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NUREG-2105, Vol. 3

Environmental Impact Statement for the Combined License (COL) for Enrico Fermi Unit 3

Final Report

Appendix E

U.S. Nuclear Regulatory Commission
Office of New Reactors
Washington, DC 20555-0001

Regulatory Office
Permit Evaluation, Eastern Branch
U.S. Army Engineer District, Detroit
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Final Environmental Impact Statement
for Combined License (COL) for Enrico Fermi Unit 3

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Abstract:

This environmental impact statement (EIS) has been prepared in response to an application submitted to the U.S. Nuclear Regulatory Commission (NRC) by Detroit Edison for a construction permit and operating license (combined license or COL). The proposed actions related to the Detroit Edison application are (1) NRC issuance of a COL for a new power reactor unit at the Detroit Edison Enrico Fermi Atomic Power Plant (Fermi) site in Monroe County, Michigan; and (2) U.S. Army Corps of Engineers (USACE) permit action to perform certain regulated activities on the site. The USACE is participating with the NRC in preparing this EIS as a cooperating agency and participates collaboratively on the review team.

This EIS includes the NRC staff's analysis, which considers and weighs the environmental impacts of constructing and operating a new nuclear unit at the Fermi site and at alternative sites, and mitigation measures available for reducing or avoiding adverse impacts. Based on its analysis, the staff determined that there are no environmentally preferable or obviously superior sites.

The EIS includes the evaluation, in part, of the proposed action's impacts on the public interest, including impacts on waters of the United States pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Appropriations Act of 1899. The USACE will decide whether to issue a permit on the basis of the EIS evaluation of the probable impacts on the public interest, including cumulative impacts, of Detroit Edison's proposed activities that are within the USACE scope of analysis; USACE verification of compliance with the requirements of USACE regulations and the Clean Water Act Section 404(b)(1) Guidelines; and any supplemental information, evaluations, or verifications that may be outside the NRC's scope of analysis and not included in this EIS, but are required by the USACE to support its permit decision.

After considering the environmental aspects of the proposed action, the staff's recommendation to the Commission is that the COL be issued as proposed.[(a)] This recommendation is based on (1) the application, including the Environmental Report (ER) submitted by Detroit Edison; (2) consultation with Federal, State, Tribal, and local agencies; (3) the staff's independent review; (4) the staff's consideration of comments related to the environmental review that were received during the public scoping process

(a) As directed by the Commission in CLI-12-16, the NRC will not issue the COL prior to completion of the ongoing rulemaking to update the Waste Confidence Decision and Rule (see Section 6.1.6 of this EIS).

and on the draft EIS; and (5) the assessments summarized in this EIS, including the potential mitigation measures identified in the ER and this EIS. The USACE permit decision would be made following issuance of this final EIS and completion of its permit application review process and permit decision documentation.

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Executive Summary

By letter dated September 18, 2008, the U.S. Nuclear Regulatory Commission (NRC or the Commission) received an application from Detroit Edison Company (Detroit Edison) for a combined license (COL) for a new power reactor unit, the Enrico Fermi Unit 3 (Fermi 3), at the Detroit Edison Enrico Fermi Atomic Power Plant (Fermi) site in Monroe County, Michigan.

The proposed actions related to the Fermi 3 application are (1) NRC issuance of COLs for construction and operation of a new nuclear unit at the Fermi site and (2) U.S. Army Corps of Engineers (USACE) permit action pursuant to Section 404 of the Federal Water Pollution Control Act, as amended (33 USC 1251, *et seq*.) (Clean Water Act), and Section 10 of the Rivers and Harbors Appropriation Act of 1899 (33 USC 403 *et seq.*) (Rivers and Harbors Act of 1899) to perform certain regulated activities associated with the Fermi 3 project, within the USACE jurisdiction and scope of analysis. The USACE is participating with the NRC in preparing this environmental impact statement (EIS) as a cooperating agency and participates collaboratively on the review team. The reactor specified in the application is an Economic Simplified Boiling Water Reactor (ESBWR) designed by GE-Hitachi Nuclear Energy Americas, LLC (GEH). The GEH design was approved by the NRC in March 2011. The final design approval was published in the *Federal Register* on March 16, 2011 (76 FR 14437).

The NRC staff completed its safety review of the ESBWR design on March 9, 2011 and issued a final safety evaluation report (FSER, Agencywide Documents Access and Management System [ADAMS] accession number ML103470210). The NRC staff also issued a standard design approval (SDA) via letter to GE Hitachi Nuclear Energy on March 9, 2011 (ADAMS accession number ML110540310). This SDA signified that the NRC staff reviewed the design and found the design met all applicable regulations.

In parallel with the SDA, the NRC staff began preparing a rulemaking to certify the design approved in the SDA. Based on the completion of its safety review, the NRC published a proposed rule on March 24, 2011 (77 FR 16549) that would certify the ESBWR design in Appendix E to 10 CFR Part 52.

In late 2011, while the NRC staff was preparing the final rule, issues were identified with the ESBWR steam dryer, which is a non-safety component. These issues called into question certain conclusions in the staff's safety review under the SDA. Resolution of these issues requires additional analyses by the applicant and review by the NRC staff in order for the NRC staff to conclude the design is acceptable for certification. The design certification rulemaking process is delayed pending resolution of these issues. If the additional analyses resolve the issues, certification, via publication of a final rule, is expected to be completed in 2013.

Section 102 of the National Environmental Policy Act of 1969, as amended (NEPA) (42 USC 4321 *et seq*.), directs that an EIS be prepared for major Federal actions that significantly affect the quality of the human environment. The NRC has implemented Section 102 of NEPA in Title 10 of the Code of Federal Regulations (CFR), Part 51. Further, in 10 CFR 51.20, the NRC has determined that the issuance of a COL under 10 CFR Part 52 is an action that requires an EIS.

The purpose of Detroit Edison's requested NRC action – issuance of the COL – is to obtain a license to construct and operate a new nuclear unit. This license is necessary but not sufficient for construction and operation of the unit. A COL applicant must obtain and maintain the necessary permits from other Federal, State, Tribal, and local agencies and permitting authorities. Therefore, the purpose of the NRC's environmental review of the Detroit Edison application is to determine if a new nuclear power plant of the proposed design can be constructed and operated at the Fermi site without unacceptable adverse impacts on the human environment. The objective of Detroit Edison's anticipated request for USACE action would be to obtain a decision on a permit application proposing structures and/or work in, over, or under navigable waters and/or the discharge of dredged or fill material into waters of the United States, including jurisdictional wetlands. Upon acceptance of the Detroit Edison application, the NRC began the environmental review process described in 10 CFR Part 51 by publishing in the *Federal Register* (FR) a Notice of Intent (73 FR 75142) to prepare an EIS and conduct scoping. On January 14, 2009, the NRC held two scoping meetings in Monroe, Michigan, to obtain public input on the scope of the environmental review. To gather information and to become familiar with the sites and their environs, the NRC and its contractors, Argonne National Laboratory, Energy Research, Inc., and Ecology and Environment, Inc., visited the Fermi site in February 2009 and the four alternative sites, Belle River/St. Clair, Greenwood Energy Center, and two greenfield sites (Petersburg and South Britton sites) in January 2009.

During the Fermi site visit, the NRC staff, its contractors, and the USACE staff met with Detroit Edison staff, public officials, and the public. The NRC staff reviewed the comments received during the scoping process and contacted Federal, State, Tribal, regional, and local agencies to solicit comments. Included in this EIS are (1) the results of the review team's analyses, which consider and weigh the environmental effects of the proposed action (i.e., issuance of the COL) and of building and operating a new nuclear unit at the Fermi site; (2) mitigation measures for reducing or avoiding adverse effects; (3) the environmental impacts of alternatives to the proposed action; and (4) the staff's recommendation regarding the proposed action.

To guide its assessment of the environmental impacts of a proposed action or alternative actions, the NRC has established a standard of significance for impacts based on Council on Environmental Quality guidance (40 CFR 1508.27). Table B-1 of 10 CFR Part 51, Subpart A,

Appendix B, provides the following definitions of the three significance levels – SMALL, MODERATE, and LARGE:

> SMALL – Environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource.
>
> MODERATE – Environmental effects are sufficient to alter noticeably, but not to destabilize, important attributes of the resource.
>
> LARGE – Environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource.

Mitigation measures were considered for each resource category and are discussed in the appropriate sections of the EIS.

In preparing this EIS, the NRC staff and USACE staff reviewed the application, including the Environmental Report (ER) submitted by Detroit Edison; consulted with Federal, State, Tribal, and local agencies; and followed the guidance set forth in NUREG-1555, *Environmental Standard Review Plan*. In addition, the NRC staff considered the public comments related to the environmental review received during the scoping process. Comments within the scope of the environmental review are included in Appendix D of this EIS.

A 75-day comment period began on October 28, 2011, when the U.S. Environmental Protection Agency (EPA) issued a FR Notice of Availability (76 FR 66925) of the draft EIS to allow members of the public to comment on the results of the environmental review. Two public meetings were held on December 15, 2011, at Monroe County Community College, in Monroe, Michigan. During these public meetings, the review team described the results of the NRC environmental review, answered questions related to the review, and provided members of the public with information to assist them in formulating their comments. The comment period for the draft EIS ended January 11, 2012. Comments on the draft EIS and the staff's responses are provided in Appendix E of this EIS.

The USACE issued LRE-2008-00443-1-S11 public notice for a 30-day review on December 23, 2011, describing the proposed USACE-regulated activities associated with the Fermi 3 project; proposed water of the United States avoidance and minimization plan and conceptual mitigation strategy; and USACE preliminary assessment of certain impacts. The purpose of the public notice was to solicit comments from the public; Federal, State, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of regulated activities within the USACE scope of analysis that are associated with the Fermi 3 project. The comments received during the public comment period are under review by USACE.

The NRC staff's recommendation to the Commission related to the environmental aspects of the proposed action is that the COL be issued as requested.[(a)] This recommendation is based on (1) the application, including the ER submitted by Detroit Edison and the applicant's supplemental letters and responses to the staff's Requests for Additional Information; (2) consultation with other Federal, State, Tribal, and local agencies; (3) the staff's independent review; (4) the staff's consideration of public comments related to the environmental review that were received during the scoping process and on the draft EIS; and (5) the assessments summarized in this EIS, including the potential mitigation measures identified in the ER and this EIS. The USACE will base its evaluation of Detroit Edison's permit application on items (1), (2), (4), and (5) listed above; USACE consideration of public comments received in response to the USACE public notice; the requirements of USACE regulations and the Clean Water Act Section 404(b)(1) Guidelines; and the USACE public interest review. The USACE's permit decision will be based, in part, on this EIS and will be made after issuance of the final EIS and completion of its permit application review and decision-making process.

The NRC staff's evaluation of the site safety and emergency preparedness aspects of the proposed action will be addressed in the NRC's Safety Evaluation Report anticipated to be published in the future.

(a) As directed by the Commission in CLI-12-16, NRC will not issue the COL prior to completion of the ongoing rulemaking to update the Waste Confidence Decision and Rule (see Section 6.1.6 of this EIS).

Abbreviations/Acronyms

χ/Q	dispersion values
°F	degree(s) Fahrenheit
ABWR	advanced boiling water reactor
ac	acre(s)
AC	alternating current
ACHP	Advisory Council on Historic Preservation
ADAMS	Agencywide Documents Access and Management System
ADG	ancillary diesel generator
ADT	average daily traffic
AEC	Atomic Energy Commission
AHS	Auxiliary Heat Sink
ALARA	as low as reasonably achievable
ANSI	American National Standards Institute
APE	area of potential effects
AQCR	Air Quality Control Region
Argonne	Argonne National Laboratory
AST	aboveground storage tank
ASLB	Atomic Safety and Licensing Board
AWEA	American Wind Energy Association
BA	Biological Assessment
BACT	Best Available Control Technology
BEA	Bureau of Economic Analysis (U.S. Department of Commerce)
BEIR	Biological Effects of Ionizing Radiation
BGEPA	Bald and Golden Eagle Protection Act of 1940
BIA	Bureau of Indian Affairs
BiMAC	basemat internal melt arrest and coolability
BMP	best management practice
Bq	Becquerel
Bq/MTU	Becquerel per metric ton uranium
BRC	Blue Ribbon Commission
Btu	British thermal unit(s)
BWR	boiling water reactor
CAA	Clean Air Act
CAES	compressed air energy storage
CAIR	Clean Air Interstate Rule

CCR	coal combustion residuals
CCRG	Commonwealth Cultural Resources Group, Inc.
CCS	carbon capture and sequestering/sequestration
CDC	Centers for Disease Control and Prevention
CDF	core damage frequency
CEQ	Council on Environmental Quality
CER	Capital Expenditure and Recovery
CFR	Code of Federal Regulations
cfs	cubic feet per second
cfu	colony forming units
CH_4	methane
CHP	combined heat and power
Ci	curie(s)
CIRC	Circulating Water System
CIS	containment isolation system
CN	Canadian National
CNF	Capacity Need Forum (MPSC)
CO	carbon monoxide
CO_2	carbon dioxide
CO_2-e	carbon dioxide-equivalent
COL	combined construction permit and operating license
CSAPR	Cross-State Air Pollution Rate
CSP	concentrated solar power
CSX	CSX Transportation
CT	combustion turbine
CWA	Clean Water Act
CWIS	Cooling Water Intake Structure
CZMA	Coastal Zone Management Act
DA	Department of the Army
dB	decibel
dBA	A-weighted decibel
DBA	design-basis accident
dbh	diameter at breast height
DC	direct current
DCD	Design Control Document
DDT	dichlorodiphenyltrichloroethane
Detroit Edison	Detroit Edison Company
DHS	U.S. Department of Homeland Security
DNL	equivalent continuous sound level

DNR	Designated Network Resource
DOC	U.S. Department of Commerce
DOD	U.S. Department of Defense
DOE	U.S. Department of Energy
DOI	U.S. Department of the Interior
DOT	Department of Transportation
D/Q	deposition factor
DRIWR	Detroit River International Wildlife Refuge
DSM	demand-side management
DTW	Detroit Metropolitan Wayne County Airport
DWSD	Detroit Water and Sewerage Department
E&E	Ecology and Environment, Inc.
EAB	Exclusion Area Boundary
EERE	U.S. Department of Energy Office of Energy Efficiency and Renewable Energy
EGS	engineered geothermal system
EIA	Energy Information Administration
EIS	environmental impact statement
ELF	extremely low frequency
EMF	electromagnetic field
EOP	emergency operating procedure
EPA	U.S. Environmental Protection Agency
EPRI	Electric Power Research Institute
EPT	Ephemeroptera, Plecoptera, Trichoptera (index)
EPZ	emergency planning zone
ER	Environmental Report
ERI	Energy Research, Inc.
ESA	Endangered Species Act of 1973, as amended
ESBWR	Economic Simplified Boiling Water Reactor
ESRP	Environmental Standard Review Plan
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
Fermi	Enrico Fermi Atomic Power Plant
Fermi 1	Enrico Fermi Unit 1
Fermi 2	Enrico Fermi Unit 2
Fermi 3	Enrico Fermi Unit 3
FES	Final Environmental Statement
FIRM	Flood Insurance Rate Map
FIS	Financial Reporting and Analysis

FP	fire pump
fps	feet per second
FPS	Fire Protection System
FR	*Federal Register*
FSAR	Final Safety Analysis Report
FSER	Final Safety Evaluation Report
ft	foot (feet)
ft/day	feet per day
ft^3	cubic feet
FTE	full-time equivalent
FWS	U.S. Fish and Wildlife Service
FY	fiscal year
GAF	Generation and Fuel
gal	gallon
GBq	gigabecquerel
GC	gas centrifuge
GD	gaseous diffusion
GEH	General Electric-Hitachi Nuclear Energy Americas, LLC
GEIS	*Generic Environmental Impact Statement for License Renewal of Nuclear Plants*
GEIS-DECOM	*Generic Environmental Impact Statement for Decommissioning of Nuclear Facilities: Supplement 1, Regarding the Decommissioning of Nuclear Power Reactors*
GHG	greenhouse gas
GIS	geographical information system
GLC	Great Lakes Commission
GLENDA	Great Lakes Environmental Database
GLOFS	Great Lakes Operational Forecast System
GLWC	Great Lakes Wind Council
gpd	gallon(s) per day
gpm	gallon(s) per minute
GWh	gigawatt hour(s)
GWP	global warming potential
ha	hectare
HAP	hazardous air pollutant
HCMA	Huron-Clinton Metropolitan Authority
HDR	hot dry rock
HEPA	high-efficiency particulate air
HFC	hydrofluorocarbon

HFE	hydrofluorinated ether
HLW	high-level waste
HQUSACE	U.S. Army Corps of Engineers Headquarters
hr	hour(s)
HRSG	heat recovery steam generator
HUD	U.S. Department of Housing and Urban Development
HVAC	heating, ventilating, and air-conditioning
IAEA	International Atomic Energy Agency
ICRP	International Commission on Radiological Protection
IEEE	Institute of Electrical and Electronics Engineers
IGCC	integrated gasification combined cycle
IGLD 85	International Great Lakes Datum of 1985
IJC	International Joint Commission
in.	inch(es)
INAC	Indian and Northern Affairs Canada
IOU	investor-owned utility
IPCC	Intergovernmantal Panel on Climate Change
IPCS	Integrated Plant Computer System
IPP	independent power producer
IRP	Integrated Resource Plan
ISD	Intermediate School District
ISFSI	Independent Spent Fuel Storage Installation
ITC	ITC Holdings Corporation
JPA	Joint Permit Application
kg	kilogram(s)
KiKK	Childhood Cancer in the Vicinity of Nuclear Power Plants (German acronym)
km	kilometer(s)
km^2	square kilometer(s)
kV	kilovolt(s)
kW	kilowatt(s)
kWh	kilowatt hour(s)
L	liter(s)
L_{90}	sound level exceeded 90 percent of the time
LaMP	Lakewide Management Plan
lb	pound(s)
L_{dn}	day-night average sound level
LEDPA	least environmentally damaging practicable alternative

LEOFS	Lake Erie Operational Forecast System
L_{eq}	equivalent continuous sound level
LET	Lake Erie Transit
LFA	Load Forecasting Adjustment
LLW	low-level waste
LOLE	Loss of Load Expectation
LOLP	Loss-of-Load Probability
LOS	level of service
LPZ	low population zone
LRF	large release frequency
LTRA	Long-Term Reliability Assessment (NERC)
LW	long wave
LWR	light water reactor
µg	microgram(s)
m	meter(s)
m^3	cubic meter(s)
MACCS2	MELCOR Accident Consequence Code System
MBTA	Migratory Bird Treaty Act of 1918
MCCC	Monroe County Community College
mCi	millicurie
MCL	maximum contaminant level; Michigan Compiled Laws
MCRC	Monroe County Road Commission
MDCH	Michigan Department of Community Health
MDCT	mechanical draft cooling tower
MDELEG	Michigan Department of Energy, Labor and Economic Growth
MDEQ	Michigan Department of Environmental Quality
MDNR	Michigan Department of Natural Resources
MDOT	Michigan Department of Transportation
MDSP	Michigan Department of State Police
MEI	maximally exposed individual
METC	Michigan Electric Transmission Company
mGy	milliGray
MGD	million gallons per day
mi	mile(s)
mi^2	square mile(s)
MichCon	Michigan Consolidated Gas Company
MISO	Midwest Independent System Operator
MIT	Massachusetts Institute of Technology
mL	milliliter(s)
MMT	million metric tons

$MMTCO_2$-e	million metric tons of carbon dioxide equivalent
MNFI	Michigan Natural Features Inventory
mo	month(s)
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
mph	mile(s) per hour
MPSC	Michigan Public Service Commission
mrad	milliradian
mrem	millirem(s)
MSA	Metropolitan Statistical Area
MSW	municipal solid waste
MT	metric ton(s) (or tonne[s])
MTEP	MISO Transmission Expansion Plan
MTU	metric ton(s) of uranium
MW	megawatt(s)
MW(e)	megawatt(s) electrical
MW(t)	megawatt(s) thermal
MWd	megawatt-day(s)
MWd/MTU	megawatt-day(s) per metric ton of uranium
MWh	megawatt hour(s)
NAAQS	National Ambient Air Quality Standard
NACD	Native American Consultation Database
NaCl	sodium chloride
NAGPRA	Native American Graves Protection and Repatriation Act of 1990
NAS	National Academy of Sciences
NAVD 88	North American Vertical Datum of 1988
DCDC	National Climate Data Center
NCI	National Cancer Institute
NCRP	National Council on Radiation Protection and Measurements
NDCT	natural draft cooling tower
NEI	Nuclear Energy Institute
NEPA	National Environmental Policy Act of 1969, as amended
NERC	North American Electric Reliability Corporation
NESC	National Electrical Safety Code
NESHAP	National Emission Standards for Hazardous Air Pollutants
NF_3	nitrogen trifluoride
NGCC	natural gas combined-cycle
NHPA	National Historic Preservation Act of 1966, as amended
NIEHS	National Institute of Environmental Health Sciences
NMFS	National Marine Fisheries Service

NML	noise monitoring location
NNW	north-northwest
N_2O	nitrous oxide
NO_2	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NO_x	nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NPHS	normal power heat sink
NPS	National Park Service
NRC	U.S. Nuclear Regulatory Commission
NRCS	Natural Resources Conservation Service
NREL	National Renewable Energy Laboratory
NREPA	Natural Resources and Environmental Protection Act
NRHP	*National Register of Historic Places*
NS	Norfolk Southern
NSPS	New Source Performance Standard
NSR	new source review
NTC	Nuclear Training Center
NTU	nephelometric turbidity unit
NWI	National Wetland Inventory
NWIS	National Water Information System
NWR	National Wildlife Refuge
O_3	ozone
ODCM	Offsite Dose Calculation Manual
ODNR	Ohio Department of Natural Resources
OGS	off-gas system
OSHA	Occupational Safety and Health Administration
PAM	primary amebic meningoencephalitis
PAP	personnel access portal
Pb	lead
PC	personal computer
PCB	polychlorinated biphenyl
pCi/L	picocurie(s) per liter
PCTMS	Plant Cooling Tower Makeup System
PEM	palustrine emergent marsh
PESP	Pesticide Environmental Stewardship Program
PFC	perfluorocarbon
PFO	palustrine forested wetland
P-IBI	Planktonic Index of Biotic Integrity

PIPP	Pollution Incident Prevention Plan
PJM	PJM Interconnection
PM	particulate matter
$PM_{2.5}$	particulate matter with a mean aerodynamic diameter of less than or equal to 2.5 μm
PM_{10}	particulate matter with a mean aerodynamic diameter of less than or equal to 10 μm
PRA	probabilistic risk assessment
PRB	Powder River Basin
PSD	Prevention of Significant Deterioration
psia	pounds per square inch absolute
PSR	Physicians for Social Responsibility
PSS	palustrine scrub-shrub wetland
PSWS	Plant Service Water System
PTE	potential to emit
Pu-239	plutonium-239
PV	photovoltaic
PWSS	pretreated water supply system
RAI	Request for Additional Information
RCRA	Resource Conservation and Recovery Act of 1976, as amended
RDF	refuse-derived fuel
REIRS	Radiation Exposure Information and Reporting System
rem	roentgen equivalent man
REMP	radiological environmental monitoring program
RESA	Regional Educational Service Agency
RFC	Reliability*First* Corporation
RHAA	Rivers and Harbors Appropriation Act of 1899
RHR	residual heat removal
RIMS II	Regional Input-Output Modeling System
ROI	region of interest
ROW	right-of-way
RPS	Renewable Portfolio Standard
RRD	Remediation and Redevelopment Division
RSICC	Radiation Safety Information Computational Center
RTO	Regional Transmission Organization
RTP	Regional Transportation Plan
RV	recreational vehicle
Ryr	reactor-year

SACTI	Seasonal/Annual Cooling Tower Impact
SAMA	severe accident mitigation alternative
SAMDA	severe accident mitigation design alternative
SAMG	severe accident management guidelines
SBO	station blackout
SCPC	supercritical pulverized coal
SCR	selective catalytic reduction
SDA	standard design approval
SDG	standby diesel generator
sec	second(s)
SEGS	Solar Energy Generating System
SEMCOG	Southeast Michigan Council of Governments
SER	Safety Evaluation Report
SESC	soil erosion and sedimentation control
SF_6	sulfur hexafluoride
SHPO	State Historic Preservation Office(r)
SO_2	sulfur dioxide
SO_x	sulfur oxides
SOARCA	State-of-the-Art Reactor Consequence Analyses
SRHP	*State Register of Historic Places*
SRREN	Special Report on Renewable Energy Sources and Climate Change Mitigation
SSC	system, structure, and component
SSE	safe shutdown earthquake ground motion
STG	steam turbine generator
STORET	Storage and Retrieval Database
SUV	sport-utility vehicle
Sv	sievert
SWMS	solid radioactive waste management system
SWPPP	Stormwater Pollution Prevention Plan
SWS	Station Water System
TDS	total dissolved solids
TEDE	total effective dose equivalent
THPO	Tribal Historic Preservation Office
TI	Temporary Instruction
TIP	Transportation Improvement program
TLD	thermoluminescent dosimeter
TMDL	total maximum daily load
TRAGIS	Transportation Routing Analysis Geographic Information System
TRU	transuranic

U.S.	United States
USC	United States Code
U_3O_8	triuranium octoxide (“yellowcake”)
UF_6	uranium hexafluoride
UMTRI	University of Michigan Transportation Research Institute
UO_2	uranium dioxide
USACE	U.S. Army Corps of Engineers
USBLS	U.S. Bureau of Labor Statistics
USCB	U.S. Census Bureau
USDA	U.S. Department of Agriculture
USGCRP	U.S. Global Change Research Program
USGS	U.S. Geological Survey
VIB	Vehicle Inspection Building
VOC	volatile organic compound
WHO	World Health Organization
WNW	west-northwest
WPSCI	Wolverine Power Supply Cooperative, Inc.
WRA	Wind Resource Area
WTE	waste-to-energy
WWSL	wastewater stabilization lagoon
WWTP	wastewater treatment plant
yd^3	cubic yard(s)
yr	year(s)

Appendix E

Draft Environmental Impact Statement Comments and Responses

Appendix E

Draft Environmental Impact Statement Comments and Responses

As part of the U.S. Nuclear Regulatory Commission (NRC) review of a Detroit Edison Company (Detroit Edison) application for combined licenses (COLs) for proposed Enrico Fermi Unit 3 (Fermi 3) at its existing Fermi site, the NRC and the U.S. Army Corps of Engineers (USACE) (together referred to as the "review team") solicited comments from the public on the draft environmental impact statement (EIS). The Draft EIS was issued in October of 2011. A 75-day comment period began on October 28, 2011, when the U.S. Environmental Protection Agency (EPA) issued a *Federal Register* Notice of Availability (76 FR 66925) of the Draft EIS to allow members of the public to comment on the results of the environmental review. As part of the process to solicit public comments on the Draft EIS, the review team:

- Placed a copy of the Draft EIS at Monroe County Public Libraries,
- Made the Draft EIS available in the NRC's Public Document Room in Rockville, Maryland,
- Placed a copy of the Draft EIS on the NRC Web site at www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr2105/,
- Provided a copy of the Draft EIS to any member of the public who requested one,
- Sent copies of the Draft EIS to certain Federal, State, Tribal, and local agencies,
- Published a Notice of Availability of the Draft EIS in the *Federal Register* on October 28, 2011 (76 FR 66998),
- Filed the Draft EIS with the EPA, and
- Held two public meetings on December 15, 2011, at Monroe County Community College, Monroe, Michigan.

Approximately 175 people attended the public meetings, and numerous attendees provided oral comments. A certified court reporter recorded these oral comments and prepared written transcripts of the meeting. The transcripts of the public meetings were published on January 13, 2012, as part of the public meeting summary (Agencywide Documents Access and Management System [ADAMS] Accession Number ML12005A174). In addition to the comments received at the public meeting, the NRC received letters and email messages with comments.

The comment letters, email messages, and transcripts of the public meeting are available in ADAMS. ADAMS is accessible at http://www.nrc.gov/reading-rm.html. Persons who do not have access to ADAMS or who encounter problems in accessing the documents located in ADAMS should contact the NRC's Public Document Room reference staff at 800-397-4209 or 301-415-4737. The ADAMS accession numbers for the letters, email messages, and transcripts are provided in Table E-1.

E.1 Disposition of Comments

Each set of comments from a given commenter was given a unique correspondence identifier, allowing each set of comments from a commenter to be traced back to the transcript, letter, or email in which the comments were submitted.

After the comment period concluded, the review team considered and dispositioned all comments received. To identify each individual comment, the team reviewed the transcript of the public meeting and each letter and email received related to the Draft EIS. As part of the review, the review team identified statements that it believed were related to the proposed action and recorded the statements as comments. Each comment was assigned to a specific subject area, and similar comments were grouped together. Finally, responses were prepared for each comment or group of comments.

Some comments addressed topics and issues that are not part of the environmental review for this proposed action. These comments included questions about NRC's safety review, general statements of support or opposition to nuclear power, and comments on the NRC regulatory process in general. These comments are included, but detailed responses to such comments are not provided because they addressed issues that do not directly relate to the environmental effects of this proposed action and are, thus, outside the scope of the National Environmental Policy Act (NEPA) review of this proposed action. Many comments, however, specifically addressed the scope of the environmental review, analyses, and issues contained in the Draft EIS, including comments about potential impacts, proposed mitigation, the agency review process, and the public comment period. Detailed responses to each of these comments are provided in this appendix.

Table E-1 provides a list of commenters identified by name, affiliation (if given), comment number, and the source of the comment.

Table E-1. Individuals Providing Comments during the Comment Period

Commenter	Affiliation (if stated)	Comment Source and ADAMS Accession No.	Correspondence ID
Anonymous		Letter (ML12013A161)	0081
Anderson, Christy	Self	Email (ML12010A193)	0002
Anderson, Christy	Self	Email (ML12011A059)	0003
Barnes, Kathryn	Don't Waste Michigan, Sherwood Chapter	Email (ML12004A183)	0004
Barnes, Kathryn	Self	Email (ML12018A137)	0042
Barnes, Kathryn	Self	Email (ML12018A138)	0043
Bergier, Kim	Self	Email (ML11342A185)	0005
Berlucourt, Kerry	Self	Meeting Transcript (ML12009A120)	0040-34
Bettega, Gayle	Self	Email (ML12011A058)	0006
Bihn, Sandy	Western Lake Erie Association	Email (ML12018A160)	0044
Bihn, Sandy	Western Lake Erie Association	Meeting Transcript (ML12009A121)	0039-2
Bihn, Sandy	Western Lake Erie Association	Meeting Transcript (ML12009A121)	0039-21
Bray, Anne & Peter	Self	Email (ML12018A132)	0045
Carey, Corinne	Don't Waste Michigan	Email (ML12011A061)	0007
Carroll, Connie	United Way of Monroe County	Meeting Transcript (ML12009A120)	0040-10
Carroll, Connie	United Way of Monroe County	Meeting Transcript (ML12009A121)	0039-19
Cheal, Lauren	Great Lakes United	Email (ML12018A135)	0046
Clark, Robert	Self	Meeting Transcript (ML12009A121)	0039-11
Colligan, Mary A.	National Marine Fisheries Service, Northeast Region	Letter (ML11336A064)	0071
Collins, Jessie	Self	Email (ML12004A185)	0016
Collins, Jessie	Self	Email (ML12011A057)	0015
Collins, Jessie	Self	Meeting Transcript (ML12009A121)	0039-22
Conner, Bill	Self	Meeting Transcript (ML12009A121)	0039-33
Coronado, Derek	Self	Email (ML12019A113)	0076
Cumbow, Kay	Citizens for Alternatives to Chemical Contamination	Email (ML12018A207)	0047
D'Arrigo, Diane	Nuclear Information and Resource Service	Email (ML12018A209)	0049
D'Arrigo, Diane	Nuclear Information and Resource Service	Email (MLL12018A159)	0050

Table E-1. (contd)

Commenter	Affiliation (if stated)	Comment Source and ADAMS Accession No.	Correspondence ID
Dale, Sigrid & Ron	Self	Email (ML12010A196)	0017
Dean, Dan	Self	Meeting Transcript (ML12009A120)	0040-19
Demare, Joe	Self	Meeting Transcript (ML12009A121)	0039-23
Demare, Joe	Self	Meeting Transcript (ML12009A121)	0039-3
Dexter, James	Michigan Department of Natural Resources	Email (ML12018A210)	0052
Doherty, Carolyn	Self	Letter (ML12019A114)	0075
Doherty, Carolyn	Self	Meeting Transcript (ML12009A120)	0040-4
Duffey, Leona	Sierra Club, SEMG, Conservation & Energy Committee	Email (ML12018A157)	0055
Duffey, Leona	Sierra Club, SEMG, Conservation & Energy Committee	Meeting Transcript (ML12009A120)	0040-32
Dwyer, Anabel	Self	Letter (ML12012A111)	0073
Ehrle, Lynn Howard	Self	Email (ML12018A153)	0056
Englund, Lance	Self	Email (ML12011A062)	0018
Filanda, Bobbi	Self	Email (ML12018A155)	0057
Frederick, Lamar	Monroe County Board of Commissioners	Meeting Transcript (ML12009A120)	0040-7
Gill, James	Self	Letter (ML11336A067)	0072
Gleckner, Allen	Self	Email (ML12018A131)	0036
Gruelle, Martha	Wildlife Habitat Council	Meeting Transcript (ML12009A121)	0039-25
Gunter, Keith	Self	Email (ML12018A038)	0037
Harrison, James	Self	Letter (ML12013A161)	0079
Hartung, Tiffany	Sierra Club	Email (ML12004A182)	0019
Johnson, Bruce	Self	Meeting Transcript (ML12009A120)	0040-3
Johnston, Bruce	Self	Meeting Transcript (ML12009A120)	0040-27
Johnston, Mary	Self	Meeting Transcript (ML12009A120)	0040-26
Kamps, Kevin	Beyond Nuclear	Email (ML12018A150)	0058
Kamps, Kevin	Beyond Nuclear	Meeting Transcript (ML12009A120)	0040-22
Kamps, Kevin	Beyond Nuclear	Meeting Transcript (ML12009A121)	0039-28

Table E-1. (contd)

Commenter	Affiliation (if stated)	Comment Source and ADAMS Accession No.	Correspondence ID
Kamps, Kevin	Beyond Nuclear	Meeting Transcript (ML12009A121)	0039-9
Kasenow, Lisa & Kevin	Self	Email (ML12011A063)	0020
Kaufman, Hedi	Self	Meeting Transcript (ML12009A121)	0039-27
Keegan, Michael	Self	Meeting Transcript (ML12009A121)	0039-24
Keegan, Michael	Self	Meeting Transcript (ML12009A121)	0039-7
Keegan, Michael J.	Don't Waste Michigan	Email (ML12018A154)	0059
Keegan, Michael J.	Don't Waste Michigan	Email (ML12018A156)	0060
Keegan, Michael J.	Don't Waste Michigan	Email (ML12018A205)	0061
Keegan, Michael J.	Don't Waste Michigan	Meeting Transcript (ML12009A120)	0040-9
Keegan, Michael J.	Don't Waste Michigan	Meeting Transcript (ML12009A121)	0039-24
Lake, Tim	Monroe County Industrial Development Board	Meeting Transcript (ML12009A120)	0040-18
Lankford, R.E.	Self	Email (ML11342A191)	0023
Lankford, R.E.	Self	Email (ML12004A187)	0022
Lankford, R.E.	Self	Meeting Transcript (ML12009A120)	0040-13
Laroy, Barry	City of Monroe	Email (ML11354A090)	0024
Lent, Patricia L.	Self	Email (ML12004A184)	0025
Lodge, Terry		Meeting Transcript (ML12009A121)	0039-13
Lodge, Terry	Intervenors	Email (ML12018A204)	0063
Lodge, Terry	Intervenors	Email (ML12018A204)	0077
Macks, Vic	Self	Email (ML12010A195)	0026
Macks, Vic	Self	Email (ML12018A148)	0064
Macks, Vic	Self	Meeting Transcript (ML12009A120)	0040-12
Marcus, Esther	Self	Email (ML12018A151)	0065
Marida, Patrica	Nuclear Issues Committee at the Ohio Sierra Club	Meeting Transcript (ML12009A120)	0040-33
Marida, Patricia A.	Self	Email (ML12010A191)	0027
Martinez, Michelle	Self	Meeting Transcript (ML12009A121)	0039-26
Mataya, Diana	Monroe County Chamber of Commerce	Meeting Transcript (ML12009A120)	0040-31

Table E-1. (contd)

Commenter	Affiliation (if stated)	Comment Source and ADAMS Accession No.	Correspondence ID
May, Ron	DTE Energy	Meeting Transcript (ML12009A120)	0040-8
May, Ron	DTE Energy	Meeting Transcript (ML12009A121)	0039-16
McArdle, Ed	Michigan Sierra Club and Southeast Group of the Sierra Club	Meeting Transcript (ML12009A120)	0040-14
McArdle, Ed	Self	Meeting Transcript (ML12009A120)	0040-2
McArdle, Ed	Self	Meeting Transcript (ML12009A121)	0039-31
McDevitt, Richard	French Town Charter Township	Meeting Transcript (ML12009A120)	0040-24
McDevitt, Richard	Self	Meeting Transcript (ML12009A121)	0039-15
McNulty, Regina	Self	Meeting Transcript (ML12009A120)	0040-11
Mentel, Floreine	Monroe County	Meeting Transcript (ML12009A121)	0039-12
Meyer, Richard	Self	Meeting Transcript (ML12009A121)	0039-14
Meyers, Marcee	Self	Email (ML12018A134)	0066
Micka, Richard	Self	Meeting Transcript (ML12009A120)	0040-21
Mull, Sandy	Self	Meeting Transcript (ML12009A121)	0039-20
Myatt, Art	Self	Email (ML12011A055)	0028
Newman, Kent	Self	Email (ML11339A090)	0021
Newnan, Hal	Self	Email (ML12004A181)	0029
Nixon, Dave	Monroe County Community College	Meeting Transcript (ML12009A120)	0040-17
Nixon, Dave	Monroe County Community College	Meeting Transcript (ML12009A120)	0040-29
Nixon, Dave	Monroe County Community College	Meeting Transcript (ML12009A121)	0039-29
Noonan, Henry	Southeast Michigan Group of the Sierra Club	Meeting Transcript (ML12009A120)	0040-17
Oberleiter, Tracy	Monroe County Economic Development Corporation	Meeting Transcript (ML12009A120)	0040-16
Page, Scott	Self	Meeting Transcript (ML12009A120)	0040-23

Table E-1. (contd)

Commenter	Affiliation (if stated)	Comment Source and ADAMS Accession No.	Correspondence ID
Peven, Robert	Monroe County Planning Commission	Email (ML12018A152)	0067
Pitoniak, Gregory	SEMCA	Meeting Transcript (ML12009A120)	0040-36
Podorsek, Edward	Self	Email (ML12010A192)	0030
Rivera, Ethyl	Self	Email (ML12018A133)	0070
Rivera, Ethyl	Self	Meeting Transcript (ML12009A120)	0040-25
Rivera, Ethyl	Self	Meeting Transcript (ML12009A121)	0039-5
Rivera, Evelyn	Self	Meeting Transcript (ML12009A121)	0039-30
Rossi, Vincent	Self	Email (ML11320A089)	0031
Sandel, Ron	Self	Meeting Transcript (ML12009A121)	0039-18
Sandel, Ron	Self	Meeting Transcript (ML12009A121)	0039-4
Schroeck, Nicholas Joseph	Great Lakes Environmental Law Center	Email (ML12018A129)	0038
Seubert, Nancy	IHM Sisters	Email (ML12018A130)	0068
Smith, Peter	Self	Letter (ML12010A197)	0083
Sobzab, Jerry	DTE Shareholders United	Meeting Transcript (ML12009A120)	0040-20
Sontag, Cady	Self	Letter (ML12023A035)	0082
Spencer, Dr. Donald A.	Monroe County Intermediate School District	Meeting Transcript (ML12009A120)	0040-30
Steinman, Shirley	Self	Email (ML11354A086)	0032
Stephens, Thomas	Self	Email (ML12010A194)	0033
Stephens, Thomas	Self	Email (ML12018A136)	0069
Stephens, Thomas	Self	Meeting Transcript (ML12009A121)	0039-32
Stickel, John	Self	Meeting Transcript (ML12009A121)	0039-17
Thompkins, Bob	Detroit Edison Alliance of Retirees	Meeting Transcript (ML12009A120)	0040-35
Tori, Gildo	Public Policy Production Limited's Great Lakes Atlantic Regional Office	Meeting Transcript (ML12009A120)	0040-28
Treichel, Lisa	Department of the Interior	Letter (ML12026A464)	0080
Vanderpool, Simon	Self	Meeting Transcript (ML12009A120)	0040-6
Welke, Jim	Self	Email (ML12010A190)	0034

Table E-1. (contd)

Commenter	Affiliation (if stated)	Comment Source and ADAMS Accession No.	Correspondence ID
Westlake, Kenneth A.	Office of Enforcement and Compliance Assistance, U.S. EPA Region 5	Letter (ML12023A034)	0078
Zaski, Frank	Self	Email (ML11354A088)	0035
Zaski, Frank	Self	Meeting Transcript (ML12009A120)	0040-15
Zaski, Frank	Self	Meeting Transcript (ML12009A120)	0040-5
Zorn, Dale		Letter (ML11361A434)	0074

E.2 Comments and Responses

This appendix presents the comments and the review team responses to them grouped by similar issues as presented in Table E-2.

When the comments resulted in a change in the text of the Draft EIS, the corresponding response refers the reader to the appropriate section of the EIS where the change was made. Throughout the final EIS, with the exception of this new Appendix E, revisions to the text from the Draft EIS are indicated by vertical lines (change bars) in the margin beside the text.

Table E-3 is an alphabetical index to the comment categories and lists the commenter names and comment identification numbers that were included in each category. The balance of this document presents the comments and responses organized by topic category. References appear in Section E.3 at the end of the appendix.

Table E-2. Comment Categories

E.2.1 Comments Concerning Process - COL
E.2.2 Comments Concerning Process - NEPA
E.2.3 Comments Concerning Site Layout and Design
E.2.4 Comments Concerning Land Use - Site and Vicinity
E.2.5 Comments Concerning Land Use - Transmission Lines
E.2.6 Comments Concerning Geology
E.2.7 Comments Concerning Hydrology - Surface Water
E.2.8 Comments Concerning Hydrology - Groundwater
E.2.9 Comments Concerning Ecology - Terrestrial
E.2.10 Comments Concerning Ecology - Aquatic
E.2.11 Comments Concerning Socioeconomics
E.2.12 Comments Concerning Environmental Justice
E.2.13 Comments Concerning Historic and Cultural Resources
E.2.14 Comments Concerning Meteorology and Air Quality
E.2.15 Comments Concerning Health - Nonradiological
E.2.16 Comments Concerning Health - Radiological
E.2.17 Comments Concerning - Nonradiological Waste
E.2.18 Comments Concerning Accidents - Design Basis
E.2.19 Comments Concerning Accidents - Severe
E.2.20 Comments Concerning the Uranium Fuel Cycle
E.2.21 Comments Concerning Transportation
E.2.22 Comments Concerning Decommissioning
E.2.23 Comments Concerning Cumulative Impacts
E.2.24 Comments Concerning the Need for Power
E.2.25 Comments Concerning Alternatives - No-Action
E.2.26 Comments Concerning Alternatives - Energy
E.2.27 Comments Concerning Alternatives - System Design
E.2.28 Comments Concerning Alternatives - Sites
E.2.29 Comments Concerning Benefit-Cost Balance
E.2.30 General Comments in Support of the Licensing Action
E.2.31 General Comments in Support of Nuclear Power
E.2.32 General Comments in Support of the Existing Plant
E.2.33 General Comments in Opposition to the Licensing Action
E.2.34 General Comments in Opposition to the Licensing Process
E.2.35 General Comments in Opposition to Nuclear Power
E.2.36 Comments Concerning Issues Outside Scope - Emergency Preparedness
E.2.37 Comments Concerning Issues Outside Scope - Miscellaneous
E.2.38 Comments Concerning Issues Outside Scope - NRC Oversight
E.2.39 Comments Concerning Issues Outside Scope - Safety
E.2.40 Comments Concerning Issues Outside Scope - Security and Terrorism
E.2.41 General Editorial Comments

Table E-3. Comment Categories with Associated Commenters and Comment IDs

Comment Category	Commenter (Comment ID)
Accidents - Design Basis	• Doherty, Carolyn (0040-4-1) • Newnan, Hal (0029-3-1)
Accidents - Severe	• Anderson, Christy (0003-1-8) (0003-3-2) • Barnes, Kathryn (0042-4) • Collins, Jessie (0015-1) (0016-4-14) (0016-4-15) (0016-4-16) • D'Arrigo, Diane (0050-9) • Demare, Joe (0039-23-1) • Gunter, Keith (0037-5) • Kamps, Kevin (0058-2) (0058-7) • Macks, Vic (0026-6-33) (0026-6-40) (0040-12-1) • Myatt, Art (0028-1) • Newnan, Hal (0029-1-2) (0029-3-6) • Podorsek, Edward (0030-8) (0030-9) • Rossi, Vincent (0031-1) (0031-3) • Welke, Jim (0034-5-5)
Alternatives - Energy	• Anderson, Christy (0003-1-12) (0003-5-3) • Barnes, Kathryn (0042-8) (0042-11) • Collins, Jessie (0016-3-10) (0016-4-39) • Gleckner, Allen (0036-2-1) (0036-2-2) (0036-2-3) • Gunter, Keith (0037-11) • Hartung, Tiffany (0019-5) (0019-6) • Kamps, Kevin (0058-21) • Keegan, Michael J. (0039-24-5) (0040-9-2) • Lankford, R.E. (0023-3) • Lodge, Terry (0077-6-15) • Marida, Patricia A. (0027-5) • McArdle, Ed (0040-14-1) • Newman, Kent (0021-2) • Newnan, Hal (0029-1-3) • Noonan, Henry (0040-17-5) • Podorsek, Edward (0030-7)
Alternatives - No-Action	• Collins, Jessie (0016-4-38) • Marida, Patrica (0040-33-1)
Alternatives - Sites	• Anderson, Christy (0003-1-11) (0003-5-2) • Collins, Jessie (0016-1-20)
Alternatives - System Design	• Berlucourt, Kerry (0040-34-3)

Table E-3. (contd)

Comment Category	Commenter (Comment ID)
Benefit-Cost Balance	• Anderson, Christy (0003-5-4) • Collins, Jessie (0016-4-10) • Dean, Dan (0040-19-3) • Ehrle, Lynn Howard (0056-1) • Gleckner, Allen (0036-3-1) (0036-3-2) (0036-3-12) • Hartung, Tiffany (0019-2) • Kamps, Kevin (0039-28-2) (0039-28-3) (0058-20) • Lodge, Terry (0077-6-13) • Macks, Vic (0026-6-62) • Marida, Patricia A. (0027-4) (0027-6) • Newnan, Hal (0029-2-4) (0029-2-6) • Noonan, Henry (0040-17-7) • Stephens, Thomas (0033-8) • Welke, Jim (0034-1-3) (0034-1-4) (0034-1-5) (0034-5-2) • Westlake, Kenneth A. (0078-33) • Zaski, Frank (0035-5) (0035-6) (0040-15-3)
Cumulative Impacts	• Bihn, Sandy (0039-21-3) (0039-21-4) • Collins, Jessie (0016-4-36) • Gunter, Keith (0037-4) • Kamps, Kevin (0058-11) • Lankford, R.E. (0022-3) • Rivera, Ethyl (0070-5)
Decommissioning	• Newnan, Hal (0029-3-2) • Noonan, Henry (0040-17-11) • Welke, Jim (0034-4-1)
Ecology - Aquatic	• Anderson, Christy (0003-1-2) (0003-2-3) • Bihn, Sandy (0039-2-1) (0039-2-2) (0039-21-2) (0039-21-6) (0044-4) (0044-5) (0044-8) (0044-9) (0044-10) (0044-11) • Collins, Jessie (0016-1-17) (0016-2-10) (0016-2-11) (0016-2-12) (0016-2-14) (0016-2-15) (0016-3-4) (0016-3-5) (0016-3-6) (0016-3-7) (0016-3-8) (0016-3-11) (0016-4-6) (0016-4-8) (0016-4-41) • Dexter, James (0052-2) (0052-3) • Duffey, Leona (0055-2) • Kamps, Kevin (0058-9) (0058-12) (0058-14) (0058-18) • Kasenow, Lisa & Kevin (0020-2) • Keegan, Michael J. (0040-9-3) (0059-5) (0059-11) • Lankford, R.E. (0022-2) • Macks, Vic (0026-6-7) (0026-6-13)

Table E-3. (contd)

Comment Category	Commenter (Comment ID)
Ecology - Aquatic (contd)	• Marcus, Esther (0065-1) • Marida, Patricia A. (0027-2) • Schroeck, Nicholas Joseph (0038-3-1) (0038-3-3) • Seubert, Nancy (0068-1) (0068-3) • Stephens, Thomas (0033-6) • Treichel, Lisa (0080-6) (0080-7) (0080-8) (0080-9) • Welke, Jim (0034-4-2) (0034-4-3) (0034-4-8) (0034-4-9)
Ecology - Terrestrial	• Barnes, Kathryn (0042-5) • Collins, Jessie (0016-1-14) (0016-2-2) (0016-2-3) (0016-2-4) (0016-2-5) (0016-2-6) (0016-2-7) (0016-2-8) • Duffey, Leona (0040-32-1) • Gruelle, Martha (0039-25-1) (0039-25-2) • Lodge, Terry (0077-6-1) (0077-6-5) (0077-6-11) • Micka, Richard (0040-21-2) • Oberleiter, Tracy (0040-16-2) • Peven, Robert (0067-8) • Schroeck, Nicholas Joseph (0038-4-2) (0038-4-3) • Tori, Gildo (0040-28-1) • Treichel, Lisa (0080-1) (0080-2) (0080-3) (0080-4) (0080-5) (0080-10) (0080-11) • Westlake, Kenneth A. (0078-9) (0078-17) (0078-18) (0078-27)
Editorial Comments	• Collins, Jessie (0016-1-2) (0016-1-5) (0016-3-30) (0016-3-31) (0016-4-12) (0016-4-20) (0016-4-33) (0016-4-34) (0016-4-42) • Macks, Vic (0026-6-21) • Peven, Robert (0067-2) (0067-3) (0067-4) (0067-5) (0067-6) • Smith, Peter (0083-1) (0083-2) (0083-3) (0083-4) (0083-5) (0083-6) (0083-7) (0083-8) (0083-9) • Welke, Jim (0034-4-11) • Westlake, Kenneth A. (0078-37) (0078-39) (0078-40)
Environmental Justice	• Collins, Jessie (0015-4) (0016-2-18) (0016-3-13) • Macks, Vic (0026-6-11) • Martinez, Michelle (0039-26-1) • Stephens, Thomas (0033-7) (0069-1) • Welke, Jim (0034-4-10) • Westlake, Kenneth A. (0078-13)
Geology	• Anderson, Christy (0003-2-5) • Duffey, Leona (0040-32-2) • Gleckner, Allen (0036-3-7) • Westlake, Kenneth A. (0078-4)

Table E-3. (contd)

Comment Category	Commenter (Comment ID)
Health - Nonradiological	• Collins, Jessie (0016-1-11) (0016-1-13) (0016-3-12) (0016-4-7) • Keegan, Michael J. (0040-9-5) (0059-2) • Macks, Vic (0026-6-15) • Peven, Robert (0067-10) • Westlake, Kenneth A. (0078-20) (0078-25) (0078-26)
Health - Radiological	• Anderson, Christy (0003-4-1) (0003-4-8) • Berlucourt, Kerry (0040-34-5) • Collins, Jessie (0016-2-1) (0016-3-14) (0016-4-2) (0016-4-3) (0016-4-4) (0016-4-5) (0016-4-11) • D'Arrigo, Diane (0049-1) (0049-2) (0049-3) (0049-4) (0049-5) (0049-6) (0049-7) (0049-8) (0049-9) (0049-10) (0049-11) (0049-12) (0049-13) (0049-14) (0049-15) (0050-4) • Demare, Joe (0039-23-3) • Duffey, Leona (0040-32-3) • Ehrle, Lynn Howard (0056-2) (0056-5) (0056-7) • Johnston, Mary (0040-26-4) (0040-26-7) • Kamps, Kevin (0058-5) (0058-6) (0058-10) (0058-13) • Keegan, Michael J. (0040-9-8) (0040-9-10) (0059-1) (0059-4) (0059-7) (0059-17) (0060-1) • Lankford, R.E. (0022-1) • Lankford, R.E. (0040-13-5) • Laroy, Barry (0024-4) • Lodge, Terry (0077-6-8) • Macks, Vic (0026-6-9) (0026-6-14) (0026-6-16) (0026-6-31) (0026-6-32) (0026-6-37) (0026-6-38) • Marida, Patricia A. (0027-3) • McArdle, Ed (0039-31-3) • Noonan, Henry (0040-17-9) • Podorsek, Edward (0030-5) • Rivera, Ethyl (0070-3) (0070-4) (0070-10) • Rivera, Evelyn (0039-30-3) • Sontag, Cady (0082-2) • Vanderpool, Simon (0040-6-1) • Welke, Jim (0034-5-3) • Westlake, Kenneth A. (0078-23) (0078-24) (0078-28)

Table E-3. (contd)

Comment Category	Commenter (Comment ID)
Historic and Cultural Resources	• Collins, Jessie (0016-2-19) (0016-4-35) • Keegan, Michael J. (0039-24-2) (0040-9-13) • Lodge, Terry (0077-3-6) (0077-4-1) • Macks, Vic (0026-6-12) • Nixon, Dave (0039-29-2) (0040-29-2) • Peven, Robert (0067-9)
Hydrology - Groundwater	• Collins, Jessie (0016-1-15) (0016-2-9) (0016-3-26) (0016-3-28) • Macks, Vic (0026-6-5) (0026-6-8) • Rivera, Ethyl (0070-12) (0070-14) • Seubert, Nancy (0068-2) • Welke, Jim (0034-4-4) • Westlake, Kenneth A. (0078-3) (0078-11)
Hydrology - Surface Water	• Anderson, Christy (0003-2-4) • Barnes, Kathryn (0042-3) • Berlucourt, Kerry (0040-34-4) • Bihn, Sandy (0039-21-1) (0039-21-5) (0044-2) (0044-3) (0044-6) (0044-7) • Collins, Jessie (0016-1-16) (0016-1-18) (0016-1-19) (0016-3-24) (0016-3-27) (0016-3-29) • Dean, Dan (0040-19-1) • Demare, Joe (0039-23-2) • Dexter, James (0052-1) • Gleckner, Allen (0036-3-9) • Kamps, Kevin (0058-15) (0058-16) (0058-17) • Keegan, Michael J. (0059-6) (0059-8) (0059-10) (0059-12) (0059-13) (0059-15) • Laroy, Barry (0024-3) • Lodge, Terry (0077-6-3) (0077-6-4) (0077-6-10) (0077-6-12) • Macks, Vic (0026-6-6) (0026-6-20) • Noonan, Henry (0040-17-8) • Rivera, Ethyl (0070-11) (0070-13) • Schroeck, Nicholas Joseph (0038-2-1) (0038-2-2) (0038-2-3) (0038-3-2) • Welke, Jim (0034-4-5) • Westlake, Kenneth A. (0078-10) (0078-30)
Land Use - Site and Vicinity	• Collins, Jessie (0016-1-6) (0016-1-12) (0016-3-25) • Lankford, R.E. (0040-13-2) • Welke, Jim (0034-4-6) (0034-4-7)
Land Use - Transmission Lines	• Collins, Jessie (0016-1-10) • Lodge, Terry (0077-6-7)

Table E-3. (contd)

Comment Category	Commenter (Comment ID)
Meteorology and Air Quality	• Anderson, Christy (0003-1-1) (0003-1-3) (0003-1-4) (0003-2-6) • Collins, Jessie (0016-3-2) (0016-3-18) (0016-3-21) (0016-4-1) (0016-4-9) • Dean, Dan (0040-19-2) • Kasenow, Lisa & Kevin (0020-1) • Keegan, Michael J. (0040-9-4) (0040-9-6) (0059-16) • Lankford, R.E. (0023-1) • Lodge, Terry (0077-6-9) • Macks, Vic (0026-6-17) • Rivera, Ethyl (0040-25-2) • Welke, Jim (0034-2-1) (0034-2-8) (0034-5-1) • Westlake, Kenneth A. (0078-19) (0078-21) (0078-22)
Need for Power	• Anderson, Christy (0003-1-10) (0003-5-1) (0003-5-5) (0003-5-6) • Collins, Jessie (0016-1-9) (0016-4-37) • Ehrle, Lynn Howard (0056-11) • Gleckner, Allen (0036-1-2) (0036-1-3) (0036-1-4) (0036-1-5) (0036-1-6) (0036-1-7) (0036-1-8) • Hartung, Tiffany (0019-1) • Lodge, Terry (0077-5-1) (0077-6-14) • Macks, Vic (0026-6-35) (0026-6-36) • Myatt, Art (0028-2) • Newman, Kent (0021-1) • Newnan, Hal (0029-1-6) • Noonan, Henry (0040-17-3) • Stephens, Thomas (0033-5) • Welke, Jim (0034-5-7) (0034-5-8) • Zaski, Frank (0035-1) (0035-2) (0035-3) (0035-4) (0040-15-1) (0040-15-2) (0040-5-1)
Nonradiological Waste	• Collins, Jessie (0016-4-13) • Welke, Jim (0034-5-4)

Table E-3. (contd)

Comment Category	Commenter (Comment ID)
Opposition - Licensing Action	• Anderson, Christy (0003-4-9) • Barnes, Kathryn (0004-1) (0042-1) (0042-7) (0042-9) • Bergier, Kim (0005-1) • Berlucourt, Kerry (0040-34-1) (0040-34-6) • Bettega, Gayle (0006-1) • Carey, Corinne (0007-1) • Cheal, Lauren (0046-1) • Collins, Jessie (0016-1-1) (0016-1-3) (0016-3-17) • D'Arrigo, Diane (0050-2) (0050-22) • Dale, Sigrid & Ron (0017-1) • Englund, Lance (0018-1)
Opposition - Licensing Action (contd)	• Gunter, Keith (0037-1) • Johnston, Mary (0040-26-9) • Kamps, Kevin (0040-22-1) • Keegan, Michael (0039-24-3) • Keegan, Michael J. (0040-9-1) (0040-9-14) • Lankford, R.E. (0040-13-6) • Lent, Patricia L. (0025-1) • Macks, Vic (0026-6-65) • Newnan, Hal (0029-2-2) (0029-2-3) (0029-3-5) (0029-3-8) (0029-3-9) • Noonan, Henry (0040-17-1) (0040-17-6) • Podorsek, Edward (0030-1) (0030-11) • Rivera, Ethyl (0070-6) (0070-7) • Sontag, Cady (0082-1) • Stephens, Thomas (0033-1) (0033-2) (0033-3) (0039-32-2) (0039-32-4) • Welke, Jim (0034-1-1) • Zaski, Frank (0035-7)
Opposition - Licensing Process	• Steinman, Shirley (0032-1)

Table E-3. (contd)

Comment Category	Commenter (Comment ID)
Opposition - Nuclear Power	• Barnes, Kathryn (0042-2) (0042-6) (0042-10) • Bray, Anne & Peter (0045-1) • Collins, Jessie (0039-22-1) • Demare, Joe (0039-23-5) • D'Arrigo, Diane (0050-3) • Doherty, Carolyn (0075-1) • Ehrle, Lynn Howard (0056-12) • Filanda, Bobbi (0057-1) • Gill, James (0072-1) • Johnston, Bruce (0040-27-1) • Johnston, Mary (0040-26-5) • Lankford, R.E. (0023-2) • Macks, Vic (0026-6-1) • Marida, Patrica (0040-33-2) • Marida, Patricia A. (0027-1) (0027-8) (0027-9) • McNulty, Regina (0040-11-1) • Meyers, Marcee (0066-1) • Newnan, Hal (0029-1-1) • Sontag, Cady (0082-3)
Outside Scope - Emergency Preparedness	• Collins, Jessie (0016-4-17) • D'Arrigo, Diane (0050-5) (0050-6) (0050-7) (0050-8) • Kamps, Kevin (0058-4) • Keegan, Michael J. (0061-1) (0061-2) (0061-3) (0061-4) (0061-5) (0061-6) (0061-7) (0061-8) • Lankford, R.E. (0040-13-7) • Macks, Vic (0026-6-22) (0040-12-2) • Peven, Robert (0067-11) • Rivera, Evelyn (0039-30-2)
Outside Scope - Miscellaneous	• Anonymous (0081-1) • Anderson, Christy (0003-1-9) (0003-4-3) (0003-4-7) • Collins, Jessie (0016-1-7) (0016-2-13) (0016-2-16) (0016-2-17) (0016-4-40) • Gunter, Keith (0037-6) • Kamps, Kevin (0039-28-1) (0058-19) • Keegan, Michael J. (0059-3) • Macks, Vic (0026-6-2) (0026-6-4) (0026-6-10) • Noonan, Henry (0040-17-10) • Podorsek, Edward (0030-4) (0030-6) (0030-10)

Table E-3. (contd)

Comment Category	Commenter (Comment ID)
Outside Scope - NRC Oversight	• Anderson, Christy (0003-1-6) (0003-2-2) (0003-2-8) (0003-2-9) (0003-4-10) • Ehrle, Lynn Howard (0056-13) (0056-14) (0056-15) (0056-16) • Harrison, James (0079-2) • Keegan, Michael J. (0059-14) • Macks, Vic (0026-6-39) (0026-6-41) (0026-6-42) (0026-6-43) (0026-6-44) (0026-6-45) (0026-6-46) (0026-6-47) (0026-6-48) (0026-6-49) (0026-6-50) (0026-6-51) (0026-6-52) (0026-6-53) (0026-6-54) • Newnan, Hal (0029-1-4) (0029-1-5) (0029-2-1) • Nixon, Dave (0040-17-4) • Noonan, Henry (0040-17-2) • Stephens, Thomas (0039-32-1) • Welke, Jim (0034-1-6)
Outside Scope - Safety	• Anderson, Christy (0003-1-5) (0003-1-7) (0003-2-1) (0003-2-7) (0003-3-1) (0003-3-3) (0003-3-4) (0003-4-2) (0003-4-4) (0003-4-5) (0003-4-6) • Berlucourt, Kerry (0040-34-7) • Collins, Jessie (0016-3-20) (0016-3-22) • D'Arrigo, Diane (0050-10) • Ehrle, Lynn Howard (0056-10) • Gleckner, Allen (0036-3-5) (0036-3-6) (0036-3-8) • Gunter, Keith (0037-7) (0037-9) • Hartung, Tiffany (0019-4) • Johnson, Bruce (0040-3-1) (0040-3-2) • Johnston, Mary (0040-26-2) (0040-26-6) • Lodge, Terry (0077-6-16) • Kamps, Kevin (0039-9-1) • Keegan, Michael (0039-7-1) (0039-7-2) • Keegan, Michael J. (0040-9-9) (0059-9) • Macks, Vic (0026-6-34) (0026-6-55) (0026-6-56) (0026-6-57) (0026-6-58) (0026-6-59) (0026-6-60) (0026-6-63) • McArdle, Ed (0040-14-3) • Rivera, Ethyl (0070-17)
Outside Scope - Security and Terrorism	• Anonymous (0081-2) • Gleckner, Allen (0036-3-4) • Kamps, Kevin (0058-3) • Lankford, R.E. (0040-13-3) • Macks, Vic (0026-6-61) • Rivera, Ethyl (0039-5-1) • Welke, Jim (0034-3-4) (0034-3-10)

Table E-3. (contd)

Comment Category	Commenter (Comment ID)
Process - ESP - COL	• Gunter, Keith (0037-10) • Macks, Vic (0026-6-64)
Process - NEPA	• Anderson, Christy (0002-1) (0002-2) • Colligan, Mary A. (0071-1) • Collins, Jessie (0015-2) (0015-3) (0016-1-4) (0016-1-8) (0016-1-21) (0016-3-1) (0016-3-9) (0016-3-19) • Coronado, Derek (0076-1) • Cumbow, Kay (0047-1) (0047-2) • D'Arrigo, Diane (0050-1) • Demare, Joe (0039-3-1) • Duffey, Leona (0055-3) (0055-4) • Dwyer, Anabel (0073-1) (0073-2)
Process - NEPA (contd)	• Ehrle, Lynn Howard (0056-6) (0056-8) (0056-9) • Gleckner, Allen (0036-1-1) (0036-3-10) • Gunter, Keith (0037-2) (0037-3) • Johnston, Mary (0040-26-1) • Keegan, Michael J. (0039-24-4) (0040-9-11) • Lodge, Terry (0039-13-1) (0077-3-1) (0077-3-2) (0077-3-3) (0077-3-4) (0077-3-5) (0077-6-2) • Macks, Vic (0026-6-3) (0064-1) • McArdle, Ed (0040-2-1) • Peven, Robert (0067-1) (0067-7) (0067-12) • Rivera, Ethyl (0070-8) (0070-15) (0070-16) • Schroeck, Nicholas Joseph (0038-1-1) (0038-4-4) • Seubert, Nancy (0068-5) (0068-6) • Westlake, Kenneth A. (0078-1) (0078-2) (0078-6) (0078-31) (0078-36) (0078-38)
Site Layout and Design	• Duffey, Leona (0055-1) • Westlake, Kenneth A. (0078-32)

Table E-3. (contd)

Comment Category	Commenter (Comment ID)
Socioeconomics	• Berlucourt, Kerry (0040-34-2) • Collins, Jessie (0016-3-15) (0016-3-16) • Dean, Dan (0040-19-4) • Demare, Joe (0039-23-4) • Ehrle, Lynn Howard (0056-3) • Kaufman, Hedi (0039-27-2) • Keegan, Michael J. (0040-9-12) • Lankford, R.E. (0040-13-1) (0040-13-4) • Laroy, Barry (0024-2) • Marida, Patricia A. (0027-7) • McArdle, Ed (0039-31-1) • Pitoniak, Gregory (0040-36-1) • Podorsek, Edward (0030-3) • Rivera, Ethyl (0040-25-1) (0040-25-3) (0070-9) • Rivera, Evelyn (0039-30-1) • Westlake, Kenneth A. (0078-5) (0078-12) (0078-14) (0078-15) (0078-16) (0078-34) (0078-35)
Support - Licensing Action	• Carroll, Connie (0039-19-1) (0040-10-1) • Clark, Robert (0039-11-1) • Conner, Bill (0039-33-1) • Frederick, Lamar (0040-7-1) • Lake, Tim (0040-18-1) • Laroy, Barry (0024-1) • Mataya, Diana (0040-31-1) • May, Ron (0039-16-1) (0040-8-1) • McDevitt, Richard (0039-15-1) (0040-24-1) • Mentel, Floreine (0039-12-1) • Meyer, Richard (0039-14-1) • Micka, Richard (0040-21-1) • Mull, Sandy (0039-20-1) • Nixon, Dave (0039-29-1) (0040-29-1) • Oberleiter, Tracy (0040-16-1) • Page, Scott (0040-23-1) • Sandel, Ron (0039-18-1) • Sobzab, Jerry (0040-20-1) • Spencer, Dr. Donald A. (0040-30-1) • Stickel, John (0039-17-1) • Thompkins, Bob (0040-35-1) • Zorn, Dale (0074-1)

Table E-3. (contd)

Comment Category	Commenter (Comment ID)
Support - Nuclear Power	• Harrison, James (0079-1) • Meyer, Richard (0039-14-2) • Nixon, Dave (0039-29-3) (0040-29-3)
Support - Plant	• Kaufman, Hedi (0039-27-1)
Transportation	• Collins, Jessie (0016-4-25) (0016-4-26) (0016-4-27) (0016-4-28) (0016-4-29) (0016-4-30) (0016-4-31) (0016-4-32) • Lodge, Terry (0077-6-6) • Macks, Vic (0026-6-26) (0026-6-27) (0026-6-28) (0026-6-29) (0026-6-30) • Newnan, Hal (0029-3-7) • Welke, Jim (0034-3-3) (0034-3-5) (0034-3-6) (0034-3-7) (0034-3-8) (0034-3-9) (0034-5-6) • Westlake, Kenneth A. (0078-29)
Uranium Fuel Cycle	• Collins, Jessie (0016-3-3) (0016-3-23) (0016-4-18) (0016-4-19) (0016-4-21) (0016-4-22) (0016-4-23) (0016-4-24) • D'Arrigo, Diane (0050-11) (0050-12) (0050-13) (0050-14) (0050-15) (0050-16) (0050-17) (0050-18) (0050-19) (0050-20) (0050-21) • Ehrle, Lynn Howard (0056-4) • Gleckner, Allen (0036-3-3) (0036-3-11) • Gunter, Keith (0037-8) • Hartung, Tiffany (0019-3) • Johnston, Mary (0040-26-3) (0040-26-8) • Kamps, Kevin (0040-22-2) (0040-22-3) (0058-1) (0058-8) • Kaufman, Hedi (0039-27-3) • Keegan, Michael J. (0039-24-1) (0040-9-7) • Macks, Vic (0026-6-18) (0026-6-19) (0026-6-23) (0026-6-24) (0026-6-25) (0026-6-59) • McArdle, Ed (0039-31-2) (0040-14-2) • Newnan, Hal (0029-2-5) (0029-3-3) (0029-3-4) • Podorsek, Edward (0030-2) • Rivera, Ethyl (0040-25-4) (0070-1) (0070-2) • Rossi, Vincent (0031-2) • Sandel, Ron (0039-4-1) • Seubert, Nancy (0068-4) • Stephens, Thomas (0033-4) (0039-32-3) • Vanderpool, Simon (0040-6-2) • Welke, Jim (0034-2-2) (0034-2-3) (0034-2-5) (0034-2-6) (0034-2-7) (0034-2-9) (0034-2-10) (0034-2-11) (0034-3-1) (0034-3-2) • Westlake, Kenneth A. (0078-7) (0078-8)

E.2.1 Comments Concerning Process - COL

Comment: Ensuring Public Participation:
The NRC should fully restore the public's right to obtain information and question witnesses in hearings about changes to existing power plant licenses and applications for new licenses. http://www.ucsusa.org/nuclear_power/nuclear_power_risk/safety/ucs-nuclear-safety-recommendations.html (**0026-6-64** [Macks, Vic])

Response: *This comment relates to the hearing process. It is beyond the scope of the environmental review of the Enrico Fermi Unit 3 (Fermi 3) COL application. There were no changes made to the environmental impact statement (EIS) as a result of this comment.*

Comment: The U.S. NRC has never denied a construction or operating licensing request by any U.S. electric utility. I am extremely concerned about the integrity and fairness of the licensing process itself, in addition to the potential environmental and economic impact of the existence of a Fermi-3 reactor. (**0037-10** [Gunter, Keith])

Response: *The licensing process for COL applications is specified in 10 CFR Part 52. The environmental review process associated with new reactor licensing includes a detailed review of an applicant's combined license application to determine the environmental effects of constructing and operating the nuclear power facility for up to 40 years. The NRC regulations implementing NEPA are specified in 10 CFR Part 51. A separate safety review of the application proceeds in parallel. The NRC is an objective, independent regulator and is not biased toward the industry. After review of the application against the regulations and regulatory guidance, a hearing will be held on uncontested issues (and, if necessary, contested issues) to determine whether it is appropriate to grant the license. NRC approval of an application for a COL is not a foregone conclusion. Safety issues and environmental issues will be evaluated before a decision on an application is reached. As described in the regulations, the NRC can deny an application based on the finding of its review. The potential environmental impacts of the proposed Fermi 3, including socioeconomic impacts, are described and evaluated in the EIS. No change was made to the EIS in response to this comment.*

E.2.2 Comments Concerning Process - NEPA

Comment: Hello. I just want to confirm that it is not too late to submit a public comment in regard to Fermi 3? What are the dates for submission? (**0002-1** [Anderson, Christy])

Response: *Public comments on the DEIS were accepted until January 11, 2012, and your comments were received and addressed. No change was made to the EIS in response to this comment.*

Comment: Dear Sir: Does a written public comment have to be under the 20 minute time allotment? I'm doing a written comment and I am very concerned with the length it is turning into. Thanks, (**0002-2** [Anderson, Christy])

Response: *There is no page limitation on the length of public comments on the Draft EIS. No change was made to the EIS in response to this comment.*

Comment: Staff finds that Draft EIS seems to be complete, thorough, and in compliance with the requirements for an environmental impact statement under the National Environmental Policy Act of 1969. (**0067-1** [Peven, Robert])

Comment: Recommendation
It is recommended that the Monroe County Planning Commission inform the Nuclear Regulatory Commission that they have reviewed the Draft Environmental Impact Statement for Combined License (COL) for Enrico Fermi Unit 3 and that they are in concurrence with its findings. (**0067-12** [Peven, Robert])

Comment: Staff is satisfied with the actions that Detroit Edison proposes to take in order to mitigate the adverse impacts of the construction and operation of the Fermi 3 project and is in agreement with the assessment that the impacts on traffic, historic resources, and terrestrial and wetland resources are classified as moderate. (**0067-7** [Peven, Robert])

Comment: Based on the materials provided, we have rated the document and project as EC-2, Environmental Concerns–Insufficient Information. This rating is based, in part, on dose limits and potential impacts from radiation to construction workers. We are also concerned with impacts to aquatic resources, air, and traffic as a result of increased onsite personnel, as well as public outreach strategies and methodologies used for analyzing direct environmental and socioeconomic impacts. Finally, we find some information from the document either missing or incomplete; its inclusion would accommodate a more comprehensive review. We have enclosed our ratings definitions and our detailed comments. (**0078-1** [Westlake, Kenneth A.])

Response: *These comments are noted. These comments are introductory statements to longer sets of comments provided by the Monroe County Planning Commission and EPA. Although no changes were made in the EIS in response to these introductory comments, responses to specific comments on the Draft EIS are provided elsewhere in the appendix. Several of these specific comments did result in changes in the EIS as noted in the responses.*

Comment: As stated in our scoping comments dated January 21,2009, no species listed or proposed for listing under the jurisdiction of NOAA's National Marine Fisheries Service (NMFS) occur in Lake Erie. Additionally, there is no critical habitat designated by NMFS in the area and no proposed critical habitat in the area. There are also no candidate species under NMFS jurisdiction that occur in the project area. No further coordination with us on the effects of the

action on listed species or their critical habitat is necessary and we do not anticipate the need for consultation pursuant to Section 7 of the Endangered Species Act of 1973, as amended, for the subject Federal action. Any questions regarding the ESA and Section 7 consultation may be directed to Julie Crocker of our Protected Resources Division at (978)282-8480.

Essential Fish Habitat and Fish and Wildlife Coordination Act

As stated in our scoping comments, no Essential Fish Habitat has been designated for species in Lake Erie or other Great Lakes and there is no requirement for you to consult with us under the Magnuson Stevens Fishery Conservation and Management Act. Although anadromous fish resources and their habitats may be impacted by the activity, we do not have sufficient staff resources to engage in the review or consultation on this activity pursuant to the Fish and Wildlife Coordination Act. Any questions regarding Essential Fish Habitat and the Fish and Wildlife Coordination Act may be directed to Mike Johnson of our Habitat Conservation Division at (978)281-9130.

Conclusions

As noted above, as no species listed as threatened or endangered by NMFS occur in the action area, no consultation pursuant to Section 7 of the ESA is necessary for the NRC's proposed action. We offer no further comments on the DEIS. We appreciate the opportunity to provide you with information on our trust resources and we look forward to continuing to work cooperatively with you on minimizing impacts of NRC actions to NMFS trust resources. (**0071-1** [Colligan, Mary A.])

Response: *The NRC appreciates the review of the Draft EIS that was conducted by the U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA). No change was made to the EIS as a result of this comment.*

Comment: That the public has been given only 75 days to read, analyze and comment on the document which has been in preparation for more than two years is not only insulting, but a reflection of the outrageous disregard of citizens" valid and serious concerns, only a few of which are mentioned below: (**0070-15** [Rivera, Ethyl])

Response: *The commenter indicates that the 75-day comment period for the Draft EIS is too short. The NRC established the time period for comments on the Draft EIS to balance the Commission's goal of ensuring openness in the regulatory processes, with its goal of ensuring that the NRC's actions are effective, efficient, realistic, and timely. The comment did not provide a sufficient basis for an extension to the comment period. No change was made to the EIS in response to this comment.*

Comment: when the NRC determines that an impact is small, does that mean that they have a muted or small response to that impact? Saying that an impact is small implies to the layperson that you don't have to do anything much about it (**0039-3-1** [Demare, Joe])

Response: *To guide its assessment of environmental impacts for a proposed action or alternative actions, the NRC has established a standard of significance for impacts using Council on Environmental Quality (CEQ) guidance (40 CFR 15088.27). Using this approach, NRC has established three significance levels - SMALL, MODERATE, or LARGE - which are defined as follows: "SMALL - Environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource." "MODERATE - Environmental effects are sufficient to alter noticeably, but not to destabilize, important attributes of the resource." "LARGE - Environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource." No change was made to the EIS as a result of this comment.*

Comment: Mr. Olson stated that the, there were two -- dates -- is that, does that -- [Comment refers to the two 15 day extensions to the public comment period on the draft EIS until January 11, 2012] (**0040-2-1** [McArdle, Ed])

Response: *Public comments on the Draft EIS were accepted until January 11, 2012. No change was made to the EIS in response to this comment.*

Comment: NUREG 2105 is a forbidding document by its sheer volume to anyone except the most dedicated of citizen activists and professionals in the field of nuclear power. Is this by design with the intent of limiting and narrowing public participation in the process? (**0037-2** [Gunter, Keith])

Response: *Section 102 of NEPA directs that an EIS be prepared for major Federal actions that significantly affect the quality of the human environment. The NRC has implemented Section 102 of NEPA in 10 CFR Part 51 and has determined that an EIS will be prepared during the review of a COL application. Two major purposes of the environmental review process are better informed decisions and citizen involvement, both of which are goals of NEPA's policies. In developing this EIS, the staff followed CEQ Regulations for Implementing NEPA found in Part 1502. The Commission has tried to balance the guidance in CEQ regulations with the need to present enough of the information on which the staff's analysis are based for a reviewer to understand the staff's conclusions. The NRC's intent is to foster rather than hinder the public's participation in the process. No changes were made to the EIS in response to this comment.*

Comment: MOTION FOR RESUBMISSION OF CONTENTION 10, TO AMEND/RESUBMIT CONTENTION 13, AND FOR SUBMISSION OF NEW CONTENTIONS 17 THROUGH 24
Now come Intervenors Beyond Nuclear, et al. (hereinafter "Intervenors"), by and through counsel, and move to resubmit Contention 10; to amend and resubmit Contention 13 for

admission to these proceedings; and to submit proposed Contentions 17 through 24 for these proceedings.

INTRODUCTION
This combined license (COL) proceeding involves the application of Detroit Edison Company (DTE or Applicant) under 10 C.F.R. Part 52, Subpart C, to construct and to operate a GE-Hitachi Economic Simplified Boiling Water Reactor (ESBWR) designated Unit 3, on its existing Fermi nuclear facility site near Newport City in Monroe County, Michigan.

The Draft Environmental Impact Statement was made public on October 28, 2011, and In addition to Beyond Nuclear, the Intervenors include: Citizens for Alternatives to Chemical 1 Contamination, Citizens Environmental Alliance of Southwestern Ontario, Don't Waste Michigan, Sierra Club (Michigan Chapter), Keith Gunter, Edward McArdle, Henry Newnan, Derek Coronado, Sandra Bihn, Harold L. Stokes, Michael J. Keegan, Richard Coronado, George Steinman, Marilyn R. Timmer, Leonard Mandeville, Frank Mantei, Marcee Meyers, and Shirley Steinman. public comments are due January 11, 2012.

TIMELINESS OF SUBMISSION OF CONTENTIONS
Intervenors resubmit former contentions and submit new contentions, being mindful that they have erroneously let pass the 60-day deadline set in the scheduling order for this case (i.e., 60 days after the unveiling of the DEIS, of December 27, 2012), and that at this point, they are tendering these contentions 75 days after formal announcement of the DEIS, at the close of the public comment period. That matter is addressed in a separate motion, contemporaneously filed to this one. While counsel for Intervenors apologizes to the Board, the NRC Staff and DTE for his oversight, Intervenors maintain that good cause exists for this filing to be accepted and all contentions considered by the Board.

Despite Intervenors' error in going 15 days past the scheduling order deadline, the presumption is that the NRC, as lead agency, will adequately study the environmental issues which are engendered by the project. Crounse Corp. v. Interstate Commerce Comm'n, 781 F.2d 1176 (6th Cir. 1986). NEPA imposes continuing obligations on the NRC following completion of an environmental analysis to re-evaluate in light of new and significant information it receives which casts doubt upon a previous environmental analysis. Marsh v. Oregon Natural Resources Council, 490 U.S. 360, 374 (1989). The harm is complete under NEPA when an agency makes a decision without sufficiently considering information NEPA requires be placed before the decision-maker and public. Sierra Club v. Marsh, 872 F.2d 497, 500 (1st Cir. 1989). "The injury of an increased risk of harm due to an agency's uninformed decision is precisely the type of injury (NEPA) was designed to prevent." Comm. to Save the Rio Hondo v. Lucero, 102 F.3d 445, 448-49 (10th Cir. 1996).

STANDARDS FOR ADMISSIBILITY OF DEIS-RELATED CONTENTIONS (**0077-3-1** [Lodge, Terry])

Comment: Section 10 C.F.R. §2.309(f)(2) states that "[o]n issues arising under the National Environmental Policy Act, the petitioner shall file contentions based on the applicant's environmental report." It then provides, however, that a petitioner "may amend those contentions or file new contentions if there are data or conclusions in the NRC draft or final environmental impact statement, environmental assessment, or any supplements relating thereto, that differ significantly from the data or conclusions in the applicant's documents." 10 C.F.R. § 2.309(f)(2). "Thus, for example, if the DEIS contains data or conclusions concerning the costs or benefits of the proposed action that differ significantly from those contained in the Environmental Report, the intervenor may file an amended contention, or an entirely new contention, to challenge the new data or conclusions." Calvert Cliffs 3 Nuclear Project, LLC, and Unistart Nuclear Operating Services, LLC (Combined License Application for Calvert Cliffs Unit 3), LBP-10-24 at 7 (December 28, 2010 "This provision tempers the restrictive effect of the agency's requirement that NEPA contentions be filed based on the ER by allowing petitioners or intervenors to challenge significantly different data or conclusions that appear for the first time in a NRC Staff NEPA document." Id. at 7 (**0077-3-2** [Lodge, Terry])

Comment: The use of the disjunctive phrase "data or conclusions" means it is sufficient that either data or conclusions in the DEIS differ significantly from those in the ER; both need not do so. A contention may therefore challenge a DEIS even though its ultimate conclusion on a particular issue (e.g., the need for power) is the same as that in the ER, as long as the DEIS relies on significantly different data than the ER to support the determination. The reverse is also true: a significantly different conclusion in the DEIS may be challenged even though it is based on the same information that was cited in the ER. Id. at 7. (**0077-3-3** [Lodge, Terry])

Comment: Also, the provision refers to "conclusions," not "the conclusion" or "all conclusions." Thus, even though the DEIS's ultimate conclusion on a particular issue might be the same as that in the ER (e.g., that there is a need for additional power generating capacity), other conclusions in the DEIS related to the ultimate conclusion might be challenged if they differ significantly from those in the ER. These could also be a permissible basis for a new or amended contention, even though the ultimate conclusion remains unchanged. Id. at 7.

Thus, if the DEIS for Unit 3 contains either data or conclusions that differ significantly from those in the ER, Intervenors may file their new contention challenging the DEIS even though both the ER and the DEIS reach the same result. Id. at 8. If Intervenors fail to show that the DEIS contains new data or conclusions that differ from those in the ER, §2.309(f)(2) provides another alternative. It allows a new contention to be filed after the initial docketing with leave of the presiding officer upon a showing that:

i. The information upon which the amended or new contention is based was not previously available;

ii. The information upon which the amended or new contention is based is materially different than information previously available; and

` iii. The amended or new contention has been submitted in a timely fashion based on the availability of the subsequent information. Id. (**0077-3-4** [Lodge, Terry])

Comment: The regulations do not define or specify an exact number of days within which a new or amended contention must be filed in order to be considered "timely." Accordingly, unless a deadline has been specified in the scheduling order for the proceeding, the determination of timeliness is subject to a reasonableness standard that depends on the facts and circumstances of each situation. Calvert Cliffs 3 Nuclear Project, LLC, and Unistart Nuclear Operating Services, LLC, LBP-10-24 at 8, citing Entergy Nuclear Vt. Yankee, LLC (Vermont Yankee Nuclear Power Station), LBP-07-15, 66 NRC 261, 266 n.11 (2007).

If the filing of a proposed new contention is not authorized by either alternative in §2.309(f)(2), then it may be evaluated under §2.309(c). The Commission has held that, even if a petitioner is unable to show that the NRC Staff's NEPA document differs significantly from the ER, it "may still be able to meet the late filed contention requirements." Calvert Cliffs 3 Nuclear Project, LLC, and Unistart Nuclear Operating Services, LLC, LBP-10-24 at 8, citing Sacramento Mun. Util. Dist. (Rancho Seco Nuclear Generating Station), CLI-93-12, 37 NRC 355, 363 (1993). Similarly, if a contention based on new information fails to satisfy the three part test of Section 2.309(f)(2)(i)–(iii), it may be evaluated under Section 2.309(c). Calvert Cliffs 3 Nuclear Project, LLC, and Unistart Nuclear Operating Services, LLC, LBP-10-24 at 8. CONTENTIONS (**0077-3-5** [Lodge, Terry])

Response: *These comments are also part of a motion concerning contentions filed by the Intervenors in the ongoing Atomic Safety and Licensing Board (ASLB) proceeding on the Fermi 3 COL. The comments relate to the standards for filing contentions in that proceeding. These comments are legal in nature, have been addressed in the ASLB proceeding, and are outside the scope of the environmental review. No changes were made to the EIS in response to these comments.*

Comment: Regarding the "Preconstruction Activities" (v 1, p 1.6) which "include clearing, grading, excavating, dredging, and discharge of fill, erection of support buildings and transmission lines, and other associated activities." Why did the Detroit Edison spokesman say at the Dec. 15th public meeting that the company had not even decided to build Fermi 3, much less start work on it? (**0016-1-4** [Collins, Jessie])

Comment: If the US Corps of Engineers has to issue a preconstruction permit because "certain preconstruction's activities that could affect waters of the U.S., including jurisdictional wetlands, based on an evaluation of probable impacts, including cumulative impacts, on the public interest." (v 1, p 1.9), why has DE began preconstruction activities before obtaining this permit? (Quarterly Nuclear Power Deployment Summary, Oct. 2011) "DTE Energy has begun site preparation for its Fermi Unit 3 reactor next to the existing Unit 2 plant." (**0016-1-8** [Collins, Jessie])

Comment: Regarding the “Pre-construction Activities” (v 1, p 1.6) which “...include clearing, grading, excavating, dredging, and discharge of fill, erection of support buildings and transmission lines, and other associated activities.” What pre-construction activities has Detroit Edison undertaken to date towards construction of the unlicensed reactor not yet approved for construction? Is this Environmental Impact Statement to satisfy a legal obligation for a project already underway? (**0026-6-3** [Macks, Vic])

Comment: If DTE Energy has yet to make a final decision on whether or not to ultimately apply for a construction and operation permit for Fermi-3 (as maintained by its spokesperson at the December 15, 2011 public meeting), I am at a loss to understand why the company would engage in “Preconstruction Activities” (v 1, p 1.6) that would include destruction of 189 acres of habitat that includes some 34.5 acres of wetlands. DTE’s December 15, 2011 proclamation notwithstanding, according to the Quarterly Nuclear Power Deployment summary dated October 2011: “DTE Energy has begun site preparation for its Fermi Unit 3 reactor next to the existing Unit 2 plant.” In light of these seeming contradictions, it appears DTE is saying one thing and doing another. (**0037-3** [Gunter, Keith])

Comment: This is a wasted meeting. This is a waste of time, and I would like to explain why. It’s a waste of time because three years ago, at the scoping meeting that was convened by the NRC in this auditorium, I produced a letter and made comments requesting to know whether or not the NRC was going to fulfill the real legal requirements of the National Environmental Policy Act. That’s NEPA, that is the law that requires the Draft and Final Environmental Impact Statements. I asked because I was concerned that in 2007 there had been a deregulation. Simply by fiat, the Nuclear Regulatory Commission decided that certain activities were of such minimal concern they did not need to have the approval of a Final Environmental Impact Statement before they could be commenced. Those activities, apparently, have commenced. According to a July 7, 2011, letter that is on file in the Adams filing system at the NRC, Detroit Edison has indicated that beginning last April the utility began what are called pre-construction activities at the plant site. They’re already starting to build. They have already committed to build a large central base load power plant at the Fermi site. The site selection has been decided and, at least, the commitment to a large base load plant has been concluded. Pre-construction activities, and these are things that are not covered by NEPA. They don’t have to be talked about and may only be voluntarily addressed in the Environmental Impact Statement, the draft. Pre-construction activities include preparation of the site, grading, construction of temporary axis roads and spoil areas, installation of concrete support facilities, warehouses, shop facilities, excavation for any structure, construction of such things as roadways, paving, railroad spurs, fencing, exterior utility and lighting systems, transmission lines, cooling tower structures, the new switch yard, nine safety-related circulating water lines, fire protection lines, the list is pretty lengthy. They are permitted, they are not permitted, they are allowed, there’s no permit required unless there’s some local or state permit requirement, to do those activities. They’re already building Fermi 3. The National Environmental Protection Act requires the project

not be committed, not be begun, that alternatives realistically and meaningfully be analyzed and discussed and disclosed to the public. What you have is a Draft Environmental Impact Statement that superficially discusses meaningful job-creating alternatives, very superficially. That discusses base load plant options and the option has already been selected. The site has already been determined. This bias has decided the project. The complaints that the public makes that this is nothing more than a dog and pony show are verified by the acts that are allowed now, the acts that are going on now. The Final Environmental Impact Statement is not due to be completed, the choice of the preferred alternative is not due to be made before November, 2012. By that time, for approximately a year-and-a-half, millions of dollars worth of construction activity will have been undertaken. The commitment is made. The commitment has been made for months before his hearing. If the NRC wants to have any credibility with the public as a regulator, instead of as a cheerleader, it will order an immediate stop work, and essentially require the holes to be filled, require the structures to be taken down. We know that isn't going to happen. In 2009 my letter requesting a commitment from the NRC to not allow project work to even begin before this process was concluded was met with our regs deregulated that, sorry. So the first time, the first answer was tragedy, the second time is the farce. Thank you. (**0039-13-1** [Lodge, Terry])

Comment: So I would conclude with, well one more point I want to make, there needs to be a reconciliation between the statements of Attorney Terry Lodge and Ron May from Detroit Edison, because the records provided by Detroit Edison to the docket, to Adams, and also in the Draft Environmental Impact Statement state that the pre-construction phase would begin January 1, 2011, and run through November, 2012, which allows the heavy moving, grading, diesel trucks moving earth, a whole host of things that Attorney Lodge spoke of. But yet, we see Ron May comes to the podium and says that no, nothing's going on. So that needs to be reconciled. There's an incongruency here, why are they saying it in the public record that's document, and we're hearing from their spokesperson that it's not going on? I don't know. So we need to reconcile that. We'll get to the bottom of it. So with that, I would say the alternatives are ready to go, they're available now. (**0039-24-4** [Keegan, Michael J.])

Response: *These comments address preconstruction activities at the Fermi 3 site. Activities that do not fall within NRC's definition of construction in 10 CFR 50.10(a) and 51.4, such as clearing and grading, excavating, building transmission lines, and erecting support buildings, are considered "preconstruction" activities that do not require NRC authorization. Most of these activities are regulated by other local, State, Tribal, or Federal agencies and require permits from them to proceed (e.g., a permit from USACE for preconstruction activities that could affect the waters of the United States). In its environmental review, NRC must consider preconstruction activities in the context of cumulative impacts. These impacts are fully evaluated in Chapters 4 and 7 of the EIS. As of October 2012, no preconstruction activities have occurred at the site and none are expected in the immediate future. The EIS has been*

revised to indicate that no preconstruction activities related to development of Fermi 3 or associated facilities have occurred on the Fermi site.

Comment: The Staff's preliminary recommendation that the COL should be issued is undermined by a number of serious shortcomings in the Draft EIS:
1) The Need for Power analysis, which is the heart of the Draft EISs cost-benefit analysis, is inaccurate and significantly overestimates future electricity demand.
2) The Draft EISs Alternatives analysis does not properly account for renewable energy resources and energy efficiency programs.
3) The Draft EIS arbitrarily understates the cost of building a new nuclear power plant.
4) The Draft EIS fails to adequately consider waste storage impacts.
5) The Draft EIS fails to address the threat of terrorism.
6) The Draft EIS does not sufficiently consider environmental impacts from potential geological events affecting the site.

These and any other shortcomings must be adequately addressed before the NRC can claim to have complied with the requirements of the National Environmental Policy Act ("NEPA"). The thorough examination of need, alternatives, and impacts required by NEPA is vital for ensuring that the NRC complies with its legal duty to protect the public health and safety. The NRC is required to make licensing decisions that are not "inimical to the common defense and security or to the health and safety of the public," 42 U.S.C. 2133(d), and must carry out its duties in a manner that is consistent with its "responsibility as an independent regulatory agency for protecting the radiological health and safety of the public." 10 C.F.R. 51.10(b). These duties can be satisfied only if the NRC objectively considers and fully and fairly evaluates the important issues identified herein and in the other public comments received on this Draft EIS. (**0036-1-1** [Gleckner, Allen])

Comment: CONCLUSION
For the foregoing reasons, the Draft EIS fails to satisfy the basic requirements of NEPA or provide the information necessary for the NRC to ensure that its licensing decision is not "inimical to the common defense and security or to the health and safety of the public," 42 U.S.C. 2133(d). In particular, the Draft EIS wrongly concludes that there is a need for a new Fermi reactor because it adopts an outdated, inaccurate electricity demand forecast. The Draft EIS also improperly rejects reasonable energy efficiency and clean energy alternatives to new nuclear power and fails to fully account for the costs of a new Fermi reactor. Further, the Draft EIS does not adequately consider the environmental impacts of on-site high-level radioactive waste storage nor the impacts from a potential terrorist threat. Finally, the Draft EIS fails to sufficiently address impacts from geologic activity that could affect the Fermi site. A proper consideration of these issues would demonstrate that the COL should be denied, because there are better, cheaper, safer, and environmentally preferable ways to meet future energy needs in Michigan and elsewhere.

Therefore, the Environmental Law & Policy Center and the Michigan Environmental Council respectfully request that the NRC: (1) Perform a Need for Power Analysis using modern and accurate information to properly conclude that there is not a demonstrated need for the electricity from a new Fermi nuclear plant; (2) Reconsider its rejection of clean energy and energy efficiency alternatives and engage in the rigorous and objective analysis of such alternatives that NEPA requires; (3) Include a cost estimate for a new Fermi nuclear plant that includes more than only an "overnight" capital cost estimate; (4) Take a hard look at the environmental impacts from the high-level waste a new Fermi reactor would generate; (5) Include an analysis of the environmental impacts from a potential terrorist threat; and (6) Fully consider the environmental impacts from geological events that can affect the Fermi site and Lake Erie. (**0036-3-10** [Gleckner, Allen])

Comment: Detroit Edison (Edison) proposes to construct and operate a new power reactor unit at the Detroit Edison Enrico Fermi Atomic Power Plant site in Monroe County, Michigan. This project would include "hydrological alterations to Lake Erie from operation of Fermi 3" including "increased water use, discharge of cooling water, and maintenance dredging of the intake canal." DEIS at 5-6. These proposed actions require approval from both the Nuclear Regulatory Commission (NRC) as well as permit approval from the U.S. Army Corps of Engineers (USACE) to perform certain construction activities on the site. As a result, the USACE and NRC prepared this DEIS as cooperating agencies and participated collaboratively as a review team. In reviewing the proposed construction and operations, the reviewing agencies analyzed the proposed project's environmental effects to ensure compliance with a number of statutes, policies, and regulations, most notably the Great Lakes Compact, Michigan Water Quality Standards, and the Michigan Natural Resources and Environmental Protection Act of 1994. The GLELC has focused its review of the DEIS on issue areas central to the long-term health of the Great Lakes, as well as the communities and wildlife that depend upon the ecosystem. The GLELC has serious concerns about the adequacy of the DEIS, particularly with respect to the document's analysis of the effects of thermal pollution, consumptive water use, wetlands degradation, and wildlife depletion. These inadequacies need to be addressed before further action on the proposed project. (**0038-1-1** [Schroeck, Nicholas Joseph])

Comment: Conclusion
The Final EIS must fully assess the proposed project's potential impacts on Lake Erie as well as wetlands and wildlife impacts. We also encourage the applicant, in collaboration with the NRC and USACE, to begin taking steps to gain approval of their proposed water usage under the Great Lakes Compact.

The DEIS contains a significant body of data, but Detroit Edison and the reviewing agencies were too quick to conclude issues associated with thermal pollution and water consumption as minor, when in fact they are very significant. The GLELC encourages the NRC and the USACE to perform further analysis of available data and collecting additional data where existing data is

insufficient to reasonably assess potential impacts and risks to water quantity, water quality, wetlands and wildlife. Finally, the GLELC supports the continued collection of data and information, including that associated with the USACE assessment of Edison's proposed mitigation project attached to their 404 permit application, so that current and new biologically significant impacts are identified and appropriately analyzed.

The National Environmental Policy Act analysis does not require that a specific decision be made, but it does require specific steps to be taken prior to the making of a decision. In order to comply with NEPA, we request that the NRC evaluate the impacts from consumptive water use, thermal pollution, impacts on wetlands and wildlife, as well as potential impacts from climate change and cumulative impacts to Lake Erie, as outlined above, to address the inadequacies found within the DEIS. (**0038-4-4** [Schroeck, Nicholas Joseph])

Comment: I'd like to make some comments about this procedure and this impact statement. The environmental impact statement prepared by the Nuclear Regulatory Commission of the United States is a document that is so biased in favor of DTE Energy that it cannot, and must not, be the basis of the issuance of a license.

It does not, in any way, represent an independent assessment, and could have been written by DTE Energy. To ask for public comments on this EIS, when the conclusions are already established, is intolerable and outrageous. Federal officials have stated that no environmental issues exist that would prevent construction of a new nuclear power plant near Newport, Michigan. That statement is beyond rational belief, and is totally refuted by the facts themselves. (**0040-26-1** [Johnston, Mary])

Comment: I urge the Nuclear Regulatory Commission to postpone further approval of Fermi 3 until the matters of environmental impact and long-term storage have been thoroughly evaluated and the local community has been adequately informed about the consequences of building another nuclear power plant on our shores. (**0068-5** [Seubert, Nancy])

Comment: Many of the assessments made of affected environments are based on outdated data, much of which was submitted by DTE and were substantiated by independent sources. (**0070-16** [Rivera, Ethyl])

Comment: The Draft Environmental Impact Statement for Combined License for DTE released by the Nuclear Regulatory Commission is so biased that it should not be considered a basis for license issuance. The stated mission of the NRC, "Protecting People and he Environment" and its stated purpose "to independently regulate commercial uses of nuclear material, including nuclear power;" have obviously been ignored as evidenced by this report as it appears to be a rubber stamp for DTE's Environmental Report rather than an independent evaluation. (**0070-8** [Rivera, Ethyl])

Comment: Immediately put a hold on the licensing process and all preliminary work for the proposed Fermi 3 nuclear power plant in Monroe Michigan. (Note: I have also signed the comments submitted by Jessie Collins which details many issues of direct concern to all of us.) In summary, far more hearings must be held and the COLEIS must be rewritten to coherently address: Existing and projected radioactive and other toxic chemical contamination 1. On Lake Erie, wetlands, regional biology and human health and safety 2. From the huge water "use" during operation and construction and 3. Using adequate and updated exposure and up-take standards. (**0073-1** [Dwyer, Anabel])

Comment: You must not only halt the licensing process but prohibit Detroit Edison from engaging in preliminary hiring and construction. The testmony and your own documents show that: 1. No plan exists for treatment of the "waste" even from Fermi 2; 2. Proper permits have not been issued; 3. You have not consulted with all interested and effected parties and groups; 4. You have not considered proper calculation, documentation, financing regarding future demand or need for electricity or immediately available and benign alternatives. (**0073-2** [Dwyer, Anabel])

Response: *These comments express dissatisfaction with the adequacy of the Draft EIS, either in general or by listing specific resource areas or topics that the commenters believed were not adequately addressed. Examples listed include need for power, alternatives, waste storage, thermal pollution, and impacts on wet lands and wildlife. In some instances, topics outside the scope of the environmental review, such as security and terrorism, were listed. Neither the general comments nor the comments listing resource areas or topics provided sufficient information for the review team to respond to in detail. Therefore, no changes were made to the EIS in response to these comments. However, a number of these commenters amplified their concerns and provided additional information elsewhere in their respective comment letter. These concerns and the NRC staff responses are provided under the appropriate topic heading elsewhere in this appendix.*

Comment: The NRC recommends licensing the reactor after "consultation with Federal, State, Tribal, and local agencies." (v 2, p iii and p 10.2 and 10.31) What tribal governments gave you any feedback on your consultations? "No feedback" does not mean approval. (**0016-1-21** [Collins, Jessie])

Comment: 39. How were these tribes approached? Were they merely sent massive amounts of documents? Were they told that the coastal marshes of the western Lake Erie are important spring, fall, and winter for waterfowl? And all of our other relations? (**0016-3-1** [Collins, Jessie])

Response: *As listed in Appendix F to the EIS, the NRC sent letters to 17 Indian Tribes notifying them of NRC's review of Detroit Edison's COL application for Fermi 3 and upcoming scoping meetings and soliciting their input on the scope of the environmental review. Prior to sending these letters, the NRC staff phoned Tribal representatives to inform them of the*

forthcoming requests. Although no responses to these requests were received, the NRC did not assume that the lack of response indicated tacit approval of the project. The comments did not result in a change to the EIS.

Comment: Commission impact statements, including the DEIS Fermi 3, have been developed absent a review by a panel of independent scientists and without public hearings. (**0056-8** [Ehrle, Lynn Howard])

Comment: The DEIS Fermi 3 document has been prepared without informed consent of the effected citizens. (**0056-9** [Ehrle, Lynn Howard])

Response: *NEPA requires agencies to inform and involve the public in the decision-making process, although the manner by which public input is sought is left to the discretion of the agencies. While public meetings are not required by NEPA, the NRC has elected to conduct public meetings as part of the environmental scoping and review process. Public involvement and comments are invited and encouraged throughout the environmental review of a project, and NRC formally solicited both written and oral comments from members of the public at two different times during the Fermi 3 environmental review, during the scoping process, and after publication of the DEIS. NRC published meeting notices in newspapers in communities near the plant and posted a notice of the meetings on the NRC's Web site for the project. The Web site provided addresses for written comments to be submitted in person, by mail, or electronically. These meetings were held near the proposed plant. As part of the environmental review process, the NRC evaluates site-specific data provided by the applicant, other Federal Agencies, State agencies, and Tribal and local governments, as well as information from members of the public. In addition, the NRC performs independent reviews of the environmental site-specific impacts of the proposed action (construction and operation of Fermi 3). These comments did not result in a change to the EIS.*

Comment: Additionally, a document entitled "Information Sheet on the Enrico Fermi Unit 3 Combined Operating Licenses Environmental Review" that NRC representatives handed out at the Public Meeting in Monroe, MI on Dec. 15, 2011. On the back page, under Chapter 10 - Conclusions and Recommendations, the document states, "The chapter summarizes the impacts of constructing and operating two new reactors. It also weighs the costs of the two new units." What is that about? Surely it isn't some sort of "bait and switch" tactic that has something to do with "Due to the current limited guarantee authority, DOE has narrowed the remaining power facilities under consideration for loan guarantees to three applicants, which are planning to build a total of five reactors" (Quarterly Nuclear Power Deployment Summary Oct. 2011)? It is also suspicious that the USACE included this document as an enclosure in the public notice for their proposed permit. (**0015-2** [Collins, Jessie])

Response: *The NRC staff developed a summary that was passed out at the meeting that erroneously stated, "The final chapter of the EIS provides the staff's preliminary*

recommendation whether the combined licenses should be issued to Detroit Edison. The chapter summarizes the impacts of constructing and operating two new reactors. It also weighs the costs (e.g., habitat loss, traffic noise) versus the benefits (e.g., more jobs, electricity generation) of the two new units." The reference to two reactors in the handout was inadvertent and erroneous. The applicant is proposing only a single new reactor at Fermi 3. No change was made to the EIS in response to this comment.

Comment: The third issue is that the DEIS states that the USACE has partnered in the environmental review and signed off on it, and yet, the USACE's draft permit, LRE-2008-00443-1-S11 states, "The Corps has not verified the adequacy of the applicant's avoidance and minimization statement at this time." And "the Corps has not verified the adequacy of this mitigation proposal at this time" (p. 5). There is too much at stake to proceed without official verification. Since the National Marine Fisheries Service in their NUREG 2105 Draft EIS comments stated, "Although anadromous fish resources and their habitats may be impacted by the activity, we do not have sufficient staff resources to engage in the review or consultation on this activity pursuant to the Fish and Wildlife Coordination Act." I looked up anadromous and it refers to types of fish that swim up to the rivers and creeks to spawn. To poison them on their way in is just evil. Well, the government could save taxpayers money by just closing all these agencies that can't differentiate right from wrong without a costly investigation. (**0015-3** [Collins, Jessie])

Response: *The EIS addresses the impacts of current proposals made by Detroit Edison for the construction of Fermi 3. It is possible (as stated in Section 1.1.3 of the EIS) that the USACE's processing of the permit application could result in some changes to Detroit Edison's current proposal before it would make a permit decision. If the impacts of any such modifications were greater than or substantially different from those presented in the EIS, a supplemental EIS would be required. With regard to the National Marine Fisheries Service (NMFS) issue, NMFS has advised that it considers fishery resources within Lake Erie as non-NMFS trust resources. This is the case even for those species that would be considered NMFS trust resources if found in the ocean, an estuary, or a river with tidal connections (e.g., rainbow smelt, alewife, Atlantic salmon). This is because fish that are land-locked in Lake Erie are not considered a component of the marine or estuarine ecosystem, could not serve as prey for a Federally managed species, or could not in any way contribute to the marine fisheries under NMFS jurisdiction. Section 2.4.2.3 of the EIS has been modified to clarify NMFS's jurisdiction in the western basin of Lake Erie.*

Comment: DE submitted their permit application tor "to conduct activities that affect waters of the United States, including wetlands" (v 1, p 3.1) on June 17, 2011 with the Michigan Department of Environmental Quality, and on Sept. 9, 2011 to the U.S. Army Corps of Engineers for "activities associated with the proposed Fermi 3 project." Can those agencies issue permits before the NRC has issued its ruling? (**0016-3-19** [Collins, Jessie])

Response: *The Michigan Department of Environmental Quality (MDEQ) and the USACE can issue permits before the NRC decides whether to issue the COL for Fermi 3. These are independent processes. However, construction activities as defined in NRC regulations, 10 CFR 50.10 and 10 CFR 51.4, cannot commence until NRC acts on the COL application. No change was made to the EIS as a result of this comment.*

Comment: CACC contends that the public comment period for the Fermi 3 Draft Environmental Impact Statement should be extended, by at least 60 days after the Biological Report, (essential to understanding and review of the draft EIS) is completed, released to the public and the public has adequate time to review. This is a draft Environmental Impact Statement and there is no way that the public can adequately assess this whole DEIS and the possible harm or ramifications to the environment, whether it be the health of the human community or ecosystem, upon which humans utterly depend, without access to the Biological Report. It is an unacceptable segmentation of the DEIS. The Biological Report is a fundamental part of any EIS. (**0047-1** [Cumbow, Kay])

Comment: Protection of people and the environment is written right into the NRCs Mission statement, and should be your top priority, not a decision to short-change the public from critical information, in order to keep to a schedule, especially when what is being constructed is a new, untried reactor, admittedly lacking many of the critical safety systems required of other commercial reactors, (because it is heralded as “inherently safer” - even though the safety of this reactor has never been proven over time.) Merely one severe nuclear reactor accident can damage very large areas of land and water for centuries, and cause enormous damage to the health of communities and the ecosystem for generations. We protest and oppose the idea that either humans or the Great Lakes watershed should be guinea pigs for the nuclear industry. The precautionary principle states that: When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically. In this context, the proponent of an activity, [in this case, the utility] rather than the public, should bear the burden of proof. The process of applying the Precautionary Principle must be open, informed [emphasis mine] and democratic and must include potentially affected parties. It must also involve an examination of the full range of alternatives, including no action.” Separating this vital report from the whole of the DEIS, is designed to keep the public in the dark, and without full information or participation. Ivan Selin, former Chair of the NRC, once said that the public would have no confidence in a process they could not participate in. Now - to assuage an industry shaken by the meltdowns and radioactive releases at Fukushima, a serious earthquake affecting nuclear plants in the northeast, cracking of the shield building at Davis-Besse, the recent loss of over half of the control room functions at Palisades, and many other unresolved management and safety issues uncovered both in the U.S. and global nuclear industry as well as increased electrical efficiency, greater conservation by a financially and environmentally aware public, and greater competition from cleaner, safer renewable energy such as wind and solar, which do not bring the costly

environmental burden of uranium mining, milling and processing, nor the unwanted lethal burden of irradiated fuel that must somehow be isolated from the biosphere for a million years or more - (all of which is bringing huge economic repercussions and a loss of public confidence) - the Nuclear Regulatory Commission wants to cut corners in the National Environmental Protection Act, so as to hurriedly build another reactor before the public has a chance to look too closely. This reactor has yet to have final approval by the U.S. NRC, yet the NRC is denying the public access to vital information about possible repercussions to the environment. A biological report is a key component of any NEPA process. The health and safety of the public or the environment appears to mean little to either the NRC or the nuclear industry. CACC contends that the biological report is part and parcel of the environmental impact statement and the draft EIS cannot be adequately reviewed apart from that report. (**0047-2** [Cumbow, Kay])

Comment: REQUESTING EXTENSION ON COMMENT AND COL NEW CONTENTION DEADLINES:

NIRS joins other commenters in the Fermi DEIS and interveners in the Construction and Operating Licensing (COL) application process in requesting a 60 to 90 day extension---from the date that the Biological Report on Fermi 3 becomes available--- on the comment period for this Draft Environmental Impact Statement and on deadline for additional contentions on the COL application for Fermi 3. The Biological Report underpins the assumptions made about the impacts discussed in the DEIS and is necessary for providing comments on many aspects of the DEIS. Please extend the comment period and contention deadlines. Failure to provide all necessary documents violates NEPA, the APA and common sense. (**0050-1** [D'Arrigo, Diane])

Comment: The public comment period should be extended to at least 60 days from the date of completion. I want to request another public hearing upon completion of further environmental studies/reviews. (**0055-3** [Duffey, Leona])

Comment: The Biological Report for the DEIS has not been completed for the proposed Enrico Fermi 3 plant and therefor has not been released for public review. I should like to request that the public comment period be extented, of necessity, until after the Biological Report, which is essential to understanding and reveiw of the DEIS is commpleted and the public is given adequate time to review the draft at least 60 days upon completetion. The extra time is needed so the public can adequately assess the possible harm to the envrionment, ecosystems upon which the health of the human community depends. (**0055-4** [Duffey, Leona])

Comment: The exclusion of a biological impact statement in DEIS Fermi 3 renders this report meaningless. The only remedy is to put a hold on this final comment deadline (11 January, 2012), appoint a panel of independent scientists who have no ties to industry to draft the biological statement, consult with the public interest intervenors during the selection process, convene three public hearings with locations agreeable to the intervenors, and establish a new comment period. (**0056-6** [Ehrle, Lynn Howard])

Comment: The comment period must be extended 60 days after the biological assessment is made public to allow for full comment on the DEIS. (**0064-1** [Macks, Vic])

Comment: I would also request that the comment period be extended until after the Biological Report is completed and the public has had at least 60 days to review it. (**0068-6** [Seubert, Nancy])

Comment: CONTENTION 18: The Endangered Species Act consultation and biological assessment ("BA") are incomplete, and there is no adequate substitute for the BA which appears within the DEIS. This makes the DEIS dependent upon completion of the BA and as a practical matter, precludes the public a participation/comment opportunity on the Endnagered species Act at the DEIS stage. This disclosure violates NEPA requirements for a Draft Environmental Impact Statement.

At pp. 5-21 - 5.22 of the DEIS appears this passage:

To meet responsibilities under Section 7 of the U.S. Endangered Species Act of 1973 (ESA), the review team will prepare a Biological Assessment (BA) prior to issuance of the final EIS that will evaluate potential impacts of preconstruction, 1 construction, and operations on Federally listed threatened or endangered aquatic and terrestrial species.

For any federal action that may affect a threatened or endangered species, the agency contemplating the action must undertake a "Section 7" consultation with the consulting agency to ensure that the federal action is not likely to jeopardize "the continued existence of" an endangered or threatened species and will not result in the "destruction or adverse modification" of the designated critical habitat of the listed species. 16 U.S.C. §1536(a)(2); see Gifford Pinchot Task Force v. U.S. Fish and Wildlife Service, 378 F.3d 1059, 1063 (9th Cir. 2004). The agency is required to ask FWS in writing, whether, in its opinion, a listed or proposed species may be present in the action area. 16 U.S.C. §1536(c)(1). If FWS responds that no protected species are present, the consultation requirement ends. If, however, FWS responds that there may be an endangered or threatened species in the action area, the agency is required to prepare a biological assessment ("BA"), which identifies any listed species within the area and evaluates the potential effects of the action on those species. 16 U.S.C. §1536(c)(1); 50 C.F.R. §402.02.

The consultation process concludes with the consulting agency issuing a Biological Opinion. See Ariz. Cattle Growers' Assoc. v. United States Fish and Wildlife Serv., 273 F.3d 1229, 1239 (9th Cir. 2001). This opinion must address both jeopardy and critical habitat by considering the current status of the species, the environmental baseline, the effects of the proposed action, and the cumulative effects of the proposed action. Gifford Pinchot, 378 F.3d at 1063. In formulating its biological opinion, the agency "shall use the best scientific and

commercial data available." 16 U.S.C. § 1536(a)(2); see 50 C.F.R. § 402.14(g)(8); Pacific Coast Fed'n of Fishermen's Ass'n, Inc. v. National Marine Fisheries Service, 265 F.3d 1028, 1034 (9th Cir. 2001).

The BA requirement can be fulfilled as part of the agency's procedural requirements established by the National Environmental Policy Act of 1969 ("NEPA"), 42 U.S.C. §4332. U.S.C. §1536(c)(1). Similarly to NEPA, a BA is required for all federal actions which constitute a "major construction activity," whether or not a listed species is suspected in the area. 50 C.F.R. §402.12(b)(1). A "major construction activity" is defined as "a construction project (or other undertaking having similar physical impacts) which is a major Federal action significantly affecting the quality of the human environment as referred to in [NEPA, 42 U.S.C. §4332(2)(C)]." 50 C.F.R. §402.02. The term "major" reinforces the term "significantly," but has no meaning independent of it. Andrus v. Sierra Club, 442 U.S. 347, 364 n. 23, 99 S.Ct. 2335, 2344 n. 23, 60 L.Ed.2d 943 (1979); 40 C.F.R. § 1508.18. The regulations promulgated to institute NEPA also specifically provide that "major" actions include approving permits for construction. 40 C.F.R. §1508.18(b)(4).

When an agency prepares an EIS, it is complying with the BA requirement of 16 U.S.C. § 1536(c), provided that one of the environmental impacts discussed is the impact on threatened and endangered species. Sierra Club v. U.S. Army Corps Engineers, 295 F.3d 1209, 1220 (9th Cir. 2002).

The problem here is that there is no biological assessment included within the DEIS, but instead, a promise that one will be performed in the future. This deprives the public of an adequate comment opportunity at the DEIS stage; all it has before it is a "plan to have a plan." The harm to a public plaintiff in a NEPA circumstance is complete when an agency makes a decision without sufficiently considering information NEPA requires be placed before the decision-maker and public. Sierra Club v. Marsh, 872 F.2d 497, 500 (1st Cir. 1989). That information includes comments and feedback from public participants; the courts expect that "Persons challenging an agency's compliance with NEPA must structure their participation so that it... alerts the agency to the [parties'] position and contentions,' in order to allow the agency to give the issue meaningful consideration." Dep't of Transp. v. Pub. Citizen, 541 U.S. 752, 764 (2004). Plaintiffs "waive their right to challenge [the final NEPA result} if "they did not raise that issue during the administrative process"). Protect Lake Pleasant, LLC v. Connor, No. CIV 07-454-PHX-RCB, 2010 WL 5638735, at *37 (D.Ariz. July 30, 2010).

Here, Intervenors and the public are being deprived of a comment right accorded them under NEPA by not having access to the result of the ESA consultation and any biological assessment that results, as a part of the DEIS stage. (**0077-6-2** [Lodge, Terry])

Response: *These comments address the Biological Assessment (BA) prepared by the NRC to satisfy requirements of the Endangered Species Act (ESA), and make the claim that the Fermi 3*

Draft EIS is incomplete without inclusion of the BA. It should be noted that the BA is not a NEPA requirement, and Federal agencies are not required to include a BA prepared for a proposed action in their EIS. BAs and similar non-NEPA regulatory documents are often prepared separately from EISs and may or may not be included as part of the EIS, at the discretion of the action agency. In the case of the Fermi 3 EIS, NRC includes, for informational purposes, the BA, as well as the U.S. Fish and Wildlife Service's (FWS's) concurrence with NRC's conclusions in the BA, in Appendix F to the final EIS. Public review of the BA is not a requirement of the ESA because, unlike NEPA, the ESA process is between the NRC and the FWS. All of the environmental impacts that are included in the BA were also included in the draft EIS, so the public had access to all of the relevant information and findings, and the ability to comment on the impacts on Federally listed species during the public comment period. No changes were made to the EIS in response to these comments.

Comment: I have problems that there is segmentation fragmentation in this NEPA process. Detroit Edison announces in their, in the DEIS document, that they are going to do site preparation and pre-construction beginning as early as January 2011, and running through November 2012. Eighteen months, eighteen months without a final environmental impact statement. This is a blatant violation of NEPA. In addition, you're segmenting out projects, the entire corridor, transmission corridor is not factored into this, you're doing piecemeal. And that is a no-no, and we're going to catch you on it. The biological assessment for the plant has not been issued yet. Yet we're here making comments on what is supposed to be a comprehensive draft environmental impact statement. It is not, it's piecemeal, it's being dribbled out piecemeal. (**0040-9-11** [Keegan, Michael J.])

Response: *This comment indicates the Draft EIS is flawed because it considers certain impacts on a piecemeal basis. The NRC staff does not agree with this characterization. The environmental impacts of the BA were included in the Draft EIS and the NRC includes the BA in Appendix F to the final EIS for informational purposes. Although preconstruction activities, including offsite transmission lines, are outside the scope of NRC regulatory authority, they are considered in the EIS in the context of cumulative impacts. They are not ignored. No changes were made to the EIS as a result of this comment.*

Comment: I would like to request an extension of the public comment period for the Draft Environmental Impact Statement (DEIS) of 75 days. The current comment period has been insufficient given that it occurred during the Christmas and New Year holidays. Additionally, the comment period should be extended due to the lack of complete documentation, such as a full biological report. Additional time is also required to consider emergency monitoring and response across multiple jurisdictions, specifically within southwestern Ontario which the DEIS has not sufficiently documented. (**0076-1** [Coronado, Derek])

Response: *Public comments were accepted for 75 days after issuance of the Draft EIS, until January 11, 2012. The NRC staff considers this period of time sufficient for public review and*

comment. USACE issued its public notice for a 30-day period ending January 21, 2012, and considers this to be a reasonable period of time within which interested parties may express views concerning the proposed action. It should be noted that, as discussed elsewhere in this appendix, the environmental impacts of the BA were included in the Draft EIS and that emergency preparedness is outside the scope of the environmental review.

Comment: In Appendix D (v 2, p D.23) Kay Cumbow entered a comment about the NRC holding the meetings to encompass both the Thanksgiving holiday and the Christmas holiday. Here again, are meetings and deadlines over the holidays. Is this standard NRC procedure? Or should I say Federal procedure since the USACE sent me a Public Notice on their permit LRE-2008-00443-1- S11 on Christmas Eve. Both comment periods ran over New Year's and Old Christmas on Jan. 6th. Even Martin Luther King Day will take place before the USACE's time will elapse. I use the public library for internet, printing, etc. Therefore, having your timeline set when the public library is closed the most possible days seems pretty rude to me. (**0016-3-9** [Collins, Jessie])

Response: *The NRC established the 75-day time period for comments on the Draft EIS, ending on January 11, 2012, to balance the Commission's goal of ensuring openness in the regulatory processes with its goal of ensuring that the NRC's actions are effective, efficient, realistic, and timely. The comment does not provide a sufficient basis for an extension.*

Comment: We commend the Applicant for suggesting various mitigation strategies and public outreach undertakings. However, EPA is concerned that non-nuclear-safety-related mitigation will not be included in the license conditions; this is discussed further in the detailed comments. We recommend the Applicant commit to all mitigation measures and public outreach methods mentioned in the Draft EIS and Environmental Report (ER) in the decision documents. (**0078-2** [Westlake, Kenneth A.])

Response: *The NRC appreciates the review of the Draft EIS that was conducted by the EPA. No change was made to the EIS as a result of this comment, but responses to specific comments from the EPA on the draft EIS are provided elsewhere in the appendix. Several of these specific comments did result in changes in the EIS as noted in the responses.*

Comment: EPA understands that NRC analyzes impacts from the lengthening of the transmission lines and expansion of the Milan Substation as cumulative impacts and outside the scope of the COL permit application and accompanying NEPA document. However, per NEPA, EPA views these actions as connected to the granting of the license and, therefore, should be analyzed as direct impacts as a result of the proposed action. The Draft EIS even acknowledges the connectedness of the building of Fermi 3 and the expansion of the Substation on page 3-17, lines 31-21, among other locations: "The 350-ft-by-ft-500-ft Milan Substation may be expanded to an area about 1000 ft by 1000 ft to accommodate the Fermi 3 expansion." Therefore, because the lengthening of the transmission lines and the expansion of the Substation are only

necessitated by granting the COL license for Fermi 3, the Final EIS should analyze impacts from these two actions as direct impacts. Recommendation: The Final EIS should analyze the construction of the transmission lines and the expansion of the Substation as actions part of the proposed action; any unavoidable impacts should be accounted and mitigated for. (**0078-31** [Westlake, Kenneth A.])

Comment: While EPA recognizes that NRC does not consider "preconstruction" activities within the scope of the COL application, per 10 CFR 5!.45(c), these activities are within the scope of the NEPA review because they are all connected actions, per 40 CFR l508.25(a)(l)(iii) [... are interdependent parts of a larger action and depend on the larger action for their justification]. For example, Table 3-2 identifies "deep excavation" or the "excavation of the basemat for the reactor" as a preconstruction activity. However, but for the larger action (the issuance of the COL), the excavation of the basement for the reactor need not occur. Thus, all preconstruction activities should be analyzed as direct impacts. This might be a valid delineation if "preconstruction" activities were either completed or ongoing at the time of the document's issuance. This is not the case, as noted on page 4-59, line 8 to 9: "Detroit Edison plans to begin the preconstruction work specific to Fermi 3 in 20!3 and to complete all building activities in 2020." Specific to Fermi 3, all preconstruction activities should be analyzed as direct impacts, per NEPA. Therefore, the magnitudes of impacts (as identified by NRC as SMALL, MODERATE, or LARGE) significantly changes, and warrants stronger or additional mitigation measures. EPA agrees that preconstruction activities should also continue to be analyzed in terms of cumulative impacts. Recommendation: NRC-deemed preconstruction activities should be re-analyzed as part of the construction of Fermi 3. The Final EIS should include activities specific to the Fermi 3 site that have been deemed "pre-construction," rather than the generic activities listed in Table 3-2. Finally, if any construction-related activities have commenced, these should be identified in the Final EIS. (**0078-6** [Westlake, Kenneth A.])

Response: *In 10 CFR sections 50.10(a) and 51.4, the definition of "construction" is limited to activities for safety-related structures, systems, or components (SSCs) and certain other SSCs. A limited work authorization, construction permit, or COL is required before performing such activities. Activities that do not fall within NRC's definition of construction, such as clearing and grading, excavating, building transmission lines, and erecting support buildings, are considered "preconstruction" activities that do not require NRC authorization. Most of these activities are regulated by other local, State, Tribal, or Federal agencies and require permits from them to proceed. In its environmental review, NRC must consider "preconstruction" activities in the context of cumulative impacts. Accordingly, these impacts were evaluated in Chapters 4 and 7 of the EIS. No change was made to the EIS in response to these comments.*

Comment: Based on conversations between EPA staff and NRC staff on December 6th and 15th, 2011, we understand that NRC cannot include mitigation measures in the license that do not pertain to nuclear security. However, EPA strongly encourages the Applicant commit to a

comprehensive public outreach strategy to inform residents about the risks and impacts of the proposed project. EPA believes that comprehensive public outreach is part of any successful mitigation strategy. This should include, but is not limited to, targeted outreach campaigns to neighbors, informational literature, and updated websites. There are specific resource impacts where EPA believes this outreach would be particularly beneficial, including, but not limited to:

- construction schedule;
- work shifts and the resultant traffic expectations;
- noise monitoring;
- air quality monitoring data;
- radiological data;
- dewatering at the construction site and the resultant lowering of the well levels;
- refueling outages and the resultant increase in onsite personnel;
- contact information for complaints and questions; and
- emergency information.

Recommendation: EPA strongly encourages the Applicant commit to a comprehensive public outreach strategy to inform residents to the risks and impacts as a result of the proposed project. This should include, but is not limited to, targeted outreach campaigns to neighbors, informational literature, and updated websites. Commitment by the Applicant to a comprehensive public outreach strategy would alleviate many of the EPA's concerns. Any details of the public outreach strategy should be included in the Final EIS. (**0078-36** [Westlake, Kenneth A.])

Response: *For activities outside of NRC's jurisdiction, such as those mentioned in this comment, the NRC staff cannot require the applicant to perform specific mitigation actions. No changes to the EIS were made as a result of this comment.*

Comment: We recommend that the following entities be provided copies of the Final EIS and be afforded the right to comment, as they each have authorities or interests in the proposed project, but were not listed as contacted in Appendix B:

- Occupational Safety and Health Administration;
- United States Coast Guard;
- Canadian Environmental Assessment Agency; and
- Michigan Department of Transportation, given the concerns outlined under Construction Impacts. (**0078-38** [Westlake, Kenneth A.])

Response: *The NRC appreciates EPA's recommendation and will send copies of the EIS to these agencies. No change was made to the EIS in response to this comment.*

E.2.3 Comments Concerning Site Layout and Design

Comment: The Fermi site is located in a 100 year floodplain. The state building code requires that a critical facility such as a power plant constructed in the floodplain, be elevated or flood-

proofed one foot above the 0.2% annual chance flood elevation. 2011 was the costliest year in terms natural disasters for reinsurance companies. $105 billion in insured losses. It is a reminder that the decisions on where to build need serious considerations of risks, especially where certain buildings are concerned, above all, nuclear power plants. The increase in seismic activity in Ohio's New Madrid fault, must also be considered. Building on wetlands regardless of the type of fill, remains unstable ground. In the event of an unprecedented water event, the water will go where it was meant to go, both over and underground.
(**0055-1** [Duffey, Leona])

Response: *As stated in Section 4.1.1 of the EIS, the majority of the proposed Fermi 3 buildings and structures would be situated outside the 100-year and 500-year floodplains. Detroit Edison designed the proposed layout to minimize floodplain encroachment. The majority of the floodplain impacts would be temporary, and the small number of permanent impacts would not noticeably reduce floodplain capacity. Development in floodplain areas will require review and approval by Frenchtown Charter Township. No change to the EIS was made in response to this comment.*

Comment: EPA notes in the detailed site plans many of the current parking lots have been converted into parking structures; we appreciate that the Applicant opted for a smaller footprint, thus reducing potential wetland and upland forest impacts. EPA strongly encourages that elements of sustainable or "green" infrastructure be incorporated into all facets of the design and site layout of Fermi 3. This should include consideration of, but is not limited to, using permeable pavement in roads leading in and out of the plant, for example, and re-planting construction lay-down areas with native vegetation. We appreciate that the Applicant has already identified re-vegetation of construction areas with native species as part of their overall mitigation plan. In the Final EIS, we recommend all beneficial mitigation measures be outlined and included in the license. We also encourage the Applicant to construct all buildings to Leadership in Energy and Environmental Design (LEED) standards. If LEED standards are pursued, this information should be included in the Final EIS. Any potential use of Energy Star appliances, EPA's WaterSense program, EPA's GreenScapes program, or other similar programs should be identified in the Final EIS. These are important elements of reducing the overall environmental impact of the proposed project. (**0078-32** [Westlake, Kenneth A.])

Response: *NRC cannot require the applicant to incorporate specific green infrastructure elements in its project design, because such elements are outside of NRC's jurisdiction. However, the NRC encourages the applicant to evaluate the EPA's recommendations and incorporate green design in landscaping and facilities to the extent practicable. No change was made to the EIS in response to this comment.*

E.2.4 Comments Concerning Land Use - Site and Vicinity

Comment: Table 3-2 (v 1, p 3.23) shows 'Examples of Activities Associated with Building Fermi 3 and includes, "Placing fill material into wetlands to bring it to grade with the adjacent land surface." I believe that filling in wetlands is an immoral act; it is not an insignificant thing that, "...only 189 acres would be considered new disturbance." (v 1, p 3.24) (**0016-1-6** [Collins, Jessie])

Response: *Detroit Edison revised its site layout several times, taking actions such as relocating facilities from wetlands to uplands in order to avoid and minimize impacts on wetlands. These impacts may be further reduced during the USACE permit evaluation review. To offset the proposed adverse wetland impacts, Detroit Edison has proposed compensatory mitigation (see Appendix K of the EIS). Wetland impacts are discussed in detail in Section 4.3.1.3. Although 197 ac of land onsite not previously disturbed by building Fermi 1 and 2 would be disturbed to build Fermi 3, much of even this land is not pristine natural habitat, having been used for farmland before inclusion in the Fermi site. As noted on page 4-5 of the Draft EIS, only about 45 ac of the Detroit River International Wildlife Refuge (DRIWR) would be disturbed by Fermi 3, and only about 19 ac of the refuge would be permanently lost. The refuge constitutes the most valuable areas of natural habitat on the Fermi site. This comment provided no new information and, therefore, does not warrant changes to the EIS.*

Comment: "Onsite: approximately 189 acres of habitat would be disturbed, including approximately 34.5 acres of wetlands. Offsite (transmission lines): 1,069 acres of habitat would be disturbed. Approximately 21 acres of additional habitat would be used to expand Milan Substation." (v 2, p 10.6) Does this include the wetlands planned to be replanted in wild rice? (**0016-1-12** [Collins, Jessie])

Response: *The wetlands on the Fermi site proposed to be affected are not part of a plan to reintroduce/plant wild rice in Lake Erie. The transmission lines would be built across a landscape consisting mostly of current or former agricultural land. All of the land expected to be disturbed by expanding the Milan substation is previously disturbed farmland. This comment provided no new information and, therefore, does not warrant changes to the EIS.*

Comment: During planned construction, "Approximately 8.3 acres of wetlands and the 5.2 acres of open water would be permanently lost." (v 1, p 4.5) Does that mean the building of Fermi 3 would actually fill in 5.2 acres of Lake Erie? What is the precedent for such an action? (**0016-3-25** [Collins, Jessie])

Response: *The 5.2 ac of open water refers to the overflow canal (U2 on Figure 2-11) and an unvegetated pond (H1 and H2 on Figure 2-11). The unvegetated pond (1.9 ac of the 5.2 ac of the open water subject to fill) has no connection to Lake Erie and is not considered part of Lake Erie. The overflow canal (3.3 ac of the 5.2 ac of open water subject to fill) is defined as part of*

Lake Erie by USACE. USACE has issued permits in the past for the discharge of fill into Lake Erie. This comment provided no new information and, therefore, does not warrant changes to the EIS.

Comment: Building Fermi 3 would permanently fill approximately 8.3 ac of wetland and temporarily affect 23.7 ac of wetland. The temporarily impacted wetlands would be restored. See Section 4.3.1 for additional discussion of wetlands impacts and mitigation.

Why is this acceptable when improved end-use efficiency, and renewable generating sources would have no such impact (and lower cost to ratepayers)? Wetlands can never be restored to their original state -- it is a conceit to think they will be. (**0034-4-6** [Welke, Jim])

Response: *Compliance with Section 404 of the Clean Water Act requires the applicant to offset unavoidable impacts to waters of the United States including adjacent wetlands, through compensatory mitigation. USACE regulations (33 CFR Part 332) established performance standards and criteria to ensure the quality and success of compensatory mitigation projects for activities authorized by USACE permits. The USACE requires that final compensatory mitigation and onsite restoration plans comply with this regulation, and such plans approved for Fermi 3 would be incorporated into the USACE permit as a special condition, if issued. Wetland impacts are discussed in detail in Section 4.3.1.3. The potential impacts of building and operating alternative energy generation sources are discussed in Section 9.2 of the DEIS. The possible wetland impacts from building renewable energy generation sources, such as wind or solar facilities, cannot be quantified, as sites for these facilities have not been identified. This comment provided no new information and, therefore, does not warrant changes to the EIS.*

Comment: The wetland impacts described in Section 4.3.1 would be mitigated by restoration of temporarily disturbed wetlands, restoration and enhancement of approximately 82 ac of wetlands in the coastal zone of western Lake Erie, and restoration of approximately 21 ac of wetlands located onsite. The review team assumes that it is unlikely that the USACE and MDEQ would issue permits allowing extensive disturbance of coastal wetlands along western Lake Erie.

What do “restoration” and “enhancement” mean, exactly? Does anyone believe that wetlands can be restored to a primordial state? How can they be enhanced? Is it really sensible to allow such alteration of wetlands (essential to fisheries and wildlife), when other less costly options exist (improved electricity end-use efficiency and distributed renewable energy sources [http://www.ucsusa.org/clean_energy/solutions/big_picture_solutions/do-weneed-coal-and-nuclear-power.html])? (**0034-4-7** [Welke, Jim])

Response: *For the Fermi 3 project, activities involving the discharge of fill material into waters of the United States, including wetlands, require authorization from the USACE under Section 404 of the CWA. The CWA Section 404(b)(1) Guidelines (40 CFR Part 230)*

(Guidelines) are the substantive criteria the USACE uses to determine a project activity's environmental impact on wetlands from discharges of fill. An applicant for a 404 permit must demonstrate to the USACE that project-related fill activities satisfy the Guidelines and constitute the least environmentally damaging practicable alternative (LEDPA). Compliance also requires the applicant to offset unavoidable impacts to wetlands through compensatory mitigation. Appendices J and K of the EIS contain Detroit Edison's proposal for compliance with the Guidelines. Before a permit decision is made, USACE would ensure that the proposed project is in compliance with the Guidelines. This may include project revisions to further reduce and/or avoid wetland fill. In addition, USACE requires that final compensatory mitigation and onsite restoration plans comply with USACE mitigation regulations (33 CFR Part 332). These regulations define acceptable mitigation types, including the terms restoration and enhancement used in Detroit Edison's proposed concept mitigation plan (Appendix K), the suitability of such mitigation types to meet compensatory requirements to offset unavoidable wetland losses, and the performance standards and criteria necessary to ensure the quality and success of such compensatory mitigation projects for activities authorized by USACE permits. These regulations are available at http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=/ecfrbrowse/ Title33/33cfr332_main_02.tpl .

Although building Fermi 3 would result in the permanent loss of wetlands onsite, the impact of construction of alternative power generation facilities to replace power not generated by Fermi 3 on wetlands cannot be determined, as sites for these facilities have not been identified. This comment provided no new information and, therefore, does not warrant changes to the EIS.

Comment: I agree with some of the things said about the additional laws being created. But we have laws that are being ignored. Our coastlines are protected from the mouth of the Detroit River to Maumee Bay and the proposed new power plant sits right in the middle of them. This is a federal law, something we as Michigan people don't even have to vote on, it's there. (**0040-13-2** [Lankford, R.E.])

Response: *As stated in Section 4.1.1 of the EIS, the Fermi site and some adjoining areas lie within the coastal zone defined by the State of Michigan under the Coastal Zone Management Act, which is designed to ensure the reasonable use of coastal areas. On January 24, 2012, the Michigan Department of Environmental Quality (MDEQ) issued a permit to Detroit Edison for Fermi 3-related dredge and fill activities in regulated wetlands. Consistency with Coastal Zone Management Act requirements is considered when issuing permits for activities in regulated wetlands, and the issuance of the permit is considered by the State to constitute a certification of consistency with the requirements of the CZMA. In addition, Detroit Edison currently has a Cooperative Agreement with the U.S. Fish and Wildlife Service (FWS) for management of the onsite portion of the DRIWR, and the proposed reduction in the size of the DRIWR is consistent with the 2003 Cooperative Agreement and the FWS Comprehensive Conservation Plan for the*

Refuge. This comment provided no new information and, therefore, does not warrant changes to the EIS.

E.2.5 Comments Concerning Land Use - Transmission Lines

Comment: Concerning the impact of the new transmission lines "over scattered wetlands" that, "Detroit Edison expects that the remaining 10.8 miles, extending to the Milan Substation, would be built within an undeveloped right-of-way.." (v 1, p 2.10) What if the citizens of Whitaker want to keep their "scattered wetlands?" (**0016-1-10** [Collins, Jessie])

Response: *Page 4-42 of the Draft EIS states that installing the proposed new transmission line towers would permanently affect only about 0.5 ac of wetlands. The remaining wetland impacts from building the proposed transmission lines would be limited to clearing trees and other woody vegetation. Portions of the scattered wetlands in the undeveloped right-of-way (ROW) would be converted from forested (or scrub-shrub) wetlands to emergent wetlands for the operational life of the new transmission line. But other than about 0.5 ac of wetland fill to build transmission towers, no wetlands would be permanently lost. This comment provided no new information and, therefore, does not warrant changes to the EIS.*

Comment: The high-voltage transmission line portion of the project involves a lengthy corridor which is inadequately assessed and analyzed in the Draft Environmental Impact Statement.

The discussion of the environmental impacts to the approximately 1,000 acres of transmission corridor is deficient in a host of ways. The DEIS admits that 80 wetlands and other waters would be crossed by Fermi 3's proposed, up to 300-foot wide-transmission line corridor (Table 2-7. page 2-46), NRC's determination that impacts will be minimal or small is not credible. NRC's analysis of the environmental impacts of the proposed Fermi 3 transmission line corridor is scattered throughout the DEIS, and is thus not coherent, is vague and shallow. NEPA requires a much more coherent, integrated, comprehensive, clear, and in-depth analysis. NRC's analysis flirts with illegal segmentation for not assembling NEPA disclosures associated with the transmission corridor in its own discrete section of the DEIS.

Nowhere in the DEIS are the cumulative impacts compiled in a meaningful way. The shallow descriptions of what is planned simply do not adequately discuss the interconnectedness of the corridor land uses with adjacent land uses. For example, will the transmission line corridor, by cutting down all the trees, and dramatically increasing evaporation, completely transform a wetland into at best intermittently mucky soil? A total change might even result in eradication of virtually all wetland functions. Ephemeral wetlands, for example, are vital frog habitat. By downgrading or destroying wetlands quality, NRC's DEIS must address the issue of whether mitigation should be considered, perhaps by creating wooded wetlands elsewhere. By not meaningfully disclosing mitigation arrangements, NRC's DEIS violates NEPA.

The CEQ's regulations define a project's cumulative impacts as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions." 40 C.F.R. § 1508.7; see also 40 C.F.R. §1508.25 (requiring that agencies take cumulative impacts into consideration during NEPA review). The regulation states that "[c]umulative impacts can result from individually minor but collectively significant actions taking place over a period of time." 40 C.F.R. § 1508.7. In that vein, a consideration of cumulative impacts must also consider "[c]losely related and proposed or reasonably foreseeable actions that are related by timing or geography." *Vieux Carre Prop. Owners, Residents, & Assocs., Inc. v. Pierce*, 719 F.2d 1272, 1277 (5th Cir.1983). The transmission corridor is an example of this to-be-avoided piecemealing, whereby the environment suffers death by a thousand clearcuts in the shadow cast by obscurity.

The record compiled by the agency must be sufficient to determine the mitigation measures being used to compensate for adverse environmental impacts stemming from the original proposal that, unmitigated, would be significant. *Spiller v. White*, 352 F.3d 235, 241 (5th Cir.2003) (quoting *Cabinet Mountains Wilderness v. Peterson*, 685 F.2d 678, 682 D.C.Cir.1982)). Although proposed mitigation measures need not be laid out to the finest detail, even within the more labor-intensive context of an environmental impact statement, *Robertson v. Methow Valley Citizens Council,* 490 U.S. 332, 352, 109 S.Ct. 1835, 104 L.Ed.2d 351 (1989) it is still required "that mitigation be discussed in sufficient detail to ensure that environmental consequences have been fairly evaluated." *Miss. River Basin Alliance v. Westphal*, 230 F.3d 170, 176-77 (5th Cir.2000) (quoting *Robertson*, 490 U.S. at 352, 109 S.Ct. 1835). Hence an EIS involving mitigation must include "a serious and thorough evaluation of environmental mitigation options for [a] Project to allow its analysis to fulfill NEPA's process-oriented requirements [.]" *Miss. River Basin Alliance*, 230 F.3d at 178.

On page 2-10, NRC admits that ITC Transmission has not yet even chosen the exact route for Fermi 3's offsite transmission line corridor. Thus, "Detroit Edison expects that the remaining 10.8 miles [of new transmission line corridor], extending to the Milan Substation, would be built within an undeveloped right-of-way (ROW)…No data are available on existing land uses in the anticipated 10.8-mi undeveloped ROW segment, but the review team expects that it crosses mostly agricultural and forest lands and scattered wetlands…[and] the route likely crosses some prime farmland." This begs the question as to why the public is being asked to comment on such a half-baked DEIS, based on a half-baked ER, based on a half-baked ESBWR design and new reactor proposal? Not knowing the corridor route effectively makes environmental impact analysis impossible. DTE should be made to disclose precisely where the transmission line corridor will be, before this proceeding continues any further. NRC cannot attempt to duck its responsibilities under NEPA by echoing DTE, that the transmission line corridor belongs to ITC Transmission (as at 2.4.1.2 Terrestrial Resources – Transmission Lines, page 2-45). This is a

new atomic reactor proposal. The transmission line corridor proposal is part and parcel of the Fermi 3 proposal under NEPA.

NRC reports that "the final western 10.8 miles of transmission lines would be built in an undeveloped segment of an existing transmission ROW…Some transmission tower footings were installed there as part of earlier plans but were never used." NRC reports that the proposed new Fermi 3 transmission line corridor would cross open water, deciduous forest, evergreen forest, mixed forest, grassland, 93.4 acres of woody wetlands, and 13 acres of emergent herbaceous wetland. (Table 2-7,Vegetative Cover Types in the Proposed 29.4-mi Transmission Corridor, page 2-46). This shows what is at stake – major impacts, or perhaps even complete destruction, to irreplaceable habitat, vital for the viability of endangered and threatened species, as well as overall ecosystem health. At 4-2, "Vegetative Cover Types Occurring in the Undeveloped 10.8-mi Segment of the Transmission Line Corridor" (page 4-28), DEIS Table 4-2 repeats the sensitive vegetative cover forms at risk from the proposed Fermi 3 transmission corridor: 170 acres of deciduous forest, 74 acres of woody wetlands, and 9 acres of herbaceous emergent wetlands.

Evidently earlier transmission tower footings were previously installed for no good reason whatsoever, for projects that were never completed. Those footings did environmental harm, for no good reason. Presumably, they cannot be used now as part of the current proposal, but would have to be replaced, doubling that earlier, unnecessary impact, and risking that, if and when Fermi 3 is cancelled midstream, yet more unnecessary damage will have been inflicted on vital habitat and important species. This would be the antithesis of NEPA's purpose, to fully consider all aspects of major federal actions (such as NRC's approval of DTE's Fermi 3 plans) in advance, so that unnecessary damage to the environment can be avoided.

Although the NRC DEIS does mention that the platforms for the towers along the transmission line corridor will cover a relatively small area, NRC's DEIS nonetheless does not quantify changes to wetlands. For example, how much fill will be done? How much wetland will be destroyed? Such questions must be answered, in detail, now, not later, to fulfill NEPA's purposes under law.

NRC's DEIS section 2.4.1.4 Important Terrestrial Species and Habitats – Transmission Lines (page 2-60) also reports the high biological stakes. Important species may occur along transmission lines, "but because the exact route of the corridor has not been finally determined, no surveys have yet been conducted to confirm the presence of any species." Again, the risks of irreparable harm are increased due to DTE's half-baked plans, as well as NRC's premature DEIS. However, table 2-9 (page 2-61) shows state-listed and federally-listed species which inhabit the counties (Monroe, Washtenaw, Wayne) that would be crossed, including over 80 plant species, 8 insect species, 2 amphibian species, 4 reptile species (including the Eastern Fox Snake), a dozen bird species, and 2 mammal species. The Michigan Dept. of Natural Resources (MDNR/now DNRE) has not provided concurrence for the project to proceed,

because DTE has provided no details about the transmission line corridor route for determining the damage that would be done to threatened and endangered species and their habitats. MDNR has identified five State-listed species likely present on the Fermi site, which could also be present along the proposed Fermi 3 transmission corridor. In addition to all of the above, the U.S. Fish and Wildlife Service has identified the eastern massasauga snake as a candidate species potentially inhabiting Washtenaw and Wayne Counties, and thus, at risk along the proposed new transmission corridor.

The DEIS refers to effects on major species. The Eastern Fox Snake is mentioned. Intervenors have raised contentions about the impacts on the endangered/threatened Eastern Fox Snake in the Fermi 3 COLA proceeding. There is valid concern that damage to, or destruction of, ephemeral and/or forested wetlands by Fermi 3's proposed transmission line corridor will deal a fatal blow to endangered and/or threatened species, including the Eastern Fox Snake.

At page 5-22. NRC's DEIS states (lines 22 to 32):

> The Endangered Species Coordinator for the Michigan Department of Natural Resources (MDNR) has not yet reviewed Detroit Edison's proposed Habitat and Species Conservation Plan for the eastern fox snake, and has not yet commented on whether the plan's mitigation measures would be adequate to protect the eastern fox snake (Hoving 2010). The Coordinator stated, however, that monitoring of the eastern fox snake population during and after building of Fermi 3 could help determine whether the direct impacts from increased traffic warranted additional mitigation measures. An example of mitigation for traffic mortality impacts, if needed, would be installing fences along roads to serve as barriers to the snake and reduce the likelihood of snakes being hit by vehicles. Monitoring and implementing any necessary mitigation measures, as discussed in Section 5.3.1.1, would likely hold the effects on the eastern fox snake from project operation to minimal levels.

Given the lingering doubts and uncertainties about the well being of the endangered/threatened Eastern Fox Snake, it is essential that any negative impacts from the proposed Fermi 3 transmission line corridor be comprehensively and completely understood, so they can be prevented in the first place.

At 1.1.2 (page 1-6) Preconstruction Activities, NRC states that constructing transmission lines are preconstruction activities not needing its NEPA approval. The DEIS at page 3-22 states, "Activities associated with transmission line corridors are also considered preconstruction." This implies an explanation for the inadequate transmission corridor analysis: the lead agency simply doesn't care.

At 2.4.2.2 Aquatic Habitats – Transmission Lines (2-80), NRC joins DTE in a disconcerting dismissal of issues of species diversity – and the importance of the habitats on which those

species depend – merely because the streams the transmission line corridor would cross are small. Also dismissed is the ecological significance of small drainages and their intermittent flows. Such habitat is vital for frogs and other critical reptilian species that serve as food for species higher up the food chain.

As reported at the DEIS at Page 2-64, the transmission lines would cross important habitats: 30 wetlands or other waters that may be regulated by the USACE and/or MDEQ, according to FWS National Wetland Inventory mapping. Several of the wetlands would require the placement of a transmission tower or pole within the wetland itself. The wetlands include woody and emergent herbaceous habitat. At 2.4.2.4, "Important Aquatic Species and Habitats – Transmission Lines" (page 2-123), NRC admits that "it is not known whether suitable habitat or populations of species identified in Table 2-16 occur in portions of the drainage that would be crossed by the proposed transmission route. The FWS and MDEQ may require surveys of the proposed transmission line corridor to evaluate the presence of important species and habitat." Again, this is evidence that NRC's DEIS, as with DTE's ER and COLA, is premature. Table 2-16 shows what is at stake. The listed federal and state species include 16 species of mollusks, and 17 species of fish (pages 2-99 to 2-100).

There is no discussion in the DEIS of whether the wetlands in the transmission corridor are connected to close-by wetlands, themselves not under power lines or impacted by other human activities, and what effect denuding the forested wetlands of trees in the transmission corridor will have on overall wetland units in the ecosystem, such as "greenways" for species movement and hence genetic diversity. There is no clear, long-term management plan articulated in the DEIS. It is clear that the deforestation will be an indefinitely long, or even permanent, condition. Although herbicides designed for use in wetlands are mentioned, no specifics are given. The impact of these biocides on species inhabiting the corridor is thus impossible to analyze, given the lack of specificity. The downgrade in the ecological quality and quantity (or even permanent loss and complete destruction) of forested wetlands in an extended area along the Fermi 3 transmission line corridor is a major ecosystem impact, which currently goes unreflected. For example, at Wetlands and Floodplains (page 5-24), NRC states:

> Vegetation management actions may include, but are not limited to, pruning, wall trimming, tree removal, mowing, and herbicide application…Wetlands within the corridor that have the potential to regenerate in forest vegetation are expected to be manually cleared of woody vegetation periodically for line safety clearance, thereby being kept in a low-growing scrub/shrub or emergent wetland state…Detroit Edison expects that ITC Transmission would minimize the use of pesticides in wetland portions of the transmission corridor.

Thus, the damage appears to be permanent. Detroit Edison "expects," but is not certain, that pesticide usage would be minimized. The permanence of the damage is again documented at

4.1.2, “Transmission Line Corridors and Other Offsite Facilities:” “…in forested areas, the corridor would remain cleared.” (page 4-8).

At page 2-47, “Existing Natural and Human-Induced Ecological Effects on the Transmission Corridor”, NRC admits “Corridor maintenance, including the removal of undesirable vegetation by mechanical means and herbicides, imposes stress on terrestrial resources.” But vegetation is desirable from a habitat and biological diversity perspective. The proposed Fermi 3 transmission corridor will inflict permanent damage on habitat, such as wetlands and forest, vital for protecting and preserving biological diversity, such as the survival of threatened and endangered species. The permanence of this destruction of habitat is documented at 3.4.2.2 Power Transmission System (page 3-31): “During operation of Fermi 3, the power transmission line system would need to be maintained free of vegetation by ITC Transmission. Vegetation removal activities would include trimming and application of herbicides periodically and on an as-needed basis along the transmission line corridor.”

At 3.3.1.8, “Transmission Line Corridors” (page 3-26), NRC admits that:

> Installing transmission lines would require the removal of trees and shrubs along portions of the transmission line corridor, movement of construction equipment, and shallow excavation for the foundations of the transmission line towers… The 10.8 mi corridor to the Milan substation is currently undeveloped, and building this portion of the line could disturb 393 ac of mostly forested and agricultural lands. A total of 1069 ac of land would be occupied by the 29.4 mi long transmission line corridor.

There is no commitment documented in NRC’s DEIS that DTE and/or ITC Transmission will use the best available science in assessing damage and management planning along its proposed Fermi 3 transmission line corridor. There is also little to no discussion of best available science or best available technology to prevent or mitigate ecological harm caused by the proposed new transmission line corridor.

Any inventory of the loss of wetlands functions due to damage done by the Fermi 3 transmission corridor is woefully inadequate, disjointed, and largely non-existent. These impacts on the ecosystem represent a significant change in the character of wetlands habitat, which is not captured by the DEIS.

An ironic part of the Fermi 3 transmission line corridor proposal is the plan to destroy restored prairie at/near the Fermi site. At 3.3.1.9, “Switchyard” (page 3-26), NRC reports: “Detroit Edison would build a new switchyard containing three 345-kV transmission lines to transport to (sic) power generated by Fermi 3. The Fermi 3 switchyard would be constructed on 10 ac of the prairie restoration area at the intersection of Fermi Drive and Toll Road (shown as “28” on Figure 3-2). The irony is that DTE often brags about its ecological “good citizenship,” such as “nature preserves” it has established. For example, at both the NRC environmental scoping

public meeting in January 2009, and again at the NRC DEIS public comment meeting in December 2011, DTE set up a large, glossy "informational display" in the lobby about its efforts to preserve and protect the environment in the Fermi plant vicinity. But this is mere PR green-washing, belied by DTE's readiness to destroy restored prairie to build a switchyard for Fermi 3. The DEIS does not disclose why the prairie was restored in the first place, nor what the history was that prompted DTE to preserve/restore it. If it were to mitigate other ecological destruction associated with the Fermi nuclear plant, DTE in its ER, and NRC in its EIS, surely must disclose those facts, as well as relevant laws, regulations, and commitments made to local, state, and/or federal government agencies.

NRC is required in its DEIS to describe in detail permits that are required, including CWA 404 and Michigan state laws. State-required permits are needed since Michigan is deputized to enforce the Clean Water Act on inland wetland areas. Sufficient detail is missing currently from NRC's DEIS on these legal and regulatory matters.

The DEIS, at 2.7.3, "Historic and Cultural Resources within the Transmission Line Corridor," (page 2-205), raises social and environmental justice, as well as human rights and religious freedom issues. Also implicated are various treaty rights, established by treaties signed between the U.S. federal government and various Native American nations. These treaties, after all, are the highest law of the land, equal in stature to the U.S. Constitution itself. At page 2-206, again reflecting the premature nature of the DEIS, as well as the half-baked nature of the Fermi 3 proposal writ large (including its proposed new transmission corridor), NRC admits that "Efforts to identify cultural resources along the proposed transmission line route were limited…" Hence, culturally significant sites could be bulldozed by DTE and ITC Transmission for the Fermi 3 transmission line corridor, without the public or affected Native nations even knowing that culturally significant sites were at risk.

Table 2-63 on page 2-206 shows that the proposed new segment of the transmission line corridor would impact five "archaeological" or "prehistoric" sites, three of which are of unidentified prehistorical significance, two of which are identified as Late Woodland, and one of which is identified as Woodland. Given the lack of adequate NRC outreach and government to government consultation with affected units of Indian government, NRC's determination that these impacted sites are insignificant is entirely inappropriate. Affected tribal governments should be contacted, and allowed to determine for themselves the significance of these identified sites. To do otherwise in the year 2011 is entirely unacceptable, given the religious significance of burial and other sacred sites to Native American Nations, for instance, as protected under law.

Compliance with the National Historic Preservation Act does not preclude the need to comply with NEPA with regard to impacts on historic and cultural aspects of the environment. Therefore, impacts on proposed historic districts must be evaluated and, if necessary, mitigation measures undertaken. *Philadelphia Electric Co.* (Limerick Generating Station, Units 1 & 2),

LBP-83-11, 17 NRC 413, 435 (1983). See also *Hydro Resources, Inc.*, LBP-05-26, 62 NRC 442, 472 (2005) (To comply with NEPA in this regard, "an agency must reasonably (1) consider the historic and cultural resources in the affected area; (2) assess the impact of the proposed action, and reasonable alternatives to that action, on cultural resources; (3) disseminate the relevant facts and assessments for public comment; and (4) respond to legitimate concerns."). (**0077-6-7** [Lodge, Terry])

Response: *Even though the proposed transmission lines would be built and operated by ITC*Transmission*, a separate business entity from Detroit Edison, the EIS assesses the potential impacts from building and operating the transmission lines as part of the overall Fermi 3 project. Subsections of Chapters 2, 4, and 5 addressing resource areas for which the transmission line might have impacts sharply different from site impacts (e.g., land use, terrestrial ecology, and cultural resources) have separate subheaders for transmission line text. The discussion of cumulative impacts for each resource area in Chapter 7 provides an integrated assessment of impacts from site and transmission line activities as well as impacts from other past, present, and reasonably foreseeable actions in the surrounding landscape.*

As stated in Section 4.3.1.2 of the EIS, although there could be minor impacts on wetlands during the installation of transmission towers, once the new transmission structures are installed, existing land uses, other than forest, in the transmission line corridor would subsequently be left unchanged. The review team's conclusions of minimal for land use and ecological impacts associated with development of additional transmission lines are therefore appropriate. Although, as the commenter suggests, there are various aspects to land use impacts covered in different sections of the document (e.g., habitat, vegetation), the land use section itself draws on these sections in order to provide a coordinated description of the impacts as they pertain to land use. Cumulative land use impacts of transmission line development are presented in Section 7.1 of the EIS. Impacts of transmission line building on vegetation and habitats are covered in Section 4.3.1.2 of the EIS. Given that the transmission corridor would be left unchanged once installation of towers is complete, it is unlikely that mitigation of wetland impacts, for example, as the commenter suggests and as is proposed for onsite construction through an aquatic resource mitigation strategy, would be necessary. This comment provided no new information and, therefore, does not warrant changes to the EIS.

E.2.6 Comments Concerning Geology

Comment: 2. Another example of a nuclear plant not being able to withstand cataclysmic events is the Dominion Virginia Power Plant, when it informed the NRC that "the ground motion produced by the 5.8 magnitude quake "may have exceeded" the amount of shaking the plant was designed to withstand" and "During the quake, 36 "scratch plates" at the facility recorded ground motion in three dimensions and the plant may have exceeded design basis for ground-force acceleration. Dominion said on the day of the quake that the plant would be safe up to a magnitude 6.2 earthquake. But the amount of shaking such a quake produces varies with

distance to the epicenter, depth, and the type of rock the quake occurs in. The other onsite reactor in North Anna, VA scrammed. The other reactor SCRAMMED when the earthquake made the reactor lose offsite power. The NEIS comment: “The Fukushima nuclear disaster in Japan is also viewed as being caused by the “loss of offsite power,” coupled with the failure of all available back-up power generation systems onsite. As such it is a serious problem; and was extensively addressed in the July 12th Report from the special NRC 90-day study group on the Fukushima lessons learned. It remains a major source of concern at U.S. reactors as well.” Which leads many concerned citizens to question the F3EIS. What are the depths and the type of rock the F3 reactor will be built upon and is it conducive to withstanding seismic activity with an epicenter from an earthquake in very close proximity of the facility? How is John Q. Public supposed to trust or consider an obsolete 800 page report such as proposed by the F3EIS? Perhaps a facility that cannot ensure the public safety in the event of a black swan event should be postponed until it CAN ensure public safety or worst case scenario, NOT be built at all. According to the F3EIS, “The NRC considers alternatives to a proposed action including NO ACTION.” (**0003-2-5** [Anderson, Christy])

Response: *The evaluation of seismic hazard at the Fermi 3 site is out of scope of this EIS. As mentioned in Section 2.8, site-specific seismic hazard is evaluated in Section 2.5.2 of the Safety Evaluation Report (SER). No changes were made to the EIS as a result of this comment.*

Comment: And with the increase in severe weather water events how well could the Fermi site hold up? The current Fermi 1 and 2 complexes were built on drained and filled wetlands. Filled wetland sites are unstable and should never be built on. Recent research has found that buildings that were placed on former wetlands are starting to sink and shift. Cracks were forming throughout the structures. The earth is in constant motion. The land will revert back to what it once was. The studies have found that it takes on average between 38 and 50 years for the land to revert back, depending on the type of area. Fermi, the Fermi site is headed toward that time frame. Case in point, the entire city of Syracuse, New York has been gradually sinking. It had been built on a huge filled wetland area. The entire Washington D.C. area was built on a huge swamp. A massive network of drainage pipes and sump pumps are running 365 days, 24/7, underneath the capital, to keep it from sinking. In the event of a catastrophic power grid failure, and the pump system fails, the underground will fill with water, the ground surface will become unstable, and the entire D.C. area will sink back into the muck. How well will the Fermi site hold up in the event of a massive flooding event that could undermine the ground and cause subsidence, or how well would it hold up in the event of a massive earthquake from the New Madrid fault, which seismologists predict to happen within the next 40 years, due to increased activity, and it is overdue for a big one. Will we have another Fukushima? We don’t need or want another nuclear reactor. (**0040-32-2** [Duffey, Leona])

Response: *An evaluation of the geotechnical engineering properties for the Fermi 3 site is out of scope of this EIS. The stability of subsurface materials and foundations is addressed in*

Section 2.5.4 of the SER. Seismic hazard for the Fermi site is evaluated in Section 2.5.2 of the SER. Flooding and other potential hydrological safety impacts are evaluated in Section 2.4 of the SER. No changes were made to the EIS as a result of this comment.

Comment: B. Karst Geology Is Not Sufficiently Characterized At The Fermi Site.
Section 2.5.3.8.2 of the FSAR claims that "the potential for nontectonic deformation at the Fermi 3 site is negligible,- and that - there is no evidence of nontectonic deformation at the Fermi 3 site in the form of unloading phenomenon (i.e., pop-up features), glacially-induced faulting, salt migration, dissolution or collapse related to karst, or volcanic intrusion." But Figure 1 (below), which identifies several known Karst areas in Monroe County, Michigan where the Fermi site is located, demonstrates that a more thorough search for this type of subsurface formation in the area is warranted. Two concerns related to this issue include:

Risk of future subsidence at the site that could damage the structural integrity of the reactor containment building, existing or potential radioactive waste storage facilities, and other important structures.

Risk of contamination of groundwater beyond the Fermi site via unknown flow pathways that are typically inherent in Karst formations even where obvious underground voids are not identified through bore sampling and other techniques.

More evaluation of these risks is necessary to reduce the uncertainty raised by the existence of multiple Karst formations so near to the proposed project site as shown in Figure 1. 23 EPA, UIC Well Inventory (2010), available at http://water.epa.gov/type/groundwater/uic/upload/UIC-Well-Inventory_2010-2.pdf; EPA, Underground Injection Wells in Region 5, available at http://www.epa.gov/r5water/uic/r5uicwel (**0036-3-7** [Gleckner, Allen])

Response: *The comment is focused on two aspects of karst bedrock: karst as a geologic hazard and karst as a preferential groundwater flowpath. The evaluation of geologic hazards is out of scope of this EIS. Non-seismic geologic hazards, including the potential for karst, at the Fermi 3 site are evaluated in Section 2.5.1.4 of the SER. Reeves et al. (2004) provide a study of bedrock aquifers in Monroe County. In this report, karst is noted only in southwestern Monroe County. Apple and Reeves (2007) describe the hydrogeology of each Michigan county. For Monroe County, they describe the Bass Islands Group as "beds of limestone and microcrystalline dolomite. The limestone contains small vugs and the dolomite contains vugs and fractures. Celestite and calcite are minerals that are present in the vugs." The Salina Group in Monroe County is described as, "The Salina Group consists of interbeds of dolomite, limestone, and shale. The texture of the dolomite is microcrystalline to sucrosic. The dolomite is fractured and vugs exist with crystals of calcite and celestite. Fractures and small vugs are also present in the limestone of the Salina Group." Elsewhere in their report, "karst" is used to describe bedrock in other counties, but the formations are not the Bass Islands Group or the Salina. The Fermi 3 Final Safety Analysis Report (FSAR), Revision 0 (ML082730640), includes*

drilling logs in Appendix 2.5DD. This appendix has approximately 600 pages of drilling logs for at least 53 locations, most of which are in the Fermi 3 location, and most of which are 50 to 300 ft deep and penetrate bedrock. The location map for these boreholes is shown in FSAR Figures 2.5.1-235 and 236. Karst may be indicated on drill logs by notations about observations of sample core or about tool drop during drilling. A search of karst-related words indicated no occurrences of "karst." "Void" appeared only a few times, and all described voids were filled. "Drop" occurred several times: a 0.5-ft drop at a depth of 59 ft, a 0.2-ft drop at a depth of 241 ft, a 1-ft drop in soft clay at a depth of 16 ft, a 2.5-in. drop at a depth of 200 ft, a 1-ft drop at a depth of 204 ft, and a 1-ft drop at a depth of 213 ft. "Vug" appeared numerous times, but the sizes were generally less than 0.5 in. Based on the literature, the lack of obvious karst topography, and the site drilling data, it is reasonable to assume that mature karst is not present below the site, and there is no evidence for significant preferential groundwater flowpaths. No changes were made to the EIS as a result of this comment.

Comment: In our scoping comment letter dated February 9, 2009, we commented that karst geology may be found at the Fermi site. This was not addressed in Chapter 2 of the Draft EIS, as indicated in Appendix D that it would be. Recommendation: EPA recommends that the document clarify whether or not karst geology exists at the Fermi site. If karst exists, the Applicant should identify how the proposed project will be influenced by it. The Draft EIS mentions 0.88 acre in the southeastern part of the Fermi site as mineral rights not owned by the Applicant. Part of the proposed project includes the relocation of the meteorological tower to the southeastern part of the Fermi site. Recommendation: EPA recommends clarifying whether these areas overlap and, if they do, what plans, if any, the Applicant has to acquire the minerals rights below the proposed meteorological tower. The Final EIS should show this area, where the Applicant does not own mineral rights, on site maps. (**0078-4** [Westlake, Kenneth A.])

Response: *The evaluation of geologic hazards is out of scope of this EIS. Non-seismic geologic hazards, including the potential for karst, at the Fermi 3 site are evaluated in Section 2.5.1.4 of the SER. Regarding mineral rights, it is currently unclear as to how the proposed new meteorological tower's location relates to the Michigan Department of Natural Resources (MDNR) mineral rights area. No changes were made to the EIS as a result of this comment.*

E.2.7 Comments Concerning Hydrology - Surface Water

Comment: "Water produced during excavation dewatering would likely be discharged to Swan Creek...." (v 1, p 4.13) Poor, pitiful, already polluted Swan Creek. (**0016-3-27** [Collins, Jessie])

Response: *The commenter is correct, in that water produced during excavation will be discharged to Swan Creek. The commenter is concerned that this discharge could affect Swan Creek. As discussed in Section 4.2 of the EIS, discharge of groundwater that is pumped during excavation dewatering would comply with all applicable permits and stipulations in order to*

prevent or reduce potential impacts on water resources. No changes were made to the EIS as a result of this comment.

Comment: "Dredged sediments would be disposed of in the Spoils Disposal Pond (Figure 4.1) .....Discharge associated with Fermi 3 dredging activities would be regulated under the existing Fermi 2 NPDES permit, which allows 450 million gallons per year (v 1, p 4.19) to be discharged from the pond." Is that 450 million gallons discharged from only one of the three ponds? (**0016-3-29** [Collins, Jessie])

Response: *There is only one Spoils Disposal Pond, and it is shown on Figure 4-1 of the EIS. The Disposal Pond has an existing National Pollutant Discharge Elimination System (NPDES) permit that allows 450 million gal/yr to be discharged from the pond. This pond would be used to dispose of sediments dredged for the Fermi 3 project. No changes were made to the EIS as a result of this comment.*

Comment: We have reviewed the proposed plans such that concerns with the construction project will likely produce soil erosion and may increase sediment transport into Lake Erie. Lake Erie is the source of both water systems and due to the site work proximity to the intakes used to draw raw water from the lake, we are concerned that a decrease in raw water quality may result from the project conversely increasing water treatment plant costs to treat the water to safe drinking water standards. (**0024-3** [Laroy, Barry])

Comment: Below is a letter from the City of Monroe Water System speaking to the concerns and potential for damage to the City Water Intake and overall quality of water. We adopt those concerns as ours Intervenors as well.

From: Laroy, Barry [barry.laroy@monroemi.gov]
Sent: Sunday, December 11, 2011 8:16 PM
To: Fermi3COLEIS Resource
Cc: Knight, Christopher; Brown, George

Subject: Fermi 3 Project Comments

To Whom it May Concern:

The City of Monroe Water System is generally in favor of the overall Fermi 3 project. The City of Monroe is located adjacent to Frenchtown Charter Township such that the City & Frenchtown co-own a raw water facility (Raw Water Partnership) used to serve potable water to their respective retail and wholesale customers. The City of Monroe maintains the raw water facility for the partnership were Lake Erie is the raw water source. Between both water systems, approximately 75,000 people are served potable water. The City of Monroe and Raw Water Partnership are in receipt of the correspondence for the proposed Fermi 3 Project.

The project will aid in employment opportunities and retail revenue for Monroe County. We have reviewed the proposed plans such that concerns with the construction project will likely produce soil erosion and may increase sediment transport into Lake Erie. Lake Erie is the source of both water systems and due to the site work proximity to the intakes used to draw raw water from the lake, we are concerned that a decrease in raw water quality may result from the project conversely increasing water treatment plant costs to treat the water to safe drinking water standards. (**0059-8** [Keegan, Michael J.])

Response: *Any active construction site could result in sedimentation from stormwater runoff. These effects are controlled and managed onsite by best management practices (BMPs) and permitted under the NPDES permit issued by the MDEQ. Impacts on water quality and local water users are not expected. No changes were made to the EIS as a result of these comments.*

Comment: I was dismayed to see the chart of Lake Erie water usage: 56,024 million/gallon/per day and power plants drew 50,518 of them! All other uses added up to ten percent of the power plant uses. (v 1, p 2.24) Could that use be connected to the NUREG 2105 prediction, "Recent studies of the effects of climate change indicate that there could be declines in the overall Lake Erie water levels of 1 to 2 meters."? (v 1, p 2.25) I think the glut of water going to the power plants might get blamed on climate change. (**0016-1-16** [Collins, Jessie])

Comment: I was dismayed to see the chart of Lake Erie water usage: 56,024 million/gallon/per day and power plants drew 50,518 of them! All other uses added up to ten percent of the power plant uses. (v 1, p 2.24) Could that use be connected to the NUREG 2105 prediction, "Recent studies of the effects of climate change indicate that there could be declines in the overall Lake Erie water levels of 1 to 2 meters. (v 1, p 2.25) I think the glut of water going to the power plants is not sustainable in the long term and might get blamed on climate change.
(**0026-6-6** [Macks, Vic])

Response: *The comments express concern that the potential water level declines in Lake Erie of 1 to 2 meters may be the result of water use for power plant operations, instead of a result of climate change. Section 2.3.2.1 has been updated to present the most recent information on potential declines in Lake Erie water levels as a result of climate change. The report by Hartig et al. (2007) that was cited in the Draft EIS relies largely on climate modeling results published in 1990. A more recent study released in 2009 by the U.S. Global Climate Change Research Program (USCGRCP) indicates that under the highest emissions scenario (worst case), Lake Erie water levels could decline by up to 1.5 ft by 2099. Section 2.3.2.1 has been updated with this information. The comment also cites the number presented in Table 2-4 of 56,024 million gpd as the total amount used in 2006. This number is not total consumptive water use but is the total amount of water withdrawn. That table also indicates that only 477 million gpd of water was consumptively used in 2006 for all uses, while the remaining 55,547 million gpd was returned to the Lake Erie basin. Thus, the consumptive use of water was less than 1 percent of*

total withdrawals from the basin. Section 7.2 of the EIS discusses the cumulative impact of past, present, and reasonably foreseeable future projects or actions including climate change on Lake Erie. Based on this analysis, the review team concluded that potential future impact on water levels in Lake Erie would be due to climate change, not the building or operation of Fermi 3.

Comment: Because they need a large supply of water as coolant, they are created along rivers and lakes. They pose a threat to the water quality wherever they exist. (**0042-3** [Barnes, Kathryn])

Response: *The incremental impact from the Fermi 3 plant is anticipated to be SMALL. The permits required by the MDEQ would require compliance with State of Michigan water quality limits. No changes were made to the EIS as a result of this comment.*

Comment: An example of this is the Nebraska Fort Calhoun facility. Currently, this facility has declared a Notification of Unusual Event (minimal level on a 4 level taxonomy) as required by Nuclear Regulatory Commission guidelines. Apparently, extreme flooding was not accounted for when this reactor was built. Nuclear safety rules in the United States do not adequately weigh the risk of a single catastrophic event such as flooding. A flood assessment performed by the Nuclear Regulatory Commission in 2010 indicated that the Fort Calhoun Nuclear Generating Station, "did not have adequate procedures to protect the intake structure and auxiliary building against external flooding events." The assessment also indicated that the facility was not adequately prepared for a "worst-case" flooding scenario. http://pbadupws.nrc.gov/docs/ML1113/ML111370123.pdf A report was prepared and presented to the facility A YEAR IN ADVANCE but nothing was ever done to ensure it was acted upon. A perfect case of the fox watching the hen house! Not only are old Nuclear facilities unprepared for "Black Swan events" due to climate change the NRC, USACE and Nuclear industry can't even be counted on to enforce these safety reports presented to these facilities! A black swan event is a rare event that has HUGE repercussions. A rare event especially one that has never occurred - is difficult to foresee, expensive to plan for and easy to discount with statistics. Just because something is only supposed to happen every 10,000 years does not mean that it will not happen tomorrow. Over the typical 40-year life of a plant, assumptions can also change, as they did on September 11, 2001, in August 2005 when Hurricane Katrina struck, and in March after Fukushima. If nuclear energy is necessary, then these bodies of people must ENSURE that facilities can cope with extreme natural events NO MATTER HOW UNLIKELY. (**0003-2-4** [Anderson, Christy])

Comment: The Risk Of Damage From Seiche Events Is Not Fully Considered.

The Draft EIS does not adequately address the potential risk to structures at the Fermi 3 site due to high water. Table 2-3 of the Draft EIS gives the average elevation of Lake Erie as 571.6 feet and the design elevation of Fermi 3 safety structures as 589.3 feet (North American Vertical Datum of 1988). This results in a 17.7 feet elevation difference between safety

structures and average lake level. Sec. 2.3.1.1 of the Draft EIS describes wind-driven surges in lake levels, or seiches, that can occur during sustained heavy weather and that result in subsequent oscillations of water levels until a stable equilibrium is reached. The FSAR identifies seiches in the western basin of Lake Erie in Toledo that yielded a maximum recorded rise of 6.3 feet and a maximum recorded fall of 8.9 feet for the period 1941 to 1981. But beyond the water level increase from a seiche alone, there can be significantly high waves that must be fully considered in the risk analysis. For example, during one storm in November 2003, the water level at Buffalo on Lake Erie rose by 7 feet with waves of 10-15 feet for a rise of 22 feet. Therefore, water levels that have been recently recorded in Lake Erie topped the design elevation of Fermi 3 safety structures by more than 4 feet. The Draft EIS fails to address this obvious discrepancy and describe the environmental impacts that would occur if Fermi 3 were to be flooded by such an event. (**0036-3-9** [Gleckner, Allen])

Response: *These comments express concerns about safety of the proposed nuclear power plant in the event of flooding. Because NEPA regulations do not address safety issues, these comments are out of scope of the review team's environmental review. A safety analysis report was provided as part of the COL application. The NRC staff is developing a SER that analyzes all aspects of reactor and operational safety including flooding events. The primary purpose of the EIS is to evaluate the environmental impacts resulting from the construction and operation of the proposed plant during normal environmental conditions. Therefore, no changes were made to the EIS as a result of these comments.*

Comment: With an estimated consumptive footprint of 20-25 million gallons per day, the Fermi 3 facility will most certainly be subject to a "regional review" from the various states and provinces within the Compact. Id. at 5-8. The review by the states and provinces will likely require voluminous information from Detroit Edison in order to gain approval from the Parties for their desired levels of withdrawal and consumption. Great Lakes Compact Section 4.3. Each party will be able to review whether Edison's proposed usage is consistent with the Compact based on a number of factors, most notably whether "withdrawal or consumptive use will be implemented so as to ensure that the Proposal will result in no significant individual or cumulative adverse impacts to the quantity or quality of the Waters and Water Dependent Natural Resources and the applicable Source Watershed" and whether "the withdrawal or consumptive use will be implemented so as to incorporate Environmentally Sound and Economically Feasible Water Conservation Measures." Great Lakes Compact Section 4.11. Based on the statistics given within the DEIS, Edison and the reviewing agencies will likely find that standard difficult to meet.

The DEIS states that the Fermi 3 facility will withdraw around 50 MGD of water, and consume about half that; 20-25 MGD. DEIS at 5-8. In comparison, the reviewing agencies note that "between 2000 and 2006, the US and Canadian power plants withdrew an average of 168 MGD from Lake Erie and consumed an average of 14 MGD, amounting to an average consumption

rate of 8%." Id. at 2-23. Fermi 2, which accounted for about half of that average daily withdrawal for the entire lake, had a consumption rate of about 40%, far higher than other facilities. Id. Therefore, the proposed Fermi 3 facility, while withdrawing less water than its counterpart Fermi 2, will actually consume a great deal more water. In fact, the Fermi 3 plant will consume far more water per day than all of the nuclear facilities on Lake Erie combined on average from 2000-2006. Id. at 2-23.

The review team states in the DEIS that an estimated annual consumption of 7.6 billion gallons of water would only amount to about 4% of the current total consumptive use of Lake Erie, dismissing this percentage as a small impact and concluding that mitigation is not warranted. Id. at 5-8, 5-9. With this new facility estimated to take up such a large amount of consumptive use in comparison to its peer facilities and industrial use as a whole, the Party states to the Compact may not agree with the reviewing agencies under the standard of review set forth in the Great Lakes Compact, and find the use per se unreasonable. When looking at the long-term health of the Great Lakes Basin, the Party states are likely to note that climate change could put increasing pressure on the lake as water levels decrease and consumption from all sectors increases. The DEIS notes that "potential increases in Lake Erie water temperature resulting from climate change could increase the amount of cooling water needed for operation of the proposed Fermi 3 and other major users. Therefore, the operations of Fermi and other thermoelectric plants on Lake Erie could be altered as a result of climate change." Id. at 7-10, 7-11. (**0038-2-2** [Schroeck, Nicholas Joseph])

Response: *The NRC does not have the authority or responsibility to regulate or manage water resources. It is the responsibility of the applicant to secure all permits required to operate Fermi 3, including a Water Withdrawal Permit from the MDEQ. Ultimately, once-through cooling does result in a substantial consumption of water through surface evaporation of the receiving waters. The staff agrees that the operation of Fermi 3 and other thermal electric plants on Lake Erie could be affected by climate change as discussed in Section 7.2.1. This comment did not result in any changes to the EIS.*

Comment: Second point is the environmental impacts are grossly miscalculated. All ready mentioned has been the algae problems and the problems of the waste. I just want to touch on something which was mentioned earlier in this hearing, that this is only going to affect .012 percent of Lake Erie. Well, that sounds small, except Wikipedia tells us that there's 1.277 x 10 to the 24th gallons of water in Lake Erie. Much of the public's acceptance that, the idea that the public will accept nuclear power is based on the idea, the belief that we can't do math. Well, .012 percent of 1.2 x 10 to the 24th gallons, and I'm going to make a deliberate math error here, you're talking 1 x 10 to the 19th gallons of water. If, you know, that's a 1 with 19 zeros after it. I don't even, I have to admit I don't know what that's called, math-wise, a billion quadrillion trillion? I don't know, but if that amount of water were suddenly to be released, let's say, from a dam that was just to the west of us, this entire campus, along with the nuclear plant and the coal

plant down the way, we'd all get washed into Lake Erie. We're talking a lot of water. And the NRC is incorrect when they categorize this as a small impact. This is a large impact. This is not a moderate impact. This is not a small impact. This is a large impact by any measure and so, must be addressed as such in the Environmental Impact Statement. (**0039-23-2** [Demare, Joe])

Response: *There are 128 trillion gallons of water in Lake Erie. Fermi 3 would consumptively use approximately 7.6 billion gallons of water per year. No changes were made to the EIS in response to this comment.*

Comment: The first issue I wanted to talk about, there is a great deal in section two of the EIS that talked about the recordkeeping that was done on Lake Erie, about water levels, and that the records go back 100 years. And that all of the variations for the last 100 years have been accommodated by the plant design. I just humbly would like to suggest that the last 100 years are not the 100 years we need to worry about. And that there is an issue of global warming that is happening, and we need to understand what the effect of that is going to be on the lake system, and whether the water levels of the lakes will be going up or going down. And I was hoping that in the process of applying for this construction permit, that there might be an analysis by some climatologist to look at the various models that might be occurring in the next 100 years, so that whatever plan goes forward we can accommodate those situations. (**0040-19-1** [Dean, Dan])

Response: *In Section 7.2 of the EIS, the review team discusses the potential impacts of climate change on water levels in Lake Erie through the year 2060, which is near the end of the operating license period for Fermi 3. This discussion is based on predictions from a compilation of regional studies that evaluate potential impacts up to the year 2100. No changes were made to the EIS in response to these comments.*

Comment: Lake Erie is the shallowest of all the great lakes, and has over one-half of all the consumable fish in the great lakes. Most of those consumable fish spawn and begin their lives right here in the western basin of Lake Erie. Fermi 3 is proposed on the shores of the far western basin of Lake Erie, where the average depth of water is only 24 feet and where nearby Maumee Bay's waters have an average depth of only five feet. The Great Lakes Compact passed by Congress and voted on by all the great lake states, governs water use and withdrawals. The State of Michigan passed implementing legislation for the Great Lakes Compact and adopted a water withdrawal assessment tool for evaluating water withdrawals in Michigan waters. I see no reference to the Great Lakes Compact, the water withdrawal assessment tool and results in the Draft Environmental Impact Statement. It would seem that this assessment is required by law, and the results should be publicly shared for comment in the Environmental Impact Statement. (**0039-21-1** [Bihn, Sandy])

Comment: In addition Section 5.221 Line 1 after line 16 states that the Great Lakes Compact of 2008 requires that any new water use of more than 5 MGD be subjected to a regional review,

So Fermi 3 would be subject to such a review by the other Great Lakes States and provinces. While this statement is correct, the State of Michigan has also adopted a water withdrawal model that should be part of this review.

In addition there is a 2011 report by Limnotech that shows the algae in the area of where Fermi 3 is to be built which is not reported or discussed in the EIS. (**0059-10** [Keegan, Michael J.])

Response: *These comments state that the requirements of the Great Lakes Compact Water Withdrawal Permit for all new withdrawals of more than 5 million gpd should be explained in detail within the EIS. The requirements of the Great Lakes Compact 4.11 are met by the State of Michigan under the MDEQ Large Quantity Withdrawal Permit through the authority of MCL 324.32723 as listed in Table H-1. Although the permits required for the proposed actions are listed and discussed as part of the EIS, it is not within the scope of the EIS to explicitly list each requirement of the necessary permits. This is typically done by the applicant within the respective permit applications. However, general bounding requirements are mentioned within EIS Section 2.3, Water; Section 5.2, Water-Related Impacts; and Appendix H, Table H-1 - Authorizations, Permits, and Requirements. The text in Section 2.3.2.1 has been revised to provide a callout to the listing of this requirement in Table H-1.*

The State of Michigan's water withdrawal assessment tool is not applicable to withdrawals within Lake Erie, because the tool is designed for withdrawals related to flows in rivers. Reference to this tool does not need to be made within the Fermi 3 EIS.

The comments do not specify the details of which 2011 LimnoTech report is being referred to in the comment. The review team examined various 2011 LimnoTech reports and presentations pertaining to algal production, eutrophication, and nutrient levels obtained from the LimnoTech Web site (http://www.limno.com/publications.html). Although some of these reports indicate specific areas of nutrient enrichment and algal production within the western basin of Lake Erie, there was no specific indication in those reports and presentations that the area of the western basin in the vicinity of the Fermi site supported elevated levels of harmful algal production.

Comment: Lake Erie's shallow western basin cannot tolerate the thermal pollution from yet one more large-scale thermo-electric power plant. Lake Erie already faces major lake level loss and retreat of its waters from the current lakeshore due to climate change. It already has a significantly higher air temperature than the rest of the Great Lakes, which contributes to evaporation of Lake Erie's waters. Such water loss will exacerbate overheating, especially in the shallow waters of Lake Erie's western basin, with a current average depth of just 24 feet. (**0058-15** [Kamps, Kevin])

Response: *This comment expresses concern over the cumulative impact of thermal discharges from this project and other operating power plants on Lake Erie when coupled with the effects of climate change. The commenter is reminded that this is a closed cycle plant that*

dissipates almost all of its waste heat to the atmosphere, not Lake Erie. Section 5.2.3 of the EIS provides a description of modeling that was performed by Detroit Edison and verified by the review team to evaluate the effects of discharged cooling waters on Lake Erie. This model incorporated conservative values for input parameters specific to Fermi 3 and the area of Lake Erie where cooling water will be discharged in order to evaluate the largest potential thermal impact. The review team also evaluated the combined impacts of the building and operation of Fermi 3; other past, present, and reasonably foreseeable future actions; and climate change on the quantity and quality of water within Lake Erie. Based on this analysis, the review team concluded that potential future impact on water levels in Lake Erie would be due to climate change, not the building or operation of Fermi 3. The cumulative impact of these projects on Lake Erie is discussed in Section 7.2 of the EIS. No changes were made in the EIS as a result of this comment.

Comment: We need to make better resource decisions in this, points to our one, two consumption of the entire Lake Erie lake volume. This is a lot of water, even for one little nuclear power plant. (**0040-17-8** [Noonan, Henry])

Response: *The comment implies that water usage by Fermi 3 is not acceptable because it is large. Sections 4.2, 5.2 and 7.2 of the EIS illustrate that despite the consumptive use, a SMALL impact on water quantity is predicted. This comment did not result in any changes to the EIS.*

Comment: Is there a limit on the heat temperature of waste water released into Lake Erie? "When the Turbine Bypass System is in operation, the temperature of the discharge could reach up to 96 degrees." (v 1, p 3.35) (**0016-3-24** [Collins, Jessie])

Comment: Is there a limit on the heat temperature of waste water released into Lake Erie? "When the Turbine Bypass System is in operation, the temperature of the discharge could reach up to 96 degrees." (v 1, p 3.35) Is the public informed of actual real time temperature of releases? Where and how? (**0026-6-20** [Macks, Vic])

Comment: The added impact on our lake of discharging 34,000 gallons a minute of water, reaching temperatures of up to 96 degrees is an additional concern. Again, Lake Erie is a warm and shallow lake. The impact of Fermi 2's discharge water is already impacting and the additional of Fermi 3 will not be tolerated. We all need drinking water, and Lake Erie is where I get mine. (**0040-34-4** [Berlucourt, Kerry])

Response: *Section 5.2.3 of the EIS discusses the thermal discharge and resulting impact of that discharge on Lake Erie. Table 5-2 presents anticipated monthly maximum temperatures of discharges of cooling water. No changes were made to the EIS as a result of these comments.*

Comment: One of the things that's troubling, I think, in the EIS is that it evaluates this facility compared to all of Lake Erie, and the water in the western basin turns over every 30 to 45 days,

the water in the lake every two-and-a-half years. So it does not look at the western basin specifically, and the quantity of water being used here is said to be .012, but that's when referenced to the whole lake, not to the western basin, which is the hub of the fish growth and the hub of the algae problem. (**0039-21-5** [Bihn, Sandy])

Comment: Section 5.221 line 12 and forward discusses the volume of water that Detroit Edison will use for Fermi 3. The estimate provided is .006 percent of the total volume of water in all of Lake Erie. Fermi 3 is to be located in the shallowest part of Lake Erie--the western basin which holds only 5% of the total volume of Lake Erie water. Rather than .006 percent of the total Lake Erie water volume, the EIS should base the analysis of water in the Western Lake Erie basin. This means that the volume of water used would be .1727 percent of the western Lake Erie volume. This is based on 5% of 116 cubic miles = 5.8 cubic miles, .00006 times 116 equals .00696 cubic miles, .00696/5.8 cubic miles equals .12% of the water use in western Lake Erie where the plant is located, significantly more than .006% in the report. Furthermore, the total volume of water used by DTE from western Lake Erie in the Monroe, Michigan area adds up to 4.8% of the water in the western basin of Lake Erie. Given the current algae crisis in Lake Erie, especially western Lake Erie the volume of water used in the basin with the increased discharge temperature decrease western Lake Erie water quality and increase algae growth. (**0044-2** [Bihn, Sandy])

Response: *The commenter suggests that the water use for Fermi 3 should be compared to the volume of water in the western basin of Lake Erie. Text has been added to Section 5.2.2.1 that compares the water use for Fermi 3 to the volume of water in the western basin of Lake Erie, in addition to the current analysis that compares water use for Fermi 3 to the entire volume of Lake Erie.*

The effects of the proposed Fermi 3 thermal plume associated with the discharge of cooling water on ecological conditions in Lake Erie are evaluated in Section 5.3.2.1 of the EIS, and Section 5.3.2.3 includes a subsection devoted to the potential for operations of the station to affect invasive nuisance organisms. In that section, the potential for invasive species (including various species of invertebrates, fish, and algae) to use the thermal plume associated with the cooling water discharge for Fermi 3 as a refuge from unsuitable natural conditions in Lake Erie is discussed. In addition, the potential contribution of the construction and operation of the proposed Fermi 3 to the overall cumulative impacts on water quality and algal production in Lake Erie are evaluated in Chapter 7 of the EIS. Based upon the evaluation, the review team concluded that the area that would be affected by the thermal plume associated with operation of Fermi 3 would be small and the effect on aquatic biota, including invasive species, would be minor.

Comment: Monroe County already hosts DTE's Monroe (Coal) Power Plant, at 3,000 megawatt-electric, one of the largest in the U.S. It also hosts DTE's Fermi 2 nuclear reactor, as well as Consumers Energy's Whiting Coal Plant. Due to such facilities, many billions

of gallons of water are withdrawn from Lake Erie by Monroe County each and every day - an incredibly high percentage of water usage in all of Michigan - and returned super-heated. Additional nuclear reactors and coal plants in northwest Ohio also contribute heat to Lake Erie's western basin. As already seen throughout the Great Lakes, such overheating could even force the shutdown of thermo-electric power plants on hot summer days, significantly impacting the reliability of the electric grid. (In fact, Fermi 3, at 1,560 megawatts-electric, would introduce significant grid instability if it ever shut down for an extended period for any reason whatsoever, thus increasing potential electricity reliability risks that could well require massive purchases of expensive replacement power.) Given this massive thermal pollution, Fermi 3 should be required to utilize the best available dry cooling tower technology, to minimize or even eliminate water withdrawals from, and heat discharges, into Lake Erie. In addition, DTE's Monroe Coal Plant should be required to install an additional best-available technology cooling tower. (**0058-16** [Kamps, Kevin])

Response: *Operational impacts on water quality and use from the heat dissipation system proposed by Detroit Edison, a natural draft cooling tower (NDCT), were discussed in Section 5.2 of the EIS. Cumulative impacts on water use and quality were discussed in Section 7.2. As noted in Section 5.2, the review team defers to MDEQ for a determination of the acceptability of proposed water withdrawals and discharges and expects that the required NPDES permit that would be issued by MDEQ will include appropriate limitations for thermal as well as pollutant discharges, based on MDEQ's consideration of cumulative impacts. In addition to its evaluation of the proposed heat dissipation system, in Section 9.4, the review team evaluated the technical feasibility and environmental impacts of alternative heat dissipation systems, including dry cooling towers, and found none to be environmentally superior to the proposed NDCT system. No changes were made to the text of the EIS as a result of this comment.*

Comment: Because...There are also two water intakes on Lake Erie and in the vicinity of the Fermi site for public water supply: the Frenchtown Water Plant, which uses 8 million gallons per day (MGD), and the Monroe County Water Plant, which uses 7.5 MGD (Frenchtown Charter Township 2010; AWWA 2009). The impacts of these two water plants and the other projects listed in Table 7-1 are considered in the analysis in Sections 4.2 and 5.2 and would not be detectable or would be so minor that they would not affect surface water use. (**0059-15** [Keegan, Michael J.])

Response: *The incremental impact on water use from Fermi 3 is anticipated to be SMALL. The permits required by the MDEQ would require compliance with State of Michigan water quality limits. No changes were made to the EIS as a result of this comment.*

Comment: Reports on 2007 water samples from within Lake Erie, 2008. leaks and spills of harmful substances such as chlorine, ethylene glycol, sanitary waste, diesel oil and grease and others were reported, but specifics on recent monitoring were not provided. (**0070-11** [Rivera, Ethyl])

Response: *Section 2.3 of the EIS presents water quality monitoring data for Lake Erie from 2007 through 2009. The water quality monitoring program was undertaken to increase the knowledge of baseline conditions. These data are in addition to the water quality data collected regularly through the NPDES program, which is regularly reported to the MDEQ. MDEQ maintains oversight and ensures compliance with the NPDES program. No change was made to the EIS as a result of this comment.*

Comment: Fermi 3's intake and outfall is Lake Erie but during at least some conditions the intake and outfall would impact the nearby Maumee Bay estuary, the average depth of which is just five feet, and which is already impacted by the neighboring DTE Monroe coal burning power plant, which uses an average of 1.9 billion gallons of water a day, as well as the adjacent Fermi 2 nuclear plant, which uses an additional tens of millions of gallons a day. Such impacts must be evaluated. (**0058-17** [Kamps, Kevin])

Comment: .. The extremely high volumes of water to be taken from and then returned in much-decreased quantities and with higher temperatures to Lake Erie which has been under assault in the past 20+ years from Fermi 2 and DTE's nearly coal-fired facility. (**0070-13** [Rivera, Ethyl])

Response: *These comments express concern over the combined effect of the operation of the proposed facility and other nearby currently operating power plants, including Fermi 2 and the Bayshore Power Plant on the quality and quantity of water within Lake Erie. Maumee Bay is more than over 15 mi south/southwest of the Fermi site. As explained in Section 5.2.3.1 of the EIS, parameters included in Model Set 3 of the thermal plume modeling were chosen to create the worst case impact on the shoreline. Despite this, model results indicate that the plume dissipates within 1300 ft of the shoreline near Fermi 3. As a result, at this distance, no interaction between the Fermi 3 thermal plume and the discharges from power plants located on Maumee Bay is expected. The review team evaluated the combined impacts of the proposed action and other past, present, and reasonably foreseeable future actions in the region of interest surrounding the Fermi 3 site on both the quantity and quality of water within Lake Erie. A list of the past, present, and reasonably foreseeable future projects considered within the cumulative analysis are presented in Table 7-1 of the EIS. The impact of these projects on Lake Erie is discussed in Section 7.2 of the EIS. No changes were made in the EIS as a result of these comments.*

Comment: Consumptive Water Use Issues
The DEIS analyzes the effect of the project on the adjacent bodies of water in a number of its sections, including water consumption. Although there are impacts to groundwater and adjacent streams in the construction of Fermi 3, "the primary water body of concern is Lake Erie, which would be the sole source of water to Fermi 3 and would receive the majority of the discharged from Fermi 3." DEIS at 2-26. Thus, the primary concern of the reviewing agencies should also be on the effect of the Fermi 3 operations on Lake Erie.

With Lake Erie under increasing stress from various uses and interests, and tensions increasing due to the presence of so many different interests and actors trying to manage one large hydrologic system, the various states and provinces created and ratified the Great Lakes Compact in 2008 as a framework to "act together to protect, conserve, restore, improve and effectively manage the Waters and Water Dependent Natural Resources of the Basin under appropriate arrangements for intergovernmental cooperation and consultation." Great Lakes Compact ..1.3(2)(a). Within this framework the states created a system by which all actors attempting to withdraw or consume large amounts water from the Great Lakes must seek approval from the various state actors that are party to the agreement. The review team accurately cites this approval requirement with the DEIS, stating that "with the passing of the Great Lakes Compact in 2008, any new water withdrawals within the Great Lakes Basin that would result in a consumptive use of 5 MGD [million gallons per day] or more were made subject to review by all of the States and provinces in the region." DEIS at 2-25. This requirement, however, is merely mentioned within a single section and is not properly addressed by the DEIS (**0038-2-1** [Schroeck, Nicholas Joseph])

Comment: Consumptive water uses from the Great Lakes Basin have not been properly addressed in accordance with the Great Lakes Compact, and the required approval process and approvals, if any, are not delineated in the DEIS, in violation of NEPA. More text supporting the comment is provided by the commenter.

Intervenors cite in support of this contention the comment letter submitted by the Great Lakes Environmental Law Center (GLELC), an expert organization located in Detroit which associates with the Wayne State University Law School's Environmental Law Clinic. GLELC's comments are of sufficient quality to be considered as the following three contentions.

The DEIS analyzes the effect of the Fermi 3 project, including water consumption, on the adjacent bodies of water. Although there are impacts to groundwater and adjacent streams in the construction of Fermi 3, "the primary water body of concern is Lake Erie, which would be the sole source of water to Fermi 3 and would receive the majority of the discharged from Fermi 3." DEIS at 2-26.

With Lake Erie under increasing stress from various uses and interests, and tensions increasing due to the presence of so many different interests and actors trying to manage one large hydrologic system, the various states and provinces created and ratified the Great Lakes Compact in 2008 as a framework to "act together to protect, conserve, restore, improve and effectively manage the Waters and Water Dependent Natural Resources of the Basin under appropriate arrangements for intergovernmental cooperation and consultation." Great Lakes Compact § 1.3(2)(a). Within this framework, the states created a system by which all actors attempting to withdraw or consume large amounts water from the Great Lakes must seek approval from the various state actors that are party to the agreement. The review team accurately cites this approval requirement with the DEIS, stating that "with the passing of the

Great Lakes Compact in 2008, any new water withdrawals within the Great Lakes Basin that would result in a consumptive use of 5 MGD [million gallons per day] or more were made subject to review by all of the States and provinces in the region." DEIS at 2-25. This requirement, however, is merely mentioned within a single section and is not properly addressed by the DEIS.

With an estimated consumptive footprint of 20-25 million gallons per day, the Fermi 3 facility will most certainly be subject to a "regional review" from the various states and provinces within the Compact. Id. at 5-8. The review by the states and provinces will likely require voluminous information from Detroit Edison in order to gain approval from the Parties for their desired levels of withdrawal and consumption. Great Lakes Compact §4.3. Each party will be able to review whether Edison's proposed usage is consistent with the Compact based on a number of factors, most notably whether "withdrawal or consumptive use will be implemented so as to ensure that the Proposal will result in no significant individual or cumulative adverse impacts to the quantity or quality of the Waters and Water Dependent Natural Resources and the applicable Source Watershed" and whether "the withdrawal or consumptive use will be implemented so as to incorporate Environmentally Sound and Economically Feasible Water Conservation Measures." Great Lakes Compact §4.11. Based on the statistics given within the DEIS, Edison and the reviewing agencies will likely find that standard difficult to meet.

The DEIS states that the Fermi 3 facility will withdraw around 50 MGD of water, and consume about half that; 20-25 MGD. DEIS at 5-8. In comparison, the reviewing agencies note that "between 2000 and 2006, the US and Canadian power plants withdrew an average of 168 MGD from Lake Erie and consumed an average of 14 MGD, amounting to an average consumption rate of 8%." Id. at 2-23. Fermi 2, which accounted for about half of that average daily withdrawal for the entire lake, had a consumption rate of about 40%, far higher than other facilities. Id. Therefore, the proposed Fermi 3 facility, while withdrawing less water than its counterpart Fermi 2, will actually consume a great deal more water. In fact, the Fermi 3 plant will consume far more water per day than all of the nuclear facilities on Lake Erie combined on average from 2000-2006. Id. at 2-23.

The review team states in the DEIS that an estimated annual consumption of 7.6 billion gallons of water would only amount to about 4% of the current total consumptive use of Lake Erie, dismissing this percentage as a small impact and concluding that mitigation is not warranted. Id. at 5-8, 5-9. With this new facility estimated to take up such a large amount of consumptive use in comparison to its peer facilities and industrial use as a whole, the Party states to the Compact may not agree with the reviewing agencies under the standard of review set forth in the Great Lakes Compact, and find the use per se unreasonable. When looking at the long-term health of the Great Lakes Basin, the Party states are likely to note that climate change could put increasing pressure on the lake as water levels decrease and consumption from all sectors increases. The DEIS notes that "potential increases in Lake Erie water temperature resulting

from climate change could increase the amount of cooling water needed for operation of the proposed Fermi 3 and other major users. Therefore, the operations of Fermi and other thermoelectric plants on Lake Erie could be altered as a result of climate change." Id. at 7-10, 7-11.

Because of the uncertainty inherent in gaining approval from the regional review process under the Great Lakes Compact for a project this size, the GLELC recommends, and Intervenors concur, that certain actions by the applicant and the reviewing agencies are indicated. First, steps should be taken to initiate an approval process under the terms of the Great Lakes Compact. Perhaps by noting the Compact review requirement in the DEIS without addressing it, the review team understands the requirements of the Compact to be separate from those that need to be outlined in an EIS process; it may in fact be an operational issue and not a construction issue, for example. However, it is clear that an approval through the regional review process of the Compact is necessary in order for the Fermi 3 facility to operate. Second, the reviewing agencies should include in the Final EIS the steps that will be taken by the relevant parties to seek and gain approval by the parties of the Compact. Included in these steps should be an explanation of why the Fermi 3 facility's large consumptive use of water, in comparison to its counterpart facility Fermi 2 as well as other peer facilities in the region, should be allowed in accordance with the principles of the Great Lakes Compact. (**0077-6-3** [Lodge, Terry])

Response: *These comments state that the requirements of the Great Lakes Compact Water Withdrawal Permit for all new withdrawals of more than 5 million gpd should be explained in detail within the EIS. The requirements of the Great Lakes Compact 4.11 are met by the State of Michigan under the MDEQ Large Quantity Withdrawal Permit through the authority of* Michigan Compiled Laws (*MCL) 324.32723 as listed in Table H-1. Although the permits required for the proposed action are listed and discussed as part of the EIS, it is not within the scope of the EIS to explicitly list each requirement of the necessary permits. This is typically done by the applicant within the respective permit applications. However, general bounding requirements are mentioned within EIS Section 2.3, Water; Section 5.2, Water-Related Impacts; and Appendix H, Table H-1 - Authorizations, Permits, and Requirements. The text in Section 2.3.2.1 has been revised to provide a callout to the listing of this requirement in Table H-1.*

Comment: The thermal plume that will result from the operation of the FERMI 3 reactor will increase the current thermal discharge to Lake Erie from the operation of the FERMI 2 reactor. While the current proposed design attempts to minimize the area and volume of water influenced by the temperature increase from the discharge plume, the expected affects are likely to be more significant on Lake Erie resources in the area of the project than the DEIS suggests. The Department requests that a detailed thermal analysis be conducted as part of the EIS process for this project that fully examines the effects of operating this additional reactor on

the water temperature regime in the western basin of Lake Erie. This analysis should include an evaluation of the effects of the likely thermal plume from this expanded project on fish and wildlife resources in the project area, the cumulative effects of this project on western basin water temperatures when other thermal discharges are considered, and recommended best available technologies to effectively minimize these thermal effects. (**0052-1** [Dexter, James])

Response: *This comment expresses concern over the operational impacts and cumulative impact of thermal discharges from this project and other operating power plants on Lake Erie. Section 5.2.3 of the EIS provides a description of modeling that predicts various physical characteristics of the thermal plume under varying conditions. The modeling was performed by Detroit Edison and verified by the review team. The results of the modeling effort are used to evaluate the effects of discharged cooling waters on Lake Erie. This model incorporated conservative values for input parameters specific to Fermi 3 and the area of Lake Erie where cooling water will be discharged in order to evaluate the largest potential thermal impact. The review team also evaluated the combined impacts of the building and operation of Fermi 3; other past, present, and reasonably foreseeable future actions; and climate change on the quantity and quality of water within Lake Erie. Based on this analysis, the review team concluded that potential future impact on water levels in Lake Erie would be due to climate change, not the building or operation of Fermi 3. The cumulative impact of these projects on Lake Erie is discussed in Section 7.2 of the EIS. No changes were made in the EIS as a result of this comment.*

Comment: p. 7-14,15 Surface water quality impacts include sediment loading, and thermal and chemical discharges from the proposed Fermi 3. Thermal and chemical (i.e., biocides, metal and organic compounds) discharges from Fermi 3 would be required to meet applicable NPDES permit requirements, health standards, regulations, and total maximum daily loads (TMDLs) mandated by MDEQ and EPA. On the basis of its evaluation, the review team concluded that the cumulative impacts on surface water quality would be MODERATE; however, the cumulative impacts of building and operating Fermi 3 would not contribute significantly to the overall cumulative impacts in the geographical area of interest. Therefore, the incremental impacts from NRC-authorized activities would be SMALL, and no further mitigation would be warranted. Further mitigation? It sounds like no mitigation at all beyond meeting minimum water quality standards. If the impact is moderate, should not the NRC require some mitigation? Why is it acceptable that meeting “applicable NPDES permit requirements, health standards, regulations, and total maximum daily loads (TMDLs) mandated by MDEQ and EPA” is sufficient, when other energy sources (efficiency and renewables) would have far less impact? (**0034-4-5** [Welke, Jim])

Response: *The incremental impact from Fermi 3 to the overall cumulative impact on surface water quality is anticipated to be SMALL. The permits required by the MDEQ would require compliance with State of Michigan water quality limits. No changes were made to the EIS as a*

result of this comment. This comment also suggests that alternative energy sources with less potential impact be considered instead of the proposed Fermi 3. An evaluation of alternative energy sources was performed, and potential benefits and impacts were compared to the proposed Fermi 3 project in Section 9.2 of the EIS. Results of this evaluation are presented in Tables 9-5 and 9-6 of the EIS.

Comment: Thermal Pollution Impacts
Similar to its analysis with respect to consumptive use issues, the DEIS notes the issues with thermal pollution on its discharge cooling water into Lake Erie but does not properly evaluate these issues as serious and fails to provide potential mitigation options for the Fermi 3 facility. As the review team is well aware, Lake Erie is under a number of stresses, and in particular the stress caused by warmer temperatures has lead to historically bad algae blooms that create a toxic environment for much of the natural aquatic flora and fauna. The review team notes this, stating that "current water quality concerns with regard to Lake Erie include (1) increased phosphorus loading from regional agricultural activities, which cause toxic algal blooms." DEIS at 2-26. Additionally, the reviewing agencies also determined through sampling that area of lake adjacent to Fermi 3 was consistent with other stressed areas of the lake, with "elevated levels of nutrients including total phosphorus, orthophosphorus, nitrate and nitrite nitrogen, and total Kjeldahl nitrogen." Id. at 2-28. An increase of localized temperature caused by a large and steady discharge of cooling water could therefore have a deleterious effect on Lake Erie's ability to regulate its own toxicity. Nonetheless, the reviewing agencies determined that thermal pollution potentially caused by the Fermi 3 facility would have a minimal impact on Lake Erie, and did not recommend any mitigation strategies for Edison. More text supporting the comment is also provided by the commenter. (**0077-6-10** [Lodge, Terry])

Comment: The DEIS does not adequately evaluate thermal pollution issues associated with the discharge of cooling water into Lake Erie, in violation of NEPA. The DEIS notes the issues with thermal pollution on its discharge cooling water into Lake Erie but does not properly evaluate these issues as serious and fails to provide potential mitigation options for the Fermi 3 facility. Lake Erie is under a number of stresses, and in particular the stress caused by warmer temperatures has lead to historically bad algae blooms that create a toxic environment for much of the natural aquatic flora and fauna. The review team notes this, stating that "current water quality concerns with regard to Lake Erie include (1) increased phosphorus loading from regional agricultural activities, which cause toxic algal blooms." DEIS at 2-26. Additionally, the reviewing agencies also determined through sampling that area of lake adjacent to Fermi 3 was consistent with other stressed areas of the lake, with "elevated levels of nutrients including total phosphorus, orthophosphorus, nitrate and nitrite nitrogen, and total Kjeldahl nitrogen." Id. at 2-28. An increase of localized temperature caused by a large and steady discharge of cooling water could therefore have a deleterious effect on Lake Erie's ability to regulate its own toxicity. Nonetheless, the reviewing agencies determined that thermal pollution potentially caused by the

Fermi 3 facility would have a minimal impact on Lake Erie, and did not recommend any mitigation strategies for Edison.

In determining the possible impact of thermal pollution, the DEIS looks to the Michigan Water Quality Standards, which include temperature limits for Lake Erie, including mixing zone limits and applicability of the standards. These regulations state that the "Great Lakes and connecting waters shall not receive a heat load which would warm the receiving water at the edge of the mixing zone more than 3 degrees Fahrenheit above the existing natural water temperature." MI Admin. R. 323.1070(1). Based on Lake Erie's mean monthly temperature, the regulations give specific heat limits over which, if occurring outside of a designated mixing zone area, the temperature becomes a thermal plume. DEIS at 5-11. Approval of the size of the mixing zone varies depending on the size of the thermal plume and the body of water and is determined in the discharge permitting process, which has yet to occur. MI Admin. R. 323.1082(4).

To investigate the potential impacts of discharged cooling water with elevated temperatures on Lake Erie, Detroit Edison used a hydrodynamic model that simulates mixing processes, to evaluate the average impact and size of discharged thermal plumes. DEIS at 5-12. Based on the simulations performed under this modeling framework, DTE found that in 9 of 12 months each year, the average temperature of the potential thermal plume will be above the maximum temperature allowed under Michigan regulations. Id. Additionally, in three months out of the year, the difference between the mean temperature of the discharge and the mean ambient lake temperature will be over 20 degrees Fahrenheit. Id. Important to note within these results is that they measure mean temperature differences, which indicates that in many instances throughout the month the temperature differences will be even larger.

Noting that the thermal plume would not be large enough to reach the shoreline (primarily due to the lengthy discharge pipe called for in the design of the facility), and enormous size of the basin into which the thermal plume would be discharged, the reviewing agencies determined that the thermal pollution would have minimal environmental impact on Lake Erie and did not suggest mitigation or alternatives to the current discharge plan. Id. at 5-7; 5-16. This analysis is poorly framed, particularly when future projections which factor in the impact of climate change are taken into account.

The projections based on Edison's simulations show a thermal plume that could potentially be as large as 55,000 square feet. DEIS at 5-2; 7-14. While this plume is a "small fraction of the western basin of Lake Erie," at a localized level it could be enormously damaging, especially if the temperatures are upwards of 20 degrees Fahrenheit warmer than the mean natural temperature of the lake. This thermal pollution could result in drastic growth of toxic algae, heat stress for aquatic life, and, as the DEIS states, "the creation of favorable conditions for invasive species." Id. at 5-33. Furthermore, in their analysis of possible impacts, the reviewing agencies indicate that climate change could exacerbate the issues caused by thermal

plumes. Climate change could lower lake levels, causing large thermal plumes and mixing zones caused by the shallow depths at the area of discharge (already as low as 7 feet in some areas) to expand further. Id. at 7-14. Additionally, as previously noted, higher average lake temperatures would lead to greater water withdrawals to achieve the same cooling effectiveness. The larger withdrawals would also lead to larger discharges, which could create even larger thermal plumes at the shallower depths. Id. at 7-11; 7-14.
Intervenors concur with the GLELC, and recommend that the reviewing agencies reevaluate the potential problems caused by thermal pollution from coolant water discharges at a more localized level before producing the Final EIS. The review team did suggest two mitigation procedures within the DEIS, the installation of a diffuser that would mix the discharge before being released into the lake and a procedure to gradually reduce the discharge of cooling water during plant shutdowns to avoid any sort or heat or cold shock to aquatic species. DEIS at 5-7; 5-35. These are positive mitigation procedures but not adequate to properly address the extent of harm that the volume of warm effluent being released by the facility. It should be noted that, as the Great Lakes Compact monitors both consumption and withdrawals, the discharge of thermal pollution as a result of a withdrawal would also be subject to a review under §4.11 of the Compact. Therefore, it would be prudent for both Edison and the regulatory agencies tasked with approving Fermi 3 to ensure that the thermal plumes being discharged into Lake Erie "result in no significant individual or cumulative adverse impacts to the quantity or quality of the Waters and Water Dependent Natural Resources and the applicable Source Watershed." Great Lakes Compact §4.11. (**0077-6-4** [Lodge, Terry])

Response: *Section 5.3 of the EIS indicates that operation of Fermi 3 will have little or no influence on turbidity levels (which control light penetration), nutrients (phosphorous), and temperature, which are the key factors thought to control the growth of algal blooms. Dredging activities would be infrequent and temporary and diffusion ports will discharge cooling water upward, reducing the potential to stir sediment up at ports. The applicant will not be using phosphorus-containing treatment chemicals, so the plant will not contribute to phosphorus loading in Lake Erie. Last, because of thermal stratification, heated water would only periodically reach the bottom. This periodicity would not "significantly increase the potential for development of algal blooms" (page 5-52). As mentioned previously and discussed in Section 7.2 of the Draft EIS, future impacts due to warming would be caused by climate change, not operation of Fermi 3. No change was made to the EIS as a result of these comments.*

Comment: Section 5.2.3.1 discusses the mixing zone/thermal plume as be about 55,000 square feet. This conflicts with a recent mixing zone/thermal study conducted by BP for Ohio EPA in Maumee Bay in about eight feet of water which is about the same as Fermi 3's estimated depth. That study showed the plume extending in some cases over one mile--significantly more than the Detroit Edison information suggests and from some research it appears that the same model was used. NRC should review the BP thermal report recently completed which includes analysis of fish kills and determine why there are such discrepancies

in the mixing zone calculations. Also, if the calculations used in the thermal plume model use the entire volume of water in Lake Erie rather than the volume of water in the western basin, then the calculations for the thermal plume are understated. In addition there is a 2011 report by Limnotech that shows algae in the area of where Fermi 3 is to be built is not reported or discussed in the EIS. The growing algae problem in Lake Erie decreases water quality and caters to fish that live in lower water quality. (**0044-3** [Bihn, Sandy])

Comment: Attachment A Size of thermal plume Bayshore power plant. Note that OEPA suggests that the thermal plume/mixing zone predictive model underestimates the size of the thermal plume. Given the conservative estimate below, Bayshore uses about 750mgd with "an underestimated" average observed plume size of 216 acres while the model shows 84 acres, which is 2.52 times the model. If this observation would apply to Fermi 3, then the plume size would be 55,000 sq. ft. times 2.57 = 141,350 sq. ft. This from a 2004 Ohio EPA Update of the Bayshore Power plant. slightly less than the daily maximum water quality standards while it is possible that south shore temperatures exceed the 30-day average water quality standards during certain months (**0044-7** [Bihn, Sandy])

Comment: The Water Intake for the City of Monroe is at the end of Pointe aux Pouix road. This is approximately (air) 1/4 mile south of the Fermi 2. Fermi 3 is north of Fermi 2 and that is where water out-take / discharge for the Fermi will occur. There is direct and indirect potential for the thermal zone to impact the water intake.

It is noted in the DEIS that the permissible "mixing zone" will be determined by state of Michigan agencies MDEQ/DNRE and has not yet been decided (p 523 of the DEIS pdf). Estimates of plume range of up to approximately 1.3 surface acres, reported as 300 ft in length. The Michigan DEQ does not permit mixing zones in locations where there is long-term (chronic) human exposure, such as wading beaches or drinking water intakes. http://www.deq.state.or.us/wq/wqpermit/mixingzones.htm

Elsewhere in the DEIS, Section 5.2.3.1 discusses the mixing zone/thermal plume as be about 55,000 square feet. This conflicts with a recent mixing zone/thermal study conducted by BP (British Petroleum) for the Ohio EPA in Maumee Bay in approximately eight feet of water which is near equivalent as the reported Fermi 3's estimated depth. That study documented that the plume extended in some cases over one mile - significantly more than the Detroit Edison information suggests, this is odd, since it appears from same research and that the same model was used. (**0059-12** [Keegan, Michael J.])

Comment: NRC should review the BP thermal report recently completed which includes analysis of fish kills and determine why there are such discrepancies in the mixing zone calculations. Section 5.2.2.1 line 6 page 5-9 talks about the water quantity withdrawal impacts when considering the Monroe/Frenchtown water intake. There is no discussion of the impact on the water intake from the discharged waters of Fermi 3 - both from water quality changes and

from temperature changes. The State of Oregon bans drinking water intakes from being in a mixing zone. Given the shallow nature of the water - estimated at 8.5 -, it is imperative that the EIS include an analysis of impacts on the Monroe drinking water intake for the public health. Once again the Michigan DEA does not permit mixing zones in locations where there is long-term (chronic) human exposure, such as wading beaches or drinking water intakes. http://www.deq.state.or.us/wq/wqpermit/mixingzones.htm

This 'Water Intake' excerpt is from page 729 line 16 of the DEIS. As described in Section 5.2.2.1 ..."There are also two water intakes on Lake Erie and in the vicinity of the Fermi site for public water supply: the Frenchtown Water Plant, which uses 8 million gallons per day (MGD), and the Monroe County Water Plant, which uses 7.5 MGD (Frenchtown Charter Township 2010; AWWA 2009). The impacts of these two water plants and the other projects listed in Table 7-1 are considered in the analysis in Sections 4.2 and 5.2 and would not be detectable or would be so minor that they would not affect surface water use." There are also two water intakes on Lake Erie and in the vicinity of the Fermi site for public water supply: the Frenchtown Water Plant, which uses 8 million gallons per day (MGD), and the Monroe County Water Plant, which uses 7.5 MGD (Frenchtown Charter Township 2010; AWWA 2009). The impacts of these two water plants and the other projects listed in Table 7-1 are considered in the analysis in Sections 4.2 and 5.2 and would not be detectable or would be so minor that they would not affect surface water use. http://www.deq.state.or.us/wq/wqpermit/mixingzones.htm (**0059-13** [Keegan, Michael J.])

Response: *These comments express concern that modeling of thermal plume conducted independently for the Fermi 3 site and the Toledo Edison Bayshore Power Plant site, located on Maumee Bay, resulted in predicting thermal plumes of different sizes. The thermal plume modeling for both sites was performed by using the CORMIX modeling program. Each of the thermal plume models incorporate many site-specific variables that are very different between the Fermi 3 site and the Bayshore Plant site, which is located in Maumee bay. The most significant difference is that the Bayshore Plant discharges are well over 20 times larger than planned discharges from the proposed Fermi 3. In addition to discharge volumes, the model accounts for discharge velocity, ambient lake currents in the vicinity, ambient wind speed in the vicinity, water depth, discharge temperature, design of the discharge pipe, and other parameters to calculate plume size. Despite the regional proximity of the plants, these site-specific variables are very different for the two different places. As a result, the plume size predicted by the model would result in plumes of varying size. One commenter mentioned a 2011 LimnoTech report. The comment does not specify the details of which 2011 LimnoTech report is being referred to in the comment. The review team examined various 2011 LimnoTech reports and presentations pertaining to algal production, eutrophication, and nutrient levels obtained from the LimnoTech Web site (http://www.limno.com/publications.html). Although some of these reports indicate specific areas of nutrient enrichment and algal production within the western basin of Lake Erie, there was no specific indication in those reports and*

presentations that the area of the western basin in the vicinity of the Fermi site supported elevated levels of harmful algal production. No changes were made to the EIS in response to these comments.

Comment: Section 5.2.2.1 line 6 page 5-9 talks about the water quantity withdrawal impacts when considering the Monroe/Frenchtown water intake. There is no discussion of the impact on the water intake waters from the discharged waters of Fermi 3 - both from water quality changes and from temperature changes. The State of Oregon bans drinking water intakes from being in a mixing zone. Given the shallow nature of the water - estimated at 8.5 -, it is imperative that the EIS include an analysis of impacts on the Monroe drinking water intake for the public health--both from increased temperatures and increased chemicals in the water. (**0044-6** [Bihn, Sandy])

Comment: The water intake station jointly owned by Monroe City and Frenchtown Township withdraws water from Lake Erie and supplies water to these communities. Fermi 3 is also planning to receive water for plant potable needs from the Frenchtown Township Water Treatment Plant which receives water from this intake. The impacts of planned discharges from Fermi 3 on water quality within Lake Erie is discussed in EIS section 5.2.3.1 (beginning on page 5-10). Normal operational discharges are required to be within effluent limits specified by the NPDES permit with MDEQ for Fermi 3. This permit covers CWA Section 316(a) and limits are set to protect the public and the environment. Regular testing is required to verify compliance with these limits. (**0059-6** [Keegan, Michael J.])

Comment: The distance between the surface water discharge outfalls of Fermi 2 and 3 is approximately 0.4 miles. The presence of any shoreline currents could transport water from one of the plumes towards the location of the other plume discharge. There is no discussion of whether shoreline currents are near the Fermi site, and if there are, how currents might impact plume movement. Recommendation: EPA recommends that discussion of shoreline current be included, and if present, what effects it would have on plume movement. (**0078-30** [Westlake, Kenneth A.])

Response: *These comments express concern over the potential for water quality impacts along the shoreline and at nearby water intakes due to thermal discharges from the proposed Fermi 3. Section 5.2 of the EIS contains a discussion of the modeling scenarios used to evaluate the impact of thermal discharge on Lake Erie water quality. As illustrated in Table 5-4, which summarizes the modeling parameters and results, a number of site-specific parameters were incorporated into the model and a variety of scenarios were evaluated. Lake current direction and velocity were taken into consideration in the Fermi 3 thermal plume modeling. Because no currents near the Fermi site are measured, the Fermi 3 thermal plume model used a depth-averaged current value that was simulated by the Lake Erie Operational Forecast System (LEOFS) model issued by NOAA. In one model scenario, conservative parameters were simulated in order to determine the potential for impact on the shoreline and nearby water intake structures. In this analysis, the plume dissipated about 1300 ft from the shoreline near*

the Fermi 3 discharge location. As a result, the review team concluded that even in extreme conditions the thermal plume would pose no threat to the shore. The incremental impact from Fermi 3 is anticipated to be SMALL. The permits required by the MDEQ would require compliance with State of Michigan water quality limits. Additional text has been added to Section 7.2 to describe the lake current data, which was used for thermal plume modeling.

Comment: EPA appreciates that the Applicant has committed to gradual reduction in surface water discharge rates during the winter months to reduce the risk of fish mortality caused by temperature shock. Recommendation: We recommend that the Applicant work with and notify Michigan Department of Environmental Quality (MDEQ) during unplanned shutdowns to control discharge rates and temperatures and to mitigate for any resultant impacts, e.g., fish kills. Please be aware that EPA reserves the right to provide comments at the Clean Water Act National Pollution Discharge Elimination System (NPDES) permitting stage. EPA has delegated the NPDES program to MDEQ, but retains an oversight role on NPDES permitting. Should any water quality criteria or effluent change during the five-year permitting cycle, the NPDES permit will need to be updated when the permit is up for renewal. This includes the forthcoming revised standards under the Clean Water Act Section 316(b), which are currently in draft form, but closed for public comments. (**0078-10** [Westlake, Kenneth A.])

Response: *The NRC does not have the authority or responsibility to regulate or manage water resources. It is the responsibility of the applicant to secure all permits required to operate Fermi 3, and these recommendations may be made within that permitting process. Section 5.3.2.1 describes mitigation measures to reduce the potential for fish mortality due to cold shock. No changes were made to the EIS as a result of this comment.*

Comment: We also encourage the applicant, in collaboration with the NRC and USACE, to begin taking steps to gain approval of their proposed water usage under the Great Lakes Compact. The DEIS contains a significant body of data, but Detroit Edison and the reviewing agencies were too quick to conclude issues associated with thermal pollution and water consumption as minor, when in fact they are very significant. The GLELC encourages the NRC and the USACE to perform further analysis of available data and collecting additional data where existing data is insufficient to reasonably assess potential impacts and risks to water quantity, water quality, wetlands and wildlife. Finally, the GLELC supports the continued collection of data and information, including that associated with the USACE assessment of Edison's proposed mitigation project attached to their 404 permit application, so that current and new biologically significant impacts are identified and appropriately analyzed. More text supporting the comment is also provided by the commenter. (**0077-6-12** [Lodge, Terry])

Response: *The comment expresses concern that the analyses and supporting data within the EIS of impacts on water resources are insufficient. The studies and data that were relied on for evaluation of the impact of the proposed Fermi 3 on hydrological resources, including Lake Erie, are cited within the relevant sections of the EIS. Sources of data included historic and recent*

publications and information available from the applicant and local and Federal agencies. Analysis of the impacts of construction of Fermi 3 on the water resources of the area are described in Section 4.2. Analysis of operational impacts of Fermi 3 on water resources are described in Section 5.2. Analysis of the cumulative impacts of the building and operation of Fermi 3 and other past, present, and reasonably foreseeable future actions and climate change on the quantity and quality of water within Lake Erie are discussed in Section 7.2. No change was made to the EIS as a result of this comment.

Comment: To investigate the potential impacts of discharged cooling water with elevated temperatures on Lake Erie, Detroit Edison used a hydrodynamic model that simulates mixing processes, to evaluate the average impact and size of discharged thermal plumes. DEIS at 5-12. Based on the simulations performed under this modeling framework, Edison found that in 9 of 12 months each year, the average temperature of the potential thermal plume will be above the maximum temperature allowed under Michigan regulations. Id. Additionally, in three months out of the year, the difference between the mean temperature of the discharge and the mean ambient lake temperature will be over 20 degrees Fahrenheit. Id. Important to note within these results is that they measure mean temperature differences, which indicates that in many instances throughout the month the temperature differences will be even larger. Noting that the thermal plume would not be large enough to reach the shoreline (primarily due to the lengthy discharge pipe called for in the design of the facility), and enormous size of the basin into which the thermal plume would be discharged, the reviewing agencies determined that the thermal pollution would have minimal environmental impact on Lake Erie and did not suggest mitigation or alternatives to the current discharge plan. Id. at 5-7; 5-16. This analysis is poorly framed, particularly when future projections which factor in the impact of climate change are taken into account. (**0038-3-2** [Schroeck, Nicholas Joseph])

Response: *The comment expresses concern that the analyses within the EIS of impacts on receiving-water resources are insufficient. Section 5.2.3 of the EIS provides a description of modeling that was performed by Detroit Edison and verified by the review team to evaluate the effects of discharged cooling waters on Lake Erie. This model incorporated conservative values for input parameters specific to Fermi 3 and the area of Lake Erie where cooling water will be discharged in order to evaluate the largest potential thermal impact. The review team also evaluated the combined impacts of building and operation of Fermi 3; other past, present, and reasonably foreseeable future actions; and climate change on the quantity and quality of water within Lake Erie. Based on this analysis, the review team concluded that potential future impact on water levels in Lake Erie would be due to climate change, not the building or operation of Fermi 3. The cumulative impact of these projects on Lake Erie is discussed in Section 7.2 of the EIS. The commenter states that the staff's analysis is poorly formed, particularly with respect to climate change. No specifics pertaining to the staff's analysis are provided. No change was made to the EIS as a result of this comment.*

Comment: Because of the uncertainty inherent in gaining approval from the regional review process under the Great Lakes Compact for a project this size, the GLELC recommends certain actions by the applicant and the reviewing agencies. First, steps should be taken to initiate an approval process under the terms of the Great Lakes Compact. Perhaps by noting the Compact review requirement in the DEIS without addressing it, the review team understands the requirements of the Compact to be separate from those that need to be outlined in an EIS process; it may in fact be an operational issue and not a construction issue, for example. However, it is clear that an approval through the regional review process of the Compact is necessary in order for the Fermi 3 facility to operate. Second, the reviewing agencies should include in the Final EIS the steps that will be taken by the relevant parties to seek and gain approval by the parties of the Compact. Included in these steps should be an explanation of why the Fermi 3 facility's large consumptive use of water, in comparison to its counterpart facility Fermi 2 as well as other peer facilities in the region, should be allowed in accordance with the principles of the Great Lakes Compact. (**0038-2-3** [Schroeck, Nicholas Joseph])

Response: *This comment states that the requirements of the Great Lakes Compact Water Withdrawal Permit for all new withdrawals of more than 5 million gpd should be explained in detail within the EIS. The requirements of the Great Lakes Compact 4.11 are met by the State of Michigan under the MDEQ Large Quantity Withdrawal Permit through the authority of MCL 324.32723 as listed in Table H-1. Although the permits required for the proposed actions are listed and discussed as part of the EIS, it is not within the scope of the EIS to explicitly list each requirement of the necessary permits. This is typically done by the applicant within the respective permit applications. However, general bounding requirements are mentioned within EIS Section 2.3, Water; Section 5.2, Water-Related Impacts; and Appendix H, Table H-1 - Authorizations, Permits and Requirements. The NRC does not have the authority or responsibility to regulate or manage water resources. It is the responsibility of the applicant to secure all permits required to operate Fermi 3, including a Water Withdrawal Permit from the MDEQ. The text in Section 2.3.2.1 has been revised to provide a callout to the listing of this requirement in Table H-1. This comment also implies that water usage by Fermi 3 is not acceptable, because it is large relative to water use of other Lake Erie water users. However, as discussed in the EIS, impact on Lake Erie water availability is determined by analyzing the individual and cumulative effects of usage on the resource, not through comparison to other water users. Sections 4.2, 5.2, and 7.2 of the EIS illustrate that despite the consumptive use, a SMALL impact on water quantity is predicted.*

Comment: The document addressed the current water quality concerns regarding Lake Erie, and identified serious water problems. Increased phosphorus loading, which cause toxic algae; elevated concentrations of three bio-accumulative contaminants (dioxin, PCBs, and mercury). "On average, concentrations of mercury in site surface water exceeded the Michigan Department of Environmental Quality Rule 57 for human noncancerous values and wildlife values." (v 1, p 2.28) Is this termed "cumulative effect?" (**0016-1-18** [Collins, Jessie])

Comment: I was sorry to learn that “Currently Lake Erie waters under Michigan jurisdiction are on the 303(d) list for not supporting fish consumption because of the elevated concentrations of these chemicals in fish tissue.” (v 1, p 2.26) (**0016-1-19** [Collins, Jessie])

Response: *The comments express concern with the current conditions within Lake Erie. These are described in detail in Section 2.3 of the EIS. No changes were made to the EIS as a result of these comments.*

E.2.8 Comments Concerning Hydrology - Groundwater

Comment: The document states that pollution is kept to a minimum by recharging the waters in the fill and overburden, “recharge of the fill is through precipitation - The overburden is recharged with precipitation...” (v 1, p 2.18) If “annual average rainfall over Lake Erie is about 35 in./yr “ The average annual evaporation from Lake Erie is estimated to be 36 in./yr...” (v 1, p 2.14) How can the precipitation refresh either fill or overburden if evaporation rate exceeds precipitation? (**0016-1-15** [Collins, Jessie])

Comment: The document cites geologic issues and states that pollution is kept to a minimum by recharging the waters in the fill and overburden, “recharge of the fill is through precipitation” The overburden is recharged with precipitation....” (v 1, p 2.18) If “annual average rainfall over Lake Erie is about 35 in./yr - The average annual evaporation from Lake Erie is estimated to be 36 in./yr.....” (v 1, p 2.14) How can the precipitation refresh either fill or overburden if evaporation rate exceeds precipitation?
(**0026-6-5** [Macks, Vic])

Response: *Average Lake Erie evaporation may exceed the average rainfall because Lake Erie is an open water body that receives far greater input from its entire watershed. Actual evaporation rates over land would be less, and some portion of the annual precipitation infiltrates areas not covered with impervious surfaces. Evaporation does not occur from groundwater, which is contained within the subsurface. Also, the fill and overburden at the Fermi site are hydraulically connected to Lake Erie, meaning that water directly flows from these into Lake Erie. The hydrology of the area around the proposed site is discussed in Section 2.3.1 of the Draft EIS. No changes were made to the EIS as a result of this comment.*

Comment: 28. Concerning the overflow and discharge canals, have there been known breaks or cracks in the clay lining that allowed contaminates to seep out? Is this a source of the tritium in the groundwater? (**0016-2-9** [Collins, Jessie])

Response: *The overflow and discharge canals, which were built to provide hydrologic connection among onsite wetlands, are discussed in Section 2.3.3 and are not known to have carried tritium. They are constructed in clayey material, including lake deposits, glacial till, and fill composed of these natural parent materials, but are not lined structures. A discussion of the*

source and impact of sporadic and variable trace amounts of tritium in plant groundwater is presented in Section 5.9.6. Tritium concentrations are well below EPA drinking water standards and have been attributed to infiltration of the plant's gaseous effluent. No changes were made to the EIS as a result of this comment.

Comment: Concerning the 4.2.1.3. Groundwater, "Groundwater ... would be affected during building activities.....include the following: excavation of portions of site aquifers (overburden and Bass Islands Group) and emplacement of the high-conductivity structural fill, filling in of the onsite water bodies, changes in recharge due to impervious surfaces and stormwater routing, and dewatering during excavation. Excavation dewatering would lower the water levels locally...." (v 1, p 4.13) Lower the local water tables? Is that legal as long as one buys a permit? (**0016-3-26** [Collins, Jessie])

Response: *As discussed and illustrated in Section 4.2.2.2, the dewatering is expected to result in temporary, local lowering of water levels in the bedrock aquifer and would not result in significant impact on nearby groundwater users. As discussed near the beginning of Section 4.2, a permit would be required under the Clean Water Act (CWA) for the excavation dewatering. No changes were made to the EIS as a result of this comment.*

Comment: "Detroit Edison states that grouting in the bottom of the excavation could also be used to reduce groundwater inflows into the excavation area." (v 1, p 4.14) Grout would be used to stop water inflow instead of sealing the bottom to prevent contamination from seeping out? (**0016-3-28** [Collins, Jessie])

Response: *As discussed in Sections 4.2.1.3 and 4.2.2.2, grouting is planned for the bottom of the excavation in order to reduce inflow of groundwater during excavation dewatering. The grout material could be expected to be a long-term barrier that would restrict groundwater movement. No changes were made to the EIS as a result of this comment.*

Comment: Tritium (which is radioactive for 248 years and can pass from mother to fetus) is showing up in the monitoring wells of Fermi 2. (v 1, p 2.29) "In wells within a 5-mi radius of the Fermi site, elevated concentrations of arsenic about the EPA maximum contaminate level were found in groundwater samples." and ... "detected in the few shallow groundwater wells downwind from the Fermi 2 stack." (v 1, p 5.117) Detroit Edison attributed this to the recapture of tritium in precipitation from the plant's gaseous effluent." (v 1, p 2.234) (**0026-6-8** [Macks, Vic])

Response: *Tritium has a half-life of 12.3 years. As discussed in Section 2.3.3.2, tritium has been detected in monitoring wells near the Fermi 2 emissions stack at levels far below the EPA drinking water standard. No changes were made to the EIS as a result of this comment on tritium. Arsenic data are from an MDEQ study of Monroe County. The elevated arsenic is not attributed to the power plant, nor were the wells with elevated arsenic close to the power plant.*

Section 2.3.3.2 of the EIS, Groundwater Quality, was revised to address this comment on arsenic.

Comment: p. 7-12 Given that (1) the proposed Fermi 3 would not use groundwater for operations, (2) there would be no discharges to groundwater from Fermi 3, and (3) temporary dewatering operations during preconstruction and construction activities would have limited spatial effect and would not affect the overall productivity of the Bass Islands Group aquifer, the review team determined that the potential impacts on groundwater use from building and operating Fermi 3 would be minimal. In addition, the review team concluded that the cumulative groundwater use impacts would be SMALL. The incremental impacts from NRC-authorized activities would be SMALL, and no further mitigation would be warranted. Unless, of course, the reactor containment were to fail during operations, or spent fuel storage pools were to leak, in which case the impact of Fermi III on groundwater would be LARGE and PERMANENT. But that will never happen, right? Unless, maybe, a tsunami caused by an earthquake in Western Pennsylvania rolled across the lake and into Fermi III and lots of unexpected things happened. But that will never happen, right? (**0034-4-4** [Welke, Jim])

Response: *The potential for problems resulting from an earthquake or tsunami are safety-related issues. These are outside the scope of this EIS but are addressed as part of the safety review of this application. Results of this safety review will be available in the NRC staff's Safety Evaluation Report . No changes were made to the EIS as a result of this comment.*

Comment: Water well monitoring in the area has disclosed tritium contamination. (**0068-2** [Seubert, Nancy])

Response: *As discussed in Section 2.3.3.2, tritium has been detected in monitoring wells near the Fermi 2 emissions stack at levels far below the EPA drinking water standard. No changes were made to the EIS as a result of this comment.*

Comment: .Tritium, high sulfate and high chloride concentrations detected in wells (**0070-12** [Rivera, Ethyl])

Response: *As discussed in Section 2.3.3.2, tritium has been detected in monitoring wells near the Fermi 2 emissions stack at levels far below the EPA drinking water standard. As discussed in Section 2.3.3.2, sulfate and chloride have been detected in onsite monitoring wells. These levels exceeded EPA secondary standards for water. Section 2.3.3.2 of the EIS, Groundwater Quality, was revised to address this comment.*

Comment: Elevated concentrations of mercury and arsenic (**0070-14** [Rivera, Ethyl])

Response: *As discussed in Section 2.3.3.1, mercury has been observed in onsite surface water, but the levels have been consistent with those observed at the Lake Erie intake. No*

changes were made to the EIS as a result of this comment regarding mercury. Arsenic data are from an MDEQ study of Monroe County groundwater. The elevated arsenic is not attributed to the power plant, nor were the sampled wells with elevated arsenic close to the power plant. Section 2.3.3.2 of the EIS, Groundwater Quality, was revised to address this comment.

Comment: EPA is concerned that tritium has been detected in some onsite monitoring wells (page 2-29, lines 16 though 23) and that well locations have not been provided. NRC indicates that the Applicant has provided a "realistic scenario of the washout of tritium by precipitation." The Draft EIS is not clear if NRC concurs with this statement, or if it is a reiteration of the Applicant's conclusion. Recommendation: Clarify whether NRC concurs with the Applicant's conclusions on the source(s) of the tritium. The Final EIS should include a map of the locations of the deep and shallow monitoring wells, rather than referencing the Environmental Report (ER) on the whole. This will help us analyze whether or not there is a pattern regarding tritium concentrations. It is also unclear whether the Applicant has pursued remediation based on these levels, if (and by how much) permitted discharge is a contributing factor, and if (and by how much) the operation of Fermi 3 will increase tritium levels at the monitoring sites. Though tritium levels in Lake Erie are expected to be significantly diluted, we would like the Final EIS to include a map showing the location of tritium monitoring points in Lake Erie. EPA is concerned with the arsenic level found in wells within a five-mile radius of the Fermi site. These wells have elevated concentrations above EPA's maximum concentration level. The Draft EIS does not identify a source(s), nor does it identify any remediation efforts by the responsible party(s), if known. Recommendation: Identify the source(s) of the arsenic. We recommend this information be included in the Final EIS. Further, we recommend identifying whether or not construction or operation related activities will augment concentrations of arsenic. (**0078-3** [Westlake, Kenneth A.])

Response: *The washout of tritium from the emissions stack is a realistic explanation for the low levels of tritium observed in groundwater monitoring data. Section 2.3.3.2 of the EIS, Groundwater Quality, was revised to address this comment. The section was also revised to describe further details of the concentrations observed in the wells and the lack of trend. A map is not included in the Draft EIS, because it would not improve understanding significantly beyond the revisions to the text. No groundwater remediation is being carried out. Any discharge of the tritium in groundwater to the lake via natural seepage would be instantly diluted. Permitted discharge does not take place near the monitoring wells. The normal operation of Fermi 3 could not be expected to influence tritium levels measurably in Lake Erie. The arsenic data are from an MDEQ study of Monroe County. This study included sampling of wells throughout Monroe County. The closest ones to the site are in various locations in the city of Monroe, parts of which are within about 5 mi of the Fermi property. Of the 42 samples collected from 13 general countywide locations, as summarized in the Environmental Report (ER), the average arsenic of each location was well below the maximum contaminant level (MCL) of 0.010 ppm. The highest result was 0.018 ppm and was likely from a single family dwelling in South Rockwood, Michigan, because this general sampling location was the only*

one with an average arsenic concentration significantly greater than the other locations. This arsenic cannot be attributed to Fermi. Identifying the source of the arsenic, whether natural or anthropogenic, is beyond the scope of this EIS. It is not reasonable to expect that the construction and operation of Fermi 3 would affect arsenic levels in water wells. Section 2.3.3.2 of the EIS, Groundwater Quality, was revised to address this comment on arsenic by clarifying the general distance and lack of relationship between the arsenic and the site.

Comment: The Draft EIS does not identity a clear recommendation regarding the groundwater dewatering scenario as laid out in Section 4.2.2.2. Recommendation: EPA recommends using the dewatering technique that has the least negative impact on adjacent receptors. Based on the models and the information provided, that technique would be the reinforced diaphragm concrete scenario. We also recommend that more information be included pertaining to where the pumped water will ultimately discharge. Finally, we would like additional information about public outreach to be conducted before drawdown activities. Because several receptor wells will experience groundwater drawdown of no more than one foot (page 4-16), we recommend providing written notices to impacted residents explaining when, why, and by how much they will be impacted. (**0078-11** [Westlake, Kenneth A.])

Response: *The modeling analysis in Section 4.2.2.2 shows that both dewatering scenarios will result in negligible effects on well users. The EIS analyzes the impact of proposed actions; it does not provide recommendations. Any recommendations would come from agencies involved in the permitting of certain activities. As noted in Section 2.3.3.1, water from dewatering operations will be discharged to Swan Creek. As noted near the beginning of Section 4.2, a permit would be required under the CWA for the excavation dewatering. No changes were made to the EIS as a result of this comment.*

E.2.9 Comments Concerning Ecology - Terrestrial

Comment: The council's experience is that, as operational uses of corporate lands change, meaningful habitat stewardship can be maintained. Wildlife habitat programs are not just about the habitat. Each corporate program that is certified also includes community partnerships and elements of nature education. These elements, which the Fermi 2 wildlife team has described the council certification staff, will help ensure that the company's planned habitat protections will, indeed, be implemented. The wildlife team, in the recent past, has partnered with scout troops and the local school system to use the site's habitats for education. The team works with National Audubon and Michigan Department of Natural Resources for bird counts. And, as you know, the Fermi team also cooperates with the U.S. Fish and Wildlife Service in maintaining much of the site as part of the Detroit River International Wildlife Refuge. The company has worked to design the new facilities in a way that minimizes the impact on wildlife habitat. At the same time, there will be cases where restored habitats that are performed as mitigation will be of higher quality than the original. This is because many terrestrial and wetland habitats at this site, as elsewhere, are highly impacted by invasive plant species. In particular, many coastal

areas along the Lake Erie shoreline are invaded by the non-native strain of *Phragmites australis*. This plant forms monotypic stands that are not habitable by many native wetland species. In restored wetlands, DTE Energy can detect and respond to invasions by *Phragmites* or other invasive species quickly and more effectively than is possible where the plant is well established. According to the Draft Environmental Impact Statement, Detroit Edison has stated its intention to restore temporarily disturbed areas with regionally indigenous species. This intention the company can be expected to act on. In fact, through its wildlife at work program, Detroit Edison has shown the long-term commitment that will be needed to re-establish forested areas, as well as wetlands and grassland, and to continue stewardship of the areas not directly impacted by construction or operations . (**0039-25-2** [Gruelle, Martha])

Response: *This commenter acknowledges efforts by Detroit Edison to avoid and minimize impacts to wetlands and other terrestrial habitats and to mitigate unavoidable impacts. The commenter expresses confidence that Detroit Edison will honor its wetland and other terrestrial habitat mitigation commitments associated with Fermi 3. No changes were made to the EIS as a result of this comment.*

Comment: Wildlife Habitat Council is a 20-year old coalition of companies and conservation groups aimed at increasing the amount of quality wildlife habitat on corporate, private and public lands. We focus on voluntary action by companies to support biodiversity by providing and enhancing habitat for native species on those companies' own properties. Wildlife Habitat Council is headquartered near Washington, DC, and works internationally. My position is based in Detroit, and involves communications with corporate habitat programs on both sides of the international border and the Lake Huron to Lake Erie corridor. One of Wildlife Habitat Council's core activities is our certification of corporate programs that manage areas for the use of native species and for nature education. We call this wildlife at work certification. More than 650 corporate habitat programs in 17 countries are now certified by Wildlife Habitat Council, including the program at DTE Energy's Fermi 2 Nuclear Power Plant. That is how I am acquainted with the history of land stewardship at Fermi 2, which is the context for my comments today. Wildlife Habitat Council's wildlife at work certification requires substantial documentation of valid voluntary habitat enhancement activities. Detroit Edison's Fermi 2 plant has provided this document regularly since the year 2000. Thus, this year the employee wildlife team at Fermi 2 achieved its fourth wildlife at work re certification. All of the activities that contribute to this certification are voluntary. That is they are not the fulfillment of any regulatory or legal requirements. For instance, if the company is required to mitigate for harm to eastern fox snake or American lotus or other species, these activities will not count toward a wildlife at work re-certification, unless they can show that actions went above and beyond requirements. As part of the wildlife program, Detroit Edison employees help maintain about 650 acres of wildlife habitat. I understand that area is planned to be reduced by about 20 acres. The council does not consider this reduction an impediment to future wildlife at work certification, as long as valid activities are maintained elsewhere on the site. (**0039-25-1** [Gruelle, Martha])

Response: *This comment relates to the potential impacts of the project on wildlife habitat on the Fermi site, presumably the 656 ac on the site that are managed as part of the DRIWR. The commenter states that Detroit Edison has demonstrated its commitment to improving and maintaining the quality of wildlife habitat through qualifying for the "wildlife at work" certification. The commenter further states that the reduction of wildlife habitat by 20 ac would not constitute grounds for continued certification. The 20 ac (reported in the EIS as 19 ac) represents the net permanent loss of land from the DRIWR; the EIS also notes that an additional 26 ac would be subjected to temporary impacts while the proposed Fermi 3 is being built. No changes were made to the EIS as a result of this comment.*

Comment: Finally, on a personal level, I'm a very active and dedicated outdoors man. I have long been deeply involved in Ducks Unlimited and its efforts to conserve North American waterfowl habitat. Monroe County and its Lake Erie wetlands are an important part of the Mississippi flyway, providing important migration , breeding, and wintering areas for many of the waterfowl including woodducks, mallards and canvas backs, and we all enjoy very much observing those waterfowl. DU has worked with a variety of partners to restore and enhance thousands of acres of wetlands in more than 30 counties across Michigan. All to maximize the amount and quality of nesting habitat and more generally the conditions for migrating waterfowl. Monroe County is prominent on this list, and here, too Detroit Edison has been an instrumental partner, and remains one of the top states highest financial donors here in the state of Michigan.

I am a especially supportive of DTE Energy's plan to mitigate for Fermi's three temporary and permanent wetland impacts. Its proposal to protect, restore and enhance the coastal wetland observation area near the Fermi Power Plant is both sound and welcome. When completed we'll see more than 200 acres of continuous wetland habitat on the shores of Lake Erie, benefitting not just waterfowl but other species as well. (**0040-16-2** [Oberleiter, Tracy])

Response: *This commenter acknowledges past actions by Detroit Edison to enhance waterfowl habitat and supports the mitigation measures described in the EIS. No changes were made to the EIS as a result of this comment.*

Comment: I'm the Director of Public Policy Ducks Unlimited Great Lakes Atlantic Regional Office, located in Ann Arbor, and that office covers 21 states in the northeast mid-west portion of our country. Ducks Unlimited is a wetland conservation organization. We focus on protecting and restoring and enhancing and managing wetlands for the benefit of waterfowl other wildlife and people. The Fermi nuclear plant and its facilities are located in and among wetlands that have been long been altered and manipulated by anthropogenic activities going back several hundred years. Although these wetlands have been impacted, they still continue to provide valuable habitat for wildlife and fish. In the expansion of the site wetlands that would be impacted must be mitigated for, so that wetland values and functions will not be lost. We believe that DTE's mitigation plan did a great job of minimizing the wetland impact. And that the

established mitigation targets that you've heard about today, 13 acres lost, 82 gained, exceeds what's required by law for mitigation.

We need electric power, and we need wetlands, and this plan does a good job of doing both. DTE has been a valuable partner to Ducks Unlimited and other conservation organizations in the area. They have proven to be good managers of the wetlands they own, and they have used their wetland experts and their time and their funds to benefit the ones off-site as well. Last year DU, the fish and wildlife service, and DTE and other partners celebrated the restoration of a tract just north of here, you heard that from Dick Micka, the branch out tract, where we took ag land that had been farmed for probably six or seven decades and returned it to wetlands that are productive and thriving today.

DTE has also been instrumental in a large North American wetlands conservation act grant here in the region that protected over 1,000 acres of wetlands and restored more than 3,000 acres. DTE has proven itself to be a good steward of the land and the waters they own, while providing essential services we all need. They have cooperatively worked with the fish and wildlife service, the DNR and other conservation organizations to insure good land and water conservation, and we applaud their efforts. (**0040-28-1** [Tori, Gildo])

Response: *This commenter acknowledges efforts by Detroit Edison to avoid and minimize impacts on wetlands and to mitigate unavoidable impacts. The commenter expresses confidence that Detroit Edison would honor its wetland mitigation commitments resulting from the Fermi 3 project. No changes were made to the EIS as a result of this comment.*

Comment: 21. American lotus is growing in the wetlands standing where Fermi 1 is proposed. Why doesn't the lotus' status as a State-listed threatened species (v 1, p 2.34) prevent destruction of its habitat? Or the federally listed Indiana Bat, eastern prairie fringed orchid, and Karner blue butterfly (v 1, p 2.49)? Or the songbirds that use the cattails and reeds for nesting? And the list could go on and on.(**0016-2-2** [Collins, Jessie])

Response: *The comment refers to Fermi 1, an existing facility that would be removed from an already developed portion of the Fermi site prior to building Fermi 3. The review team assumes, however, that the comment was intended to refer to Fermi 3. Section 4.3.1.3 of the EIS discusses potential impacts from construction of Fermi 3 to important species on the Fermi site.*

Page 4-43 of the Draft EIS acknowledges that Fermi 3 could affect a small area of American lotus in the south canal on the Fermi site. It states that Detroit Edison would transplant the affected individual plants to suitable wetland habitats on the Fermi site, if available, or otherwise offsite. This species has been successfully transplanted in Southeastern Michigan. The MDNR issued a letter to Detroit Edison on October 27, 2011 (ML12037A242), stating that the information provided to MDNR adequately addresses the State's concerns for potential

threatened and endangered species at the site. Detroit Edison would need to obtain an endangered species permit from MDNR to transplant the lotus plants.

Section 4.3.1.3 of the EIS concluded that any potential Indiana bat habitat would be used by the bats only seasonally and impacts on the bats can be avoided by following the protection measures in the Range-wide Indiana Bat Protection and Enhancement Plan Guidelines (2009b), including avoiding clearing of habitat trees during the roosting season. Detroit Edison hired an expert to inspect onsite lands potentially disturbed by Fermi 3 for possible Indiana bat maternity roost trees in August 2011. A representative of the FWS inspected those locations later in August 2011 and concluded that while certain of the trees might currently function as maternity roosts, those trees were dead ash (Fraxinus spp.) trees whose functional suitability would deteriorate within a couple of years. By the time Detroit Edison is expected to begin site preparation work capable of disturbing those trees, they would have fallen or otherwise deteriorated to the point that they would no longer serve as potential Indiana bat maternity roosts. The BA submitted by the review team to the FWS in March 2012 therefore concludes that there is a low probability that any suitable Indiana bat habitat will exist on the Fermi site by the time construction would begin. The final EIS presents the full text of the BA as an appendix, and discusses the conclusions in the BA and the response of the FWS to the BA.

As discussed in Section 4.3.1.3, the eastern prairie fringed orchid is unlikely to occur on the Fermi site or in other areas potentially affected by Fermi 3. Most of the potentially suitable habitat that might be affected by the project (i.e., the emergent wetlands on but not landward of the Fermi site) has already been severely degraded by infestations of the invasive plant common reed. The BA therefore concludes that the project could affect but is unlikely to adversely affect the orchid.

The BA in Appendix F and Section 4.3.1.3 of the EIS indicate that the probability of the Karner blue butterfly or its habitat occurring in areas potentially affected by the Fermi 3 project is considered to be very low by FWS, MDNR, and the review team. Section 4.3.1.1 of the EIS discusses the potential impacts on mobile wildlife. Included in the discussion are the species of birds that use the cattails and reeds occupying large areas of the Fermi site for nesting and that are abundant in the region. Populations of those bird species, such as red-winged blackbirds, would not be adversely affected.

Other than presenting and discussing the BA and FWS response, both produced subsequent to the draft EIS, no change to the EIS was made as a result of this comment.

Comment: I'm with the Westland Homeowners Committee for Environmental Conservation. I'm also with the Sierra Club Southeast Michigan Group. I would like to thank the NRC for holding this hearing, even though we know that this is just a panacea for the residents here. You've already made your decision of what you're going to do with the Fermi plant.

The proposed Fermi 3 nuclear site has the potential to destroy and alter 656 acres of emergent wetlands, several other types of wetlands, sensitive grass lands, wetland forest and rapidly vanishing lake shore habitat. Now, this area is home to a varied number of common, threatened, and endangered species. Everyone benefits from the multitude of functions and values that Michigan's wetlands provide. Because everyone shares the benefits of clean water, flood protection, healthy fish, healthy and abundant wildlife, everyone has a stake in how wetlands are to be protected and managed. As citizens who value and benefit from the functions that wetlands provide, we are responsible for their protection.

Since the first Europeans settled here, Michigan has lost approximately one half to three quarter of its' wetland resources. More than one third of all threatened or endangered animal species in the United States live in wetland areas, or depend on wetlands for some part of their life cycle. This is especially critical concerning that wetlands comprise only about five percent of the lower 48 states. Examples of Michigan's threatened or endangered animals that rely on wetlands include the bald eagle, which has been nesting on the Fermi site, osprey, common loon and king rail. The list also includes terrestrial and waterfowls, amphibians and aquatic animals, mammals, reptiles, plants, insects and plankton.

According to the Michigan Natural features inventory, of Michigan's 395 threatened and endangered, rare and special concern plant species, 194 of them are found in wetland habitats. Nearly 50 percent of Michigan's plants of management concern reside in less than 15 percent Michigan surface area. Wetlands are natures water pollution control. A major function of wetlands is the preservation of water quality. Wetlands function like living filters by trapping polluting nutrients and sediments from surface and ground water. Although less well known than providing fish and wildlife habitat, this wetland function is important to the integrity of the aquatic ecosystems and can influence all other functions. Relocating wetland species to another man made mitigated sites are rarely successful. On some occasions they are. It is much easier to bulldoze fills, bury or chase away the wildlife, after all the animals can go somewhere else. (**0040-32-1** [Duffey, Leona])

Response: *The NRC will not make a decision on whether to issue a COL until after the EIS has been completed; the scope of the EIS includes an evaluation of potential impacts on wetlands and other terrestrial and aquatic habitats. Section 2.2.1 of the EIS identifies the Fermi site as consisting of approximately 1260 ac, and of that, approximately 656 ac of undeveloped land are managed by the Detroit River International Wildlife Refuge. Section 4.3.1.3 of the EIS identifies approximately 34.5 ac of wetland habitat on the Fermi site, not 656 ac as commented, which would be affected. Of that, approximately 8.3 ac would be permanently impacted for project uses.*

The same section of the EIS discusses the analysis conducted by Detroit Edison to avoid and minimize wetland impacts, and its proposed plan to offset the remaining unavoidable wetland impacts by compensatory mitigation. The compensatory mitigation proposed by Detroit Edison

would reestablish former wetlands on the western shore of Lake Erie. USACE requires that final compensatory mitigation and onsite restoration plans comply with USACE mitigation regulations (33 CFR Part 332). These regulations define acceptable mitigation types, the suitability of such mitigation types to meet compensatory requirements to offset unavoidable wetland losses, and the performance standards and criteria necessary to ensure the quality and success of such compensatory mitigation projects for activities authorized by USACE permits. These regulations are available at http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=/ecfrbrowse/Title33/33cfr332_main_02.tpl.

The review team believes that, taking into consideration USACE- and MDEQ-required compensatory mitigation, the net impacts on wetlands from building Fermi 3 would be minor.

The commenter cites the bald eagle (Haliaeetus leucocephalus), osprey (Pandion haliaetus), common loon (Gavia immer), and king rail (Rallus elegans) as species that are designated as threatened or endangered species and that rely on wetland habitats. The EIS discusses the status of each of these species under Federal and State endangered species laws and other laws. All these species except for the king rail have been observed on the Fermi site. All four species could occur within some parts of the transmission line corridor.

According to the Michigan Natural Features Inventory (MNFI), the bald eagle and osprey are species of special concern, but are not legally protected under State endangered species law. The MNFI lists the common loon as threatened and the king rail as endangered. None of these species are protected under the Federal ESA. The bald eagle is, however, still protected under the Bald and Golden Eagle Protection Act (BGEPA), and all four species are protected under the Migratory Bird Treaty Act (MBTA).

The EIS identifies several federally listed and State-listed species that could potentially be affected by the project and describes steps that have been taken or would be taken by Detroit Edison to avoid, minimize, or mitigate potential impacts to those species. The review team believes that the effects on these species would be minimal. No change to the EIS was made as a result of this comment.

Comment: 22. And all undeveloped area of the Fermi site can be considered habitat for the eastern fox snake. (State-listed as threatened) (v 1, p 2.52) There was no mention of the eastern massasauga, a federally listed candidate species (v 1, p 2.60) also being present in the area. (**0016-2-3** [Collins, Jessie])

Response: *Section 4.3.1.3 of the EIS discusses the potential impacts on the eastern fox snake and measures that would be taken to avoid, minimize, and mitigate impacts. The same section of the EIS also notes that only 21 ac of the snake's preferred habitat (the emergent wetlands on but not landward, i.e., west of, the Fermi site) would be disturbed. As noted in Sections 4.3.1.3 and 5.3.1.3, Detroit Edison has developed and plans to implement a Construction Habitat and*

Species Conservation Plan and an Operational Conservation and Monitoring Plan containing specific conservation and mitigation measures to reduce the potential for adverse effects on the eastern fox snake from building and operation of the Fermi 3 project.

*Section 2.4.1.4 of the EIS and the BA in Appendix F of the EIS note that FWS has stated the eastern massasauga may be present in Wayne and Washtenaw Counties and, therefore, may be present within the transmission line corridor. ITC*Transmission*, which would build and operate the transmission line, would have to comply with Federal and State regulations protecting threatened and endangered species. Prior to building the transmission line, ITC*Transmission *would need to confer with FWS and MDNR to determine which federally listed and State-listed species could be affected by the development of the transmission line. No change to the EIS was made as a result of this comment.*

Comment: 24. Bald eagles nest on the proposed site. The documents states that "Detroit Edison could minimize impacts on wildlife, including restricting the timing of certain construction activities (such as avoiding primary nesting periods for the bald eagle or limiting disturbance of specific habitat types) to periods when migratory species that use those habitats have migrated out of the area." (v 1, p 4.27) Could is the key word. They could do a lot of things, as in they could build windmills in the Thumb, which would be much greater protection for all the species in the Lake Erie bio-region. (**0016-2-5** [Collins, Jessie])

Response: *Section 4.3.1.1 of the EIS describes onsite measures to mitigate potential impacts on bald eagles and states that Detroit Edison would follow FWS guidance for bald eagle management. Section 4.3.1.3 of the EIS states that Detroit Edison would schedule its work consistent with requirements of the BGEPA and the MBTA and would coordinate with the FWS on construction locations and schedules. With respect to alternative sources of energy that could be substituted for Fermi 3, the relative environmental impacts of energy alternatives to Fermi 3 are discussed in Section 9.2. No change to the EIS was made as a result of this comment.*

Comment: Wetlands & Wildlife Impacts
The evaluation of the wetland areas that would be impacted by the construction and operation of the reactor, and the potential status of selected wildlife within those areas is not fully and properly addressed in the DEIS. The majority of the Fermi site, which includes Fermi 3 as well as the currently operating Fermi 2, is currently characterized as surface wetlands within the coastal zone of Lake Erie. DEIS at 2-13; 2-14. Approximately 656 acres of undeveloped lands on the Fermi site are managed as part of the Detroit River International Wildlife Refuge. Id. at 2-14. Wetlands are a unique habitat and provide a number of different benefits to human society and the environment, and thus they are protected by both state and federal laws requiring permits from both state and federal agencies. Id. at 2-53. In this case, the wetlands on the Fermi site are particularly valuable in shielding the area from flooding, as well as providing habitat for a number of species. Id. at 2-57; 2-58.

Between the construction and operation of the Fermi 3 facility, about 19 of the 656 acres of coastal wetlands would be permanently converted. Id. at 5-23. Additionally, the new facility will require some auxiliary support structures, transmission lines, and vehicular access roads, making up a transmission corridor travelling to the edge of the Fermi site that will further cause temporary destruction or soil erosion in another 93.4 acres of inland wetlands. Id. at 5-39; 7-21. Edison has already submitted a Joint Permit Application to both the MDEQ and USACE in order to fill these wetlands as part of construction. Within the DEIS, the reviewing agencies determined that mitigation was necessary and would be performed through 82 acres of coastal wetland restoration at an offsite location on Lake Erie as well as 21 acres of onsite restoration as proposed by Edison within their 404 permit. Id. at 7-20. The GLELC believes this mitigation plan is bereft of details within the pages of the DEIS. More text supporting the comment is provided by the commenter. (**0077-6-11** [Lodge, Terry])

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Response: Detroit Edison initially proposed a *Conceptual Aquatic Resource Mitigation Strategy that was presented in Appendix K of the Draft EIS. Detroit Edison subsequently refined its mitigation strategy based on coordination with USACE and produced the draft*

mitigation plan presented in Appendix K of this EIS. Detroit Edison's proposed mitigation plan, as presented in Appendix K of the EIS, is still under review by USACE. As part of its permit evaluation process, USACE must ensure that the proposed project is in compliance with the Section 404(b)(1) Guidelines. This may include project revisions to further reduce and/or avoid wetland fill. In addition, USACE requires that final compensatory mitigation and onsite restoration plans comply with USACE mitigation regulations (33 CFR Part 332). These regulations establish performance standards and criteria to ensure the quality and success of compensatory mitigation projects for activities authorized by USACE permits. A final detailed compensatory mitigation plan containing details as required by the USACE mitigation regulations would be approved by USACE prior to a permit decision and incorporated into the USACE permit, if issued, as a special condition.

Based on Detroit Edison's joint permit application, MDEQ issued a wetlands permit on January 24, 2012 (ADAMS Accession No. ML12037A243). The MDEQ permit states that Detroit Edison must implement mitigation that adequately offsets State-regulated wetland impacts. The permit also requires the submittal of an acceptable final wetland mitigation plan that adequately offsets State-regulated wetland impacts and provides details and other specific information necessary to implement the mitigation. Detroit Edison submitted its proposed aquatic resource mitigation strategy and design to MDEQ on August 3, 2012, for review and approval (ADAMS Accession No. ML122580003). No change to the EIS was made as a result of these comments.

Comment: "Efforts are underway with the help of the native American community, to bring back wild rice as an 1812 bicentennial project. Fermi unit 3 has ample areas suitable for the propagation of wild rice. It would start the process of reintroducing missing species that were once abundant in the Lake Erie marshes." (v 2, p D.40) "Chapter 324, Sect. 303.01 of the Michigan Natural Resources and Environmental Protection Act identifies Michigan Natural Communities that are considered rare and imperiled. "At the Fermi site, these communities are found relatively intact..". (v 2, p K.13) And yet, you would allow them to be destroyed. (**0016-1-14** [Collins, Jessie])

Response: *The commenter's suggestion that wild rice be established at the Fermi 3 site has been noted. This comment provided no new information and, therefore, does not warrant changes to the EIS.*

Comment: 23. I recommend briefings given for workers to recognize the difference between these look-a-like snakes. (v 1, p 4.25), "....instructing workers to inform inspectors with stop-work authority to allow time to catch and relocate the snakes." Relocate them where? In City Parks? "Approximately 51 acres of potential fox snake habitat would be converted permanently to developed uses." (v 1, p 4.35) (**0016-2-4** [Collins, Jessie])

Comment: It is hoped that the proposed wetland mitigation will provide public benefits, and that an adequate mitigation plan will be developed to reduce the impact on the threatened eastern fox snake, and possibly improve the remaining suitable habitat for this species. (**0067-8** [Peven, Robert])

Comment: The fact that to build Fermi 3 would include tearing up a wetland area which is home to an endangered species, the Fox Snake, is to violate the Endangered Species Act and beyond that, is pure madness. Who would want to sacrifice a precious, beautiful, innocent life form for an ugly destructive, potentially deadly, wasteful detriment to humanity and the environment? No one! No rational human being would want that. (**0042-5** [Barnes, Kathryn])

Response: *Impacts on the eastern fox snake or its habitat are not regulated under the Federal ESA. The eastern fox snake is not listed as threatened or endangered under the Act. The snake is, however, listed by the State of Michigan as threatened and is protected under Part 365, Endangered Species Protection, of the Natural Resource and Environmental Protection Act, Act 451 of 1994.*

Detroit Edison has prepared a Construction Habitat and Species Conservation Plan and an Operational Conservation and Monitoring Plan for the eastern fox snake to promote awareness of the snake among workers building and operating the Fermi 3 facilities and to provide guidance in identifying and protecting any individual snakes that might be encountered. The plans also provide for inspectors with stop-work authority to halt work in areas where eastern fox snakes are found until they can be captured and released. The plans specify that snakes captured in active work areas be released in undisturbed suitable habitat on the Fermi site which will not be impacted by Fermi 3 construction. As indicated in Sections 4.3.1.3 and 5.3.1.3, MDNR has approved the plans. No change to the EIS was made as a result of these comments.

Comment: 25. There are over three pages (v 1, p 2.61- p 2.64) of federally and state listed Terrestrial Species that “May Occur within the Transmission Line Corridor.” The corridor crosses about 30 wetlands or other waters that may be regulated by the USACE and/or MDEQ. What is the point of all these lists, if any corporation with the money can get around the laws? Surely these agencies have more righteous intentions than collecting fees for devastating permits? (**0016-2-6** [Collins, Jessie])

Response: *The Federally listed and State-listed species identified in Table 2-9 are those species potentially occurring in any part of Monroe, Washtenaw, and Wayne Counties based on information collected by regulatory agencies over several decades. It is not expected that more than a small number of the species in Table 2-9 would be encountered within the transmission line corridor ultimately selected. The information in the table is not intended to imply that all the identified species are likely to be present or affected by the proposed transmission line.*

Because the exact alignment of the transmission line is not yet known, no listed terrestrial species can be categorically eliminated from the possibility of occurring in the corridor. The

purpose of the list is to identify listed species that have at least some potential to occur in the project area so that proper attention can be given to those resources in planning and evaluating potential impacts of the project.

*Development of the transmission line would require permits or authorizations for any impacts on wetlands and federally listed and State-listed threatened and endangered species. Prior to development, ITC*Transmission *would have to conduct site-specific investigations for multiple resources, including threatened and endangered species, to support permit applications from Federal and/or State agencies. As is the case for work by Detroit Edison on the Fermi 3 site, ITC*Transmission *would need to demonstrate that all practicable measures would be taken to avoid impacts on regulated resources, to minimize impacts that cannot be avoided, and to mitigate impacts that are unavoidable. No changes were made to the EIS as a result of this comment.*

Comment: As a civic booster I have long observed and admired DTE Energy's involvement in Monroe County. I have had the pleasure to work with, shoulder to shoulder with many men and women from the company, and to a person they are great examples of what good neighbors should be. As a conservationist I have worked over the years with what I term the big four of local environmental stewardship, the Fish and Wildlife Service, Michigan Department of Natural Resources, the Huron Clinton Metropolitan Authority and the utilities. DTE Energy and its involvement with the Wildlife Habitat Council is a great example of environmental stewardship. Of course, DTE Energy was the first business partner within the wildlife refuge entering into a cooperative management agreement with the fish and wildlife service, enabling the service to protect and manage wildlife and fish populations on 656 acres at Fermi. I am aware that about 34 acres of wetlands will be impacted by Fermi 3, only 13 of which are to be permanently affected. My experience with other projects where wetlands have been restored is that wetlands along the west shore of Lake Erie recover quickly. I can point to the reclamation of the Brancheau tract on Swan Creek, about 180 acres. It had been actively farmed for more than a century. But it did not take long after Ducks Unlimited and the Fish and Wildlife Service turned it back into productive wetlands. My belief is that we will see a similar success with the 82 acres to be restored along LaPlaisance space south of River Raisin, Plum Creek Bay. In closing, 82 acres of restored wetlands for 13 acres of permanently impacted wetlands, a multi-billion expansion of operations involving one of our biggest and best community partners and greater diversification of our energy portfolio sounds like a win win scenario to me.
(**0040-21-2** [Micka, Richard])

Response: *The commenter acknowledges past environmental stewardship efforts by Detroit Edison and is supportive of the conceptual wetlands mitigation plan. No changes were made to the EIS as a result of this comment.*

Comment: 27. DE addressed the issue by saying, "cooling towers (approximately 400 ft. tall) may have a minor, localized impact on birds migrating through the area. Bird collisions are not

monitored by DE, but dead birds are occasionally found around the towers ....during a one-week period in October 2007, 45 dead birds were found at the Fermi south cooling tower." (v 1, p 2.43) Please, let the Audubon Society be an international organization! (**0016-2-8** [Collins, Jessie])

Response: *With respect to the potential impacts of Fermi 3 on migrating birds, the EIS (Section 5.3.1.1) concludes that although birds do collide with cooling towers, the impacts on bird populations are sufficiently small as to not endanger local populations. No change to the EIS was made as a result of this comment.*

Comment: 26. And who knew the Fermi site "lies on the Atlantic flyway, which is one of several major migratory flyways in North America." (v 1, p 2.41) Fermi 2 is endangering other species as they migrate to and from their homelands. I hope the Audubon Society steps up to the plate on this. (**0016-2-7** [Collins, Jessie])

Response: *The comment refers to the project location within the Atlantic flyway and the hazard posed by Fermi 2, the existing active nuclear reactor on the Fermi site, to migrating birds. Impacts of Fermi 2 are out of the scope of the EIS. With respect to the potential impacts of the proposed Fermi 3 on migrating birds, the EIS (Section 5.3.1.1) concludes that while birds do collide with cooling towers, the impacts on bird populations are sufficiently small as to not endanger local populations. The review team therefore believes that operating the proposed Fermi 3 facilities, including the proposed Fermi 3 cooling towers, would have at most minimal effects on migratory birds. No change to the EIS was made as a result of this comment.*

Comment: EPA is pleased to see that, from the first iterations of the proposed project, projected permanent wetlands impacts have been reduced from approximately 125 acres to 10 acres. EPA appreciates that the conceptual mitigation plans were included as an attachment to the Draft EIS. Recommendation: We recommend that the following measures to further minimize impacts to wetlands during construction be committed to in the license:

- Perform construction in wetlands during frozen ground conditions, if feasible;
- Minimize width of temporary access roads;
- Use easily-removed materials for construction of temporary access roads and staging areas (e.g., swamp/timber mats) in lieu of materials that sink (e.g., stone, rip-rap, wood chips);
- Use swamp/timber mats or other alternative matting to distribute the weight of the construction equipment. This will minimize soil rutting and compaction;
- Use vehicles and construction equipment with wider tires or rubberized tracks, or use low ground pressure equipment to further minimize impacts during construction access and staging;
- Use long-reach excavators, where appropriate, to avoid driving or staging in wetlands; and

- Place mats under construction equipment to contain any spills. (**0078-9** [Westlake, Kenneth A.])

Response: *The review team agrees that these recommendations would help reduce wetland impacts while the proposed Fermi 3 facilities are being built. Although the NRC cannot require the applicant to implement the recommendations identified in this comment, the EIS has been revised to present the recommendations and describe how they could reduce wetland impacts if implemented. USACE may add special conditions to the Fermi 3 permit, if issued, when such conditions are necessary to comply with the Section 404(b)(1) Guidelines, the ESA, and other applicable statutes, and any requirements imposed by conditions of the State 401 water quality certification or to otherwise satisfy the public interest requirement. Permit conditions would be directly related to the impacts of the proposal, appropriate to the scope and degree of the impacts, and reasonably enforceable. USACE would consider the suggestions for inclusion as special conditions in the Fermi 3 permit, if issued, within the context explained above.*

Comment: EPA is pleased to see that all temporary and permanent forest clearings will occur on edges of forest patches and that no further forest fragmentation will occur at the Fermi site. We are also pleased to see that "temporarily disturbed vegetated areas would be revegetated with plants native to the project vicinity once no longer need" (page 4-24, lines 1-2). However, EPA is concerned about the amount of habitat lost in the transmission corridor and due to the proposed expansion of the Substation, at 1,069 and 21 acres, respectively. As outlined under Transmission Corridor and Substation, EPA views these developments as connected actions. Therefore, estimated impacts should be considered when preparing mitigation plans. This includes wetlands mitigation ratios. Recommendation: We recommend that all disturbed habitats are similarly revegetated using native species and that measures of success (e.g., percentages of allowed nonnative invasive species) are discussed in the Final EIS. While we understand that conversion of forested uplands to cleared grasslands is necessary for maintenance of the transmissions towers, we strongly encourage low-growing native plants conducive to periodic mowing be used instead. Clarify whether agricultural fields that will be used for construction staging will be returned to agricultural use or converted to upland habitat. Finally, EPA would like to know the fate of the restored tall grass prairie below the transmission lines on the Fermi site mentioned on page 2-10, lines 4-6. It is unclear if this area will be impacted and, if it is, whether it will be restored and what measures of success will be employed. Because of the low likelihood of successful restoration of tall grass prairies, EPA strongly encourages the Applicant to commit to avoiding this area. Lastly, EPA recommends that the Final EIS indicate what land, if any, will revert to or become part of the Detroit River International Wildlife Refuge. (**0078-17** [Westlake, Kenneth A.])

Response: *Although building the transmission lines and expanding the Milan substation are not under NRC's regulatory jurisdiction and although these facilities would be built and operated by ITC*Transmission *rather than Detroit Edison, the EIS includes a discussion of the potential*

terrestrial impacts from their building and development in Section 4.3.1. The EIS discusses the potential terrestrial impacts from operating the subject facilities as part of Section 5.3.1. The potential effects of building and operating these facilities are also considered in the cumulative evaluation of terrestrial impacts in Section 7.3.

The review team agrees that the mitigation recommendations in this comment would help reduce wetland impacts resulting from building the proposed transmission lines and expanded substation. Although the NRC cannot require the applicant to implement the recommendations identified in this comment, the EIS has been revised to present these recommendations and describe how they could reduce wetland impacts if implemented. Part of the expanded discussion will explain how disturbed areas within the transmission line corridor could be revegetated with native species suited to the periodic mowing needed to maintain the transmission lines. Detroit Edison has determined that it would be necessary to build permanent Fermi 3 facilities, principally the new switchyard, using approximately 10 ac of the tallgrass prairie restoration area (Doub 2011). Detroit Edison, as part of its proposed 404(b)(1) analysis (Appendix J of the EIS), determined that the use of the prairie restoration area for the switchyard would contribute to the avoidance of wetlands to the extent practicable and reduce overall project impact on wetlands. Section 4.3.1 of the EIS has been revised to discuss in depth the reasons why the loss of the prairie restoration is unavoidable.

Detroit Edison has not indicated what would be done with the agricultural fields once the Fermi 3 facilities are built. Section 4.3.1 of the EIS has been revised to note that the fields could present an opportunity for restoration of the tallgrass prairie lost to building Fermi 3 facilities. However, the review team does not have the authority to require Detroit Edison to implement this mitigation measure.

As stated in Sections 4.1.1 and 4.3.1.3, approximately 45 ac on the Fermi site currently managed as part of the DRIWR would be used to develop Fermi 3, of which approximately 19 ac would remain permanently occupied and the remainder (approximately 26 ac) would be only temporarily occupied. As stated in Section 4.3.1.1 of the EIS, Detroit Edison plans to restore all temporarily disturbed land by establishing regionally indigenous vegetation. Detroit Edison plans to revise its cooperative agreement with FWS regarding the approximately 637 ac of natural habitat that it expects to be available for management by DRIWR after Fermi 3 is developed (Detroit Edison 2011a). This acreage would include the approximately 26 ac of restored temporarily disturbed land formerly managed as part of the refuge.

Comment: As noted on page 4-23, lines 20 to 24, NRC staff will prepare the Biological Assessment (BA) under the Endangered Species Act prior to the issuance of the Final EIS. Recommendation: EPA expects to see the BA as an appendix to the Final EIS. Clarify in the Final EIS whether the findings of the U.S. Fish and Wildlife Service's (USFWS) Biological Opinion are incorporated into the Final EIS, and will be incorporated into the NRC license and the USACE ROD. EPA will also look for coordination with the Michigan Department of Natural

Resources regarding adaptive management plans to protect the state-listed eastern fox snake in the Final EIS. (**0078-18** [Westlake, Kenneth A.])

Response: *The BA has been included in Appendix F of the final EIS. As noted in Sections 4.3.1.3 and 5.3.1.1, the Construction Habitat and Species Conservation Plan and the Operational Conservation and Monitoring Plan developed by Detroit Edison to minimize the potential for eastern fox snake impacts have been approved by MDNR.*

Comment: The Draft EIS does not discuss lights that may be located on the proposed meteorological tower or the proposed cooling towers. As this area or this part of Lake Erie is an important part of migratory bird flight paths, any lights that might impact bird migration should be discussed and subsequently mitigated for. Recommendation: EPA recommends that any lighting installed on the meteorological tower or the cooling towers is discussed, including what color will be used and whether they would be continuous or intermittent. The Final EIS should discuss coordination with USFWS and the Federal Aviation Administration to ensure the best possible lighting solutions are employed to reduce avian impacts, while ensuring aviation safety. (**0078-27** [Westlake, Kenneth A.])

Response: *The NRC filed a Request for Additional Information (RAI) with Detroit Edison in response to this comment. The RAI requested information about the types of lighting planned for the cooling towers and meteorological tower as well as the potential impacts of the lighting and any mitigating measures that might be taken. The RAI also requested documentation of correspondence on this subject between Detroit Edison and the FWS and the Federal Aviation Administration (FAA). Detroit Edison responded to the RAI with the requested information on May 9, 2012 (ML12132A368). Detroit Edison conferred with FAA multiple times about the cooling and meteorological towers, including obstruction lighting requirements. A summary of the correspondence between Detroit Edison and FAA was provided in Detroit Edison's letter NRC3-10-0025, dated July 9, 2010 (ML102000566). Although Detroit Edison contacted FWS regarding the Fermi 3 project, the subject of obstruction lighting was not documented in that correspondence. Detroit Edison (2012) has stated it will consult with both FAA and FWS prior to construction of the Fermi 3 cooling tower and meteorological tower to devise obstruction lighting systems that incorporate FAA and FWS guidelines, as applicable. The EIS was revised to include information about the tower lighting obtained in response to the RAI.*

Comment: Further investigation into communications between the USACE and Edison reveal that as of December 2011, the USACE had still not verified the adequacy of the applicant's avoidance and minimization statement, and therefore its compensatory mitigation plan. U.S. Army Corps of Engineers Public Notice Re: Application of Detroit Edison No. LRE-2008-00443-1-S11 at 5. The Federal Regulations state that compensatory mitigation may only be employed after all appropriate and practical steps to avoid and minimize adverse impacts to aquatic resources, including wetlands and streams, have been taken. 33 CFR 325 et seq. The USACE needs to confirm both the necessary conversion of the wetlands on site as well as the proposed mitigation from the 404 application if it is to move forward properly. The EIS should

also include proposed mitigation measures that take the potential effects of climate change on the wetland areas into account. Prolonged higher temperatures could cause increased evaporation rates, which, along with the greater likelihood of drought, could reduce the extent of wetlands in the area." Id. at 7-18.

In analyzing the effect of possible conversion of wetlands in the DEIS, the review team noted that there were possible threatened species that may be effected by the elimination of wetlands, and more specifically, by the creation of infrastructure and access roads within the wetlands. The DEIS noted first, that the creation of access roads creates a moderate threat to the status of the Eastern Fox Snake, listed by the State of Michigan as Threatened, due to possible vehicle mortality. DEIS at 5-142; 7-16. The DEIS also reported a potential impact to the American Lotus, also listed by the State as Threatened, due to construction activities. Id. at 7-20. In both cases the regulatory agencies made note that Edison would work together with the Michigan Department of Natural Resources to create protections for those Threatened species. No specific protection plans are in place at this time however, and these protections must be published and available for public comments prior to inclusion in the Final EIS.
The impact of thermal pollution on local aquatic wildlife was discussed in the previous section, but likewise, thermal pollution is another issue associated with the operations of the Fermi 3 facility with potential for increasing harm to wetlands and wildlife as climate change continues to alter lake levels and temperatures. (**0038-4-3** [Schroeck, Nicholas Joseph])

Response: *The NRC will not make a decision whether to issue a COL until after the EIS has been completed; the scope of the EIS includes an evaluation of potential impacts on wetlands, other terrestrial habitats, aquatic habitats, and threatened and endangered species. The USACE's decision on whether or not to issue a Section 10/404 permit will be made after the final EIS has been issued, and the decision would be based in part on the information and analysis in the final EIS. Section 4.3.1.1 of the EIS identifies approximately 197 ac of terrestrial wildlife habitat that would be affected, of which approximately 51 ac would be permanently converted to project uses on the Fermi site. Section 4.3.1.3 of the EIS points out that an approximate total of 34.5 ac of wetlands would be impacted by the Fermi 3 project, of which 8.3 ac would be permanently lost and 23.7 ac would be temporarily impacted. The same section of the EIS discusses the analysis conducted by Detroit Edison to avoid and minimize wetland impacts, and their proposed plan to offset the remaining unavoidable wetland impacts by compensatory mitigation, as required by USACE and MDEQ. Detroit Edison's initial design would have resulted in impacts on approximately 151 ac of wetlands (Detroit Edison 2008). A substantial part of that area would have been permanently affected by construction of the cooling tower, which was relocated in a revised layout to reduce wetlands impacts, as discussed in Appendix J of the EIS. Considering that the USACE permit evaluation process must ensure that jurisdictional wetland impacts have been avoided and minimized to the extent practicable, and that compensatory mitigation for the remaining unavoidable wetland impacts will be required as a condition of the USACE permit, if issued, and that MDEQ also requires*

compensatory mitigation for State jurisdictional wetland losses, the review team believes that the net impacts on wetlands from building Fermi 3 would be minor.

Detroit Edison has prepared a Construction Habitat and Species Conservation Plan and an Operational Conservation and Monitoring Plan for the eastern fox snake that include provisions for minimizing eastern fox snake impacts during building and operation of Fermi 3. MDNR has approved the plans. Section 4.3.1.3 of the EIS acknowledges that Fermi 3 could affect a small area of American lotus near the western edge of the South Lagoon. It states that Detroit Edison would transplant the affected individual plants to suitable wetland habitats on the Fermi site, if available, or otherwise offsite. This species has been successfully transplanted in southeastern Michigan.

Section 4.2.3.1 of the EIS concludes that the effects of discharges on water quality, including thermal impacts on Lake Erie, would be SMALL. This conclusion would extend to wetlands that are hydrologically connected to the lake. However, the EIS has been revised to include discussion of the potential impacts of thermal pollution associated with operation of Fermi 3 in the context of the potential effects of climate change, including altered lake levels and temperatures.

Comment: The descriptions of terrestrial and wetland mitigation plans are insufficient and inadequate, legally and practically, in violation of NEPA requirements for a Draft Environmental Impact Statement.

At DEIS Vol. 1 p. 4-44 appears this statement :
Any impacts on terrestrial or wetland ecological resources associated with the compensatory mitigation proposed by Detroit Edison would be evaluated by the USACE and MEDQ as part of th permitting process for that activity . It is anticipated that this process will be completed prior to issuance of the final Fermi 3 EIS. The record compiled by the agency must be sufficient to determine the mitigation measures being used to compensate for adverse environmental impacts stemming from the original proposal that, unmitigated, would be significant. Spiller v. White, 352 F.3d 235, 241 (5th Cir.2003) (quoting Cabinet Mountains Wilderness v. Peterson, 685 F.2d 678, 682 (D.C.Cir.1982)). Although proposed mitigation measures need not be laid out to the finest detail, even within the more labor-intensive context of an environmental impact statement, Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 352, 109 S.Ct. 1835, 104 L.Ed.2d 351 (1989) , it is still required “that mitigation be discussed in sufficient detail to ensure that environmental consequences have been fairly evaluated.” Miss. River Basin Alliance v. Westphal, 230 F.3d 170, 176-77 (5th Cir.2000) (quoting Robertson, 490 U.S. at 352, 109 S.Ct. 1835). An EIS involving mitigation must include “a serious and thorough evaluation of environmental mitigation options for [a] Project to allow its analysis to fulfill NEPA’s process-oriented requirements [.]” Miss. River Basin Alliance, 230 F.3d at 178.

But in the instance of Fermi 3, the NRC Staff expects Intervenors and the public to forego public comment opportunity on terrestrial and/or wetland mitigation plans at the DEIS stage for want of

information disclosure in a timely fashion. Intervenors and the public are being asked to potentially forfeit rights accruing from having that option available.

The harm to a public plaintiff in a NEPA circumstance is complete when an agency makes a decision without sufficiently considering information NEPA requires be placed before the decision-maker and public. Sierra Club v. Marsh, 872 F.2d 497, 500 (1st Cir. 1989). That information includes comments and feedback from public participants; the courts expect that "Persons challenging an agency's compliance with NEPA must structure their participation so that it... alerts the agency to the [parties'] position and contentions,' in order to allow the agency to give the issue meaningful consideration." Dep't of Transp. v. Pub. Citizen, 541 U.S. 752, 764 (2004). Plaintiffs "waive their right to challenge [the final NEPA result} if "they did not raise that issue during the administrative process"). Protect Lake Pleasant, LLC v. Connor, No. CIV 07-454-PHX-RCB, 2010 WL 5638735, at *37 (D.Ariz. July 30, 2010).

Here, Intervenors and the public are being deprived of a comment right accorded them under NEPA by not having access to mitigation plans contemporaneously and as a part of the DEIS stage. (**0077-6-1** [Lodge, Terry])

Response: *This comment is a contention submitted by the intervenors in the ongoing Fermi 3 licensing proceeding before the Atomic Safety and Licensing Board (ASLB). The ASLB rejected the contention, noting that the mitigation plans have been described in the EIS and that the public is not deprived of the right to comment under NEPA if other agencies' permitting processes are not completed at the draft EIS stage. The EIS discusses terrestrial and wetlands mitigation in Sections 4.3.1.5 and 5.3.1.5.*

Comment: Evaluation of the wetland areas that would be impacted by the construction and operation of the reactor, and the potential status of selected wildlife within those areas, is not fully and properly addressed in the DEIS, in violation of NEPA. The majority of the Fermi site, which includes Fermi 3 as well as the currently operating Fermi 2, is currently characterized as surface wetlands within the coastal zone of Lake Erie. DEIS at 2-13; 2-14. Approximately 656 acres of undeveloped lands on the Fermi site are managed as part of the Detroit River International Wildlife Refuge. Id. at 2-14. Wetlands are a unique habitat and provide a number of different benefits to human society and the environment, and thus they are protected by both state and federal laws requiring permits from both state and federal agencies. Id. at 2-53. In this case, the wetlands on the Fermi site are particularly valuable in shielding the area from flooding, as well as providing habitat for a number of species. Id. at 2-57; 2-58.

Between the construction and operation of the Fermi 3 facility, about 19 of the 656 acres of coastal wetlands would be permanently converted. Id. at 5-23. Additionally, the new facility will require some auxiliary support structures, transmission lines, and vehicular access roads, making up a transmission corridor travelling to the edge of the Fermi site that will further cause temporary destruction or soil erosion in another 93.4 acres of inland wetlands. Id. at 5-39; 7-21.

Edison has already submitted a Joint Permit Application to both the MDEQ and USACE in order to fill these wetlands as part of construction. Within the DEIS, the reviewing agencies determined that mitigation was necessary and would be performed through 82 acres of coastal wetland restoration at an offsite location on Lake Erie as well as 21 acres of onsite restoration as proposed by DTE within its §404 permit. Id. at 7-20.

Intervenors concur with the GLELC in the belief this mitigation plan is bereft of details within the pages of the DEIS. Further investigation into communications between the USACE and Edison reveal that as of December 2011, the USACE had still not verified the adequacy of the applicant's avoidance and minimization statement, and therefore its compensatory mitigation plan. U.S. Army Corps of Engineers Public Notice Re: Application of Detroit Edison No. LRE-2008-00443-1-S11 at 5. The Federal Regulations state that compensatory mitigation may only be employed after all appropriate and practical steps to avoid and minimize adverse impacts to aquatic resources, including wetlands and streams, have been taken. 33 CFR 325 et seq. The USACE needs to confirm both the necessary conversion of the wetlands on site as well as the proposed mitigation from the 404 application if it is to move forward properly. The EIS should also include proposed mitigation measures that take the potential effects of climate change on the wetland areas into account. Prolonged higher temperatures could cause increased evaporation rates, which, along with the greater likelihood of drought, could reduce the extent of wetlands in the area." Id. at 7-18.

In analyzing the effect of possible conversion of wetlands in the DEIS, the review team noted that there were possible threatened species that may be effected by the elimination of wetlands, and more specifically, by the creation of infrastructure and access roads within the wetlands. The DEIS noted first, that the creation of access roads creates a moderate threat to the status of the Eastern Fox Snake, listed by the State of Michigan as Threatened, due to possible vehicle mortality. DEIS at 5-142; 7-16. The DEIS also reported a potential impact to the American Lotus, also listed by the State as Threatened, due to construction activities. Id. at 7-20.

In both cases the regulatory agencies made note that Edison would work together with the Michigan Department of Natural Resources to create protections for those Threatened species. No specific protection plans are in place at this time however, and these protections must be published and available for public comments prior to inclusion in the Final EIS. The harm to tje public under NEPA is complete when an agency makes a decision without sufficiently considering information NEPA requires be placed before the decision-maker and public. Sierra Club v. Marsh, 872 F.2d 497, 500 (1st Cir. 1989). That information includes comments and feedback from public participants; the courts expect that "Persons challenging an agency's compliance with NEPA must structure their participation so that it... alerts the agency to the [parties'] position and contentions,' in order to allow the agency to give the issue meaningful consideration." Dep't of Transp. v. Pub. Citizen, 541 U.S. 752, 764 (2004). Plaintiffs "waive

their right to challenge [the final NEPA result} if "they did not raise that issue during the administrative process"). Protect Lake Pleasant, LLC v. Connor, No. CIV 07-454-PHX-RCB, 2010 WL 5638735, at *37 (D.Ariz. July 30, 2010).

Here, Intervenors and the public are being deprived of a participation right accorded them under NEPA by not having access to the specific protection plans for endangered and threatened species at the DEIS stage, in order to comment and make their positions on significant environmental issues known. (**0077-6-5** [Lodge, Terry])

Response: *This comment is a contention submitted by the intervenors in the ongoing Fermi 3 licensing proceeding before the ASLB. The ASLB rejected the contention with respect to the American lotus, noting that the intervenors did not include a specific argument about alleged inadequacies of the draft EIS. Potential impacts on American lotus are described in Section 4.3.1.3 of the EIS, and Detroit Edison's proposed mitigation with respect to the American lotus is described in Section 4.3.1.5 The eastern fox snake is the subject of a pending contention before the ASLB, and issues related to that contention will be resolved in the adjudicatory proceeding. Potential impacts on the eastern fox snake are discussed in Sections 4.3.1.3 and 5.3.1.3 of the EIS, and mitigation for eastern fox snake impacts is discussed in Sections 4.3.1.5 and 5.3.1.5 of the EIS.*

Comment: To facilitate compliance with Section 7(c) of the Endangered Species Act of 1973, as amended, Federal agencies are required to obtain information from the U. S. Fish and Wildlife Service (FWS) concerning any species, listed or proposed to be listed, that may be present in the area of proposed action.

The DEIS identifies six federally-listed species in Monroe County, Michigan that may inhabit the project area. The FWS is reserving substantive comments regarding federally listed species until they are provided an opportunity to review the forthcoming biological assessment. At that time, consultation pursuant section 7 of the ESA will continue. The construction of the transmission lines will require a separate section 7 consultation as it is considered a separate project by the Nuclear Regulatory Commission (NRC). The FWS recommends that the NRC not issue a license for Fermi 3 until section 7 consultation has been completed. (**0080-1** [Treichel, Lisa])

Response: *The BA has been completed and was transmitted to FWS on March 21, 2012. This BA also is included in the final EIS in Appendix F. NRC anticipates that the Section 7 consultation for actions that would be taken on the Fermi site will be completed before the final EIS is published. NRC will not issue a license to Detroit Edison until the Section 7 consultation process for the Fermi 3 project has been completed.*

*Detroit Edison would not build the transmission line; instead, ITC*Transmission *would be responsible for building and operating it. The review team expects that a separate*

*environmental review would be conducted by ITC*Transmsision *in advance of building that transmission line. Section 7 consultation would likely be necessary as part of the Section 404 permit process. It is not known at this time when the offsite transmission line would be constructed, nor the precise locations of towers and other appurtenances. No changes were made to the EIS as a result of this comment.*

Comment: DTE has proposed a closed circuit cooling system with a cooling basin cooling tower for Fermi 3. This closed system can significantly reduce the water use by 96 to 98%, and significantly reduce the impingement or entrainment of aquatic organisms. DTE has also proposed a through screen velocity of 0.5 ft/s or less under all operating conditions which should also reduce entrainment and impingement. The system also allows impinged organisms to be washed from the traveling screens to be directed back to Lake Erie via a fish return system. We laud these measures to reduce entrainment/impingement but the DEIS has not addressed impingement of diving ducks. There are water intake structures at other nuclear power plants in the Great Lakes where this has become a problem. Ducks may be attracted to the intake structures to feed on the guagga/zebra mussels that colonized the intake and the surrounding substrate. The DEIS has not stated the depth of the intake. The depth could be greater than a diving duck's diving capabilities but DTE should address this issue in the forthcoming FEIS. (**0080-10** [Treichel, Lisa])

Response: *In January of 2000, an episode of the impingement causing the death of approximately 100 greater scaup (Aythya marila) and lesser scaup (Aythya affinis) occurred in the cooling water intake for the Nine Mile Point Nuclear Station in Lycoming, New York. The report prepared by the Niagara Mohawk Power Corporation (2000) stated that the maximum water velocity at the intake opening was 2 ft per sec. There are few other documented cases of waterfowl being impinged or entrained at water intakes. The EPA (2011) has proposed new regulations to establish requirements for cooling water intake structures at existing facilities. The proposed regulation allows for alternative measures to minimize impingement and entrainment. One alternative is to limit the through-screen velocity to 0.5 ft per sec or less, which Detroit Edison has proposed. According to the EPA, that velocity should allow most fish to swim away from the cooling water intake of the facility. According to the Niagara Mohawk Power Corporation (2000) report, scaups feed by diving 10 to 25 ft deep and have been known to dive to depths of 40 ft on occasion. Since Lake Erie is not deep at the Fermi site, the review team assumes that scaups and possibly other diving ducks are capable of diving as deep as the proposed Fermi 3 cooling water intake. Nevertheless, the review team concludes that, given the relatively few documented cases of impingement of waterfowl and Detroit Edison's proposed maximum intake velocity, the likelihood that waterfowl would become impinged or otherwise injured at the water intake is low. The text of Section 5.3.1.3 has been expanded to include discussion of the potential impingement of waterfowl.*

Comment: The FWS will provide more substantive comments regarding federally listed threatened and endangered species after they are provided the opportunity to review the biological assessment (BA). In the DEIS, on page 5-21, it is stated that ?the Review Team will prepare a BA prior to issuance of final EIS", at which time the U. S. Fish and Wildlife Service, East Lansing Field Office will review the BA. Wetland loss should be mitigated and any affected coastal wetland should not lose any exiting habitat value. A wildlife management plan should be developed and provided to the local FWS Office for review and comment. The impingement of diving ducks should be addressed in any forthcoming NEPA documents. (**0080-11** [Treichel, Lisa])

Response: *The BA has been completed and was transmitted to FWS on March 21, 2012. This BA is included in the final EIS as Appendix F. As explained in Sections 4.3.1.3 and 5.3.1.3 of the final EIS, Detroit Edison prepared a Construction Habitat and Species Management Plan and an Operational Conservation and Monitoring Plan outlining measures to protect the eastern fox snake, and MDNR has approved those plans. The plan for construction of Fermi 3 was presented in the Draft EIS, but the final EIS discusses the latest version dated March 2012. The plan for Fermi 3 operations was not prepared until March 2012 but is discussed in the final EIS. Appendix K of the Draft EIS presented a conceptual wetland mitigation strategy proposed by Detroit Edison; Appendix K of the final EIS presents Detroit Edison's proposed compensatory wetland mitigation plan developed to implement the earlier strategy and comply with USACE mitigation regulations (33 CFR Part 332). Impacts on wildlife are addressed in Sections 4.3.1, 5.3.1, and 7.3.1 of the draft and final EISs. Potential impingement of waterfowl is addressed in the response to the comment above and in Section 5.3.1 of the final EIS. The staff concluded in the final EIS that impacts on terrestrial ecological resources from preconstruction, construction, and operation of Fermi 3, as well as cumulative impacts, would be SMALL.*

These comments are also represented in the specific comments from L. Treichel presented below. Separate responses, and separate statements as to how the EIS was revised, are provided below.

Comment: There is a known bald eagle territory that overlaps DTE's FERMI 3 project boundary. As outlined in the FWS Bald Eagle Management Guidelines (http://www.fws.gov/midwest/eagle/guidelines/guidelines.html), the FWS recommends no construction activity within a buffer distance of 660 feet from any existing or recently existing nest if the proposed activity is visible from the nest and/or a resulting structure will be over three stories tall. Because the locations of proposed project-related construction activities appear to fall outside the recommended 660 foot nest buffer around the current active nest, the FWS has determined that this project, at this time, is unlikely to result in take of breeding eagles. This determination should only be considered valid as long as activities associated with the chosen project alternative continue to fall outside of the aforementioned 660 foot buffer around the current active eagle nest and there are no new eagle nests identified in the area.

It is worth noting that the breeding pair of eagles that occupy the nearby territory have constructed five nests in the last ten years (resulting in one new nest approximately every other year) on FERMI property, and have used all but one of them for nesting during that same time period. An unused nest was constructed in 2011 and is likely to be used for breeding at some point in the future. Because these eagles frequently relocate nest sites, and because the project start date may be one or several years down the road, it is very difficult to predict impacts to these eagles from this project. As such, FWS recommends that DTE remain in close contact with FWS Field Office in Michigan regarding changes in eagle nest locations. If a new nest were to be built, or an inactive nest be occupied in the future and project activities cannot be modified to avoid a potential disturbance, an eagle take permit may be necessary.
Additionally, since the project is located in the proximity of eagle foraging and roosting habitat both during breeding and in the winter, along with the above finding, the FWS encourages you to implement the following recommendations to further avoid impacting bald eagles:

- Minimize potentially disruptive activities (as outlined in the Guidelines) and development in the eagles' direct flight path between any known nests, roost sites and/or important foraging areas.
- Avoid loud, intermittent noises within one-half mile of known eagle nest locations during the breeding season and known eagle use areas when eagles are present.
- Protect and preserve potential roost and nest sites by retaining, when possible, mature trees and old growth stands within one-half mile of water.
- Employ industry-accepted best management practices to prevent birds from colliding with any lines, poles, and tower supports.
- Use pesticides, herbicides, fertilizers, and other chemicals only in accordance with federal and state laws. (**0080-2** [Treichel, Lisa])

Response: *The review team acknowledges these recommendations. Section 4.3.1.1 of the Draft EIS indicates that Detroit Edison has stated it would follow FWS guidelines for bald eagle management. Furthermore, Section of 4.3.1.1 of the Draft EIS also indicates that Detroit Edison has stated its intention to coordinate locations and schedules for development of the Fermi 3 project with the FWS. No changes were made to the EIS as a result of this comment.*

Comment: The DEIS identifies several species of woodland and grassland bird species or their habitats that fall under protection of the Migratory Bird Treaty Act. Because the proposed project site very likely provides nesting habitat for migratory birds, we have concerns that the proposed project may also impact migratory birds. Under the Migratory Bird Treaty Act of 1918, as amended, it is unlawful to take, capture, kill, or possess migratory birds, their nests, eggs, or young. We recommend that removal of potential nesting habitat associated with the proposed project be completed before spring nesting begins or initiated after the breeding season has ended to avoid take of migratory birds, eggs, young, and/or active nests. Specifically, we recommend that no habitat disturbance, destruction, or removal occur between April 15 and

August 15 to minimize potential impacts to migratory birds during their nesting season, but please be aware that some species may initiate nesting before April 15. (**0080-3** [Treichel, Lisa])

Response: *The EIS identifies measures Detroit Edison could take to minimize impacts on wildlife, including migratory birds. An example of such a measure would be restricting the timing of certain construction activities to periods when migratory species have migrated out of the area. The U.S. Department of the Interior's (DOI's) detailed recommendations for avoiding impacts on migratory birds have been added to Section 4.3.1.1 of the EIS.*

Comment: Approximately 197 acres of terrestrial wildlife habitat on the proposed Fermi 3 site will be disturbed and of that, 51 acres will be permanently lost. We would recommend DTE develop a wildlife management plan to compensate for the loss of wildlife habitat to be reviewed and approved by the FWS Field Office in Michigan. There will be approximately 130 acres of grassland-type habitat either permanently or temporarily lost due to the construction of Fermi 3 and associated appurtenances. The plan should include development of quality grassland habitat to offset the loss and to provide nesting habitat for grassland avian species (i.e., bobolink, Eastern meadowlark, savannah sparrow). (**0080-4** [Treichel, Lisa])

Response: *The review team acknowledges DOI's recommendation. The grassland habitat subject to disturbance by Fermi 3 includes approximately 64.0 ac of cropland, most of which would be only temporarily affected and would be useable for growing crops after Fermi 3 would be built. The remaining grassland subject to disturbance by Fermi 3 consists of a mix of idle/old field/planted areas and ROW areas. Detroit Edison has stated its intention to restore temporarily disturbed areas, including temporarily disturbed grassland, with regionally indigenous species of vegetation (draft EIS Section 4.3.1.1, page 4-22).*

The EIS was revised to include DOI's recommendation that Detroit Edison develop a wildlife management plan to compensate for the loss of wildlife habitat, including development of quality grassland habitat to offset the loss of the prairie restoration area and to provide nesting habitat for grassland avian species (i.e., bobolink, eastern meadowlark, savannah sparrow). The NRC does not have the authority to require the applicant to prepare such a plan or to require FWS review and approval.

Comment: Approximately 34.5 acres of wetlands will be affected from the construction of Fermi 3. Of that, 27.7 acres will be temporarily disturbed and will be restored. Approximately 8.3 acres would be permanently lost at the site. To offset any wetland loss, DTE has developed an aquatic resource mitigation plan that includes restoring or enhancing approximately 82 acres of wetland offsite in the coastal zone of Western Lake Erie. The FWS agrees conceptually with the mitigation plan although according to the FWS's mitigation plan, coastal wetlands may be considered Category 1, with a goal of no loss of existing habitat value." Therefore, the 0.80 acres of emergent coastal wetlands proposed to be impacted by the project should not lose any existing habitat value. (**0080-5** [Treichel, Lisa])

Response: *For the Fermi 3 project, activities involving the discharge of fill material into waters of the United States, including wetlands, require authorization from the USACE under Section 404 of the CWA. The CWA Section 404(b)(1) Guidelines (40 CFR Part 230) (Guidelines) are the substantive criteria the USACE uses to determine a project activity's environmental impact on wetlands from discharges of fill. An applicant for a 404 permit must demonstrate to the USACE that project-related fill activities satisfy the Guidelines, including justification of a least environmentally damaging practicable alternative (LEDPA). Appendix J of the EIS contains Detroit Edison's proposed Section 404(b)(1) evaluation submittal to the USACE. It details the proposed site layout revisions and avoidance and minimization measures that led to its proposed LEDPA. The original layout of the project was revised four times to minimize impacts on the terrestrial ecosystem, including avoidance of a forested wetland of approximately 11.6 ac, while still meeting the purposes of the project. The analysis includes the temporary filling of 0.8 ac of emergent coastal wetlands as part of the Detroit Edison- proposed LEDPA. Compliance with the Guidelines also requires that Detroit Edison offset unavoidable impacts on wetlands through compensatory mitigation. Appendix K of the Draft EIS contained Detroit Edison's proposed mitigation strategy, and Appendix K of the Final EIS contains Detroit Edison's proposed plan for compensatory mitigation to comply with the Guidelines. Before a permit decision is made, USACE would ensure that the proposed project is in compliance with the Guidelines. This may include project revisions to further reduce and/or avoid wetland fill, as well as approval of a final plan to compensate for the loss of wetland functions, including the temporal losses attributable to temporary wetland impacts. The USACE requires that final compensatory mitigation and onsite restoration plans comply with USACE mitigation regulations (33 CFR Part 332); such plans approved for Fermi 3 would be incorporated into the USACE permit as a special condition, if issued. In this regard, there would be no functional loss attributable to the 0.8 ac temporary coastal emergent wetlands impact. No changes were made to the EIS as a result of this comment.*

E.2.10 Comments Concerning Ecology - Aquatic

Comment: The F3EIS fails to identify and consider direct, indirect, and cumulative impingement/entrainment and chemical and thermal effluent discharge impacts of the proposed cooling system intake and discharge structures on aquatic resources in the event of a catastrophic/cataclysmic event. (**0003-1-2** [Anderson, Christy])

Response: *The cumulative effects of climate change and the operation of Fermi 3 on aquatic resources are considered together in Section 7.3.2 of the EIS, although the effects of specific severe-weather events that could occur as a result of climate change are not evaluated. A specific severe-weather event could result in a shutdown of plant operations, thereby reducing impingement and entrainment for the duration of the shutdown. However, it is unlikely that a specific severe-weather event would result in increased effects of impingement, entrainment, or*

effluent discharge on aquatic resources. No changes were made to the EIS in response to this comment.

Comment: 1. F3EIS does NOT address climate change in light of the latest nuclear disaster. The FE3EIS in its current form does not address safety concerns in regard to natural resources, people, or property in the event of a catastrophic/cataclysmic event. A new reactor, or one that was built 20 or 30 years ago does not make it able to handle what is ahead for the NEXT 20 or 30 years in regard to climate change. The F3EIS is a severely deficient report in the sense that it does not adequately address climate change with the possibility of cataclysmic or volatile weather changes that can happen overnight, spontaneously or within a few short days. The F3EIS fails to identify and consider direct, indirect, and cumulative impingement/entrainment and chemical and thermal effluent discharge impacts of the proposed cooling system intake and discharge structures on aquatic resources in the event of such a climatic event. (**0003-2-3** [Anderson, Christy])

Response: *This comment generally expresses concern about the impacts of severe weather and climate change on the operation of the proposed nuclear power plant. The EIS is concerned with the potential effects of plant construction and operation on the environment. Therefore, these comments are not within the scope of the environmental review. The staff's SER will address the effects of severe weather on the plant. Nuclear power plants are extremely robust structures that are designed to survive severe weather such as tornadoes. The cumulative effects of climate change and the operation of Fermi 3 on aquatic resources are considered in Section 7.3.2 of the EIS, although the effects of specific severe-weather events that could occur as a result of climate change are not considered. A specific severe-weather event could potentially result in a shutdown of plant operations, thereby reducing impingement and entrainment for the duration of the shutdown. However, it is unlikely that a specific severe-weather event would result in increased effects of impingement, entrainment, or effluent discharge on aquatic resources. No changes were made to the EIS in response to this comment.*

Comment: "Fermi 3 operations would result in an average consumptive use of approximately 7.6 billion gallons of Lake Erie water per year." (v 2, p 10.9) "Unavoidable adverse impacts on aquatic ecology resources would include an increased potential for entrainment, impingement, and thermal loading to Lake Erie..." That is just not acceptable. (**0016-1-17** [Collins, Jessie])

Response: *As identified in Section 10.2.2 of the EIS, the anticipated consumptive use of Lake Erie water by the proposed Fermi 3 would represent approximately 4.1 percent of the current level of consumptive use of water from the Lake Erie basin. Although there is a potential for increased impingement, entrainment, and thermal loading to Lake Erie from the operation of the proposed Fermi 3, the analyses presented in the EIS support a conclusion that the aquatic resources of the lake would not be noticeably altered. No changes were made to the EIS in response to this comment.*

Comment: 31. The western basin of Lake Erie and "is of the greatest concern with regard to construction and operation of Fermi 3. The western basin receives 95 percent of the water that drains into Lake Erie, including five major river drainages (Maumee River, River Raisin, Huron River, and Detroit River) as well as numerous smaller streams that discharge directly into the western basin." (v 1, p 2.70) Since Lake Erie borders the U.S. and Canada, the site is already polluting International Waters. Think of the improved relationship with Canada (and the other states that use and enjoy Lake Erie) if a Fermi 3 doesn't turn Lake Erie into a dead lake. (**0016-2-12** [Collins, Jessie])

Response: *The effects of the construction and operation of the proposed Fermi 3 on aquatic resources in Lake Erie are evaluated in Sections 4.2 and 5.2 of the EIS. The review team does not believe there is any credible information that the construction and operation of this facility would contribute to turning Lake Erie into a "dead zone." This comment did not provide new information relating to the environmental effects of the proposed action on water quality. No changes were made to the EIS in response to this comment.*

Comment: 33. "Consequently, aquatic habitats and organisms in Lake Erie in the vicinity of the Fermi site have the greatest potential for being affected by building and operation of Fermi 3." (v 1, p 2.69) EPA studies showed the overall condition of Lake Erie's western basin had continued elevating levels of plankton, "which are important indicators of nutrient pollution." (v 1, p 2.72) How could the EPA consider issuing another NPDES to add to the chemical pollution? (**0016-2-14** [Collins, Jessie])

Response: *Section 2.4.2.1 (the section referenced in the comment) identifies that there are indications that the levels of some nutrients, especially total phosphorus concentrations, have started to increase in Lake Erie over the past decade and that increases in nutrient levels tend to result in an increase in phytoplankton and algae abundance in aquatic habitats. Pursuant to the CWA, the EPA has the authority to require water quality monitoring for physical and/or chemical parameters associated with discharges into the waters of the United States. In Michigan, the EPA delegates this authority to the MDEQ. Prior to operation of Fermi 3, the applicant is required to obtain an NPDES permit from MDEQ to discharge liquid effluent to a surface water body; this permit would contain any water quality monitoring conditions or requirements. The contribution to nutrient loading is one factor that is considered by MDEQ during NPDES permitting. As identified in Section 5.3.2.1 for chemical impacts, the proposed Fermi 3 would use sodium bisulfate for dehalogenation of cooling water, thereby avoiding the use of phosphorus-containing chemicals that could contribute to nutrient enrichment and development of algal blooms. No changes were made to the EIS in response to this comment.*

Comment: 34. Why was taxpayer's dollars spent on funding studies of the "Federally and State-listed threatened and endangered unionid mussels for Monroe County..." Although the mussel was "once widely distributed and common in the western basin of Lake Erie, declines in the abundance of unionid mussels have been documented since 1961." (v 1, p 2.73 The time of

the Fermi 1? “Without the presence of healthy fish host populations, unionid mussels are unable to reproduce.” (v 1, p 2.74) (**0016-2-15** [Collins, Jessie])

Response: *The funding of the referenced studies that are the basis of the comments does not fall within NRC’s regulatory jurisdiction, and the issue of funding such studies was not considered in the EIS. The referenced studies were evaluated by the review team in order to gather information about the types of habitats and organisms that could be present on or near the Fermi site and about the historical trends for populations of species of concern. There were no indications in the cited studies that historic declines in unionid mussels were related to operations at the Fermi site. The comment did not provide new information relating to the environmental effects of the proposed action, and no changes were made to the EIS in response to this comment.*

Comment: I was appalled at Table 2-11, “Estimated Numbers of Fish Eggs and Larva Entrained by the Fermi 2 Cooling Water Intake” in an eight month period! 62,566,649 (v 1, p 2.78) Over 62 million! (v 1, p 5.29) Is that not destroying a lot of people’s livelihoods by depleting fish in their breeding grounds? (**0016-3-4** [Collins, Jessie])

Comment: Table 2-11: “Estimated Numbers of Fish Eggs and Larva Entrained by the Fermi 2 Cooling Water Intake” in an eight month period! 62,566,649 (v 1, p 2.78) Over 62 million! (v 1, p 5.29) That destroys commercial and noncommercial fishing. (**0026-6-13** [Macks, Vic])

Response: *Based on the available information, the review team concluded that the impacts on fish populations (including populations of commercially and recreationally important species) from entrainment at the proposed Fermi 3 would be small. No key spawning areas for commercially or recreationally important fish species are known within the immediate vicinity of the Fermi site. The fish species that had eggs or larvae that made up the largest proportions of those observed during entrainment studies (e.g., gizzard shad, emerald shiner, freshwater drum, and yellow perch) are species that are widely distributed and abundant in Lake Erie and have eggs and/or larvae that are present in the upper portion of the water column. Although it is estimated that approximately 55 million fish eggs and larvae would be entrained annually by the operation of Fermi 3 (Section 5.3.2.1 of the EIS), these values are small when evaluated in the context of the numbers of eggs that can be produced by a single female of those species likely to be entrained (reported numbers of eggs per female are presented in Table 5-7 of the EIS) and the numbers of individuals of those species present in the western basin. For example, the estimated 25.1 million gizzard shad eggs and larvae that would be entrained annually by operation of Fermi 3 could be produced by approximately 46 to 1100 adult gizzard shad, based on the range of reported fecundity values for that species and on the fact that there are very large numbers of adult gizzard shad present in the western basin. No changes were made to the EIS in response to these comments.*

Comment: "It is estimated that approximately 1.7 million bigmouth buffalo eggs and larvae were entrained at the Fermi site during 2008,....approximately 435 million channel catfish eggs and larvae were entrained and 30 individual fish were impinged by the Fermi 2 cooling water intake...2.3 million freshwater drum eggs and larva (& 30 individual freshwater drum were impinged)....30.2 million gizzard shad eggs and larvae (1,200 impinged)...124,000 white perch eggs and larvae (305 individuals impinged)....4.8 million yellow perch eggs and larvae..152,000 largemouth bass eggs and larvae (31 largemouth bass impinged)." What agency deals with international waters that should be notified of this glut? (**0016-3-5** [Collins, Jessie])

Response: *Although most of the numbers presented in the comment match the information presented in the EIS, the EIS reported that approximately 434 thousand (not million) channel catfish eggs and larvae were estimated to be entrained during the 2008–2009 entrainment study for the Fermi 2 facility. Based on its review of the available information, the review team concluded that the impacts on fish populations from impingement and entrainment at the proposed Fermi 3 would be small. The conclusion that the effects of impingement would be small was based on the planned low through-screen intake velocity, the use of closed cycle cooling, the location and design of the intake bay, the historic low impingement rates during operations of the existing Fermi 2, and installation and operation of a system for returning impinged fish to Lake Erie alive. Based on the small proportion of water that would be withdrawn from Lake Erie relative to the volume of water in the western basin, the use of closed cycle cooling to reduce water withdrawals compared to once-through cooling technologies, the location of the intake bay away from sensitive or productive habitats, the historic entrainment rates for Fermi 2, and the high fecundities exhibited by the species that experience the highest entrainment rates, the review team also concluded that impacts on fish populations from entrainment for Fermi 3 would be small. The comment did not provide new information relating to the environmental effects of the proposed action on impingement and entrainment, and no changes were made to the EIS in response to this comment.*

Comment: And isn't the absence of trout in any of the cited fish studies proof that the waters are already polluted? (**0016-3-6** [Collins, Jessie])

Response: *In general, the aquatic habitats on the Fermi site do not provide the appropriate type of cool water or cold water habitat for trout, and trout would not be expected to occur in those locations in significant numbers. Consequently, the absence of trout in the cited surveys conducted in onsite water bodies does not provide evidence of pollution. No changes were made to the EIS in response to this comment.*

Comment: "The intake for Fermi 3 would be adjacent to the existing intake for Fermi 2, which is located between the two groins that project out into Lake Erie." (v 1, p 3.10) Adding another cooling water intake would suck up double the fish eggs and larvae. The "flow rate at the intake

would be 34,264 gallons per minute." (v 1, p 3.11) It should be criminal to add another intake pipe. (**0016-3-7** [Collins, Jessie])

Response: *The cumulative effects of entrainment by the Fermi 2 facility and the proposed Fermi 3 are addressed in Section 7.3.2 of the EIS. As identified in that section, the combined operation of the Fermi 2 and Fermi 3 facilities would effectively double the water intake and would likely increase the entrainment and impingement rates compared to the operation of Fermi 2 alone. Section 7.3.2 of the EIS also presents an evaluation of research that examined the potential for the combined entrainment at four other power plants located in the western basin of Lake Erie to affect fish populations and the relative level of entrainment expected during operation of Fermi 3. Based upon that evaluation, the review team concluded that even though the estimated impingement and entrainment rates for Fermi 3 would be considerably lower than those reported for most of the other power stations within the western basin and would represent a minor incremental impact on aquatic resources, the cumulative impacts of impingement and entrainment from all power stations on fish populations within the western basin could have a significant impact on some aquatic species. The comment did not provide new information relating to the environmental effects of the proposed action on entrainment, and no changes were made to the EIS in response to this comment.*

Comment: Table 2-12, Estimated Numbers of Fish Impinged by the Fermi 2 Cooling Water Intake "...approximately 100,000 to 25 million eggs and larvae of these species (Table 5.6) would be entrained annually at the cooling water intake for Fermi 3 with the intake pumps at full capacity." (v 1, p 5.41) Fermi 2 sucked in over 62 million in an eight month period, how does DE justify such an expansive Fermi 3 estimate that falls about 40 million short of their admitted studies at Fermi 2? (**0016-3-8** [Collins, Jessie])

Response: *The review team believes that the commenter is asking why the estimate for the projected entrainment for the proposed Fermi 3 (presented in Table 5-6 of the EIS) differs from the estimated entrainment for the existing Fermi 2 nuclear power plant (presented in Table 2-11 of the EIS). To calculate the estimated entrainment for the proposed Fermi 3, the entrainment rates (number of fish eggs and larvae per unit volume taken in; i.e., number per gallon) for each fish species entrained during a study conducted from July 2008 through July 2009 at the Fermi 2 intake were calculated based upon operational water intakes that occurred and the numbers of eggs and larvae that were entrained during the study. Those rates were multiplied by the projected maximum withdrawal capacity (gallons per minute) for the Fermi 3 intake. In Table 5-6 of the EIS, entrainment at Fermi 3 was presented as numbers of each species that would be entrained per month if it was assumed that the unit would withdraw water at the maximum operational rate for the entire period, and the estimated annual total for each species was based upon the sum of each month's estimated entrainment. Because the projected maximum withdrawal capacity for the Fermi 3 intake is slightly less than the intake capacity for Fermi 2, it is projected that the numbers of fish eggs and larvae that would be entrained by*

Fermi 3 would be lower than the numbers entrained by Fermi 2. Overall, the estimated annual entrainment at Fermi 2 during the 2008–2009 study was more than 62 million eggs and larvae (Table 2-11 of the EIS), and the estimated annual entrainment of eggs and larvae for the proposed Fermi 3 is projected to be approximately 55 million (Table 5-6 of the EIS), a difference of approximately 7 million eggs and larvae. The sentence from Section 5.3.2.3 of the EIS that is partially quoted in the comment identifies that the estimated entrainment of eggs and larvae for the seven commercially or recreationally important species observed during entrainment studies would range from 100,000 to 25 million for each of those species and does not present an overall entrainment estimate for the Fermi 3 intake. The comment did not provide new information relating to the environmental effects of the proposed action on entrainment, and no changes were made to the EIS in response to this comment.

Comment: And what was the point of giving 69 lines to fish that were not impinged at Fermi? Or giving 22 pages of descriptions and history of various mussels and other water creatures that are NOT at Fermi? Did they used to be there? (**0016-3-11** [Collins, Jessie])

Response: *The comment does not indicate which section of the EIS is being referred to. The information presented in Section 2.4.2 is intended to provide background information about species that could potentially be affected by the construction and operation of Fermi 3. As stated in NRC standard review plans for conducting environmental reviews for proposed new nuclear power facilities, the review team includes information identifying the aquatic habitats in the vicinity of the site and the species known or likely to be present in those habitats. In particular, the section provides information for species of commercial and recreational importance, or species that are federally protected or State-listed that could be present in potentially affected water bodies. The inclusion of species in Section 2.4.2 does not necessarily mean that they historically occurred at the Fermi site. For example, listed aquatic species that have a potential to occur in the western basin of Lake Erie are discussed even if it is unlikely that they would be present in the areas associated with the Fermi site. The comment did not provide new information relating to the environmental effects of the proposed action, and no changes were made to the EIS in response to this comment.*

Comment: Regarding Thermal Impacts. “Potential thermal impacts on aquatic organisms could include heat stress, cold shock, and the creation of favorable conditions for invasive species.” (v 1, p 5.33) Besides the invasive mussels and toxic plankton, what other invasive species does the “thermal pollution” (v 1, p 5.34) attract? (**0016-4-6** [Collins, Jessie])

Response: *Section 5.3.2.3 includes a subsection devoted to the potential for operations of the proposed Fermi 3 to affect invasive nuisance organisms. In that section, the potential for invasive species (including various species of invertebrates, fish, and algae) to use the thermal plume associated with the cooling water discharge for Fermi 3 as a refuge from unsuitable natural conditions in Lake Erie is discussed. No changes were made to the EIS in response to this comment.*

Comment: Why does the section dealing with Federally-Listed Aquatic Species deal only that occurs in Monroe, Wayne, and Washtenaw Counties, and not in the bordering Ohio counties? (v 1, p 5.43) (**0016-4-8** [Collins, Jessie])

Response: *The EIS evaluated the potential impacts on listed aquatic species that could occur in the counties where the proposed action would take place and where it was reasonable to anticipate potential impacts could occur as a result of construction and operation of the proposed facility and the associated transmission lines. The evaluation is consistent with guidance from the FWS for proposed Federal actions and used information regarding the species of concern obtained from the FWS during the environmental review process. No changes were made to the EIS in response to the comment.*

Comment: Thanks for the many pages of flora and fauna not on the proposed Fermi site. It was enlightening. Or were these also species that used to live there? (**0016-4-41** [Collins, Jessie])

Response: *The comment does not indicate which section of the EIS is being referred to. The information presented in Section 2.4.2 is intended to provide background information about species that could potentially be affected by the construction and operation of Fermi 3 and associated transmission lines. As required by NRC guidelines for conducting environmental reviews for proposed new nuclear power facilities, the section includes information identifying the habitats in the vicinity of the site and the species known or likely to be present in those habitats. In particular, the section provides information for species of commercial and recreational importance or species that are federally protected or State-listed that could be present in potentially affected water bodies. The inclusion of species in Section 2.4 of the EIS does not necessarily indicate that they historically occurred at the Fermi site. The comments did not provide new information relating to the environmental effects of the proposed action, and no changes were made to the EIS in response to this comment.*

Comment: 4. Failure to analyze the impact of the addition of decomposing dead aquatic life that would be returned to Lake Erie. The aquatic life is caught on screens, and then returned to the lake. This is the equivalent of fertilizing the water in the lake. No environmental impact has been provided for this addition of nutrients to the lake and the surrounding shoreline. (Please see page 3-11 and ch. 7 Cumulative Impacts DEIS Fermi 3.) (**0020-2** [Kasenow, Lisa & Kevin])

Comment: In the DEIS and in the Environmental Report there is a failure to analyze the impact of the addition of decomposing dead aquatic life that would be returned to Lake Erie. The aquatic life is caught on screens, and then returned to the lake. This is the equivalent of fertilizing the water in the lake. No environmental impact has been provided for this addition of nutrients to the lake and the surrounding shoreline. (Please see page 3-11 and ch. 7 Cumulative Impacts DEIS Fermi 3.) This certainly will have negative impact on quality of drinking water. This is an omission of the DEIS and Environmental Report and must be addressed. (**0059-5** [Keegan, Michael J.])

Response: *The screen washing and fish return system associated with the intake system for the proposed Fermi 3 would return the vast majority of impinged fish to Lake Erie without killing them. Live and moribund fish taken on the intake screens and returned to the lake would have come from the lake and, therefore, would not add to the overall nutrient loading of the lake. The screen washing and fish return system associated with the intake system for the proposed Fermi 3 would return the impinged fish to Lake Erie by using a fish return system that will substantially reduce mortality due to impingement. As a consequence, there would be no detectable change in water quality or nutrient levels associated with fish impingement. The EIS was modified to clarify that the fish return system would be designed to return the majority of impinged fish to Lake Erie alive.*

Comment: Next, the site for the proposed Fermi3 power plant will increase water temperatures and create an artificial Lake effect. This in turn decreases usable Farmland into wet, untillable soil. The water temperature also can create a "Dead Zone" which the immediate Lake Erie Western basin cannot recover from. You really need a deep water site for this operation. (**0022-2** [Lankford, R.E.])

Response: *It is not clear what the commenter means by "create an artificial Lake effect." However, as identified in Section 4.2.1.4, the effects of construction of the proposed Fermi 3 on groundwater and surface water would be localized. The effects of the cooling water discharge from operation of the proposed Fermi 3 on water temperatures in Lake Erie are discussed in Section 5.2.3.1 of the EIS. The effects of the thermal plume associated with the discharge of cooling water on ecological conditions in Lake Erie are evaluated in Section 5.3.2.1 of the EIS. Based upon the evaluation, the review team concluded that the area that would be affected by the thermal plume associated with operation of Fermi 3 would be small and the effects on aquatic biota would be minor. The design and location of the discharge structure will result in a thermal plume that will not detectably affect the Lake Erie dead zone. The comment did not provide new information relating to the environmental effects of the proposed action, and no changes were made to the EIS in response to this comment.*

Comment: "Fermi 3 operations would result in an average consumptive use of approximately 7.6 billion gallons of Lake Erie water per year." (v 2, p 10.9) "Unavoidable adverse impacts on aquatic ecology resources would include an increased potential for entrainment, impingement, and thermal loading to Lake Erie..." That is just not acceptable. (**0026-6-7** [Macks, Vic])

Response: *As identified in Section 10 of the EIS, the operation of Fermi 3 would result in increased consumptive use of Lake Erie water and an increased potential for impingement, entrainment, and thermal loading to Lake Erie. However, based upon the evaluations presented in Sections 5.2 (Water-Related Impacts) and 5.3.2.1 (Aquatic Resources), the review team concluded that the effects of these increases on aquatic resources would be small. The comment did not provide new information relating to the environmental effects of the proposed action, and no changes were made to the EIS in response to this comment.*

Comment: While accounting for the environmental impact of constructing a Fermi 3 reactor at this location is of critical concern, there is a certain irony in this exercise, since wherever nuclear is located, grave threats to the future of the area are at hand. Within the scope of the DEIS, the ESBWR will add to the thermal, chemical and radioactive burden in Lake Erie, as well as surrounding communities. In 2011 the largest-ever blue-green algae outbreak blanketed western Lake Erie. The DEIS does not sufficiently address the seriousness of this potential problem. (**0027-2** [Marida, Patricia A.])

Response: *The contribution of the construction and operation of the proposed Fermi 3 to the overall cumulative impacts on water quality and algal production in Lake Erie are evaluated in Chapter 7 of the EIS. Cumulative impacts on surface water quality are evaluated in Section 7.2.3 of the EIS, including cumulative effects on chemical and thermal conditions in Lake Erie. Contributions from the operation of the proposed Fermi 3 to the cumulative radiological conditions in Lake Erie are evaluated in Section 7.8 of the EIS. Contributions from the operation of the proposed Fermi 3 to the cumulative effects on aquatic biota, including the potential effects on algal blooms, are evaluated in Section 7.3.2 of the EIS. No changes were made to the EIS in response to this comment.*

Comment: Lake Erie
The proposed Fermi 3 is inconsistent with survival of Lake Erie and its aquatic life resources as a Great Lake, in terms of both its massive overuse of lake water and its pollution and overheating of the lake. The DEIS states that “Fermi 3 operations would result in an average consumptive use of approximately 7.6 billion gallons of Lake Erie water per year.” (v 2, p 10.9) “Unavoidable adverse impacts on aquatic ecology resources would include an increased potential for entrainment, impingement, and thermal loading to Lake Erie.” The document addresses the current water quality concerns regarding Lake Erie, and identifies serious water problems. Increased phosphorus loading, causing toxic algae; and elevated concentrations of three bioaccumulative contaminants (dioxin, PCBs, and mercury). “On average, concentrations of mercury in site surface water exceeded the Michigan Department of Environmental Quality Rule 57 for human noncancerous values and wildlife values.” (v 1, p 2.28) “Consequently, aquatic habitats and organisms in Lake Erie in the vicinity of the Fermi site have the greatest potential for being affected by building and operation of Fermi 3.” (v 1, p 2.69) EPA studies showed the overall condition of Lake Erie’s western basin had continued elevating levels of plankton, “which are important indicators of nutrient pollution.” (v 1, p 2.72) “Lake Erie supports one of the largest freshwater commercial fisheries in the world, with the majority of commercial fishing occurring along the Canadian border.” (v 1, p2.82)

The western basin of Lake Erie “is of the greatest concern with regard to construction and operation of Fermi 3. The western basin receives 95 percent of the water that drains into Lake Erie, including five major river drainages (Maumee River, River Raisin, Huron River, and Detroit River) as well as numerous smaller streams that discharge directly into the western basin.” (v 1,

p 2.70) Since Lake Erie borders the US and Canada, the existing Fermi 2 is already polluting International Waters. Fermi 3 threatens to turn Lake Erie into a dead lake. (**0033-6** [Stephens, Thomas])

Response: *As identified in Section 10 of the EIS and referenced in the comment, the operation of Fermi 3 would result in increased consumptive use of Lake Erie water and an increased potential for impingement, entrainment, and thermal loading to Lake Erie. However, based upon the information and evaluations presented in Sections 5.2 (Water-Related Impacts) and 5.3.2.1 (Aquatic Resources), the effects of these increases would be small. As identified in Section 5.2.2.1 of the EIS, the volume of Lake Erie is estimated at approximately 128 trillion gallons, and the incremental withdrawal of water for the operation of the proposed Fermi 3 would be approximately 0.006 percent of the total volume of the lake. Section 2.4.2.1 (one of the sections referenced in the comment) identifies that there are indications that the levels of some nutrients, especially total phosphorus concentrations, have started to increase in Lake Erie over the past decade and that increases in nutrient levels tend to result in an increase in phytoplankton and algae abundance in aquatic habitats. Pursuant to the CWA, the EPA has the authority to require water quality monitoring for physical and/or chemical parameters associated with discharges into the waters of the United States. In Michigan, the EPA delegates this authority to the MDEQ. Prior to operation of Fermi Unit 3, the applicant is required to obtain an NPDES permit from MDEQ to discharge liquid effluent to a surface water body; this permit would contain any water quality monitoring conditions or requirements. The contribution to nutrient loading is one factor that is considered by MDEQ during NPDES permitting. As identified in Section 5.3.2.1 for chemical impacts, the proposed Fermi 3 would use sodium bisulfate for dehalogenation of cooling water, thereby avoiding the use of phosphorus-containing chemicals that could contribute to nutrient enrichment and development of algal blooms. A discussion of the operation of Fermi and the station's potential effects on blue-green algae (e.g., Lyngbya) populations is found in Section 5.3.2.1. The comments did not provide any new information relating to the environmental effects of the proposed action, and no changes were made to the EIS in response to this comment.*

Comment: pg. 7-9 As described in Section 5.2.2.1, the review team determined that the annual consumptive use of surface water from the operation of Fermi 3 would not be significant compared to the relative volume of water in Lake Erie (0.006 percent), and it would also remain a small portion of the average annual consumptive water use of all users in the Lake Erie basin (4.1 percent). Does it really make sense to compare Fermi's water use to total volume and total consumption? Is it not more important to note the effect these intakes will have on local marine life, such as injesting fish, insect, and amphibian eggs; fish, amphibian, and insect larvae, and adult fish, amphibians, and insects? In addition, it should be noted that water will be discharged to the lake at a much higher temperature than surrounding lake water, which will surely have deleterious local effects on marine life, as well as other animals that depend on marine life for subsistence. (**0034-4-2** [Welke, Jim])

Response: *The effects of cooling water withdrawal and discharge associated with the operation of the proposed Fermi 3 on aquatic biota, including effects resulting from entrainment, impingement, and heated effluent, are evaluated in Section 5.3.2. The effects of water use and the areal extent and water temperatures for the thermal plume from cooling water discharge during operations of the proposed Fermi 3 are evaluated in Section 5.2.3.1. As presented in Section 5.3.2.6, the review concluded that the impacts of the operation of the proposed Fermi 3 on aquatic resources would be small. The comments did not provide any new information relating to the environmental effects of the proposed action, and no changes were made to the EIS in response to this comment.*

Comment: p. 7-23, 24, 25 As described for Fermi 3 in Section 5.3.2, withdrawing cooling water has a potential to affect aquatic organisms through impingement and entrainment. If the organisms being entrained or impinged at different power plants are members of the same populations, the impacts on those populations would be cumulative. Because the water intakes for Fermi 2 and Fermi 3 would be located in close proximity within the intake bay, it is estimated that the combined operation of... the Fermi 2 and Fermi 3 facilities would effectively double the water intake and would likely increase entrainment and impingement rates of aquatic organisms in the immediate vicinity of the intake bay as compared to the operation of Fermi 2 alone (Detroit Edison 2011a). The mean daily entrainment of the larvae of four species of fish that are common in Lake Erie's western basin - gizzard shad (*Dorsoma cepedianum*), white bass (*Morone chrysops*), walleye (*Sander vitreus*), and freshwater drum (*Aplodinotus grunniens*) - at four power plants (i.e., the once-through Bayshore, Monroe, Acme [no longer operational], and Whiting) averaged over three seasons of production (1975 - 1977) ranged from nearly zero to approximately 8 percent of the larvae present within nearshore areas (Patterson 1987) and is considered to be detectable. The study suggested that the numbers of larvae surviving to reach older life stages for these species would increase substantially if the effects of power plant entrainment were removed (Patterson and Smith 1982; Patterson 1987). Cooling water intake rates for each of the four facilities (Patterson and Smith 1982; Patterson 1987) were estimated to be 4 to 15 times higher than the cooling water intake rates for the Fermi 2 facility and for the proposed Fermi 3 facility (Detroit Edison 2011a). The larval fish entrainment rates for these facilities are expected to be higher than for Fermi 3. Therefore, even though the estimated impingement and entrainment rates for Fermi 3 would be considerably lower than that reported for most of the other power stations within the western basin (Detroit Edison 2011a, Section 5.3.1.2.3.2) and individually would represent a minor incremental impact to aquatic resources (as described in Section 5.3.2 of this EIS), the cumulative impacts of impingement and entrainment from all power stations on fish populations within the western basin could have a significant impact on some aquatic species.

In addition to mortality of fish from impingement and entrainment at power plants, millions of pounds of fish are harvested annually from the western basin through recreational and commercial fishing activities (see Section 2.4.2.3), thereby contributing to cumulative mortality

impacts on fish populations. The status of fish populations in the western basin are monitored by the MDNR, the Ohio Department of Natural Resources, and the Ontario Ministry of Natural Resources, and regulations and annual harvest limits for important target species are periodically adjusted by those agencies to prevent overfishing and to maintain suitable population levels. The Great Lakes Fisheries Commission, which coordinates fisheries research and facilitates cooperative fishery management among the State, Provincial, Tribal, and Federal agencies that manage fishery resources within the Great Lakes, has established a Lake Erie committee that considers issues pertinent to Lake Erie. (**0034-4-8** [Welke, Jim])

Response: *The cumulative effects of impingement and entrainment by the Fermi 2 facility and the proposed Fermi 3 are addressed in Section 7.3.2 of the EIS. As identified in that section, the combined operation of the Fermi 2 and Fermi 3 facilities would effectively double the water intake and would likely increase the entrainment and impingement rate compared to the operation of Fermi 2 alone. Section 7.3.2 of the EIS also presents an evaluation of research that examined the potential for the combined entrainment at four other power plants located in the western basin of Lake Erie to affect fish populations and the relative level of entrainment expected during operation of Fermi 3. Based upon that evaluation, the review team concluded that even though the estimated impingement and entrainment rates for Fermi 3 would be considerably lower than that reported for most of the other power stations within the western basin and would represent a minor incremental impact on aquatic resources, the cumulative impacts of impingement and entrainment from all power stations on fish populations within the western basin could be significant for some species.*

The analysis in the EIS regarding the potential cumulative effects of thermal plumes from multiple power plants on fish populations do not assume that fish are uniformly distributed across the lake, only that small proportions of any given population are likely to be affected by cold shock or heat stress at any given facility. No key spawning habitat areas for commercially or recreationally important fish species or for federally or State-listed species were identified as being present in the vicinity of the Fermi site based upon aquatic ecology surveys conducted at the Fermi site and a review of the available literature. Because the thermal plume that would result during the operation of the proposed Fermi 3 would be located such that it would not completely prevent passage through the area and would be relatively small in areal extent, migrating fish could move around areas with unsuitable temperatures. No changes were made to the EIS in response to this comment.

Comment: My question for the NRC is what happens after, when the body of water that you're impacting, namely Lake Erie, declines or degradates from the original submissions by Detroit Edison and the original analysis of the Environmental Impact Statement? If the conditions change, how then is that reflect in the EIS, or is there an assessment if the lake continues to deteriorate the way it is in terms of what the impacts of this facility might be on it? (**0039-2-1** [Bihn, Sandy])

Response: *The environmental review conducted in the EIS is associated with the NRC action of considering the issuance of a COL to build and operate the proposed Fermi 3. If the license is approved, NRC's environmental review will be complete and will not be revisited by the NRC. However, pursuant to the CWA, the EPA has the authority to require water quality monitoring for physical and/or chemical parameters in the waters of the United States. In Michigan, the EPA delegates this authority to the MDEQ. Prior to operation of Fermi Unit 3, the applicant would be required to obtain an NPDES permit from MDEQ to discharge liquid effluent to a surface-water body; this permit would contain any water quality monitoring conditions or requirements for that effluent. NPDES permits must be renewed every five years, at which time the requirements associated with NPDES permits can be revised. If a specific water quality issue is detected as a result of monitoring, MDEQ may also require additional action. The comment provided no new information, and no changes were made to the EIS in response to this comment.*

Comment: You're assuming that it'll be taken care of in the NPDES permit. And my question, specifically, is at this plant, at this facility, with the lake where it's at, the western basin of Lake Erie, which really is not in the Environmental Impact Statement, you assume that this facility impacts the entire lake, rather than the western basin, which has its own unique characteristics and problems. And they've become very severe, that many of us are worried that the lake is now dying. In 2011, conditions changed considerably where algae was experienced all the way to Cleveland, all kinds of things happened. To say that we have to work in a five-year frame when there's a new facility and a new water withdrawal, you know, be proposed and that that would not be re-evaluated for conditions of the lake, I think is short of what is needed. And that's really where we're coming from. (**0039-2-2** [Bihn, Sandy])

Response: *The NRC does not assume that operation of the proposed facility would affect the entire lake, but rather that the effects would be localized near the proposed intake and discharge structures. The NRC does not have authority over matters concerning discharge permits or compliance with the CWA. Pursuant to the CWA, the EPA has the authority to require water quality monitoring for physical and/or chemical parameters in the waters of the United States. In Michigan, the EPA delegates this authority to the MDEQ. Prior to operation of Fermi Unit 3, the applicant is required to obtain an NPDES permit from MDEQ to discharge liquid effluent to a surface water body; this permit would contain any water quality monitoring conditions or requirements. Thus, the NPDES permitting process is the appropriate means for regulating discharges with regard to the physical and/or chemical parameters of concern in order to protect surface water quality. The sections of the EIS that describe aquatic resources that could be affected by the construction and operation of the proposed Fermi 3 (Section 2.4.2) and the sections that evaluate the potential effects and aquatic resources from the construction (Section 4.3.2) and operation (Section 5.3.2) present information and evaluate impacts relevant to the vicinity of the Fermi site. The review team does not believe there will be any detectable impacts on the western basin of Lake Erie or Lake Erie as a whole. Section 5.3.2.3 includes a subsection devoted to the potential for operations of the proposed Fermi 3 to affect invasive*

nuisance organisms, including algal species. The contribution of the construction and operation of the proposed Fermi 3 to the overall cumulative impacts on water quality and algal production in Lake Erie are evaluated in Chapter 7 of the EIS. No changes were made to the EIS in response to this comment.

Comment: This assessment is particularly important because in the summer and fall of 2011, Lake Erie experienced the worst algal bloom in decades and probably in Lake Erie's history. The algae extended over a hundred miles east past Cleveland, and in some part of the central basin of Lake Erie. It was over 60 feet in depth at some parts, and extended over 14 miles offshore in the western and central basins of Lake Erie. Algae was, similarly, found along the anterior shoreline, and the algae was so bad that it slowed down boat motors, and it was repulsive to people in boats and fishing, and anyone who saw it and experienced it. All research on Lake Erie algae says that the algae originates here in the far western basin of Lake Erie, where the Maumee River, Raisin and Detroit Rivers are located; in other words where this proposed plant is to be located. I was here for the hearing several years ago and read the reports from Detroit Edison that depicted Lake Erie as healthy, a lake that recovered. At that time, the algal blooms were getting worse every year. But the reports on Lake Erie were still generally good. That is no more. Lake Erie is now referred to as the lake that is failing again, and the Detroit Edison Fermi 3 submissions, nor the Draft Environmental Impact depict or address impacts of this project on algal growth in Lake Erie and the impacts to water quality and aquatic habitat under current conditions. (**0039-21-2** [Bihn, Sandy])

Response: *Section 2.4.2.3 of the EIS presents information on the invasion of portions of the western basin of Lake Erie by the blue-green alga (*Lyngbya wollei*) and reviews information about water quality conditions that are believed to contribute to its proliferation. Section 5.3.2.3 includes a subsection devoted to the potential for operations of the proposed Fermi 3 to affect invasive nuisance organisms, including algal species. In addition, the potential contribution of the construction and operation of the proposed Fermi 3 to the overall cumulative impacts on water quality and algal production in Lake Erie are evaluated in Chapter 7 of the EIS. The review team concluded that construction and operation of Fermi 3 will not contribute to the proliferation of* L. wolliei *in the western basin of Lake Erie. No changes were made to the EIS in response to this comment.*

Comment: The only other thing I have to suggest is that the coal-fired power plant in Monroe uses 1.9 billion gallons of water a day, and perhaps the NRC would consider some mitigation that maybe a cooling tower would be put up there to offset the impacts from this plant. (**0039-21-6** [Bihn, Sandy])

Response: *Requiring implementation of such a mitigation measure is beyond NRC's regulatory authority. No changes were made to the EIS in response to this comment.*

Comment: Fish kill estimates are based on Fermi 2 counts. There is no analysis for Fermi Three of the incremental impact of additional fish kills in an already stressed western Lake Erie watershed. How many fish would Fermi 3 have to kill before there was an adverse impact on walleye and yellow perch populations in western Lake Erie either from the species themselves being killed or from the forage fish needed to support the walleye and yellow perch populations. (**0044-5** [Bihn, Sandy])

Comment: Fermi 3 would harm Lake Erie's remarkably productive fisheries. Fermi 3's water usage would worsen the impingement and entrainment of Lake Erie biota already occurring at the numerous large-scale thermo-electric power plants sited on its shores. Negative impacts, including fish kills, must be prevented, to protect sports fisheries as well as Native American fishing rights recognized by legally-binding treaties signed by the U.S. federal government. Harm to all life stages of Lake Erie biota must be analyzed by NRC, and mitigated by DTE at Fermi 3. (**0058-18** [Kamps, Kevin])

Comment: I am opposed to another nuclear reactor being built at the Fermi site! According to your own report, the estimated number of fish eggs and larvae entrained by the Fermi 2 cooling water intake from July 2008 thru July 2009 totals 62,566.649. (See Draft NUREG-2105 page 2-78). This does not include eggs and larvae from December thru February. How can you ignore those kinds of numbers? I am not a scientist but I know when something is wrong! (**0065-1** [Marcus, Esther])

Comment: Already the cooling water intake for Fermi 2 destroys millions of fish eggs and larvae and thousands of adult fish. (**0068-1** [Seubert, Nancy])

Response: *The Fermi 3 cooling system was designed to be consistent with EPA Phase I regulations for intake structures. The facility also employs closed cycle cooling; therefore, the facility is presumed to be protective of the aquatic resources from the perspective of impingement and entrainment.*

Although entrainment rates at the Fermi 2 intake were not measured from December through February, the EIS identified that these are months in which the majority of the fish in the western basin would not be reproductively active and the numbers of eggs and larvae in the water column would be expected to be low.

The effects of operations of the proposed Fermi 3 on important aquatic species, including forage species (e.g., gizzard shad) and recreationally and commercially important species (such as yellow perch and walleye) are evaluated in Section 5.3.2.3 of the EIS. Various life stages of fish were considered in the evaluation of impingement and entrainment, including eggs, larvae, and adults. Although the exact numbers of fish that would need to be affected before population-level effects would occur is not known, the evaluation provides the rationale for concluding that the population-level effects of Fermi 3 operations would be small.

The cumulative effects of impingement and entrainment by the existing Fermi 2 facility and the proposed Fermi 3 are described and evaluated in Section 7.3.2 of the EIS. As identified in that section, the combined operation of Fermi 2 and Fermi 3 facilities would effectively double the water intake and would likely increase the entrainment and impingement rate compared to the operation of Fermi 2 alone. Section 7.3.2 of the EIS also presents an evaluation of research that examined the potential for the combined entrainment at four other power plants located in the western basin of Lake Erie to affect fish populations and the relative level of entrainment expected during operation of Fermi 3. Based upon that evaluation, the review team concluded that even though the estimated impingement and entrainment rates for Fermi 3 would be considerably lower than that reported for most of the other power stations within the western basin and would represent a minor incremental impact on aquatic resources, the cumulative impacts of impingement and entrainment from all power stations on fish populations within the western basin could affect some aquatic species. No new information was provided in the comments, and no changes were made to the EIS.

Comment: Attachment B USGS comments on DTE 316 fish kills etc. for the coal fired power plant which may be applicable to Fermi 3 - attached

Evaluation of 316(b) Demonstration Detroit Edison's Monroe Power Plant

Abstract 1. In response to a request from the U.S. Fish and Wildlife Services (ELFO), the Great Lakes Fishery Laboratory undertook an evaluation of Detroit Edison's 316(b) demonstration for its coal-fired power plant at Monroe, Michigan. The evaluation was to serve (1) as a detailed critique of the Monroe plant 316(b) demonstration, for use by the field staff and other agencies responsible for reviewing that document, and (2) by way of example, as a guide to assist the field staff in their review of 316(b) demonstrations for other Great Lakes region power plants.

2. The 316(b) report states that an estimated 861,000 fish of various species, including 122,000 yellow perch, were impinged on the intake screens of the Monroe plant from June 1975 through May 1976 when the plant was operating at 57% of maximum capacity. These estimates differ substantially from those in the present report, which are based on Detroit Edison data for the same period of time and show a potential impingement of 4.7 million fish, including 626,000 yellow perch. The higher estimates given in the present report result mainly from two reasons. First, on most days when impingement data were collected, fish were counted from only a maximum of half of the plant's 16 intake screens. These count data were not expanded correctly to yield an impingement estimate for the whole plant that represents the number of fish impinged on the other screens from which no count data were collected. Secondly, the 316(b) did not consider as impinged any fish removed from the plant intake by the "fish collectors" (a prototype system for pumping live fish from the screen wells) installed in the front of two of the plant's intake screens. In the present report, the fish removed by the collectors were considered to be impinged, because the 316(b) did not present evidence that these fish were returned unharmed to Lake Erie. (**0044-8** [Bihn, Sandy])

Comment: 3. The 316(b) estimates that 21.4 million fish larvae (including about 5 million yellow perch larvae) and 13.1 million fish eggs were entrained at the Monroe plant during mid-May 1975 through mid- May 1976. Using Detroit Edison's data, the present report estimates that 20.7 million fish larvae and 27.5 million fish eggs were entrained during that same period. The discrepancy between the two annual fish egg entrainment estimates is apparently due to an error in the 316(b) whereby mean egg density in the cooling water passing through the Monroe plant was calculated by dividing the number of eggs found in samples from stations in the plant intake canal by the combined volume of water passing through the sampling pumps at stations in the intake canal and at stations in the plant discharge canal.

Although the present report verifies the procedures used to calculate the entrainment estimates presented in 316(b) for fish larvae and provides a corrected estimate for egg entrainment at the Monroe plant, the entrainment of eggs and larvae may even have been substantially higher than indicated. This possibility arises because the samples used for estimating the numbers of larvae and eggs entrained were collected only at 1-m and 3-m depths in the 5-7 m deep intake canal and because information not presented in 316(b) indicates most entrainable eggs and larvae would have been more abundant near the bottom of the Monroe plant intake canal than near the surface. (**0044-9** [Bihn, Sandy])

Comment: 4. The 316(b) presents no estimate of the numbers of biomass of macrozoobenthos or zooplankton entrained annually at the Monroe plant. The present report estimates, on the basis of Detroit Edison data, that 55.6 million macrozoobenthic organisms, most of which (77% by number) were chironomids, were entrained during May 1975 through April 1976. This estimate of the number of macrozoobenthos entrained at the Monroe plant may be low because these organisms would normally be found at highest densities on or near the bottom, and because the Detroit Edison samples on which this estimate is based were collected at depths of 1 m and 3 m in the 5-7 m deep intake canal. An estimate of zooplankton entrainment was developed using cooling water flow data from the 316(b) and published information on the density of zooplankton at the plant intake. According to this estimate about 159,000 kg (175 tons) of zooplankton were probably entrained during 1975-76. The most abundant zooplankton entrained were probably rotifers (77% of the total by number) and cladocerans (74% of the total by weight). (**0044-10** [Bihn, Sandy])

Comment: 5. The 316(b) presents several estimates of the impact of impingement and entrainment losses of fish at the Monroe plant on the source populations in western Lake Erie. Impingement impact was assessed on the basis of the simple ratio of the number of fish impinged of a given species to the number of individuals of that species in the source population; a similar assessment was presented for the impact of entrainment of larval fish on the source population of larvae. The impact of larval entrainment was also evaluated by projecting the loss of entrained larvae to an equivalent loss of adults. The impact of fish egg entrainment was evaluated by considering the estimated number of entrained eggs as the

equivalent number of adult females required to produce the eggs. The adequacy of these 316(b) impact assessments is subject to the concerns expressed above regarding the accuracy of the 316(b) estimates of the numbers of fish and fish eggs entrained and impinged and to other concerns detailed in the main body of the present report. No estimate of the impact of macrozoobenthos or zooplankton entrainment at the Monroe plant is given in the 316(b) report. The available information suggests that large numbers of organisms that are food for fishes are entrained and that zooplankton may have a high mortality because most are entrained when condenser discharge temperatures have risen to the acutely lethal level.

6. The 316(b) contains no discussion of the impact of the plant on the Raisin River even though the entire flow of the river is diverted through the Monroe plant for cooling water during most of the year. Although resident fish populations in the upper river would probably be little affected by the plant, those fish populations that required access to both the upper river and to Lake Erie would be denied this access by the Monroe plant.

7. The impact of the combined entrainment and impingement losses of yellow perch at the Monroe plant was estimated by means of a model formulated for the U.S. Environmental Protection Agency by R.L. Patterson. This model projects the annual loss in potential yield of yellow perch to commercial and sport fisheries of western Lake Erie due to impingement and entrainment losses of that species at the Monroe plant. On the basis of the estimated impingement and entrainment losses of yellow perch given in the present report (approximately 626,000 and 5 million fish, respectively) and the assumption of 70% mortality of entrained larvae (as in Patterson's model), the annual loss in potential yield of yellow perch to the fisheries is about 265,000 pounds; if it is assumed, as in the 316(b), that the mortality of entrained larvae is 100%, the loss is approximately 267,000 pounds. (**0044-11** [Bihn, Sandy])

Response: *The information provided in these comments (as Attachment B) pertains to the 316(b) demonstration for the Monroe power plant and does not comment directly on the Fermi 3 Draft EIS. Because the Monroe power plant uses a once-through cooling system, a much greater volume of water is withdrawn from the lake for cooling and impingement, and entrainment rates for the Monroe power plant and the proposed Fermi 3 (which uses a closed cycle cooling system) are not directly comparable. However, information pertaining to impingement and entrainment at the Monroe power plant was considered, along with other power plants using water from the western basin of Lake Erie for cooling, when cumulative impacts on aquatic resources were evaluated as described in Section 7.3.2 of the EIS. No changes were made to the EIS as a result of these comments.*

Comment: Impingement and Entrainment - The DEIS discusses the effects of fish mortality from entrainment through the cooling water intake system for the FERMI 3 reactor based on estimates from studies conducted at the FERMI 2 reactor intake. Results from two different studies are presented with significantly greater entrainment and mortality during the most recent study. The DEIS appears to minimize the effect of the impacts of entrainment by comparing the

results to the overall populations within Lake Erie. There is less analysis of the effects on a regional and localized level. While most of the adults, juveniles, eggs and larval fish are comprised of forage species, that does not mean they lack significance in the vicinity of the proposed project. In addition to the entrainment and mortality of forage species, significant numbers of game fish of several species are included in the results. It is not clear from the DEIS that the level of entrainment will not have an effect on local populations. An additional critical concern with the most recent entrainment study is the relatively short time period covered. While covering all seasons, it does not address the issue of variance between years that is likely to be large and unaccounted for by a single year study. The Department recommends that the applicant either consider the results of the most recent entrainment study as a minimum estimate of entrainment and fully develop needed mitigative measures based on this estimate or develop improved estimates using a new entrainment study that covers at least 2 years. (**0052-2** [Dexter, James])

Response: *The Fermi 3 cooling system was designed to be consistent with EPA Phase I regulations for intake structures. The facility also employs closed cycle cooling. Therefore, the facility is presumed to be protective of the aquatic resources from the perspective of impingement and entrainment. The sections of the EIS that describe aquatic resources that could be affected by the construction and operation of the proposed Fermi 3 (Section 2.4.2) and the sections that evaluate the potential effects of impingement and entrainment on aquatic resources from the operation (Section 5.3.2) of Fermi 3 present information and evaluate impacts relevant to the vicinity of the Fermi site and the western basin of Lake Erie in greater detail than information for Lake Erie as a whole. Based on the available information, the review team concluded that the impacts on fish populations, including populations of commercial and recreationally important species, from entrainment at the proposed Fermi 3 would be small.*

No critical spawning areas for commercially or recreationally important fish species are known within the immediate vicinity of the Fermi site. The fish species that had eggs or larvae that made up the largest proportions of those observed during entrainment studies (e.g., gizzard shad, emerald shiner, freshwater drum, and yellow perch) are species that are widely distributed and abundant in the western basin of Lake Erie and have eggs and/or larvae that are dispersed in the upper portion of the water column. Although it is estimated that approximately 55 million fish eggs and larvae would be entrained annually by the operation of Fermi 3 (Section 5.3.2.1 of the EIS), these values are small when evaluated in the context of the numbers of eggs that can be produced by a single female (i.e., fecundity) of those species likely to be entrained (reported fecundity values are presented in Table 5-7 of the EIS) and the numbers of individuals of those species present in the western basin. For example, the estimated 25.1 million gizzard shad eggs and larvae that would be entrained annually by operation of Fermi 3 could be produced by approximately 46 to 1100 adult gizzard shad, based upon the range of reported fecundity values for that species, and there are very large numbers of adult gizzard shad present in the western basin.

The review team recognizes that there will be inter-annual variability associated with entrainment rates. However, the study that was conducted provided results that were generally similar to results of an entrainment study conducted at the Fermi 2 intake during the 1991 to 1992 period (see Section 2.4.2.1 of the EIS). The review team used the best available information and believes that there was sufficient information available to perform the assessment of the impacts of granting a license for the construction and operation of the proposed Fermi 3. No changes were made to the EIS in response to this comment.

Comment: The proposed traveling screen system appears to be adequate for handling and reducing mortality of large juveniles and adult fish, however the Department requests that the applicant review the current available best technology for reduction of larval and egg mortality and provide a set of recommended technologies that are feasible for installation at the FERMI 3 project. The Department anticipates there will be new requirements for intake systems in 2012; therefore the applicant should be prepared to revisit the intake protection standards. While the proposed new regulations are under Environmental Protection Agency review, the Department suggests the applicant review the Michigan Department of Environmental Quality guidance for intake structures which can be found on the internet at: http://www.michigan.gov/deq/0,1607,7-135-3313_3682_3713---,00.html . (**0052-3** [Dexter, James])

Response: *The Fermi 3 cooling system was designed to be consistent with EPA Phase I regulations for intake structures. The facility also employs closed cycle cooling; therefore, the facility is presumed to be protective of the aquatic resources from the perspective of impingement and entrainment. The review team is unaware of any effort on the part of EPA to revise the Phase I regulation for new facilities in 2012. EPA proposed regulations in April 2011 for Phase II (existing facilities), but they have not yet been finalized. No changes were made to the EIS in response to this comment.*

Comment: Toxic discharges from Fermi 3 would threaten Lake Erie's fragile ecosystem. Biocides, such as chemicals used to control zebra mussels, would be used in significant quantities and then released into Lake Erie. Cleaning solvents, heavy metals, and even fossil fuels integral to Fermi 3's operations would also be released into Lake Erie. Over a decade ago, the U.S.-Canadian International Joint Commission called for the virtual elimination of toxic chemicals into the Great Lakes, a goal Fermi 3 would not meet. Lake Erie, already suffering from phosphorus contamination and risking a return of algal blooms and consequent dead zones, is too fragile for yet another large-scale source of significant toxic contamination. (**0058-12** [Kamps, Kevin])

Response: *The potential contribution of the construction and operation of the proposed Fermi 3 to the overall cumulative impacts on water quality and algal production in Lake Erie are evaluated in Chapter 7 of the EIS. Cumulative impacts on surface water quality are evaluated in Section 7.2.3 of the EIS, including cumulative effects on chemical and thermal conditions in Lake Erie. Contributions from the operation of the proposed Fermi 3 to the cumulative effects*

on aquatic biota, including the potential effects on algal blooms, are evaluated in Section 7.3.2 of the EIS. Pursuant to the CWA, the EPA has the authority to require water quality monitoring for physical and/or chemical parameters associated with discharges into the waters of the United States. In Michigan, the EPA delegates this authority to the MDEQ. Prior to operation of Fermi 3, the applicant is required to obtain an NPDES permit from MDEQ to discharge liquid effluent to a surface water body; this permit would contain any water quality monitoring conditions or requirements and limits on discharge levels. The contribution to nutrient loading is one factor that is considered by MDEQ during NPDES permitting. As identified in Section 5.3.2.1 for chemical impacts, the proposed Fermi 3 would use sodium bisulfate for dehalogenation of cooling water, thereby avoiding the use of phosphorus-containing chemicals that could contribute to nutrient enrichment and development of algal blooms. No new information was provided in the comment, and no changes were made to the EIS.

Comment: 29. "Thirty fish species were captured in the overflow canal during surveys conducted in 2008....twenty-eight fish species were collected in the discharge canal...the central canal is stagnant and has no connections to the overflow or discharge canal...thirteen fish species were collected in the central canal..." (v 1, p 2.66) Are those fish tested for cancerous growth or other physical malformations due to the radiation/chemical exposure? It concerns me that "the south Lagoon, which has extensive aquatic vegetation: fish within that drainage can move freely from the lagoon out into the main body of the lake." (v 1, p 2.75) (**0016-2-10** [Collins, Jessie])

Response: *A radiological environmental monitoring program (REMP) has been in place at the Fermi site since 1985, with preoperational sampling conducted since 1978. The REMP includes radiological contamination monitoring from a variety of pathways and includes sampling of aquatic organisms from Lake Erie. Any radiological contamination of aquatic organisms, such as resident fish, would be identified. The fish collected in the studies cited in the EIS were not evaluated for the presence or absence of cancerous growths or other physical malformations, and the review team is not aware of such studies that have been conducted in surface waters associated with the Fermi site. As identified in Section 5.9.5.3 of the EIS, estimated total radiological body dose rates for biota, including fish, invertebrates, algae, mammals, and birds (see Table 5-29), were far below guideline levels that have been identified as protective of biota by the International Atomic Energy Agency. Malformations and other effects would not be expected to result from radiation exposure at the estimated levels. No changes were made to the EIS in response to this comment.*

Comment: 30. Regarding "Fish surveys conducted in portions of Stony Creek located in Monroe County during 1997 indicated the fish community in Stony Creek was dominated by taxa (a word that is not in my 5" thick dictionary) that are tolerant of degraded water quality conditions, although the fish community was rated as acceptable." (v 1, p 2.69) Do later surveys reach the same conclusion as this 14-year-old study? (**0016-2-11** [Collins, Jessie])

Response: *"Taxa" is the plural of "taxon" and refers to biological taxonomic categories or groups, such as a phyla, orders, families, genera, or species. The cited study was the most recent documentation found that provided fish community information for Stony Creek in Monroe County. The rating of "acceptable" for the fish community was made by the MDEQ based upon the cited survey and was not a designation made by the environmental review team for this EIS. Although portions of the Stony Creek watershed are near the boundaries of the Fermi site, the entire Fermi site falls within the Swan Creek watershed, as identified in Section 2.3 and Section 4.3.2.1 of the EIS. Runoff from the Fermi site drains either into Lake Erie or Swan Creek. No changes were made to the EIS in response to this comment.*

Comment: 4 ... A MODERATE 5 impact would be expected under the highest-emissions scenario (CO2 air concentration of 940 ppm by 2100 [about four times pre-industrial levels]), which is expected to produce the highest increases in air and water temperatures. These increases in air and water temperature could noticeably alter water levels but would not do so to the point that the resource and surrounding environment become destabilized. Really? I believe there are studies that indicate a radical alteration of Michigan's environment if C02 levels reach 940ppm. Might not the shoreline recede substantially? Have studies of shoreline topography been done that examine how much the shoreline will recede as lake levels drop? Will canals need to be dug for water inlet and outlets (or pipelines run, which offer a lot more cost and flow resistance than canals, and so are likely less desirable). Will not the discharge of hot water (and overhead steam and water vapor) have even more deleterious effects in warmer air and lake water (such a higher probability of death for insects, amphibians, and fish; their eggs and larvae; as well as the animals that feed on them)? (See revised predictions of global warming impact: http://www.giss.nasa.gov/research/news/20070509/, http://www.giss.nasa.gov/research/briefs/druyan_07/) (**0034-4-3** [Welke, Jim])

Response: *The potential effects of climate change on aquatic biota due to projected changes in water levels and water temperatures are discussed in Section 7.3.2 of the EIS and recognize that significant changes in aquatic species assemblages could result. However, based upon the levels of water withdrawals and the nature of the thermal plume that would result from operation of the proposed Fermi 3, the review team concluded that the construction and operation of Fermi 3 would not contribute significantly to the overall cumulative effects on aquatic biota within the region. Modifications to pipelines, digging of canals, and other impacts on manmade structures or systems would be the result of the lowering of the lake level because of climate change, not operation of Fermi 3. The comments did not provide any new information relating to the environmental effects of the proposed action, and no changes were made to the EIS in response to this comment.*

Comment: Some environmental concerns I have regarding this plant, there's a multitude of them. I just, I got noticed I'd be the first one coming up so I didn't get to collect my thoughts just yet, but I do have some notes. I'm concerned about the thermal pollution on Lake Erie. Lake

Erie is already beyond the tipping point. We're seeing algae blooms that are far beyond the tipping point. One more thermal polluter on the lake is going to exacerbate this problem. (**0040-9-3** [Keegan, Michael J.])

Response: *Section 5.3.2.3 includes a subsection devoted to the potential for operations of the proposed Fermi 3 to affect invasive nuisance organisms. In that section, the potential for invasive species (including various species of invertebrates, fish, and algae) to use the thermal plume associated with the cooling water discharge for Fermi 3 as a refuge from unsuitable natural conditions in Lake Erie is discussed. In addition, the potential contribution of the construction and operation of the proposed Fermi 3 to the overall cumulative impacts on water quality and algal production in Lake Erie are evaluated in Chapter 7 of the EIS.*

As indicated in Section 5.3 of the EIS, operation of Fermi 3 will have little or no influence on turbidity levels (which control light penetration), nutrients (phosphorous), and basin-wide water temperature, which are the key factors thought to control the growth of algal blooms. Because of the design of the discharge diffusers and thermal stratification, heated water would only periodically reach the bottom, and this periodicity would not "significantly increase the potential for development of algal blooms."

The effects of the cooling water discharge from operation of the proposed Fermi 3 on water temperatures in Lake Erie are discussed in Section 5.2.3.1 of the EIS. The effects of the thermal plume associated with the discharge of cooling water on ecological conditions in Lake Erie are evaluated in Section 5.3.2.1 of the EIS. Based upon the evaluation, the review team concluded that the area that would be affected by the thermal plume associated with operation of Fermi 3 would be small and the effects on aquatic biota would be minor. No new information was provided in the comment, and no changes were made to the EIS.

Comment: NOAA MODIS satellite imagery available for Lake Erie in 2011 shows massive algal blooms along the Monroe shoreline from July through October. Researchers say that the Lake Erie 2011 algal bloom was the largest ever recorded. Detroit Edison in their EIS depicted Lake Erie as being healthier and thriving when in fact the water quality and types of aquatic habitat it can support are declining. USEPA, Ohio EPA and others can verify the growing algae problem in Lake Erie. The Fermi Three plant will heat an estimated additional .12% of the water in western Lake Erie that will contribute to undesirable toxic algae growth which is a threat to human health and the environment. Contribution to algae growth and degradation to the fish population from the additional algae was not evaluated in the EIS. (**0044-4** [Bihn, Sandy])

Comment: NOAA MODIS satellite imagery available for Lake Erie in 2011 shows massive algal blooms along the Monroe shoreline from July through October. Researchers say that the Lake Erie 2011 algal bloom was the largest ever recorded. Detroit Edison in their EIS depicted Lake Erie as being healthier and thriving when in fact the water quality and types of aquatic habitat it can support are declining. USEPA, Ohio EPA and others can verify the growing algae

problem in Lake Erie. The Fermi Three plant will heat an estimated additional 4% of the water in western Lake Erie which will contribute to undesirable toxic algae growth which is a threat to human health and the environment. Contribution to algae growth and degradation to the fish population from the additional algae was not evaluated in the EIS. Because of thermal plume from Fermi 3 discharges there is higher potential for more intense Algae Blooms. Including the Lyngbia Wollei which is a toxic blue-green algae. (**0059-11** [Keegan, Michael J.])

Comment: Algae blooms resulting from warmer water temperatures are causing a "dead zone" every year in the shallow lake. The Great Lakes ecosystem is a regional wonder and a fresh-water treasure for the planet. I have not seen a clear and comprehensive plan to protect our region from the environmental risks posed by another nuclear power plant. (**0068-3** [Seubert, Nancy])

Response: *Although the proposed Fermi 3 would withdraw water at approximately the levels identified in the comment, not all the withdrawn water would be returned as heated effluent, since some water would be lost through evaporation. Nevertheless, Section 2.4.2.3 of the EIS presents information regarding the invasion of portions of the western basin of Lake Erie by the blue-green alga (*Lyngbya wollei*) and reviews information about water quality conditions that are believed to contribute to its proliferation.*

As indicated in Section 5.3 of the EIS, operation of the proposed Fermi 3 will have little or no influence on turbidity levels (which control light penetration), nutrient levels (especially phosphorous), and basin-wide water temperature, which are the key factors thought to control the growth of algal blooms. Because of the design of the discharge diffusers and thermal stratification, heated water would only periodically reach the bottom, and this periodicity would not "significantly increase the potential for development of algal blooms."

The effects of the cooling water discharge from operation of the proposed Fermi 3 on water temperatures in Lake Erie are discussed in Section 5.2.3.1 of the EIS. The effects of the thermal plume associated with the discharge of cooling water on ecological conditions in Lake Erie are evaluated in Section 5.3.2.1 of the EIS, and Section 5.3.2.3 includes a subsection devoted to the potential for operations of the proposed Fermi 3 to affect invasive nuisance organisms. In that section, the potential for invasive species (including various species of invertebrates, fish, and algae) to use the thermal plume associated with the cooling water discharge for Fermi 3 as a refuge from unsuitable natural conditions in Lake Erie is discussed.

In addition, the potential contribution of the construction and operation of the proposed Fermi 3 to the overall cumulative impacts on water quality and algal production in Lake Erie are evaluated in Chapter 7 of the EIS. Based upon the evaluation, the review team concluded that the area that would be affected by the thermal plume associated with operation of Fermi 3 would be small and the effects on aquatic biota would be minor. No new information was provided in these comments and no changes were made to the EIS.

Comment: Lake Erie Committee that considers issues pertinent to Lake Erie. Therefore, the management and control of cumulative impacts on populations of harvested fish species are partially addressed through the actions of these agencies. As described in Section 5.3.2, discharge of heated cooling water from other power plants also has the potential to affect survival and growth of organisms by altering ambient water temperatures. In most cases, thermal plumes from power plants discharging into Lake Erie would be expected to affect relatively small areas, and the plumes from Fermi 3 and the existing power plants in the western basin are not expected to overlap. Although many of the aquatic species that could be affected by the thermal plumes from different power plants are likely to belong to the same populations, the numbers of individuals that could be affected by cold shock or heat stress are expected to be small relative to the overall numbers of individuals within populations. As a consequence, the cumulative effect of thermal discharges from existing power plants and the proposed Fermi 3 on aquatic resources within the western basin of Lake Erie would be minor, and the incremental contribution of Fermi 3 would be insignificant.

Impingement of aquatic species will have “a significant impact”, as stated above, and I suspect the impact of the heat plumes, at best, is unknown. The NRC seems to assume that fish are distributed uniformly across the lake, and since the thermal plumes cover a small section of the lake, they will have minimal impact. What if the section of the lake covered by the plumes overlaps an essential migratory or breeding zone? Is the NRC review team sure this is not the case now, and never will be? If it were true that the plume intersected essential migratory or breeding zones, then the impact of Fermi III could be much more substantial. Should we not find out for sure? (**0034-4-9** [Welke, Jim])

Response: *The cumulative effects of impingement and entrainment by the Fermi 2 facility and the proposed Fermi 3 are addressed in Section 7.3.2 of the EIS. As identified in that section, the combined operation of the Fermi 2 and Fermi 3 facilities would effectively double the water intake and would likely increase the entrainment and impingement rate compared to the operation of Fermi 2 alone. Section 7.3.2 of the EIS also presents an evaluation of research that examined the potential for the combined entrainment at four other power plants located in the western basin of Lake Erie to affect fish populations and the relative level of entrainment expected during operation of Fermi 3. Based upon that evaluation, the review team concluded that even though the estimated impingement and entrainment rates for Fermi 3 would be considerably lower than those reported for most of the other power stations within the western basin and would represent a minor incremental impact on aquatic resources, the cumulative impacts of impingement and entrainment from all power stations on fish populations within the western basin could be significant on aquatic species.*

The analysis in the EIS regarding the potential cumulative effects of thermal plumes from multiple power plants on fish populations does not assume that fish are uniformly distributed across the lake, only that small proportions of any given population are likely to be affected by

cold shock or heat stress at any given facility. No key spawning habitat areas for commercially or recreationally important fish species or for Federally or State-listed species were identified as being present in the vicinity of the Fermi site, based upon aquatic ecology surveys conducted at the Fermi site and a review of the available literature. Because the thermal plume that would result during the operation of the proposed Fermi 3 would be located such that it would not completely prevent passage through the area and would be relatively small in areal extent, migrating fish could move around areas with unsuitable temperatures. No changes were made to the EIS in response to this comment.

Comment: Although the DEIS is a monumental compilation of data, I feel there should be further environmental site studies, surveys and reviews done by the MDEQ, USACE and NRC. The Biological Report needs to be completed and made public. (**0055-2** [Duffey, Leona])

Response: *The assessment presented in the EIS was based on the best available information, drawing from a variety of sources, including data collected at the Fermi site by Detroit Edison and data collected by the MDNR, other governmental agencies, and independent researchers. The review team believes that there was sufficient information available to perform the assessment of the impacts of granting a license for the construction and operation of the proposed Fermi 3. Before building and operating the proposed Fermi 3, Detroit Edison will be required to obtain certain Federal, State, and local environmental permits, as well as meet applicable statutory and regulatory requirements. The list of such authorizations, permits, and certifications relevant to the proposed Fermi 3 is included in Appendix H of the EIS. Although it is not clear what the comment means when referring to the "Biological Report," it is assumed the comment refers to the BA prepared by the NRC and USACE to satisfy requirements of the ESA. The BA was forwarded to the FWS by letter dated March 30, 2012. The FWS concurred with the effects determinations made by the review team as indicated in a letter dated June 8, 2012. The text of the BA and copies of the consultation correspondence are provided in Appendix F of this EIS.*

Comment: A new reactor at Fermi would add to the cumulative impact of such "routine releases" already occurring at operating atomic reactors, namely Fermi 2 and Davis-Besse, on Lake Erie's shallow, fish-rich western basin. (**0058-9** [Kamps, Kevin])

Response: *The potential contribution of the construction and operation of the proposed Fermi 3 to the overall cumulative impacts on water quality and algal production in Lake Erie, especially the western basin, are evaluated in Chapter 7 of the EIS. Cumulative impacts on surface water quality are evaluated in Section 7.2.3 of the EIS, including cumulative effects on chemical and thermal conditions in Lake Erie. Contributions from the operation of the proposed Fermi 3 to the cumulative effects on aquatic biota, including the potential effects on algal blooms, are evaluated in Section 7.3.2 of the EIS. The review team concluded that building and operating the proposed Fermi 3 would not contribute significantly to the overall cumulative*

impacts on aquatic resources within the geographic area of interest. No new information was provided in the comment, and no changes were made to the EIS.

Comment: Detroit Edison's Environmental Report holds that there are currently no problems with phosphorus contamination or algae in Lake Erie, which is false. NRC should address these issues, and the cumulative impacts that can be expected from adding yet another reactor at the Fermi power plant site. (**0058-14** [Kamps, Kevin])

Response: *Section 2.4.2.1 of the EIS identifies that there are indications that the levels of some nutrients, especially total phosphorus concentrations, have started to increase in Lake Erie over the past decade and that increases in nutrient levels tend to result in an increase in phytoplankton and algae abundance in aquatic habitats. Section 2.4.2.3 of the EIS also presents information regarding the invasion of portions of the western basin of Lake Erie by the blue-green alga (*Lyngbya wollei) *and reviews information about water quality conditions that are believed to contribute to its proliferation. Section 5.3.2.3 includes a subsection devoted to the potential for operations of the proposed Fermi 3 to affect invasive nuisance organisms. In that section, the potential for effects on invasive species (including various species of invertebrates, fish, and algae) is discussed. As identified in Section 5.3.2.1 for chemical impacts, the proposed Fermi 3 would use sodium bisulfate for dehalogenation of cooling water, thereby avoiding the use of phosphorus-containing chemicals that could contribute to nutrient enrichment and development of algal blooms. In addition, the potential contribution of the construction and operation of the proposed Fermi 3 to the overall cumulative impacts on water quality and algal production in Lake Erie are evaluated in Chapter 7 of the EIS. Cumulative impacts on surface water quality are evaluated in Section 7.2.3 of the EIS, including cumulative effects on chemical and thermal conditions in Lake Erie. Contributions from the operation of the proposed Fermi 3 to the cumulative effects on aquatic biota, including the potential effects on algal blooms, are evaluated in Section 7.3.2 of the EIS. The review team concluded that building and operating the proposed Fermi 3 would not contribute significantly to the overall cumulative impacts on aquatic resources within the geographic area of interest. No new information was provided in the comment, and no changes were made to the EIS.*

Comment: Thermal Pollution Impacts
Similar to its analysis with respect to consumptive use issues, the DEIS notes the issues with thermal pollution on its discharge cooling water into Lake Erie but does not properly evaluate these issues as serious and fails to provide potential mitigation options for the Fermi 3 facility. As the review team is well aware, Lake Erie is under a number of stresses, and in particular the stress caused by warmer temperatures has lead to historically bad algae blooms that create a toxic environment for much of the natural aquatic flora and fauna. The review team notes this, stating that "current water quality concerns with regard to Lake Erie include (1) increased phosphorus loading from regional agricultural activities, which cause toxic algal blooms." DEIS at 2-26. Additionally, the reviewing agencies also determined through sampling that area of lake

adjacent to Fermi 3 was consistent with other stressed areas of the lake, with “elevated levels of nutrients including total phosphorus, orthophosphorus, nitrate and nitrite nitrogen, and total Kjeldahl nitrogen.” Id. at 2-28. An increase of localized temperature caused by a large and steady discharge of cooling water could therefore have a deleterious effect on Lake Erie’s ability to regulate its own toxicity. Nonetheless, the reviewing agencies determined that thermal pollution potentially caused by the Fermi 3 facility would have a minimal impact on Lake Erie, and did not recommend any mitigation strategies for Edison.

In determining the possible impact of thermal pollution, the DEIS looks to the Michigan Water Quality Standards, which include temperature limits for Lake Erie, including mixing zone limits and applicability of the standards. These regulations state that the “Great Lakes and connecting waters shall not receive a heat load which would warm the receiving water at the edge of the mixing zone more than 3 degrees Fahrenheit above the existing natural water temperature.” MI Admin. R. 323.1070(1). Based on Lake Erie’s mean monthly temperature, the regulations give specific heat limits over which, if occurring outside of a designated mixing zone area, the temperature becomes a thermal plume. DEIS at 5-11. Approval of the size of the mixing zone varies depending on the size of the thermal plume and the body of water and is determined in the discharge permitting process, which has yet to occur. MI Admin. R. 323.1082(4). (**0038-3-1** [Schroeck, Nicholas Joseph])

Comment: The projections based on Edison’s simulations show a thermal plume that could potentially be as large as 55,000 square feet. DEIS at 5-2; 7-14. While this plume is a ‘small fraction of the western basin of Lake Erie,” at a localized level it could be enormously damaging, especially if the temperatures are upwards of 20 degrees Fahrenheit warmer than the mean natural temperature of the lake. This thermal pollution could result in drastic growth of toxic algae, heat stress for aquatic life, and, as the DEIS states, “the creation of favorable conditions for invasive species.” Id. at 5-33. Furthermore, in their analysis of possible impacts, the reviewing agencies indicate that climate change could exacerbate the issues caused by thermal plumes. Climate change could lower lake levels, causing large thermal plumes and mixing zones caused by the shallow depths at the area of discharge (already as low as 7 feet in some areas) to expand further. Id. at 7-14. Additionally, as previously noted, higher average lake temperatures would lead to greater water withdrawals to achieve the same cooling effectiveness. The larger withdrawals would also lead to larger discharges, which could create even larger thermal plumes at the shallower depths. Id. at 7-11; 7-14.

The GLELC recommends that the reviewing agencies reevaluate the potential problems caused by thermal pollution from coolant water discharges at a more localized level before producing the Final EIS. The review team did suggest two mitigation procedures within the DEIS, the installation of a diffuser that would mix the discharge before being released into the lake and a procedure to gradually reduce the discharge of cooling water during plant shutdowns to avoid any sort or heat or cold shock to aquatic species. DEIS at 5-7; 5-35. These are positive

mitigation procedures but not adequate to properly address the extent of harm that the volume of warm effluent being released by the facility. It should be noted that, as the Great Lakes Compact monitors both consumption and withdrawals, the discharge of thermal pollution as a result of a withdrawal would also be subject to a review under Section 4.11 of the Compact. Therefore, it would be prudent for both Edison and the regulatory agencies tasked with approving Fermi 3 to ensure that the thermal plumes being discharged into Lake Erie "result in no significant individual or cumulative adverse impacts to the quantity or quality of the Waters and Water Dependent Natural Resources and the applicable Source Watershed." Great Lakes Compact § 4.11. (**0038-3-3** [Schroeck, Nicholas Joseph])

Response: *The effects of the cooling water discharge from operation of the proposed Fermi 3 on water temperatures in Lake Erie are discussed in Section 5.2.3.1 of the EIS, and the effects of the thermal plume associated with the discharge of cooling water on ecological conditions in Lake Erie are evaluated in Section 5.3.2.1 of the EIS. Based upon the evaluation, the review team concluded that the area that would be affected by the thermal plume associated with operation of Fermi 3 would be small and the effects on aquatic biota would be minor. Section 5.2.3.1 describes the estimated discharge rates and temperatures that would occur as a result of the operation of Fermi 3 and evaluates the characteristics of the thermal plume that would result, including the likely increases in ambient water temperature and the dimensions of the thermal plume. As described in Section 5.2.3.1, MDEQ would specify allowable characteristics of the thermal plume through the NPDES permitting process.*

Thermal plume simulation modeling was conducted by Detroit Edison and independently confirmed by the review team. Based on the expected volumes and water temperatures of cooling water blowdown discharged from Fermi 3, the estimated maximum extent of the thermal plume (i.e., where ambient water temperatures would be increased by 3°F or more) would encompass an area of no more than approximately 55,300 ft^2 (1.3 ac) during any period of the year. It was also estimated that the portion of the plume that would be equal to or exceed the temperature standard established by MDEQ for Lake Erie for each month would encompass an area of 188 ft^2 or less during any period of the year. Based on these results, the review team concluded that the area of the thermal plume would be small relative to the large extent of similar open water habitat in the immediate area.

Because of the small area affected by the thermal plume and because the discharge is located in an area not known for spawning activity, it is unlikely that fish migration or spawning efforts would be significantly hindered; however, fish could avoid the area altogether in the summer when maximum lake temperatures are reached. During winter months, the thermal plume may act as an aggregation point for some species that prefer warmer water temperatures (e.g., gizzard shad). The largest increases in ambient water temperatures would occur during wintertime when ambient lake water temperatures decline. Maximum absolute lake water temperatures would occur in summer months and could result in water temperatures

approaching the reported critical thermal maximum for some cool or coldwater fish species in the immediate vicinity of the discharge diffusers. Ambient water temperatures during summer months have been documented to exceed 76°F. However, even during such periods, it is estimated that the area that would exceed ambient temperatures by 3°F or more would be 188 ft^2 or less, based on modeling for the thermal plume, and most fish species would be capable of detecting and avoiding the affected area; consequently, it is concluded that impacts on populations of fish would be small.

Section 5.3.2.3 includes a subsection devoted to the potential for operations of the proposed Fermi 3 to affect invasive nuisance organisms. In that section, the potential for invasive species (including various species of invertebrates, fish, and algae) to utilize the thermal plume associated with the cooling water discharge for Fermi 3 as a refuge from unsuitable natural conditions in Lake Erie is discussed. In addition, the potential contribution of the construction and operation of the proposed Fermi 3 to the overall cumulative impacts on water quality and algal production in Lake Erie are evaluated in Chapter 7 of the EIS. As indicated in Section 5.3 of the EIS, operation of Fermi 3 will have little or no influence on turbidity levels (which control light penetration), nutrients (phosphorous), and basin-wide water temperature, which are the key. No changes were made to the EIS in response to these comments.

Comment: Pgs. 2-74, and 9-202: The information presented in the document on the Lake Erie fishery could be more thorough. USGS suggests that the Final EIS include the information available from the website: http://www.glsc.usgs.gov/_files/reports/2009LakeErieMonitoring.pdf (**0080-6** [Treichel, Lisa])

Response: *Information from the suggested source pertaining to fish resources in Lake Erie has been added to Sections 2.4.2.1 and 9.3.5.4 of the EIS.*

Comment: Pg. 2-121: The document does not indicate that the tubenose goby (Proterorhinus semilunaris) has been collected in Swan Creek. USGS suggests the Final EIS include the information on the tubenose goby available from the website: http://nas.er.usgs.gov/queries/factsheet.aspx?SpeciesID=714 (**0080-7** [Treichel, Lisa])

Response: *Information about the tubenose goby will be added to the Non-Native and Nuisance Species subsection of Section 2.4.2.3 of the EIS.*

Comment: Pg. 9-153: The information presented in the document on the Lake Huron fishery could be more thorough. USGS suggests the Final EIS include the information available from these websites: http://www.glsc.usgs.gov/_files/reports/2009LakeHuronDemersal.pdf http://www.glsc.usgs.gov/_files/reports/2009LakeHuronPreyfish.pdf (**0080-8** [Treichel, Lisa])

Response: *Information from the suggested sources pertaining to fish resources in Lake Huron has been added to Section 9.3.4.4 of the EIS.*

Comment: Pg. 9-202, paragraph 3: The tubenose goby (Proterorhinus semilunaris) is not included in the list of nuisance species. USGS suggests the Final EIS include the tubenose goby as a nuisance species. A suggested reference can be found at: http://nas3.er.usgs.gov/queries/CollectionInfo.asp?SpeciesID=714&HUCNumber=41000 (**0080-9** [Treichel, Lisa])

Response: *The tubenose goby has been added to the list of non-native and nuisance species in Section 9.3.5.4 of the EIS.*

E.2.11 Comments Concerning Socioeconomics

Comment: Table 2.28 (v 1, p 2.136) shows a seven percent (7%) decline in the area work force from 2000 - 2008; and then the SEMOG Report (v 1, p 2.138) refers to a "declining population." How does DE justify their statement "Population will increase 74 percent by 2060" (v 1, p 2.24)? (**0016-3-15** [Collins, Jessie])

Response: *Table 2-26 of the EIS shows population projections through 2060 for the entire population within a 50-mi radius of Fermi 3. No changes were made to the EIS as a result of this comment.*

Comment: A new reactor would increase the coffers of those sworn to put the health and safety of citizens first (v 1, p 2.148), as well as increased taxes, and more paychecks. "Some impacts, such as the addition of tax revenue from DE for the local economies, are likely to be beneficial to the community." (v 1, p 5.136) So would a wind farm or a photovoltaic facility. Between 2007 and 2010, U.S. coal use dropped 8 percent. During the same period, and despite the recession, 300 new wind farms cane online. (World on the Edge by Lester R. Brown) (**0016-3-16** [Collins, Jessie])

Comment: I'll just go over some of the job categories since that seems to be a big interest here, and which I agree with jobs. I'd like to see more jobs. What I spoke about this afternoon was the lack of need for a Fermi 3 because we have just begun to mine the energy efficiencies and the renewable energies that we have just started to use. But there's another category called gray power, which is co generation of waste heat from industrial facilities. And according to studies of recycled energy development, this could provide gigawatts of energy, electrical energy. And it's been proven in several facilities. This would protect American manufacturers making them more competitive, and would protect more manufacturing jobs for this country. And let me talk a minute about base load power. The bias for base load power in the DEIS I think I wrong because what we're doing is going more and more towards what they call distributed power. Like if every one of us had a solar panel or a wind charger in our backyard, we wouldn't need, not only wouldn't we need another huge power plant, but we wouldn't need more transmissions lines to be built out. Now how do you get distributed power, and what kind of jobs does this mean? You get it by following the example of Europe, especially Germany, and now

Ontario and 70 other countries that have passed what they call a feed-in tariff, which incentivizes renewable energy. Okay, Ontario, which passed it last year has said that they're going to create 70,000 jobs just in solar alone. And I think we got better solar than Ontario. And we got better solar than Germany even. So this is solar, not wind, and it's been proven by these studies that with the wind and solar energy that we already generate creates far more jobs than central base load power plants. (**0039-31-1** [McArdle, Ed])

Comment: He goes on to quote NRG Chairman David Crane, talking about the inevitability of solar power, I'm not going to read that paragraph. But he does also talk about solar energy being able to create, he lists here, 275,000 jobs for Americans. (**0040-19-4** [Dean, Dan])

Comment: As I said before, the opportunity costs are the greatest costs involved. If we take 15 billion dollars and we send it down this rat hole, what are we missing out on? We're missing out on a magnitude, a multitude of jobs. Renewables, alternative energies are much more labor intensive. I know that labor is here today, I want jobs for Monroe County, I want tax for Monroe County. I understand that. But, our economic depravity should not be driving us. Move in another direction. (**0040-9-12** [Keegan, Michael J.])

Response: *Sections 4.4 and 5.4 of the EIS present the socioeconomic impacts associated with the building and operation of Fermi 3. Beneficial impacts include an increase in number of jobs, income, and tax revenues. Section 9.2 of the EIS discusses energy alternatives, including wind power (Section 9.2.3.2) and solar power (9.2.3.3). These comments provided no new and significant information. Therefore, no changes were made to the EIS as a result of these comments.*

Comment: The project will aid in employment opportunities and retail revenue for Monroe County. (**0024-2** [Laroy, Barry])

Comment: Regarding comments on the economy, back in the '80's, I lived here then, the construction of Fermi 2 was great for the schools, the township, the county, everybody. It's still good. It's getting to be a little bit less good because the valuation of the plant is going down. There were lots of good, high-paying jobs. Traffic on Dixie Highway was impossible at certain times of the day. It was a boom time. Now we're headed for the bust. Maybe there'll be another boom, I don't know. A Fermi 3 would certainly bring one about. The problem with the boom and bust, there's no leveling out. With the man who talked about the solar plant in Perrysburg, that sounded pretty good to me. Maybe we wouldn't have as big of a boom, but we wouldn't have a bust either. We'd have a more sustainable set of jobs here in the county. (**0039-27-2** [Kaufman, Hedi])

Response: *Socioeconomic impacts of construction and operation of Fermi 3 are discussed in Sections 4.4 and 5.4 of the EIS. No changes were made to the EIS as a result of these comments.*

Comment: Studies have shown that communities who have retained excellent environmental quality are the places are where the economy is most vibrant. These are the places people want to live, particularly young professionals and entrepreneurs. (**0027-7** [Marida, Patricia A.])

Comment: As Mr. Hsia had told us earlier, the mission of the NRC is to protect the public and the environment through regulation. Their responsibility is not to provide jobs. And yet, we have heard tonight, and earlier today, many, many people come up here and laud the efforts of DTE in providing jobs. This reminds me of my family in Pennsylvania in a very company-owned coal mining town in which they were indebted, from the cradle to the grave, to the company store, the coal company. I hope that Monroe does not become a company store town. (**0039-30-1** [Rivera, Evelyn])

Comment: Going to the economic impact, and this is my third point, the environmental impact in this study includes employment and jobs. But it does not include the idea of greater employment that would be created by creating a distributed energy system, wind turbines in multiple location, solar panels on every house, geothermal heating systems in every household in Michigan. The number of jobs that would be created in using those technologies far outnumber the number of jobs created by people working at a nuclear power plant. As an illustration, in my area we have Davis Bessie Nuclear Power Plant that employs 700 people. Seven hundred families benefit directly from that. Just down the road in Perrysburg, we have the first solar company. That employs 2,500 people. Those solar panels are right now being shipped off to Germany because Germany has had the foresight to wean itself off of nuclear and move towards solar and wind. So Ohioans are being employed right now, providing Germany with their solar panels. If the U.S. does not make a similar shift, then these other technologies, the wind, the solar, the geothermal heating, these will wither and die on the vine. I have seen this at work in New York State. The deregulated the electric industry. There had been a burgeoning co-generation, a burgeoning wind power, burgeoning solar power. Once they deregulated, the huge, the hemis, the massive electricity being put onto the grid by the nuclear power plants had to be continued to be put on at all times. Nuclear can't, you can't dial it up and dial it down. So these nuclear plants had to put all their power on the grid all the time. The result was there was supposed to be a bidding. Producers were supposed to say I'll produce at three cents a kilowatt hour. Someone else would said I'll produce at two cents. New York Power Authority would say, well, I'll buy the two cents and when I bought all theirs, then I'll buy some three cents, providing us with the cheapest possible electricity. What the nuclear power industry did after deregulation, because they had to dump all their power on the grid all the time, was they bid negative numbers. The said to the New York Power Authority, we'll pay you three cents a kilowatt hour to take this electricity, because we can't do anything else with it. The result was the burgeoning co-generation industry and the tens of thousands of jobs that it had was wiped out, because no one could compete with negative numbers. So that's just another example of the negative impact of not choosing a distributed system that has more jobs. (**0039-23-4** [Demare, Joe])

Response: *These comments are related to socioeconomic issues in general. No changes were made to the EIS as a result of these comments.*

Comment: 2. The jobs that DTE is boasting that will be created will most likely given to outstate specialists and will be gone once the plant is built. How many people actually work at the Fermi 2 plant now? And how large is the security team that protects the plant (and they're rent-a-cop security guards at that for the most part). (**0030-3** [Podorsek, Edward])

Comment: I've heard several statements here this morning, or this afternoon, about jobs coming to Monroe County, and in particular this local area. But the draft environmental impact statement itself, if you would read it, you will see that there is a problem with these statements and these promises of jobs. First of all, Monroe County does not have most of the categories of jobs that will be needed to construct this plant. They will be taken from outside of your area, coming from many other areas of Michigan. Number two, they will not be permanent jobs, once the facility would be constructed, a lot of these people would go back. (**0040-25-1** [Rivera, Ethyl])

Comment: Now given the fact that most of these resources would be used would also not be as a result of jobs in your local area. It would be imported from other areas. So please don't be fooled by the promise of jobs, we are all hoping for them. (**0040-25-3** [Rivera, Ethyl])

Response: *Section 2.5 of the EIS presents the total workforce at Fermi 2. Section 4.4 of the EIS presents the expected direct and indirect jobs that would be created with the building of Fermi 3. Section 5.4 presents the expected number of jobs associated with the operations workforce. No changes were made to the EIS as a result of these comments.*

Comment: We were all told about the economic benefits of this new nuclear plant. Fermi 1 didn't provide prosperity, Fermi 2 didn't provide prosperity and I doubt if Fermi 3 will be any better. I live in an area of Merlin Township and the Jefferson School District. Our tax rates had an added $13 mil surcharge called hold harmless, because Detroit Edison legislated away their tax bill. And I suggest that anybody, any community that deals with these people have their taxes changed into an irrevocable trust, so that money cannot be withheld from the citizens. So here we were, a bedroom community, paying the highest rates in the state for taxes. And our community has few sewers, few sidewalks and no garbage pick up. We're scarcely Bloomfield Hills, or Auburn Hills. (**0040-13-1** [Lankford, R.E.])

Response: *EIS Section 2.5 describes the State and local tax structure and tax revenue for jurisdictions in the area of Fermi 2 and the proposed Fermi 3. Sections 4.4.3.2 and 5.4.3.2 of the EIS present the projected tax revenue from the building of Fermi 3 and the operation of Fermi 3, respectively. No changes were made to the EIS as a result of this comment.*

Comment: You can hardly call our area prosperous. There is no long term carry over for any of the three plants that we built or are going to build. And getting this kind of money from an

operation like this is like receiving a life line from the Titanic. Do you want to take it? (**0040-13-4** [Lankford, R.E.])

Response: *Sections 4.4 and 5.4 of the EIS present the socioeconomic impacts associated with the building and operation of Fermi 3. Beneficial impacts include an increase in number of jobs, income, and tax revenues. No changes were made to the EIS as a result of this comment.*

Comment: The first issue I have is the impact that Fermi 3 will have on the area. I have relatives in Oregon, Ohio who have been commercial fisherman for over 50 years. In the past five years, they have found it increasingly difficult to fish in the waters of Lake Erie. The lake has been plagued with the green algae for the past five years and beyond. The problem is not going away. And the Toledo Blade reported on this last week. Lake Erie is the shallowest and the warmest of our great lakes. It's been reported that over an eight month period, Fermi 2's cooling water intake was responsible for the destruction of over 62 million fish eggs and larvae, and over 3,000 live fish were killed. Adding Fermi 3 will double this impact on our lake. What is the future of fishing in our great lakes at this point? Even without Fermi 3 it is very concerning. (**0040-34-2** [Berlucourt, Kerry])

Response: *Section 5.2.3.1 of the EIS discusses the surface water quality impacts associated with discharge of the cooling water into Lake Erie, and Section 5.3.2.1 discusses the impact on aquatic organisms of water withdrawal and consumption and cooling water discharges. Section 5.3.2.1 concludes that the impacts of impingement would be minor and that impacts of heat stress on Lake Erie fish populations from the discharge of cooling water blowdown from Fermi 3 would be minor. Discharges would be monitored in compliance with a NPDES permit to be issued by the MDEQ. Further analysis of the impacts on the commercial fishery industry from the operation of Fermi 3 is therefore not warranted. No changes were made to the EIS as a result of this comment.*

Comment: I am here to speak as the Chief Executive Officer for the Southeast Michigan Community Alliance, commonly known as SOMCA. SOMCA is officially designated by the state of Michigan to serve as the Michigan Works Agency for Monroe and Wayne counties excluding the City of Detroit, under the national network of work force investment boards, required in the federal work force investment act. As the Michigan Works agency, our primary responsibility is to increase employment opportunities for area residents by meeting the talent and training needs of area employers. SOMCA Michigan Works is designated to receive state and federal funds to assist in the recruitment of qualified candidates, and to fund training at high demand occupations as communicated to us by employers. In the current changing economy, our work force has experienced a substantial loss of jobs, and find that their current skills may not match those needed in the jobs that are currently available.

Though in recent months, the unemployment rate in our region has been improving, yet remains far too high in Monroe, Wayne and Lucas counties. Recently, Governor Snyder and the

Michigan Economic Development Corporation identified the energy industry as a targeted industry cluster for prioritization of workforce development programs and services. It is in this context that I appear before you today. I support the inclusion in the draft environmental impact statements for the Fermi 3 nuclear power plant, a summary of the economic benefits of constructing such a plant in our region. From the energy sector, the proposed new plant would help assure the energy needs of region will be met for decades to come. And economic growth clearly cannot be sustained unless an adequate, reasonable energy supply is available. Equally important, the jobs created by Fermi 3 would be a significant boost to this region and state. During the construction phase, the Nuclear Energy Institute estimates that 2,800 construction jobs would be created and they say a plan of this size would require DTE to add 850 permanent employees. And we all know how real these jobs are. DTE currently has about 2,000 employees in Monroe County alone.

None of these figures speak to the tremendous number of spinoff jobs created by the businesses that would serve the plant and its employees. Before I close, let me reassure you that this region knows the importance of providing our workforce with the new skills necessary to obtain employment in the energy industry. Many of our laid off workers have work experience or skills that make them ideal candidates for re-training in the energy industry occupations. As Dr. Nixon from Monroe Community College explained, and as many other institutions from our region know they area already heavily into energy occupation training, and continue to work with DTE and others to assure their programs are responsive to the specific current and future needs of the energy industry. And we at SOMCA place a high priority on encouraging careers in the energy field, and on providing training funding for appropriate candidates.

In conclusion, as the NRC proceeds with the environmental impact analysis for this proposed plan, I implore you to include the potential economic benefits it will generate for Michigan and our region. This clearly is essential component to assure balance in your final conclusion on the costs and benefits of the proposed plan. (**0040-36-1** [Pitoniak, Gregory])

Response: *The comment is noted and is supportive of issuing a COL for Fermi 3. No changes were made to the EIS as a result of this comment.*

Comment: And what of the serious socioeconomic factors that are off the books? Read the DEIS comments of Frank Zaski on the NRC website if you want to become informed about the economic consequences of a Fermi 3 reactor. (**0056-3** [Ehrle, Lynn Howard])

Response: *Mr. Zaski's comments are addressed under Section E.2.26, Comments Concerning Need for Power, and Section E.2.31, Comments Concerning Benefit-Cost Balance. No changes were made to the EIS as a result of this comment.*

Comment: Labor and employment statistics used 2006 and 2008 estimates, all of which have seen drastic changes since also affecting the projections used (**0070-9** [Rivera, Ethyl])

Response: *The staff updated Sections 2.5, 4.4, and 5.4 of the EIS with more recent demographic information for Monroe, Wayne, and Lucas Counties and for the States of Michigan and Ohio. These revisions to Sections 2.5, 4.4, and 5.4 address this comment.*

Comment: Table 2-33 indicates that the labor force percentages for "nuclear technicians" for both Michigan and Ohio is not projected to increase between 2006 and 2016,just before Fermi 3 is expected to begin operation. With no currently operating facilities in the area expected to begin the decommissioning process (Fermi 2 has begun there-licensing process and Davis-Besse is in the midst of re-licensing), the Draft EIS does not draw conclusions about where the Applicant might obtain the new nuclear technicians needed. Recommendation: EPA recommends the NRC identify from where the nuclear technicians might come in order to rectify the discrepancy in this number. (**0078-5** [Westlake, Kenneth A.])

Response: *Table 2-33 demonstrates that the projected labor force in Ohio and Michigan for Fermi 3 is sufficiently large that the workforce assumptions in Section 4.5 and 5.5 appear valid. In addition, as discussed in Section 2.5.2.7, Monroe County Community College and Lakeland Community College in Kirkland, Ohio, have developed a nuclear engineering technology program in anticipation of a forecasted need for workers in the nuclear energy industry. Further clarification of the assumptions on the exact location of locally available construction and operations workers is outside the purpose of NEPA and would not change the analysis. Therefore, the review team determined this comment does not warrant further revision to the EIS.*

Comment: In order to analyze different types of impacts in a more generic way, NRC opted to use the average number of onsite construction workers over an 8-year construction period, which is 1,000 onsite workers. We understand this is a more convenient way to compare impacts, as it captures the range of the construction period; however, using an 8-year average to analyze the number of onsite workers obscures the fluctuations in the numbers so that the true impact of their presence is not captured. During the first 50 months and last 30 months, the Fermi 3 site will experience a markedly lower number of onsite workers (each period being under 500 workers). The middle 40 months will experience the peak of construction, between 2,500 and 2,900 workers. Using the average of 1,000 workers overestimates by a factor of two the number of workers in the beginning and ending months and underestimates the number of onsite workers during the middle 40 months by a factor of three. Because of this, EPA does not agree with the conclusions about the impacts of onsite constructions workers. For example, the economic benefits of the presence of construction workers during the beginning and ending months of the construction period is largely inflated because 1,000 workers will not be onsite, only 500 workers will be onsite. Conversely, the negative air quality impacts from traffic and construction equipment during the middle 40 months are largely diluted because the impacts are evenly spread throughout the construction period, when in reality, the impacts will be undoubtedly much greater during the peak of construction. At both extremes, the metric does

not capture the true impact of onsite construction workers. Recommendation: EPA recommends revisiting this methodology to better reflect the true number of onsite workers and reevaluating the magnitude of impact during each construction phase. (**0078-12** [Westlake, Kenneth A.])

Response: *Section 4.4.2 of the EIS states, "The review team will consider the cumulative impacts of the building and operations workforce in the following analysis by evaluating the average onsite workforce of 1000 workers and/or peak workforce of 2900 workers during the building period." The review team recognizes that the economic impact will vary annually by the number of onsite workers and provides the reader the range of the onsite workforce over the 10-year building period in Figure 4-6. No changes were made to the EIS as a result of the comment.*

Comment: We agree that there will be at least a MODERATE impact to traffic. However, as detailed above, EPA views the methodology used to determine impact from the influx of construction workers as flawed and the true impact will be much greater during parts of the construction cycle. EPA also believes the Michigan Department of Transportation (MDOT) and Monroe County should be consulted on the impending decreases in levels-of-service to certain roads and intersections. Ultimately, a comprehensive outreach strategy can mitigate many of the traffic impacts. Recommendation: We suggest as part of the Applicant's mitigation strategy that the Applicant supply estimated schedules to adjacent communities and post them on the Applicant's website. The estimated schedules should include when (beginnings and ends of shifts) and where (heavily used roads and intersections) an increase in traffic is expected. We also recommend that the MDOT and Monroe County be consulted on the proposed project and any associated impacts to traffic patterns so they can assess the need for potential improvements. Any improvements to local roads that are a result of the proposed Fermi 3 project should be treated as connected actions and analyzed as such in the Final EIS. (**0078-14** [Westlake, Kenneth A.])

Response: *Section 4.4.4.1 states the staff relied upon the traffic consultants used by Detroit Edison (Mannik & Smith Group, Inc.), which focused on the peak building employment period for potential construction-related traffic impacts on local roads. Providing guidance for Detroit Edison's traffic impact mitigation strategy is beyond the scope of NRC's authority under the Atomic Energy Act and NEPA. No changes were made to the EIS based upon this comment.*

Comment: Based on conversations between EPA and NRC staff, we understand that there are no other sensitive populations in the vicinity of the Fermi site (such as nursing homes and child-care centers) other than those listed in Chapter 2 of the Draft EIS. Recommendation: We recommend this be definitively stated in the Final EIS. (**0078-15** [Westlake, Kenneth A.])

Response: *Nursing homes and child care centers in the vicinity of the Fermi site are a safety issue discussed in the FSAR at Part 2 of the Fermi 3 COL Application and in the EIS in Section 2.5.1.2. No changes were made to the EIS based upon this comment.*

Comment: The meteorological data indicates the predominate wind direction at the site is from the southeast. The land downwind from the site is primarily Canadian. While we appreciate the comprehensiveness of the data provided for Monroe and Lucas Counties in the United States, EPA would like to see more socioeconomic data from Canada, as Canadian citizens will also be receptors of Fermi 3 impacts. Recommendation: EPA recommends that socioeconomic data from Canadian receptor areas be included in the Final EIS. (**0078-16** [Westlake, Kenneth A.])

Response: *The scope of the NRC's regulatory authority is set by the Atomic Energy Act, which does not provide for analyses of socioeconomic impacts on foreign lands. NEPA does not provide any new authority to the NRC through which it can impose greater regulatory or analytical scope for the inclusion of foreign lands in its analyses. In addition, Executive Order 12898 does not provide any additional regulatory authority to the NRC. Consequently, the NRC's ability to provide for a meaningful assessment of the socioeconomic impacts on Canada is significantly limited. The review team recommends no change to either the socioeconomic analysis or the environmental justice analysis.*

Comment: The Draft EIS does not fully outline when refueling of Fermi 2 will take place and how this activity might impact onsite construction workers. It is not clear if each of the resource analyses have taken into account the additional workers and risk of radiation. Recommendation: EPA recommends that NRC and the Applicant identify when during the pre-construction and construction periods the required refueling operations of Fermi 2 will occur, if Fermi 3 construction workers will be impacted by re-fueling operating, and identify whether each of the impact analyses took this into account when drawing conclusions. We are particularly interested in the sections on radiological health impacts, traffic impacts, and socioeconomic impacts, due to the additional risk of radiation exposure and the additional number of onsite workers. Clarify whether onsite construction workers will wear radiation badges or receive additional screening if they are onsite during the refueling periods where there is an increased risk of radiation exposure. (**0078-34** [Westlake, Kenneth A.])

Response: *This comment relates to the potential increased radiological impacts to construction workers when Fermi 2 undergoes refueling outages at approximately 18-month intervals. Cumulative socioeconomic impacts are discussed in Section 7.4 of this EIS. Section 4.9 of the EIS discusses radiation exposure to construction workers from licensed operations at Fermi 2, which includes refueling outages. Construction workers are considered to be members of the public and, as such, are limited by 10 CFR 20.1301 to an annual dose of 100 mrem in a year. The maximum estimated annual dose to a construction worker was a bounding estimate that was comprised of four dose rate components: direct radiation exposure from existing sources, direct radiation exposure from the ISFSI, exposure from gaseous effluents, and exposure from the decommissioned Fermi 1. The only one of these four dose rate components likely to be affected by a refueling outage at Fermi 2 is the dose from gaseous effluent releases. The dose estimate to onsite construction workers from the gaseous effluent releases from Fermi 2 was*

based on data from the year of the highest public exposure over a 10 year period (i.e., 1999 to 2008). The largest contributor to construction worker dose of the four dose rate components is the direct radiation exposure from existing sources, i.e., from the operation of Fermi 2. This dose rate component is based on the maximum annual TLD dose measured over the same 10 year period from the two TLD locations that were closest to the expected construction site for Fermi 3. Both the gaseous effluent and the measured TLD dose time periods included multiple Fermi 2 refueling outages. Thus, the estimated construction worker dose takes into account any increased dose during refueling outages.

The above comment also makes reference to the potential increased risk of radiation exposure due to the additional number of workers onsite during refueling outages. Refueling outages at Fermi 2 should have no effect on the number of construction workers employed for the construction of Fermi 3. Any increase in the number of workers onsite during refueling outages would likely consist of occupational workers associated with the refueling operation of Fermi 2. Unlike the dose limits to members of the public, the dose limits to occupational workers are governed by 10 CFR 20.1201, which limits the annual occupational worker dose to 5 rem (5000 mrem) in a year. No change was made to the EIS in response to this comment.

Comment: In order to better quantify traffic impacts, EPA recommends that estimated normal operating schedules for Fermi 2, proposed construction schedules for Fermi 3, and estimated Fermi 1 decommissioning schedule be included in the Final EIS. Specifically, EPA is looking for the points at which anticipated shift changes might occur, whether any shift changes coincide, and if shift changes might be staggered or altered so that traffic impacts are reduced. This is an important point for neighboring residences, as levels-of-service (LOS) on several nearby roads and intersections is already rated at C or lower and LOS is expected to worsen as construction of Fermi 3 progresses. Recommendation: EPA recommends additional coordination with MDOT and Monroe County. The Final EIS should outline shift schedules so local communities can be made aware of and adequately prepare for the change in traffic patterns. (**0078-35** [Westlake, Kenneth A.])

Response: *The Mannik & Smith Group, Inc. traffic study modeled the peak construction workforce and the Fermi 2 workforce, along with the consequences of an additional 1200–1500 outage workers every 18 months (see Section 4.4.4.1). The staff stated that traffic impacts would worsen if outages occurred during the peak construction workforce, but stated that the impacts would be temporary (30 days) and limited to only those times when shift changes occurred. Detroit Edison stated that it would consider shifting schedules to reduce traffic impacts. The Michigan Department of Transportation (MDOT) and Monroe County Road Commission (MCRC) are engaged during the site review process, and may recommend specific roadway improvements at that time. This process is discussed in Section 4.4.4.1. No changes were made to the EIS based upon this comment.*

E.2.12 Comments Concerning Environmental Justice

Comment: A final issue is that the people of Walpole Islands First Nations were not contacted by either the NRC or the USACE regarding the impact of building Fermi 3. The NRC stated in the DEIS that they are Canadian and don't have to be included. Wrong. They live on unceded lands and have dual citizenship in Canada and the United States. In their role as American citizens, they have to be included in scoping process and for the possible impacts. The Walpole Island Heritage Center has contacted the Canadian government for help in preventing the licensing of Fermi 3.

The 1807 Treaty of Detroit states that all descendants of those tribes and bands have fishing, hunting, and gathering rights in southeastern Michigan forever. The pollution from Fermi 2 alone is a treaty violation. Many descendants of those treaty rights have signed on to my comments. I have their tribal affiliation listed with their names.

Therefore, we the undersigned, wish you to put the Fermi 3 licensing process on hold until all of these issues have been adequately addressed. (**0015-4** [Collins, Jessie])

Comment: Walpole Island First Nations is located within the affected radius, but "because it is in Canada, the review team did not include it in its environmental justice investigation." (v 1, p 2.187) It is my understanding that Walpole Island First Nations is on unceded lands and is not Canadian or American, but those residents have dual citizenship. Therefore, they need to be included in your scoping process ... even if you have to back up to do (**0026-6-11** [Macks, Vic])

Comment: Walpole Island First Nation Community
There are many tribal fishing enterprises on the Canadian side of the lake, and many tribes have dual citizenship in the United States and Canada. The Walpole Island First Nation community's fishing territories are located within the affected radius, but "because it is in Canada, the review team did not include it in its environmental justice investigation." (v 1, p 2.187) Whether Walpole Island First Nation residents inhabit sovereign lands, Canadian or US territories, they should have been included in the NRC scoping process and the public notices of these proceedings because they would be affected by Fermi 3. The NRC must reopen the licensing process for this purpose. (**0033-7** [Stephens, Thomas])

Comment: Walpole Island First Nation should have been included in the NRC scoping process and public notices because its members would be affected by Fermi 3. The NRC must reopen the licensing process for this purpose. The Walpole Island First Nation's traditional fishing territories are located within the affected radius, but "because it is in Canada, the review team did not include it in its environmental justice investigation." (v 1, p 2.187) However, North American Indians have the right to trade and travel between the United States and Canada under Article III of the Jay Treaty. Walpole Island First Nation members inhabit U.S. and

unceded indigenous territories in addition to Canadian territory, and many Walpole Island members are U.S. citizens. (**0069-1** [Stephens, Thomas])

Comment: 37. Walpole Island First Nations is located within the affected radius, but "because it is in Canada, the review team did not include it in its environmental justice investigation." (v 1, p 2.187) Walpole Island First Nations is on unceded lands and is not Canadian or American, but those residents have dual citizenship. Therefore, they should have been included in your scoping process. Since you did not, I believe the NRC must back the whole licensing process up to do so. They are American citizens and have the same rights as the citizens of Monroe. (**0016-2-18** [Collins, Jessie])

Response: *The NRC consulted with 17 federally recognized Indian Tribes in accordance with the NEPA, Executive Order 12898, and Section 106 of the National Historic Preservation Act of 1966 (NHPA). Appendix F contains a complete listing of the 17 federally recognized Indian Tribes with which NRC consulted, including responses received from Tribes. The NRC is not required to provide any specific notifications regarding scoping or Draft EIS publication to the Walpole Nation because it is not a federally recognized Tribe in the United States. Per 10 CFR 51.1, the NRC's NEPA regulations "do not apply to . . . any environmental effects which NRC's domestic licensing and related regulatory functions may have upon the environment of foreign nations." Therefore, no changes were made to the EIS as a result of these comments.*

Comment: 1 ... The environmental justice impacts from NRC-authorized activities would be 2 SMALL, and no further mitigation would be warranted.

Electricity from Fermi III will cost substantially more than it would if obtained from improved end-use efficiency, or distributed renewable energy sources (http://www.rmi.org/cms/Download.aspx?id=1171&file=E05-15_MightyMice.pdf,http://www.rmi.org/images/PDFs/Energy/E08-01_AmbioNucIllusion.pdf). Since electricity costs affect the poor as a greater percentage of their income, and since minorities are disproportionately subject to poverty, it seems that Fermi III presents a social justice issue if not an environmental justice issue. And since the environmental burdens of Fermi III will be borne equally by minorities, it seems unreasonable to also expect them to pay a larger portion of their incomes for the electricity provided by Fermi III, especially in light of the fact that improved end-use efficiency, and distributed renewable energy sources would provide electricity to them at lower cost, and provide minorities and the impoverished more and better job opportunities than Fermi III. (**0034-4-10** [Welke, Jim])

Comment: What I'd like to highlight today is the economic impact that we would have here with low-income consumers of DTE. We're particularly concerned with the cost of a nuclear plant in comparison with other forms of energy, including energy efficiency and wind production. This year we've had a particularly difficult year in the economy as you all well know. With the

foreclosure crisis and unemployment rates in the City of Detroit and the DTE service area, people are struggling to pay their bills. In the State of Michigan the low-income energy efficient fund was eliminated. That was the only state fund provided to low-income customers to provide warmth and assistance to pay their bills in between jobs, or when looking for jobs, or when on a limited amount of income. That was eliminated this year, a fund that provided almost $600 million since its inception in 2002. We're also looking at a dramatic decrease in federal assistance to home heating in the City of Detroit, and we're greatly concerned with this. We've had dialog with DTE in regards to creating an alternative rate structure that would help. But what would be the greatest help to families in need would be energy efficiency, which would help provide a greater reliability of our energy structure by freeing up more energy that could provide somewhat up to a 30 percent savings for people in their homes. And could provide about 10 times cheaper form of energy than a new coal-fired power plant and much less than a new nuclear facility. We're particularly concerned, not only because the unemployment rates have hindered people from paying their bills, but since 2007 our shut-off rates have gone up in the DTE service area. One very sad story I'll relate to you tonight was a young mother who was struggling to pay her DTE bills, and was put in shut-off. She ran out of her house in the middle of winter to go buy a generator, and when she got back her house and her children had burned to the ground. It's a very sad story, and I think that we should take to heart what happens to people when they are in shut-off, and think about that as an also reasonable impact than a new nuclear facility would have on the population in Detroit, just as we might project a rail line that might be built in the tri-city area. In 2007, we had 83,763 shut-offs according to the Michigan Public Service Commission. In 2008, an increase to 139,064 shut-offs in the DTE service area in one year. By 2009, we had over 200,000 shut-offs in the DTE service area. This is a considerable concern, and was not mentioned anywhere in the Environmental Impact Statement. We do ask the NRC to include this, as well. (**0039-26-1** [Martinez, Michelle])

Response: *The purpose of the EIS is to disclose the potential environmental impacts of constructing and operating the proposed Fermi 3. Regulatory decisions regarding future energy options and setting retail power rates are outside the NRC's regulatory purview; those determinations are the responsibility of the Michigan Public Ser\vice Commission (MPSC). Because of the dynamic nature of the rate-setting process, including the uncertainty as to how any increase would be distributed between residential, commercial, and industrial customers, analyzing the likelihood and magnitude of future rate changes (if any) would entail undue speculation by the review team. The EIS was not modified as a result of these comments.*

Comment: EPA appreciates NRC's efforts to outline its environmental justice analysis methodology; however, we disagree with NRC's conclusion that the influx of some 2,900 construction workers at the peak of Fermi 3's construction will have a SMALL impact to infrastructure and community services. As outlined above, the additional 2,900 workers is captured by using the average of 1,000 workers; the magnitude of an increase in 2,900 workers cannot be quantified given the methodology used. Such a large increase of workers will

undoubtedly put pressure on community resources, such as affordable rent and availability of medical services. Therefore, EPA believes that the impacts are MODERATE in magnitude and require additional mitigation. Recommendation: EPA recommends a re-evaluation of the methodology for assessing socioeconomic impacts as a result of the proposed project; this will yield a higher magnitude of impact to resources on which communities living with environmental justice concerns are reliant. This will also increase the necessity of mitigation measures. (**0078-13** [Westlake, Kenneth A.])

Response: *Section 4.4.4 of the EIS discusses the impacts to infrastructure and community services during the construction of Fermi 3. The review team concluded that the impact of building activities on regional infrastructure and community services would be MODERATE for traffic on local roadways and SMALL on recreation, housing, water, and wastewater facilities; police, fire, and medical facilities; and education. The conclusion that the impacts would be SMALL is based on the size of the in-migrating construction workforce and that housing and community services are spread out through a number of jurisdictions and municipalities. Section 4.5 concludes that these impacts are not expected to disproportionately impact low-income and minority populations. The comment provides no new information; therefore, no changes were made to the EIS as a result of this comment.*

Comment: What is the purpose of giving breakdown charts and descriptions of Ethnic groups in the area? (v 1, p 2.184) Under the Environmental Justice Section (7.4.2), it is stated “There is a potential for minority and low-income populations to experience disproportionately high and adverse impacts from the activities” (v 1, p 7.30) Does radiation discriminate? Why would we have higher impacts? (**0016-3-13** [Collins, Jessie])

Response: *The environmental justice analyses provided in Sections 4.5 and 5.5 of the EIS address disproportionately adverse human health and environmental (including radiological) impacts on low-income and minority communities that could potentially be produced by the construction and operation of Fermi 3, and Section 7.4 addresses cumulative impacts in terms of environmental justice. The presence of an environmental justice population of interest is sufficient for the staff to consider the possibility of a disproportionately high and adverse impact on a minority or low-income community. Section 4.9 of the EIS discusses the radiological health impacts on the public during construction, and Section 5.9 of the EIS discusses the radiological impacts on the public during operation of Fermi 3. Section 7.8 addresses all potential cumulative radiological impacts on the public from operation of Fermi 3. The review team found that (1) all environmental emissions and operation dose assessments are well within NRC and EPA regulations and (2) no demographic subgroup is affected differently than any another subgroup, including by exposure to radiation. On an individual level, there is no disproportionate effect from exposure to radiation. No change was made to the EIS as a result of this comment.*

E.2.13 Comments Concerning Historic and Cultural Resources

Comment: Three federally recognized IndianTribes with established land claims within Monroe County, "because judicially established land claims are based on proven ancestral or historic ties to lands, these three federally recognized Indian Tribes may also have been prehistorically or historically associated with the Fermi 3 project locations or its surrounding region." (v 1, p 2.192). How can Fermi 3 be built without their agreement? (**0016-2-19** [Collins, Jessie])

Response: *The NRC review team initiated consultation with the three federally recognized Indian Tribes with established land claims within Monroe County in December 2008 in accordance with Section 106 of NHPA and NEPA in December 2008. These three Tribes are the Hannahville Indian Community, the Forest County Potawatomi Community of Wisconsin, and the Ottawa Tribe of Oklahoma. Copies of correspondence with these three Tribes are available in the NRC-Agency-Wide Document Management System (ADAMS) under Accession Number ML083520641. The NRC review team did not receive responses from any of these three Tribes. The NRC review team concludes that these Tribes have no concerns regarding the Fermi 3 project. No changes were made to the EIS as a result of this comment.*

Comment: Am I to understand that in Historic and Cultural Resources (v 1, p7.31) the impacts were rated as moderate because Fermi 1 has to be decommissioned instead of left as a historical building? (**0016-4-35** [Collins, Jessie])

Response: *The impacts on historic and cultural resources were rated as moderate because if the Fermi 1 structure is still present after decommissioning, it would have to be demolished so that Fermi 3 could be constructed. Because Fermi 1 is a* National Register of Historic Places *(NRHP)-eligible historic property, demolition of the structure that comprises this property for the Fermi 3 project would be considered an adverse impact. However, this adverse impact would be mitigated through recordation documentation of the structure and a public exhibit at Monroe County Community College, resulting in a MODERATE impact. Text in Section 4.6.1 has been clarified as a result of this comment.*

Comment: Fermi 1 is stated as eligible for listing on the National Registry of Historic Places? (v 1, p 2.199 & 2.203) If it becomes listed, then maintenance/monitoring of all the spent fuel on site (and decommissioning) will be done at taxpayers' expense? What presentation could there be of Fermi 1 except that it was a near catastrophic explosion, unable to produce electricity, and a financial loss? Will the historic presentation include the 1957 WASH Report produced by the Brookhaven National Laboratory at the request of the Atomic Energy Commission? That report said that in a major accident the following would happen: 3,400 people would die within 15 miles; 43,000 people within 44 miles would suffer severe radiation sickness; 82,000 people within 00 miles would have double the chance of cancer; 66,000 people would have to be rapidly moved out of a 92 square mile area stretching 100 miles downwind; and subsequently, 460,000 people would have to be moved out of their homes up to 320 miles downwind of the

accident; and there would be 7 billion dollars in property damage. Would the historical presentation include the 1956 report of the Advisory Committee on Reactor Safe Guards, given to the Atomic Energy Commission, that clearly stated that the design of the proposed Fermi 1 reactor was unsafe and should not be built? Would it acknowledge that AEC Chairman Strauss suppressed these reports and authorized construction of Fermi 1? (**0026-6-12** [Macks, Vic])

Response: *Whether Fermi 1 is eligible for listing in, or listed in the NRHP has no impact on funding of maintenance/monitoring of all spent fuel onsite, or on funding for decommissioning Fermi 1. The owner of Fermi 1 (Detroit Edison) is responsible for funding these activities, in compliance with regulations and requirements set forth by the NRC. The comment regarding the presentation of Fermi 1 relates to the results of Section 106 consultation with the Michigan State Historic Preservation Office and other consulting parties. Section 2.7.4 has been updated to reflect the results of Section 106 consultation, including a measure in the Memorandum of Agreement (MOA) that stipulates development of this public exhibit as part of the resolution of adverse effects on Fermi 1. The MOA is included in Appendix F.*

Comment: Now, what is this nuclear scheme all about? It's about, as I heard Dr. Nixon from the community college state that he was proud that the community college would be housing a museum, archives for the Fermi 1 documents.

I have some documents on the Fermi 1. They were top secret when they were first established. And it talks about the time objective of the Fermi 1 as high rate of production of fissionable material, where weapons material production is the prime objective, as appears to be the case in much of the commission's program. Our present studies indicate the cheapest source would be very large size breeder reactors, operated for the maximum production of fissionable material. It goes on to say unique weapons material. The physical characteristics of the fast reactor and the rapid processing with the contemplated metallurgical separation system will permit our reactor to provide very high purity weapons materials. It was a bomb factory, okay?

I'm not real proud of that. Now earlier afternoon session, there were some people who were proud of Custer. Custer was a skunk to the Native Americans, he epitomizes their genocide. So I see Fermi 1 with a core meltdown in 1966, which was chronicled in We Almost Lost Detroit as not a proud moment. I think it's something you want to bury and hide, and it's still radioactive. It's still releasing radioactive material in the environment. In 2008, was releasing, spilling tritium into the environment. In 2008, the Fermi 1 caught on fire again, sodium spontaneously combusting.

So it's not a proud moment in Detroit Edison's history. So I'd suggest to you maybe put the archives somewhere else. And then, I found on the floor, and I guess I want to read into the record, because as I read it I do agree with what's here. (**0039-24-2** [Keegan, Michael J.])

Response: *The comment provides no additional information. There were no changes made to the EIS because of this comment.*

Comment: And I'm also pleased to say that, as the hub of nuclear energy related educational activity locally, Monroe County Community is proud, yes proud, to be selected as a partner with DTE Energy in terms of preserving history in a community that takes a great deal of pride in historic preservation. In this case, it'll be the history of Fermi 1 assisting in the mitigation and the demolition of Fermi 1 so that long after we're gone scholars from other parts and scientists from other parts of the world looking for information, what they learned or what was learned from Fermi 1, can come to Monroe and seek that information. So the demolition of decommissioned Fermi 1 unit, which was designated a nuclear historic landmark of 1986 by the American Nuclear Society is included in the Draft Environmental Impact Statement as a "moderate impact." MCCC is committed to preserving the history through displays of artifacts in our new career technology center soon to be under construction about a hundred yards from here. (**0039-29-2** [Nixon, Dave])

Response: *The comment relates to the development of a public exhibit on the history of Fermi 1 as a result of Section 106 consultation with the Michigan State Historic Preservation Office and other consulting parties. Section 2.7.4 has been updated to reflect the results of Section 106 consultation, including a measure in the MOA that stipulates development of this public exhibit as part of the resolution of adverse effects on Fermi 1. The MOA is included in Appendix F.*

Comment: And I'm also pleased to say that as a hub of nuclear energy related activities, Monroe County Community College is proud to be partnering with DTE Energy in terms of preserving history. The history of Fermi 1, and assisting in the mitigation and the demolition of Fermi 1. The demolition of the decommissioned Fermi 1 unit, which was designated a nuclear historic landmark in 1986 by the American Nuclear Society, is now included in the draft environmental impact statement as a moderate impact. Monroe County Community College is committed to preserving that history in this county, a county that prides itself in historical preservation. We'll do that through displays and artifacts in the soon to be constructed career technology center, where the nuclear tech programs will be housed. And in addition, the artifacts archiving of the significant records, and its history, here in the Monroe County Community College Campus. (**0040-29-2** [Nixon, Dave])

Response: *The comment relates to the development of a public exhibit on the history of Fermi 1 as a result of Section 106 consultation with the Michigan State Historic Preservation Office (SHPO) and other consulting parties. Section 2.7.4 has been updated to reflect the results of Section 106 consultation, including a stipulation in the MOA for development of this public exhibit as part of the resolution of adverse effects on Fermi 1. The MOA is included in Appendix F.*

Comment: Fermi 1 is being declared a historical site and there will be a museum set up. But I would like to know that the public will have access as to what goes in that museum. Little known fact that the Fermi 1, the primary objective of Fermi 1 was to produce weapons grade plutonium, suitable for rockets. (**0040-9-13** [Keegan, Michael J.])

Response: *Fermi 1 is considered a historic property, not a historic site, because it has been determined eligible for listing in the NRHP. A public exhibit on the history of Fermi 1 will be developed as a result of Section 106 consultation with the Michigan SHPO and other consulting parties. Section 2.7.4 has been updated to reflect the results of Section 106 consultation, including a measure in the MOA that stipulates development of this public exhibit as part of the resolution of adverse effects on Fermi 1. The MOA is included in Appendix F.*

Comment: Perhaps there exists the potential for a cooperative agreement with the Monroe County Historical Museum to develop resources related to the Fermi 1 plant which will help mitigate the loss of this historic resource. (**0067-9** [Peven, Robert])

Response: *In an email to John Fringer of the NRC dated November 18, 2011, Ms. Chris Kull, curator and archivist of the Monroe County Historical Museum, stated that she notified Mr. Randy Westmoreland of Detroit Edison Company and Dr. David Nixon of Monroe County Community College of the presence of Fermi 1 documents in the museum's "Jens Collection" (Monroe County Historical Museum 2011). Ms. Kull stated that Mr. Westmoreland indicated he may send a student intern to look through the collection. A public exhibit on the history of Fermi 1 will be developed as a result of Section 106 consultation with the Michigan SHPO and other consulting parties. Section 2.7.4 has been updated to reflect the results of Section 106 consultation, including a measure in the MOA that stipulates development of this public exhibit as part of the resolution of adverse effects on Fermi 1. The MOA is included in Appendix F.*

Comment: CONTENTION 10 (Amended): The Walpole Island First Nation has learned of these proceedings and has petitioned the government of Canada for consultation and accommodation prefatory to joining these proceedings on the ground that tribal hunting and fishing rights, property rights and other concerns on the Great Lakes may be impaired by the construction and operation of Fermi 3.

A. Purpose of Contention

Intervenors proffered a contention in 2009 to ensure the participation of first nations people, in which they alleged non-notification of the Walpole Island First Nation as well as other native tribes, to ensure that all Native American tribes and bands and First Nations were adequately notified by NRC of the Fermi 3 new reactor licensing and environmental review proceedings, as due to them under applicable treaties, laws, and regulations. Intervenors withdrew that contention voluntarily because of an inability to secure the Walpoles' commitment

to join these proceedings. Detroit Edison Company (Fermi Nuclear Power Plant, Unit 3), LBP-09-16 at 70, fn. 196 (slip. op.). They now resubmit it.

B. Facts Relied on to Show Existence of a Genuine Dispute with the Applicant and the NRC

There has been no formal notification given the Walpole First Nation by the NRC Staff of the pendency of these proceedings, nor the right to comment or otherwise participate as an intervenor. Nonetheless, the tribe on December 21, 2011 requested that the Minister of Environment of the federal government of Canada, where the tribe is located, consult and accommodate the tribe. See attached letter. Specifically, the tribe has communicated this to the government of Canada:

Peter Kent
Minister of Environment Canada
10 Wellington Street
Gatineau, Quebec K1A 0H3
Canada
Via Fax: 819-953-0279
Re: Detroit Edison New Nuclear Reactor

Dear Mr. Kent:

It has come to our attention that Detroit Edison is pursuing an approval process for a new nuclear reactor on the shore of the westernmost part of Lake Erie in Newport, Michigan. This location is very close to the U.S.-Canada border, and adjacent to Lake Erie, so we expect that you have been or will be asked for your views by the proponent or by a U.S. regulatory agency.

This location is also within the traditional territory of our First Nation, is close to areas where our members exercise traditional harvesting, and is about 80km from our reserve. As you may know, our First Nation has a long history of concern for the environment, has well developed environmental knowledge and expertise, and has often been involved in environmental approval processes.

It is therefore our view that given the proximity to us of this proposed new nuclear reactor, Canada is required to consult and accommodate our First Nation, in accordance with the Haida Nation principle, regarding whatever position Canada takes concerning this project.

Please contact me to discuss how to initiate such a consultation.

Yours truly,
Joseph B. Gilbert, Chief
Walpole Island First Nation

It is anticipated that such consultation and accommodation will occur between the tribe and the federal government of Canada, based upon Canadian legal precedent, and that the end result will be that the Walpole Island First Nation will petition this Board to intervene.

C. Statement of Issues of Law and Fact to Be Raised

The Walpole Island First Nation is located about 53 miles from the proposed site of the proposed Fermi 3 atomic reactor. Walpole Island First Nation occupies unceded territory, named the Bkejwanong Territory, located on a series of islands in the St. Clair River between Michigan and Ontario, to the north and east of the proposed site of the Fermi 3 reactor.

The NRC has legal obligations under the National Environmental Policy Act (NEPA) to notify affected Native American tribes of pending significant proposals and actions, such as the Fermi 3 new reactor environmental and licensing proceedings. NRC is required under NEPA to interact with Native American tribes in a sovereign-government-to-sovereign-government manner. This is reinforced by Executive Order 12898, which incorporates the concept of "environmental justice" into decisionmaking related to environmentally controversial projects and minority populations. NRC's own regulations, specifically 10 CFR §51.28(a)(5), require the NRC to invite "any affected Indian tribe" to participate in the NEPA process for the new Fermi 3 reactor.

D. Explanation of the Basis for the Contention

Walpole Island First Nation would be an affected Indian tribe, should Fermi 3 be built and operated. Over one-third of the time, the prevailing winds that reach Walpole Island First Nation emanate from the direction of Fermi 3. Thus, any radiological and/or toxic chemical releases from Fermi 3, whether so-called "routine" or "permissible" releases or accidental releases, would likely reach and negatively impact Walpole Island First Nation. Besides the airborne radiological and toxic chemical risks from Fermi 3, the waterborne radiological, toxic chemical, and thermal risks are also of note . Walpole Island First Nation has hunting and fishing rights, by the Treaty of 1807 which would be implicated by Fermi 3, whether by "routine releases" of radioactivity, toxic chemicals, and thermal pollution, or by large-scale releases of radioactivity due to accident or attack at the Fermi 3 reactor. (**0077-3-6** [Lodge, Terry])

Comment: Demonstration That the Issue Raised by the Contention is Within the Scope of the Proceeding and Material to the Findings the NRC Must Make to Support its Licensing Decision

Typically, when a U.S. federal action impacts First Nations associated with the Canadian federal government, the U.S. federal agency will contact its Canadian federal counterpart. The Canadian federal agency will then provide its U.S. counterpart a list of First Nations in the affected area which should receive notification and an explanation of their rights in the proceeding. Such close and careful coordination and collaboration in codified in such U.S. and Canadian binding legal arrangements as the century-old Boundary Waters Treaty, which created the U.S.-Canadian International Joint Commission (IJC) to oversee such shared natural resources as the Great Lakes. Additionally, the United States federal government has entered into various treaties with Native American tribes over the course of centuries. These treaties recognize such legally binding rights as Native American tribes' rights to hunt and fish in certain territories, viz., the United States' "Treaty with the Ottawa, Etc., 1807" (November 17, 1807; 7 Statute, 105; Proclamation, January 27, 1808) which states at Article V,[2] "It is further agreed and stipulated, that the said Indian nations shall enjoy the privilege of hunting and fishing on the lands ceded as aforesaid, as long as they remain the property of the United States."

The NRC further routinely recognizes the status of First Nations tribes in fulfilling its NEPA/National Historic Preservation Act responsibilities

Intervenors state that the Commission is obligated to notify the Walpoles and other First Nations in Canada just as it must notify tribes located partly or wholly within the United States when there are transboundary environmental impacts from a project. NEPA is applicable to cases with international environmental impacts. *See, e.g.*, the Council on Environmental Quality's *Guidance on NEPA Analyses for Transboundary Impacts*[3] ("NEPA requires agencies to include analysis of reasonably foreseeable trans-boundary effects of proposed actions in their analysis of proposed actions in the United States"). In *Hirt v. Department of Energy*, 127 F. Supp.2d 833, 849 (W.D. Mich. 1999), the court found that NEPA applied to an agency planning to permit the transport of nuclear materials through the United States to the border of Canada (considering the potential impact in Canada of an accident). In light of the cross-boundary effects of a nuclear power plant's operations and of conceivable accident scenarios, plus the fact that a large portion of southern Ontario falls within the 50-mile plume exposure pathway from Fermi (the Citizens Environmental Alliance of Southwestern Ontario, Derek Coronado and Rick Coronado, all located in Windsor, Ontario, are presently Intervenors in this case), in light of the treaty rights of the Walpole tribe, which include the waters of Lake Erie only a few hundred yards away from the Fermi 3 site, Intervenors urge that these proceedings must be waylaid to allow the Walpoles an opportunity to intervene and participate. (**0077-4-1** [Lodge, Terry])

[2] http://www.1836cora.org/pdf/1807nov17treaty.pdf 2

[3] 2http://ceq.eh.does.gov/nepa/regs/transguide.html

Response: *The NRC review team consulted with 17 federally recognized Indian Tribes in accordance with NEPA and Section 106 of NHPA. Section 2.7.4 of this EIS has been updated*

to reflect the results of consultation with these Tribes for activities associated with the licensing action. Appendix F contains a complete listing of the 17 Federally recognized Indian Tribes with which the NRC review team consulted, including responses received from the Tribes. The NRC is not required to provide any specific notifications regarding scoping or Draft EIS publication to the Walpole Nation, because it is not a Federally recognized Tribe in the United States, NHPA applies only to Federally recognized Tribes and because, per 10 CFR 51.1, the NRC's NEPA regulations "do not apply to . . . any environmental effects which NRC's domestic licensing and related regulatory functions may have upon the environment of foreign nations."

E.2.14 Comments Concerning Meteorology and Air Quality

Comment: There are several concerns that I have with the building of a third reactor in our hometown but my main concern first and foremost is that the Fermi 3 Environmental Impact Study (F3EIS) is deficient and obsolete for several reasons.

1. F3EIS does NOT address climate change. (**0003-1-1** [Anderson, Christy])

Response: *The potential cumulative impacts on resources that could be affected by the building and operating of Fermi 3 that are described in Section 7.0 of the EIS include the potential effects of climate change. For example, climate change impacts on land use, surface water, wildlife and habitat, and aquatic resources are discussed in Sections 7.1, 7.2.1, 7.2.3, 7.3.1, and 7.3.2, of the Draft EIS, respectively. Greenhouse gas (GHG) emissions associated with building, operating, and decommissioning Fermi 3 are addressed in Sections 4.7, 5.7, 6.1.3, and 6.3. The review team concluded that the national and worldwide cumulative impacts of GHG emissions are noticeable but not destabilizing and that the incremental contribution of impacts from building and operating activities proposed for Fermi 3 would be SMALL. No changes to the EIS were made as a result of this comment.*

Comment: A new reactor built today or one that was built 20 or 30 years ago does not make it able to handle what is ahead for the NEXT 20 or 30 years in regard to climate change. (**0003-1-3** [Anderson, Christy])

Response: *A nuclear power plant built today or one that was built 20–30 years ago results in considerably less CO_2 entering the atmosphere over the lifetime of the reactor and mitigates climate change as compared to a fossil fuel-fired power plant generating the same amount of power. Potential impacts of severe weather (including climate change) on plant design and operation are outside the scope of the NRC's EIS process but are addressed in Sections 2.3 and 2.4 of the Fermi 3 FSAR and in Sections 2.3 and 2.4 of the NRC staff's SER. No change to the EIS was made as a result of this comment.*

Comment: The F3EIS is a severely deficient report in the sense that it does not address adequately the possibility of cataclysmic or volatile weather changes that can happen overnight, spontaneously or within a few short days. (**0003-1-4** [Anderson, Christy])

Response: *Potential impacts of severe weather (including climate change) on plant design and operation are outside the scope of the NRC's EIS process but are addressed in Sections 2.3 and 2.4 of the Fermi 3 FSAR and in Sections 2.3 and 2.4 of the NRC staff's SER. No change to the EIS was made as a result of this comment.*

Comment: FYI - Monroe County, Washtenaw County and Lenawee counties ALL have had RECORD rainfall and flooding along with some of the highest bouts of severe weather the area has EVER seen with record insurance claims in the last year. Also, Natural disasters in 2011 exerted the costliest toll in history - a whopping $380 billion worth of losses from earthquakes, floods, tornadoes, hurricanes, wildfires, tsunamis and more. Only a third of those costs were covered by insurance. And the tally ignores completely any expenses associated with sickness or injuries triggered by the disasters.

1. http://www.lenconnect.com/news/x1896018744/County-getting-sand-bags-after-recordfloods Lenawee county record breaking flooding in 2011.

2. http://www.google.com/url?sa=t&rct=j&q=washtenaw%20record%20rainfall%202011&source=web&cd=1&ved=0CDMQFjAA&url=http%3A%2F%2Fannarbor.com%2Fnews%2F2011-isnow-the-wettest-spring-on-record-in-ann-arbor-flood-warning-still-in-effect-more-rainexpect%2F&ei=iFoIT--eFYOmgwfu_73BDA&usg=AFQjCNGBrWqWzJg13D4Gd6qzGFv2k6r90w Washtenaw record breaking rainfall in 2011.

3. http://www.google.com/url?sa=t&rct=j&q=scientific%20american%20noaa%20most%20extrememe%202011%20weather&source=web&cd=1&sqi=2&ved=0CCMQFjAA&url=http%3A%2F%2Fwww.scientificamerican.com%2Farticle.cfm%3Fid%3Dnoaa-makes-2011-mostextreme-weather-year&ei=kFUIT_HbLcPn0QHmhKmcAg&usg=AFQjCNGIGeMMar-XJZqazCl8plVPi0ECBA 2011 most extreme weather year in history.

4. http://www.google.com/url?sa=t&rct=j&q=ndrc%20extreme%20weather&source=web&cd=2&sqi=2&ved=0CCQQFjAB&url=http%3A%2F%2Fwww.nrdc.org%2Fglobalwarming%2F&ei=HlYIT6S0JuLc0QHN1O3UAQ&usg=AFQjCNHoWdqeEJ0QPJSXeIFfY7IdqK3z2Q A study found that more than 1,100 counties -- one-third of all counties in the lower 48 -- will face higher risks of water shortages by mid-century as the result of global warming.

Another example. Calvert Cliffs nuclear facility in Maryland where hurricane Irene shorted a transformer and the power loss caused it's reactor to scram. http://www.google.com/url?sa=t&rct=j&q=clavart%20cliffs%20hurrican%20irene&source=web&cd=2&ved=0CCkQtwIwAQ&url=http%3A%2F%2Fwww.abc2news.com%2Fdpp%2Fnew

s%2Fregion%2Feastern_shore%2Fhurricane-irene-knocked-a-nuclear-reactor-offline-atcalvert-cliffs&ei=s64MT-OwIYeA2QXqsajVBw&usg=AFQjCNE0S3B_4zSnaIYZ_8JqzpgNx7hz8A

Although the reactor did what it was supposed to, it was hit with hurricane force winds. (**0003-2-6** [Anderson, Christy])

Response: *Historically, severe weather and its associated physical/monetary damages vary from year to year and from place to place. In recent years, these extreme events tend to be more frequent than in the previous century, widely believed due to improvements in monitoring technologies such as Doppler radars combined with changes in population and increasing public awareness. There is no evidence that the frequency or strength of the tornadoes is increasing (USGCRP 2009). Potential impacts of severe weather on plant design and operation are outside the scope of the NRC's EIS process but are addressed in Sections 2.3 and 2.4 of the Fermi 3 FSAR and in Sections 2.3 and 2.4 of the NRC staff's SER. No change to the EIS was made as a result of this comment.*

Comment: "The new meteorological tower will be located about 4,750 ft. south-southeast of the Fermi 3 reactor building" Primary and secondary sensors on the new tower will monitor the same parameters as do those on the existing Fermi 2 tower. The new tower will be operational for at least one and possibly two years prior to decommissioning of the existing tower. (v 1, p 2.226) Does this mean the decommissioning of the current Fermi 2 tower scheduled before decommissioning of the entire Fermi 2 site? (**0016-3-18** [Collins, Jessie])

Response: *The existing Fermi 2 meteorological tower will be decommissioned well before the Fermi 2 reactor and replaced with a new tower that will serve both Fermi 2 and Fermi 3. The current, 40-year operating license for Fermi 2 is valid until March 20, 2025. No change to the EIS was made as a result of this comment.*

Comment: "The atmosphere would receive heat and water in the form of cooling tower vapor and drift." (v 1, p 3.31) Can these emissions be stopped when they exceed contamination limits? (**0016-3-21** [Collins, Jessie])

Response: *Visible plumes from a NDCT consist of water vapor and drift. Water vapor is the gas phase of pure water that does not contain any chemicals. Drift is particulate matter (PM), which is a criteria air pollutant regulated by EPA. Drift is mostly pure water with a minimal amount of chemicals inherent in water intake from Lake Erie and treatment chemicals such as biocide, corrosion/scale inhibitors, and the like. Drift does not contain toxic chemicals or combustion-related criteria air pollutants in significant enough quantities to have a potential impact on human health and the environment. The cooling tower will be equipped with drift eliminators designed to limit drift to 0.001 percent or less of total water flow. Estimated PM emissions from the NDCT are relatively low, about 6.63 tons/year, or 1.51 lb/hr. In addition, the height of the tower (about 600 ft) along with buoyant plume rise will allow for good dispersion of*

the drift and significantly lower the ground-level concentrations of PM. There have been no reports or complaints documented to date indicating potential adverse impacts on human health and the environment associated with the cooling tower operations of Fermi 2. No change to the EIS was made as a result of this comment.

Comment: "....the EPA announced on Dec. 7, 2009 that GHGs threaten the public health and welfare of the American people..." (v 2, p 9.20) "...emissions for Fermi 3 equate to about 313,000 tons over 7 years - This also amounts to a small percentage of projected Green House Gas emissions for Michigan and the United States." (v 1, p 4.103) What is the total amount of GHG emissions a single reactor is allowed to send into the atmosphere per year? (**0016-4-1** [Collins, Jessie])

Response: *Currently, if annual GHG emissions exceed the threshold of 25,000 metric tons CO_2e,[(a)] a facility has to report its annual emissions to EPA as specified in the Mandatory Greenhouse Gas Reporting Rule (40 CFR Part 98) effective on December 29, 2009. In addition, the EPA established permitting requirements for GHG emissions under the Prevention of Significant Deterioration (PSD) and Title V Greenhouse Gas Tailoring Rule (75 FR 31514) effective on August 2, 2010. If GHG emissions exceed 100,000 metric tons CO_2e for a new plant or 75,000 metric tons CO_2e for a modification at existing facility, the facility is subject to the EPA's PSD regulations, which could require the facility to limit its GHG emissions by applying Best Available Control Technology (BACT). The facility would also be subjected to EPA's Title V operating permit program. Table 5-22 of the EIS shows that the CO_2 emissions from the stationary combustion sources that support the operation of Fermi 3 are estimated to be approximately 7700 tons per year (7000 metric tons per year). No change to the EIS was made as a result of this comment.*

Comment: "The review team has estimated the Fermi 3 for Potential to Emit (Greenhouse Gases) to be about 116 tons/yr, which exceeds the major source threshold. To avoid being a major source, Fermi 2 and Fermi 3 would need to limit their combined PTE to be eligible as a "synthetic minor" (or "opt-out") source" (v 1, p 5.95) How would combining their emissions bring them under the 100 tons/yr limit? (**0016-4-9** [Collins, Jessie])

Response: *The review team has estimated that Fermi 3 has the Potential to Emit (PTE) 116 tons per year of nitrogen oxides (NO_x), not GHGs. As explained in Section 5.7.2.1 of the EIS, PTE is defined as the maximum capacity of a stationary source to emit a pollutant under its physical and operation design. In fact, actual emissions are projected to be well below this*

(a) Carbon dioxide equivalent (CO_2e) is a measure used to compare the emissions from various GHGs on the basis of their global warming potential (GWP), which is defined as the cumulative radiative forcing effects of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to a reference gas, carbon dioxide (CO_2). The CO_2e for a gas is derived by multiplying the gas emissions by the associated GWP. For example, the GWP for CH_4 is estimated to be 21. Therefore, 1 ton of CH_4 emission is equivalent to 21 tons of CO_2 emissions or 21 tons CO_2e.

PTE. Thus, a facility could apply to be a "synthetic minor source," which is a facility that can operate as a major source, but for which the applicant is voluntarily requesting a Federally enforceable limit on one or more parameters (e.g., throughput or operating time) such that the PTE of the facility remains below major source thresholds. In this way, the Fermi site could limit its emissions under the major NOx source threshold of 100 tons/yr. No change to the EIS was made as a result of this comment.

Comment: The DEIS for the Enrico Fermi Unit 3 is incomplete, with the following omissions:

1. Failure to perform a detailed and comprehensive analysis of the chemical content of water being supplied from Lake Erie. The analysis referred to here is one that would be conducted on the water to determine its chemical content prior to being treated for use as cooling water. Please see pages 3-30 through 3-34 of the Draft Environmental Impact Statement for the COL for Enrico Fermi Unit 3 NUREG-2105 Vol.1.)

2. Because the chemical content of the cooling water is unknown, there is also a failure to predict the chemical and particulate content of the water vapor that will be emitted from the cooling towers.

3. Because the chemical content of the water vapor emitted from the cooling towers is unknown, there is also a failure to analyze the environmental impact of the contents of the water vapor emitted from the cooling towers. The environmental impact cannot be assessed if the chemical content of the drift from the towers is unknown. The total dissolved solids in the drift water were assumed to be salt (see pages 5-18, 5-91, 5-138 of the Fermi 3 DEIS). Such an assumption does not constitute a science-based analysis of the actual conditions and completely fails to consider the impact of other chemicals in the drift, many of which could be far more environmentally destructive than salt and could appreciably contribute to the PM2.5 emissions from the cooling towers. On page 7-13 DEIS Fermi 3, there is a brief discussion of the industrial pollutants that are acknowledged to be in the waters of Lake Erie. However, the rest of the document assumes that these pollutants do not exist and does not address their potential environmental impact as cooling tower drift. (**0020-1** [Kasenow, Lisa & Kevin])

Response: *Visible plumes from a NDCT consist of water vapor and drift. Water vapor is the gas phase of pure water, which does not contain any chemicals. The drift is mostly pure water with a minimal amount of chemicals inherent in water intake from Lake Erie and treatment chemicals such as biocide, corrosion/scale inhibitors, and the like. Drift does not contain toxic chemicals or combustion-related criteria air pollutants in significant enough quantities to have a potential impact on human health and the environment. The cooling tower will be equipped with drift eliminators designed to limit drift to 0.001 percent or less of total water flow. Estimated PM emissions from the NDCT are relatively low, about 6.63 tons/yr or 1.51 lb/hr. In addition, the height of the tower (about 600 ft) along with buoyant plume rise will allow for good dispersion of the drift and significantly lower the ground-level concentrations of PM. There have been no*

reports or complaints documented to date indicating potential adverse impacts on human health and the environment associated with the cooling tower operations of Fermi 2.

All total dissolved solids in the drift were conservatively assumed as salt for the solids deposition analysis, for which environmental impact threshold values on plants are available (NUREG-1555, Section 5.3.3.2; NRC 2000). Cooling tower modeling indicated that maximum predicted impacts are well within the acceptable thresholds (lower by about 3–4 orders of magnitude) and generally not damaging to plants. The predicted minimal impact due to salt deposition from the Fermi 3 NDCT is further substantiated by historical data from the operation for the Fermi 2 NDCTs. No change to the EIS was made as a result of this comment.

Comment: I have comments about the proposed creation of another Nuclear power plant in my neighborhood. This placement of yet another facility in Monroe County, Michigan. Placement of yet another Nuclear plant would create more atmospheric warming and moisture in the air over the immediate area. The additional snow and rain. (**0023-1** [Lankford, R.E.])

Response: *More atmospheric warming and moisture in the air over the immediate area are anticipated with operation of another NDCT at the Fermi 3 site. However, potential impacts on the local meteorology would be minor, as discussed in Section 5.7.1 of the EIS. For example, operations of the NDCT could increase rain by about 0.0001 percent of the average driest monthly rainfall and snow by less than 1 in., which would be only a small fraction of the typical snowfalls (about 44 in.) the area receives.*

Although water vapor is a GHG, it is not considered to be a cause of man-made global warming, because human activities have only a small direct influence on the amount of atmospheric water vapor. Unlike long-lived GHGs such as CO2, water vapor does not persist in the atmosphere for more than 10 days before being precipitated out. Atmospheric water vapor also tends to provide a self-regulating mechanism. For example, clouds are regulators of the radiative heating on the planet, because they not only reflect a large part of the incoming solar radiation but also absorb the outgoing longwave (LW) radiation (also known as infrared or thermal radiation) emitted by the warmer earth. Although water vapor emitted from a cooling tower forms a cloud, it is a localized phenomenon of inconsequential influence on natural global cloud formation-dissipation. No change to the EIS was made as a result of this comment.

Comment: "The atmosphere would receive heat and water in the form of cooling tower vapor and drift." (v 1, p 3.31) Can these emissions be stopped when they exceed contamination limits? What provision is there for notifying the public of excess releases beyond design releases? What are the contaminants and at what dose? (**0026-6-17** [Macks, Vic])

Response: *Visible plumes from a NDCT consist of water vapor and drift. Water vapor is the gas phase of pure water, which does not contain any chemicals. Drift is PM, which is a criteria air pollutant regulated by EPA. Drift is mostly pure water with a minimal amount of chemicals*

inherent in water intake from Lake Erie and treatment chemicals such as biocide, corrosion/scale inhibitors, and the like. Drift does not contain toxic chemicals or combustion-related criteria air pollutants in significant enough quantities to have a potential impact on human health and the environment. The cooling tower will be equipped with drift eliminators designed to limit drift to 0.001 percent or less of total water flow. In addition, the height of the tower (about 600 ft) along with buoyant plume rise will allow for good dispersion of the drift and significantly lower the ground-level concentrations of PM. There have been no reports or complaints documented to date indicating potential adverse impacts on human health and the environment associated with the cooling tower operations of Fermi 2. Water vapor is not a regulated air pollutant under the CWA or the Clean Air Act. No change to the EIS was made as a result of this comment.

Comment: p. 6-5 -- (Table 6-1): Effluents - thermal 4063 billion BTU's / yr This is roughly the equivalent of 4638 100K BTUH home heating furnaces running 365 days a year, 24 hours a day for the life of the plant. All of this heat dumps into the atmosphere and Lake Erie in a concentrated area adjacent to the plant. I do not think the NRC can predict the effect of this heat on local plants and wildlife, and I challenge the NRC to prove it can. If nothing else, it spills a lot of contaminated steam and heat trapping water vapor into the air, and water vapor traps local atmospheric heat in greater quantities than CO2. It is terrifically wasteful, and if scaled up to include many more plants as the industry intends, the local effects will multiply. Physics demands water vapor manifest itself as cloud cover and rain somewhere. Besides, these plants waste a lot of heat and nature never rewards wastefulness, but inevitably punishes it. (**0034-2-1** [Welke, Jim])

Response: *A considerable amount of waste heat is released from the NDCT, but this amount of waste heat is small compared with the heat capacity of nature. Operations of an NDCT could somewhat modify the local climate by increasing fogging and icing, cloud formation and plume shadowing, precipitation, and humidity. However, these impacts would be minor, as discussed in Section 5.7.1 of the EIS.*

Visible plumes from an NDCT consist of water vapor and the drift. Water vapor is the gas phase of pure water, which does not contain any chemicals. The drift is mostly pure water with a minimal amount of chemicals inherent in water intake from Lake Erie and treatment chemicals such as biocide, corrosion/scale inhibitors, and the like. Drift does not contain toxic chemicals or combustion-related criteria air pollutants in significant enough quantities to have a potential impact on human health and the environment. There have been no reports or complaints documented to date indicating potential adverse impacts on human health and the environment associated with the cooling tower operations of Fermi 2.

Although water vapor is a GHG; it is not considered to be a cause of man-made global warming, because human activities have only a small direct influence on the amount of atmospheric water vapor. Unlike long-lived GHGs such as CO_2, water vapor does not persist in the atmosphere for

more than 10 days before being precipitated out. Atmospheric water vapor also tends to provide a self-regulating mechanism. For example, clouds are regulators of the radiative heating on the planet, because they not only reflect a large part of the incoming solar radiation but also absorb the outgoing LW radiation (also known as infrared or thermal radiation) emitted by the warmer earth. Although water vapor emitted from a cooling tower forms a cloud, it is a localized phenomenon of inconsequential influence on natural global cloud formation-dissipation. No change to the EIS was made as a result of this comment.

Comment: p. 6-10 ...

> The CO2 emissions from the fuel cycle are about 5 percent of the CO2 emissions from an equivalent fossil-fuel-fired plant.

Again, why compare to "equivalent fossil-fuel-fired plant" -- why not compare to distributed renewables or efficiency improvements?

> In Appendix L, the NRC staff estimates that the carbon footprint of the fuel cycle to support a reference 1000-MW(e) LWR operating at an 80 percent capacity factor for a 40-year plant life is on the order of 17,000,000 MT of CO2, including a very small contribution from other greenhouse gases (GHG's). Scaling this footprint to the power level of Fermi 3 using the scaling factor of 2 discussed earlier, the NRC staff estimates the carbon footprint for 40 years of fuel cycle emissions to be 34,000,000 MT of CO2 (average annual emissions rate of 850,000 MT, averaged over the period of operation) as compared to a total United States annual emission rate of 5.5 billion MT of CO2 (EPA 2011).

Why compare to a static assumption of "total United States annual emission rate of 5.5 billion MT of CO2 (EPA 2011)?" It is a favorable comparison, but irrelevant. CO2 emissions are additive and cumulative, and more is bad, less is good, period. Why not compare these emissions to those from distributed renewables as a substitute for construction of a nuclear reactor, or to GHG emission reductions from efficiency improvements for the same financial investment?

In the words of Amory Lovins from the Rocky Mountain Institute, in a paper titled "Mighty Mice:" (http://www.rmi.org/cms/Download.aspx?id=1171&file=E05-15_MightyMice.pdf)

> Buying a costlier option, like nuclear power, instead of a cheaper one, like "negawatts" and micro power, displaces less carbon per dollar spent. This opportunity cost of not following the least-cost investment sequence - the order of economic and environmental priority - complicates climate protection. The indicative costs in Figure 3 (neglecting any differences in the energy embodied in manufacturing and supporting the technologies) imply that we could displace coal-fired electricity's carbon emissions by spending $0.10 to

deliver any of the following:
- 1.0kWh of new nuclear electricity at its 2004 US subsidy levels and costs.
- 1.2-1.7kWh of dispatchable windpower at zero to actual 2004 US subsidies and at 2004-2012 costs.
- 0.9-1.7kWh of gas-fired industrial cogeneration or ~2.2-6.5kWh of building scale trigeneration (both adjusted for their carbon emissions), or 2.4-8.9kWh of waste-heat cogeneration burning no incremental fossil fuel (more if credited for burning less fuel).
- From several to at least 10kWh of end-use efficiency. (**0034-2-8** [Welke, Jim])

Response: *The comment questions why the EIS does not discuss the CO_2 emissions from distributed renewable energy sources or efficiency improvements. The proposed action involves baseload electrical power generation. The review team determined that the renewable energy alternatives and the implementation of conservation and demand-side management programs would not meet the proposed action's purpose and need for baseload power generation and therefore need not be considered at the same level of detail as the baseload power alternatives. The comparison of CO_2 emissions from nuclear power and other alternatives capable of providing baseload electrical power is presented in Section 9.2.5. No changes were made to the EIS as a result of this comment.*

Comment: p. 7-36 ... The national and worldwide cumulative impacts of GHG emissions are noticeable but not destabilizing. The review team concludes that the cumulative impacts would be noticeable but not destabilizing with or without the GHG emissions from Fermi 3. The review team concludes that cumulative impacts from other past, present, and reasonably foreseeable future actions on air quality resources in the geographic areas of interest would be SMALL for criteria pollutants and MODERATE for GHGs.

The NRC review team states that the effects of global warming will be "noticeable but not destabilizing." I guess I would like to see their definition of destabilizing. If you live on Tuvalu, or Manhattan for that matter, then a sea level rise of couple of feet will be quite "destabilizing" -- to the extent that your home might well be washed away forever (for sure in Tuvalu, possibly, but more likely, in Manhattan via storm surge). If the American farming bread basket becomes a dust bowl due to drought, I bet local residents would call that "destabilizing." So, this is a question of semantics, I guess. How about defining destabilizing? (impacts of global warming: http://www.ipcc.ch/publications_and_data/ar4/wg2/en/ch6.html, http://www.epa.gov/climatechange/science/futuretc.html) (**0034-5-1** [Welke, Jim])

Response: *On December 15, 2009, the EPA Administrator issued a final rule that six GHGs taken in combination endanger both the public health and public welfare of current and future generations (74 FR 66496). On June 3, 2010, EPA's Tailoring Rule specified which stationary sources and modification projects became subject to permitting requirements for GHG gas emissions under the Clean Air Act (75 FR 31514). Covered facilities include power plants, industrial boilers, and oil refineries and are responsible for 70 percent (by mass) of the GHGs*

emitted by stationary sources. The Tailoring Rule states that starting in January 2011, new large industrial facilities and existing industrial facilities that make changes that significantly increase GHG emissions are required to obtain permits that address GHG emissions.

The EPA Tailoring Rule proposes to control GHG emissions for future facilities and existing facilities that have significant modifications. If the EPA had determined that an immediate action was necessary to improve public health conditions in the affected environment (e.g., the closure of GHG-emitting facilities), then the NRC may have considered an impact category level more reflective of a destabilized environment. No change to the EIS was made as a result of this comment.

Comment: I would also like to comment again, in section two there is mention of a tornado on last June, 2010. And that the damage that that caused, now that tornado was kind of a breeze by tornado. It was, it landed just off Fermi property and then it flew by and it tore up the roof of one of the major buildings, and it also blew the side off of one of the major buildings. And I just wonder if it wouldn't be appropriate in order to get the construction permit, that there ought to be an analysis made of just what the stress test is for high wind conditions, because we know that one of the things they say about global warming is that severe weather events are going to become more common. And so we need to be able to plan for that. (**0040-19-2** [Dean, Dan])

Response: *Potential impacts of severe weather (including climate change) on plant design and operation, including tornadoes, are outside the scope of the NRC's EIS process but are addressed in Section 2.3 of the Fermi 3 FSAR and Section 2.3 of the NRC staff's SER. The Fermi 3 plant is based on the GE-Hitachi Nuclear Energy's Economic Simplified Boiling Water Reactor (ESBWR). The ESBWR safety-related structures, systems, and components necessary to shut down the reactor and maintain it in a safe condition are designed to withstand tornado winds up to 330 mph, which is a strong EF 5 tornado. There is no evidence that the frequency or strength of the tornadoes is increasing (USGCRP 2009). No change to the EIS was made as a result of this comment.*

Comment: Number two, nukes are not carbon free. I think that many of the remarks here today have really just been a sham that would lead the public to believe that nuclear energy is clean energy. Just the construction of such a plant would be a huge impact, a huge carbon footprint on our local areas. It would require as much concrete as used to build the Pentagon. Have any of you seen the Pentagon and the size it is. As much steel as was used to build the Empire State Building, which is enormous. 300 miles of wiring, 44 miles of pipes, all with a huge carbon footprint. (**0040-25-2** [Rivera, Ethyl])

Comment: The fossil footprint of the Fermi 3 will be huge, the concrete, construction and equipment. (**0040-9-6** [Keegan, Michael J.])

Response: *No large-scale technology development comes without environmental trade-offs. The Intergovernmental Panel on Climate Change (IPCC) Special Report on Renewable Energy Sources and Climate Change Mitigation (SRREN) provides estimates of life cycle GHG emissions from renewable and non-renewable electricity-generating technologies (http://srren.ipcc-wg3.de/, accessed June 18, 2012). Without considering emissions related to land use change, the SRREN report found life cycle GHG emissions normalized per unit of electrical output from nuclear energy facilities to be considerably less than those from facilities powered by fossil fuel-based resources and somewhat similar to technologies powered by renewable resources. The proportion of GHG emissions from each life cycle stage differs from technology to technology. For fossil-fueled technologies, fuel combustion during operation of the facility emits the vast majority of GHGs. For nuclear power, fuel processing stages emit the largest share of GHG emissions. For most renewable technologies, most life cycle GHG emissions stem from component manufacturing and, to a lesser extent, facility construction.*

Appendix L presents the review team's estimate of the CO_2 footprint of the nuclear power generation alternative. The comparison of CO_2 footprints for construction and operating a new nuclear power plant and alternatives is presented in Section 9.2.5 of the EIS. Overall, the construction and operation of a nuclear power plant could have far greater positive impact than any fossil fuel-fired power plants from a standpoint of criteria and hazardous air pollutant and GHG emissions. No change to the EIS was made as a result of these comments.

Comment: We hear of 17,000 gallons per minute of evaporation coming off the cooling tower. This is going to be setting up micro climates. (**0040-9-4** [Keegan, Michael J.])

Response: *Operations of an NDCT could somewhat modify the local climate by increasing fogging and icing, cloud formation and plume shadowing, precipitation, and humidity. However, these impacts would be minor, as discussed in Section 5.7.1 of the EIS. No change to the EIS was made as a result of this comment.*

Comment: Because the chemical content of the water vapor emitted from the cooling towers is unknown, there is also a failure to analyze the environmental impact of the contents of the water vapor emitted from the cooling towers. The environmental impact cannot be assessed if the chemical content of the drift from the towers is unknown. The total dissolved solids in the drift water were assumed to be salt (see pages 5-18, 5-91, 5-138 of the Fermi 3 DEIS). Such an assumption does not constitute a science-based analysis of the actual conditions and completely fails to consider the impact of other chemicals in the drift, many of which could be far more environmentally destructive than salt and could appreciably contribute to the PM2.5 emissions from the cooling towers. On page 7-13 DEIS Fermi 3, there is a brief discussion of the industrial pollutants that are acknowledged to be in the waters of Lake Erie. However, the rest of the document assumes that these pollutants do not exist and does not address their potential environmental impact as cooling tower drift. (**0059-16** [Keegan, Michael J.])

Comment: Because the chemical contents of the water vapor emitted from the cooling towers is unknown, there is a consequent omission to analyze the environmental impact of the contents of the water vapor emitted from the cooling towers. The environmental impact cannot be assessed if the chemical content of the drift from the towers is unknown. The total dissolved solids in the drift water were assumed to be salt (see pages 5-18, 5-91, 5-138 of the Fermi 3 DEIS). Such an assumption does not constitute a science-based analysis of the actual conditions and completely fails to consider the impact of other chemicals in the drift, many of which could be far more environmentally destructive than salt and could appreciably contribute to the PM2.5 emissions from the cooling towers. On page 7-13 DEIS Fermi 3, there is a brief discussion of the industrial pollutants that are acknowledged to be in the waters of Lake Erie. However, the rest of the document assumes that these pollutants do not exist and does not address their potential environmental impact as cooling tower drift. [More text supporting the comment is provided by the commenter.] (**0077-6-9** [Lodge, Terry])

Response: *Visible plumes from an NDCT consist of water vapor and drift. Water vapor is the gas phase of pure water, which does not contain any chemicals. The drift is mostly pure water with a minimal amount of chemicals inherent in water intake from Lake Erie and treatment chemicals such as biocide, corrosion/scale inhibitors, and the like. Drift does not contain toxic chemicals or combustion-related criteria air pollutants in significant enough quantities to have a potential impact on human health and the environment. The cooling tower will be equipped with drift eliminators designed to limit drift to 0.001 percent or less of total water flow. Estimated PM emissions from the NDCT are relatively low, about 6.63 tons/yr, or 1.51 lb/hr. In addition, the height of the tower (about 600 ft) along with buoyant plume rise will allow for good dispersion of the drift and significantly lower the ground-level concentrations of PM. There have been no reports or complaints documented to date indicating potential adverse impacts on human health and the environment associated with the cooling tower operations of Fermi 2.*

All total dissolved solids (TDS) in the drift were conservatively assumed to be salt for the solids deposition analysis, for which environmental impact threshold values on plants are available (NUREG-1555, Section 5.3.3.2; NRC 2000). Cooling tower modeling indicated that maximum predicted impacts are well within the acceptable thresholds (lower by about 3–4 orders of magnitude) and generally not damaging to plants. The predicted minimal impact due to salt deposition from the Fermi 3 NDCT is further substantiated by historical data from the operation for the Fermi 2 NDCTs. No changes were made to the EIS as a result of these comments.

Comment: EPA appreciates the dust suppression and control methods proposed by the Applicant. We find the wet operations and watering plans as appropriate control measures and encourage NRC to include this information in their decision document. Since Monroe County, Michigan is within an area that is designated in as “maintenance” for the 8-hour ozone standard and in “non-attainment” for the fine particulate PM2 5 standard, a conformity analysis for the proposed project is forthcoming. EPA acknowledges that MDEQ has requested re-designation

of southeastern Michigan to “maintenance” for PM25. That request is currently under review by EPA. Recommendation: EPA expects to see this conformity analysis in the Final EIS. (**0078-19** [Westlake, Kenneth A.])

Response: *As stated in EPA’s General Conformity Training Module (http://www.google.com/url?sa=t&rct=j&q=general%20conformity%20training%20module&source=web&cd=2&sqi=2&ved=0CD8QFjAB&url=http%3A%2F%2Fwww.epa.gov%2Fairquality%2Fgenconform%2Ftraining%2Ffiles%2FGeneral_Conformity_Training_Manual.pdf&ei=kat1T4XkH-TX0QHqhKjJDQ&usg=AFQjCNHFaqk-LOD36p406S3L8Hjmh0GoYA), the Federal agency with the Federal action determines the most appropriate way, given the individual situation, to integrate the conformity and NEPA process. A conformity evaluation may be integrated with the NEPA process, but this is not required and the two may be separated.*

With regard to NRC’s Federal action of potentially issuing a COL to authorize the building of Fermi 3, Section 4.7.1 of the EIS states that the NRC will perform a Clean Air Act Section 176 air conformity applicability analysis pursuant to 40 CFR Part 93, Subpart B, to determine whether additional mitigation may be warranted. This applicability analysis is still under development. If the total direct and indirect emissions are below the de minimis *levels, the General Conformity Regulations do not require any official review or reporting of the applicability analysis. If the NRC determines that the emissions from its Federal action are above the* de minimis *levels, a conformity determination will be completed prior to issuing the COL. If a conformity determination is required for the building of Fermi 3, the NRC will provide copies of its draft conformity determination to the EPA and other affected Federal agencies, States, Tribe, local agencies, and local metropolitan planning organizations, as well as provide the public an opportunity to comment on the draft demonstration, in accordance with the General Conformity Regulations.*

As stated in Section 5.7.2 of the EIS, a general conformity determination is unlikely to be needed for facility operations of Fermi 3, because emissions are estimated to be below the de minimis *levels.*

No changes were made to the EIS as a result of this comment.

Comment: The location of the proposed cooling tower, presently the site for meteorological data collection, will require the relocation of the meteorological data collection site. This presents an excellent opportunity to upgrade the instrumentation. Presently, the instrumentation is on a 60-meter high tower. Relocation of this tower to the proposed wooded location requires cutting a large amount of trees to bring the site into compliance with the regulatory requirements for clearance around the tower. Replacing the tower with a SODAR unit and some additional ground-based instruments would likely decrease the amount of clearance required. The use of the SODAR unit would also increase worker safety by eliminating the elevated work required for maintenance. Recommendation: EPA suggests the Applicant consider using a SODAR unit and

some additional ground-based instrumentation at the new meteorological site instead of relocating the meteorological tower. (**0078-21** [Westlake, Kenneth A.])

Comment: Present meteorological monitoring data shows the presence of a lake breeze at times. Lake breeze effects usually extend only a few miles inland, at best. Moving the meteorological monitoring site closer to Lake Erie will probably increase the amount of data that shows the lake breeze effect. Although this is important for onsite emergency response, it could cause problems if the emergency is extended offsite. The ability to determine if a lake breeze is in effect may be critical. The presence of a second (10 m) tower located inland beyond the lake breeze zone would be helpful. Recommendation: EPA suggests the Applicant consider installing a second, 10-meter meteorological tower beyond the lake breeze effect zone for use during emergencies. (**0078-22** [Westlake, Kenneth A.])

Response: *These comments are outside the scope of the EIS. A full description of the Fermi 3 meteorological monitoring program is provided in Section 2.3.3 of the Fermi 3 FSAR, and a review of the Fermi 3 meteorological monitoring program by the NRC is provided in Section 2.3.3 of the NRC staff's SER. No changes were made to the EIS as a result of these comments.*

Comment: "On the basis of tornado statistics for the Fermi site vicinity, the review team estimates the probability of a tornado striking the proposed Fermi 3 reactor building to be about 5 in 10,000." (v 1, p 2.218) Just out of curiosity, why wasn't that broken down to the lowest fraction, 1 in 2,000? (**0016-3-2** [Collins, Jessie])

Response: *Mathematically, the two ratios are exactly the same. However, the ratio based on the decimal system (e.g., 5 in 10,000) is more widely used because of general convention and easier compatibility among estimates. No change to the EIS was made as a result of this comment.*

E.2.15 Comments Concerning Health - Nonradiological

Comment: The Planning Commission, in the past, has raised concerns with the potential health effects of electromagnetic fields (EMFs) generated by transmission lines, especially when sited in densely populated areas. However, as stated in the EIS, the state of the science on the human health impacts of EMFs is inadequate and chronic effects are uncertain. The proposed transmission lines would use the existing corridor in Monroe County, although a new corridor is proposed which would be north of the county line, terminating at a proposed substation near Milan. (**0067-10** [Peven, Robert])

Response: *The comment relates to the impacts of the electromagnetic fields (EMFs) associated with the transmission lines. These impacts are discussed in Sections 2.10.4 and 5.8.4 of the EIS. No change was made in the EIS because of this comment.*

Comment: "Transmission lines generate both electric and magnetic fields, referred to collectively as EMFs. Public and worker health can be compromised by acute and chronic exposure to EMFs from power transmission systems, including switching stations (or substations) onsite" (v 1, p 2.232) Is this true for all forms of electricity transmitted through the lines, or just certain types? (**0016-1-11** [Collins, Jessie])

Response: *The comment relates to the impacts of the EMFs associated with the transmission lines. These impacts are discussed in Sections 2.10.4 and 5.8.4 of the EIS. The impacts are similar for all forms of electricity transmitted through the lines. No change was made in the EIS because of this comment.*

Comment: Is there a law requiring companies to notify the dangers of transmission lines across their property. "The National Institute of Environmental Health Science concludes that ELF-EMF (extremely low frequency-electromagnetic field) exposure cannot be recognized as entirely safe because of weak scientific evidence that exposure may pose a leukemia hazard." (v 1, p 5.102) (**0016-1-13** [Collins, Jessie])

Response: *The comment relates to the impacts of the EMFs associated with the transmission lines and the applicable regulatory standards. As discussed in Sections 3.2.2.3 and 5.8.3 of the EIS, all transmission lines would comply with National Electric Safety Code (NESC) provisions. No change was made in the EIS because of this comment.*

Comment: "Operation of the proposed Fermi 3 would result in a thermal discharge to Lake Erie. Such discharges have the potential to increase the growth of etiological agents, both in the circulating water system and the lake. "These microorganisms could result in potentially serious human health concerns, particularly at high exposure levels." (v 1, p 5.98) Is meningitis one of those water health concerns? (**0016-4-7** [Collins, Jessie])

Response: *This comment relates to the health impacts on the public from the operation of the cooling system. These impacts are discussed in Section 5.8.1 of the EIS. Operations of the proposed Fermi 3 would result in a thermal discharge to Lake Erie. Meningitis is not one of the water health concerns related to thermal discharges to Lake Erie. The main concerns, as discussed in Section 5.8.1, include legionellosis, salmonellosis, shigellosis, and primary amebic meningoencephalitis. No change was made in the EIS because of this comment.*

Comment: "Public and occupational health can be compromised by activities at the Fermi site that encourage the growth of disease-causing microorganisms (etiological agents). Thermal discharges from Fermi into the circulation water system and Lake Erie have the potential to increase the growth. These microorganisms could give rise to potentially serious human concerns, particularly at high exposure levels." (v 1, p 2.229) With these results, what could possibly justify the unnecessary doubling of the thermal discharges into Lake Erie? (**0026-6-15** [Macks, Vic])

Response: *Potential impacts on human health with regard to etiological agents (disease-causing organisms) associated with thermal discharges in Lake Erie are discussed in Section 5.8.1 of the EIS. The thermal plume would be approximately 1291 ft away from the shoreline with a total plume area of approximately 55,300 ft^2 in Lake Erie in a restricted industrial area that would not be used for any recreational activities. As discussed in Section 7.3.2 of the EIS, the thermal plume from the proposed Fermi 3 and the existing power plants in the Western Basin of Lake Erie are not expected to overlap. In addition, no outbreaks of legionellosis, primary amebic meningoencephalitis, or any other waterborne disease associated with Fermi 2 operations have been reported in the past. No change was made in the EIS because of this comment.*

Comment: There are going to be bacteria which thrive in this atmosphere, legionnaire, legionella, other bacteria. In addition, vapors are indeed greenhouse gases. (**0040-9-5** [Keegan, Michael J.])

Response: *Nonradiological health impacts of etiological agents are discussed in Section 5.8.1 of the EIS, and the air quality impact of GHGs are discussed in Section 5.7.2 of the EIS. No change was made in the EIS because of this comment.*

Comment: Additional equipment for detecting other persistent toxic chemical contamination allowed under the Fermi 3 NDPES permits must be provided to the City of Monroe. Adequate financial resources must be provided to City by DTE to install such equipment.

The monitoring must be established in a transparent manner and capable of audit. DTE must not be contracted, sub-contracted, to operate, maintain, or calibrate the instrumentation. To do so is a direct conflict of interest in protecting Monroe residents and residents from other communities. (**0059-2** [Keegan, Michael J.])

Response: *Pursuant to the CWA, the EPA has the authority to require water quality monitoring for physical and/or chemical parameters in the waters of the United States. In Michigan, the EPA delegates this authority to the MDEQ. Prior to operation of Fermi 3, the applicant is required to obtain an NPDES permit from MDEQ to discharge liquid effluent to a surface-water body; this permit would contain any water quality monitoring conditions or requirements. Blowdown constituents are regulated by the EPA pursuant to 40 CFR Part 423. No changes were made in the EIS as a result of this comment.*

Comment: "Biological control, especially of zebra mussels, could also be accomplished through thermal shock by raising the temperature for a brief period of time." (v 2, p 9.306) "Public and occupational health can be compromised by activities at the Fermi site that encourage the growth of disease-causing microorganisms (etiological agents). Thermal discharges from Fermi into the circulation water system and Lake Erie have the potential to increase the growth. These microorganisms could give rise to potentially serious human

concerns, particularly at high exposure levels." (v 1, p 2.229)? Sounds like thermal shock to zebras would not be good for all our relations. (**0016-3-12** [Collins, Jessie])

Response: *Potential impacts on human health with regard to etiological agents are discussed in Section 5.8.1 of the EIS. The thermal discharges to Lake Erie would result in a very localized increase in water temperatures that would not be widespread or sufficient to increase populations of microorganisms. Biocides would be used to reduce the microorganisms in the cooling water system, and the operational workers would comply with Occupational Safety and Health Administration (OSHA) standards. No change was made in the EIS because of this comment.*

Comment: The document states that mean monthly wind velocity was measured at the Grosse Ile, Michigan airport, which is approximately 11 miles from the Fermi site (page 5-14, lines 15 through 17). Recommendation: The Final EIS should provide appropriate rationale for using this data rather than data generated by the onsite meteorological tower. Section 5.2.3.1, which discusses discharge and intake of water from Lake Erie, includes much valuable information for making an assessment of the surface water quality and quantity impacts. There are separate discussions regarding etiological agents and biocides, but not how biocides might control the listed pathogens, such as legionnella, salmonella, and *Naegleria fowleri*. The Draft EIS does not include a monitoring or sampling plan for the listed pathogens or an adaptive management plan should an outbreak occur. Recommendation: We acknowledge that NRC concluded that the likelihood of an outbreak would be SMALL. Nevertheless, EPA recommends that the Final EIS include a more thorough discussion of etiological agents that could be found in Lake Erie, in conjunction with the NPDES permit The document only discusses normal operations and does not describe adaptive management if there were an outbreak of enteric pathogens in the thermal plume, cooling towers, or condensers. Finally, EPA would like to see a discussion of worker protection from exposure to likely etiological agents, such as legionnella or *Naegleria fowleri*. (**0078-26** [Westlake, Kenneth A.])

Response: *The commenter requested a rationale for using mean monthly wind speed data from the Grosse Ile Airport rather than data generated by the onsite meteorological tower. Section 5.2.3.1 of the EIS has been updated to reflect the rationale for using these data*.

Pursuant to the CWA, the EPA and the MDEQ have authority to require water quality monitoring for nonradiological material in the waters of the United States. The NRC has no authority to place water monitoring requirements on any facility, except for radiological monitoring. Withdrawals from and discharge to Lake Erie are governed by State permits as described in Section 5.2 of the EIS. 40 CFR 141.70 regulates maximum contaminant levels of various microorganisms, including Legionella *in public drinking water systems. However, there are no regulations that could be tied to microorganisms that are associated with cooling towers or thermal discharges. No OSHA or other legal standards for exposure to microorganisms exist at the present time (NUREG-1555; NRC 2000). However, standard practices for operating cooling*

towers include adding biocides to the water to limit growth of microorganisms inside the towers and providing appropriate protective equipment for workers who enter the cooling towers for maintenance operations. The biocides in the water sources for the cooling towers would limit microbial growth at the source and minimize the potential for any aerosol releases. The use of biocides in various water systems for Fermi 3 is discussed in Section 3.4.2.4 of the EIS. Additional information was added to Section 5.8.1 of the EIS to address Legionella *spp.*

Comment: The National Institute for Occupational Safety and Health (NIOSH) has determined that diesel exhaust is a potential occupational carcinogen, based on a combination of chemical, genotoxicity, and carcinogenicity data. In addition, acute exposures to diesel exhaust have been linked to health problems such as eye and nose irritation, headaches, nausea, asthma, and other respiratory system issues. Recommendation: Although every construction site is unique, common actions can reduce exposure to diesel exhaust. EPA recommends that the Applicant commit in the Final EIS to the following actions during construction:

- Using low-sulfur diesel fuel (less than 0.05% sulfur).
- Retrofitting engines with an exhaust filtration device to capture diesel particulate matter before it enters the construction site.
- Positioning the exhaust pipe so that diesel fumes are directed away from the operator and nearby workers, thereby reducing the fume concentration to which personnel are exposed.
- Using catalytic converters to reduce carbon monoxide, aldehydes, and hydrocarbons in diesel fumes. These devices must be used with low sulfur fuels.
- Ventilating wherever diesel equipment operates indoors. Roof vents, open doors and windows, roof fans, or other mechanical systems help move fresh air through work areas. As buildings under construction are gradually enclosed, remember that fumes from diesel equipment operating indoors can build up to dangerous levels without adequate ventilation
- Attaching a hose to the tailpipe of diesel vehicles running indoors and exhaust the fumes outside, where they cannot reenter the workplace. Inspect hoses regularly for defects and damage.
- Using enclosed, climate-controlled cabs pressurized and equipped with high efficiency particulate air (HEPA) filters to reduce the operators' exposure to diesel fumes. Pressurization ensures that air moves from inside to outside. HEP A filters ensure that any incoming air is filtered first.
- Regularly maintaining diesel engines, which is essential to keep exhaust emissions low. Follow the manufacturer's recommended maintenance schedule and procedures. Smoke color can signal the need for maintenance. For example, blue/black smoke indicates that an engine requires servicing or tuning.
- Reducing exposure through work practices and training, such as turning off engines when vehicles are stopped for more than a few minutes, training diesel-equipment operators to perform routine inspection, and maintaining filtration devices.
- Purchasing new vehicles that are equipped with the most advanced emission control systems available.

- With older vehicles, using electric starting aids such as block heaters to warm the engine reduces diesel emissions.

Using respirators, which are only an interim measure to control exposure to diesel emissions. In most cases, an N95 respirator is adequate. Workers must be trained and fitted before they wear respirators. Depending on work being conducted, and if oil is present, concentrations of particulates present will determine the efficiency and type of mask and respirator. Personnel familiar with the selection, care, and use of respirators must perform the fit testing. Respirators must bear a NIOSH approval number. Never use paper masks or surgical masks without NIOSH approval numbers. (**0078-20** [Westlake, Kenneth A.])

Response: *The comment concerns known and potential health effects of exposure to diesel exhaust and offers strategies to mitigate such exposures. Nonradiological health impacts on the public and workers from construction activities and plant operations are discussed in Sections 4.8 and 5.8 of the EIS. Air quality impacts are discussed in Sections 4.7.2 and 5.7.2 of the EIS. As stated in Section 5.7.2.1, the air emissions from two standby diesel generators (SDG), two auxiliary diesel generators (ADGs), and diesel-driven fire pumps would be required to comply with the requirements of the National Emission Standards for Hazardous Air Pollutants (NESHAP). The requirements include limitation on fuel sulfur content and operating limitations. These Federal requirements would be administered by the State. According to the MOU between NRC and OSHA (http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=Mou&p_id=233), plant conditions that result in an occupational risk from exposure to toxic nonradioactive materials and other industrial hazards in the workplace would be covered by OSHA. Allthough the NRC determined that nonradiological impacts would be monitored and controlled in accordance with the applicable OSHA regulations and would be SMALL and although the NRC only has authority to reduce risk created by radioactive materials, it agrees that the measures identified in the comment would further reduce exposure to diesel exhaust. No changes were made in the EIS as a result of this comment.*

Comment: EPA acknowledges that Section 4.8.2 presented information on noise impacts during construction. However, EPA recommends additional information be included in the Final EIS on specific noise sources and locations of noise receptors. The Final EIS should include discussion of adaptive management should there be an annoyance. Recommendation: EPA recommends that the sources of noise be listed along with anticipated decibel levels or potential sound pressure levels. A map of potential receptors should be included in the Final EIS. The Final EIS should also include specific noise attenuation measures and Applicant mitigation plans to adapt should noise thresholds be exceeded for the listed receptors or the Frenchtown Charter Township Noise Ordinance be violated. See comments on Public Notification below, for discussion on recommended outreach. (**0078-25** [Westlake, Kenneth A.])

Response: *As discussed in the EIS, predicted noise levels at the nearest residences would not exceed noise regulations or guidelines most of the time during the construction phase because*

of the considerable buffering distances. The consideration of other noise attenuation mechanisms (such as air absorption and ground effects) would reduce further the predicted noise levels presented in the EIS. However, should noise thresholds be exceeded for the listed receptors or should the Frenchtown Charter Township Noise Ordinance be violated, the applicant would develop and implement an adaptive management plan to minimize potential noise impacts at the nearby receptors. Section 4.8.2 of the EIS was modified to provide the information and analysis requested in the comment.

E.2.16 Comments Concerning Health - Radiological

Comment: DE considered the following exposure pathways in evaluating the dose to the maximally exposed individual (MEI): ingestion of aquatic food (i.e., fish and invertebrates); ingestion of drinking water; ingestion of meats, vegetables, and milk (using irrigation water contaminated by liquid effluent); and direct radiation exposure from shoreline activities, swimming, and boating. (v 1, p 5.105) Sounds like anyone living in the affected area is doomed. (**0016-4-4** [Collins, Jessie])

Response: *This comment relates to the radiation dose calculation methods used in the EIS. Releases of radionuclides from nuclear power plants must meet radiation dose-based limits specified in 40 CFR Part 190, 10 CFR Part 20, and Appendix I of 10 CFR Part 50. Section 5.9 of the EIS discusses radiological impacts on the public during operation of the plant. Details of the staff independent dose assessment are provided as Appendix G, Supporting Documentation on Radiological Dose Assessment. The NRC staff used the LADTAP II and GASPAR II computer codes to confirm the estimated doses provided by the applicant. These codes use the dose assessment approach specified in Regulatory Guide 1.109 (NRC 1977). The amount of radioactive material released from nuclear power facilities is well measured, well monitored, and known to be very small. The doses of radiation that are received by members of the public as a result of exposure to nuclear power facilities are so low (i.e., less than a few millirem) that resulting cancers attributed to the radiation have not been observed and would not be expected. No change to the EIS was made as a result of this comment.*

Comment: The cancer rate among people under the age of 25 in Monroe County rose at more than three times the rate of the rest of the state between 1996 and 2005, according to a report generated by the Michigan Department of Community Health (MDCH). Between 1996 and 2000, the average rate of cancer cases for this group was 18.5 cases per 100,000 people; between 2001 and 2005, the rate grew to 24.3 per 100,000. Between 1996 and 2000 the statewide rate of cancer for this group was 20.2 per 100,000; between 2001 and 2005, the rate was 21.9. Cancer rates have grown 3 times the rate in Monroe County than the rest of the state. http://michiganmessenger.com/12965/cancer-questions-grow-around-fermi-nuclear-plant. With cancer rates such as these, how can a parent NOT be worried about their children?

A. http://michiganmessenger.com/14545/"http://michiganmessenger.com/8200/kalamazoo-doctor-finds-childhood-leukemia-deaths-increase-near-old-nuke-plants

B. http://michiganmessenger.com/14545/"http://michiganmessenger.com/11897/public-health-expert-urges-examination-of-cancer-rates-around-fermi
(**0003-4-8** [Anderson, Christy])

Comment: A Center for Disease Control statistical analysis shows that there is a significantly higher incidence of cancer deaths for Monroe, MI residents compared with incidences for the U.S. as a whole. This increase in Monroe cancer deaths correlates with the Fermi 2 going to full power. This is ignored by the NRC and Detroit Edison: Radiation and Public Health Project
(The comment also includes Statement by Joseph J. Mangano that is not included here)
(**0026-6-32** [Macks, Vic])

Comment: Radioactive Fallout from Weapons Testing Combines with Reactors Emissions to Produce a Larger Biological Effect:
Cancer Risk to Americans from Atomic/Thermonuclear Test Fallout
Joseph J. Mangano MPH MBA
Radiation and Public Health Project October 20, 2009
http://www.radiation.org/reading/pubs/091020stlouisreport.html
Summary Excerpts below are quotes from the study:
Results of the study were as follows:

1.The average Sr-90 level in teeth of persons who died of cancer was 122% greater - more than double - than in teeth of healthy controls, a significant difference.
2. Average Sr-90 concentration in teeth of cancer survivors was not significantly elevated.

In 2002, the U.S. government estimated that 15,000 Americans will die of cancer from fallout (past nuclear weapons tests). This projection is much lower than a 2003 European Committee on Radiation Risk estimate of 61,600,000 cancer deaths worldwide. As about 20 million of the 79 million Americans born in the 1950s and 1960s are expected to die of cancer in their lifetime, tooth study results suggest the number of 15,000 cancer deaths from fallout is low, and that the true number may be hundreds of thousands, or even millions.

The immense blasts over the Nevada desert contained over 100 radioactive chemicals not found in nature. These chemicals, which are tiny metal particles and gases, were propelled high into the stratosphere, and moved with prevailing winds - generally to the east. It took roughly 2-3 days for fallout to move across the continental U.S. Precipitation returned the fallout to the environment, where it entered the food chain, including municipal water supplies, grazing areas for milk-producing cows and goats, fruit orchards, vegetable farms, and other forms of food.

Americans routinely ingested these chemicals as part of their diet. Levels of these radioactive chemicals in the environment were tracked by U.S. government officials. Beginning in 1957, the U.S. Public Health Service took monthly measurements in the air, water, and milk of five locations. The program expanded to nine sites in 1958 and 60 sites in 1960.

Scientists became interested in measuring fallout levels, not just in the environment but in the human body. The first such studies began back in 1953, when Columbia University researchers working for the U.S. government began measuring Strontium-90 (Sr-90) levels in bones of humans who had died. Strontium is a bone-seeking, calcium-like element; after it is consumed in food and water, it quickly enters the stomach, moves to the blood stream, and attaches to bone and teeth, where it harms and kills cells.

Sr-90 in bone penetrates into the bone marrow. Even among radioactive chemicals, Sr-90 is especially toxic, as the bone marrow is the site where the red and white blood cells critical to the immune response are formed. For the next 12 years (after 1958), with the help of federal grants, this scientist-citizen partnership collected approximately 320,000 baby teeth, and tested them for Sr-90. As testing went on, average Sr-90 levels increased rapidly; St. Louis children born in 1964 had about 50 times more Sr-90 in their baby teeth than those born in 1950, before the start of testing in Nevada.

Congress mandated that the U.S. National Cancer Institute conduct the study, but the Institute took 15 years to produce it. In 1997, the report was finally released, and it concluded that Iodine-131 from tests, consumed in milk, caused from 11,000 to 212,000 Americans to develop thyroid cancer. A 2002 unreleased report by the U.S. Centers for Disease Control and Prevention estimated that 35,000 U.S. cancer cases (15,000 fatal) were caused by bomb fallout. (**0026-6-38** [Macks, Vic])

Comment: Cancer is on the increase already in the area, and we grow a lot of crops and have lots of farm animals too. (**0030-5** [Podorsek, Edward])

Comment: Also, the researchers of Joseph Mangano show that in the vicinity of nuclear power plants, thyroid cancer rates roughly double, and miscarriage rates increase by 40 percent. I admit I do not live in the immediate vicinity of this plant. I live further south in Ohio, close enough to be affected in the case of an accident, but I have talked with people who do live here in this region. And some people have told me that there have been, they've experienced a number of miscarriages and cancers. And families are suffering, and that provides a real economic impact, a negative impact. The studies that have been done, statistically, that show those sorts of impacts must be included in the economic portion of the Environmental Impact Statement. So the research of people like Joseph Mangano need to be included in this system. (**0039-23-3** [Demare, Joe])

Comment: One other thing before I get kicked off here, I mentioned the article I picked up online. For the first time recent German data reveal large spikes in radioactive releases during the refueling of nuclear power stations. And this is new information, apparently, and you know the radiation levels of noble gases, tritium. Tritium is not a vitamin as you can tell from my shirt here, and that this could explain, perhaps, the increase of cancer rates in Monroe caused by these refueling operations. (**0039-31-3** [McArdle, Ed])

Comment: Now in the first gentleman's comments about cancer risk and so forth, that's a 45 percent increase that we know about. So you have your statistics, and I see on the documentation they're trying to explore areas around the facility to geographic units smaller than the counties used in the NCI report. I was fortunate, I received my MBA at Central Michigan and Health Service Administration. We were taught how to track diseases. Apparently these big shots at these committees don't have that same education. So a lot of people in the population around these facilities that they want to attach as cancer causing, have moved out of the area. We've lost track of them. There's probably a lot more people that contracted cancer causing diseases in areas of nuclear plants that you just lost sight of, because you don't know how to track it, you don't know how to do your jobs under that aspect. (**0040-13-5** [Lankford, R.E.])

Comment: Locally, it's already been brought up that Monroe County has seen a 45 percent increase in cancer deaths for those from birth to 24. According to the U.S. census, poor disease control and prevention. Since 1988 when Fermi 2 began operating, that cancer rate has increased. In the early 1980's, the Monroe County cancer death rate was 36th highest of the 83 Michigan counties. But by the early 2000's it had moved up to the 13th highest. These heartbreaking statistics stand in sharp contrast to the rosy picture presented in this EIS. The sacrifice of our children in the service of a failed and failing industry, and the loss of their right to a liveable world, is a moral failure of epic proportions. I don't care what these officials say, or how much money they're going to make off of our children and their own. (**0040-26-4** [Johnston, Mary])

Comment: The second concern I have regarding Fermi 3 is the radiation effects that Fermi 2, and the proposed Fermi 3, have on the surrounding population in our area.Â It's been documented that cancer rates are increased in Monroe, Michigan and in Ottawa County areas surrounding Davis Besse. (**0040-34-5** [Berlucourt, Kerry])

Comment: There is a need for a base line health study. It is already known that there are elevated cancers from Fermi 2, it's been documented by the CDC. Prior to Fermi 2 going on line the cancer rate was below national average, after Fermi going on line it was 31 percent above. So it's a swing of 45 percent, and this is CDC data. These are huge numbers. These are not anomalies. (**0040-9-10** [Keegan, Michael J.])

Comment: Is it true that there is an increase in cancer incidence or non-cancer diseases and morbidity within a fifty-mile radius of reactors? The NRC won't tell us. (**0056-2** [Ehrle, Lynn Howard])

Comment: Through sins of omission and commission the NRC and its staff refuse to acknowledge or reference studies on the impact of low levels of radiation exposures.

1) ECRR: 2003 Recommendations of the European Committee on Radiation Risk and its 2010 update. These reports, by more than 50 low-dose experts, challenge the International Commission on Radiological Protection (ICRP) model based upon a single bomb blast (A-bomb Life Span Study) to the exclusion of internal exposures.

2) Chernobyl: 20 Years On by the ECRR (2006). This study cites genomic instability effects and damage to all living organisms from low levels of exposure, resulting in radiation-induced ageing and over a 150-fold increase in childhood leukemia.

3) The German government-sponsored KiKK study, Epidemiological Study on Childhood Cancer in the Vicinity of Nuclear Power Plants. The study found children < 5 years of age who lived within 5 km of a nuclear power plant during 1980-2003 are 2.19 times more likely to develop leukemia than children living > 5 km from all 16 reactors.

4) Chernobyl: Consequences of the Catastrophe for People and the Environment. First published by the New York Academy of Sciences (now out of print and reprinted by Greko Printing, Plymouth, Michigan), it is the only study to assess nonmalignant diseases and morbidity. Lead author, Russian biologist Alexey Yablokov, former advisor to Boris Yeltsin, stated that 100% of the clean-up workers are ill and about 15% of the 830,000 were deceased by 2005. (**0056-7** [Ehrle, Lynn Howard])

Comment: Fermi 2's operations are correlated with local increases in cancer rates and other diseases, a radioactive health risk that Fermi 3 would make even worse. Janette Sherman, MD of the Environmental Institute at Western Michigan University published "Childhood Leukaemia Near Nuclear Installations" in a recent edition of the European Journal of Cancer Care. Using mortality statistics from the U.S. Centers for Disease Control and Prevention, Sherman examined data from 1985-2004 and determined that when measured against background levels in the rest of the U.S., leukemia rates have increased for children that live near nuclear reactors. She found an increase of 13.9% near nuclear plants started up between 1957-1970 (oldest plants); an increase of 9.4% near nuclear plants started up between 1971-1981 (newer plants); and a decrease of 5.5% near nuclear plants started up between 1957-1981 and later shut down.

Joe Mangano of the Radiation and Public Health Project has documented that in the early 1980s, before Fermi 2 began operating in 1988, the Monroe County cancer death rate was 36th highest of 83 Michigan counties. But by the early 2000s, it had moved up to 13th highest.

From 1979-1988, the cancer death rate among Monroe County residents under age 25 was 21.2% below the U.S. rate. But from 1989-2005, when Fermi 2 was fully operational, the local rate was 45.5% above the U.S. rate. The energy efficiency and renewable alternatives to Fermi 3 do not involve such radioactive health risks. (**0058-10** [Kamps, Kevin])

Comment: Below is the table of contents on the DEIS for Radiological Impacts. It is precisely because the operation of a nuclear power plant allows for the routine effluents of gaseous, liquid and solid radionuclides below "permissible allowable levels" and during routine operation, and during accidental discharges, that Independent Monitoring is needed. Part of that Independent Monitoring is a Community Baseline Health Study and that is what I am requesting at this time.

The DEIS and the Environmental Report have omitted a great deal in the consideration of Water Intake and Safe Drinking Water. What has been provided is a tertiary overview which does not address the gravity of the situation.

In order to protect public health, I am requesting that a Community Baseline Health Study established. This must be done in a transparent and sound methodological approach.

Appendix E

POTENTIAL HEALTH RISKS POSED BY ADDING A NEW REACTOR AT THE FERMI PLANT
Radioactive contamination from Fermi 2 and changes in local health status

Joseph J. Mangano, MPH MBA
Executive Director
Radiation and Public Health Project
January 10, 2012

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EXECUTIVE SUMMARY

In November 2008, Detroit Edison submitted an application to the U.S. Nuclear Regulatory Commission (NRC) for a new nuclear reactor (Fermi 3) in southeast Michigan. In October 2011, an Environmental Impact Statement (EIS) was released for public comment, and the following report addresses issues of environmental impact.

Even though it mandates a lengthy process before deciding on whether to grant a license to the proposed new reactor, the NRC has no provision mandating that the utility produce evidence demonstrating the safety of the new unit. Neither was addressed in the EIS, other than to conclude (without empirical evidence) that the potential for meltdown would be extremely small, and that routine radioactive releases into the environment would not harm local residents. This report provides a basic “report card” of operations at Fermi 2 as a means to help evaluate safety and health issues posed by Fermi 3.

Contamination from Fermi 2 – both potential and actual – are multiple and concerning. The chance of a meltdown at a nuclear reactor is all too real. Prior meltdowns from human error at places like Three Mile Island and Chernobyl have been augmented by the 9/11 attacks in 2001, which created a real threat of a meltdown from acts of sabotage, and by the 2011 earthquake and tsunami in Japan, which caused meltdowns at four reactors at the Fukushima plant. Fermi 2 has had several events that raised the possibility of a meltdown in the past decade. With a population of 4.8 million living within 50 miles of the plant, a meltdown would be catastrophic for the Detroit area, along with parts of Ohio and Canada.

Like all reactors, Fermi 2 has routinely emitted radiation into the local air since it began operating at low power in June 1985 and full power in January 1988. NRC data suggest that emission levels have been higher at Fermi than for most U.S. reactors.

Analyses were conducted on changes in the Monroe County (vs. the U.S. or Michigan) rates of diseases and deaths known to be especially susceptible to radiation exposure since the 1980s (before and just after Fermi 2 startup). Of 19 indicators, the Monroe County rate change exceeded the state or nation for all 19, with 10 of them statistically significant and 4 others approaching significance. These indicators included:
- Infant deaths
- Low weight births
- Cancer mortality for all ages, plus children, young adults, and the very elderly
- Cancer incidence for all cancers, plus breast, colorectal, lung, and prostate
- Mortality for all causes other than cancer
- Hospitalization rates for all causes, cancer, and birth defects

More analysis is merited here, but these strongly consistent findings should be taken seriously. This report concludes that no decision should be made on whether or not to approve a license for Fermi 3 until more research of this type is undertaken; a thorough public education and discussion process occurs; and that the majority of local people still approve of the new reactor with this additional knowledge.

INTRODUCTION

The Fermi nuclear plant is located on Lake Erie, in Monroe County Michigan, about 26 miles south of Detroit. The table below shows Fermi has been the site of two operating nuclear reactors; Fermi 1 closed in 1972, while Fermi 2 is still in operation. A new Fermi 3 reactor was ordered in 1972, but cancelled two years later (Table 1). The current proposed Fermi 3 is a different project and design than the 1972 proposal.

Table 1 Reactors Ordered at the Fermi Nuclear Plant

Reactor	Megawatts	Application	Went Critical	Closed
Fermi 1	61	6/ 1/56	8/23/63	9/22/72
Fermi 2	1065	7/26/68	6/21/85	
Fermi 3	1171	1/ 1/72	Never Built	

Source: U.S. Nuclear Regulatory Commission, www.nrc.gov

In November 2008, Detroit Edison Company proposed building a new Fermi 3 Economic Simplified Boiling Water Reactor of 1560 megawatts electrical/4680 megawatts thermal

at the site, and is seeking a “Combined Operating License” from the U.S. Nuclear Regulatory Commission (NRC). The NRC prepared a draft Environmental Impact Statement (EIS) in October 2011, a legal mandate as part of the process of considering whether or not to grant approval for the development of Fermi 3.

This report will examine whether the EIS sufficiently addressed two subjects, i.e. the potential contamination from a new Fermi 3, and potential health risks of this contamination to local residents.

The contamination from reactors such as those at Fermi involves a process known as fission, which occurs when Uranium-235 is bombarded by neutrons. (Before this point, U-235 must be mined, milled, converted, enriched, and fabricated). This is exactly the same process in an atomic bomb explosion, except that the process in nuclear reactors is controlled.

As uranium atoms split, neutrons strike other U-235 atoms, causing a chain reaction in which extremely high heat is created. Breaking U-235 atoms apart also creates several hundred new chemicals, known as fission and activation products. They are not found in nature, but formed by the re-arrangement of protons, neutrons, and electrons from the old U-235 atoms.

Some of these chemicals have become well known during the atomic era of the past 65 years, including Iodine-131, Cesium-137, and Strontium-90. Despite efforts by reactor operators to contain these chemicals within the reactor building, some must be routinely emitted into the air and water, during daily operations and refueling. These metal particles and gases are returned to the earth through precipitation. They enter the human body by breathing and the food chain, where they kill and injure cells by emitting alpha particles, beta particles, or gamma rays. A damaged cell may or may not repair itself; if it fails to do so, it will duplicate into similarly damaged cells, which can lead to mutations and cancer.

While all humans are harmed by fission products, the fetus, infant, and child are most affected. Adult cell division is relatively slow, giving a damaged cell a better chance for repair. But fetal and infant cells divide at a very rapid rate, making repair of the damage less likely. The fetal and infant immune system is also relatively immature, making it less likely to fight off mutations that can become cancer.

The cocktail of over 100 chemicals attacks various parts of the body. Radioactive iodine attaches to the thyroid gland. Strontium seeks out bone and teeth, and penetrates into the bone marrow. Plutonium enters the lung. Cesium disperses throughout the muscles.

Thus, exposure to the mix of radioactive elements can raise risk of many diseases, not just bone or thyroid cancer.

RADIOACTIVE CONTAMINATION PRODUCED BY FERMI – ACTUAL AND POTENTIAL

Possibility of Meltdowns. The radioactivity produced by nuclear reactors like those at Fermi can be released into the environment, and thus into human bodies, in large amounts (via a meltdown) or smaller amounts (via routine releases or deliberate releases). The EIS does not adequately address potential and actual radioactive emissions from Fermi. It minimizes the chance of a meltdown, which can occur from human error (like Chernobyl or Three Mile Island), act of sabotage (terrorist organizations have been known to target U.S. reactors), or act of nature (like Fukushima). In addition, human error (along with mechanical problems) accounted for a partial meltdown at Fermi 1 in 1966, which came dangerously close to a huge environmental release of radioactivity. In 1982, Sandia National Laboratories reported to Congress the number of humans that would be affected by a worst-case meltdown near each U.S. nuclear plant. The figures for a meltdown at Fermi 2 included 8,000 deaths from acute radiation poisoning and 13,000 cancer deaths within 15 miles, along with 340,000 non-fatal cases of acute radiation poisoning within 70 miles. The figure of 340,000 is the highest of any U.S. reactor except for Limerick, located near Philadelphia. (Calculation of Reactor Accident Consequences, or CRAC-2, reported to the House Committee on Interior and Insular Affairs Subcommittee on Oversight and Investigations, November 1, 1982).

Although any meltdown would have devastating consequences, such an event at Fermi 2 would be especially harmful. According to 2010 U.S. Census data, while just 92,377 persons live within 10 miles of the plant, 4,799,526 live within 50 miles, including the metropolitan areas of Detroit MI, Toledo OH, and Windsor Canada. (Source: Dedman B. Nuclear neighbors: Population rises near US reactors, msnbc.com, April 14, 2011. http://www.msnbc.msn.com/id/42555888/ns/us_news-life/. Accessed January 10, 2012). The recent devastation at Fukushima just 10 months ago is a tragic reminder that the risk of a meltdown is all too real, and should be a major consideration when evaluating whether to bring new nuclear reactors on line.

Aging Reactors Operating Most of Time. For years, U.S. nuclear reactors operated barely half the time, due to frequent mechanical problems. But beginning in the late 1980s, utilities made upgrades that reduced shut down time, even correcting mechanical flaws while reactors continued to operate. In addition, “refueling” nuclear reactors is now done much less often (about every 18 months), and the time that a reactor is shut down for refueling, a complex process, has been greatly reduced, to several weeks.

While this practice is a positive one from a financial point of view, it raises concerns from a health standpoint. Reactors are aging – virtually all are at least 25 years old – and their parts are becoming increasingly brittle and susceptible to breakdown. The practice of keeping reactors in operation more of the time is akin to driving an old car with many miles on it increasingly long distances.

Table 2 shows that the Fermi 2 plant operated 91.0% of the time from 2000-2005, a figure roughly equal to the national rate. The U.S. Nuclear Regulatory Commission stopped publishing monthly hours of operation on its web site several years ago; but even though exact figures are not known, it is highly likely that post-2005 capacity is similar to the prior several years.

A high capacity factor increases the probability of meltdowns. It also increases the likelihood of routine emissions of radioactivity escaping into the environment.

Table 2 Percent Capacity (% of time in operation) Fermi 2 Reactor, 2000-2005

Year	Hrs. Critical	Total Hrs.	% Capacity
2000	7696.5	8784	87.6
2001	7967	8760	90.9
2002	8646	8760	98.7
2003	7614	8760	86.9
2004	7905	8784	90.0
2005	8032.8	8760	91.7
TOTAL	47861.3	52608	91.0

Source: U.S. Nuclear Regulatory Commission, www.nrc.gov.

Near Miss Accidents. In 2006, the group Greenpeace published an analysis of “near miss” meltdowns at U.S. nuclear reactors in the 20 years since Chernobyl. There were 200 such events on the list, and two occurred at Fermi 2. On January 28, 2001, the reactor’s emergency diesel generator was inoperable for more than seven days. On August 14, 2003, the reactor experienced a loss of offsite power due to the blackout in the northeast U.S. (Source: An American Chernobyl: Nuclear “Near Misses” at U.S. Reactors Since 1986, www.greenpeace.org).

Shut Downs for Over a Year. Also in 2006, the Union of Concerned Scientists published a list of U.S. nuclear reactors that had been closed for at least a year. One was Fermi 1, which was closed from October 5, 1966, when it experienced a partial meltdown, and did

not re-start until July 18, 1970. The reactor operated very little thereafter, and closed permanently two years later.

The other long outage occurred at Fermi 2, from December 25, 1993 to January 18, 1995, a total of 13 months. (Source: Union of Concerned Scientists: Unlearned Lessons from Year-Plus Reactor Outages, www.ucsusa.org).

Actual Emissions. Each utility company operating a nuclear reactor is required by law to measure actual emissions of various types of radioactivity into the environment. There are various chemicals included in these reports, but several show that Fermi 2 may be among the reactors with the greatest emissions in the U.S.

One type of chemical reported is Iodine-131, produced only in nuclear reactors and weapons tests. In the year 2002, for example, Fermi 2 released the 10th highest amount of I-131 into the air, out of 68 reactors with reported emissions. The Fermi total of 9,280 microcuries of I-131 was far above the median of 496 for the 68 reactors (Table 3). I-131 has a half life of 8 days, and seeks out the thyroid gland, where it destroys and injures cells.

Table 3 U.S. Reactors with Greatest Emissions of Airborne I-131, 2002 (Total 68 Reactors, Medican Microcuries = 496)

Reactor	Microcuries
1. LaSalle 1 IL	316,000
2. Browns Ferry 1 AL	275,000
3. Vogtle 1 GA	20,500
4. San Onofre 2 CA	17,300
5. Salem 2 NJ	16,500
6. Oyster Creek NJ	13,700
7. Fort Calhoun NE	10,900
8. Brunswick 1 NC	10,300
9. Palo Verde 2 AZ	9740
10. Fermi 2 MI	9280

Source: U.S. Nuclear Regulatory Commission, Radiation Exposure Information and Reporting System (www.reirs.comm/effluent).

In addition, Fermi 2 released a relatively high total of Strontium-89 into the air in 2002. Its total of 418 microcuries ranked 7th highest of 33 reactors with reported releases, and its total was far above the national median of 36 microcuries (Table 4). Radioactive strontium seeks out bone and penetrates into the bone marrow, where the white blood cells so important to the immune system are formed. Sr-89 has a half life of 50 days.

Table 4 U.S. Reactors with Greatest Emissions of Airborne Sr-89, 2002

Reactor	Microcuries
1. Oyster Creek NJ	8630
2. LaSalle 1 IL	7350
3. Cooper Station IL	1980
4. Quad Cities 1 IL	1850
5. Dresden 2 IL	986
6. Nine Mile Point 1 NY	655
7. Fermi 2 MI	418
8. Browns Ferry 1 AL	355
9. Vermont Yankee VT	281
10. River Bend LA	199

Source: U.S. Nuclear Regulatory Commission, Radiation Exposure Information and Reporting System (www.reirs.com/effluent).

There is also evidence that Fermi 2 emissions are relatively high for periods more recent than 2002. Table 5 shows the volume of gaseous emissions of tritium during 2007 from U.S. nuclear plants. Of the 60 plants with reporting data, Fermi ranks 13th highest. Its total of 124.60 curies ranks well above the U.S. median of 55.23.

Table 5 U.S. Nuclear Plants with Greatest Emissions of Airborne Tritium, 2007 (Total 60 Plants, Median Curies = 55.23)

Plant	Curies
1. Palo Verde AZ	1934.7
2. Hope Creek/Salem 1-2 NJ	414.1
3. Cook 1-2 MI	291.4
4. Brunswick 1-2 NC	256.0
5. Harris NC	235.9
6. McGuire 1-2 NC	204.3
7. Diablo Canyon 1-2 CA	193.7
8. Catawba 1-2 SC	187.9
9. Nine Mile Point 1-2 NY	158.1
10. St. Lucie 1-2 FL	138.1
11. Waterford LA	131.8
12. Sequoyah 1-2 TN	131.2
13. Fermi 2 MI	124.6

Source: U.S. Nuclear Regulatory Commission, Radiation Exposure Information and Reporting System (www.reirs.comm/effluent).

Gaseous tritium emissions appear to be rising over time. Table 6 shows the amount of reported emissions for each year from 2001 to 2007. Although not all quarterly reports showed actual emissions, it still appears that levels are rising over time.

Table 6 Gaseous Tritium Releases, by Year, 2001-2007, Fermi 2 Plant

Year	Quarters Reported	Curies
2001	1	1.31
2002	2	1.23
2003	3	23.66
2004	4	101.50
2005	0	----
2006	4	111.30
2007	4	124.60

Source: U.S. Nuclear Regulatory Commission, Radiation Exposure Information and Reporting System (www.reirs.comm/effluent).

DEMOGRAPHICS - AREA CLOSEST TO VOGTLE

Fermi is located in southeastern Monroe County, which means that all residents live within 20 miles of the Fermi plant, and the majority of residents live within 10 miles. Because of this proximity, and because the National Cancer Institute 1990 study of cancer near nuclear plants selected Monroe County as the “local” area closest to Fermi, this study will also use the county as the focal area of analysis.

There are limits by using the county as the study area. Prevailing winds tend to blow towards the east, i.e. into Lake Erie, and thus local residents may not absorb the greatest doses of radioactivity released from Fermi. Using the entire county does not examine whether there are health differences in Monroe County populations closest to Fermi vs. those further away – essentially because of the difficulty in obtaining sub-county health data. However, winds swirl, propelling Fermi radioactivity not just to the east, but to the west, north, and south. The municipal water supply is located very close to Fermi. And fish caught in Lake Erie are most likely to be consumed by local residents. For these reasons, Monroe County should be a relatively meaningful area
Demographic characteristics of Monroe County, compared to the state and nation, are given in Table 7 below:

Table 7 Demographic Characteristics, Monroe County vs. Michigan vs. U.S. Category Monroe Michigan United States

2010 population	152,021	9,883,640	308,745,538
2010 % < 18 years	24.1	23.7	24.0
2010 % > 65 years	13.4	13.8	13.0
2010 % Female	50.7	50.9	50.8
2010 % White	94.4	78.9	72.4
2010 % Black	2.1	14.2	12.6
2010 % Asian	0.6	2.4	4.8
2010 % Hispanic	3.1	4.4	16.3
2010 % White non-Hisp.	92.5	76.6	63.7
2005-09 % Foreign born	1.9	6.0	12.4
2005-09 % High School grad	87.7	87.4	84.6
2005-09 % College grad	17.1	24.5	27.5
2009 % Below Poverty	10.7	16.1	14.3
2009 Median Household Inc.	$53,224	$45,254	$50,221

Note: Percent high school and college graduates are for adults over age 25. Source: U.S Bureau of the Census, www.census.gov, state and county quick facts.

With a population just over 150,000, Monroe County is similar to the state and nation in terms of gender and age distribution. The proportion of residents that are minorities is much lower in Monroe, as is the percent of foreign born. The percent of college graduates is low, but so is the percent living below poverty.

While there are differences in demographics between Monroe compared to Michigan and the United States, these differences have existed for many years. Therefore, temporal trends over time are appropriate when comparing Monroe County to the state and nation. This report will examine changes in health status before and after the startup of Fermi 2, using official data from a variety of health indicators.

LOCAL TRENDS IN RADIATION-SENSITIVE HEALTH INDICATORS SINCE STARTUP OF FERMI 2 REACTOR

Infant Deaths. The segment of the population that is most susceptible to the damage inflicted by radiation exposure is the fetus and infant. The very young have immature immune systems; and their cells are dividing so rapidly compared to adults there is less of a chance that a fetal/infant cell damaged by radiation can self-repair before dividing – into more damaged cells.

Appendix E

Data are available for several types of infant and fetal health indicators at the county level. The first is infant deaths, which is one of the more commonly used indicators of a society's health. Annual infant deaths and death rates for each U.S. county is available from the U.S. Centers for Disease Control and Prevention, for the 30 year period 1979 to 2008. This means a baseline period of 1979-1984 – after the shut down of Fermi 1 and before the startup of Fermi 2 – can be used, in comparison to the period 1985-2008.

Table 8 below shows the Monroe County infant death rate (under 1 year old) compared to the U.S. rate for the pre- and post-startup period of Fermi 2.

Table 8
Death Rates, Infants <1, 1979-1984 vs. 1985-2008
Monroe County MI vs. United States
Rate (No. of Deaths)

Period	Monroe	U.S.	% Monroe vs. U.S.
1979-1984	903.1 (110)	1183.5	- 23.7%
1985-2008	672.0 (293)	801.2	- 16.1%
% Change			+ 7.6% p<..29 (NS)

Source: U.S. Centers for Disease Control and Prevention, http://wonder.cdc.gov. Rates represent number of deaths per 100,000 live births.

Monroe's pre-Fermi infant death rate was 23.7% below the U.S., which has risen to 16.1% below thereafter. The increase fell short of being statistically significant (p<.29, when p<.05 is significant). In the most recent decade, the county rate was just 10.1% below the U.S., meaning the traditionally low county infant death rates is gradually approaching the national average, the longer the reactor operates.

Because of the great racial disparity in infant deaths, it would be helpful to examine the same changes for whites only, given in Table 9:

Table 9
Death Rates, Infants <1, 1979-1984 vs. 1985-2008, Whites
Monroe County MI vs. United States
Rate (No. of Deaths)

Period	Monroe	U.S.	% Monroe vs. U.S.
1979-1984	831.4 (99)	1021.3	- 18.6%
1985-2008	643.8 (271)	668.5	- 3.7%
% Change			+14.9% p<.12 (NS)

Source: U.S. Centers for Disease Control and Prevention, http://wonder.cdc.gov. Rates represent number of deaths per 100,000 live births.

The increase in white Monroe County infant death rates from 18.6% to 3.7% below the U.S. is sharper than that for all races. The rise falls short of statistical significance at p<.12. The county rate was actually 5.3% ABOVE the U.S. in the past decade (1999-2008), changing a below-average infant death rate to an above-average one.
The fact that there are few Hispanics in Monroe County has little effect on infant death rates. The county infant death rate for non-Hispanic whites in the past decade is 2.5% greater than the U.S., based on 93 deaths.

Low Weight Births. Another means of measuring infant and fetal health is the percentage born under weight. Public health officials generally classify births below 2500 grams (5.5 pounds) as under weight, and those under 1500 grams (3.3 pounds) as very under weight.

The Michigan Department of Community Health web site displays annual birth weight data for each Michigan county and the state total, for each year from 1989-2009. Unfortunately, there are no data prior to Fermi's opening in 1985, but using several years immediately following Fermi 2 started can be substituted for a baseline period. Table 10 below compares the county and the state of Michigan from 1989-1990 and 1991-2009, for low weight and very low weight births.

Table 10
Rates of Low Weight and Very Low Weight Births, 1989-1990 vs. 1991-2009
Monroe County MI vs. United States
Rate (No. Low Wt Births)

Period	Monroe	Mich.	% Monroe vs. Mich.
Low Weight Births			
1989-1990	5.14 (198)	6.69	- 32.2%
1991-2009	6.69 (2264)	7.98	- 16.1%
% Change			+16.1% p<.002
Very Low Weight Births			
1989-1990	0.78 (30)	1.09	- 49.3%
1991-2009	1.54 (367)	1.61	- 32.5%
% Change			+16.8% p<.12 (NS)

Source: Michigan Department of Community Health, www.michigan.gov/mdch, statistics and reports. Rates represent number of low weight births (<2500 grams) and very low weight births (<1500 grams) per 100 live births.

The county rate of births <2500 grams and <1500 grams both rose sharply, compared to the state of Michigan, since 1990. In the past two decades, the county rate is still below the state, but in recently there have been several years in which the county exceeded the state, suggesting again that the low rates in the county several decades ago are being replaced by higher ones.

The change for low weight births is highly significant (p<.002). In particular, the rate of very low weight births (<1500 grams) nearly doubled, from 0.78% to 1.54%, although it falls short of statistical significance (p<.12) due to the relatively small number of cases. Childhood and Adolescent Cancer. Another expression of harm from radiation exposure early in life is cancer to the child and adolescent. Damaged fetal and infant cells may take years before manifesting as an actual cancer that is diagnosed. Childhood cancer may be the most-studied health measure after radiation exposure, as there are dozens of medical journal articles published on this topic.

The CDC mortality web site from 1979-2008 can be used to examine trends in Monroe County's child and adolescent cancer rates. Child cancer incidence often uses age 0-19; because cancer deaths often take several years to occur, Table 11 can use cancer deaths age 0-24. Again, the period 1979-1984 (before Fermi 2) is used as a baseline, compared with the 24 years following.

Table 11
Cancer Death Rates Age 0-24, 1979-1984 vs. 1985-2008
Monroe County MI vs. United States
Rate (No. of Deaths)

Period	Monroe	U.S.	% Monroe vs. U.S.
1979-1984	3.699 (13)	4.889	- 24.3%
1985-2008	4.444 (55)	3.470	+28.1%
% Change			+52.4% p<.004

Source: U.S. Centers for Disease Control and Prevention, http://wonder.cdc.gov. Rates represent number of deaths from cancer per 100,000 persons. The ICD-9 codes used for the years 1979-1998 are 140.0-208.9, and the ICD-10 codes used for 1999-2008 are C00-C97.9.

In the years prior to the startup of Fermi 2, the local cancer death rate age 0-24 was 24.3% below the U.S. But in the years following, the local rate rose, while the national rate declined. The county rate in the period 1985-2008 was 28.1% ABOVE the U.S., based on 55 deaths (significant at p<.004). Moreover, in the most recent decade (1999-2008), the county rate was 50.2% higher (4.631 vs. 3.083 deaths per 100,000), suggesting rates are getting higher with time, and as the Fermi 2 reactor ages and its parts become more brittle.

Cancer in Young Adults. If children and adolescents are most sensitive to developing cancer from radiation exposure, it is a logical assumption that the next most sensitive group are young adults, defined in this analysis as age 25 to 44. CDC data on changes in Monroe vs. U.S. rates since Fermi 2 started up are presented in Table 12.

Table 12
Cancer Death Rates Age 25-44, 1979-1984 vs. 1985-2008
Monroe County MI vs. United States
Rate (No. of Deaths)

Period	Monroe	U.S.	% Monroe vs. U.S.
1979-1984	21.263 (49)	27.254	- 22.0%
1985-2008	25.581 (262)	24.593	+ 4.0%
% Change			+26.0% p<.05

Source: U.S. Centers for Disease Control and Prevention, http://wonder.cdc.gov. Rates represent number of deaths from cancer per 100,000 persons. The ICD-9 codes used for the years 1979-1998 are 140.0-208.9, and the ICD-10 codes used for 1999-2008 are C00-C97.9.

The county rate before Fermi 2 started up was 22.0% below the U.S., but has since been 4.0% above the U.S., based on 262 deaths from 1985-2008 (significant at p<.05). In the most recent decade of 1999-2008, Monroe's rate was 8.4% greater (based on 103 deaths), indicating again that local rates are continuing to rise over time.

Cancer Mortality – Very Elderly. Aside from younger populations, the group that is most sensitive to damaging effects of radiation is the very elderly, whose immune systems are becoming weaker, making them less likely to fight off a carcinogen such as radiation. Table 13 shows the change in cancer death rates for Monroe County residents age 75 and older, compared to the U.S., in the periods before and after Fermi 2 started up.

Table 13
Cancer Death Rates Age 75+, 1979-1984 vs. 1985-2008
Monroe County MI vs. United States
Rate (No. of Deaths)

Period	Monroe	U.S.	% Monroe vs. U.S.
1979-1984	1375.5 (376)	1318.7	+ 4.3%
1985-2008	1505.7 (2462)	1412.08	+ 6.6%
% Change			+ 2.3% p<.67

Source: U.S. Centers for Disease Control and Prevention, http://wonder.cdc.gov. Rates represent number of deaths from cancer per 100,000 persons. The ICD-9 codes used for the years 1979-1998 are 140.0-208.9, and the ICD-10 codes used for 1999-2008 are C00-C97.9.

The Monroe County increase from 4.3% higher to 6.6% higher is not as dramatic as those larger increases for younger populations. The change is not statistically significant, but does represent a large number of deaths (2462 Monroe County residents age 75 and older died of cancer from 1985-2008). In the most recent decade (1999-2008), the county rate was 10.2% above the nation, suggesting that the increase is continuing in the Fermi 2 era. Cancer Mortality – All Ages. The Monroe County and U.S. changes in cancer mortality for persons of all ages before and after Fermi 2 startup were also examined. These figures are adjusted to account for age distribution, a commonly used epidemiological method when examining populations of all ages. Table 14 indicates these changes.

Table 14
Cancer Death Rates All Ages, 1979-1984 vs. 1985-2008
Monroe County MI vs. United States
Rate (No. of Deaths)

Period	Monroe	U.S.	% Monroe vs. U.S.
1979-1984	211.27 (1231)	207.83	+ 1.7%
1985-2008	213.25 (6540)	200.45	+ 6.4%
% Change			+ 4.7% p<.14 (NS)

Source: U.S. Centers for Disease Control and Prevention, http://wonder.cdc.gov. Rates represent number of deaths from cancer per 100,000 persons, adjusted to the 2000 U.S. population. The ICD-9 codes used for the years 1979-1998 are 140.0-208.9, and the ICD-10 codes used for 1999-2008 are C00-C97.9.

Monroe County's cancer death rate rose from 1.7% to 6.4% above the U.S. after Fermi 2 began operating. A total of 6540 deaths among county residents occurred in the 24-year period 1985-2008, but the change fell short of statistical significance at p<.l4. During the most recent decade (1999-2008), the county rate was 8.6% above the U.S., indicating that the increase is continuing. The racial mix doesn't affect the rates much; in the period 1999-2008, the rate for non-Hispanic whites in Monroe County was 6.0% greater than the U.S., compared to 6.4% for all races.

The National Cancer Institute published a study in 1990 entitled "Cancer in Populations Living Near Nuclear Facilities." The study examined cancer death rates near 62 U.S. nuclear plants in 5-year groups from 1950 to 1984, for all cancers combined and for 13 types of cancer. The study included statistics for Monroe County as that closest to the Fermi plant. Source: National Cancer Institute. Cancer in Populations Living Near Nuclear Facilities. NIH Pub. No. 90-874. Washington DC: U.S. Government Printing Office, 1990.

In the five-year period 1974-1978, after Fermi 1 had closed and before Fermi 2 had begun operating, the county mortality rate for all cancers combined was 11.3% below the U.S., based on 788 deaths. Thus, if this period was combined with 1979-1984, the Monroe cancer rate was below the U.S. – yet another example of a Monroe death rate below the nation before Fermi 2 was put into operation, only to approach or exceed the U.S. average after the reactor went critical.

Cancer Incidence, Most Common Cancers. While historical cancer mortality (death) data is available for the past 30 years for each state, such is not the case for cancer incidence (cases). Each state developed its cancer registry for newly-diagnosed cases at a different point in time, and thus the National Cancer Institute makes state- and county-specific incidence data available only for the period 2004-2008, making any historical trend analysis impossible.

However, the Michigan Department of Community Health makes annual county-specific cancer incidence data available on its web site beginning in 1985 and ending in 2007. All cancers combined are provided, along with the four most common malignancies (female breast, colorectal, lung, and male prostate), which make up about 55% of all diagnosed cases of cancer.

While there is technically no data prior to the startup of Fermi 2 in 1985, the period 1985-1987 can serve as a “before startup” period, since most cancers that would be affected by emissions from Fermi 2 would occur at least two years after startup. Thus, Table 15 shows the changes in incidence for Monroe vs. the U.S., for the periods 1985-1987 and 1988-2007.

Table 15
Cancer Incidence Rates, All Ages, 1985-1987 vs. 1988-2007
Monroe County MI vs. United States
Rate (No. of Deaths)

Period	Monroe	U.S.	% Monroe vs. U.S.
All Cancers Combined			
1985-1987	268.5 (868)	456.1	- 41.1%
1988-2007	434.7 (11514)	483.4	- 10.1%
% Change			+30.0% p<..000001
Female Breast Cancer			
1985-1987	64.1 (113)	128.5	- 50.2%
1988-2007	101.1 (1481)	132.6	- 23.7%
% Change			+26.5% p<..00001
Colorectal Cancer			
1985-1987	34.0 (104)	64.4	- 47.3%
1988-2007	53.1 (1358)	54.6	- 2.8%
% Change			+44.5% p<..00001
Lung Cancer			
1985-1987	52.5 (174)	66.1	- 20.6%
1988-2007	75.0 (1977)	65.8	+ 14.0%
% Change			+34.6% p<..00001
Male Prostate Cancer			
1985-1987	58.9 (61)	122.8	- 52.0%
1988-2007	134.7 (1479)	177.5	- 24.1%
% Change			+27.9% p<..00002

Sources: Michigan Cancer Registry, http://www.michigan.gov/mdch/0,4612,7-132-2944_5323---,00.html (Monroe County data). Surveillance, Epidemiology, and End Results system (www.seer.cancer.gov, Cancer Statistics Registry, 1975-2008). U.S. rates consist of the states of Connecticut, Hawaii, Iowa, New Mexico, Utah, and the metropolitan areas of Atlanta, Detroit, San Francisco, and Seattle, Rates represent number of cancer cases per 100,000 persons, adjusted to the 2000 U.S. population.

For all cancers combined, and for each of the four most common cancers, the Monroe County incidence rate was below the U.S. in 1985-1987. All of the rates rose in the next 20-year period, although all are still below the U.S. (except for lung cancer, which is now 14% higher). The large numbers of cancer cases (11,514 in the 20 year period 1988-2007) make the results for each of the five cancer types highly statistically significant. Mortality, All Other Causes. Cancer is disease most strongly linked with the hazardous health effects of radiation exposure. However, the fact that radiation from nuclear reactors destroys and injures cells, impairing the immune system's ability to fight disease

can increase the risk of other conditions such as heart, digestive, and respiratory diseases. Table 16 shows the change in Monroe vs. U.S. mortality rates for all causes of death except for cancer, for the pre- and post-Fermi 2 startup periods.

Table 16
Non-Cancer Death Rates All Ages, 1979-1984 vs. 1985-2008
Monroe County MI vs. United States
Rate (No. of Deaths)

Period	Monroe	U.S.	% Monroe vs. U.S.
1979-1984	814.84 (4441)	794.01	+ 2.6%
1985-2008	703.03 (20507)	676.30	+ 4.0%
% Change			+ 1.4% p<.41 (NS)

Source: U.S. Centers for Disease Control and Prevention, http://wonder.cdc.gov. Rates represent number of deaths from cancer per 100,000 persons, adjusted to the 2000 U.S. population. The ICD-9 codes used for the years 1979-1998 are all except 140.0-208.9, and the ICD-10 codes used for 1999-2008 are all except C00-C97.9.

The non-cancer death rate in Monroe County made a modest increase from 2.6% to 4.0% since Fermi 2 began operating, not significant at p<.41. The 4.7% excess for the most recent decade (1999-2008) was greater than the prior periods (2.6% for 1979-1984, and 3.3% for 1985-1998), showing a steady rise continuing into the most current period Hospitalization Rate. The state of Michigan Department of Community Health also provides county-specific data on rates of hospital admissions for the period 2004-2008. While trend analysis is not possible, comparing Monroe County with the state may be indicative of potential health problems. Table 17 provides current hospitalization rates for all causes, plus cancer and birth defects, the conditions most closely connected with radiation exposure.

Table 17
Hospitalization Rates, 2004-2008, Selected Conditions
Monroe County MI vs. Michigan
Rate (No. Hospitalizations)

Period	Monroe	Mich.	% Monroe vs. Mich.
All Ages			
All Causes	1399.2 (107,465)	1315.6	+ 6.3% p<.000001
Malignant Cancer	43.7 (3360)	42.3	+ 3.3% p<.68 (NS)
Benign neoplasms	20.4 (1570)	14.8	+37.8% p<.000001
Age <18			
Congenital anomalies	10.8 (200)	10.4	+ 3.8% p<.71 (NS)
Malignant cancer	3.2 (60)	2.5	+28.0% p<.18 (NS)

Source: Michigan Department of Community Health, www.michigan.gov/mdch, statistics and reports. Rates represent number of hospital admissions per 10,000 persons.

The hospitalization rate for Monroe County was 6.3% higher than the state for the period 2004-2008, which is significant due to the very large number of admissions (107,465). In 2009, the county rate of 1477.1 was 11.7% greater than the state rate of 1322.7 per 10,000 persons, based on 22,559 hospitalizations, signaling that the county-state gap may be growing.

Hospitalization rates for cancer – both malignant and benign – of all ages were greater in Monroe County vs. the state, as were rates for children under age 18 for cancer and congenital anomalies (birth defects). Of the five hospitalization measures here, two were statistically significant.

DISCUSSION

The proposed new Fermi 3 nuclear reactor raises a number of health concerns that should be addressed before any decision is made on whether to allow the reactor to be constructed. Assessing the potential environmental impact of Fermi 3 would be much more evidence-based if a “report card” on the performance of previous Fermi reactors, especially Unit 2, were part of the assessment. Unfortunately, the U.S. Nuclear Regulatory Commission does not require any such review, and thus, the EIS for Fermi 3 did not address the record of operations and health risks to the local population.
This report analyzes data on Fermi 2 in two areas: environmental contamination and trends in local health status. The environmental contamination section first addressed releases from a meltdown. Because of the 1966 meltdown at Fermi 1; the aging, corroding reactor at Fermi 2; and the reality that human error (Chernobyl), act of nature

(Fukushima), and act of sabotage (if a terrorist attack struck a reactor) could cause a devastating meltdown at a plant with 4.8 million residents within 50 miles, the meltdown threat posed by a Fermi 3 is serious and should be strongly weighed in any decision on whether to allow its building.

The other type of radioactive contamination addressed in this report was that of emissions routinely released into the environment by Fermi 2. Several types of radioactive chemicals were examined, and in each, Fermi's releases were greater than most U.S. nuclear reactors.

This report then examined trends in a variety of health status indicators since the 1980s, before and just after Fermi 2 came online. The Monroe County disease or death rate was compared to the state or national rate, for the "before" and "after" periods. The indicators were those believed to be most sensitive to radiation exposure, including infant deaths, low weight births, cancer mortality (all ages, children, young adults, and the very elderly), cancer incidence (all cancers, plus breast, colorectal, lung, and prostate cancer), plus hospitalization rates for cancer and birth defects.

For 19 of 19 indicators, the increase in the Monroe County rate exceeded the increase for the state or nation. Of these, 10 achieved statistical significance, with 4 others that approached significance. More analysis is merited here, but these strongly consistent findings should be taken seriously.

In closing, basic data on the performance of Fermi 2 strongly suggests Fermi 3 will pose a safety and health risk for local residents. Accordingly, the conclusion of this report is that no decision should be made on whether or not to approve a license for Fermi 3 until more research of this type is undertaken. A baseline health study by independent experts is needed, along with a thorough public education and discussion process, to ensure whether the majority of local people approve of the new reactor after acquiring this additional knowledge. (**0060-1** [Keegan, Michael J.])

Comment: Your Documentation for Mortality and Cancer rates had admitted flaws in completeness and a concern for refining geographic regions for the studies. If you know that your Data could be better, then it should be enough to put a Hold on the Fermi3 project until accurate Data is acquired.

The problem you have is due to tracking former residents who have lived around Nuclear power plants. You do not know how many people have moved away and died or have received Cancer treatments and lived. This can easily be remedied since Federal laws were made years ago to have children receive Social Security numbers almost at Birth. By incorporating the Social Security numbers with past addresses, the affected people can be tracked after they move from

a Nuclear plant area. The Social Security numbers of children can be listed on the parents Income Tax forms. This will provide an almost Cradle to Grave record of their health and Geographic area of residence. The Social Security numbers just need to be matrix-ed into a Medical Records system to work. I suspect that all Health care providers, both Private and Government, are supplementing the operation of Nuclear power plants by paying for all the increased costs of Health care brought on by the operation of the Nuclear plants. (**0022-1** [Lankford, R.E.])

Comment: The incidence of 45.5% increase in cancer deaths since 1988 when Fermi 2 began operating for those from birth to 24 (according to the CDC) has not been sufficiently reported. In the early 1980s the Monroe County cancer death rate was 36th highest of 83 Michigan counties" but by the early 2000s it had moved up to 13th highest. (**0070-3** [Rivera, Ethyl])

Response: *These comments concern potential human health effects such as cancer from radiation exposure. The NRC's mission is to protect the public health and safety and the environment from the effects of radiation from nuclear reactors, materials, and waste facilities. The NRC's regulatory limits for radiological protection are set to protect workers and the public from the harmful health effects (i.e., cancer and other biological impacts) of radiation on humans. The limits are based on the recommendations of standards-setting organizations. Radiation standards reflect extensive scientific study by national and international organizations. The NRC actively participates in and monitors the work of these organizations to keep current on the latest trends in radiation protection. If the NRC determines that there is a need to revise its radiation protection regulations, it will initiate a rulemaking. The models recognized by the NRC are for use by nuclear power reactors to calculate dose incorporate conservative assumptions and account for differences in gender and age to ensure that workers and members of the public are adequately protected from radiation.*

Although radiation may cause cancers at high doses, currently there are no reputable scientifically conclusive data that unequivocally establish the occurrence of cancer following exposure to low doses (i.e., below about 10 rem [0.1 Sv]). However, radiation protection experts conservatively assume that any amount of radiation may pose some risk of causing cancer or a severe hereditary effect and that the risk is higher for higher radiation exposures. Therefore, a linear, no-threshold, dose response relationship is used to describe the relationship between radiation dose and adverse impacts such as incidents of cancer. Simply stated, in this model, any increase in dose, no matter how small, results in an incremental increase in health risk. This theory is accepted by the NRC as a conservative model for estimating health risks from radiation exposure, recognizing that the model probably overestimates those risks. Based on this theory, the NRC conservatively establishes limits for radioactive effluents and radiation exposures for workers and members of the public. Although the public dose limit in 10 CFR Part 20 is 100 mrem (1 mSv) for all facilities licensed by the NRC, the NRC has imposed additional constraints on nuclear power reactors. Each nuclear power reactor has enforceable

license conditions that limit the total annual whole body dose to a member of the public outside the facility to 25 mrem (0.25 mSv). The amount of radioactive material released from nuclear power facilities is well measured, well monitored, and known to be very small. The doses of radiation that are received by members of the public as a result of exposure to nuclear power facilities are so low (i.e., less than a few millirem) that resulting cancers attributed to the radiation have not been observed and would not be expected.

In addition to NRC's requirements to monitor radioactive effluents (routine and inadvertent) discharged into the environment, each nuclear power plant is required to have a REMP. The REMP quantifies the environmental impacts associated with radioactive effluent releases from the plant. The REMP monitors the environment over time, starting before the plant operates to establish background radiation levels and continuing throughout its operating lifetime to monitor radioactivity in the local environment. The REMP provides a mechanism for determining the levels of radioactivity in the environment to ensure that any accumulation of radionuclides released into the environment will not become significant as a result of plant operations. The REMP also measures radioactivity from other nuclear facilities that may be in the area (i.e., other nuclear power plants, hospitals using radioactive material, research facilities, or any other facility licensed to use radioactive material). Thus, the REMP monitors the cumulative impacts from all sources of radioactivity in the vicinity of the power plant. To obtain information on radioactivity around the plant, samples of environmental media (e.g., surface water, groundwater, drinking water, air, milk, locally grown crops, locally produced food products, river, ocean, or lake sediment, and fish and other aquatic biota) are collected from areas surrounding the plant for analysis to measure the amount of radioactivity, if any, in the samples. The media samples reflect the radiation exposure pathways (i.e., inhalation, ingestion, and physical location near the plant) to the public from radioactive effluents released by the nuclear power plant and from background radiation (i.e., cosmic sources and naturally occurring radioactive material, including radon and global fallout). The NRC has standards for the amount of radioactivity in the sample media, which, if exceeded, must be reported to the NRC, and the licensee must conduct an investigation. The REMP supplements the radioactive effluent monitoring program by verifying that measurable concentrations of radioactive materials and levels of radiation in the environment are not higher than expected when compared against data on the amount of radioactive effluent discharged. As part of its environmental review, the NRC staff reviews REMP reports to look for adverse data or evidence of a buildup of radioactivity in the environment. The results of the NRC staff's review were discussed in Section 5.9.6.

Although a number of studies of cancer incidence in the vicinity of nuclear power facilities have been conducted, there are no studies to date that are accepted by the scientific community that show a correlation between radiation dose from nuclear power facilities and cancer incidence in the general public. The following is a listing of radiation health studies that the NRC recognizes:

- *In 1990, at the request of Congress, the National Cancer Institute conducted a study of cancer mortality rates around 52 nuclear power plants and 10 other nuclear facilities. The study covered the period from 1950 to 1984 and evaluated the change in mortality rates before and during facility operations. The study concluded there was no evidence that nuclear facilities may be linked causally with excess deaths from leukemia or from other cancers in populations living nearby.*
- *In June 2000, investigators from the University of Pittsburgh found no link between radiation released during the 1979 accident at the Three Mile Island power plant and cancer deaths among nearby residents. Their study followed 32,000 people who lived within 5 mi of the plant at the time of the accident.*
- *The American Cancer Society in 2000 concluded that although reports about cancer clusters in some communities have raised public concern, studies show that clusters do not occur more often near nuclear plants than they do by chance elsewhere in the population. Likewise, there is no evidence that links strontium-90 with increases in breast cancer, prostate cancer, or childhood cancer rates. Radiation emissions from nuclear power plants are closely controlled and involve negligible levels of exposure for nearby communities.*
- *In 2000, the Illinois Public Health Department compared childhood cancer statistics for counties with nuclear power plants to similar counties without nuclear plants and found no statistically significant difference.*
- *The Connecticut Academy of Sciences and Engineering, in January 2001, issued a report on a study around the Haddam Neck nuclear power plant in Connecticut and concluded radiation emissions were so low as to be negligible and found no meaningful associations to the cancers studied.*
- *In 2001, the Florida Bureau of Environmental Epidemiology reviewed claims that there are striking increases in cancer rates in southeastern Florida counties caused by increased radiation exposures from nuclear power plants. However, using the same data to reconstruct the calculations on which the claims were based, Florida officials were not able to identify unusually high rates of cancers in these counties compared with the rest of the State of Florida and the nation.*

On April 7, 2010, the NRC announced that it asked the National Academy of Sciences (NAS) to perform a state-of-the-art study on cancer risk for populations surrounding nuclear power facilities (NRC 2010; ADAMS Accession No. ML100970142). The NAS has a broad range of medical and scientific experts who can provide the best available analysis of the complex issues involved in discussing cancer risk and commercial nuclear power plants. More information on its methods for performing studies is available at http://www.nationalacademies.org/studycommitteprocess.pdf*. The NAS study will update the 1990 U.S. National Institutes of Health National Cancer Institute (NCI) report, Cancer in Populations Living near Nuclear Facilities (NCI 1990). The study's objectives are to (1) evaluate whether cancer risk is different*

for populations living near nuclear power facilities; (2) include cancer occurrence; (3) develop an approach to assess cancer risk in geographic areas that are smaller than the county level; and (4) evaluate the study results in the context of offsite doses from normal reactor operations. Phase I of the NAS study report was published on March 29, 2012 and is available on the NAS Web site (http://www.nap.edu).

No changes have been made to the EIS in response to these comments.

Comment: The DE employs approximately 1,200 to 1,500 workers for 30 days during every refueling outage (v 1, p 2.134) Are these workers allowed to receive a year's dosage of radiation during those 30 days? (**0016-3-14** [Collins, Jessie])

Comment: The DE (Detroit Edison) employs approximately 1,200 to 1,500 workers for 30 days during every refueling outage (v 1, p 2.134) Are these workers allowed to receive a year's dosage of radiation during those 30 days? What is their dose exposure for the refueling period? (**0026-6-14** [Macks, Vic])

Response: *The comments relate to occupational exposure. The NRC has established a conservative limit of 0.05 Sv per year (Sv/yr) (5 rem per year [rem/yr]) in 10 CFR Part 20 for radiation doses to people exposed to radiation as part of their job, such as operating personnel at nuclear power plants. The workers involved in refueling operations may work at more than one NRC-licensed facility. To track the occupational exposure at NRC-licensed facilities, the occupational exposure data are maintained in the NRC's Radiation Exposure Information and Reporting Systems (REIRS), and the yearly occupational exposure for the personnel at the nuclear power plants is maintained below the radiation dose limit in 10 CFR Part 20. The licensees' are also required by 10 CFR Part 20 under any operations, including refueling, to the extent practical, to use procedures and engineering controls based upon sound radiation protection principles to achieve occupational doses and doses to members of the public that are as low as is reasonably achievable (ALARA). Therefore, it is expected that workers during refueling outages would not receive up to the annual occupational dose limit. No changes were made in the EIS as a result of these comments.*

Comment: Additional discharges to Lake Erie could include treated liquid radwaste. (v 1, p 3.14) The monthly average anticipated water intake from Lake Erie would vary between approximately 23,750 and 33,500 gallons per minute (Table 3.5). Monthly discharge to Lake Erie (blowdown) would vary between 11,868 and 16,743 gallons per minute. (v 1, p3.30) Are there hourly samplings done and are there any emergency shut off values to stop the discharge when samples exceed radiation/contamination limits? What radionuclides are in this liquid discharge? At what dose? (**0026-6-16** [Macks, Vic])

Response: *Radiological monitoring would be done as described in Section 5.9.6 of the EIS. The estimated radiation doses to members of the public from liquid effluent releases are*

discussed in Section 5.9.2.1 of the EIS. The liquid effluent source term and liquid radwaste discharge flow rate are provided in Table G-1 of the EIS. No changes were made to the EIS as a result of this comment.

Comment: Tritium (which is radioactive for 248 years and can pass from mother to fetus) is showing up in the monitoring wells of Fermi 2. (v 1, p 2.29) “In wells within a 5-mi radius of the Fermi site, elevated concentrations of arsenic about the EPA maximum contaminate level were found in groundwater samples.” and “....detected in the few shallow groundwater wells downwind from the Fermi 2 stack. (v 1, p 5.117)” Detroit Edison attributed this to the recapture of tritium in precipitation from the plant’s gaseous effluent. (v 1, p 2.234) To allow a Fermi 3 to be built would be to contribute to our own deaths, and worse, the deaths of our loved ones. Children are more susceptible to radiation than adults. (**0016-2-1** [Collins, Jessie])

Comment: To allow a Fermi 3 to be built would be to contribute to our own deaths. Children are more susceptible to radiation than adults (**0026-6-9** [Macks, Vic])

Comment: History of Radiation Standard Setting [Much of this section is text provided by Dr. Rosalie Bertell, who witnessed these events, It is effectively an oral history.]

The first standards (in the 1920s) for exposure to ionizing radiation were developed to limit the exposure of physicians. A committee of the International Association of Radiologists dedicated itself to setting standards and developing units for measurement of radiation. The U.S., Canadian and UK physicists of the Manhattan Project met, between 1945 and 1950, to set international recommendations for Radiation Protection Standards, in light of atmospheric nuclear testing which began in the Pacific by the U.S. in 1946, and the planned expansion of the nuclear industrial base. During this time, the physicists decided only cancer deaths caused by radiation were “of concern.” They also developed the Standard Man, 18-30 years old, Caucasian, healthy (the soldier or atomic worker). This Standard Man is to this day the body mass used to calculate a generic radiation “dose” when radiation measurements are taken. In 1950, the International Commission for Radiological Protection (ICRP) was formed from the Radiologist Committee and Manhattan Project physicists. (**0049-12** [D’Arrigo, Diane])

Comment: Children - It has long been understood that children and the unborn are at greater risk from exposure to ionizing radiation than adults of either gender. During the rapid cell division in growing young bodies DNA is more vulnerable to damage from radiation. It is more difficult to find reports on gender-specific data comparing differences in harm to boys and girls or to embryos exposed to ionizing radiation.[See “Radiation and Children: The Ignored Victims” web posted at: http://www.nirs.org/radiation/radiationhome.htm and included in “Transforming Terror, Remembering the Soul of the World,” 2011, edited by Susan Griffin and Karin Lofthus Carrington, University of California Press (p 34 “ 36).]

(**0049-3** [D’Arrigo, Diane])

Response: *The NRC has based its dose limits and dose calculations on a descriptive model of the human body referred to as "standard man." However, the NRC has always recognized that dose limits and calculations based on "standard man" must be informed and adjusted in some cases for factors such as age. For example, the NRC has different occupational dose limits for declared pregnant women, because the rapidly developing human fetus is more radiosensitive than an adult woman. NRC dose limits are also much lower for members of the public, including children and elderly people, than for adults who receive radiation exposure as part of their occupation. Finally, NRC dose calculation methods have always included age-specific dose factors for each radionuclide, because they may used differently by infant, child, and teen bodies, which are also generally smaller than adult bodies. In addition, the calculation methods have always recognized that the diets (amounts of different kinds of food) of infants, children, and teens are different from those of adults (NRC 1977).*

The amount of radioactive material released from nuclear power facilities is well measured, well monitored, and known to be very small. The doses of radiation that are received by members of the public as a result of exposure to nuclear power facilities are so low (i.e., less than a few millirem) that resulting cancers attributed to the radiation have not been observed and would not be expected. No changes were made in the EIS as a result of these comments.

Comment: The EIS as written is deficient in its details of the environmental and health impacts of past Fermi 1 and 2 performance. It also neglects to mention incidents of increased cancer rates among people in the area. Some of the past Fermi reactor accidents resulted in core meltdowns, hot shutdowns, radioactive spillage, employee mishandlings and incompetence, safety record and lack of proper public disclosure. The latter allows the public to question the ability to trust a facility as it's track record and past performances ARE indicators of future performance. (**0003-4-1** [Anderson, Christy])

Comment: Planned and unplanned radiological releases regularly occur at all reactors. These things are certainties. (**0027-3** [Marida, Patricia A.])

Comment: There are going to be health ramifications. It was 11 million gallons of slightly radioactive water that were dumped in the lake in February of 1994. (**0040-9-8** [Keegan, Michael J.])

Comment: Routine radioactivity releases from Fermi 3 would harm human health. Even new reactors like Fermi 3 will release significant amounts of radioactivity directly into the environment. These would include so-called "planned" and "permitted" releases from the reactor's "routine" operations, as well as unplanned releases from leaks and accidents. Atomic reactors are designed to release radioactive liquids and gases into the air, water, and soil, which can then bio-concentrate in the ecosystem and human bodies. Liquid releases, which at Fermi

are discharged into Lake Erie, include tritium, which can incorporate into the human biological system, even down to the DNA level. Once organically bound, tritium can persist in the human body for long periods, emitting damaging radioactive doses. Tritium can cross the placenta from mother to fetus. Current radiation health standards are not protective of women, children, nor fetuses. The Institute for Energy and Environmental Research has launched a campaign called "Healthy from the Start," which urges NRC, EPA, and other agencies to protect the more vulnerable "Reference Pregnant Woman" from such radioactive hazards as tritium, rather than "Reference Man" as is currently done. The State of Colorado has instituted a tritium regulation 40 times stronger than the federal standard; California has a 50-fold stronger standard. Michiganders deserve equally strong protection. (**0058-5** [Kamps, Kevin])

Comment: The radiological impacts of normal operation were also analyzed and discussed in Section 5.9 of the EIS. In this analysis the pathway causing the highest potential calculated dose to residents was determined. One of the scenarios evaluated was the ingestion of drinking water. Protection of the public is also the primary focus of the NRC safety review, under the 10 CFR Part 52 review process. Impacts to drinking water and members of the public due to the accidental release of radiological effluents are evaluated in the Final Safety Analysis Report (or FSAR) Section 2.4.13.

In this analysis NRC staff considers the release of the highest potential concentration from the liquid waste management system and flow to the nearest potential water user using conservative site-specific parameters (dilution, velocity, sorption, etc.). According to the schedule on the NRC public website, this document should be ready for review by 9/12 (contact the Project Manager Adrian Muniz with questions (301) 415-4093).

It is precisely because there is the potential for radioactive effluents through planned releases as under licensing conditions referred to as "Permissible Allowable Levels" and accidental releases that Independent Monitoring as described above is essential. (**0059-7** [Keegan, Michael J.])

Response: *The NRC takes seriously its statutory responsibilities to protect the health and safety of the public and the environment in regulating the U.S. nuclear power industry and continuously evaluates the latest radiation protection recommendations from international and national scientific bodies to ensure the adequacy of the agency's standards. During operation of the plant, the NRC continuously inspects licensee performance through the use of resident inspectors stationed at each plant and the use of technical specialist inspectors from the NRC regional offices. If there is an abnormal situation at a plant, the resident inspector and regional specialists become involved to assess the licensee's response to the situation to ensure that NRC requirements are met. The NRC requires licensees to report plant discharges and results of environmental monitoring around their plants to ensure that potential impacts are detected and reviewed. Licensees must also participate in an interlaboratory comparison program, which*

provides an independent check of the accuracy and precision of environmental measurements. In annual reports, licensees identify the amount of liquid and airborne radioactive effluents discharged from plants and the associated doses. Licensees also must report environmental radioactivity levels around their plants annually.

The NRC conducts periodic onsite inspections of each licensee's effluent and environmental monitoring programs to ensure compliance with NRC requirements. The NRC documents licensee effluent releases and the results of their environmental monitoring and assessment effort in inspection reports that are available to the public. As with any industrial facility, a nuclear power plant may deviate from normal operation with a spill or leak of liquid material. However, the design of the plant and the NRC inspection program provide reasonable assurance that even in abnormal situations, safety limits are met.

The NRC established a "lessons learned" task force to address inadvertent, unmonitored releases of radioactive liquids, containing primarily tritium, from U.S. commercial nuclear power plants. The task force reviewed a wide range of releases going back to 1996 and even included a substantial release from the Hatch plant in 1986, and none of the events led to appreciable radiation doses to people outside the plants. The task force identified lessons learned from these events and recommended changes in the agency's regulatory program, publishing its findings on September 1, 2006, as the Liquid Radioactive Release Lessons-Learned Task Force Final Report*. (NRC 2006) The task force produced 26 recommendations that apply to the NRC, nuclear power plant operators, or both. For instance, the task force recommended updating NRC regulations on monitoring radioactive releases and the environment in and around a plant to take into account state-of-the-art technology and practices. The task force also recommended that nuclear power plant operators work with local and State agencies to voluntarily report information on radioactive liquid releases that otherwise fall below NRC reporting requirements. The NRC revised its inspection procedures for nuclear power plants to evaluate licensees' programs to inspect and assess the equipment and structures that have the potential to leak. The NRC also placed additional emphasis on evaluating the licensees' abilities to analyze for additional discharge pathways, such as groundwater, as a result of a spill or leak. Each of the NRC program offices (e.g., Nuclear Reactor Regulation) is considering the recommendations relevant to its mission. More information on the NRC roles and responsibilities is available on the NRC Web site at http://www.nrc.gov/about-NRC.html. No change was made to the EIS as a result of these comments.*

Comment: The opportunity to radio contaminate waters of the Great Lakes during any one of numerous disaster scenarios is high at a time when drinkable water is getting more and more scarce across the country and world. Risking this is sort of unethical and criminal. (**0040-17-9** [Noonan, Henry])

Comment: It's been mentioned that it's acceptable for people and the environment to be exposed to small doses of radiological material. That's totally unacceptable. I've been a

licensed practical nurse for 38 years, and we've been polluting and poisoning our environment for so long that it's getting worse all the time. The health of the ecosystem directly influences our health. Do we want to continue to poison ourselves and poison the world for our children and grandchildren to come? And I'd like to know what some of the NRC people, how many of you live within the fallout zone of a nuclear plant, I know some of you aren't here from Michigan, but with the NRC. I know myself, and I have my father and relatives here that live in the area. I'm scared stiff in the case of a fall out. You should be, too. (**0040-32-3** [Duffey, Leona])

Comment: Independent Audited Radiation Monitors are needed to protect the public from radiation exposure. (**0059-1** [Keegan, Michael J.])

Comment: The Communities of Toledo, Luna Pier, in Downriver, Amherstburg, and Windsor Ontario must be consulted and provided equipment to protect their water supply as well. This monitoring should be set up with "Real Time" and remote data access. Radiation Monitor system onto water intake that can be read in real time and by remote access.

Currently DTE is doing the maintenance on the City Water Intake. The calibration is not independent. There can be no appearance of a vested interest in low balling radiation reports.

Independent Methodologies for Radiation Monitoring equipment must be transparent.
In 1986 through citizen initiatives, DTE was required to place a radiation monitoring system onto the City water intake, at the City's request. Real time monitoring with independent verification provided in the public domain, with remote reading and observation is needed. (**0059-4** [Keegan, Michael J.])

Comment: Because of the above, Independent Radiation Monitoring and Independent Chemical Monitoring of the City of Monroe Water Intake is needed. This holds true for other nearby Water Intake Systems as well in Cities of Toledo, Luna Pier, Flat Rock, Down River, Amhersburg Ontario, Windsor Ontario. (**0059-17** [Keegan, Michael J.])

Response: *The NRC takes seriously its statutory responsibilities to protect the health and safety of the public and the environment in regulating the U.S. nuclear power industry and continuously evaluates the latest radiation protection recommendations from international and national scientific bodies to ensure the adequacy of the standards the agency uses. During operation of the plant, the NRC continuously inspects licensee performance through the use of resident inspectors stationed at each plant and the use of technical specialist inspectors from the NRC regional offices. The NRC requires licensees to report plant discharges and results of environmental monitoring around their plants to ensure that potential impacts are detected and reviewed. Licensees must also participate in an interlaboratory comparison program, which provides an independent check of the accuracy and precision of environmental measurements. In annual reports, licensees identify the amount of liquid and airborne radioactive effluents*

discharged from plants and the associated doses. Licensees also must report environmental radioactivity levels around their plants annually. The NRC conducts periodic onsite inspections of each licensee's effluent and environmental monitoring programs to ensure compliance with NRC requirements. The NRC documents licensee effluent releases and the results of the environmental monitoring and assessment effort in inspection reports that are available to the public. The REMP for the Fermi site was discussed in Sections 2.11, 5.9.6, and 7.8 of the EIS. No changes were made to the EIS as a result of these comments.

Comment: DE identified four sources of direct radiation exposure from the Fermi site: (1) "skyshine" from the nitrogen-16 source present in the operating Fermi 2 main turbine stream cycle, (2) condensate storage tanks, (3) the onsite low-level waste storage facility, and (4) the planned Independent Spent Fuel Storage Installation. The doses from skyshine and the planned ISFSI are identified as the primary sources of direct radiation exposure to the proposed Fermi 3 construction workers." (v 1, p 4.114) So, the Fermi 3 construction workers would get irradiated from Fermi 2? (**0016-4-2** [Collins, Jessie])

Response: *The sources of direct radiation described in paragraph 1 of Section 4.9.1 of the EIS were included in the applicant's evaluation of direct radiation dose. The applicant's evaluation estimated annual dose to the construction workers using readings from thermoluminescent dosimeters located at the protected area fence line. These measurements would include any contribution to dose from the cycled condensate storage tank, low-level waste storage facility, and skyshine from nitrogen-16 present in the Fermi 2 turbine building. Total direct radiation exposure to construction workers was estimated by adding the measured thermoluminescent dosimeter (TLD) dose to the estimated dose from the Independent Spent Fuel Storage Installation (ISFSI). No changes were made in the EIS as a result of this comment.*

Comment: "The public and biota would be exposed to increased ambient background radiation from Fermi 3 via the liquid effluent, gaseous effluent, and direct radiation pathways." (v 1, p 5.105) How does gaseous effluent differ from skyshine? (**0016-4-3** [Collins, Jessie])

Response: *The sources of radiation exposure and resulting exposure pathways were discussed in Sections 4.9 and 5.9 of the EIS. Gaseous radioactive effluent releases result in the following exposure pathways: immersion in the radioactive plume, direct radiation exposure from deposited radioactivity, inhalation of airborne activity, ingestion of garden fruit and vegetables with absorbed radioactivity, and ingestion of meat and milk produced from animals that may have eaten plants or drank water contaminated by the gaseous effluent. As provided in the footnote on page 4-114 of the Draft EIS, skyshine is the scattered radiation of a primary gamma radiation source generated by aerial dispersion, or, in other words, this is the radiation that is scattered back to the ground by the atmosphere above a radiation-producing facility. Thus, the key difference between the two is that, for one, the source of radiation is dispersed in the environment (gaseous radioactive effluent), while the other source of radiation is still within a facility or building (skyshine). No changes were made to EIS as a result of this comment.*

Comment: "The maximally exposed organ is the bone of a child, and the majority of the dose is from fish ingestion." (v 1, p 5.109) (**0016-4-5** [Collins, Jessie])

Response: *Releases of radionuclides from nuclear power plants must meet radiation dose-based limits specified in 40 CFR Part 190, 10 CFR Part 20, and Appendix I of 10 CFR Part 50. Appendix I provides design objectives for new reactor designs to meet the ALARA philosophy for radioactive material in reactor effluents. The design objective for estimated annual air dose to an individual in an unrestricted area from gaseous effluents is 10 millirads for gamma radiation or 20 millirads for beta radiation. The design objective for estimated annual dose to an individual from liquid effluents is 3 mrem to the total body or 10 mrem to any organ. The dose limit for the public from operation of a reactor is 100 mrem (total effective dose equivalent) annually as specified in 10 CFR 20.1301. The licensee must also comply with EPA's environmental radiation standards in 40 CFR Part 190, which are 25 mrem annually to the whole body, 75 mrem annually to the thyroid, and 25 mrem annually to any other organ. As provided in Regulatory Guide 1.109 (NRC 1977), the calculated radiation exposures to individual receptors must be assessed in each of four age groups, namely, infants (0 to 1 year old), children (1 to 11 years old), teens (11 to 17 years old), and adults (17 years and older). The applicant identified the maximally exposed organ of any of the individual receptors as the bones in a child, which still met the 10 CFR Part 50 design objectives and demonstrate compliance with EPA's environmental standards in 40 CFR Part 190. No changes were made to the EIS as a result of this comment.*

Comment: Assuming the additive nature of exposure and harm at low doses, adding the natural radiation and natural cancer to the NAS "study group" results in one in 50 women getting cancer from radiation exposure, and one in 100 dying as a result. This radiation dose (100 millirems/year "allowed" for industrial sources in addition to background) is precisely what the Nuclear Regulatory Commission sets as its overall regulatory goal for nuclear operations of its licensees.[The NRC actually allows each license to expose the public (an adult male is assumed) up to 100 millirems a year in air, another 100 millirems/year in water, up to 500/year in sewage. Many nuclear power plants have two or three licenses per site.] While there is a cancer epidemic in the U.S., this level of harm [Ionizing radiation regulation is demonstrably far less protective than the regulation of toxic chemicals where the allowable level of risk of fatal cancer is 1 in 100,000 or in some challenging SuperFund clean-ups, as high as 1 in 10,000. We have seen here that combined background, for which there is no option, plus only 100 mrads means that 1 in 50 women suffer cancer, and 1 in 100 die of it. That is a privilege by a factor of 1000.] from legally "allowable" levels of radiation is stunning and worthy of our attention and action. (**0049-10** [D'Arrigo, Diane])

Comment: Membership in the ICRP is by recommendation of present members and approval of their Executive Committee which has resulted in physicists constituting more than half the membership of the Commission. This all took place, and the radiation exposure

recommendations were set, before any analysis of the Hiroshima and Nagasaki atomic bomb data, contrary to myths. Indeed, the survivors had not even been identified in 1950 when the international standards, which stood unchallenged until 1990, were set. The ICRP as a self appointed entity has functioned to provide the appearance of a scientific basis for standards designed to allow governments and private corporations to expose workers, and now by extension, the general public to amounts of radiation over and above natural terrestrial levels. In every case, these "legal" limits allow a doubling or more of the level of radiation that is "natural" and with which life evolved. (**0049-13** [D'Arrigo, Diane])

Comment: Government agencies worldwide have based their standards on recommendations from the ICRP and a corresponding "National" Committee for Radiological Protection (NCRP). These bodies have not explicitly made standards to protect either women or children, originally due to the historical focus on a relatively young male workforce. In the interim the public has become subject to the ongoing contamination of air, water and soil by atmospheric nuclear weapons tests, and from the growing number of catastrophic nuclear accidents including Windscale, Kyshtym, Fermi 1, Santa Suzanna, Brookhaven, Three Mile Island, Chernobyl, and Fukushima. (**0049-14** [D'Arrigo, Diane])

Comment: The Nuclear Regulatory Commission bases its levels of allowable radiation exposure to the public and workers [Chapter 10 Part 20 of the U.S. Code of Federal Regulations] on the NCRP and ICRP recommendations. The NRC regulates the largest sources of radioactivity, the 104 operable nuclear reactors in the U.S. The radioactivity generated by a single 1000-megawatt nuclear reactor unit per year is on the scale of 1000 detonations of an atomic bomb like the one that destroyed Hiroshima. Reactors routinely release radioactivity to air, water and as solid waste, with ongoing potential for radiation exposure even without an accident.[See "Hidden Radioactive Releases from Nuclear Power Reactors in the United States" posted at: http://www.nirs.org/factsheets/drey_usa_pamphlet.pdf] The NRC does not regulate with respect to women or children, Using units that were developed expressly with the assumption that the individual receiving the dose is an adult male. Basing the national radiation limits on the "standard" or "reference" man is not protective of our species. The standard "reference man" cannot, of course, reproduce by himself. October 2011. Prepared by Mary Olson, Director of the Southeast Office of Nuclear Information and Resource Service, maryo@nirs.org 828-252-8409 www.nirs.org CORRECTED 10/22/2011 page 5 (TYPO: 40% not 80%). (**0049-15** [D'Arrigo, Diane])

Comment: Radiation impacts women 50% more than men (NIRS paper attached) and children more than adults. There is no study even being carried out on synergistic effects of radioactivity and other stressors present in the environment and coming from nuclear reactors and fuel chain facilities. These increased risks are not incorporated into the regulations that permit radioactive releases and prohibit challenge in site-specific licensing actions. We call on NRC, DTE and the Army Corps of Engineers to now account for this newly released, previously known information

on radiation risks to more vulnerable population groups “like women” more than half of the human population! Just like old reactor seismic design bases that were developed before the world knew about plate tectonics, radiation standards predate knowledge and additional uncertainties about disparate impacts on different sectors of the population. In fact NRC is not protecting us more with its latest “updates” which increase the allowable contamination levels for more than half the radionuclides listed. We say NO now to more radioactive exposure, release, and risk at every level. (**0050-4** [D’Arrigo, Diane])

Response: *The comments concern the potential health effects on the public, especially children and women, from radiation exposure in the vicinity of the existing or proposed Fermi reactors. Section 5.9 of the EIS estimates the potential radiation doses to a member of the public from operation of two reactors (one currently operating and one proposed) at the Fermi site.*

The NRC takes seriously its responsibility under the Atomic Energy Act to protect the health and safety of the public and the environment in regulating the U.S. nuclear power industry. The NRC’s mission is to protect the public health and safety and the environment from the effects of radiation from nuclear reactors, materials, and waste facilities. The NRC’s regulatory limits for radiological protection are set to protect workers and the public from the harmful health effects (i.e., cancer and other biological impacts) of radiation on humans. The limits are based on the recommendations of standards-setting organizations. Radiation standards reflect extensive scientific study by national and international organizations. The NRC actively participates in and monitors the work of these organizations to keep current on the latest trends in radiation protection.

The NRC has based its dose limits and dose calculations on a descriptive model of the human body referred to as “standard man.” However, the NRC has always recognized that dose limits and calculations based on “standard man” must be informed and adjusted in some cases for factors such as age. For example, the NRC has different occupational dose limits for declared pregnant women, because the rapidly developing human fetus is more radiosensitive than an adult woman. NRC dose limits are also much lower for members of the public, including children and elderly people, than for adults who receive radiation exposure as part of their occupation. Finally, NRC dose calculation methods have always included age-specific dose factors for each radionuclide, because they may be used differently by infant, child, and teen bodies, which are also generally smaller than adult bodies. In addition, the calculation methods have always recognized that the diets (amounts of different kinds of food) of infants, children, and teens are different from those of adults (NRC 1977).

If the NRC determines that there is a need to revise its radiation protection regulations, it will initiate a rulemaking. The public has been given the opportunity to participate in the rulemaking

process that established the regulations that govern its review process. More information on NRC's roles and responsibilities is available on the NRC's Internet Web site at http://www.nrc.gov/what-we-do.html. No change was made to the EIS as a result of these comments.

Comment: When my family moved down here to Monroe County in the early '70's, it was to be in a place where my father had dreamed to have a small family farm, and be away from the city, and have his retirement doing the things he loved to do. I don't think he would have moved down here had he had any idea that the potential contamination which already possibly exists, but we don't know because it isn't monitored, of the beautiful, rich, fertile farmland in this area is being ignored for the potential economic benefits to many other portions of this county. Much has been mentioned here this evening of the deer, birds and animals and other wildlife in the property on and surrounding Fermi 2 and they habitat preservation efforts of DTE. I would like to ask a question, however, because this has been bothering me. I would like to know whether any of this wildlife has any monitoring equipment on them. Can anyone answer that?... If not, perhaps, if not we should. The deer and wildlife, many of the wildlife surrounding the Chernobyl area have been monitored, and they've been studied for many years now. And they're finding that that population of animals that has returned to that area are contaminated and they will never, ever, ever be able to leave. (**0039-30-3** [Rivera, Evelyn])

Comment: Numerous spills to groundwater and soil on Fermi 2 site (**0070-10** [Rivera, Ethyl])

Comment: The lack of reported monitoring on the many crops grown in the once-rich soils of Monroe County is noted with alarm. The deleterious impact of Fermi 1 and Fermi 2 are on the many farms and orchards and, ultimately, the food that is consumed by not only those in the County but beyond, is noticeably missing. (**0070-4** [Rivera, Ethyl])

Response: *Detroit Edison has implemented a REMP for the Fermi site since 1978. The REMP includes the collection and analysis of samples of air particulates, precipitation, crops, milk, soil, well water, surface water, fish, and silt as well as the measurement of ambient gamma radiation. Results of the REMP are summarized each year in the Annual Radiological Environmental Operating Report (Detroit Edison 2011b). NRC regulations do not explicitly require the monitoring of wildlife such as deer around nuclear power plants. However, the REMP's terrestrial and aquatic monitoring documents what levels of radioactivity exist in the surrounding environment and could be attributable to the local wildlife including deer. As presented in Section 7.8 of the EIS, the results of the REMP indicate that the levels of radiation and radioactive material in the environment around the Fermi site are generally not above or only a little above natural background levels. No changes were made to the EIS as a result of these comments.*

Comment: Atomic Radiation is More Harmful to Women

A woman is at significantly greater risk of suffering and dying from radiation-induced cancer than a man who gets the same dose of ionizing radiation. This is news because data in the report on the biological effects of ionizing radiation published in 2006 by the National Academy of Sciences (NAS) [Biological Effects of Ionizing Radiation (BEIR) VII, Phase 2 report, "Health Risks from Exposure to Low Levels of Ionizing Radiation," published by the National Academy Press in 2006, Washington, DC.] has been under-reported. It is more often acknowledged that children are at higher risk of disease and death from radiation, but it is rarely pointed out that the regulation of radiation and nuclear activity (worldwide) ignores the disproportionately greater harm to both women and children. [The background for some recommendations include calculations of the different radiation effects on women and children but the final, "allowable" doses to the public do not incorporate this information.]

The goal of this briefing paper is to help the lay reader understand the data on radiation impacts to women presented in the NAS radiation report. Other researchers indicate that the effects may be even greater than the NAS findings.[ECRR European Committee on Radiation Risk reports 2003 and 2010 http://www.euradcom.org/2011/ecrr2010.pdf ; Independent researchers include the towering giants, Dr John Gofman, Dr Rosalie Bertell, Dr Alice Stewart and Dr Steven Wing in the United States and an even larger circle in Europe and Russia.] This is because the NAS report covers only radiation doses that are from sources outside the body (gamma and X-rays)--leaving out doses from radioactivity taken inside the body. These internal effects result from contamination inhaled in air, and ingested food and water and confirm that the overall assessment by the NAS is not complete.

Nonetheless, the NAS report is stunning enough: it finds that harm to women (cancer) is 50% higher than the comparable harm to men from radiation doses that fall within the legal limit to the public over a lifetime. Let's be clear: radiation kills men--but it kills significantly more women. Both cancer incidence and death are 50% higher for women. Non-cancer health impacts were not included in the analysis. (**0049-1** [D'Arrigo, Diane])

Comment: NAS also looked at a second group receiving annual radiation dose levels that were ten times higher than the first group (still under the legal limits for a nuclear worker) during ages 18 - 65, as might occur from occupational exposures or adults living in contaminated zones like parts of Japan, Ukraine, Belarus, Russia, Scotland, Australia, Kazakhstan, Mongolia, U.S. (and other contaminated zones). The reported incidence of cancer in women in this group is also 50% higher when compared to men who got the same dose level. Women in this group were 40% more likely to die of their cancer than men in this group. The overall cancer rate (both incidence and mortality for both men and women) is higher in this more highly exposed group. For more details on this data [[See Note 1] Table 12D-3 on page 312 of the BEIR VII report called "Lifetime Attributable Risk of Solid Cancer Incidence and Mortality." The original is available on-line from the National Academy press at: http://www.nap.edu/openbook.php?record_id=11340&page=312] see "An Explanation" section below.

The fact that this information has not been widely reported has deprived women of our right to know about this threat and protect ourselves from this harm. In addition to the “right to know,” women have the right to protection. The U.S. Constitution guarantees “equal protection under the law.” International “allowable” radiation levels do not reflect disproportionate harm to women or the extent to which they say they do, they are not protective. In the U.S. it may be necessary to depart from the international radiation regime in order to deliver constitutional rights to the more than 150 million females in the United States. Further, this situation violates the Right to Free Prior and Informed Consent as recognized throughout the UN Declaration on the Rights of Indigenous Peoples and other international human rights instruments, norms and standards; [United Nations Declaration on the Rights of Indigenous Peoples Adopted by General Assembly Resolution 61/295 on 13 September 2007, posted on-line at: http://www.un.org/esa/socdev/unpfii/en/drip.html] particularly Article 19: States shall consult and cooperate in good faith with the indigenous peoples concerned through their own representative institutions in order to obtain their free, prior and informed consent before adopting and implementing legislative or administrative measures that may affect them. To our knowledge, no women, indigenous or otherwise, have given “informed consent” to a striking lack of protection from ionizing radiation. (**0049-2** [D’Arrigo, Diane])

Comment: No Safe Dose

It is vital to keep in mind that there is no “safe” dose of radiation to anyone of either gender, or any age. [All the BEIR reports of the National Academy of Science affirm this finding. The Environmental Protection Agency states in the Safe Drinking Water Standards that there is no safe concentration of any radioactive material. The radiation standards of the US Nuclear Regulatory Commission are also based on the “linear no threshold” model which states that in order to have zero risk, there must be zero dose.] This is because any radioactive emission has the potential to cause damage that over time becomes cancer. Cancer is harm--and many cancers have the potential to be lethal. The cells of our bodies have repair mechanisms that in some cases can reverse the damage caused by radiation--but the amount of exposure, type of exposure (internal, external), timing of exposure and presence of other carcinogens and stressors impact this function. There is evidence that individual bodies vary in capacity to carry out correct repair. It is not clear if there is a gender difference in the repair mechanism, but the NAS findings underscore that should be investigated. (**0049-4** [D’Arrigo, Diane])

Comment: Not Only Cancer

Radiation harm includes not only cancer and leukemia, but reduced immunity and also reduced fertility, increases in other diseases including heart disease, birth defects including heart defects, other mutations (both heritable and not). When damage is catastrophic to a developing embryo spontaneous abortion or miscarriage of a pregnancy may result.[Non-cancer health effects are documented in classic works of John Gofman, for instance Radiation and Human Health (Random House 1982) and digital documents available: http://www.ratical.org/radiation/

overviews.html#CNR and Dr. Rosalie Bertell's classic work "No Immediate Danger" Summer Town Books, 1986.] (**0049-5** [D'Arrigo, Diane])

Comment: Precaution

It is not clear whether further research is being done to unravel the basis for disproportionate radiation impacts on women; however, the Principle of Precaution dictates that we protect first, study second. Increased harm to women is not fully understood but it is known that reproductive tissue is more sensitive to radiation damage, and females have a larger mass of reproductive tissues than males. There are multiple, complex factors that make reproductive tissue unique, and also multiple, complex modes of radiological damage. The Principle of Precaution dictates that protective action must be taken once a potential (in this case actual and ongoing) harm is identified. Research may follow, but precaution dictates that protective action not be postponed pending future research results. (**0049-6** [D'Arrigo, Diane])

Comment: Radiation is a Priveleged Pollutant

The world's radiation standards were originally developed to allow exposure rather than to prevent it. This makes sense given the historical context: the need for such regulation arose in the early 20th Century when exposure to human-concentrated or human-generated radioactivity was rare. The Manhattan Project, the all-out national effort to develop the first atomic bombs, was one of the original "drivers" pushing the development of "permissible" radiation exposure levels. It is also the origin of assuming the individual receiving a radiation dose is a male--a Manhattan Project worker. With the advent of nuclear energy and the facilities that produce nuclear fuel and handle waste, these standards have become even more generalized to a larger and larger public. The current limits for most industrial radiation in the U.S. allow fatal cancer among members of the general public at a rate that is between 300--3000 times higher than the legal rate of harm from most other industrial hazards.

A hazardous industry has traditionally been defined as one that causes cancer in one individual in a million. The Environmental Protection Agency's goals for clean-up of contamination on industrial Super Fund sites is a risk of one in a million exposed getting cancer, with exceptions down to 1 cancer in 10,000 people exposed. The U.S. Nuclear Regulatory Commission now "allows" radiation levels to the general public that it projects would result in 1 fatal cancer in every 286 people (well, actually, adult men) exposed over a lifetime.[See the Expanded Policy Statement on Below Regulatory Concern of the US Nuclear Regulatory Commission published in the Federal Register in 1990.] However, this is "apples" compared to "oranges." EPA regulations reference cancer incidence. NRC references deaths; if non-fatal cancers were included by NRC, the comparison would be even "worse." We are less protected by NRC radiation standards than the regulation of other toxic hazards by EPA. The NRC limit of 100 millirems a year is comparable to the NAS 100 millirad study level. NRC"s risk assessment of 1 fatal cancer in every 286 exposed does not reflect the NAS findings that radiation at this

level to women results in 1 fatal cancer in every 201 women. The NRC equation underestimates the risk to women by nearly 40%. Since NRC does not differentiate between men and women in its regulations, it does not regulate to specifically protect women. Thus women are not equally protected where such standards are in place. Since 1992 there has been further relaxation of regulations: the amount of radioactivity legally released to the environment under NRC regulations has gone up, however the stated dose of radiation from those revised levels remains unchanged. This paradox is contrary to NRC's own principle that there is no safe level of radiation, which should dictate tightening, not the reverse. Following is a more detailed presentation and deconstruction of the NAS report, additional commentary and a brief history of the regulation of radiation. (**0049-7** [D'Arrigo, Diane])

Comment: An Explanation of NAS BEIR VII-Table 12D-3

The balance of this paper will unfold the analysis of radiation"s impact on women found in the U.S. National Academy of Sciences Biological Effects of Ionizing Radiation (BEIR) VII, Phase 2 report, Health Risks from Exposure to Low Levels of Ionizing Radiation, published by the National Academy Press in 2006.

Following is selected information from: Table 12D-3 on page 312 of the BEIR VII report called Lifetime Attributable Risk of Solid Cancer Incidence and Mortality.[The original is available on-line from the National Academy press at: http://www.nap.edu/openbook.php?record_id=11340&page=312] Units: Rads are a statement of the amount of radiation and assumes, as NAS states, only radiation from external sources (X-rays, gamma rays). A millirad (mrad) is 1/1000 of a rad. The table reports the impacts of 100 mrad per year over a lifetime AND also 1 rad a year from age 18 - 64 (these are doses in addition to natural background radiation exposures). The cancer rates are per 100,000 people exposed. The 100 mrad level corresponds to the U.S. Nuclear Regulatory Commission"s overall goal for members of the public (100 millirem a year). The higher 1 rad a year is in the range of occupational levels of radiation exposure (the US limit for workers is 5 times higher, 5 rems). From BEIR VII, Table 12D-3 Lifetime exposure to 100 mrad: MALES - all cancers: incidence = 621 in 100,000; this is the same as 1 in 161 (numbers simplified by this author) and deaths = 332 in 100,000; this is the same as 1 in 302 FEMALES - all cancers: incidence = 1019 in 100,000; this is the same as 1 in 98 This cancer rate in females is 60% higher compared to the rate in males reported above and deaths = 497 in 100,000; this is the same as 1 in 201 This cancer death rate in females is 50% higher than the cancer death rate in males reported above.

From U.S. Nuclear Regulatory Commission [In 1990 the NRC published the Expanded Below Regulatory Concern policy, in which its assessment of risk from radiation was published. The NRC reports that in its view, 100 millirems a year for a lifetime results in 3.5 fatal cancers per 1000 people exposed--or 1 in 286 (with no designation of gender/age).]: No differentiation for males v females, 70 year (lifetime) at 100 mrems/year (comparable to mrads if only consider external radiation) NRC states: 3.5 fatal cancers in every 1000 exposed; this is the same as

350 fatal cancers per 100,000 (to compare to the BEIR VII) and also the same as 1 fatal cancer in 286 people so exposed. (incidence is not reported) The NRC generic assignment of risk of fatal cancer to both genders is a 42% under-report for women compared to the cancer death rate for females in the NAS findings above. BEIR VII -- Annual exposure to 1 rad, for ages 18 " 64 [note: this radiation exposure is 10 times higher per year than the group above, but still only 1/5 of what nuclear workers can legally be exposed to per year] MALES " all cancers: incidence = 3059 in 100,000; this is the same as 1 in 33 and deaths = 1700 in 100,000; this is the same as 1 in 59 FEMALES " all cancers: incidence = 4295 in 100,000; this is the same as 1 in 23 This cancer rate is 40% higher than the cancer rate in males reported above and deaths = 2389 in 100,000; this is the same as 1 in 42 This cancer death rate is 40% higher than the cancer death rate in males reported above. (**0049-8** [D'Arrigo, Diane])

Response: *Based on the reading of studies such as the BEIR VII report, the commenter questioned whether the NRC staff's assessment of the impact of radiation dose from the proposed Fermi 3 accounts for differences in dose impacts on the young, elderly, and women. The dose standards were set conservatively by NRC based on the conclusions and recommendations of numerous national and international expert panels in part to account for the potential uncertainties noted by the commenter. These dose standards are based on the linear, no-threshold dose-response model described in the BEIR VII report. The BEIR VII report does not say that there is no safe level of exposure to radiation; it does not address "safe versus not safe." It does continue to support the conclusion that there is some amount of cancer risk associated with any amount of radiation exposure and the risk increases with exposure and exposure rate. It does conclude that the risk of cancer induction at the dose levels in the NRC's and EPA's radiation standards is very small. As reported to the Commission in SECY-05-0202, the staff stated "that the findings presented in the National Academies BEIR VII report contribute to our understanding of the health risks from exposure to ionizing radiation. The major conclusion is that current scientific evidence is consistent with the hypothesis that there is a linear, no-threshold dose response relationship between exposure to ionizing radiation and the development of cancer in humans. This conclusion is consistent with the system of radiological protection that the NRC uses to develop its regulations. Therefore, the NRC regulations continue to be adequately protective of the public health and safety and the environment. Consequently, none of the findings in the BEIR VII report warrant initiating any immediate change to NRC regulations or Federal guidance" (NRC 2005). In addition, the BEIR Committee maintains that other health effects, such as heart disease and stroke, occur at high radiation doses but that additional data must be gathered before an assessment of any possible dose response connection can be made between low doses of radiation and non-cancer health effects.*

The NRC has based its dose limits and dose calculations on a descriptive model of the human body referred to as "standard man." However, the NRC has always recognized that dose limits and calculations based on "standard man" must be informed and adjusted in some cases for

factors such as age. For example, the NRC has different occupational dose limits for declared pregnant women, because the rapidly developing human fetus is more radiosensitive than an adult woman. NRC dose limits are also much lower for members of the public, including children and elderly people, than for adults who receive radiation exposure as part of their occupation. Finally, NRC dose calculation methods have always included age-specific dose factors for each radionuclide, because they may be used differently by infant, child, and teen bodies, which are also generally smaller than adult bodies. In addition, the calculation methods have always recognized that the diets (amounts of different kinds of food) of infants, children, and teens are different from those of adults (NRC 1977).

Comment: Adding in Background Radiation

Federal agencies have repeatedly altered their assessments of how much "background" radiation people in the U.S. get on an annual basis.[In 1990 the NRC published the Expanded Below Regulatory Concern policy, in which its assessment of risk from radiation was published. The NRC reports that in its view, 100 millirems a year for a lifetime results in 3.5 fatal cancers per 1000 people exposed--or 1 in 286 (with no designation of gender/age).] "Natural background" radiation refers to that received from terrestrial sources (primarily uranium and its decay progeny in rocks and earth) and non-terrestrial sources. The reported levels have stayed relatively constant at 80-100 millirems a year on average depending on elevation.[NRC currently states that about 15% of the 620 millirems or 93 millirems come from naturally occurring minerals on earth combined with cosmic rays. See: http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/bio-effects-radiation.html] For purposes of this discussion, where only low-LET radiation from external sources is considered, a millirem and a millirad are effectively interchangeable. "natural radiation" results in "natural cancer."

Everything on Earth gets exposed to radiation; this "background" exposure is not uniform--so averages are used, but are not necessarily accurate. When radiation hits living tissue there is always the potential for damage that may lead to disease. This "natural" ionizing radiation is from cosmic rays from deep space, from the sun, from meteors, from elements that are part of Earth's crust and core that are taken up in the food chain, dissolved by water or spewed by volcanoes and spread by dust storms. At 100 millirems a year over a lifetime, this natural background radiation exposure is comparable to the 100 mrads that the NAS looked at. Background radiation is however, an additional dose. When doing research, it is assumed that the "control group" and the "study group" both get the same background radiation dose; therefore the "study group" who got the 100 mRad a year were in actuality receiving, on average, 200 mRad a year total radiation dose.

All radiation exposures from radioactivity that is released into our air and water from industrial energy production, military activities and all the accident sources are over and above the naturally occurring background radiation that comes with living on this planet. Thus, the NRC's legal dose of 100 mr/yr is on top of background, and constitutes a doubling (on average) of both the dose of radiation and risk of health consequences from radiation to the public.

Adding to the background dose does not change the rate of risk â€" but as dose goes up, so does harm. The dose/response (harm) relationship assumed by NAS (and NRC) is linear. When the dose doubles, so does the harm. Interpretation of the NAS data which reports both cancer incidence and cancer fatalities at two dose levels again opens the doors to many "apples vs oranges" vs "peaches and grapes" since it is not possible to completely factor the issues between a cancer which results in death and one which is survived. In addition, the linear model has been challenged by later, independent researchers who suggest, as the NAS data supports, a higher level of harm at the lower levels of radiation exposure.[ee Gofman, John, 1990. Low-Dose Radiation, an Independent Analysis. CNR Books, Berkeley, CA] (**0049-9** [D'Arrigo, Diane])

Response: *Table 6-2 of the EIS lists the annual average dose received by an individual from all sources of radiation including background radiation. The annual average dose received from nuclear fuel cycle operations is a very small percentage (approximately 0.1 percent) of the total background radiation. As part of NRC requirements for operating a nuclear power plant, licensees must (1) keep releases of radioactive material to unrestricted areas during normal operations as low as reasonably achievable and (2) comply with radiation dose limits for the public. In addition, NRC regulations require licensees to have various effluent and environmental monitoring programs in place to ensure that the impacts from plant operations are minimized. The dose limit for the public from operation of a reactor is 100 mrem (total effective dose equivalent) annually, as specified in 10 CFR 20.1301. The licensee must also comply with EPA's environmental radiation standards in 40 CFR Part 190, which are 25 mrem annually to the whole body, 75 mrem annually to the thyroid, and 25 mrem annually to any other organ. Moreover, licensees must meet multiple design objectives. Appendix I of 10 CFR Part 50 provides design objectives for new reactor designs to meet the ALARA philosophy for radioactive material in reactor effluents. The design objective for estimated annual air dose to an individual in an unrestricted area from gaseous effluents is 10 millirad for gamma radiation or 20 millirad for beta radiation. The design objective for estimated annual dose to an individual from liquid effluents is 3 mrem to the total body or 10 mrem to any organ. The licensees identify the maximally exposed organ to meet the 10 CFR Part 50 design objectives and demonstrate compliance with EPA's environmental standards in 40 CFR Part 190. At the Fermi site, the estimated dose to a maximally exposed member of the public is less than 10 mrem per year. No changes were made to the EIS as a result of this comment.*

Comment: Internal Exposure

Radiation from radioactivity taken inside the body via inhalation, absorption and ingestion is substantially different than external exposure. The NAS work explicitly does not consider any internal dose. The survivors of the Atomic bombings of Hiroshima and Nagasaki are often cited (incorrectly) as basis for 20th Century regulation of radioactivity, are also not representative of the type of radiation most people today suffer. This group was primarily exposed to an intense flash of external radiation. It is nuclear accidents like the meltdown of Three Mile Island [Wing, Steven, et al 1997."A Reevaluation of Cancer Incidence Near Three Mile Island: The Collision of Evidence and Assumptions." Environmental Health Perspectives, page 52 - 57, Vol 105, No 1 January 1997. This study showed that people were harmed by radiation released during the core melt at Three Mile Island and that previous publications failed to have a strong scientific basis.], the explosion of Chernobyl [There is a large body of web-posted information about the Chernobyl accident, see for instance: http://www.nirs.org/c20/c20us.htm. Maps of the deposition of contamination have been produced by several sources. A recent animation of the cesium release is available (caution this is a LARGE file): http://zerodegreeburn.com/chernobyl/film_nuage_web.swf] and now the explosions and meltdowns of Fukushima where food, air and water have become substantially contaminated and internal exposures result.

Many radioactive elements emit particles (alpha, beta, neutrons) that are called high-LET because they are traveling with a force which, combined with its greater mass may inflict greater damage to living tissue than an X-ray. Lab studies show that an alpha particle may cause as much as 1000 times greater damage to a cell than an X-ray [Many radiation research papers are cited in "No Such Thing as a Safe Dose of Radiation" posted: http://www.nirs.org/factsheets/nosafedose.pdf . See footnote 8 as well as additional reference section.]. Internalized radiation also results in higher doses since every internal emission absorbed, at zero distance to the impacted tissues, will cause radiation impact for as long as it is in the body, and may concentrate in the most vulnerable areas, such as gonads or bone marrow.

The image (left) of tissue damaged by alpha particles originating from a plutonium particle embedded in the lung of an ape is from a photograph by Robert Del Tredici. (Photo used by permission)

When alpha and beta particle exposures from radioactive substances that have found their way inside the body are included the overall risk factors may or may not change [Dr John Gofman did a meticulous reanalysis of the data from the survivors of Hiroshima and Nagasaki nuclear attacks. Gofman found that the assumption of a straight-line dose response may not be accurate at the low end of the graph--in other words, low doses per unit of exposure are MORE harmful than higher ones. In fact the NAS findings do not dispute this insofar as the higher dose group has a slightly lower risk of fatal cancer than the lower dose group. Gofman"s work was published: Radiation-Induced Cancer from Low-Dose Exposure: An Independent Analysis. Committee for Nuclear Responsibility, Inc. 1990:18-16, 18-18. Isbn 0-932682-89-8.], but the

assessment of the radiation dose itself does change. The European Committee on Radiation Risk report of 2003 [The Executive Summary of the ECRR report is posted: http://www.euradcom.org/2003/execsumm.htm] discusses this in detail. This explication is based on the NAS which explicitly does not include doses from internal sources. (**0049-11** [D'Arrigo, Diane])

Response: *Radiation is only one of many agents with the potential for causing cancer, and cancer caused by radiation cannot be distinguished from cancer attributable to any other cause, such as chemical carcinogens or other stressors in the environment. The chances of getting cancer from a low dose of radiation are not known precisely, because the few effects that may occur cannot be distinguished from normally occurring cancers. The normal chance of dying from cancer is about one in five. Synergism between the effects of exposure to radiation and chemicals is not well understood. However, comparing the small amount of radiation exposure a maximally exposed member of the public receives from nuclear power plants (generally less than 10 mrem/yr) with the amount of natural background radiation (about 311 mrem/yr) an average member of the public in the United States receives, any synergistic effects introduced by the radiation emitted from nuclear power plants would be indistinguishable from the synergistic effects caused by the natural background radiation. There are many difficulties involved in designing research studies that can accurately measure the projected small increases in cancer cases that might be caused by low exposures to radiation versus the rate of cancer resulting from all other causes.*

The NRC conservatively assumes that any amount of radiation may pose some risk for causing cancer or having some hereditary effect and that the risk is higher for higher radiation exposures. This is called a linear, no-threshold dose-response model and is used to describe the relationship between radiation dose and the occurrence of cancer. This model suggests that any increase in dose above background levels, no matter how small, results in an incremental increase in risk above existing levels of risk. The associations between radiation exposure and the development of cancer are mostly based on studies of populations exposed to relatively high levels of ionizing radiation (for instance, the Japanese atomic bomb survivors and the recipients of selected diagnostic or therapeutic medical procedures).

Although radiation can cause cancers at high doses and high dose rates, currently there are no data to establish unequivocally the occurrence of cancer following exposures to doses less than about 10 rem. At the Fermi site, the estimated dose to a member of the public is less than 10 mrem per year. This is compared to the 10 rem (10,000 millirem) dose discussed previously. At doses higher than 10 rem, a relationship between radiation and cancer can be observed. Although there is a statistical chance that radiation levels that small (i.e., less than 10 rem) could result in a cancer, it has not been possible to calculate with any certainty the probability of cancer induction from a dose this small. Because many agents cause cancer, it is often not possible to say conclusively whether the cancer was radiation-induced cancer. A number of

studies have been performed to examine the health effects around nuclear power facilities. In 1990, at the request of Congress, the NCI conducted a study (NCI 1990). On April 7, 2010, the NRC announced that it asked the NAS to perform a state-of-the-art study on cancer risk for populations surrounding nuclear power facilities (ADAMS Accession No. ML100970142). The NAS has a broad range of medical and scientific experts who can provide the best available analysis of the complex issues involved in discussing cancer risk and commercial nuclear power plants. More information on its methods for performing studies is available at http://www.nationalacademies.org/studycommitteprocess.pdf. The NAS study will update the 1990 U.S. National Institutes of Health National Cancer Institute (NCI) report, Cancer in Populations Living near Nuclear Facilities (NCI 1990). The study's objectives are to (1) evaluate whether cancer risk is different for populations living near nuclear power facilities; (2) include cancer occurrence; (3) develop an approach to assess cancer risk in geographic areas that are smaller than the county level; and (4) evaluate the study results in the context of offsite doses from normal reactor operations. Phase I of the NAS study report was published on March 29, 2012 and is available on the NAS Web site (http://www.nap.edu). No changes were made to EIS as a result of this comment.

Comment: The DEIS Fermi 3 fails to describe and quantify its biological impact upon humans and all other life forms. This failure is primarily the result of a huge public relations and lobbying effort by the nuclear industry and its surrogates in the radiological establishment and by the mainstream media. (**0056-5** [Ehrle, Lynn Howard])

Response: *The effects on human health and nonhuman biota from normal operations of the proposed Fermi 3 were discussed in Sections 5.8 and 5.9 of the EIS. The radiological consequences on the environment from potential accidents were discussed in Section 5.11 of the EIS. No changes were made to EIS as a result of this comment.*

Comment: The NRC is not regulating: Leak First, Fix Later
Uncontrolled and Unmonitored Radioactive Releases from Nuclear Power Plants
A Beyond Nuclear Report, Paul Gunter, Director, Reactor Oversight Project
April 2010

EXECUTIVE SUMMARY
The highly-publicized leaks of radioactive hydrogen "or tritium" from buried pipes at the Braidwood, Oyster Creek and Vermont Yankee nuclear power plants have drawn attention to a more widespread and longstanding problem analyzed by a new report from Beyond Nuclear. Leak First, Fix Later: Uncontrolled and Unmonitored Radioactive Releases from Nuclear Power Plants finds leaking U.S. reactors are now ubiquitous. There is evidence of 15 radioactive leaks from March 2009 through April 16, 2010 from buried pipe systems at 13 different reactor sites. At least 102 reactor units are now documented to have had recurring radioactive leaks into groundwater from 1963 through February 2009.

The report finds that the federal regulator " the U.S. Nuclear Regulatory Commission (NRC) " has replaced its own oversight responsibilities in favor of industry self-regulation. Instead of mandating compliance with established license requirements for the control and monitoring of buried pipe systems carrying radioactive effluent, the NRC cedes responsibility to industry voluntary initiatives that will add years onto the resolution of a decades-old environmental and public health issue. Of further concern, the agency and the industry continue to downplay and trivialize the health risks of prolonged exposure to tritium which is shown to cause cancer, genetic mutations and birth defects.

The delinquency of the NRC is made more alarming by the fact that the nuclear industry has deliberately misrepresented the truth about its leaking reactors to state governments, most dramatically in Illinois and Vermont. Given the history of untrustworthiness of the nuclear industry, it is even more important to have a vigilant and responsible regulator. The report found this not to be the case with the NRC and its oversight of increasing leaky reactors. The report examines radioactive leaks in Illinois, New Jersey, Michigan, New York and Vermont that illuminate concerns over continuing groundwater contamination, the accelerating deterioration of buried pipes, the lack of integrity of industry's reporting of leaks and pipes and the questionable replacement of federal oversight and enforcement with industry "voluntary initiatives."

".....Braidwood nuclear power station (IL) had 22 recurring uncontrolled radioactive spills from unmaintained vacuum breaker valves on the same buried pipeline that went undisclosed from 1996 to December 2005 including two releases totaling six million gallons of tritiated water. The Braidwood operators allowed millions of gallons of radioactive water contaminated with tritium to soak into groundwater along the four and a half-mile long pipe and to run off site into the neighboring community of Godley Park Township where 600 people have been supplied with bottled water provided by Exelon for more than four years. The city of Wilmington takes in its drinking water from the Kankakee River just two and a half miles from the same Braidwood discharge pipe. Oyster Creek nuclear power plant (NJ) disclosed radioactive water leaking from buried pipes just seven days after the NRC awarded the oldest reactor in the US a 20-year license renewal. The leaking buried pipes had been falsely documented in company work orders. Management decisions made in the1990s to close Oyster Creek cancelled numerous corrective actions for buried pipes carrying radioactive water. When the reactor was instead sold, many of the work orders were never resumed. The unmanaged deterioration of aging systems sounds an alarm about the thoroughness and adequacy of the NRC license extension review process. Vermont Yankee nuclear power station (VT) is seeking a 20-year license extension. (**0026-6-37** [Macks, Vic])

Comment: p. 7-39 ... As described in Section 2.11, sporadic and variable trace quantities of tritium were detected in a few shallow groundwater wells downwind from the Fermi 2 stack as a result of the recapturing of tritium in precipitation from the plant"s gaseous effluent.

And we should overlook that? The health effects are unknown, right? But it was just a "few" wells...(**0034-5-3** [Welke, Jim])

Comment: Large-scale accidental tritium leaks into groundwater in Illinois, that had been covered up for a decade by the nuclear utility and state environmental agency, were uncovered in early 2006 by a concerned mother whose daughter had contracted brain cancer at age 7. A cluster of rare childhood brain cancers were then documented in the community of Morris, Illinois, home to three atomic reactors and a high-level radioactive waste storage facility. The scandal led to the revelation of widespread accidental tritium releases nationwide at almost all atomic reactors. (**0058-6** [Kamps, Kevin])

Comment: In the opinion of Dr. Helen Caldicott, the U.S. government is failing to protect the public from radioactive contamination from nuclear plants. Is this true? According to the NRC, there have been hundreds of thousands of incidents" reported from plants across the country. At present, a majority have buried pipes which are leaking tritium. Among people living in areas with tritium contamination, the chronic exposure can cause serious health effects. Young people in Monroe suffer higher rates of cancer than young people in the rest of Michigan or in the U.S. at large. Tritium can produce cancer, mutations, tumors and cell death. No economically feasible technology exists that can remove tritium from a reactor's waste water or steam releases to the air. Every nuclear reactor releases tritium during routine operation. What effects does tritium have on the flora and fauna in the Lake Erie Watershed? Eating food contaminated with tritium can be more damaging than drinking tritium in water, because when bound in animal or plant tissue, tritium can stay in the body 10 years or longer. (**0082-2** [Sontag, Cady])

Response: *Although NRC regulations require licensees to make surveys, as necessary, to evaluate the potential hazard of radioactive material released in order to assess doses to members of the public and workers, recent discoveries of releases at other plants indicate that undetected leakage to groundwater from facility structures, systems, or components can occur, resulting in unmonitored and unassessed exposure pathways to members of the public. The NRC has identified several instances of unintended tritium releases, and all available information shows no threat to the public. Nonetheless, the NRC is inspecting each of these events to identify the cause, verify the impact on public health and safety, and review licensee plans to remediate the event.*

The NRC also established a "lessons learned" task force to address inadvertent, unmonitored liquid radioactive releases from U.S. commercial nuclear power plants. This task force reviewed previous incidents to identify lessons learned from these events and determine what, if any, changes are needed to the regulatory program. The task force identified lessons learned from these events and recommended changes in the agency's regulatory program, publishing its findings September 1, 2006, as the Liquid Radioactive Release Lessons-Learned Task Force Final Report *(NRC 2006). The task force produced 26 recommendations that apply to the NRC,*

nuclear power plant operators, or both. For instance, the task force recommended updating NRC regulations on monitoring radioactive releases and the environment in and around a plant, to take into account state-of-the-art technology and practices. The task force also recommended that nuclear power plant operators work with local and State agencies to voluntarily report information on radioactive liquid releases that otherwise fall below NRC reporting requirements.

The NRC revised its inspection procedures for nuclear power plants to evaluate licensees' programs to inspect and assess the equipment and structures that have the potential to leak. The NRC also placed additional emphasis on evaluating the licensees' abilities to analyze for additional discharge pathways, such as groundwater, as a result of a spill or leak. Each of the NRC program offices (e.g., Nuclear Reactor Regulation) is considering the recommendations relevant to their mission. The task force's detailed information and updates on these liquid releases can be found on the NRC public Web site at http://www.nrc.gov/reactors/operating/ops-experience/grndwtr-contam-tritium.htm. No changes to the EIS were made as a result of these comments.

Comment: "DE estimated the collective total body dose within a 50-mile radius of the Fermi 3 site to be 14.9 person-rem from liquid effluents and 6.7 person-rem/yr from gaseous effluents." (v 1, p 5.112) Is that calculations based on an average assuming people closer to the reactor get a larger dose and farther away get less? (**0016-4-11** [Collins, Jessie])

Response: *Section 5.9 of the EIS discusses radiological impacts to members of the public. There are design standards and regulatory dose limits for radioactive emissions; these are shown for comparison in the tables in that section. The concept and the method of estimating population dose risk are described in Section 5.9.3.2 and Appendix G. The population dose from gaseous and liquid effluent pathways was estimated by using the GASPAR II and LADTAP II computer codes, respectively. The parameters used in dose estimation are provided in Appendix G. The evaluation of population dose is dependent on site-specific conditions such as meteorology, water pathway location and usage, land usage, population density and distribution, and other factors. No changes have been made to the EIS as a result of this comment.*

Comment: Fukushima's radioactivity has been detected in fruits, vegetables and milk in the United States. (**0040-26-7** [Johnston, Mary])

Response: *Given the great distances between Fukushima and the United States and the large amount of dilution and dispersion that would occur over this distance, only a trace amount of radioactivity was detected in the United States from this event. Based on past experience, it is expected that the Fukushima Dai-ichi accident would result in little to no impact on human health (NRC 2011a). No changes were made in the EIS as a result of this comment.*

Comment: Contention 24: The public health effects and impacts from routine, licensed radiological emissions in air and water from the proposed Fermi 3 have been inadequately assessed, analyzed and disclosed in the Draft Environmental Impact Statement, in violation of NEPA. About a quarter mile downstream of the Fermi 3 the cooling water intake and discharge pipe facilities planned for construction are two public water supply intakes on Lake Erie: the Frenchtown Water Plant, which uses 8 million gallons per day (MGD), and the Monroe County Water Plant, which uses 7.5 MGD (Frenchtown Charter Township 2010; AWWA 2009). The impacts of these two water plants and the other projects listed in Table 7-1 of the DEIS are considered in the analysis in Sections 4.2 and 5.2 and would not be detectable or would be so minor that they would not affect surface water use. (**0077-6-8** [Lodge, Terry])

Response: *This comment is a contention submitted by the intervenors in the Fermi 3 licensing proceeding before the ASLB. The ASLB has rejected this contention, noting that it does not challenge the contents of the DEIS and a vast majority of the data has been available when the ER was submitted to the NRC. No changes to the EIS were made as a result of this comment.*

Comment: In its application process for a license to build a new reactor, Fermi 3, Detroit Edison estimates that the collective total body dose within a 50 mile radius of the Fermi 3 site to be 14.9 person-rem from liquid effluents and 6.7 person-rem from gaseous effluents. (p 5.112) So, I recognize that this means that collective dose is a measure of the total amount of effective dose multiplied by the size of the exposed population; and that there is then a net increase of 21.6 person-rem for all in the 50 mile radius. The NRC "concludes there would be no observable health impacts on the public from normal operation of Fermi 3, the health impacts would be SMALL, and additional mitigation is not warranted." In so doing, NRC dismisses the report of the National Academy of Sciences, Committee on the Biological Effects of Ionizing Radiation (BEIR) that all radiation including low level radiation can produce non-malignant illness and cancer as well as genetic mutations. The BEIR report defines low level radiation as near zero to 100 millisieverts (mSv).
http://www8.nationalacademies.org/onpinews/newsitem.aspx?RecordID=11340

The BEIR report was sponsored by the U.S. departments of Defense, Energy, and Homeland Security, the U.S. Nuclear Regulatory Commission, and the U.S. Environmental Protection Agency. The National Research Council is the principal operating arm of the National Academy of Sciences and the National Academy of Engineering. It is a private, nonprofit institution that provides science and technology advice under a congressional charter. Clearly, the NRC is a cheer leader for the nuclear power industry and not a spokesperson for public health.

The NRC goes on, "The estimated collective dose to the same population from natural background radiation is estimated to be 2,200,000 person-rem/yr. The dose from natural background radiation was calculated by multiplying the 50-mi population estimate for 2060 of approximately 7,710,000 people by the annual background dose rate of 311 mrem/yr." The statement of average background radiation (311 mrem/yr) is excessive and indicates the NRC

effort to trivialize additional reactor releases. The National Academy of Sciences, Committee on the Biological Effects of Ionizing Radiation states that the average background radiation is 3 mSv (millisieverts) per year. I recognize that Millirem and millisievert can be thought of as equivalent. Actually, I recognize that millirem measures the release amount. Millisievert measures the biological impact, variable on different parts of the body. I bear in mind that background radiation exposure varies from one region to another and is higher at higher elevations. This NRC statement does not indicate what effective dose is multiplied by what population to get the total of 21.6 person-rems designed Fermi 3 release. Why would the calculation for background radiation go out to the 2060 estimated population rather than use current population figures? Is that to make the background radiation appear to dwarf the proposed Fermi 3 release? This appears to be an average dosage. Left unsaid is that those closer to the reactor would be exposed to higher doses and that weather patterns may concentrate exposures anywhere within or beyond the 50 mile radius and that radiation does not stop at 50 miles. Also, the NRC does not take account of or address or comment or report on large releases of radionuclides from reactors during "normal" operation (beyond designed releases) or due to defective equipment, operator error, relative proximity to reactors or accidents. It does not address radioactive "hot spots", regions where high dose concentrations impact populations. We know and the NRC knows that these are real issues that occur at existing reactors in the U.S. and around the world. To imply that this cannot happen at Fermi 3 is not credible. (**0026-6-31** [Macks, Vic])

Response: *Based on a reading of the BEIR VII report, the commenter questioned whether the NRC staff's assessment of the impact of radiation dose from proposed Fermi 3 is adequate. The BEIR VII report does not say that there is no safe level of exposure to radiation; it does not address "safe versus not safe." It does continue to support the conclusion that there is some amount of cancer risk associated with any amount of radiation exposure and the risk increases with exposure and exposure rate. It does conclude that the risk of cancer induction at the dose levels in the NRC's and EPA's radiation standards is very small. Section 5.9.3.2 of the EIS included the estimated health risk and stated that the estimated collective whole body dose to the population was small and would most likely result in zero excess health effects. Both the National Council on Radiation Protection and Measurements (NCRP) and* International Commission on Radiological Protection *(ICRP) suggest that when the collective effective dose is smaller than the reciprocal of the relevant risk detriment (i.e., less than 1/0.00057, which is less than 1754 person-rem), the risk assessment should note that the most likely number of excess health effects is zero (NCRP 1995; ICRP 2007).*

The estimate for the population size within 50 mi of Fermi 3 in the year 2060 was used to calculate the collective whole body dose from Fermi 3 to the population. The same 50-mi population estimate was also used to estimate the collective background radiation dose to the population. The annual background dose rate of 311 mrem/yr used in the calculation was taken from the recent NCRP (2009) report. Both mSv and mrem are units that are used to measure

the biological impact of radiation dose (1 mSv = 100 mrem). Section 5.9.3 of the EIS discussed impacts on the members of the public. Environmental impacts of potential accidents were discussed in Section 5.11 of the EIS. As discussed in Sections 2.11 and 5.9.6 of the EIS, Detroit Edison has an established REMP for the Fermi site since 1978. The REMP includes the collection and analysis of samples of air particulates, precipitation, crops, milk, soil, well water, surface water, fish, and silt as well as the measurement of ambient gamma radiation. Results of the REMP are summarized each year in a radioactive effluent release report. The report includes the detailed monitoring results of plant releases (including any accidental releases) and estimated dose resulting from these releases at offsite locations. The results of the REMP indicate that the levels of radiation and radioactive material in the environment around the Fermi site are generally not above or only slightly above natural background levels. Section 5.9.3.2 of the EIS was revised in response to this comment.

Comment: Given Fermi 3's inevitable radiological and toxic releases, drinking water intakes from Lake Erie must be required to constantly monitor contaminants in order to adequately protect public health. NRC should address the synergistically harmful health impacts due to human exposures to radioactivity and toxic chemicals. (**0058-13** [Kamps, Kevin])

Response: *The NRC licensing process for nuclear power plants includes a thorough review of all the plant's radioactive, gaseous, liquid, and solid waste systems, components, and programs to ensure that radioactive material is safely controlled in accordance with NRC regulations. The licensing process evaluates the plant's ability to safely handle, store, monitor, and discharge radioactive effluents in accordance with NRC requirements. These requirements include safety limits on radiation dose to plant workers and members of the public. During operation of the plant, the NRC continuously inspects licensee performance through the use of resident inspectors stationed at each plant and the use of technical specialist inspectors from the NRC regional offices. If there is an abnormal situation at a plant, the resident inspector and regional specialists become involved to assess the licensee's response to the situation to ensure NRC requirements are met. As part of NRC requirements for operating a nuclear power plant, licensees must (1) keep releases of radioactive material to unrestricted areas during normal operation as low as reasonably achievable (as described in the Commission's regulations in 10 CFR 50.36a) and (2) comply with radiation dose limits for the public (10 CFR Part 20).*

In addition, NRC regulations require licensees to have various effluent and environmental monitoring programs to ensure that the impacts from plant operations are minimized. In annual reports, licensees identify the amount of liquid and airborne radioactive effluents discharged from plants and the associated doses. Licensees also must report environmental radioactivity levels around their plants annually. Sections 2.5 and 5.9.6 of the EIS describe the ongoing REMP that has been conducted at the Fermi site since 1978. Representative drinking water samples from automatic samplers at Monroe water station are collected monthly and analyzed for radioactivity. Results of the REMP are summarized each year in the Annual Environmental

Radiological Operating Report. Effluent releases are summarized annually in an annual radioactive effluent release report. Each site must monitor gaseous and liquid effluents in real time. Effluent monitors will alarm if routine release levels are exceeded.

Radiation is only one of many agents with the potential for causing cancer, and cancer caused by radiation cannot be distinguished from cancer attributable to any other cause, such as chemical carcinogens or other stressors in the environment. The chances of getting cancer from a low dose of radiation are not known precisely, because the few effects that may occur cannot be distinguished from normally occurring cancers. The normal chance of dying from cancer is about one in five. Synergism between the effects of exposure to radiation and chemicals is not well understood. However, comparing the small amount of radiation exposure a maximally exposed member of the public receives from nuclear power plants (generally less than 10 mrem/yr) with the amount of natural background radiation (about 311 mrem/yr) that an average member of the public in the United States receives, any synergistic effects introduced by the radiation emitted from nuclear power plants would indistinguishable from the synergistic effects caused by the natural background radiation. No changes were made to the EIS as a result of this comment.

Comment: Based on conversations held between members of the EPA review team and NRC staff on December 6th, 15th, and 21st, 2011, we understand the following: The classification of construction workers as members of the public pertains to radiation dose limits only. Construction workers are protected under a more stringent NRC annual limit of 100 rnillirem (mrem), as opposed to occupational workers who are protected under the NRC annual limit of 5 rem. Construction workers are still protected by the Occupational Safety and Health Administration (OSHA) for other types of occupational hazards; any onsite safety violations or concerns will be reported to OSHA via the onsite NRC inspectors. Further, the annual ambient limit of 100 mrem is an NRC regulatory limit for onsite members of the public, while the EPA limit is for members of the public offsite. This information should be included in the Final EIS.

- The dose limit used to estimate construction worker exposure is very conservative, as it included the design maximum as the upper limit; however, this is not the expected dose. This estimation includes exposures as a result of fuel outages.
- Construction workers and other onsite personnel (administrative, reclamation, etc.) who are not classified as occupational radiation workers will not wear radiation badges. Until the new fuel for the operation of Fermi 3 is brought onsite at the end of the construction stage, there will be limited potential for radiation exposure. Fermi 1 has been undergoing decommissioning for approximately 20 years and Fermi 2 has its own radiation monitoring plan. There are radiation monitors within the boundary of Fermi 2. The Applicant does not anticipate that there will be a radiation exceedance; therefore, radiation badges are not required on construction workers. (**0078-23** [Westlake, Kenneth A.])

Comment: EPA respectively disagrees with the Applicant's assertion that construction workers should be protected under the "members of the public" annual limit of I 00 mrem; we are also concerned with NRC's interpretation of 10 CFR Part 20. Based on an NRC Request for Additional Information (RAI) dated May 21, 2010 (ADAMS Access number: ML101450195; answers to question 5 and 6), we understand that this conclusion was reached based on a worst-case scenario estimate of total radiation doses from all onsite sources to construction workers, which is 96 mrem. Since this number is under NRC's members-of-the-public dose limit of 100 mrem, the Applicant and NRC opted to allow construction workers to be treated as members of the public. However, NRC's regulations at 10 CFR Part 20 indicate that individuals are excluded from being considered members of the public when they are "receiving an occupational dose" and an occupational dose means "the dose received by an individual in the course of employment in which the individual's assigned duties involve exposure to radiation or to radioactive material". These definitions suggest construction workers should be subject to occupational dose limits as opposed to limits that would apply to members of the public. As outlined above, EPA recognizes that construction workers will not be working in direct contact with radioactive material and that the 96 mrem is a conservative estimate; however, since they will be exposed to radiation just by being onsite, as pointed out in the Draft EIS, EPA believes that the construction workers are entitled to a higher protection class than onsite "members of the public." As occupational workers, the construction workers would be allowed a total effective dose limit of 5 rems per year, and would also fall under the licensed radiation protection program, further ensuring their health and safety.

Recommendation: EPA strongly encourages NRC and the Applicant to commit to a comprehensive radiation monitoring program that includes construction workers as occupational workers, affording them radiation monitoring (simple radiation badges) and health screening. At a minimum, ambient air quality monitoring should be performed at the construction site to ensure that the estimated dose limit of 96 mrem is an achievable limit. Onsite monitoring would not only validate that construction workers are working under the 100 mrem limit, but also provide valuable data for future nuclear power plant siting (i.e., situations where aging units are being decommissioned alongside either operating units or units under construction). Finally, the above clarifications (bullets under this heading) should be incorporated into the Final EIS, including NRC's views on where the radiation limit to members of the public of 100 rmem applies (e.g., within or beyond the facility boundaries). (**0078-24** [Westlake, Kenneth A.])

Comment: As outlined above, under Construction Impacts: Radiological Health, EPA disagrees with the conclusion that construction members should be treated as "members of the public." Based on information in Section 5.9 (Radiological Impacts of Normal Operations), the document indicates the maximally-exposed individual (MEI) is someone living offsite, but near, the Fermi facility. It is not clear why a person living near the facility, and not working directly on it, might be considered the MEI EPA recommends clarification of whether the assumptions made in the MEI analysis are actually for a maximally-exposed offsite individual (MEOSI).

Recommendation: EPA recommends that more information about MEI be included in the Final EIS, including the differences between MEI and MEOSI and whether construction workers fall into either category. If they do not, this should also be explained. The Final EIS should explain which models and assumptions were used to make determinations of MEI or MEOSI, and the relative degree of conservatism that was used to keep exposures as low as reasonable achievable (ALARA). (**0078-28** [Westlake, Kenneth A.])

Response: *The maximum estimated annual dose to a construction worker was a bounding estimate that included four components: direct radiation exposure from existing sources, direct radiation exposure from the ISFSI, exposure from gaseous effluents, and exposure from decommissioned Fermi 1. The maximum measured TLD doses for the last 10 years from the two locations that were closest to the expected construction site for Fermi 3 were used in estimating the direct exposure to workers from existing sources. The measured TLD doses included the multiple time periods when Fermi 2 went through refueling outages. Nuclear power plants go through refueling in approximately 18- to 24-month cycles. Therefore, the estimated construction worker dose includes the dose during fuel outages. Fermi 1 is scheduled to be decommissioned before the construction for Fermi 3 would start. The actual dose to the construction worker is expected to be much less than the maximum estimated dose. Also, as discussed in Section 5.9.6 of the DEIS, Detroit Edison has an established REMP for the Fermi site since 1978, which includes the previously mentioned TLDs and would continue during the construction of the proposed Fermi 3.*

Public dose means the dose received by a member of the public from exposure to radiation or to radioactive material released during reactor operations or to any other source of radiation under the control of the applicant. According to the Environmental Standard Review Plan (NUREG-1555; NRC 2000), if evaluation of the doses indicate that workers may be exposed to levels above the limits to the public (i.e., 100 mrem/yr), then construction workers must be treated as radiation workers by the licensee (or applicant), and the requirements in 10 CFR Part 20 must be followed. This is also presented in Section 5.7 of EPA's 309 Reviewer's Guidance for New Nuclear Power Plant Environmental Impact Statements (EPA 2008).

In the EIS, the construction workers were classified as members of the public for the following reasons:

- *The maximum estimated annual dose to construction workers does not exceed 100 mrem/yr;*
- *Construction workers for Fermi 3 would not be involved in the operation of Fermi 2 and the estimated dose is below the public dose limit of 100 mrem/yr;*
- *Construction workers for Fermi 3 would get exposure from radiation or radioactive material released by the operation of Fermi 2 or any source that is under the control of Detroit Edison; and*

- *The construction workers assigned duties do not involve the handling of radioactive material and the resulting exposure to radiation.*

Section 5.9 of the EIS discusses radiological impacts on the public during operation of Fermi 3. Details of the dose assessment are provided in Appendix G, and LADTAP II and GASPAR II computer codes were used to estimate doses. These codes use the dose assessment approach specified in Regulatory Guide 1.109 (NRC 1977). During normal operation, the yearly dose is estimated for the maximally exposed individual (MEI), and it includes the maximum dose from each exposure pathway regardless of the location of the maximum dose. After the construction phase, members of the public are not expected to spend more time onsite and would not be exposed to all exposure pathways onsite; therefore, doses for MEI are estimated at nearest site boundary locations. No changes were made to the EIS as a result of these comments.

Comment: Also, details on the Fermi 3 containment system to be used are not available. Any potential radioactive leakage from the containment system into the lake is not desirable due to the amount of customers served by both water systems and limited raw water sources. The partnership currently has a DTE provided & maintained radioactive metering system used to detect any radioactive raw water while being drawn in via intakes such that it is desired that the system continue to be maintained and or upgraded with the project with newer technology to allow both water systems adequate time to change raw water sources or alternatives in the event of a catastrophic event. (**0024-4** [Laroy, Barry])

Response: *The NRC's principal responsibility is to protect the health and safety of the public when authorizing the use of radioactive material. The regulations governing the environmental review are set forth in 10 CFR Part 51, Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions, and the regulations covering the safety review are in 10 CFR Part 52, Licenses, Certifications, and Approvals for Nuclear Power Plants, and other regulations referenced therein. Information concerning the containment for the reactor design proposed for Fermi 3 is publicly available in the applicant's FSAR and in the reactor vendor's Design Certification Document. A portion of this comment is related to safety and is outside the scope of the NRC's environmental review. As discussed in Sections 2.11 and 5.9.6 of the Draft EIS, Detroit Edison has had an established an REMP for the Fermi site since 1978. The REMP includes the collection and analysis of water samples. No changes were made to the EIS as a result of this comment.*

Comment: in the 60's and the 70's in the Monroe evening news there used to be articles that we dropped six million slightly contaminated gallons of water into Lake Erie. My granddaughter is a Cri du chat child. She's one of three in Monroe County. She's one of eighty in the world. I'm kind of wondering if there's any connection. Doctor's can't tell me that, there's a lot of smart people here, maybe somebody here can tell me. (**0040-6-1** [Vanderpool, Simon])

Response: *Genetic effects and the development of cancer are the primary health concerns attributed to radiation exposure. Genetic effects are the result of mutations (DNA damage) produced in the reproductive cells of an exposed individual (male or female) that are passed on to his or her offspring. These effects may appear in the exposed person's direct offspring, or may appear several generations later, depending on whether the altered genes are dominant or recessive.*

Although radiation-induced genetic effects have been observed in laboratory animals (given very high doses of radiation), no evidence of genetic effects has been observed among the children born to atomic bomb survivors from Hiroshima and Nagasaki. The risk estimates presented in the BEIR VII report show that "at low or chronic doses of low-LET irradiation, the genetic risks are very small compared to the baseline frequencies of genetic diseases in the population." The doses of radiation that are received by members of the public as a result of exposure to nuclear power facilities are so low (i.e., less than a few millirem) that resulting genetic effects attributed to the radiation have not been observed and would not be expected. No change was made to the EIS as a result of this comment.

E.2.17 Comments Concerning - Nonradiological Waste

Comment: "DE stated that the mixed waste that cannot be treated onsite will be temporarily stored at a remote monitored structure until it is shipped for offsite disposal at an approved facility." (v 1, p 5.120) Where is DE now shipping Fermi 2's mixed waste? (**0016-4-13** [Collins, Jessie])

Comment: p. 7-41 ... Each reactor at the Fermi site is expected to produce about 0.5 m3 per year of mixed waste. Detroit Edison anticipates that the Fermi 3 would claim a low-level mixed waste exemption from the State of Michigan (Fermi 2 currently operates under this exemption).

So, the exemption from Michigan renders this stuff (waste that has both hazardous and radioactive characteristics) harmless? Only half a cubic meter, right? But does the low volume make this stuff safe? What if we build 500 more nuclear power plants? Is it still safe? What does that exemption from Michigan mean? Exempt from regulation? Is that a good idea? If they dumped this stuff in my driveway, I would not be happy or amused, nor I think would anyone on the NRC review team. So why act like it is meaningless? (**0034-5-4** [Welke, Jim])

Response: *As stated in Section 5.10.4 of the EIS, Fermi 2 operates under a State of Michigan low-level mixed waste exemption that allows long-term temporary storage of unlimited quantities of mixed waste. Per a June 12, 2012, e-mail (ML12172A437) from R. Michael Morris, NRC Sr. Resident Inspector at Fermi 2, to John Fringer of the NRC, Detroit Edison has historically shipped small amounts of liquid mixed waste generated at Fermi 2 to Diversified Scientific Services, Inc. in Kingston, TN. Solid mixed waste is being stored onsite and has never been*

shipped. Mixed waste is managed in accordance with all applicable laws and regulations as discussed in section 5.10.4. No changes were made to the EIS as a result of these comments.

E.2.18 Comments Concerning Accidents - Design Basis

Comment: 16.) .012 consumption of the entire Lake Erie lake-volume is a lot of water. And the threat by building and operating Fermi 3 of radioactively contaminating the waters of the Great Lakes during any one of numerous disaster scenarios is high at a time when drinkable water is getting more and more scarce across our country and world. (**0029-3-1** [Newnan, Hal])

Response: *Fermi 3 requires water for cooling and operational needs. Lake Erie provides this water. Approximately half of this water is evaporated through the cooling towers (one natural and two 4-cell mechanical draft cooling towers). The operation of Fermi 3 is expected to produce a minimal amount of radioactive effluents that are mixed with the cooling tower blowdown before it enters the Lake Erie. The expected health impacts on individuals using the lake water for sport and consumption are calculated to be very small, as noted in Section 5.9 of the EIS. The Fermi 3 design has provisions to monitor all underground piping that contain radioactive materials. There are no other direct releases to the Lake Erie from Fermi 3.*

For a severe accident event leading to releases of radioactive materials to the environment, in NUREG–1437 the NRC has evaluated the potential risks of lake water contamination from radioactive materials deposited on the water. The impacts from severe accidents at Fermi 2 in terms of cumulative population dose from the aquatic food pathway were estimated to be approximately 1400 person-rem per reactor-year (see Section 5.11.2.2 of the EIS). As indicated in Table 5-32 of the EIS, the Fermi 3 design, because of its passive nature, has significantly lower risk than the risk associated with the current reactors. For example, the total core melt frequency of the Fermi 3 design is about three orders of magnitude lower than the current mean reactor core damage frequency, which includes Fermi 2. Therefore, the NRC considers the risks of Fermi 3 operation to be small. No changes were made to the EIS as a result of this comment.

Comment: Just following the Fukushima thing and realize that Fermi 2 slightly resembles, you know, the makeup of it, to realize that the passive as far as I understood just from the newspaper was, some kind of a donut that released the water. And then because of the water, apparently radioactive water contaminated the machinery underneath that allowed the pumps to bring more water, then they were out of commission. I'm talking about Fukushima, now. In the end they had to take a group of fire trucks down the hill and connect them with their batteries to get something working to pump water to cool the rods. Do I have a question? Yes. How are we similar to Fukushima? (**0040-4-1** [Doherty, Carolyn])

Response: *The reactors at Fukushima Dai-ichi are Mark I boiling water reactors, which are similar to the Fermi 2 reactor. However, the NRC has required modifications to nuclear plants since they were built, including design changes to control hydrogen and pressure in the containment. Following the event of March 11, 2011, the NRC has also required plants to have additional equipment and measures to mitigate damage stemming from large fires and explosions from a beyond-design-basis event. The measures include providing core and spent fuel pool cooling and an additional means to power other equipment onsite. The Fermi 3 design is an ESBWR. By the nature of its passive design, ESBWR has built in provisions that allow a coping time of 72 hours for core, reactor coolant system, and containment integrity without reliance on alternating current electrical power. The ESBWR design is vastly different from that of the current boiling water reactor designs. As stated in Section 5.11 of the EIS, after the Fukushima event, the NRC issued Near-Term Task Force recommendations (NRC 2011c). Collectively these recommendations are intended to clarify and strengthen the regulatory framework of protection against severe natural phenomena, mitigation of effects of such events, coping with emergencies, and improving the effectiveness of NRC programs. Section 5.11 of the EIS was revised to also discuss the NRC actions for design certification and combined license applications submitted under 10 CFR Part 52 that are currently under active NRC staff review (such as the ESBWR design and Fermi 3). The NRC actions include issuing RAIs to applicants like Detroit Edison requesting information to address the requirements of Fukushima-related NRC orders and other requests for information (NRC 2012e, f, g). NRC's evaluation of Detroit Edison's responses is addressed in the NRC's Final Safety Evaluation Report. Section 5.11 was revised to include the recent NRC actions related to the lessons learned from the event at Japan's Fukushima Dai-ichi nuclear power plant.*

E.2.19 Comments Concerning Accidents - Severe

Comment: The EIS is deficient and obsolete because it does not take into account the lessons learned from the Fukushima disaster. Because the F3EIS has not had sufficient time to address or implement any of the Obama Administration's appointed "Task Force" findings (as a result of the Fukushima disaster) it does not make a nuclear facility safer post Fukushima. The F3EIS (which takes years in the making) was completed within days of the actual Fukushima disaster. (**0003-1-8** [Anderson, Christy])

Comment: The EIS is deficient and obsolete because it does not take into account ANY of the lessons learned from the Fukushima disaster. Because the F3EIS has not had sufficient time to address any of the Obama Administration's appointed "Task Force" findings (as a result of the Fukushima disaster) it does not make a nuclear facility safer post Fukushima. The F3EIS (which takes years in the making) was completed within days of the actual Fukushima disaster. Experts around the world are increasingly turning their attention to the lessons learned from the accident and its implications for nuclear power in their respective countries. (**0003-3-2** [Anderson, Christy])

Response: *As stated in Section 5.11 of the EIS, in response to the Fukushima Dai-ichi event, the Commission established a task force to review the current regulatory framework in place in the United States and to make recommendations for improvements. The task force reported the results of its review (NRC 2011c) and presented its recommendations to the Commission on July 12 and July 19, 2011, respectively. As part of the short-term review, the task force concluded that while improvements are expected to be made as a result of the lessons learned, the continued operation of nuclear power plants and licensing activities for new plants did not pose an imminent risk to public health and safety. A number of areas were recommended to the Commission for long-term consideration. Collectively, these recommendations are intended to clarify and strengthen the regulatory framework for protecting against severe natural phenomena, mitigating the effects of such events, coping with emergencies, and improving the effectiveness of NRC programs. With its passive design and inherent 72-hour coping capability for core, containment, and spent fuel pool cooling with no operator action required, the ESBWR design has many of the design features and attributes necessary to address the task force recommendations.*

On March 12, 2012, the NRC issued three Orders and a request for information (RFI) to holders of U.S. commercial nuclear reactor licenses and construction permits to enhance safety at U.S. reactors based on lessons learned from the event at Japan's Fukushima Dai-ichi nuclear power plant. The first and third Orders apply to every U.S. commercial nuclear power plant, including recently licensed new reactors. The first Order requires a three-phase approach for mitigating beyond-design-basis external events. Licensees are required to use installed equipment and resources to maintain or restore core, containment, and spent fuel pool cooling during the initial phase. During the transition phase, licensees are required to provide sufficient, portable, onsite equipment and consumables to maintain or restore these functions until they can be accomplished with resources brought from offsite. During the final phase, licensees are required to obtain sufficient offsite resources to sustain those functions indefinitely (77 FR 16091). The second Order requires reliable hardened vent systems at boiling water reactor facilities with "Mark I" and "Mark II" containment structures (77 FR 16098). The third Order requires reliable spent fuel pool level instrumentation (77 FR 16082). The RFI addressed five topics: (1) seismic reevaluations; (2) flooding reevaluations; (3) seismic hazard walkdowns; (4) flooding hazard walkdowns; and (5) a request for licensees to assess their current communications system and equipment under conditions of onsite and offsite damage and prolonged station blackout and perform a staffing study to determine the number and qualifications of staff required to fill all necessary positions in response to a multi-unit event (NRC 2012c, d).

The ESBWR containment design differs from those identified in the second Order; therefore, this Order is not applicable to Fermi 3. The NRC staff issued RAIs to Detroit Edison requesting information to address the requirements of the first and third Orders, and information sought in the RFI (NRC 2012e, f, g). NRC's evaluation of Detroit Edison's responses is addressed in the

NRC's Final Safety Evaluation Report, and any changes to the COL application that are deemed necessary will be incorporated into the applicant's FSAR. Additionally, the severe accident scenarios analyzed in Section 5.11 include those initiated by external events, including flooding and those that involve fission product releases. Section 5.11 of the EIS was revised to include the recent NRC actions related to the lessons learned from the event at Japan's Fukushima Dai-ichi nuclear power plant.

Comment: "Three types of severe accident consequences were assessed in the MACCS2 (accident code system): human health, economic costs, and land area affected by contamination." (v 1, p 5.126) In case of accident, economic costs are considered before damage to the earth? Are the "environmental risks" listed in Table 5.32 (v 1, p 5.128) some scientist's death wish? (**0016-4-14** [Collins, Jessie])

Response: *As discussed in Section 5.11 of the EIS, the severe accident consequences listed in Table 5-32 include the risk values that are of interest to both the Commission and the public. They include human health effects in terms of calculated cumulative doses to the general public residing within 50 mi of the site and early fatalities and latent cancer fatalities in the exposed population; total economic costs from evacuation, rehabilitation, and land interdiction, condemnation and decontamination; and estimated areas of surrounding farm lands requiring decontamination. In accordance with the Commission policy statement on severe reactor accidents (50 FR 32138), these are presented in terms of risk values per reactor-year, which are the product of the probability and consequences. For example, the latent cancer fatalities are estimated by multiplying the release class frequency by the population dose for that release class and the health risk coefficient (latent cancer fatalities per person-rem). The NRC considers these risk values represent the most meaningful way to place the risk in context and inform the environmental assessment process. They include selected measures that are used for comparative analyses of risks and benefits. Specifically, the population dose and economic costs are used for* assessing *viable severe accident mitigation alternatives, or design alternatives, as explained in Appendix I of the EIS. No changes were made to the EIS as a result of this comment.*

Comment: Concerning the "Comparison of Environmental Risks" (v 1, p 5.129), how were these other five reactors chosen? (**0016-4-15** [Collins, Jessie])

Response: *As presented in Section 5.11.2 of the EIS, the five reactor sites identified in Table 5-34 are those specific reactors and sites that were used in the severe accident reactor risk reference document, NUREG 1150 (NRC 1990). The table provides an insight into the level of risks from operation of an ESBWR design at the Fermi site and operations of the current generation of reactors at five other sites. It shows that the ESBWR design has smaller relative risks than those of the existing reactors. No changes were made to the EIS as a result of this comment.*

Comment: Will someone explain why comparing risks at other facilities was important and yet, "Environmental consequences of potential surface-water pathways related to swimming and shoreline activities and aquatic food consumptions are not evaluated by MACCS2." (v 1, p 5.132) (**0016-4-16** [Collins, Jessie])

Response: *Although surface water pathways beyond water ingestion are not considered in the MACCS2, they have been examined in NUREG-1437 (NRC 1996). As stated in Section 5.11.2.2 of the EIS, in NUREG-1437, the NRC has performed generic analyses for the current fleet of nuclear reactors, including Fermi 2, to estimate doses from swimming, shoreline activities, and aquatic food consumption. The cumulative population dose from the aquatic food pathway for Fermi 2 for severe accidents was estimated to be approximately 1400 person-rem per reactor-year (NRC 1996). The Fermi 3 ESBWR design has many enhanced design features and attributes that minimize the potential for core damage and releases of the radioactive materials to the environment that could lead to lake water contaminations. Table 5-34 of the EIS provides an insight into the level of risks from operation of an ESBWR design at the Fermi site and operations of the current generation of reactors at five other sites. This table shows that the ESBWR design has smaller relative risks than those of the existing reactors. In addition, because of its very low core damage frequency compared to that of current reactor designs (as indicated in Table 5-34), the consequences of severe accidents at Fermi 3 are expected to result in lower aquatic food pathway dose per reactor-year than that calculated for severe accidents at Fermi 2. Section 5.11.2.2 of the EIS was revised to clarify that even though surface water pathways beyond water ingestion are not considered in the MACCS2, they have been examined in NUREG-1437 in the context of renewal of license for current generation reactors.*

Comment: Page 7-42, line 23, states: "On the basis of these findings, the NRC staff concludes that the cumulative risks of severe accidents at any location within 50 mi of the Fermi site would likely be SMALL, and no further mitigation would be warranted." This dismisses the possibility of a major explosion of Fermi 2 or Fermi 3 or Bessie- Davis. Such an explosion could release radionuclides that would quickly kill large numbers of people, result in both non-malignant illnesses and cancers, and genetic mutations. It would permanently contaminate a very large region. The damage could not be undone.

The environmental impact statement does not acknowledge the permanent effects on people and the biosphere of actual accidents that have taken place. Nuclear Reactor Incidents, Malfunctions, Meltdowns/Explosions, and Radioactive Releases ignored by NRC in the Environmental Impact Statement:

Excerpts from: Killing Our Own The Disaster of Americas Experience with Atomic Radiation by Harvey Wasserman & Norman Solomon with Robert Alvarez &Eleanor Walters (A Delta Book 1982 Dell Publishing Co., Inc. I Dag Hammarskjold Plaza, New York, NY 10017) are not included here.

The entire book can be read on line at http://www.ratical.org/radiation/KillingOurOwn/KOO.pdf (**0026-6-33** [Macks, Vic])

Response: *The comment concerns severe reactor accidents. Protection against severe accidents is provided by regulatory requirements in two basic ways: (1) prevention of core damage events such that the likelihood of events that lead to core damage is very low and (2) mitigation of consequences in the event of a severe accident. The NRC has determined that the combination of these two aspects does result in an acceptably low risk. As indicated in Tables 5-33 and 5-35 of the EIS, severe accident risks at any locations within 50 mi of the Fermi site are small. As stated in Appendix B of 10 CFR Part 51, Table B.1, for the current operating plant, the probability-weighted consequences of atmospheric releases, fallout onto open bodies of water, releases to groundwater, and societal and economic impacts from severe accidents are small for all plants. Therefore, the cumulative impacts from existing plants within the geographic area of Fermi 3 (i.e., Fermi 2 and Davis Besse) at any location within 50 mi of the Fermi site would still be small and bounded by the sum of risks from all reactors. Only trace amounts of radioactivity are from prior nuclear incidents and atomic tests and form part of the terrestrial background radiation as presented in Table 6-2 of the EIS. No changes were made to the EIS as a result of this comment.*

Comment: 2.) However unlikely, the possibility of a major meltdown at a plant in the United States can't be dismissed. And yet Gregory B. Jaczko, the chairman of the Nuclear Regulatory Commission, told Bloomberg last week that there would be enough time for millions of people in the region to get away "because nuclear accidents do develop slowly, they do develop over time, and we saw that at Fukushima."

3.) But even if that were true, many might never be able to return. Some 160,000 Japanese are still displaced because the radioactive contamination - in an area far less populated and less dense than the Detroit area - was so intense and far-reaching. The Nuclear Regulatory Commission's cost-benefit analyses for Indian Point and other nuclear plants in the United States do not factor in these possibilities. The consequences of land contamination should be weighed in any decision to license, or re-license reactors. (**0029-1-2** [Newnan, Hal])

Response: *The earthquake and subsequent tsunami produced widespread devastation across northeastern Japan, resulting in approximately 25,000 people dead or missing, displacing many tens of thousands of people, and significantly affecting the infrastructure and industry in the northeastern coastal areas of Japan. But the resultant accident in the Fukushima Dai-ichi nuclear power plant has not resulted in any radiation exposure-related fatalities. There are however, individuals who have been evacuated from the areas near the reactor site.*

Evacuation and land decontamination are part of the considerations in the emergency response management. Fermi 3 severe accident analyses included both the evacuations and costs associated with the evacuation, resettlements, land decontaminations, interdiction, and

condemnation. Table 5-33 of the EIS provides the calculated costs for all severe accidents. These costs are part of the evaluation process for implementation of severe accident mitigation alternatives as discussed in Section 5.11.3 and detailed in Appendix I of the EIS. No changes were made to the EIS as a result of this comment.

Comment: 22.) My understanding is that there is no consideration in the FERMI 3 DEIS of the events around the Fukushima melt downs we are now supposed to comment on. Yet, the planned site for the construction for Fermi 3 is on the same property side by side with Fermi 2, and partially covering over the only partially decommissioned site of Fermi 1 which had a "partial" melt down. An eventual melt down at Fermi 3 would have a multiplied effect by proximity to the huge amount of "spent" fuel onsite at Fermi 2; clearly that is not in the interest of the population or the environment on which it depends. It is a very bad idea to locate Fermi 3 in such a place, even worse that it is on one of our greatest bodies of fresh water that we, and future generations, need much more for other purposes. How can you justify that? (**0029-3-6** [Newnan, Hal])

Response: *As stated in Section 5.11 of the EIS, the task force report concluded that the licensing activities for new plants do not pose an imminent risk to public health and safety. This is because the new plants are designed based on present-day methodologies associated with evaluating hazards from flooding, fire, and seismic activity. In addition, there is sufficient time to evaluate and implement the consequences of any new requirements that may arise from the new rules concerning task force recommendations. Furthermore, with the nature of the passive design and inherent 72-hour coping capability of core, containment, and spent fuel pool cooling with no operator action required, the ESBWR design (i.e., Fermi 3 reactor design) has many of the design features and attributes necessary to address task force recommendations (NRC 2011c). As part of the short-term review, the task force concluded that while improvements to the current operating reactors are expected to be made as a result of the lessons learned, the continued operation of nuclear power plants do not pose an imminent risk to public health and safety. A number of areas were recommended to the Commission for long-term consideration. Collectively, these recommendations are intended to clarify and strengthen the regulatory framework for protection against severe natural phenomena, mitigation of the effects of such events, coping with emergencies, and improving the effectiveness of NRC programs. Section 5.11 of the EIS was revised to also discuss the NRC actions for design certification and combined license applications submitted under 10 CFR Part 52 that are currently under active NRC staff review (such as the ESBWR design and Fermi 3). The NRC actions include issuing RAIs to applicants like Detroit Edison requesting information to address the requirements of Fukushima-related NRC orders and other requests for information (NRC 2012e, f, g). NRC's evaluation of Detroit Edison's responses is addressed in the NRC's Final Safety Evaluation Report. Section 5.11 was revised to include the recent NRC actions related to the lessons learned from the event at Japan's Fukushima Dai-ichi nuclear power plant.*

Comment: Remember Japan recently? Doesn't this part of Michigan hover over some sort of a fault line? And then there's the tornados and flood possibilities-what is DTE and the government thinking? Never mind DTE-it's all about the $$$ for them, but the government is held (or will be held) to a much higher standard which is to remove any possibility of damaging our pristine fresh water and ecology of this part of Michigan from further potential risk. (**0030-8** [Podorsek, Edward])

Response: *U.S. nuclear power plants are built to withstand external hazards, including earthquakes, tsunamis, and flooding, as appropriate. The NRC has made substantial effort over time to ensure that vulnerabilities to both internal and external hazards were considered and mitigated in current plant design and the licensing basis of its regulated facilities. Based on NRC's preliminary analyses to date, the average probability of ground motions exceeding the safe shutdown earthquake (SSE) ground motion over the life of the plant for the plants in the Central and Eastern United States is less than about 1 percent. It is important to note that each reactor has structures, systems, and components that are required to have "adequate margin," meaning that they will continue to be able withstand shaking levels that are above the plant's design basis. Current regulatory requirements and existing plant capabilities allow the NRC to conclude that a sequence of events such as the Fukushima Dai-ichi event is unlikely to occur in the United States. Therefore, continued operation and continued licensing activities do not pose an imminent threat to public health and safety. However, based on the assessment of new insights from the events at Fukushima Dai-ichi, the Commission has determined that adequate protection of public health and safety requires that power reactor licensees and construction permit holders develop, implement, and maintain guidance and strategies to restore or maintain core cooling, containment, and spent fuel pool cooling capabilities in the event of a beyond-design-basis external event (i.e., seismic). The Fermi 3 reactor, which is an ESBWR design, by the nature of its passive design already includes provisions that allows coping with an extended loss of all alternating current electrical power for 72 hours for core, reactor coolant system, spent fuel, and primary containment integrity. Therefore, the NRC concludes that current design of the Fermi 3 has many of the design features and attributes necessary to address the task force recommendation. Section 5.11 of the EIS was revised to also discuss the NRC actions for design certification and combined license applications submitted under 10 CFR Part 52 that are currently under active NRC staff review (such as the ESBWR design and Fermi 3). The NRC actions include issuing RAIs to applicants like Detroit Edison requesting information to address the requirements of Fukushima-related NRC orders and other requests for information (NRC 2012e, f, g). NRC's evaluation of Detroit Edison's responses is addressed in the NRC's Final Safety Evaluation Report. Section 5.11 was revised to include the recent NRC actions related to the lessons learned from the event at Japan's Fukushima Dai-ichi nuclear power plant.*

Comment: 8. Remember Fermi 1 and the day we almost lost Detroit? Remember Three Mile Island. All those pre-build reports preached how safe those plants were too. (**0030-9** [Podorsek, Edward])

Response: *The accidents at Fermi 1 and Three-Mile Island-2 (TMI-2) have resulted in many rules and requirements. For example, the TMI-2 accident brought about sweeping changes for nuclear power plants and heightened oversight by NRC. A long-term follow-up study by the University of Pittsburgh that evaluated local, county, and State population data from 1979 through 1998 concluded that there is not an increase in overall cancer deaths among the people living within a 5-mi radius of Three Mile Island at the time of the accident (NRC 2012a). Additional fact sheets about the TMI-2 accident are available at the NRC Web site (*http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/3mile-isle.html*). No changes were made in the EIS as a result of this comment.*

Comment: I understand the need for energy. I understand the need for jobs. I understand the need for tax revenue. What I do not UNDERSTAND is how a nuclear energy plant can be built next to public water and not be concerned about contamination because of the possibility of a human mistake. Japan never thought their plant would be in jeopardy when they built it. (**0031-1** [Rossi, Vincent])

Comment: What are we thinking when it comes to public water and public safety. Our lake is NOT the ocean and it cannot accept contamination without jeopardizing the whole population around the lake itself. Putting revenue, taxes and jobs above the welfare of our community does not make sense. One human error will ruin our lake and the lives of those living around and in the close proximity. (**0031-3** [Rossi, Vincent])

Response: *Nuclear reactors have been built near various water sources. The reactors are operated according to the NRC's rules and regulations and the industry's best management practices to ensure safe operation and prevent accidental releases of radioactive materials to the environment. To prevent releases of radioactive materials, there are multiple barriers between the radioactive material and the environment, including the fuel cladding, the heavy steel reactor vessel itself, and the containment building, a heavily reinforced structure of concrete and steel several feet thick. The NRC has evaluated the potential for accidental releases of radioactive materials and contamination of various water bodies in NUREG-1437,and found the risk to be small.*

In addition, the implementation of task force recommendations will clarify and strengthen the regulatory framework for protection against severe natural phenomena, mitigation of the effects of such events, coping with emergencies, and improving the effectiveness of NRC programs. Section 5.11 of the EIS was revised to also discuss the NRC actions for design certification and combined license applications submitted under 10 CFR Part 52 that are currently under active NRC staff review (such as the ESBWR design and Fermi 3). The NRC actions include issuing

RAIs to applicants like Detroit Edison requesting information to address the requirements of Fukushima-related NRC orders and other requests for information (NRC 2012e, f, g). NRC's evaluation of Detroit Edison's responses is addressed in the NRC's Final Safety Evaluation Report. Section 5.11 was revised to include the recent NRC actions related to the lessons learned from the event at Japan's Fukushima Dai-ichi nuclear power plant.

Comment: p. 7-42 The estimated population dose risk for the proposed ESBWR at the Fermi site is well below the mean and median values for current generation reactors. In addition, as discussed in Section 5.11.2, estimates of average individual early fatality and latent cancer fatality risks are well below the Commission's safety goals (51 FR 30028). For existing plants within the geographic area of interest (i.e., Fermi 2 and Davis-Besse), the Commission has determined that the probability-weighted consequences of severe accidents are small (10 CFR Part 51, Appendix B, Table B-1). It is expected that risks for any new reactors at any other locations within the geographic area of interest of the Fermi site would be well below risks for current-generation reactors and meet the Commission's safety goals. The risk of severe accident attributable to any particular nuclear power plant becomes smaller as the distance from that plant increases. However, the combined risk at any location within 50 mi of the Fermi site would be bounded by the sum of risks for all these operating nuclear power plants. Even though two or more nuclear power plants could be included in the combined risk, it would still be low.

OK. This is just nuts. Especially post-Fukushima. All this language does is obfuscate facts and ignore reality. If there is a severe accident at one of these plants, past events have proven that everything that can go wrong will, and no reactor design will protect surrounding populations from radiation exposure, or the environment from loss of vital habitat. We'll have firemen carrying buckets of water to dump on the spent fuel pile, and sacrificing their lives -- for no good reason. It is pure arrogance to think humans can indefinitely manage all of these reactors (especially the old, rusty ones with irresponsibly extended licenses), distributed around the country, without ever having a severe accident. It will happen, and all sorts of embarrassing and deadly "unforeseen" events will occur -- I refer you the Three Mile Island, Chernobyl, Fukushima -- or, Fermi I and Davis Besse which both had serious near-misses. (**0034-5-5** [Welke, Jim])

Comment: As substantial as the effects from construction and routine operation of Fermi-3 could be, they pale in comparison to the potential human and biospheric impact that would result in the event of a catastrophic accident at the site---just thirty miles from Detroit. Close proximity to one of the largest freshwater commercial fisheries in the world is a colossal risk, with the majority of commercial fishing occurring along the Canadian border (v 1, p. 2.82). It is incomprehensible to me, especially in the wake of the ongoing Fukushima-Daiichi radiological calamity, that the United States Nuclear Commission could and would move forward to accept and approve NUREG 2105. (**0037-5** [Gunter, Keith])

Response: *The NRC carries out its mission to protect public health and safety by specifying licensing and operational requirements that nuclear power plants must meet and by inspecting*

and enforcing compliance with these requirements. When a licensee complies with the regulations, "adequate protection" is presumed. Protection against severe accidents is provided by regulatory requirements in two basic ways: (1) prevention of core damage events such that the likelihood of events that lead to core damage is very low and (2) mitigation of consequences in the event of a severe accident. The combination of these two aspects must result in an acceptably low risk to public health and safety. The NRC has determined that the combination of these two aspects does result in an acceptably low risk. Specifically, the Fermi 3 reactor, which is an ESBWR design, by the nature of its passive design already includes provisions that allow coping with an extended loss of all alternating current electrical power for 72 hours for core, reactor coolant system, spent fuel, and primary containment integrity. Therefore, the NRC concludes that current design of the Fermi 3 has many of the design features and attributes necessary to address the task force recommendations. In addition, as discussed in Section 5.11.2 of the EIS, estimates of average individual early fatality and latent cancer fatality risks for the operation of Fermi 3 are well below the Commission's safety goals (51 FR 30028). For existing plants within the geographic area of interest (i.e., Fermi 2 and Davis-Besse), the Commission has determined that the probability-weighted consequences of severe accidents are small (10 CFR Part 51, Appendix B, Table B-1). Therefore, combined risk at any location within 50 mi of the Fermi site would be the sum of risks for all these operating nuclear power plants, which in turn are small. Furthermore, the implementation of task force recommendations will clarify and strengthen the regulatory framework for protecting against severe natural phenomena, mitigating the effects of such events, coping with emergencies, and improving the effectiveness of NRC programs. Additionally, Section 5.11 of the EIS was revised to also discuss the NRC actions for design certification and combined license applications submitted under 10 CFR Part 52 that are currently under active NRC staff review (such as the ESBWR design and Fermi 3). The NRC actions include issuing RAIs to applicants like Detroit Edison requesting information to address the requirements of Fukushima-related NRC orders and other requests for information (NRC 2012e, f, g). NRC's evaluation of Detroit Edison's responses is addressed in the NRC's Final Safety Evaluation Report. Section 5.11 was revised to include the recent NRC actions related to the lessons learned from the event at Japan's Fukushima Dai-ichi nuclear power plant.

Comment: I want to thank everyone for the chance to speak here tonight... I want to make three main points. The first is that fundamentally at Fukushima we learned that putting tanks of water above the reactor is a bad idea. In the event of a big enough earthquake, in the event of a hydrogen explosion, in the event of a terrorist attack, the water in those tanks drains out and we saw in Japan fuel rods get exposed. So the main design feature of this plant, which is the passive cooling system dependent upon huge tanks of water sitting above the reactor chamber, is flawed. And therefore, this Environmental Impact Statement has to review and recalculate all their estimates of the chance of damage. On page 5130, there's a chart there that says the possibility of an accident is something like 5.0 x 10 to the negative fourth. Well, we all saw at Fukushima large tanks of water above a nuclear plant get blown up and drained out. The

chance I much, much greater than 10 to the negative fourth. And so, you need to recalculate those damage estimates and recalculate all the damages based on those faulty estimates. That's one point. (**0039-23-1** [Demare, Joe])

Response: *The commenter refers to the available water tanks above the reactor and the core damage accident frequency cited in Section 5.11.2.1 of the EIS. The tsunami that affected the Fukushima Dai-ichi reactors does not have any relation to the available water inside the ESBWR containment. With the passive nature of the ESBWR design, the water storage tanks in the upper containment are used to cool the reactor without any operator action for 72 hours in an event of total loss of all alternating current electrical power. The hydrodynamic effects of these water sources on the containment and the reactor have been reviewed by the NRC as part of the design certification of the ESBWR (76 FR 14437). In Section 5.11.2.1, the EIS provides a comparison of environmental risks from severe accident events for an ESBWR design at the Fermi site with risks of similar events at current operating reactors. The core damage frequency and severe accident release frequencies listed in Tables 5-35 and 5-32 for Fermi 3 are those that were reviewed and approved by the NRC as part of probabilistic risk assessment (PRA) for the ESBWR design certification. These frequencies are considered bounding for the Fermi 3. As stated in Section 5.11.2 of the EIS, Detroit Edison will prepare a site-specific PRA as required by regulation before initial fuel loading. No changes were made in the EIS as a result of this comment.*

Comment: They are likely to become damaged and even have catastrophic accident occurrences such as what happened at Fukushima from forces of nature. They are vulnerable to human error, such as what happened at Chernobyl and a multitude of accidents at many nuclear power plants that could have escalated. (**0042-4** [Barnes, Kathryn])

Response: *U.S. nuclear power plants are built to withstand external hazards, including earthquakes, tsunamis, and flooding, as appropriate. The NRC has made substantial effort over time to ensure that vulnerabilities to both internal and external hazards were considered and mitigated in the current plant design and licensing basis of its regulated facilities. In an accident event, mitigation measures that are followed are commonly referred to as the 10 CFR 50.54(hh), or B.5.b, actions. These are the actions that were taken following the events of September 11, 2001, in the United States. These measures would deal with the loss of large areas of the plant, including the use of portable equipment to provide some level of core cooling, spent fuel pool cooling, and/or maintenance of containment integrity. They provide an additional level of mitigation capability that may be of assistance in the event of a significant accident similar to the Fukushima Dai-ichi event and other similar events. Current regulatory requirements and existing plant capabilities allow the NRC to conclude that a sequence of events such as the Fukushima Dai-ichi event is unlikely to occur in the United States. Therefore, continued operation and continued licensing activities do not pose an imminent threat to public health and safety. However, based on the assessment of new insights from the*

events at Fukushima Dai-ichi, the Commission has determined that adequate protection of public health and safety requires that power reactor licensees and construction permit holders develop, implement, and maintain guidance and strategies to restore or maintain core cooling, containment, and spent fuel pool cooling capabilities in the event of a beyond-design-basis external event (i.e., seismic). The NRC staff issued RAIs to Detroit Edison requesting information to address the appropriate requirements of lessons learned from the event at Japan's Fukushima Dai-ichi nuclear power plant, and information sought in related RFI (NRC 2012e, f, g). NRC's evaluation of Detroit Edison's responses is addressed in the NRC's Final Safety Evaluation Report, and any changes to the COL application that are deemed necessary will be incorporated into the applicant's FSAR. Section 5.11 was revised to include the recent NRC actions related to the lessons learned from the event at Japan's Fukushima Dai-ichi nuclear power plant.

Comment: On page 5-133 the DEIS discusses that risks of groundwater contamination are "small" and do not have a significant effect on overall plant risk. This is troubling considering that for many months concerns about ground water contamination have been pervasive during the ongoing Fukushima Dai-ichi disaster. (**0050-9** [D'Arrigo, Diane])

Response: *As stated in Section 5.11.2.3 of the EIS, groundwater contamination involves a reactor core melt, reactor vessel failure, and the penetration of containment floor (basemat) below the reactor vessel. The ESBWR design includes a basemat internal melt arrest and coolability (BiMAC) device to cool the core debris and prevent basemat melt through. The ESBWR severe accident release sequences that might be expected to involve core-concrete interactions with containment failure have frequencies on the order of 1-in-1 billion years. In addition, the groundwater pathway is tortuous and affords more time for implementing protective actions. Therefore, the NRC staff concludes that the risks associated with releases to groundwater are sufficiently small that they would not have a significant effect on the overall plant risk. No changes were made to the EIS as a result of this comment.*

Comment: 2. The inevitable safety risks of accidents associated with Fermi 3 favor efficiency and renewables as safer alternatives. A 1982 NRC report showed that a major accident at Fermi 2 releasing catastrophic amounts of radioactivity could cause 8,000 "peak early fatalities," 340,000 "peak early injuries," 13,000 "peak cancer deaths," and $136 billion in property damage. Given population growth since, casualties would be even worse in the present day. And when adjusted for inflation, such damages would now top $288 billion. Similar or even worse casualties and damages could result from an accident at the larger Fermi 3 reactor. In fact, untested new reactors with undetected technical glitches are at significantly increased risk of suffering a major accident. Fermi 1, Three Mile Island and Chernobyl were new reactors when they suffered their infamous accidents. Old reactors are also at elevated accident risk due to age-related breakdown of safety significant systems, as occurred at Davis-Besse nuclear plant near Toledo in 2002. Thus, the geriatric Fermi 2 and the brand new Fermi 3, immediately

adjacent to one another, would represent the worst of both worlds, the extremes of atomic reactor risks. An accident at one could even spread to the other. (**0058-2** [Kamps, Kevin])

Response: *The 1982 NRC reports on Fermi 2 major accident consequences were based on then-available methodology and assumptions on source terms. Since the publication of the earlier studies, NRC has participated in many severe accident research programs. This work has improved the understanding of how heat is transferred and radioactive material moves through reactor systems during severe accidents and how radioactive material might get out of the containment building and move through the surrounding environment. Recent analyses of severe accidents as part of the State-of-the-Art Reactor Consequence Analysis (SOARCA) program, have concluded that the 1982 source term assumptions to be very conservative (NRC 2012a). Therefore, the results presented in 1982 Fermi 2 reports are not representative of the current understanding of severe accident consequences. The values quoted by the commenter were peak values from a range of possible values based on worst case scenarios from an analysis for the current Fermi 2 reactor.*

The potential consequences of a severe accident (reactor core melt) are large. However, not all severe accidents lead to large consequences, and the probability of a severe accident is extremely low. As a result, risk, which is the product of probability and consequence, is the measure used to evaluate impacts of severe accidents. Further, given the nature of calculations involved in calculating both probability and consequence, it is more appropriate to evaluate impacts by using a best estimate of risk (mean value), rather than an extreme or peak value. The potential consequences from accidents at Fermi 3 are presented in Table 5-32 of the EIS. These results are based on the current understanding of reactor core behavior and fission product movement in an accident. The most severe accident from the list in Table 5-32 is the ex-vessel steam explosion event with a release frequency of about 1-in-1 billion years. Since the risk values cited in Table 5-32 are the product of the frequency and the consequences of each accident, the ex-vessel steam explosion event resulted in an economic cost of about $84 billion and an estimated number of latent cancer fatalities of about 13,600 among an estimated exposed population of about 7.8 million in calendar year 2060 (see EIS Table 2-26). (Note that the economic cost is determined by dividing the cost per reactor year of $92 by the frequency of the accident of 1.1×10^{-9}. Similar calculations can be performed for other estimates.) The results in Table 5-32 also indicate that the mean total number of latent cancer fatalities from all severe accidents to be less than 1180 and that no early fatalities are expected. The mean total economic cost is estimated to be about $6.5 billion. Tables 5-32 through 5-35 of the EIS present estimates of the risk associated with severe accidents. The risks from a severe accident at the Fermi site are lower than the risk of normal operation, lower than the risks of the existing reactors, and far lower than the risk levels set forth in the Commission's safety goals policy statement (51 FR 30028). No changes were made to the EIS as a result of this comment.

Comment: I'm going to address just one issue out of the environmental impact statement and leave the rest to a written comment. The environmental impact statement dismisses the possibility of a major explosion of Fermi 2 or Fermi 3 as what's called small, and states that no mitigation would be warranted. Such an explosion could release radionuclides that would quickly kill large numbers of people, result in both non malignant and cancer illnesses and genetic mutations. It would permanently contaminate a very large region. The damage could not be undone. The environmental impact statement does not acknowledge the permanent effects on people and a bias here of actual activities had taken place. Kyshtym in the Soviet Union in 1957, a massive explosion rated six on the international nuclear event scale, which goes only to seven. Chalk River, Ontario 1952 and '58 rated five, Idaho Falls, 1955 and 1961 an explosion occurred, three workers dead, one of them impaled on a fuel rod stuck to the ceiling. Wind Scale, England, people, food, animals, agricultural land contaminated, fallout reached London, rated five. Fermi 1, 1966, fuel melted and released radioactive material into the containment building and outside there was a high risk of secondary major explosion that required very difficult and lucky steps to avoid. In 1970, Fermi was allowed to resume and 200 pounds of radioactive sodium burst from the pipes, and Fermi 1 sits radioactive with no resolution possible. Chernobyl, 1986, multiple explosions produced radioactive fallout throughout the entire northern hemisphere. A long list of wide spread illnesses has been documented by the Russians, but not appreciated and suppressed here. 985,000 people died in the following 25 years. 50 percent of the fallout was outside of Russia, more than a million acres of agricultural land was gone from use, a large number of people in contaminated areas have only radionuclide incorporated food to eat. The cleanup costs in the first 25 years was $500 billion and Belarus currently spends 20 percent of its national budget on mitigating efforts. Three Mile Island. People died and animals died, 430 infants died, large amounts of iodine 131 were released from the plant, and the peak of infant mortality came within a matter of months after that. Radioactive water was released into the Susquehanna River, people weren't notified of that, rated five. Fukushima has acknowledged lethal doses of, with readings off scale of 10 sieberts per hour. The reactors have continued to spill the radioactive material since. It's not over, it's a continuing issue. The earthquake caused loss of cooling and the meltdown when pipes, which were already defective, burst. It was after that that the tsunami then wiped out the backup generators. This puts all of the remaining reactors of this type in Japan, which are GE Mark I at risk, and also puts all of those GE Mark I's in the U.S. at risk, and that includes Fermi 2. That reactor was criticized by people inside the nuclear regulatory commission before and after it was built. (**0040-12-1** [Macks, Vic])

Response: *The environmental impacts of postulated accidents are addressed in Section 5.11 of the EIS. Protection against severe accidents is provided by regulatory requirements in two basic ways: (1) prevention of core damage events such that the likelihood of events that lead to core damage is very low and (2) mitigation of consequences in the event of a severe accident. The NRC has determined that the combination of these two aspects does result in an acceptably low risk. However, as with almost every human endeavor, there are risks associated*

with the action. The NRC does not expect that the cited accidents will occur again, but the possibility cannot be entirely eliminated. No death or fatality attributable to nuclear power operation will ever be acceptable in the sense that the Commission would regard it as a routine or permissible event. The following summarizes the major accidents cited by the commenter.

On March 28, 1979, the Three Mile Island accident in Pennsylvania occurred as a result of equipment malfunctions, design-related problems, and worker errors. The accident melted almost half the reactor core of Unit 2 and released contaminated water and radioactive material into the containment building. A very small amount of radioactive material reached the environment. It remains the most serious accident in U.S. commercial nuclear power plant operating history, although no plant workers or members of the nearby community were injured or killed. A long-term follow-up study by the University of Pittsburgh that evaluated local, county, and State population data from 1979 through 1998 concluded that there is not an increase in overall cancer deaths among the people living within a 5-mi radius of Three Mile Island at the time of the accident (NRC 2012a). This accident brought about sweeping changes for nuclear power plants and heightened oversight by NRC. NRC fact sheets about the Three Mile Island accident are available at http://www.nrc.gov/ reading-rm/doc-collections/fact-sheets/3mile-isle.html.

On April 26, 1986, an accident destroyed Unit 4 of the nuclear power station at Chernobyl, Ukraine, in the former USSR. The series of events that led to this accident could not occur at U.S. commercial power reactors, because U.S. reactors have different plant designs, robust containment structures, and operational controls to protect them against the combination of lapses that led to the accident at Chernobyl. Its operators ran an experiment that led to a sudden surge of power, destroying the reactor core and releasing massive amounts of radioactive material into the environment. About 30 emergency responders died in the first 4 months after the accident. The health of the evacuated population and populations in contaminated areas of Belarus, the Russian Federation, and Ukraine has been monitored since 1986. Monitoring efforts to date indicate that a lack of prompt countermeasures resulted in increased risk of thyroid cancer to members of the public, most notably among people who were children or young adults at the time of the accident. No other health effects are attributed to the radiological exposure in the general population. Chernobyl's design, which differed significantly from reactors operating in the United States, made it vulnerable to such a severe accident. NRC fact sheets about Chernobyl Accident are available at: http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/chernobyl-bg.html.

With regard to Fukushima Dai-ichi, since the events at Fukushima began to unfold, NRC has been working to understand the events in Japan and relay important information to U.S. nuclear power plants. Not long after the emergency began, NRC established a task force of senior NRC experts to determine lessons learned from the accident and to initiate a review of NRC regulations to determine whether additional measures should be taken immediately to ensure

the safety of U.S. nuclear power plants. The task force issued its report on July 12, 2011, concluding that continued U.S. plant operation and NRC licensing activities presented no imminent risk. The task force also concluded that enhancements to safety and emergency preparedness are warranted and made several general recommendations for Commission consideration. The NRC issued SECY 12-0025 (NRC 2012b), detailing the proposed orders and required actions in response to lesson learned from Japan's March 11, 2011, earthquake and tsunami. Section 5.11 of the EIS was revised to also discuss the NRC actions for design certification and combined license applications submitted under 10 CFR Part 52 that are currently under active NRC staff review (such as the ESBWR design and Fermi 3). The NRC actions include issuing RAIs to applicants like Detroit Edison requesting information to address the requirements of Fukushima-related NRC orders and other requests for information (NRC 2012e, f, g). NRC's evaluation of Detroit Edison's responses is addressed in the NRC's Final Safety Evaluation Report, and any changes to the COL application that are deemed necessary will be incorporated into the applicant's FSAR.

The following NRC Web sites have additional information on the Fukushima accident and NRC's response:

http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/fs-japan-events.html.

http://www.nrc.gov/japan/japan-info.html.

Section 5.11 of the EIS was revised to include the recent NRC actions related to the lessons learned from the event at Japan's Fukushima Dai-ichi nuclear power plant.

Comment: Gross errors in the probability of a severe accident: Fukushima is mentioned only once in this entire Statement. The disaster at Fukushima is not discussed at all in the report, but the word does appear in the title of another document listed on 5-160 of Volume 1. The mention is the following citation: "U.S. Nuclear Regulatory Commission (NRC). 2011. Recommendations for Enhancing Reactor Safety in the 21st Century: The Near-Term Task Force Review of Insights from the Fukushima Dai-Ichi Accident. July 12, 2011. Washington, D.C., ADAMS Accession No. ML111861807." This is a list of documents in 5.14 References, which starts on 5-144. Chernobyl is first mentioned in a comment on page D-80 (Appendix D) of Volume 2 of the DEIS. Chernobyl shows up as a word a total of 11 times in Appendix D comments. In table 5-36, it says the impacts of postulated severe accidents would be small, because "Probability-weighted consequences of severe accidents would be lower than the Commission's safety goals and probability-weighted consequences for currently operating reactors." This is clearly a false statement. We all know, based on the experiences of Chernobyl and Fukushima, that the consequences of severe accidents are not small but are horrendous, requiring large areas around the accident site to be completely evacuated for decades or possibly for centuries. The weasel wording here is supposed to be justified by the idea that the probability of a severe

accident is so small that, for practical purposes, we can assume no such accident will happen. The calculation of probability is not even close to correct. In round figures, there are 400 large nuclear power reactors in the world. The very first nuclear reactor was first operated in 1944, so the history of nuclear reactors is less than 70 years. In that time, 4 large reactors (1 at Chernobyl and 3 at Fukushima) have had severe accidents. This is not counting deadly accidents at smaller experimental or military reactors, but only those at reactors roughly comparable to the proposed Fermi III. It is not even counting the less severe malfunctions experienced in this country at Fermi I or at Three Mile Island. Counting just the severe accidents that have occurred at large commercial reactors resulting in huge uncontrolled releases of radiation and radioactive contaminants, there have been 4 in less than 70 years. Assuming the approximately 400 of this type of reactor has existed for the entire period would give us 28,000 reactor-years with 4 severe accidents. The odds for a severe accident at a random reactor calculated on this basis would be 1 chance in 7000 for each year, or 1 chance in 100 over a 70-year lifetime. Now, the above is just a very rough calculation based on the actual history of nuclear reactors. It is not realistic, because most reactors have not been in existence for 70 years. A more realistic calculation would give even greater chances for a severe accident. It is not realistic because it does not include as a severe accident one that reduces the value of a completed reactor to less than zero, even though two of these have occurred in the United States and one of these two has occurred right here in Michigan (Fermi I). The real probabilities of a very damaging accident are GREATER than 1 in 100.

This simple calculation is enough to show that the extreme low probability assigned for a severe accident in this Draft Environmental Impact Report is completely unrealistic. The report is simply wrong, and this is the type of wrong that can ruin people's lives, or end them. In real life, nuclear power reactors are far more dangerous than this report says. We are told that this Fermi III would be a new and better (experimental, untested) design. It won't need outside electricity for active cooling to prevent a meltdown for a whole three days after a loss of station power - if all goes as planned. All did not go as planned at Chernobyl, at Fukushima, at Three Mile Island or at Fermi I. We have no guarantee that all will go as planned here.

For decades, the people of Japan were told nuclear power is safe; there's no reason to worry about it. That was a flat-out lie. Now, the NRC Environmental Impact Report is repeating the same lie to us. We are not stupid enough to believe it. (**0028-1** [Myatt, Art])

Response: *The severe accident core damage/release frequencies listed in Table 5-32 of the EIS are those for internal events at power that were reviewed and approved by the NRC as part of the ESBWR design certification process (76 FR 14437). The frequency and consequences of accident scenarios that lead to radiological consequences are determined through the use of PRA techniques. In simple terms, this method models each accident event sequence and the required functions of systems and components to remove the decay heat and bring the reactor to a cold shutdown condition. The model consists of a series of event trees that identify the*

required systems and functions to mitigate the initiating events. Core damage could occur when the systems that are designed to mitigate the accident fail to function as designed. Each frequency in Table 5-32 reflects the expected likelihood that the cited condition could result. The very low frequency is the reflection of available redundant safety systems and numerous design enhancements in the ESBWR design to respond to severe accidents.

In place of the qualitative discussion of external and shutdown events provided in Section 5.11.2 of the draft EIS, the NRC has added a new Table 5-33 to provide in Section 5.11.2 a quantitative description of the additional risks from fires, high winds, and internal floods during at power and shutdown conditions, as was provided in Appendix I of the draft EIS. The results in renumbered Tables 5-34 and 5-35 are also updated to show the total environmental risks (i.e., from internal and external events, at power and shutdown) that were described in Appendix I. Though the values are larger, the NRC's conclusions are not changed.

The commenter estimate of severe accident frequency of about 1-in-10,000 reactor-years is based on the current and the past reactor designs. This frequency is similar to the maximum core damage frequency for current operating reactors as shown in Table 5-35 of the EIS. As indicated in Table 5-35, the core damage frequency for an ESBWR at the Fermi site is calculated to be less than that of the minimum frequency in this table. This is because of the passive design features including built-in provisions that allow ESBWR a coping time of 72 hours for core, reactor coolant system, and containment integrity with no operator action required. The safety enhancement design provisions in the ESBWR make the reactor capable of coping with accident initiators. In addition, ESBWR design is vastly different from that of Chernobyl-type reactors.

Furthermore, the probability of a "Chernobyl-like explosion" at a U.S. commercial reactor is extremely low because of the fundamental differences in the design, construction, and operation of U.S. reactors compared to the Chernobyl reactor. Despite these differences, the NRC considered what lessons it could learn from the event and took steps to address areas of potential improvement. The results of this study are documented in NUREG-1251," Implications of the Accident at Chernobyl for Safety Regulation of Commercial Nuclear Power Plants in the United States*," March 1989 (NRC 1989). The ESBWR design incorporates the lesson learned from Chernobyl and TMI-2 accidents.*

As stated in Section 5.11 of the EIS, the NRC staff task force reported the results of its reviews and insights gained from the Fukushima Dai-ichi accident (NRC 2011c), and presented its recommendations to the Commission on July 12 and July 19, 2011, respectively. As part of the short-term review, the task force concluded that while improvements are expected to be made as a result of the lessons learned, the continued operation of nuclear power plants and licensing activities for new plants did not pose an imminent risk to public health and safety. A number of areas were recommended to the Commission for long-term consideration. Collectively, these recommendations are intended to clarify and strengthen the regulatory framework for protection

against severe natural phenomena, mitigation of the effects of such events, coping with emergencies, and improving the effectiveness of NRC programs. Note that the ESBWR design has many of the design features and attributes necessary to address the task force recommendations. The Commission issued SECY 12-0025 (NRC 2012b), detailing the proposed orders and required actions in response to lesson learned from Japan's March 11, 2011, earthquake and tsunami. Section 5.11 of the EIS was revised to also discuss the NRC actions for design certification and combined license applications submitted under 10 CFR Part 52 that are currently under active NRC staff review (such as the ESBWR design and Fermi 3). The NRC actions include issuing RAIs to applicants like Detroit Edison requesting information to address the requirements of Fukushima-related NRC orders and other requests for information (NRC 2012e, f, g). NRC's evaluation of Detroit Edison's responses is addressed in the NRC's Final Safety Evaluation Report, and any changes to the COL application that are deemed necessary will be incorporated into the applicant's FSAR.

In addition, as stated in Section 5.11.2 of the EIS, the accident risk is the product of the accident frequency and its consequences, which is called probability-weighted consequences of an accident. The discussion in Table 5-34 of the EIS provides a comparison of the risk from operation of Fermi 3 to the Commission's quantitative heath objectives safety goals for average individual early fatality and latent cancer fatality from reactor accidents, as described in Section 5.11.2.1. The Fermi 3 risks for average individual early fatality and latent cancer fatality are provided in Table 5-34 of the EIS, which shows the risks are lower than the safety goals objectives. It should be emphasized, as stated in Section 5.11.2.1, that the goals are presented solely to provide a point of reference for the environmental analysis and do not serve the purpose of a safety evaluation. Section 5.11 of the EIS was revised to include the recent NRC actions related to the lessons learned from the event at Japan's Fukushima Dai-ichi nuclear power plant along with a revised discussion of external and shutdown events. No other changes were made to the EIS as a result of this comment.

Comment: Although U.S. nuclear plants have severe accident management plans, these plans are not required by regulations and do not have to be evaluated by the NRC and tested for their effectiveness. NRC blocks implementation of its own staff recommendations for post-Fukushima safety upgrades: "One of the most important tasks before the Nuclear Regulatory Commission (NRC) today is moving forward quickly on implementing the safety improvements recommended by its Fukushima Near-Term Task Force, and considering additional safety enhancements that have been identified by the NRC staff. For a while it appeared that this was actually taking place. (**0026-6-40** [Macks, Vic])

Response: *Severe accident management guidelines (SAMGs) address mitigation of consequences in the event of a severe accident. A variety of regulations were already in place prior to the development of SAMGs to provide for the mitigation of accidents that were either postulated to occur (this is the deterministic approach) or the most probable to occur (this is the*

probabilistic or risk-informed approach). The licensing basis for a plant typically contains a combination of these approaches to accident analysis. These include, for example, those regulations related to reactor containments (10 CFR Part 50, Appendix A, Section V) and fuel and radioactivity controls (10 CFR Part 50, Appendix A, Section VI), reactor siting criteria (10 CFR Part 100), and Emergency Planning requirements (10 CFR Part 50, Appendix E). The pre-SAMG "mitigation" requirements in conjunction with existing "prevention" requirements were judged to provide adequate protection. Therefore, while SAMGs further enhance mitigation capability, their contribution to risk reduction did not rise to the level of justifying a new requirement. Accordingly, the staff worked with industry to encourage voluntary implementation of SAMGs at all plants.

The Reactor Oversight Program is a risk-informed approach to inspection that focuses on ensuring compliance with those requirements that are most risk significant. Since SAMGs are not a requirement (for the reasons noted above), they are not included in the NRC baseline inspection program. SAMGs provide an improvement/enhancement to the safety margins already inherent in meeting the regulatory requirements. As part of the NRC response to the events in Japan, the NRC staff issued a temporary instruction to address the SAMGs. Temporary Instruction (TI) 2515/184 (NRC 2011b) provided instructions for NRC inspectors to determine (1) how they are being maintained and (2) the nature and extent of licensee implementation of SAMG training and exercises. The staff performed this TI and documented the results (a summary of this inspection is provided on the NRC's Web site: http://www.nrc.gov/NRR/OVERSIGHT/ASSESS/SAMGs.html). As a result of this inspection, the NRC created Near Term Task Force Recommendation 8.

This recommendation entails initiating a rulemaking to require modification of emergency operating procedure (EOP) generic technical guidance to include SAMGs and extensive damage mitigation guidelines in an integrated manner and to clarify command and control issues as appropriate.

Comment: Accidents at atomic reactors can lead to the large-scale release of harmful radioactivity into the environment. For example, the turbine explosion at Fermi 2 reactor on Christmas Day, 1993 led to DTE's release of two million gallons of radioactively contaminated water into Lake Erie. A new reactor at Fermi will effectively double such accident risks: "break in phase" accident risks at the new Fermi 3 reactor, and "break down phase" accident risks at the deteriorated, old Fermi 2 reactor. Incredibly, Fermi 1 experienced an accidental release of thousands of gallons of tritium-contaminated water in 2007, 35 years after the reactor had been permanently shut down! The nearby Davis-Besse reactor also recently admitted tritium leaks into the environment. (**0058-7** [Kamps, Kevin])

Response: *The incidents cited by the commenter are examples of operational anomalies that could occur due to equipment malfunctions. The Fermi 2 incident was caused by the failure of a low-pressure turbine that resulted in significant damage to the turbine/generator, pipe failures in*

the turbine closed cooling system and generator general service water, and initiation of the fire suppression system, leading to releases of large quantities of water in the turbine and radwaste buildings. As indicated in the NRC inspection report 50-341/94-03 (NRC 1994), this incident resulted in a safe shutdown of the reactor, with no personnel injuries. Although the water spilled to the turbine building was not radioactively contaminated, the water became contaminated after mixing with the contents of tanks and sumps in the radwaste building. Follow-up activities and building cleanup required discharge of decontaminated water to Lake Erie through a controlled and well-defined process in which the total amount of released radioactive materials was well below the regulatory standards set in 10 CFR Part 20, Appendix B, for liquid effluent discharges. Overall, a total of about 1 million gallons of contaminated water was discharged to the lake on two different occasions. The NRC calculated a maximum projected dose of about 0.02 millrem to an individual from this release due to consumption of contaminated water and fish. This dose is well below the Federal annual limit of 100 millirem in 10 CFR 20 13.01(a)(1) and the more restrictive limit of 3 millirem in 10 CFR Part 50, Appendix I.

The NRC carries out its mission to protect public health and safety by specifying licensing and operational requirements that nuclear power plants must meet and by inspecting and enforcing compliance with these requirements. When a licensee complies with the regulations, "adequate protection" is presumed. Protection against severe accidents is provided by regulatory requirements in two basic ways: (1) prevention of core damage events such that the likelihood of events that lead to core damage is very low and (2) mitigation of consequences in the event of a severe accident. The combination of these two aspects must result in an acceptably low risk to public health and safety. The NRC has determined that the combination of these two aspects does result in an acceptably low risk. No changes were made to the EIS as a result of this comment.

Comment: After I sent in my comments, issues came to my attention that need addressing. The first is new evidence has come to light since your DEIS public meeting on Dec. 15, 2011 in Monroe, Michigan. An NRC Safety Panel has accepted several key publicly requested actions regarding safety at the U.S. Fukushima-style Mark 1 reactors. This information was published in the Federal Register on Jan. 3, 2012. The NRC Safety Panel agreed to review emergency back-up power systems installed to cool densely packed high-level radioactive waste cooling ponds that sit six to ten stories up in the Mark 1 reactor buildings. In a letter (dated 12/13/2011) from Eric Leeds, NRS's Director of Office of Nuclear Reactor Regulation, to Paul Gunter of Beyond Nuclear, it is stated that "Spent fuel pools (SPF) are elevated to the top of the reactor building outside and above the rated containment structures without safety-related backup electric power systems to cool high-density storage of nuclear waste in the event of loss of grip power." Whoa! Spent fuel is being stored on top of Fermi 2? Does Detroit Edison plan to put spent fuel rods from Fermi 3 on top of the reactor building? Therefore, the DEIS should not move forward until the NRC Safety Panel has dealt with the dangers of operating Fermi 2 without a backup cooling system, and other safety factors that may be proposed for Fermi 3. (**0015-1** [Collins, Jessie])

Response: *The spent fuel pool in the Mark I BWR reactors is located at a high elevation in the reactor building. As indicated in the table attached to the NRC letter to Paul Gunter dated December 13, 2011 (NRC 2011d), the NRC Petition Review Board accepted the spent fuel pool cooling petition, because it is being evaluated as part of the Near-Term Task Force recommendations. The task force concluded that while improvements are expected to be made as a result of the lessons learned, the continued operation of nuclear power plants and licensing activities for new plants did not pose an imminent risk to public health and safety. The Fermi 3 spent fuel pool is located at the lower elevations of the fuel building and will be operated with sufficient redundancies of pool cooling systems. For design certification and combined license applications submitted under 10 CFR Part 52 that are currently under active NRC staff review (such as the ESBWR reactor design and Fermi 3), the NRC staff issued RAIs to applicants like Detroit Edison requesting information to address the requirements of the first and third Orders, and information sought in the RFI (NRC 2012e, f, g). NRC's evaluation of Detroit Edison's responses is addressed in the NRC's Final Safety Evaluation Report, and any changes to the COL application that are deemed necessary will be incorporated into the applicant's FSAR. Section 5.11 was revised to include the recent NRC actions related to the lessons learned from the event at Japan's Fukushima Dai-ichi nuclear power plant.*

E.2.20 Comments Concerning the Uranium Fuel Cycle

Comment: And Fermi 1 is listed as eligible for listing on the National Registry of Historic Places? (v 1, p 2.199 & 2.203) If it becomes listed, will the maintenance/monitoring of all the spent fuel on site (and decommissioning) be done at taxpayers" expense? (**0016-3-3** [Collins, Jessie])

Response: *The potential listing of Fermi 1 on the NRHP will have no effect on Detroit Edison's responsibility for onsite spent fuel storage or decommissioning. No changes were made to the EIS as a result of this comment.*

Comment: Considering the Solid Radioactive Waste Management System (v 1, p 3.33), "There are no onsite facilities for permanent disposal of solid wastes, so the packaged wastes would be temporarily stored in the Auxiliary and Radwaste Buildings prior to being shipped to a licensed disposal facility." And if the facilities do not need an NRC permit to add all the waste they wish (v 1, p. 6.15), what would prevent every nuclear reactor in this country from becoming a nuclear waste dump? Or are we already there? (**0016-3-23** [Collins, Jessie])

Comment: "DE can currently ship Class A low level waste (LLW) to the Energy Solutions site in Clive, Utah; however it cannot dispose of Class B and C LLW at the Energy Solutions site in Barnwell, South Carolina. (v 1, p 6.14) That statement says DE "can" ship Class A LLW to Clive, but does it currently ship Fermi 2 waste there? (**0016-4-21** [Collins, Jessie])

Comment: "Michigan is not currently affiliated with any compact. Other disposal sites may also be available by the time Fermi 3 could become operational." (v 1, p 6.14) Isn't it true that the original waste from the Manhattan Project is still waiting for disposal? (**0016-4-22** [Collins, Jessie])

Comment: "DE can currently ship Class A low level waste (LLW) to the Energy Solutions site in Clive, Utah; however it cannot dispose of Class B and C LLW at the Energy Solutions site in Barnwell, South Carolina. (v 1, p 6.14) That statement says DE "can" ship Class A LLW to Clive, but does it currently ship Fermi 2 waste there? Who monitors what private corporations do with radioactive waste? What restrictions are placed on private management of radioactive waste? (**0026-6-24** [Macks, Vic])

Response: *As stated in Section 6.1.6 of the EIS, licensees are required to evaluate the safety and environmental impacts before constructing low-level waste (LLW) storage facilities and make those evaluations available to NRC inspectors. In addition, as stated in the EIS, NRC (10 CFR Part 20) and EPA (40 CFR Part 190) dose limits would apply both for public and occupational radiation exposure. Section 6.1.6 of the EIS also states that Detroit Edison is currently able to ship Class A LLW to the Energy Solutions site in Clive, Utah, and has done so in the past for LLW from Fermi Units 1 and 2 (Detroit Edison 2011b) in addition to Detroit Edison having the option of contracting with Waste Control Specialists, LLC of Andrew County, Texas, for the disposal of Class A, B, and C LLW. Michigan is not currently affiliated with any compact. All commercial LLW disposal facilities are designed, constructed, and operated in accordance with applicable Federal and/or State regulations. Disposition of historic Manhattan Project waste is the responsibility of the U.S. Department of Energy (DOE) and is beyond the scope of this EIS. Section 6.1.6 of the EIS was revised as a result of these comments.*

Comment: "...NRC staff considered two fuel cycle options that differed in the treatment of spent fuel removed from a reactor. The "no-recycle" option treats all spent fuel as waste to be stored at a Federal waste repository, whereas the "uranium-only recycle" option involves reprocessing spent fuel to recover unused uranium and return it to the system. (p 6.2)" Which has DE proposed to use at Fermi 3? (**0016-4-18** [Collins, Jessie])

Response: *As stated in Section 6.1 of the EIS, assessment of environmental impacts of the fuel cycle as related to the operation of Fermi 3 is based on the values given in Table S-3. In developing Table S-3, the NRC staff considered impacts from both fuel cycles (no-recycle and uranium-only). The impacts presented in Table S-3 are maximized for both of the fuel cycles; that is, the identified environmental impacts are based on the cycle that results in the greater impact. The current national policy, as found in the Nuclear Waste Policy Act (42 USC 10101 et seq.), mandates that high-level and transuranic wastes be buried at a deep geologic repository. While Federal policy no longer prohibits reprocessing and recycling, additional governmental and commercial efforts would be needed before commercial reprocessing and recycling of spent fuel from U.S. nuclear power reactors would occur. Thus, Detroit Edison*

relies upon the "no-recycle" option at this time. No changes were made to the EIS as a result of this comment.

Comment: "After onsite storage for sufficient time to allow for short-lived fission product decay and to reduce the heat generation rate, the fuel assemblies would be transferred to a waste repository for internment." (v 1, p 6.5) Where is the Federal waste repository? Where is the waste from the Manhattan Project? (**0016-4-19** [Collins, Jessie])

Comment: After onsite storage for sufficient time to allow for short-lived fission product decay and to reduce the heat generation rate, the fuel assemblies would be transferred to a waste repository for internment." (v 1, p 6.5) Where is the Federal waste repository? None exists. Spent fuel remains on site, hopefully in hardened casts (not possible at the Fermi site due to geological issue), monitored and protected from threats from weather and attack? (**0026-6-23** [Macks, Vic])

Comment: "Current national policy "mandates that high-level and transuranic wastes be buried at a deep geologic repository, such as the proposed repository at Yucca Mountain, Nevada." (v 1, p 6.15) Didn't Congress permanently reject Yucca Mountain as a repository? (**0016-4-24** [Collins, Jessie])

Comment: Current national policy "mandates that high-level and transuranic wastes be buried at a deep geologic repository, such as the proposed repository at Yucca Mountain, Nevada." (v 1, p 6.15) Didn't Congress permanently reject Yucca Mountain as a repository? Increasing the volume of radioactive waste threatens people and the rest of the biosphere forever. There is no safe solution to man-made radionuclides that remain radioactive and a biological threat for hundreds, thousands, millions or billions of years. (**0026-6-25** [Macks, Vic])

Comment: 51.23, to conclude that any impacts from the storage of high-level waste would be "SMALL." Draft EIS at 6-16 - 17. The Draft EIS's discussion of this issue, however, is clearly inadequate. The WCR is based on the assumption that sufficient repository capacity will exist to store all waste created by nuclear plants. However, there appears to be little likelihood that a high-level waste repository will opened in the near future. Development of the only proposed federal repository site, Yucca Mountain, Nevada, has been postponed indefinitely. The Draft EIS downplays the significant potential that Yucca Mountain will not open. Moreover, even if Yucca Mountain were to be approved, that site does not have the capacity to store all of the high-level waste that will be created by existing nuclear power plants, much less from the proposed new Fermi reactor. Therefore, an additional high-level waste repository would be needed to handle waste from a new Fermi reactor. The Draft EIS must consider the impacts of the storage of additional high level waste at the Fermi site. Therefore, by not considering the impacts from long-term on-site storage of high-level waste, the Draft EIS violates NEPA's "hard look" requirement. (**0036-3-3** [Gleckner, Allen])

Comment: 3) The utter and complete failure by the U.S. government, the nuclear power industry, and the scientific establishment to adequately address the six decade conundrum of the long-term isolation of high-level radioactive waste represented by the $10 billion hole in the ground known as Yucca Mountain in Nevada (**0037-8** [Gunter, Keith])

Comment: Don't Waste Michigan statewide coalition, legal interveners at the Fermi 3. Nuclear power is nuclear waste. The electricity is fleeting. It'll be gone in a generation or two. What will be left in the wake is toxic material, lethal. The FBI has identified plutonium as the most lethal substance on this planet. There will literally be hundreds of tons of high level nuclear waste. In order to proceed with this DEIS, Detroit Edison had to strike up a contract with the Department of Energy to take the high level nuclear waste. And, apparently, they have struck up a contract, but nowhere in the two-volume document, and nowhere docketed in the official documents of Adams, is the contract with the Department of Energy. I would suggest to you that any contract with the Department of Energy to take high level waste is a fraudulent contract. It's sole purpose and intent is set up to defraud the public and to create a fig leaf, a mutual pretense by which the utility and the Department of Energy, with a wink and a nod, say we'll take it. Because on the prima facie evidence, the Department of Energy has not been able to take the first cup of nuclear waste that was generated with the Fermi pile back in 1942. Nobody wants the stuff, nowhere to put it, Yucca Mountain is in collapse. Nobody wants it. So it's a fraudulent contract, and the only sole purpose is to defraud the public. (**0039-24-1** [Keegan, Michael J.])

Response: *Section 6.1.6 of the EIS presents Yucca Mountain as an example of a possible high-level waste repository; the conclusions in Section 6.1.6 do not depend on whether Yucca Mountain, or another site, is ultimately the destination for spent fuel and high-level radioactive waste. The current national policy, as found in the Nuclear Waste Policy Act (42 USC 10101 et seq.), mandates that high-level and transuranic wastes be buried at a deep geologic repository. The U.S. Congress has not repealed or revised the Nuclear Waste Policy Act (42 USC 10101 et seq.). In January 2012, the Blue Ribbon Commission on America's Nuclear Future (a Federal advisory committee to the U.S. Department of Energy) provided recommendations on nuclear energy policy issues, including the storage and disposal of spent nuclear fuel (BRC 2012). As noted in a prior response, the disposition of historic Manhattan Project waste is the responsibility of DOE and is beyond the scope of this EIS. The NRC is proceeding with the development of an EIS to support publication of an updated Waste Confidence Decision and Rule. Section 6.1.6 of this EIS was revised to address these changes and in response to these comments.*

Comment: "DE has proposed a Solid Waste Management System for Fermi 3 that provides enough storage space to hold the total combined volume of 3 months of packaged Class A and 10 years of packaged Class B and Class C LLW generated during plant operations." (v 1, p 6.14) Is three months of Class A equal in volume to ten years of Class B & C waste? (**0016-4-23** [Collins, Jessie])

Response: *The proposed Fermi 3 Solid Waste Management System and the quantities of waste estimated to be generated during Fermi 3 operations are discussed in Section 3.4.2.3 of the EIS. There is not a relationship between the time for accommodating on-site storage of Class A, and Class B and C LLW. No changes were made to the EIS as a result of this comment.*

Comment: Nuclear energy is too risking- There are no safe, sound solutions for the forever deadly radioactive wastes that Fermi 3 would generate. Michigan's four nuclear plants have created over 1,600 tons of highly radioactive waste, which is currently being stored in huge pools or dry cement casks along the shores of the Great Lakes. The Great Lakes hold one fifth of the world's fresh surface water supply and currently provide drinking water to over 42 million people. It is critical that we protect them. There is no central nuclear waste storage facility in the US at present. Transporting nuclear waste to such a facility on public roads and rails that would take them through hundreds of communities would create an additional risk. (**0019-3** [Hartung, Tiffany])

Comment: 19.) How dare the county commissioner inflict the wastes from this plant on all future generations, school children and elders included? May all the names supporting this short sighted licensing go down in infamy. (**0029-3-3** [Newnan, Hal])

Comment: 20.) It looks like the NRC and Nuclear industry have little ability or interest in storing nuclear waste high middle or low level. What do you say to that? The best thing to do would be to of course not make it in the first place. But these wastes, rather than energy, are the main products of this industry. Where is the safety, and for how long, and at what cost, in protecting these wastes from getting out into the public? You don't even have a plan to have a plan. (**0029-3-4** [Newnan, Hal])

Comment: After more than 60 years of producing radioactive waste which will be biohazardous for millions of years. Waste that's being stored in pools of water or dry casks along the shores of our great lakes. Once those lakes are contaminated the results that would be following would be there millions of years. Your children and mine, our grandchildren and their grandchildren, would have to live with those results. I am particularly concerned because in my meeting yesterday with my Japanese student, I'm a tutor of the English language, she just returned from her native Japan and told me horrific stories. And I would just like you to think about maybe talking to someone from that area, reading the reports. Ten percent of that island has been lost, irrevocably lost. (**0040-25-4** [Rivera, Ethyl])

Comment: And the second part of the question is spent rods that we've got on site, that we have no place to put, how long before that becomes a Japanese disaster? (**0040-6-2** [Vanderpool, Simon])

Comment: Operation of nuclear reactors involves splitting large uranium atoms to make smaller radioactive atoms, some, like Iodine-129, which last for literally millions of years. (Half life of I-129 is 16 to 17 million years so it remains hazardous for 160 to 340 million years, 10 to 20 half lives.) These are present in both high level and so-called "low-level" radioactive waste. Despite NRC's "Waste Confidence Decision" which claims a disposal site will be available by 60 years after reactor closure, there is no high level or irradiated/spent fuel disposal site and all previous proposed sites were cancelled for technical reasons. Even NRC doesn't appear so confident - It is studying onsite storage at reactor sites for in the range of 300 years. Meanwhile the temporary dry casks are only designed for 50 years and have had technical problems from their inception, well before the50 year design life. All the irradiated fuel of the nuclear age plus all the reprocessing waste from the failed commercial reprocessing and from weapons reprocessing in the US is waiting for some form of permanent isolation - a dream we all share. (**0050-11** [D'Arrigo, Diane])

Comment: The most egregious and unethical consequence, though, is that we are forcing future generations to become nuclear watchdogs over highly radioactive wastes that remain toxic for thousands of year. (**0056-4** [Ehrle, Lynn Howard])

Comment: The United States does not have a plan to develop a long-term storage facility for nuclear waste that will remain toxic for tens of thousands of years. Spent fuel rods at the Fermi site are stored in above-ground pools and casks. As Dale Zorn of the 56th District in the Michigan House of Representatives commented in an op-ed published in the Monroe Evening News on March 9, 2011, "Fermi 2 is one of three Michigan nuclear power plants that have begun or are planning on-site storage, creating security risks in local communities across Michigan." To ensure that radioactive waste does not spill into nature, permanent storage is needed. We cannot guarantee surveillance, security or maintenance of interim storage for the time that this waste remains dangerous to living beings. (**0068-4** [Seubert, Nancy])

Comment: The many lethal components in all nuclear reactors have been broadly painted as being contained and diminished in their effects through continuously improved technology. The fact that these elements (many with half-lives of thousands and even billions of years, are housed on site as highly radioactive waste which has no disposal possibility other than transfer to munitions manufacturers and armament distributors has not been covered in this report in a factual and truthful manner. (**0070-1** [Rivera, Ethyl])

Comment: 1. DTE does not even have a place to ship off all the spent fuel rods from Fermi 2- they stay on site-mere feet away from Lake Erie. (**0030-2** [Podorsek, Edward])

Comment: My last concern is about the nuclear waste from such plant's. Storage on site is asking for major problems. I would not object if I knew there would be a storage site for all of the nuclear waste that will be generated off site and away from large populations. (**0031-2** [Rossi, Vincent])

Comment: The following specific comments are stated in summary fashion for ease of reference and response. If the goal is to achieve meaningful dialog and open decision-making among multiple stakeholder groups, these issues can be addressed much more effectively than they are in the massive DEIS document that by its size serves as an effective deterrent to meaningful discussion.

Waste Disposal
There is no way to safely or economically dispose of or store radioactive waste for the entire time it remains toxic and hazardous, equivalent to many times the entire history of known human civilization. This problem will never be resolved. Its insolubility is an essential characteristic of the technology, which only the financial power of the industry and the regulatory capture of the government has until now avoided. The ongoing global catastrophe of Fukushima Dai-ichi involves meltdowns, fires and explosions of spent nuclear fuel waste materials, for which there is no safe disposal option. The worst case scenarios envisioned by the antinuclear movement, and previously dismissed by the industry and the NRC as unlikely, have happened. "Risk assessments" and "environmental impact" analyses that continue to evade these basic truths are simply fraudulent.

Until a DEIS can truthfully state that the spent fuel and other radioactive waste will be stored using specific, proven technologies at an identified, proved adequate location, no further nuclear reactors should be permitted (aside from the major safety issues incident to transportation of the waste). No DEIS can truthfully make this statement, nor will one ever be able to do so. At the December 15 hearing, an NRC official acknowledged that "At this point there is no permanent solution [to the spent fuel problem] right now." (emphasis added) The double qualifier is doubly unnecessary. So is a proposed Fermi 3. (**0033-4** [Stephens, Thomas])

Comment: A couple of points in the materials and the things that have been said here by NRC officials and in the materials for this hearing. The Achilles heel of the industry, even before Three Mile Island, even before Chernobyl, even before Fukushima Daiichi and 9/11 when we see how important terrorism really is for these things, was always the issue of the storage of the waste. And we've heard today from the NRC official early in this, I don't know if anybody remembers it, but I wrote it down word for word. He said at this point, there is no permanent solution right now to the waste problem. At this point there is no permanent solution right now. You know, you have to start thinking in official hearings when somebody who's qualified starts repeating themselves on something. Why are they doing that? Because there is no permanent solution to storing waste that's dangerous for tens of thousands of years, maybe a million years. Longer, by orders of magnitude, than the entire history of human civilization. The answer is there is no permanent solution. And so, if you wonder why I'm angry that I have to be hear and talk to the NRC about the idea of building another one of these facilities after the first two didn't kill us, that's why. Because there is no solution to this. And to call it a dog and pony show is, you know, maybe insulting to dogs and ponies, I don't know. This is obscene. It's a joke. The idea

that anybody would try to get rich, with what's happening in our country and in our world today, off this failed technology, wake up. Let's have a little strong relationship and let's be honest about what's happening, and not just say, well you know, I know DTE can get paid, and I live in the community and there'll be some benefits, so I'm willing to come down and say it's okay. It's ridiculous. There is a written document here under NRC letterhead information sheet on the Enrico Fermi Unit 3 Combined Operating Licenses Environmental Review, an official document. It summarizes the DEIS. At the end, I guess they got tired of proofreading, because the very careful way that they phrase these things broke down a little bit, and it says that the benefits of this technology include, for example, e.g., "more jobs." That is not true. If you compare the jobs available from a centralized load, capital intensive technology, like nuclear power, versus the available alternatives, conservation, wind, real renewables, a distributed network, feed-in tariffs, the kind of thing that Ed was talking about, it does not create more jobs. The NRC's credibility is not on the line here. They have no credibility. The emperor has no clothes. This kind of thing should not be allowed in a document like this, and they shouldn't be trying to make these excuses about how there's no solution at this time for now, when there is no solution to these problems. They haven't found one for 60 years. They're not going to find one between now and when they make this decision. (**0039-32-3** [Stephens, Thomas])

Comment: For me, the main issue regarding the impact on the environment is that of spent fuel. The world simply hasn't figured out a way to dispose of spent fuel. Nowhere. The French don't have it. The Russians dumped it in places in East Germany, which the Germans have to clean now. It's a mess. It's terrible. It's expensive. We can store it. We just haven't figured out how to safely dispose of spent fuel. We can store it onsite in big casks. Not a final solution, as admitted here tonight. We can reprocess it like they're doing in France, not safe, not cheap, not clean. They dump the radioactive water into the English Channel. One of the final bi-products is bomb grade plutonium. What are we going to do with that? Where are we going to put all this stuff? My concern is the impact on the environment and is, in short, the impact of spent nuclear fuel on the environment is, in short, large. It's not small. It's not medium. It's large. Thank you. (**0039-27-3** [Kaufman, Hedi])

Response: *These comments concern the management of nuclear waste or spent nuclear fuel. In January 2012, the Blue Ribbon Commission on America's Nuclear Future (a Federal advisory committee to the U.S. Department of Energy) provided recommendations on nuclear energy policy issues, including the storage and disposal of spent nuclear fuel (BRC 2012). The NRC is proceeding with the development of an EIS to support publication of an updated Waste Confidence Decision and Rule. Section 6.1.6 of this EIS was revised to address these changes and in response to these comments.*

Comment: "Liquid, gaseous, and solid radioactive waste management systems would be used to collect and treat the radioactive materials produced as byproducts of operating Fermi 3 (v 1, p3.31).".Waste-processing systems would be designed to meet the design objectives'□ (v 1,

p.3.32). If the systems haven't been designed yet, shouldn't the NRC withhold the normal licensing procedure until the systems are invented and manufactured?

What radioactive waste is being referenced here and in what dose? (**0026-6-18** [Macks, Vic])

Response: *As discussed in Section 1.1 of this EIS, the GEH ESBWR design approved by the NRC in March 2011 includes the design of liquid, gaseous, and solid waste management systems. Section 5.9 of this EIS discusses the environmental impacts from radioactive liquid and gaseous effluent releases, and Section 6.1 of this EIS discusses the environmental impacts from the uranium fuel* cycle *and solid waste management. No changes were made to the EIS as a result of this comment.*

Comment: Considering the Solid Radioactive Waste Management System (v 1, p3.33), "There are no onsite facilities for permanent disposal of solid wastes, so the packaged wastes would be temporarily stored in the Auxiliary and Radwaste Buildings prior to being shipped to a licensed disposal facility." What facility would that be? Is radioactive waste to be privatized, without NRC oversight, recycled into consumer products, commercial landfills? Isn't it true that solid cast storage of spent fuel cannot be done at the Fermi site because the ground can't withstand the weight of the concrete casts? This results in large amounts of spent fuel kept in pools that are more vulnerable to accident/meltdown/explosions. (**0026-6-19** [Macks, Vic])

Comment: Considering the Solid Radioactive Waste Management System (v 1, p3.33), "There are no onsite facilities for permanent disposal of solid wastes, so the packaged wastes would be temporarily stored in the Auxiliary and Radwaste Buildings prior to being shipped to a licensed disposal facility." What facility would that be? Is radioactive waste to be privatized, without NRC oversight, recycled into consumer products, commercial landfills? Isn't it true that solid cast storage of spent fuel cannot be done at the Fermi site because the ground can't withstand the weight of the concrete casts? This results in large amounts of spent fuel kept in pools that are more vulnerable to accident/meltdown/explosions. (**0026-6-59** [Macks, Vic])

Response: *Section 6.1.6 of the EIS, Radioactive Waste, discusses Detroit Edison's current ability to ship Class A LLW to the Energy Solutions site in Clive, Utah (Detroit Edison 2011b); however, it cannot dispose of Class B and C LLW at the Energy Solutions site in Barnwell, South Carolina. The Waste Control Specialists, LLC, site in Andrews County, Texas, is licensed to accept Class A, B, and C LLW from the Texas Compact (Texas and Vermont). As of May 2011, Waste Control Specialists, LLC, may accept Class A, B, and C LLW from outside the Texas Compact for disposal, subject to established criteria, conditions, and approval processes. Michigan is not currently affiliated with any compact. Other disposal sites may also be available by the time Fermi 3 could become operational. The construction of the ISFSI pad for Fermi 2 is complete (i.e., all safety issues resolved including assessment of the soils) and the preoperational dry run activities at ISFSI have begun; however, normal operations have not yet started. The discussion in Sections 2.2.1 and 4.9.1 has been revised to update the description*

of the current status of ISFSI. No other changes were made to the EIS as a result of these comments.

Comment: 11.) And, did I mention that nuclear fuel is NOT a renewable energy source? In the book, "The Weather Makers" by Tim Flannery (subtitled, "The History and Future Impact of Climate Change) we find strong reasons to not consider nuclear energy to be a suitable response to climate change, OR, our countries long term energy needs. A full build-out of nuclear power plants would result in running out of fuel in a few decades. Leaving us with lots of long-term liabilities and civilization would still need to turn to energy efficiency and renewable energy, 12.) though it would probably be too late. (**0029-2-5** [Newnan, Hal])

Response: *This comment addresses the available uranium-ore supply and associated potential impact on the viability of the nuclear industry and is outside the scope of the environmental review. No changes were made to the EIS as a result of this comment.*

Comment: -- See table notes for Radon-222 and Technetium-99, i.e. litigation potential because risks not assessed

The following assessment of the environmental impacts of the fuel cycle as related to the operation of the proposed project is based on the values given in Table S-3 (Table 6-1) and the NRC staff's analysis of the radiological impact from radon-222 and technetium-99. NRC staff's analysis? Is that enough? Why not independent analysis if this research covers new ground? Would that not enhance credibility? Is the NRC analysis published and subject to peer review? (**0034-2-2** [Welke, Jim])

Comment: p. 6-11 Currently, the radiological impacts associated with radon-222 and technetium-99 releases are not addressed in Table S-3. Principal radon releases occur during mining and milling operations and as emissions from mill tailings, whereas principal technetium-99 releases occur from GD facilities. Detroit Edison provided an assessment of radon-222 and technetium-99 in its Environmental Review (ER) (Detroit Edison 2011). This evaluation relied on the information discussed in NUREG-1437 (NRC 1996). I object to relying on Detroit Edison's assessment due to obvious conflict of interest. Could we not have an independent study? Detroit Edison relied on NUREG-1437 [NRC 1996] -- to what extent? What does "relied on" mean?

p. 6-12 The nominal probability coefficient was multiplied by the sum of the estimated whole body population doses from gaseous effluents, liquid effluents, radon-222, and technetium-99 discussed above (approximately 3300 person-rem/yr) to calculate that the U.S. population would incur a total of approximately 1.9 fatal cancers, nonfatal cancers, and severe hereditary effects annually. This assumes the radiation will distributed evenly, like background radiation, across the entire US population. Is that a fair assumption? Cancer and birth defects are often

localized around point sources, aren't they? (http://www.radiation.org/reading/technical.html) (**0034-2-10** [Welke, Jim])

Response: *Section 6.1.6 of the EIS presents the NRC staff's analysis of impacts associated with estimated releases of radon-222 and technetium-99. As referenced in this EIS Section 6.1, the NRC staff analysis relied on NUREG-1437 by scaling the estimated releases of radon-222 and technetium-99 associated with the reference 1000-MW(e) LWR. NUREG-1437 can be accessed at http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/. NUREG-1437 results and Table S-3 both were parts of the NRC's rulemaking process for 10 CFR Part 51 and, therefore, were available for independent analysis and public comment. The NRC staff concluded this remains a bounding approach for estimating the risk to the members of the public from operations at the various sites and facilities associated with the uranium fuel cycle. No changes were made to the EIS as a result of these comments.*

Comment: p. 6-6 Table 6-1). For simplicity and added conservatism in its review and evaluation of the environmental impacts of the fuel cycle, the NRC staff multiplied the impact values in Table S-3 by a factor of 2, rather than 1.79, thus scaling the impacts upward to account for the increased electric generation of the proposed unit. Isn't that a little hokey? Why not 3, or 4? If they don't know the exact figure for every item, the table is useless? (**0034-2-3** [Welke, Jim])

Response: *Section 6.1 of the EIS discusses the environmental impacts from the uranium fuel cycle and solid waste management for the proposed ESBWR reactor design. The environmental impacts of this design are evaluated against specific criteria for light water reactor (LWR) designs in 10 CFR 51.51. The ESBWR design proposed for Unit 3 at the Fermi site is an LWR that would use UO_2 fuel; therefore, Table S-3 (10 CFR 51.51(b)) can be used to assess the environmental impacts of the uranium fuel cycle. Table S-3 values are normalized for a reference 1000-MW(e) LWR at an 80 percent capacity factor, equating to 800 MW(e). Because the ESBWR proposed for Unit 3 at the Fermi site would produce an average of 1428 MW(e), the values in Table S-3 are scaled upward accordingly. Rather than the specific scaling factor of 1.79 (1428/800 = 1.79), a factor of 2 was used for simplicity and because it would also be more conservative. No changes were made to the EIS as a result of this comment.*

Comment: p. 6-7 Recent changes in the fuel cycle may have some bearing on environmental impacts; however, as discussed below, the NRC staff is confident that the contemporary fuel cycle impacts are below those identified in Table S-3. This is especially true in light of the following recent fuel cycle trends in the United States: And what if those trends reverse? Is past performance not an unreliable indicator of future performance?

...The NRC staff recognizes that many of the fuel cycle parameters and interactions vary in small ways from the estimates in Table S-3; the staff concludes that these variations would have

no impacts on the Table S-3 calculations. Isn't that a little hokey? How much do they vary? Quantify "small ways," please? Concludes based on what? (**0034-2-5** [Welke, Jim])

Response: *The NRC staff concluded that the values for the environmental impacts from the uranium fuel cycle in Table S-3 remain a bounding approach for this analysis. The staff recognizes that this approach is conservative and included examples of this conservatism in the EIS. No changes were made to the EIS as a result of this comment.*

Comment: p. 6-8 Another change supporting the bounding nature of the Table S-3 assumptions is the elimination of U.S. restrictions on the importation of foreign uranium. Until recently, the economic conditions in the uranium market favored utilization of foreign uranium at the expense of the domestic uranium industry. Does the US (or Detroit Edison) enforce domestic mining, processing, and environment standards overseas? (No.) Is it not possible then, that overseas mines consume more land, water, and energy; and produce more pollution? Do we ignore overseas production inefficiencies and pollution because it is out of "scope" of this EIS? Isn't that kind of stupid?

... The majority of these applications are expected to be for in situ leach solution mining that does not produce tailings. Factoring in changes to the fuel cycle suggests that the environmental impacts of mining and tail millings could drop to levels below those given in Table S-3; however, Table S-3 estimates remain bounding for the proposed unit. "Are expected," "could drop;" what if these assumptions are wrong? Despite sticking with Table S-3 estimates, the NRC still draws another favorable conclusion based on vague expectation. Could we have a study to support or deny the probability of such expectations, even if the fuel is imported?

... In comparison, a coal-fired power plant using the same MW(e) output as the LWR-scaled model and using strip-mined coal requires the disturbance of about 360 ac/yr for fuel alone. Why make the convenient comparison to a coal-fired power plant? Why not compare to distributed renewables? Less convenient comparison? Less favorable comparison? Why not do both? (**0034-2-6** [Welke, Jim])

Response: *The NRC environmental review process covers environmental effects only in the United States. The comment above requests the review of mining operations outside the United States. Since such review is outside the scope of this NRC licensing process, such effects will not be covered in the EIS. The values in Table S-3 were calculated from industry averages for the performance of each type of facility or operation within the fuel cycle. The NRC staff followed the policy of choosing assumptions and factors to be applied so that the calculated values would not be underestimated. This approach was intended to ensure that the actual environmental impacts would be smaller than the quantities shown in Table S-3 for all LWR nuclear power plants within the widest range of operating conditions. In addition, examples of recent fuel cycle trends are presented to further illustrate this conservatism. No changes were made to the EIS as a result of this comment.*

Comment: p. 6-9 13 ... The maximum 14 consumptive water use (assuming that all plants supplying electrical energy to the nuclear fuel 15 cycle use cooling towers) would be about 4 percent of the 1000-MW(e) LWR-scaled model 16 using cooling towers. Under this condition, thermal effluents would be negligible. The NRC staff 17 concludes that the impacts on water use for these combinations of thermal loadings and water 18 consumption would be SMALL.

Again, the assumptions, and "under this condition" -- why make assumptions? Why not calculate various scenarios, and select the worst-case? The electric energy is usually produced by the combustion of fossil fuel at conventional power plants. Electric energy associated with the fuel cycle represents about 5 percent of the annual electric power production of the reference 1000-MW(e) LWR. Process heat is generated primarily by the combustion of natural gas. This gas consumption, if used to generate electricity, would be less than 0.4 percent of the electrical output from the model plant. Again, the assumptions, and "is usually produced" -- why make assumptions? Why not calculate various scenarios, and select the worst-case? If process heat comes from natural gas, do we include the environmental impact of sourcing the natural gas? Via what process? Deep hydro-fracking? Do we know the environmental impacts of that? What if process heat comes from hydrogen gas created by electrolysis, or less likely but possible, thermolysis? Where does that process electricity come from? Nuclear power plants? Do we know the impacts of that scenario? (What if fossil fuels become prohibitively expensive due to proposed cap and trade rules, and we use renewable energy to process uranium? Will the cost change? Will the environmental impact change?) The largest use of electricity in the fuel cycle comes from the enrichment process. It appears that GC technology is likely to eventually replace GD technology for uranium enrichment in the United States. The same amount of enrichment from a GC facility uses less electricity and therefore results in lower amounts of air emissions such as carbon dioxide (CO2) than a GD facility. Therefore, the NRC staff concludes that the values for electricity use and air emissions in Table S-3 continue to be appropriately bounding values. Again, the assumptions, and "is likely to eventually replace" -- what if it doesn't? What if the fuel comes from overseas? Do the assumptions hold then? For how long? Under what circumstances? (**0034-2-7** [Welke, Jim])

Response: *The NRC staff concluded that the values for the environmental impacts from the uranium fuel cycle in Table S-3 remain a bounding approach for this analysis. The staff recognizes that this approach is conservative and included examples of this conservatism in the EIS. As stated in Section 6.1 of the EIS, it appears that gas centrifuge (GC) technology is likely to replace gaseous diffusion technology for uranium enrichment in the United States. To the extent that these and other events come to pass (e.g., implementation of GC, in-situ leach, and the like), actual environmental impacts from the uranium fuel cycle would be smaller. No changes were made to the EIS as a result of this comment.*

Comment: The ratio of net carbon savings per dollar to that of nuclear power is the reciprocal of their relative cost, corrected for gas-fired CHP's carbon emissions (assumed here to be

threefold lower than those of the coal-fired power plant and fossil-fuelled boiler displaced). As Bill Keepin and Greg Kats put it in Energy Policy (December 1988), based on their still-reasonable estimate that efficient use could save about seven times as much carbon per dollar as nuclear power, “every $100 invested in nuclear power would effectively release an additional tonne of carbon into the atmosphere” - so, counting that opportunity cost, “the effective carbon intensity of nuclear power is nearly six times greater than the direct carbon intensity of coal fired power.” Whatever the exact ratio, their finding remains qualitatively robust even if nuclear power becomes far cheaper and its competitors don’t. Speed matters too: if nuclear investments are also inherently slower to deploy, as market behaviour indicates, then they don’t only reduce but also retard carbon displacement. If climate matters, we must invest judiciously, not indiscriminately, to procure the most climate solution per dollar and per year. Empirically, on both criteria, nuclear power seems less effective than other abundant options on offer. The case for new nuclear build as a means of climate protection thus requires reexamination.

... Table S-3 states that the fuel cycle for the reference 1000-MW(e) LWR requires 323,000 MW-hr of electricity. The fuel cycle for the 1000-MW(e) LWR-scaled model would therefore require 6.5 - 105 MW-hr of electricity, or 0.016 percent of the 4.1 billion MW-hr of electricity generated in the United States in 2008 (DOE/EIA 2009). Therefore, the gaseous and particulate emissions would add about 0.016 percent to the national gaseous and particulate chemical effluents for electricity generation.

Another pointless comparison. Gaseous and particulate effluents are additive, cumulative, and bad. More is worse, less is better. Why compare to how bad things already are? This is like a nihilist saying, “I’m already deeply and hopeless indebted, so why not borrow a little more?” Liquid chemical effluents produced in fuel cycle processes are related to fuel enrichment and fabrication and may be released to receiving waters. These effluents are usually present in dilute concentrations, such that only small amounts of dilution water are required to reach levels of concentration that are within established standards. Same as above: another faulty comparison. Why assume more additive, cumulative emissions are OK because they fall within established standards? Why compare these emissions to those from efficiency improvements or distributed renewables? Or, better scrubbing processes? And what if the fuel comes from overseas? Is there any guarantee the source nation will adhere to US standards? Do we ignore toxic emissions if they occur outside our borders? What if they occur in Canada and pollute the Great Lakes? What if the polluted water is shipped to the US and dumped here under a free trade agreement? (**0034-2-9** [Welke, Jim])

Response: *The initial comments concern the GHG emissions of the entire fuel cycle and operation of the proposed Fermi 3. The impacts of GHG emissions from the life cycle of fuel production, construction, operation, and decommissioning of the unit are presented in Chapters 5, 7, and in Appendix L of the EIS. The comments also address potential additive and*

cumulative impacts. Cumulative impacts are addressed in Chapter 7 of the EIS. Last, the comments suggest the review of mining operations outside the United States. Since such review is outside the legal scope of this NRC licensing process, such effects will not be covered in the EIS. No changes were made to the EIS as a result of this comment.

Comment: p. 6-12
37 Radon-222 releases from tailings are indistinguishable from background radiation levels at a
38 few miles distance from the tailings pile (at less than 0.6 mi in some cases) (NRC 1996). Why assume that no one (of importance?), and no wildlife (that we care about) will approach closer than 0.6 mi? That seems like a specious argument. It's like when you tell the doctor, "It hurts when I do this." And the doctor replies, "Don't do that." The tailings, where they reside, are toxic to both humans and wildlife (some of which may be migratory), and will be for a long time. (**0034-2-11** [Welke, Jim])

Response: *The referenced text is simply stating that radon-222 emissions are indistinguishable from background concentrations in the environment. Nonetheless, the NRC staff evaluated potential impacts associated with radon-222 based on the estimated quantity of radon-222 released to the environment. No changes were made to the EIS as a result of this comment.*

Comment: p. 6-14 Detroit Edison can currently ship Class A LLW to the Energy Solutions site in Clive, Utah; however, it cannot dispose of Class B and C LLW at the Energy Solutions site in Barnwell, South Carolina. The Waste Control Specialists, LLC, site in Andrews County, Texas, is licensed to accept Class A, B, and C LLW from the Texas Compact (Texas and Vermont). As of May 2011, Waste Control Specialists, LLC, may accept Class A, B, and C LLW from outside the Texas Compact for disposal, subject to established criteria, conditions, and approval processes. Michigan is not currently affiliated with any compact. Other disposal sites may also be available by the time Fermi 3 could become operational. Detroit Edison has proposed a Solid Waste Management System for Fermi 3 that provides enough storage space to hold the total combined volume of 3 months of packaged Class A and 10 years of packaged Class B and Class C LLW generated during plant operations. If additional storage capacity for Class B and C LLW is required, Detroit Edison could elect to construct additional temporary storage facilities. Detroit Edison could also enter into an agreement with a third-party contractor to process, store, own, and ultimately dispose of LLW from Fermi 3. The NRC staff anticipates that licensees would temporarily store Class B and C LLW on site until offsite storage locations are available. Several operating nuclear power plants have successfully increased onsite storage capacity in the past in accordance with existing NRC regulations. This extended waste storage onsite resulted in no significant increase in dose to the public.

There are a whole lot of "may" and "could" in there. Would it not be worthwhile (and fiscally prudent) to nail waste disposal details down. Will they, or won't they ship waste to Texas? Will it be Class A, B, or C? Or, all three? How much? When? How? What if a waste carrying truck

crashes or hijackers seize and dump it? (I know, section 6.2 “covers” transportation.) What if they dump the waste in a public reservoir, or where it can contaminate ground water? More of this stuff stored somewhere and then shipped means more chances for it to escape the disposal process and create unanticipated disasters. Are such scenarios considered? I bet our Department of Homeland Security does. If not considered by the NRC as potential environmental impacts, shouldn’t they be? (**0034-3-1** [Welke, Jim])

Response: *The proposed Fermi 3 Solid Waste Management System and the quantities of waste estimated to be generated during Fermi 3 operations are discussed in Section 3.4.2.3 of the EIS. The NRC staff concluded that the values for the environmental impacts from the uranium fuel cycle in Table S-3 remain a bounding approach for this analysis. NRC and other Federal agencies have implemented initiatives to evaluate and respond to possible threats posed by terrorists, including threats against transporters of nuclear fuel and waste. There are requirements for the physical protection of spent nuclear fuel in transit. The revisions provided to the regulations in 10 CFR Part 73 would provide additional security enhancements in several areas including communications, procedures and training, armed escorts, and deadly force. Malevolent acts are beyond the scope of a NEPA review and will instead be addressed in the SER, Chapter 13. No changes were made to the EIS as a result of this comment.*

Comment: p. 6-15 In most circumstances, the NRC’s regulations (10 CFR 50.59) allow licensees operating nuclear power plants to construct and operate additional onsite LLW storage facilities without seeking approval from the NRC. Is that meant to reassure? No approval required? So, oversight won’t occur until after an accident or theft has occurred. Then, insignificant fines will be levied, but the harm to groundwater and “biota” will be done and irreversible. Right? p. 6-16 fuel generated in any reactor when necessary.” In addition, 10 CFR 51.23(b) applies the 17 generic determination in Section 51.23(a) to provide that “no discussion of any environmental impact of spent fuel storage in reactor facility storage pools or independent spent fuel storage installations (ISFSI) for the period following the term of the [. . .] reactor combined license or amendment [. . .] is required in any [. . .] environmental impact statement [. . .] prepared in connection with [. . .] the issuance or amendment of a combined license for a nuclear power reactors under parts 52 or 54 of this chapter.” That’s pretty rich: “reactor facility storage pools or independent spent fuel storage installations” cannot be discussed? Because they are most likely to create a permanent environmental disaster if an unforeseen “event” breaches one of these facilities and permits the fuel to overheat and escape into surrounding air and water. (Fukushima?) Why would we want to discuss that in an EIS? (We do. I was being sarcastic, sorry.) on America’s Nuclear Future (BRC). The BRC’s charter was to provide recommendations for developing a safe, long-term solution to managing the Nation’s used nuclear fuel and nuclear waste. The BRC began releasing draft subcommittee reports in May 2011, and issued a draft report dated July 29, 2011, to the Secretary of Energy. The draft reports acknowledge that the methods of currently storing spent fuel at nuclear power plants are safe, but to ensure safety in the long term, the BRC recommends development of

centralized interim spent fuel storage facilities and geologic repositories for ultimate disposal of spent fuel and high-level radioactive waste. A Blue Ribbon Commission? And they concluded everything is fine, right? That's rich, too. No further comment on that mass hysteria. (**0034-3-2** [Welke, Jim])

Comment: I live six miles from Fermi. My daughter goes to school three miles from Fermi. This is a very emotional thing for me to be here. I would like to know how many people from this crowd right now can see Fermi from their back door or from their kids' school. Could you please raise your hand? So the rest of these people are politicking. That's what I'm telling you right now. I would love to see new technology brought into my backyard to make sure my kid is safer than she was yesterday, to put more jobs in our area, and to continue to do what we're doing. My question for the NRC is about the waste that we have in Fermi right now. Is the waste okay? Are we okay with that? That is our biggest concern in my neighborhood. (**0039-4-1** [Sandel, Ron])

Comment: THE DRAFT EIS IMPROPERLY MINIMIZES WASTE STORAGE IMPACTS. The Draft EIS is also insufficient under NEPA because it fails to adequately consider the environmental impacts from the high-level waste a new reactor at the Fermi site would generate. As part of the NEPA process, the NRC is required to take a "hard look" at the environmental consequences of a proposed action. Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 350 (1989). The discussion of environmental impacts is designed to provide a "scientific and analytical basis" for comparing the various alternatives for achieving the project's goals. 40 C.F.R. 1502.16; DuBois v. U.S. Dep't of Agriculture, 102 F.3d 1273, 1286 (1st Cir. 1996). A proper analysis of the alternatives, therefore, can be carried out only if the Draft EIS provides a complete and accurate compilation of the environmental consequences of all reasonable alternatives, especially its recommended action.

The Draft EIS does not adequately consider the impacts of high-level nuclear waste storage. Despite paying lip-service to the Blue Ribbon Commission on America's Nuclear Future draft report's recommendation for the development of a central geologic high-level waste repository, the Draft EIS continues to rely on the Waste Confidence Rule ("WCR"), 10 C.F.R. 21 See The Keystone Center, Nuclear Power Joint Fact-Finding, (June 2007), available at http://www.ne.doe.gov/pdfFiles/rpt_KeystoneReportNuclearPowerJointFactFinding_2007.pdf (Describes cost implications of materials cost increases and construction durations). (**0036-3-11** [Gleckner, Allen])

Response: *As stated in Section 6.1.6 of the EIS, licensees are required to evaluate the safety and environmental impacts before constructing LLW storage facilities and to make those evaluations available to NRC inspectors. In addition, as stated in the EIS, NRC (10 CFR Part 20) and EPA (40 CFR Part 190) dose limits would apply both for public and occupational radiation exposure. In January 2012, the Blue Ribbon Commission on America's Nuclear Future (a Federal advisory committee to the U.S. Department of Energy) provided recommendations on nuclear energy policy issues, including the storage and disposal of spent*

nuclear fuel (BRC 2012). The NRC is proceeding with the development of an EIS to support publication of an updated Waste Confidence Decision and Rule. Section 6.1.6 of this EIS was revised to address these changes and in response to these comments.

Comment: So I'd also like to get on with what I was going to talk about in this afternoon's session is the carbon fuel cycle, a uranium fuel cycle. One of the big arguments for nuclear is that it's carbon free, but it's not carbon free. It emits quite a bit of carbon within the fuel cycle from prospecting, mining, milling and enrichment and fabrication. And, for instance, U.S. Enrichment Corporation in Paducah, Kentucky is the largest single user of electricity in the United States. This plant also emits CFC114, which is 9,300 times more destructive to the atmosphere than CO2 and is recognized as being the chemical most damaging to the ozone layer. So in the DEIS they say, well, U.S. Enrichment has promised to phase out this chemical, and that they're going to another process. They were going to get away from gaseous defusion to go the centrifuges. Okay, but then there's another $2 billion subsidy from the government that they're trying to get. Of course, they were denied, so now this whole project is limbo. In 2002, U.S. Enrichment Corporation self-reported emitting 716,000 pounds of CFC114. So, if I do the math right, I think that comes out to 3.3 million tons of CO2. So this is pretty far from being a carbon-free technology. (**0039-31-2** [McArdle, Ed])

Response: *The NRC staff agrees the uranium fuel cycle is not carbon-free. Ozone-depleting substances such as CFC114 are being controlled and phased out under the Montreal Protocol on Substances that Deplete the Ozone Layer. Because of this, the EPA chose not to include chlorofluorocarbons such as CFC114 in its definition of GHGs that endanger public health and welfare (74 FR 66496).*

The impacts of GHG emissions from the life cycle of fuel production, construction, operation, and decommissioning of the unit are presented in Chapters 5 and 7 and in Appendix L of the EIS. The staff recognizes that this approach is conservative and included examples of this conservatism in the EIS. As stated in Section 6.1 of the EIS, it appears that GC technology is likely to replace gaseous diffusion technology for uranium enrichment in the United States. To the extent that these and other events come to pass (e.g., implementation of GC, in-situ leach, and the like), actual environmental impacts from the uranium fuel cycle, including GHG emissions, would be smaller. No changes were made to the EIS as a result of this comment.

Comment: I also have problems with the greenhouse gas emissions and fuel cycle. I think they ignored the CFC 114 which is 9,300 times more destructive to the ozone layer than CO2, which is emitted by the largest emitter, this chemical, the U.S. Enrichment Corporation. So there's problems right through the renewing, through the whole uranium cycle. (**0040-14-2** [McArdle, Ed])

Response: *Ozone-depleting substances such as CFC114 are being controlled and phased out under the Montreal Protocol on Substances that Deplete the Ozone Layer. Because of this, the*

EPA chose not to include chlorofluorocarbons such as CFC114 in its definition of GHGs that endanger public health and welfare (74 FR 66496).

The impacts of GHG emissions from the life cycle of fuel production, construction, operation, and decommissioning of the unit are presented in Chapters 5 and 7 and in Appendix L of the EIS. No changes were made to the EIS as a result of this comment.

Comment: And I'd like to focus on the first one, there are no safe, sound solutions for the deadly radioactive wastes that Fermi 3 would generate. The Obama Administration has canceled the proposed Yucca Mountain dump site in Nevada due to its geological unsuitability. The reprocessing of a radiated nuclear fuel to extract plutonium for supposed re-use would risk nuclear weapons proliferation and disastrous radioactive contamination of the air and water, and would cost taxpayers hundreds of billions of dollars. On site storage in indoor pools, or outdoor dry casks as currently done or proposed at Fermi 2, risks catastrophic radioactivity releases due to accident or attack as well as eventual leakage due to the breakdown of the storage containers. A 2001 NRC report, for example, revealed that 25,000 fatal cancers could result downwind of a waste pool fire. A 1998 anti-tank missile test at the U.S. Army's Aberdeen proving grounds in Maryland was done to show that dry casks are vulnerable to attack. Even consolidating wastes, at so called centralized interim storage sites would leave them vulnerable to accidents or attacks, and risk environmental injustice, as low income communities of color are most often targeted.

All away from reactor storage proposals, I'm sorry, all away-from-reactor storage proposals would risk severe accidents or attacks upon shipping containers, on the roads, rails or waterways, including the Great Lakes. Even Fermi 3's so called low level radioactive waste has nowhere to go. Barnwell, South Carolina has closed its dump sites to Michigan wastes. Every so-called low level radioactive waste dump opened in the U.S. has leaked and most have had to be closed. A Texas dump may be licensed to accept wastes from Fermi 3 sometime in the future, but puts the underlying -- aquifer at risk of radioactive contamination. Especially considering the cleaner alternative, such as efficiency and renewables, it is a moral transgression against future generations to create a forever deadly hazard like radioactive waste. Just to generate 40 to 60 years of electricity. Fermi 3 would increase the risk that Michigan would be targeted for a national high-level radioactive waste dump site, and/or a regional so-called low level radioactive waste dump site, as it has been targeted in the past for this. This was written long before the Fukushima -- catastrophe, very likely the first waste pool fire in the world, although there's a lot of spin trying to deny that there was a waste pool fire. A report from about a month ago, published in discussions of atmospheric chemistry and physics documented that the radioactivity releases of Cesium 137 went down by orders of magnitude around March 19th, right when water was sprayed into the Unit Four pool at Fukushima --. It's very strong evidence that there was a waste pool fire there. And as was said earlier by Michael Keegan, Fukushima -- units one, two, three and four are the exact same kind as Fermi

unit 2, only Fermi's much larger in size. And on the waste side of things, Fermi's pool has every fuel rod ever generated at Fermi 2 in its pool. It's very disconcerting. The figures are by spring of 2010, according to the U.S. Department of Energy, there were 523 tons of high level radioactive waste in Fermi 2's pool. (**0040-22-2** [Kamps, Kevin])

Comment: 1. There are no safe, sound solutions for the deadly radioactive wastes that Fermi 3 would generate. The Obama administration has pledged to cancel the proposed Yucca Mountain dumpsite in Nevada, due to its geologic unsuitability. Reprocessing irradiated nuclear fuel, to extract plutonium for supposed re-use, risks nuclear weapons proliferation and disastrous radioactive contamination of the air and water, and would cost taxpayers hundreds of billions of dollars. On-site storage in indoor pools or outdoor dry casks, as currently done at Fermi 2, risks catastrophic radioactivity releases due to accident or attack, as well as eventual leakage due to breakdown of the storage containers. A 2001 NRC report, for example, revealed that 25,000 fatal cancers could result downwind of a waste pool fire. A 1998 anti-tank missile test at the U.S. Army's Aberdeen Proving Ground showed dry casks vulnerable to attack. Even consolidating wastes at "centralized interim storage" centers would leave them vulnerable to accidents or attacks, and risks environmental injustice, as low income communities of color are most often targeted. All away-from reactor storage proposals would risk severe accidents or attacks upon shipping containers on the roads, rails, or waterways, including the Great Lakes. Even Fermi 3's so-called "low" level radioactive wastes have nowhere to go. Barnwell, South Carolina has closed its dumpsite to Michigan wastes. Every "low" level dump opened in the U.S. has leaked, and most have had to be closed. An imminent Texas dump may be licensed to accept wastes from Fermi 3 sometime in the future, but puts the underlying Ogallala Aquifer at risk of radioactive contamination. Especially considering cleaner alternatives, such as efficiency and renewables, it is a moral transgression against future generations to create a forever deadly hazard like radioactive waste, just to generate 40 to 60 years of electricity. Fermi 3 would increase the risk that Michigan would be targeted for a national high-level radioactive waste dumpsite, and/or a regional "low" level dump, as has occurred in the past. (**0058-1** [Kamps, Kevin])

Response: *Section 6.1.6 of the EIS presents Yucca Mountain as an example of a possible of a high-level waste repository; the conclusions in Section 6.1.6 do not depend on whether Yucca Mountain, or another site, is ultimately the destination for spent fuel and high-level radioactive waste. As stated in this EIS, Section 6.1, assessment of environmental impacts of the fuel cycle as related to the operation of Fermi 3 is based on the values given in Table S-3. In developing Table S-3, the NRC staff considered impacts from both fuel cycles (no-recycle and uranium-only). The impacts presented in Table S-3 are maximized for both of the fuel cycles; that is, the identified environmental impacts are based on the cycle that results in the greater impact. While Federal policy no longer prohibits recycling, additional research and development is needed before commercial recycling of spent fuel from U.S. nuclear power reactors would occur.*

Section 6.1.6, Radioactive Waste, discuses Detroit Edison's current ability to ship Class A LLW to the Energy Solutions site in Clive, Utah; however, it cannot dispose of Class B and C LLW at the Energy Solutions site in Barnwell, South Carolina. The Waste Control Specialists, LLC, site in Andrews County, Texas, is licensed to accept Class A, B, and C LLW from the Texas Compact (Texas and Vermont). As of May 2011, Waste Control Specialists, LLC, may accept Class A, B, and C LLW from outside the Texas Compact for disposal, subject to established criteria, conditions, and approval processes. Michigan is not currently affiliated with any compact. Other disposal sites may also be available by the time Fermi 3 could become operational.

Environmental impacts of postulated accidents are discussed in Section 5.11. In January 2012, the Blue Ribbon Commission on America's Nuclear Future (a Federal advisory committee to the U.S. Department of Energy) provided recommendations on nuclear energy policy issues, including the storage and disposal of spent nuclear fuel (BRC 2012). The NRC is proceeding with the development of an EIS to support publication of an updated Waste Confidence Decision and Rule. Section 6.1.6 of this EIS was revised to address these changes and in response to these comments.

Comment: So, by average, by next spring there could be 563 to 583 tons of waste in that pool. That's far more than adding all the waste in Fukushima -- units one, two, three and four together, in those four pools. The most at Fukushima -- was 130 tons in the unit four pool, the one that likely caught fire. So, what that means here at Fermi 2 and all of these risks go together, Fermi 2, Fermi 3, is that the risk of fire at Fermi 2 is greater in the sense that it would boil more quickly with the loss of electricity, four hours and twelve minutes is the time that it would take to start boiling. It might take some days to boil down to the level of the fuel rods, but once those fuel rods reach air, they catch on fire. And then the consequences will be so much greater. We're talking about a number of times more waste in this pool than at unit four Fukushima -- and we are in the same position we were in 1988 when Fermi 2 started generating atomic waste, we're in the same position we were in 1957 when shipping port began generating atomic waste in Pennsylvania. We're in the same position we were in on December 2nd, I'm sorry, yes, December 2nd, 1942 when Enrico Fermi created the first cup full of split atoms in human history. We don't have a solution. We need to stop making this stuff. (**0040-22-3** [Kamps, Kevin])

Response: *Environmental impacts of postulated accidents are discussed in Section 5.11 of the EIS. This section of the EIS was revised to also discuss the NRC actions for design certification and combined license applications submitted under 10 CFR Part 52 that are currently under active NRC staff review (such as the ESBWR design and Fermi 3). The NRC issued RAIs to Detroit Edison requesting information to address issues related to the mitigation of beyond-design basis external events and reliable spent fuel pool level instrumentation. NRC's evaluation of Detroit Edison's responses will be addressed in the NRC's Final Safety Evaluation*

Report, and any changes to the COL application that are deemed necessary will be incorporated into the applicant's FSAR. Section 5.11 was revised to include the recent Commission orders related to the lessons learned from the event at Japan's Fukushima Dai-ichi nuclear power plant.

The storage of spent nuclear fuel is discussed in Section 6.1.6. In January 2012, the Blue Ribbon Commission on America's Nuclear Future (a Federal advisory committee to the U.S. Department of Energy) provided recommendations on nuclear energy policy issues, including the storage and disposal of spent nuclear fuel (BRC 2012). The NRC is proceeding with the development of an EIS to support publication of an updated Waste Confidence Decision and Rule.

Sections 5.11 and 6.1.6 of this EIS were revised to address these changes and in response to this comment.

Comment: To counter these doubts, designers have come up with a new and untested design for Fermi 3. It is a GE design, passive economic simplified boiling water reactor. It's failures will be tested, not on computers, but on living populations. Just one, one only, of the many lethal components in nuclear reactors is Uranium 238, and who's half-life is 4.5 billion years, which is also the age of the solar system. After its useful life, if you can call it that, in a reactor, it is given for free to munitions manufacturers. U238 is still highly radioactive, and due to its density and penetrating power is now unknown to most Americans used by the U.S. military in what are actually radioactive weapons. (**0040-26-3** [Johnston, Mary])

Response: *The ESBWR design proposed for Fermi 3 is described in Chapter 3 of the EIS. The proposed Fermi 3 Solid Waste Management System and the quantities of waste estimated to be generated during Fermi 3 operations are discussed in Section 3.4.2.3 of the EIS. Spent nuclear fuel still has most of the uranium in the form of the uranium-238 radionuclide; however, the commenter is mistaken in stating "it is given for free to munitions manufacturers." The spent nuclear fuel is not being reprocessed in the United States and must be stored safety in accordance with NRC regulations under the control of the licensee until such time as the DOE takes control of the material. The use of unirradiated uranium-238 by the U.S. military, if currently practiced, is beyond the scope of this EIS. No changes were made to the EIS as a result of this comment.*

Comment: And even without a catastrophic accident, the deadly products of normal operation cannot be disposed of in any ordinary way, but are instead being dispersed around the earth. No safe burial is to be found anywhere. The wastes of the Manhattan Project, produced more than half a century ago, await a final destination disposition. This EIS assumes that there is such a place. But, unfortunately that dream is not to be, now or ever. (**0040-26-8** [Johnston, Mary])

Response: *Environmental impacts of postulated accidents are discussed in Section 5.11 of the EIS. The proposed Fermi 3 Solid Waste Management System and the quantities of waste estimated to be generated during Fermi 3 operations are discussed in Chapter 4 of the EIS. Section 6.1.6, Radioactive Waste, discuses Detroit Edison's current ability to ship Class A LLW to the Energy Solutions site in Clive, Utah; however, it cannot dispose of Class B and C LLW at the Energy Solutions site in Barnwell, South Carolina. The Waste Control Specialists, LLC, site in Andrews County, Texas, is licensed to accept Class A, B, and C LLW from the Texas Compact (Texas and Vermont). As of May 2011, Waste Control Specialists, LLC, may accept Class A, B, and C LLW from outside the Texas Compact for disposal, subject to established criteria, conditions, and approval processes. Michigan is not currently affiliated with any compact. Other disposal sites may also be available by the time Fermi 3 could become operational. Disposition of historic Manhattan Project waste is the responsibility of the DOE and is beyond the scope of this EIS. No changes were made to the EIS as a result of this comment.*

Comment: The mining milling processing and enrichment of the uranium for the reactor is a huge fossil fuel footprint. A lot of hot greenhouse gases. (**0040-9-7** [Keegan, Michael J.])

Response: *The impacts of GHG emissions from the life cycle of fuel production, construction, operation, and decommissioning of the unit are presented in Chapters 5 and 7 and in Appendix L of the EIS. The staff recognizes that this approach is conservative and included examples of this conservatism in the EIS. As stated in Section 6.1 of the EIS, it appears that GC technology is likely to replace gaseous diffusion technology for uranium enrichment in the United States. To the extent that these and other events come to pass (e.g., implementation of GC, in-situ leach, and the like), actual environmental impacts from the uranium fuel cycle, including GHG emissions, would be smaller. No changes were made to the EIS as a result of this comment.*

Comment: Reprocessing must be completely ruled out as a management strategy for irradiated nuclear fuel. The commercial reprocessing of less than 1000 tons of irradiated fuel including some from Enrico Fermi 1 still threaten the other side of Lake Erie in West Valley NY. That nuclear waste site which has been closed since the mid 1970s is projected to cost in the range of $9.7 BILLION to clean up. (**0050-12** [D'Arrigo, Diane])

Response: *As stated in Section 6.1 of the EIS, assessment of environmental impacts of the fuel cycle as related to the operation of Fermi 3 is based on the values given in Table S-3. In developing Table S-3, the NRC staff considered impacts from both fuel cycles (no-recycle and uranium-only). The impacts presented in Table S-3 are maximized for both of the fuel cycles; that is, the identified environmental impacts are based on the cycle that results in the greater impact. While Federal policy no longer prohibits recycling, additional research and development is needed before commercial recycling of spent fuel from U.S. nuclear power reactors would occur. Thus, Detroit Edison relies upon the "no-recycle" option at this time. The cleanup of*

West Valley, New York is the responsibility of the DOE and beyond the scope of this EIS. No changes were made to the EIS as a result of this comment.

Comment: So-called "low-level" radioactive waste is everything but the irradiated fuel and transuranics below ten or 100 nanocuries per gram. The amount could very well be greater than that assumed in the sacred Table S-3, which cannot be questioned and which was developed based on pre-mid 1970s information. Even if Table S-3 cannot be questioned legally, the DEIS should provide documentation to show that it still applies to today's situation. One example of higher than expected volumes of waste is the unexpected but pervasive underground contamination of soil from leaking pipes at nearly all the US nuclear power stations. (**0050-13** [D'Arrigo, Diane])

Response: *The values in Table S-3 were calculated from industry averages for the performance of each type of facility or operation within the fuel cycle. The NRC staff followed the policy of choosing assumptions and factors to be applied so that the calculated values would not be underestimated. This approach was intended to ensure that the actual environmental impacts would be smaller than the quantities shown in Table S-3 for all LWR nuclear power plants within the widest range of operating conditions. In addition, examples of recent fuel cycle trends are presented to further illustrate this conservatism. The NRC staff concluded that the values for the environmental impacts from the uranium fuel cycle in Table S-3 remain a bounding approach for this analysis. Chapter 3 of the EIS discusses the applicant's effluent and environmental monitoring systems. No changes were made to the EIS as a result of this comment.*

Comment: Detroit Edison clearly states that it sends Fermi 2 Class A "low-level" radioactive waste to a commercial disposal site in UTAH (EnergySolutions in Clive UT) but that the more concentrated Class B and C waste cannot go to the operating EnergySolutions disposal site at Barnwell. It cannot go to the US Ecology operated burial ground on the Hanford Reservation in Washington either although this is not mentioned. This would be the case for Fermi 3 (if those sites are still open then). (**0050-14** [D'Arrigo, Diane])

Comment: The plan for LLW is to store it until a disposal site is available. The Texas Waste Control Specialists site is cited as a possible option but this is very wishful thinking.

That site, licensed by the TX Commission on Environmental Quality (TCEQ) has very limited capacity - not even enough for the 2 compact member states (TX and VT) nuclear power and waste total projected capacities. Even if the Compact Commission approved and the site did begin taking out-of-compact waste, Fermi 3 would be behind the rest of the US nuclear power fleet in line to send waste there. Only nuclear generators in Washington, New Jersey, Connecticut and South Carolina have disposal capacity (in Wash and So Carolina) for their Class B and C "low-level" radioactive waste. Some of the operating reactors may be

decommissioned before Fermi 3 starts up, vastly increasing the amount of waste needing disposal and potentially ahead of Fermi for access to the TX dump.

It should also be clearly stated that as of today Jan 11, 2011 Waste Control Specialists has not begun disposing of commercial "low-level" radioactive waste. The TX VT Compact rules regarding Waste Acceptance Criteria for out-of-compact waste have not been finalized. The TX legislature has placed limits on the amount of waste that can go to the site. The licensed capacity of the site is not enough for out of compact waste, especially into the years that Fermi 3 would open. Finally the out-of-compact generators would need to apply and cannot assume their waste would be accepted by the compact commission. (**0050-15** [D'Arrigo, Diane])

Comment: Mention was made (page 6-14 line 32) that third parties might "process, store, own and "dispose of LLW from Fermi 3." Those processors are currently expanding their businesses, attempting to import foreign nuclear waste, which could potentially compete for US waste space. There are also legal limits [SB 1504 (now law in TX)] on the amount (volume and curies) of out-of-compact waste (if any) that can go to the Waste Control Specialists site.

Increased capacity cannot be assumed. The licensing was contentious: There was unanimous opposition to the licensing of the site by the state agency technical reviewers (concerned it did not protect the water), leading to 3 experts at the licensing agency leaving in disgust and opposition to the political reversal of the technical recommendation against licensing. There are still outstanding legal challenges to the license.

Climate change can affect the site. Water is an increasingly precious resource and can be expected to increase in value in the future. The TX disposal site (if it opens) is located in the vicinity of major aquifers (Ogallala, Edwards and others). Despite TX droughts, unusual changes could increase the water in the aquifers [such as recent snow] bringing them closer to the waste.

The Texas site is the only site to come close to opening after over 30 years of site searching involving states, compacts, private companies, some public interest groups and billions of dollars. The State of Michigan itself rejected a "low-level" radioactive waste site largely because of the threat to water. It is completely irresponsible and unsupported to assume there will be offsite disposal for Fermi 3's Class B and C "low-level" radioactive waste. (**0050-16** [D'Arrigo, Diane])

Response: *Section 6.1.6 of the EIS, Radioactive Waste, discuses Detroit Edison's current ability to ship Class A LLW to the Energy Solutions site in Clive, Utah; however, it cannot dispose of Class B and C LLW at the Energy Solutions site in Barnwell, South Carolina. The Waste Control Specialists, LLC, site in Andrews County, Texas, is licensed to accept Class A, B, and C LLW from the Texas Compact (Texas and Vermont). As of May 2011, Waste Control Specialists, LLC, may accept Class A, B, and C LLW from outside the Texas Compact for*

disposal, subject to established criteria, conditions, and approval processes. Michigan is not currently affiliated with any compact. Other licensed disposal sites may also be available by the time Fermi 3 could become operational. All commercial LLW disposal facilities are designed, constructed, and operated in accordance with applicable Federal and/or State regulations. No changes were made to the EIS as a result of these comments.

Comment: The Final EIS should include a more detailed description of the radwaste facility, including the actual activity limits outlined in the permit for this area. A complete description is necessary for reviewers to understand what will be stored onsite. Recommendation: EPA recommends including in the Final EIS a description of current and future projected tonnage, cubic volume, total activity limits, and other related parameters, in relation to current and future planned storage capacity for the nuclear pools and the ISFSI. (**0078-8** [Westlake, Kenneth A.])

Response: *The radioactive waste management system for Fermi 3 is discussed in Section 3.4.2.3 of the EIS, It includes the estimated annual solid radwaste volumes of dry active solids, wet solids, and mixed waste generated from the operation of proposed Fermi 3. As indicated in this section, the detailed description of waste management systems is provided in Chapter 11 of the ESBWR design control document (GEH 2010). The discussion in Sections 3.2.2 and 3.2.3.1 of the EIS is revised to provide reference to the ESBWR design control document for the spent fuel storage capacity and the source terms in radwaste building.*

Comment: The State of Utah is on record opposing the “downblending” of Class B and C waste down to the less concentrated Class A levels in order to meet the criteria to enter the EnergySolutions dump in Utah. It is a matter of semantics whether it is a form of downblending to load the resins for a shorter time thus creating more Class A waste instead of Class C so it can go to the Utah dump. (This is one of the scenarios suggested in the DEIS for dispersing the radioactivity in more Class A less concentrated resins rather than fewer more concentrated/heavily loaded Class C resins. The resins clean the cooling water in the core of the reactor and before it is discharged into public waterways.) (**0050-17** [D’Arrigo, Diane])

Response: *As referenced in Section 6.1.6 of the EIS, potential approaches for minimizing waste include reducing the service run length for resin beds and short-loading media volumes in ion-exchange vessels. These and other techniques are discussed in the Electric Power Research Institute (EPRI) Class B/C Waste Reduction Guide. At the direction of the Commission, the NRC staff is working to improve and strengthen the agency's standards for blending LLW under a process for proposed rulemaking, which is beyond the scope of this EIS. No changes were made to the EIS as a result of this comment.*

Comment: Tennesseans are calling for greater accountability for the nuclear waste processors which are suggested (p 6-14) in the DEIS might take the waste. Tennessee Dept of Environment and Conservation limits storage at its processors to 1 year. In specific cases, after a year the waste could be returned to the generator if no disposal site is found. So the nuclear

waste shell game continues with a very serious and undeveloped scenario that the Fermi site becomes a de-facto permanent nuclear waste site for both high and so called “low-level” radioactive waste. (**0050-18** [D’Arrigo, Diane])

Response: *Section 6.1.6 of the EIS also states that Detroit Edison is currently able to ship Class A LLW to the Energy Solutions site in Clive, Utah and has done so in the past for LLW from Fermi Units 1 and 2 (Detroit Edison 2011b), in addition to also having the option of contracting with Waste Control Specialists, LLC, of Andew County, Texas, for the disposal of Class A, B, and C LLW. Michigan is not currently affiliated with any compact. All commercial LLW processing and disposal facilities are designed, constructed, and operated in accordance with applicable Federal and/or State regulations. Other disposal sites may also be available by the time Fermi 3 could become operational. No changes were made to the EIS as a result of this comment.*

Comment: Detroit Edison’s plan to store Class A waste for 3 months and Class B and C for up to 10 years is irresponsible and lacking in detail to show it would comply with worker and public exposure limits. (**0050-19** [D’Arrigo, Diane])

Response: *Licensees are required to evaluate the safety and environmental impacts before constructing LLW storage facilities and to make those evaluations available to NRC inspectors. In addition, as stated in the EIS, NRC (10 CFR Part 20) and EPA (40 CFR Part 190) dose limits would apply both for public and occupational radiation exposure. Operational impacts at the proposed site are discussed in Chapter 5 of the EIS. No changes were made to the EIS as a result of this comment.*

Comment: There is no plan on involving the public if no disposal becomes available and additional storage capacity must be built. The potential location is mentioned, near the reactor but it is not sketched out nor are secondary limits (on the total amount of waste in onsite storage) described. At what point does the public have the ability to address the increased storage? (**0050-20** [D’Arrigo, Diane])

Comment: Historically, the NRC changed its own regulations, without any public input, allowing nuclear power reactor operators to store unlimited “low-level” waste without even keeping track of it. There is still no public reporting of what is generated and stored at reactors. More recently the NRC, Nuclear Energy Institute and the nuclear power generators wrote up some guidance documents about how they would shift the waste around under various scenarios. This does not mean there is a way to isolate that waste from the environment, the workers, and the public. That problem is not answered in the DEIS in violation of NEPA, the APA and AEA. The long term price tag is potential permanent storage and management of nuclear waste and the reactor itself at the Fermi 3 nuclear power reactor site. (**0050-21** [D’Arrigo, Diane])

Response: *Licensees are required to evaluate the safety and environmental impacts before constructing LLW storage facilities and to make those evaluations available to NRC inspectors. In addition, as stated in the EIS, NRC (10 CFR Part 20) and EPA (40 CFR Part 190) dose limits would apply both for public and occupational radiation exposure. Changes in regulations follow the NRC's rulemaking process and, therefore, would be available for independent analysis and public comment. No changes were made to the EIS as a result of these comments.*

Comment: Radioactivity releases occur not only at reactors, but at every step of the nuclear fuel chain. Accurate accounting of all radioactive wastes released to the air, water and soil from the entire reactor fuel production system is simply not available. The nuclear fuel chain includes uranium mines and mills (often located near indigenous peoples communities), chemical conversion, enrichment and fuel fabrication plants, reactors, and radioactive waste storage pools, casks, trenches and other dumps. Fermi 3 would increase the risk that new uranium mining in the Great Lakes basin, such as at Eagle Rock near Marquette and the Keweenaw Bay Indian Community in Michigan's Upper Peninsula, would go ahead. As confirmed for the seventh time by the U.S. National Academy of Sciences in 2006 in its "Biological Effects of Ionizing Radiation" report (BEIR VII), every exposure to radiation increases the risk to human health. Radioactivity can damage tissues, cells, DNA and other vital molecules, potentially causing programmed cell death (apoptosis), genetic mutations, cancers, leukemias, birth defects, and reproductive, immune, cardiovascular and endocrine system disorders. (**0058-8** [Kamps, Kevin])

Comment: The origin on these elements from the mines to the processing, preparation, and transport and the disastrous effects on the human and other biota along this entire route have been watered down. (**0070-2** [Rivera, Ethyl])

Response: *Section 6.1 of this EIS discusses the environmental impacts from the uranium fuel cycle and solid waste management for the proposed ESBWR reactor design. The environmental impacts of this design are evaluated against specific criteria for LWR designs in 10 CFR 51.51. The ESBWR design proposed for Unit 3 at the Fermi site is an LWR that would use UO_2 fuel; therefore, Table S-3 (10 CFR 51.51(b)) can be used to assess the environmental impacts of the uranium fuel cycle. Table S-3 values, which are normalized for a reference 1000-MW(e) LWR at an 80 percent capacity factor, are scaled by a factor of 2 to reflect the projected total net electric output from Fermi 3. Environmental justice impacts are discussed in Section 5.5 of the EIS. Section 6.1.5 of the EIS discusses the impacts of radioactive effluents released to the environment from waste management activities as set forth in Table S-3. No changes were made to the EIS as a result of these comments.*

Comment: EPA recognizes that in NRC's Waste Confidence Decision and rule, a generic determination was made that spent fuel could be stored onsite for 60 years past the length of its license. The Waste Confidence Decision also states that "no discussion of environmental impact of spent fuel storage in reactor facility storage pools or independent spent fuel storage

installations (ISFSI) for the period following the terms of the [...] reactor combined license or amendment [...] is required in any [...] environmental impact statement [...] prepared in connection with [...] the issuance or amendment of a combined license for a nuclear power reactors under parts 52 or 54 of this chapter." While we understand that NRC need not include a discussion of the actual storage of spent fuel at the proposed Fermi 3 site, we do not understand why the construction of the ISFSI was left out of Chapter 4. EPA views the construction of the ISFSI as a connected action to the proposed action. If the ISFSI's associated impacts were included in the discussion under a different subtitle, for instance under Radwaste Facility (page 3-16), this should be stated in the Final EIS. Based on conversations held at the interagency meeting on December 15, 2011, we understand that the pad for the ISFSI has already been installed at the Fermi site and that it could potentially hold fuel from Fermi 2. This information should be clarified in the Final EIS. Recommendation: EPA recommends that the Final EIS include discussion of the construction of the ISFSI, or identification of where it was incorporated in Chapter 4. We also recommend clarifying that it has already been constructed. (**0078-7** [Westlake, Kenneth A.])

Response: *The impact from the ISFSI to the construction workers are discussed in Section 4.9.1 of the EIS. The construction of the ISFSI pad is complete, and the preoperational dry run activities at ISFSI have begun; however, normal operations have not yet started. The discussion in Sections 2.2.1 and 4.9.1 was revised to update the description of the current status of ISFSI.*

E.2.21 Comments Concerning Transportation

Comment: "Unirradiated fuel is shipped to the reactor by truck; irradiated (spent) fuel is shipped from the reactor by truck, rail, or barge; and radioactive waste other than irradiated fuel is shipped from the reactor by truck or rail." (v 1, p 6.19) Are communities along the route notified of the shipments? (**0016-4-26** [Collins, Jessie])

Comment: "Unirradiated fuel is shipped to the reactor by truck; irradiated (spent) fuel is shipped from the reactor by truck, rail, or barge; and radioactive waste other than irradiated fuel is shipped from the reactor by truck or rail." (v 1, p 6.19) Are communities along the route notified of the shipments? (**0026-6-27** [Macks, Vic])

Response: *For each State along a specified route, advance notification is required to be made to the State governor's office four days prior to a seven-day shipping window for spent fuel shipments, as specified in 10 CFR 71.97 (Advance Notification of Shipment of Irradiated Reactor Fuel and Nuclear Waste). The potential unirradiated fuel and low-level radioactive waste shipments do not warrant advance notification because of their significantly lower quantities of radioactive material. No changes were made to the EIS in response to these comments.*

Comment: "Truck crew members would receive the highest radiation doses "NRC staff's analysis assumed that crew member doses are limited to 2 rem/yr..." (v 1, p 6.24) Shouldn't the NRC be more definite than merely assuming that will be the limit? (**0016-4-29** [Collins, Jessie])

Comment: "Truck crew members would receive the highest radiation doses NRC staff's analysis assumed that crew member doses are limited to 2 rem/yr..." (v 1, p 6.24) Shouldn't the NRC be more definite than merely assuming that will be the limit? (**0026-6-29** [Macks, Vic])

Response: *As detailed in the remainder of the same sentence and the remainder of the paragraph in the text in Section 6.2.2.1 of the EIS, DOE would take title to the spent fuel at the reactor site (Section 6.2.2.1). At that time, the transportation crew members involved in the shipment of spent fuel from Fermi 3 would be subject to DOE regulations concerning radiological exposure. The NRC assumes that DOE would enforce its administrative limit of 2 rem/yr at the time of shipment. No changes were made to the EIS in response to these comments.*

Comment: "Future shipping casks would be designed to transport longer-cooled fuel (more than 5 years out of reactor) and would require much less shielding to meet external dose limitations." (v 1, p 6.28) Isn't it more likely that regulations will be weakened to require less shielding? Or some "stakeholder" will merely need to explain. (**0016-4-30** [Collins, Jessie])

Response: *As a measure to protect workers and members of the public, NRC regulations in 10 CFR 71.47(b)(3) specify that the external dose rate cannot exceed 10 mrem/h at a distance of 2 m from the side of the transport vehicle. Thus, in the case of longer cooled fuel (i.e., higher burnup fuel requires a longer cooling period prior to cask loading), more radioactive decay would have occurred and the spent fuel would have a lower dose rate, requiring less cask shielding to meet and still maintain the level of safety provided by the specification of an external dose rate limit of 10 mrem/h at 2 m. No changes were made to the EIS in response to this comment.*

Comment: "shipments of fuel and waste to the Davis-Besse site may also contribute to the cumulative radiological impacts of transportation as a result of sharing some highway links with Fermi 2 shipments." (v 1, p 7.44) Why would shipments of waste go to the Davis-Besse reactor? (**0016-4-31** [Collins, Jessie])

Comment: "shipments of fuel and waste to the Davis-Besse site may also contribute to the cumulative radiological impacts of transportation as a result of sharing some highway links with Fermi 2 shipments." (v 1, p 7.44) Why have and why would shipments of waste go to the Davis-Besse reactor? (**0026-6-30** [Macks, Vic])

Response: *Shipments of waste from the Fermi site would not go to the Davis-Besse Nuclear Power Station. Section 7.11.2 of the EIS has been modified to distinguish between shipments of fuel to and shipments of waste from the Davis-Besse site.*

Comment: Regarding the "Table 6-10. Radionuclide Inventories Used in Transportation Accident Risk Calculations" (v 1, p 6.36) "Radionuclide inventories are important parameters in the calculation of accident risks." (v 1, p 6.35) Are not all those Radionuclides mentioned also knows as "Daughter Products" of the radioactive decay chain? (**0016-4-32** [Collins, Jessie])

Response: *Radioactive elements decay over time. The elemental products of such decay are collectively known as daughter products. The daughter products can themselves be another radioactive element or a stable (nonradioactive) element. Most of the elements listed in Table 6-10 are either fission products (result from the split of a uranium atom in a nuclear reactor during the fission process, e.g., strontium-90) or actinides and activation products (formed by the capture of a neutron, e.g., the isotopes of americium and plutonium [actinides] or cobalt-60 [activation product]). These elements will decay and their daughter products will be produced. No changes were made to the EIS in response to this comment.*

Comment: "Fuel for the plants would be enriched up to about 4.6 weight percent uranium-235, which exceeds the 10 Code of Federal Regulations 51.52(a) condition. In addition, the expected irradiation level of about 46,000 MWd/MTU exceeds the 10 CFR 51.52(a)." (v 1, p 6.19) Are we to understand that the NRC said DE can exceed the legal limits as long as they explain? What public control exists on the level of uranium enrichment? (**0026-6-26** [Macks, Vic])

Comment: "Fuel for the plants would be enriched up to about 4.6 weight percent uranium-235, which exceeds the 10 Code of Federal Regulations 51.52(a) condition. In addition, the expected irradiation level of about 46,000 MWd/MTU exceeds the 10 CFR 51.52(a)." (v 1, p 6.19) Are we to understand that the NRC said DE can exceed the legal limits as long as they explain? And will they be able to kick it up to 8 percent, IF they explain? (**0016-4-25** [Collins, Jessie])

Response: *The conditions specified in 10 CFR 51.52(a) are not "legal limits." They are bounding conditions that were previously analyzed with the corresponding environmental costs published in Table S-4 of the rule. Note that a number of current reactors are using uranium enrichments of 4.6 percent with fuel reaching irradiation levels exceeding 46,000 MWd/MTU. The environmental costs from future actions are considered to remain within those listed in Table S-4 as long as the conditions remain within those specified in 10 CFR 51.52(a). If, as stated in 10 CFR 51.52(b), those conditions are exceeded, a full analysis would be required to estimate the environmental costs, as was done in Section 6.2 of the EIS. No changes were made to the EIS in response to these comments.*

Comment: 23.) It is also worth noting that transportation of nuclear wastes puts the public at risk. There are always transportation "accidents" and dangers to everyone and every community

the radwaste hazmat materials go near or through. How are you going to answer the health and cost concerns of all this coming and going? There isn't even anywhere that will take it. If you can't answer these questions you can't build the plant. (**0029-3-7** [Newnan, Hal])

Response: *Health risks from routine transportation and transportation accidents are considered in Section 6.2 of the EIS. The radiological impacts from the transportation of unirradiated fuel and spent fuel are considered in the EIS in Sections 6.2.1.2 and 6.2.2.2, respectively. In addition, the impacts of radioactive waste disposal are discussed in Section 6.1.6. No changes were made to the EIS in response to this comment.*

Comment: p. 6-19 In its ER (Detroit Edison 2011), Detroit Edison provided a full description and detailed analyses of transportation impacts. In these analyses, radiological impacts of transporting fuel and waste to and from the Fermi site and alternative sites were calculated by Detroit Edison using the RADTRAN 5.6 computer code (Weiner et al. 2008). For this EIS, the NRC staff estimated the radiological impacts of transporting fuel and waste to and from the Fermi site and alternative sites using the RADTRAN 5.6 computer code. RADTRAN 5.6 is the most commonly used transportation impact analysis computer code in the nuclear industry, and the NRC staff concludes that the code is an acceptable analysis method. Has RADTRAN 5.6 been verified empirically? I love computers. I write software for a living. But I don't trust models unless they are verified in the real world. Is this too "difficult" or expensive? Tough. Real life will inject all sorts of "anomalies" and unforeseen "events" -- that's why Three Mile Island, Chernobyl, and Fukushima were not minor dust ups. The situations unraveled due to poor planning and poor execution of plans, things that humans are famous for and always will be. Why expect things to operate smoothly, and a according to industry computer models when they never do in the real world? One reason: a lot of industry money is at stake, and models contain all that sloppy reality. (**0034-3-3** [Welke, Jim])

Response: *The RADTRAN model for external exposure is well documented and conforms with real-world experience (NRC 1977; Weiner et al. 2008). The largest area for uncertainty lies in the application of the model. In the transportation analysis for routine conditions, conservative assumptions are used to estimate exposure to workers and the general public and lead to some overestimate of dose. An example would be the use of the regulatory maximum dose rate for spent fuel shipments as discussed in Section 6.2.2.1. Also, limited credit is given for shielding of persons near the shipment route (which reduces collective dose estimates), especially in rural areas where no credit for shielding is taken. In the case of persons exposed during truck stops, the evaluation is based on real-world observations (Griego et al. 1996) as discussed in Section 6.2.2.1. The calculation of transportation accident risk is based on accident frequency statistics, cask testing and modeling, and tested exposure pathway models. No changes were made to the EIS in response to this comment.*

Comment: p. 6-38 ... This risk is very minute compared to the estimated 1.6×10^5 person-rem that the same population along the route from the proposed Fermi site to the proposed geologic

HLW repository at Yucca Mountain would incur annually from exposure to natural sources of radiation. OK, so we evaluate “accidents” using modeling software, and conclude there is no risk from the expected dispersion of radioactive material. What if the dispersion follows an unexpected pattern? What if a cask comes unmoored due to a high speed impact (from another vehicle? a train? a plane?), flies off the truck, lands in the middle of a an oil refinery, starts a high-temperature, gasoline-fed fire that burns for days, and propels -- via explosions of fuel pipes and containers -- radioactive material into a populated shopping mall, hospital, or school? Not so farfetched, I think. What if that happens? (**0034-3-7** [Welke, Jim])

Response: *The accident risk methodology considers the entire range of credible accidents, from low-impact, high-frequency events to high-impact, low-frequency events. As discussed in Section 6.2.2.2 of the EIS, more than 99.99 percent of all potential accidents would not be expected to result in a release of material from a spent fuel cask. Because of the nature of the spent fuel and its cladding (primarily a highly stable physical solid), those accidents severe enough to breach a cask would cause the release of only a small fraction of the radioactive material (Sprung et al. 2000). No changes were made to the EIS in response to this comment.*

Comment: p. 6-29 The NRC staff calculated the radiological impacts of transportation of spent fuel using the RADTRAN 5.6 computer code (Weiner et al. 2008). Routing and population data used in RADTRAN 5.6 for truck shipments were obtained from the Transportation Routing Analysis Geographic Information System (TRAGIS) routing code (Johnson and Michelhaugh 2003). There’s that modeling software again. Shipping casks have not been designed for the spent fuel from advanced reactor designs such as the ESBWR. Information in Early Site Permit Environmental Report Sections and Supporting Documentation (INEEL 2003) indicated that advanced LWR fuel designs would not be significantly different from existing LWR designs; therefore, current shipping cask designs were used for the analysis of ESBWR spent fuel shipments. The NRC staff assumed that the capacity of a truck shipment of ESBWR spent fuel was 0.5 MTU/shipment, the same capacity as that used in WASH-1238 (AEC 1972). In its ER (Detroit Edison 2011), Detroit Edison assumed a shipping cask capacity of 0.5 MTU/shipment.

p. 6-32 route (persons living near the highway). Shipping schedules for spent fuel generated by Fermi 3 have not been determined. The NRC staff concluded it to be reasonable to calculate annual doses assuming the annual number of spent fuel shipments is equivalent to the annual refueling requirements. Each refuel cycle is anticipated to reload 68.2 MTU of fresh fuel (Detroit Edison 2011) every 2 yr. It was assumed that the same corresponding amount of spent fuel was to be removed from the reactor and sent to a spent fuel storage facility or repository. Cask type is unknown (p. 6-29, line 22, above), shipping schedules are unknown, and thus per shipment quantities of radioactive material are unknown, so all of the information in section 6.2 is academic and irrelevant, right? Why bother with this charade of studying transportation and storage when it is all still subject to a raft of unknowns?

p. 6-34 Subpart B). Most spent fuel would have cooled for much longer than 5 years before being shipped to a possible geologic repository. Shipments from the Fermi site and alternative sites are also expected to be cooled for longer than 5 years. Consequently, the estimated population doses in Table 6-9 could be further reduced if more realistic dose rate projections and shipping cask capacities are used. (**0034-3-9** [Welke, Jim])

Response: *The transportation analysis is intended to provide a reasonable estimate of the potential radiological transportation impacts associated with operation of Fermi 3. Shipping schedules would follow the refueling schedule of approximately every 2 years as determined by the reactor manufacturer. However, in some cases, such as a longer shipping distance of 3600 km for unirradiated fuel (see the footnote to Table 6-4 of the EIS) or a spent fuel cask limit of 0.5 metric tons of uranium (MTU), assumptions have been used to ensure that most future transportation scenarios would fall within the bounds of the EIS analysis. Transportation risks generally scale with the distance traveled and the number of shipments required. Fewer shipments may be expected in the future because of the use of newer cask designs, but the current cask capacities of about 0.5 MTU were used as a conservative assumption, resulting in more estimated shipments and thus higher impacts. No changes were made to the EIS in response to this comment.*

Comment: Shipments "are also expected to be cooled more than 5 years." What if the industry decides it is expedient to ship them sooner? Say, one year? Or, the minimum, 120 days? Then the dosages and risk increase, right? Why not run simulations based on that assumption?

p. 6-37 For this assessment, release fractions for current-generation LWR fuel designs (Sprung et al. 2000) were used to approximate the impacts from the ESBWR spent fuel shipments. This assumes that the fuel materials and containment systems (i.e., cladding, fuel coatings) behave similarly to current LWR fuel under applied mechanical and thermal conditions. More assumptions about the containment systems. Also, the cooling period is assumed here to exceed five years, correct? Too many assumptions. Suspend this study until these precarious assumptions are removed. (**0034-3-6** [Welke, Jim])

Response: *The assumptions used in the transportation analysis are intended to provide bounding estimates for a range of conditions. The transportation analysis assumes the shipment of short-cooled fuel (i.e., fuel that has been out of the reactor for approximately 120 days). Dosage and risk are dependent on the combination of spent fuel cooling time, amount of spent fuel, and cask design. The current cask designs, as assumed in the transportation analysis, are based on transporting short-cooled fuel. This conservative assumption bounds the shipment of longer cooled fuel, which would require fewer shipments in larger casks. The ESBWR fuel is not significantly different from that used in current boiling water reactors (BWRs). Development of uranium LWR nuclear fuel and its cladding is an incremental process intended to improve performance as more information becomes available.*

In addition, current industry has practical experience with burnups higher than the 45,000 MWD/MTU proposed for Fermi 3. The study of release fractions by Sprung et al. (2000) used in the EIS analysis also considered a range of fuel burnups higher than 45,000 MWD/MTU. No changes were made to the EIS in response to this comment.

Comment: p. 6-28 Table 6-6. Nonradiological Impacts of Transporting Unirradiated Fuel to the Proposed Fermi 2 Site and Alternative Sites, Normalized to Reference LWR Table 6-6 is informative as far as personal injury is concerned, but what about the environmental impact of these hypothetical truck "impacts?" What is the probability that the casks will survive the crash? What if one ruptures? Is there a chance land or water will be contaminated? How badly? For how long? (**0034-3-8** [Welke, Jim])

Response: *As discussed in Section 6.2.1.2 of the EIS, accident impacts involving unirradiated fuel are expected to be smaller than those listed in Table S-4 of 10 CFR 51.52. These results are consistent with the conclusions of WASH-1238 (AEC 1972) because of the similarity of the ESBWR fuel with current-generation LWRs. Section IV of WASH-1238 further discusses the physical and chemical characteristics of the unirradiated fuel, which would preclude any significant release of radionuclides to air or water under the most severe accident conditions. No changes were made to the EIS in response to this comment.*

Comment: p. 7-45 The NRC review team makes numerous assertions that current improvements to reactor design render existing tables and standards obsolete. In that case, why not re-write those tables and standards based on the new designs rather than making bland statement that things will be much better (without any real indication of how much better). (**0034-5-6** [Welke, Jim])

Response: *The NRC periodically updates its regulations as the nuclear industry evolves and more testing and operational experience become available and documented. It is not practical for the NRC to frequently update all of its many regulations because of the time and effort involved in providing careful review and recommendations for change. Such review and change is expected over the course of several years or more given the topic under consideration and the need for revision. In the meantime, reviews on a case-by-case basis that are required form a basis for future modifications of the regulations. No changes were made to the EIS in response to this comment.*

Comment: CONTENTION 22: The DEIS calls for scrutiny only transportation aspects of the use of unusually enriched fuel in the Fermi 3 reactor, which is not adequately disclosed, nor is there analysis of the potential reactor operations accident implications from use of higher-enriched fuel for fissioning, nor evaluation of the increased potential for higher levels of emissions of radioactivity in air and water from normal operations. At p. 6-19 of the DEIS appears this passage: In its application, Detroit Edison requested a COL for an additional reactor at its Fermi site in Monroe County, Michigan. The proposed new reactor would be a GE

Hitachi ESBWR. The ESBWR has a thermal power rating of 4500 MW(t), with a gross electrical rating of 1605 MW(e). This thermal power rating exceeds the 3800-MW(t) limit considered in 10 CFR 51.52. The net electrical output is expected to be approximately 1535 MW(e) as the Fermi 3 power consumption is expected to be 70 MW(e) (Detroit Edison 2011). Fuel for the plants would be enriched up to about 4.6 weight percent uranium-235, which exceeds the 10 CFR 51.52(a) condition. In addition, the expected irradiation level of about 46,000 MWd/MTU exceeds the 10 CFR 51.52(a) condition. Therefore, a full description and detailed analysis of transportation impacts is required.
Intervenors are concerned about the transportation consequences of transporting fuel which is beyond the 4% U-235 limit established by 10 CFR 51.52 as it is shipped to the Fermi 3 as unirradiated fuel. We are certainly concerned about that fuel as spent fuel being shipped away from Fermi 3 again exceeding the limit of 10 CFR 51.52. This has not been adequately addressed in the Environmental Report or in the DEIS. This is an omission. What is of particular concern to Intervenors is the use of such enriched fuel at 4.6% U-235 (by weight) running above 4500 MW thermal, both enrichment and temperature well above the 10 CFR 51.52 specifications. This is not addressed in the Environmental Report or in the DEIS.

Use of fuel enriched at 4.6% is one of with many firsts for this huge scale ESBWR not yet certified and never tested. Below is a listing drawn from ESBWR DCD Tier 2 Chapter 1 table 1.3-1. This proposed ESBWR (compared to other BWR's of BWR1 and ABWR) reactor would have the largest of:

- Core average exit quality steam at 25%. (vs 6.5% or 14.5%)
- Fuel enrichment at 4.6% (not below 4% U-235 as called for in 10 CFR 51.52)
- Fuel rod array of 10 x 10 (vs a 6x6 or 8x8)
- Number of fuel bundles of 1132 (vs 156 or 872)
- Fuel weight of UO2 kg 184,867 / 407,562 lbm (vs 10,750 kg / (23,704) lbm or 172,012 kg / (379,221) lbm)
- Core Diameter of 5883 mm / 231.6 inches. (vs.
- Number of control rods at 269. (vs 37 or 205)

This is the most fuel ever assembled in a reactor (184 tons), at an enrichment of 4.6% U-235 by weight, in the largest fuel rod array of any BWR. Fermi 3 will contain the most fuel bundles (1132), will exceed 10 CFR 51.52 criteria for thermal by at least 700 MWT at 4500 MWT. The core diameter would be the largest ever (5883 mm / 231.6 inches). These are all firsts, and all largest in a BWR design ever. The NRC reports in the DEIS that: In its ER (Detroit Edison 2011), Detroit Edison provided a full description and detailed analyses of transportation impacts. In these analyses, radiological impacts of transporting fuel and waste to and from the Fermi site and alternative sites were calculated by Detroit Edison using the RADTRAN 5.6 computer code (Weiner et al. 2008). For this EIS, the NRC staff estimated the radiological impacts of transporting fuel and waste to and from the Fermi site and alternative sites using the RADTRAN 5.6 computer code. RADTRAN 5.6 is the most commonly used transportation impact analysis

computer code in the nuclear industry, and the NRC staff concludes that the code is an acceptable analysis method.(**0077-6-6** [Lodge, Terry])

Response: *This comment is a contention submitted by the intervenors in the Fermi 3 licensing proceeding before the ASLB. The ASLB has rejected this contention, noting that it is not based on any information that is new, materially different, or previously unavailable and has been available in the DCD at least since December 2, 2010, or in the ER since March 2011 when Revision 2 was submitted. No changes were made to the EIS in response to this comment.*

Comment: "Impacts from these shipments would be from the low levels of radiation that penetrate the unirradiated fuel shipping containers. Radiation exposures at some level would occur to the following individuals: (1) persons residing along the transportation corridors between the fuel fabrication facility and the Fermi site; (2) persons in vehicles traveling on the same route as an unirradiated fuel shipment; (3) persons at vehicle stops for refueling, rest and vehicle inspections; and (4) transportation crew workers." (v 1, p 6.20) Who knew we could get zapped passing a truck hauling unirradiated fuel? (**0016-4-27** [Collins, Jessie])

Comment: "The Individual Stuck in Traffic for one hour at a distance of 4 feet - Person at a Truck Service Station - would be exposed for 49 minutes at a distance of 52 ft from the loaded shipping container." (v 1, p 6.26) Who else could be exposed? (**0016-4-28** [Collins, Jessie])

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Response: *Anyone near a truck hauling unirradiated fuel could be exposed to low levels of radiation as it passes along the shipment route. As discussed in Section 6.2.1 of the EIS, the transportation analysis estimates the collective dose to all persons living or working along the route. The analysis also looks at persons who might receive the highest doses from a shipment, such as an individual stuck in traffic or a person at a truck service station. No changes were made to the EIS in response to these comments.*

Comment: EPA acknowledges there is a discussion of rail transportation in terms of radioactive material in Chapter 6. However, the Draft EIS does not include other resource impacts as a result of the use of the rail line both on the Fermi site and externally. We

acknowledge that the rail line is currently being used; however, with increased activity from both the construction of Fermi 3 and decommissioning of Fermi I, there is reasonable expectation for rail use to increase. Recommendation: EPA recommends a more thorough discussion of impacts from increased use of the rail line transporting fuel and goods to and from the Fermi site. We are interested in both internal and external rail use. For internal rail use, impacts to worker health, noise, and emissions are the primary concerns. For external use, impacts to traffic, accident mitigation, noise, and emissions are the primary concerns. These potential impacts should be studied further and information should be provided in the Final EIS. (**0078-29** [Westlake, Kenneth A.])

Response: *The EIS provides a conservative assessment of impacts related to transportation. If rail transport were used rather than truck transport, the number of shipments to and from the Fermi site would be greatly reduced. As with radiological impacts of radioactive material transportation by truck, the impacts from increased traffic, noise, and emissions would also be lower if rail transport were used for the shipment of items such as construction materials, spent fuel, and other radioactive waste. No changes were made to the EIS in response to this comment.*

Comment: p. 6-42 Because of the conservative approaches and data used to calculate impacts, the actual environmental effects are not likely to exceed those calculated in this EIS. Thus, the NRC staff concludes that the environmental impacts of transportation of fuel and radioactive wastes to and from the Fermi site and alternative sites would be SMALL, and would be consistent with the environmental impacts associated with transportation of fuel and radioactive wastes to and from current-generation reactors presented in Table S-4 of 10 CFR 51.52. Yet, NRC's conclusion is based on assumptions that will not necessarily apply, so it is MEANINGLESS, no? ...The distance from the Fermi site or any of the alternate sites to any new planned repository in the contiguous United States would be no more than double the distance from the Michigan site to Yucca Mountain. Doubling the environmental impact estimates from the transportation of spent reactor fuel, as presented in this section, would provide a reasonable bounding estimate of the impacts for NEPA purposes. The NRC staff concludes that the environmental impacts of these doubled estimates would still be SMALL. What if the spent fuel is sent to China, Africa, or Russia? Then the distance is more than doubled, and transportation modes will vary more, right? And could we rely on other nations to adhere to our standards for disposal and security? Or, might they just toss this stuff in a landfill, and let it come back to us in "dirty" bombs? (**0034-3-5** [Welke, Jim])

Response: *For the current license application, impacts would be SMALL under the conditions that would be expected for transportation of nuclear materials to and from Fermi 3. Consideration of spent fuel shipments to another country are not within the scope of the present EIS. No changes were made to the EIS in response to this comment.*

E.2.22 Comments Concerning Decommissioning

Comment: An applicant for a COL is required to certify that sufficient funds will be available to provide for radiological decommissioning at the end of power operations. As part of its COL application for the Fermi 3 on the Fermi site, Detroit Edison included a Decommissioning Funding Assurance Report in its COL Application Part 1 (Detroit Edison 2010), which stated that Detroit Edison would establish an external sinking funds account to accumulate funds for decommissioning.

Can a corporation, answerable to shareholders be counted on to maintain this fund? What if Detroit Edison goes bankrupt building an unnecessary nuclear reactor? Will taxpayers be on the hook for decommissioning? Will the industry form a separate fund for such bankruptcy scenarios to protect taxpayers? Will corners be cut if there are insufficient funds to decommission properly?

Based on a DOE study (DOE 2004), it is expected that the ESBWR design would have lower physical plant inventories, less accumulated radioactivity, and fewer disposal and transportation costs than current operating reactors. Therefore, the NRC staff concludes that the impacts discussed in GEIS-DECOM remain bounding for reactors deployed after 2002, including the ESBWR. What if these expectations are wrong?

Ecological impacts of decommissioning are expected to be negligible. Unless there is an unforeseen mishap, right? “Expected” is nice, but not conclusive. (**0034-4-1** [Welke, Jim])

Response: *The NRC established a regulatory framework to ensure that decommissioning of all nuclear reactor facilities will be accomplished in a safe and timely manner and that funding will be available for this purpose. Federal regulations [10 CFR 50.33(k) and 10 CFR 50.75(b)] require an applicant for a COL license to certify that sufficient funds will be available to ensure radiological decommissioning at the end of power operations. One of the methods used for providing financial assurance is by establishing an external sinking fund, the method adopted by Detroit Edison (Detroit Edison 2010). An external sinking fund is a fund established and maintained by setting licensee funds aside periodically into an account segregated from licensee assets and outside of the licensee’s administrative control.*

According to NUREG-1555 (NRC 2000), studies of social and environmental effects of decommissioning large commercial power generating units have not identified any significant impacts beyond those considered in NUREG-0586, “Generic Environmental Impact Statement (GEIS) on Decommissioning of Nuclear Facilities,” (NRC 2002) and the site-specific final EIS for the facility. Decommissioning of a nuclear facility has a positive environmental impact. The major environmental impact is the commitment of small amounts of land for waste burial in exchange for the potential reuse of the land where the facility is located. The transportation impacts during decommissioning should be no different from those associated during

construction. The occupational radiation dose can be controlled to levels comparable to occupational doses during normal plant operations. To date, experience at decommissioned facilities has shown that the occupational exposures during the decommissioning period are comparable to those associated with refueling and routine maintenance of the facility when operational. No changes were made to the EIS as a result of this comment.

Comment: My understanding is that the NRC is re-licensing any plant nationwide for continued operation; and that this involves refurbishment. If a plant is to be decommissioned it also has similar problems to the ones being refurbished, that is, what to do with the so-called "low-level" wastes that the nuclear industry wants to throw off into the public sphere as "Free Release." One form of "Free Release" that we are seeing today is the incineration of nuclear waste in Tennessee, and probably soon in Ohio.

To my understanding, this licensing for Fermi 3 in no way considers the spread of these radionuclides into the larger, and unregulated sphere. Cleaning up after yourselves should be well thought out and paid for before licensing, rather than afterward, as you currently are planning to do. Where is your plan to do these things and pay for them? You don't have one, you only have a plan to have a plan, right? (**0029-3-2** [Newnan, Hal])

Comment: For a plant to be decommissioned it also has some more problems with the ones being refurbished. That is what to do with the so-called low level waste that the nuclear industry wants to throw off into the public sphere as free release.

One form of free-release that we are seeing today is incineration of nuclear waste in Tennessee, and probably soon in Ohio. To my understanding this licensing for Fermi 3 in no way considers the spread of these radionuclides into the larger and unregulated sphere. Cleaning up after ourselves, after yourselves should be well thought out and paid for before licensing rather than afterward. (**0040-17-11** [Noonan, Henry])

Response: *Decommissioning impacts of the proposed Fermi 3 are discussed in Section 6.3 of the EIS. NRC regulation (10 CFR 50.75) requires the establishment of a decommissioning trust fund. Sufficient funds are required to be collected and placed in a secure trust that would ensure decommissioning, including the disposal of LLW using an approved and regulated process. Funds are also collected from licensees to defray costs associated with the ultimate disposal of high-level waste. The decommissioning of a nuclear facility must be conducted in accordance with NRC and other Federal and State regulations for the protection of the public health and the environment as appropriate for the location. This includes any volume reduction operations of LLW by incineration at a location away from the site being decommissioned. No changes were made to the EIS as a result of these comments.*

E.2.23 Comments Concerning Cumulative Impacts

Comment: NRC should address the additional radioactivity exposures caused by discharges from the burning of coal at Monroe County's two fossil fuel plants. Radiation monitoring should be installed at those facilities. The cumulative impacts and incremental changes caused by a new reactor should be evaluated. (**0058-11** [Kamps, Kevin])

Response: *The human health effects from burning coal are discussed in Section 9.2.2.1 of the EIS, including radiological impacts and the governmental agencies that regulate emissions to protect human health. Cumulative radiological impacts are discussed in Chapter 7 of the EIS; it is noted that Detroit Edison has conducted a REMP around the Fermi site since 1978. This program measures radiation levels and radioactive materials from all sources, including nearby fossil fuel plants. No changes were made to EIS as result of this comment.*

Comment: "The cumulative effects of past, present, and reasonably foreseeable future actions combined with the predicted impacts of climate change on the quality of surface water in Lake Erie would be Moderate." (v 1, p 7.47) In the Table 7.3 (v 1, p 7.46) on Cumulative Impacts of the Proposed Fermi 3, all classifications got a small to moderate rating, except Economic Impacts . That got a Small to Large rating. Why an across the board rating? Why not just say, "It is a Jobs vs. the Environment Issue." (**0016-4-36** [Collins, Jessie])

Response: *As explained in Section 7.4.1 of the EIS, the SMALL to LARGE rating given to regional economies and tax revenues relates to the different impacts that would be experienced at the local level (Monroe County) versus the wider region. The NRC's process for assessing cumulative impacts is described in the introduction to Chapter 7. In performing its cumulative impacts analysis, the NRC follows the requirements of NEPA, NRC's regulations, and the guidance provided in NUREG-1555, the Environmental Standard Review Plan. No changes to the EIS were made as a result of this comment.*

Comment: Finally, there are concerns of Time Zero for your studies of this situation. When your presentation in Monroe, Michigan indicated what the changes would be, there was not statement of whether these changes are in addition to the changes of Fermi 2; or if Time Zero is a time before Fermi 2 was erected. This can be a vast difference. Negative effects can easily be masked by only stating changes over and above the initial effects. You need to reevaluate your Data. You have an important job that affects the lives of millions. You have to be right. You have to use more than 1 source of information for your decisions. (**0022-3** [Lankford, R.E.])

Response: *The NRC's process for assessing cumulative impacts is described in the introduction to Chapter 7. In performing its cumulative impacts analysis, the NRC follows the requirements of NEPA, NRC's regulations, and the guidance provided in NUREG-1555, the Environmental Standard Review Plan. As stated in the introduction to Chapter 7, cumulative impacts result when the effects of an action are added to or interact with other past, present,*

and reasonably foreseeable future effects on the same resources. For NRC's analysis, past actions are those that occurred prior to receipt of the COL application. Present actions are those related to resources and taken from the time of receipt of the COL application until the start of NRC-authorized construction of Fermi 3. Future actions are those that are reasonably foreseeable throughout the building and operating of Fermi 3, including its decommissioning. The geographical area over which the past, present, and future actions could contribute to cumulative impacts depends on the type of resource considered and is described individually for each resource. The review team considered, among other actions, the cumulative effects of Fermi 3 with current operations of Fermi 2 on the Fermi site. Table 7-1 lists the past, present, and reasonably foreseeable future actions considered in the analysis. Fermi 2 is the first project listed in that table. No changes to the EIS were made as a result of this comment.

Comment: The environmental impact (both radiological and thermal) of the routine operation of a proposed Fermi-3 (in addition to that of Fermi-2) is, in my opinion, no small matter. The vast preponderance of epidemiological scientific research indicates that there is no safe level threshold dosage for human exposure to ionizing radiation whether airborne or through groundwater. The addition of a water intake for a Fermi-3 reactor next to the intake of the existing Fermi-2 plant would be a substantial burden on the Lake Erie ecosystem: "Fermi-3 operations would result in an average consumptive use of approximately 7.6 billion gallons of Lake Erie water per year." (v 2, p. 10.9) "Unavoidable adverse impacts on aquatic ecology resources would include an increased potential for entrainment, impingement, and thermal loading to Lake Erie..." The thermal shock imposed on aquatic life by routine operation of Fermi-3 could also create favorable conditions for invasive species (v 1, p 5.33). Phosphorus loading would precipitate formation of toxic algae and increased bio-accumulation of dioxins, PCBs, and mercury. (**0037-4** [Gunter, Keith])

Response: *The cumulative radiological health impacts from operation of proposed Fermi 3, existing Fermi 2, Fermi 1 (going through decommissioning), Davis-Besse, and the recently completed Fermi 2 ISFSI are described in Section 7.8 of the EIS. The cumulative impacts from past, present, and reasonably foreseeable future actions, including Fermi 3 operations, on water resources and aquatic ecology, including those that are expected to occur in the western basin of Lake Erie, are described in Sections 7.2 and 7.3.2 of the EIS, respectively. The comment provides quotes from these portions of the Draft EIS, but does not provide any specific comments. No changes were made to the EIS in response to this comment.*

Comment: The reports to not identify or discuss a declining Lake Erie. Fermi 3 would be the sixth power plant in the western basin of Lake Erie, who collectively withdraw over three billion gallons of water daily and heat that water about 10 degrees Fahrenheit, and collective entrain millions of larval fish and impinge hundreds of millions of juvenile fish. There is no assessment of the tipping point of additional fish kills to the overall fish population of Lake Erie that would be caused by Fermi 3. There is no assessment of the contribution of additional discharged warm

water at Fermi 3 on algal growth. The Draft EIS fails to clearly state the proposed volume of water to be used, with the additional water temperature at discharge, and the mixing zone of existing power plants in the western basin and the proposed Fermi 3 power plant along with algae production because of the heated waters. The Draft Environmental Statement goes into great detail about the population and land use in 50 and 75-mile radiuses. With the Draft Environmental Impact Statement it shows where reserves are in Ohio, yet it fails to show where all the power plants in this basin are located, and their collective impacts, and the additional impacts from this facility. These omissions fail to address critical water quality, including water withdrawal and aquatic species impacts on a Lake Erie in distress. Rather, the Draft EIS shows other nuclear power plants and avoids disclosure and assessment of water use and fish kills by coal-fired and nuclear power plants in this area. (**0039-21-3** [Bihn, Sandy])

Response: *The effects of Fermi 3 operations on water consumption, water quality, and aquatic resources are discussed in detail in Sections 5.2.2, 5.2.3, and 5.3.2, respectively. The cumulative impacts on these resources are discussed in Sections 7.2 and 7.3.2. These analyses include consideration of the impacts discussed in the comment. In addition, the locations of other power plants that could contribute to cumulative impacts are presented in the EIS in Table 7-1. The cumulative impacts on water resources from these power plants are accounted for in Sections 7.2 and 7.3.2. This analysis indicates that cumulative impacts on surface water use would be SMALL to MODERATE, impacts on surface water quality would be MODERATE, and impacts on aquatic resources would be MODERATE. No changes were made to the EIS in response to this comment.*

Comment: Also, the Draft Environmental Impact Statement fails to disclose the growing algae problem in western Lake Erie that's been known scientifically and documented since 2003. When algae is excessive and toxic, it depletes oxygen and the food chain for fish favoring low-end less desirable fish, and reducing zooplankton and other vital fish food. For algae to grow, it needs warm water. Thermal heating of the waters helps algae grow. With the excess nutrient and algal growth in Lake Erie, it's imperative that the NRC require an additional environmental impact analysis from the additional fish kills and water withdrawals at Fermi 3. What is the environmental impact of Fermi 3's additional killing of an estimated 62.5 million fish as stated in the EIS? What is the Fermi 3's impact of an additional almost 50 million gallons of thermally heated water on algal growth? Lake Erie does not know the difference between water used by a coal-fired plant or a nuclear plant or any other intake. Nor does Lake Erie know if the water is from Michigan, Ohio or Ontario. What Lake Erie waters do know is that too much heat and too many nutrients alter the health of the waters and the abundance of fish. Fermi 3 proposes to discharge heated water. The NRC should either consider recommending Fermi 3 be located somewhere outside the western basin, or that there be mitigation required for the plant. (**0039-21-4** [Bihn, Sandy])

Response: *Section 2.4.2.3 of the EIS presents information regarding the invasion of portions of the Western Basin of Lake Erie by the blue-green algal species* Lyngbya wollei *and reviews information about water quality conditions that are believed to contribute to its proliferation. Section 5.3.2.3 includes a subsection devoted to the potential for operations of the proposed Fermi 3 to affect invasive nuisance organisms, including algal species. In addition, the potential contribution of the construction and operation of the proposed Fermi 3 to the overall cumulative impacts on water quality, algal production, impingement, and entrainment rates in Lake Erie are evaluated in Chapter 7 of the EIS. In addition, the NRC evaluated the impacts of locating the proposed new reactor at other locations away from Lake Erie in Chapter 9. On the basis of this evaluation, the NRC concluded that there was no obviously environmentally superior location for the facility. No changes were made to the EIS in response to this comment.*

Comment: The numerous SMALL and MODERATE environment impacts which have been documented in the EIS have been explained away as unimportant, temporary, or to be effectively mitigated by DTE's future actions. They are not, however, evaluated and reported in their total cumulative effects. The resulting determination that they are negligible is a shame. (**0070-5** [Rivera, Ethyl])

Response: *The cumulative impacts of Fermi 3 operations on environmental resources are presented in Chapter 7 of the EIS. The NRC's process for assessing cumulative impacts is described in the introduction to that chapter. In performing its cumulative impacts analysis, the NRC follows the requirements of NEPA, NRC's regulations, and the guidance provided in NUREG-1555, the Environmental Standard Review Plan. As stated in the introduction to Chapter 7, c*umulative impacts result when the effects of an action are added to or interact with other past, present, and reasonably foreseeable future effects on the same resources. *No changes were made to the EIS in response to this comment.*

E.2.24 Comments Concerning the Need for Power

Comment: The USACE has not shown public NEED for more nuclear power in Michigan. More and more coal plants are NOT being built or are being shut down as a result of lower customer power usage and lower demand. http://www.eia.gov/forecasts/aeo/index.cfm (**0003-1-10** [Anderson, Christy])

Response: *The review team addressed the need for power in the DTE Energy service territory in Chapter 8 of the EIS. While retirements of coal plants can indeed occur as a result of reduced demand for power, there are many other reasons for closing plants, including especially the cost to upgrade an older plant to comply with environmental standards. Increased maintenance costs as a plant ages and the inefficiency of power production using older technologies are other factors that influence coal plant retirement decisions. Section 9.2.1 provides additional considerations regarding the use of once-retired coal plants as alternatives to the proposed reactor. No changes to the EIS were made as a result of this comment.*

Comment: The EIS has not shown public NEED for more nuclear power in Michigan. http://www.eia.gov/forecasts/aeo/index.cfm (**0003-5-1** [Anderson, Christy])

Comment: Electricity demand growth has slowed in each decade since the 1950s. After 9.8-percent annual growth in the 1950s, demand (including retail sales and direct use) increased 2.4 percent per year in the 1990s. From 2000 to 2009 (including the 2008-2009 economic downturn) demand grew by 0.5 percent per year. In the Reference case, electricity demand growth rebounds but remains relatively slow, as growing demand for electricity services is offset by efficiency gains from new appliance standards and investments in energy-efficient equipment. http://www.eia.gov/forecasts/aeo/MT_electric.cfm
3. Generation from U.S. nuclear power plants increases by 9 percent from 2009 to 2035, but its share of total generation falls from 20 percent in 2009 to 17 percent in 2035. The Reference case assumes that existing nuclear power plants will continue operating through 2035 (except for retirements already announced); that some plants will be upgraded to higher rated capacities; and that a small number of new nuclear power plants will be built as a result of various incentive programs. http://www.eia.gov/forecasts/aeo/MT_electric.cfm
4. Most new capacity additions use natural gas and renewables. Decisions to add capacity and the choice of fuel depend on a number of factors. With growing electricity demand and the retirement of 39 gigawatts of existing capacity, 223 gigawatts of new generating capacity (including end-use combined heat and power) will be needed between 2010 and 2035 (Figure 78) figure date Natural-gas-fired plants account for 60 percent of capacity additions between 2010 and 2035 in the AEO2011 Reference case, compared with 25 percent for renewables, 11 percent for coal-fired plants, and 3 percent for nuclear. Escalating construction costs have the largest impact on capital-intensive technologies, including nuclear, coal, and renewables. However, Federal tax incentives, State energy programs, and rising prices for fossil fuels increase the competitiveness of renewable and nuclear capacity. http://www.eia.gov/ forecasts/aeo/source_nuclear.cfm5. In 2000, a boom in construction of new natural-gas-fired plants began, quickly bringing capacity back into balance with demand and, in fact, creating excess capacity. More recently, the economic recession in 2008 and 2009 caused a significant drop in electricity demand. As a
result, the lower demand projected for the near term in the AEO2011 Reference case again results in excess generating capacity. Capacity that is currently under construction is completed in the Reference case, but only a limited amount of additional capacity is built through 2025. In 2025, capacity growth and demand growth are in balance again, and they grow at similar rates through 2035. http://www.eia.gov/forecasts/aeo/source_nuclear.cfm (**0003-5-6** [Anderson, Christy])

Comment: If Michigan's use of electricity was "down 2.4 percent" in 2008, and down 3.6 percent from 2007, (v 1, p 8.3) doesn't that show that there is no need for Fermi 3 produced electricity? (**0016-4-37** [Collins, Jessie])

Comment: The NRC should deny the DTE Fermi 3 license for the following reasons: Fermi 3 is unneeded- Michigan's electric demand is declining. Sales forecasts used in DTE's Fermi 3 application are now very dated and misleading. DTE's current forecast indicates an electric sales decline thru 2020. Michigan's poor economy and population loss combined with the energy efficiency and renewable energy mandates are reducing electric demand. There is considerable surplus electric generating capacity in the Midwest market. CMS has announced plans to mothball 7 existing coal burning units and dropped plans for a new 830MW coal-fired power plant. DTE doesn't need an additional, large generation plant in its fleet and Michigan doesn't need the energy it would generate. (**0019-1** [Hartung, Tiffany])

Comment: Gross Errors on Statement of Need for Additional Capacity in DEIS Section 8: The Energy Information Administration (EIA), a division of the United States Department of Energy, tracks and publishes data on energy use in the United States. In particular, they publish figures on how much electricity was consumed each year in the state of Michigan, and how much was generated. According to the EIA, in 2006, 108,018 million Kilowatt-hours of electricity was consumed (sold at retail) in Michigan. For 2007, the figure was 109,927; for 2008, 105,781; for 2009, 98,121. Data for 2010 is not included in their table, available at http://www.eia.gov/state/seds/hf.jsp?incfile=sep_use/tx/use_tx_MI.html&mstate=Michigan.
The Fermi III Draft Environmental Impact Report, in section 8, relies on a study done by the Michigan Public Service Commission (MPSC) for an estimate of demand for electricity in Michigan. The MPSC study says that demand for electricity in 2006 was 112,183 million Kilowatt-hours, and that they expect demand to increase exponentially by 1.3% every year thereafter. Their formula projects a demand for 115,548 million Kilowatt-hours in 2007; 119,015 in 2008; and 122,589 in 2009.

I have compared the MPSC projections with the reality that we know about so far in the table below:

YEAR	REAL	DEMAND	MPSC PROJECTION ERROR (%)
2006	108,018	112,183	03.9%
2007	109,927	115,548	05.1%
2008	105,781	119,015	12.5%
2009	98,121	122,589	24.9%

The error for 2006 comes from the fact that the MPSC used an estimate of the amount of electricity generated in the state instead of the figure for the amount actually consumed. The ever-increasing errors are caused by the fact that their simple formula did not and could not anticipate the global financial crisis which showed up in 2008 and which is not yet resolved. We can't say with any certainty when or even if the financial crisis will be resolved. We can't say when or if the pattern of growth in demand for electricity that was normal for the 20th Century

will be resumed. There is a logical case that says it will not be resumed, but that's far outside the scope of comments to be made here.

What we can say with certainty is the projection for electrical demand is already showing a great deal of error. By 2025, it is likely to be grossly wrong. It is already too wrong to be a legitimate basis for building Fermi III. In case it is not clear, let's examine just how much of an error this is. If, from 2010 to 2025, Michigan's real electrical demand were to follow the simple formula used by the MPSC, by 2025 the demand would be roughly 157,500 million Kilowatt-hours. The MPSC's original prediction works out to 196,700 million Kilowatt-hours for 2025. That is, the error of 24.9% for 2009, if extended to 2025, would amount to 39,200 million kilowatt-hours less demand in 2025 than originally anticipated. (**0026-6-35** [Macks, Vic])

Comment: Gross errors in demand for electricity:

The Energy Information Administration (EIA), a division of the United States Department of Energy, tracks and publishes data on energy use in the United States. In particular, they publish figures on how much electricity was consumed each year in the state of Michigan, and how much was generated. According to the EIA, in 2006, 108,018 million Kilowatt-hours of electricity was consumed (sold at retail) in Michigan. For 2007, the figure was 109,927; for 2008, 105,781; for 2009, 98,121. Data for 2010 is not included in their table, available at http://www.eia.gov/state/seds/hf.jsp?incfile=sep_use/tx/use_tx_MI.html&mstate=Michigan.

The Fermi III Draft Environmental Impact Report, in section 8, relies on a study done by the Michigan Public Service Commission (MPSC) for an estimate of demand for electricity in Michigan. The MPSC study says that demand for electricity in 2006 was 112,183 million Kilowatt-hours, and that they expect demand to increase exponentially by 1.3% every year thereafter. Their formula projects a demand for 115,548 million Kilowatthours in 2007; 119,015 in 2008; and 122,589 in 2009.

I have compared the MPSC projections with the reality (according to the EIA) that we know about so far in the table below:

YEAR	ACTUAL	DEMAND	MPSC PROJECTION ERROR (%)
2006	108,018	112,183	03.9%
2007	109,927	115,548	05.1%
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The error for 2006 comes from the fact that the MPSC used an estimate of the amount of electricity generated in the state instead of the figure for the amount actually consumed. The ever-increasing errors are caused by the fact that their simple formula did not and could not anticipate the global financial crisis which showed up in 2008 and which is not yet resolved.

We can't say with any certainty when or even if the financial crisis will be resolved. We can't say when or if the pattern of growth in demand for electricity that was normal for the 20th Century will be resumed. There is a logical case that says it will not be resumed, but that's far outside the scope of comments to be made here. What we can say with certainty is the projection for electrical demand is already showing a great deal of error. By 2025, it is likely to be even more grossly wrong. It is so demonstrably inaccurate that it cannot provide a legitimate basis for building Fermi III. (**0028-2** [Myatt, Art])

Comment: 7.) Frank Zaski's comments sent in on Dec. 14, 2011, per the NRC (68 FR 55910) refer to his well-researched statement that "the need for power must be addressed in connection with new power plant construction..." What it comes down to is that there is no need in Michigan for the power from these plants, and therefore the ratepayers need to be free of paying for this unnecessary plant.

8.) The response, by the NRC at the Dec. 15, 2011 hearing in Monroe, MI, to Frank Zaski's comments were extremely lame, much in keeping with what we have seen from the NRC throughout these proceedings. (**0029-1-6** [Newnan, Hal])

Comment: Overcapacity
Unfortunately, Michigan's long economic decline in recent years has hurt our people and our resilience. One silver lining to this depressed economic time is a demonstrated reduction in the need for electric power generation. Michigan's people are not in a position to pay higher electric utility rates for this incredibly expensive technology, so that DTE can generate electricity by boiling water with nuclear technology, to generate power that can be sold elsewhere at a profit on the deregulated electricity market. Michigan is not in a position to run the awful risks of hosting this failed technology to benefit its corporate sponsor's bottom line by selling power to other regions. Michigan does not need Fermi 3. (**0033-5** [Stephens, Thomas])

Comment: p. 8-9 Data used as inputs to the planning process were provided by the Michigan utilities whose representatives also comprised the members of the Plan's various working groups. Strategist, a proprietary computer software program developed by NewEnergy Associates, LLC, was used in data processing.

OK. So, we're back to modeling. That's fine. But you know the old adage, garbage-in, garbage-out? Perhaps not. At any rate, it is mentioned above that the data for the model came from Michigan utilities. And they intend to profit from Fermi III, right? Is that not a conflict of interest? Or do we just trust them? Like self-regulation in the derivatives industry? Better if an independent analysis were done, and things like the cost effectiveness of improved end-use efficiency and distributed renewables (not to mention the job opportunities for these options) were factored in. With these two components it is likely that baseload consumption could be reduced 50%, and the need for new power plants would be obviated -- we could even shut several coal plant down. This approach has worked in California and several other states, where

new power plants have not been built in decades. Here's a link to a model run by the Union of Concerned Scientists that supports my efficiency and renewable energy claims: http://www.ucsusa.org/clean_energy/solutions/big_picture_solutions/do-weneed-coal-and-nuclear-power.html (**0034-5-7** [Welke, Jim])

Comment: p. 8-15 If pursued and successfully executed, energy efficiency and energy conservation programs would result in meaningful energy savings and reductions in electricity demand. However, even if comprehensively structured and aggressively implemented and enforced, energy efficiency programs would have only a limited influence on the rate of growth of Michigan's need for power. That is a fairly broad assertion, and one that is incorrect. I know I am guilty of broad assertions too, but I'm pretty sure I can cite reliable sources (see above hyperlink to UCS). Could you, please? (**0034-5-8** [Welke, Jim])

Comment: Per the NRC (68 FR 55910): "The need for power must be addressed in connection with new power plant construction so that the NRC may weigh the likely benefits (e.g., electrical power) against the environmental impacts of constructing and operating a nuclear power reactor." It is absolutely necessary for the NRC and DTE to update the Fermi 3 application with recent electric sales facts and forecasts. This update will show there is no need for power from Fermi 3 for the following reasons: Sales forecasts used in DTE's Fermi 3 application are now very dated and misleading DTE's current forecast indicates an electric sales DECLINE thru 2020 Michigan's poor economy and population loss are reducing electric demand Michigan has enacted energy efficiency and renewable energy mandates. There is considerable surplus electric generating capacity in the Midwest market CMS has suspended seven coal plants and dropped plans for a new plant Fermi 3 would pose considerable risk to DTE and its ratepayers Michigan's Attorney General has questioned the economic viability of Fermi 3 (**0035-1** [Zaski, Frank])

Comment: In detail: Sales forecasts used in DTE's Fermi 3 application are very dated and misleading The electric sales forecasts DTE used in their application are now 4 to 5 years old. They are based on a rate case filing to the MPSC from 4/2007 (U-15244) http://efile.mpsc.state.mi.us/efile/viewcase.php?casenum=15244&submit.x=0&submit.y=0 And, the Michigan Public Service Commission's (MPSC) 21st Century Energy Plan published in January 2007. The forecast for this report was made in early 2006. To quote: "The MPSC Plan projected a statewide growth rate for electricity consumption of 1.3 percent over the period 2006 to 2025."

DTE's current forecast indicates an electric sales DECLINE thru 2020 Quotes from DTE's rate case U-16472 filing of October, 2010: "Service area sales are expected to decline to 46,988 GWh by 2020. This represents a 0.2% average annual decrease in sales from a dismal year in 2009. Any growth in service area sales due to positive economics is more than offset by the sales reductions due to the Company's Commission-approved 2008 PA 295 Energy Optimization program."

“Detroit Edison’s service area system peak demand in 2009 was 10,627 MW. This was temperature normalized to 11,448 MW. Based on this 2009 temperature-normalized peak and a forecast service area peak demand of 10,551 MW in 2020, an average compound annual growth rate of -0.7% is expected. The peak demand declines due to 1) the expiration of four wholesale customer contracts, 2) a decline in residential air-conditioning sales, and 3) the effects of the Company’s Commission-approved 2008 PA 295 Energy Optimization program. The decline in residential air-conditioning sales, on average a decline of 1.8% annually, is mainly due to energy efficiency improvements as a result of federally mandated energy efficiency standards.” P91 http://efile.mpsc.state.mi.us/efile/docs/16472/0001.pdf

The actual annual load factor in 2009 was 54.6% and DTE’s 2020 forecast is 54.4%. This indicates that DTE will have considerable excess capacity in 2020 without Fermi 3. See counter P74 and P91 in http://efile.mpsc.state.mi.us/efile/docs/16472/0001.pdf and http://efile.mpsc.state.mi.us/efile/docs/16472/0014.pdf (**0035-2** [Zaski, Frank])

Comment: Michigan’s poor economy and population loss are reducing electric demand

Per DTE’s own economic outlook beyond 2012 for Southeast Michigan: “Auto production volume, the largest single driver of economic activity in the region, should increase over the longer horizon, but only gradually and with considerable downside risk. Area steel production, which tends to rise and fall in step with auto output, is subject to the same limitations. Housing permits should recover very slowly as jobs and personal wealth pick up and 2 potential home buyers work off their debt. Employment is expected to increase but at less than the national pace. Population is forecast to decline through the forecast horizon of 2020.” P84 http://efile.mpsc.state.mi.us/efile/docs/16472/0001.pdf

Michigan continues to lose population: http://www.tv20detroit.com/news/local/79990192.html

Michigan has enacted energy efficiency and renewable energy mandates Since DTE’s application was submitted, Michigan has mandated energy efficiency (1% annual savings) and renewable energy (10% by 2015) programs (PA 295) which have lowered the demand for conventional electric generation. http://dsireusa.org/incentives/incentive.cfm?Incentive_Code=MI16R&re=1&ee=1 Note, Michigan is behind other Midwestern states in energy efficiency and DTE is good at energy efficiency. DTE achieved 177% of their 2010 MWH target vs. 148% for the average Michigan utility. http://www.michigan.gov/documents/mpsc/eo_legislature_report2011_369985_7.pdf

There is considerable surplus electric generating capacity in the Midwest market One example, “American Electric Power (AEP) has one gigawatt more power than it needs in Ohio, according to the company’s Ohio Long-Term Forecast report to the Public Utilities Commission of Ohio, filed on April 15, 2011.” http://ohiocitizen.org/?p=8036 (**0035-3** [Zaski, Frank])

Comment: Michigan's CMS has suspended seven coal plants and dropped plans for a new one CMS announced on December 2, 2011 they have cancelled plan for a new 830 MW coal plant plus the suspension of operation of seven smaller units in 2015. Reasons given in their press release: "... reduced customer demand for electricity due to the recession and slow economic recovery, surplus generating capacity in the Midwest market, and lower natural gas prices linked to expanded shale gas supplies. Lower natural gas prices make new coal-fired power plants less economically attractive."
http://phx.corporateir.net/phoenix.zhtml?c=101338&p=irol-newsArticle&ID=1635741&highlight= ;
(**0035-4** [Zaski, Frank])

Comment: I. THE DRAFT EIS' NEED FOR POWER ANALYSIS DOES NOT COMPLY WITH NEPA AND NRC GUIDANCE, THEREBY LEADING TO INCORRECT STAFF CONCLUSIONS.

The Need for Power analysis fails to comply with NEPA and NRC Guidance because the analysis relies on outdated information that fails to account for the recession's impact on electricity demand as well as the impacts of overall structural changes in the Michigan and Midwest economy, and the accelerated market penetration and integration of more energy efficient products and equipment. The NRC requires that an EIS associated with plant licensing must include a Need for Power analysis as part of the EIS' overall cost-benefit analysis. 68 FR 55905, 55909. The Need for Power analysis attempts to determine whether there is future electricity need that a proposed plant could supply. In so doing, the Need for Power analysis measures the benefit of a new nuclear plant in the EIS' cost-benefit analysis; a plant supplying electricity that is not needed does not provide a benefit.

While the Need for Power analysis "should not involve burdensome attempts to precisely identify future conditions . . . it should be sufficient to reasonably characterize the costs and benefits associated with the proposed licensing actions." 68 FR 55910. Here, the Draft EIS's Need for Power analysis fails to meet this requirement because it relies entirely on the Michigan Public Service Commission ("MPSC") 21st Century Plan ("21st Century Plan"), a 2006 energy planning report that was prepared before the recession. Draft EIS at 8-7, 8-23. Because the electricity demand forecast contained in the 21st Century Plan was made before the global financial crisis and fails to account for the dramatic decrease in electricity demand that followed: Its predicted 1.2 percent annual electricity demand increase is far greater than what actually occurred between 2007 and today, and is much higher than current estimates of future demand. A Need for Power analysis that completely omits the second largest economic downturn in American history and Michigan's and the Midwest's economic transition in its demand forecasting cannot be "sufficient to reasonably characterize" a realistic demand for power in Southeast Michigan over the next 15 years.

With this inaccuracy underlying its analysis, the Draft EIS' Need for Power analysis violates NEPA and does not conform to NRC's mandate that the analysis "should be sufficient to reasonably characterize the costs and benefits" of the proposed plant because: (1) the

analysis arbitrarily relies on an outdated, inaccurate demand forecast; (2) the reliance on this flawed data conflicts with NRC's Need for Power Guidance; and (3) this inaccuracy leads NRC Staff to flawed conclusions regarding the need for new power generation in the Detroit Edison service area. (**0036-1-2** [Gleckner, Allen])

Comment: A. The Draft EIS' Electricity Demand Forecast Significantly Overestimates Southeast Michigan's Future Electricity Demand.

The Draft EIS' electricity demand forecast of a 1.2 percent annual increase is a significant overestimation because it is adopted from the pre-recession 21st Century Plan. A comparison of the actual electricity demand from the last five years and the 21st Century Plan's forecast for that period shows that the recession drastically changed electricity demand and rendered the 21st Century Plan forecast inaccurate. Moreover, there is no substantial evidence that the aggressive growth forecast in the 21st Century Plan and adopted in the Draft EIS will materialize in the near future. In fact, testimony by Detroit Edison, other Michigan and Midwest utility information, and independent demand forecasts show that the Draft EIS' demand forecast of 1.2 percent yearly growth is a significant overestimation.

To date, the Draft EIS demand forecast adopted from the 21st Century Plan has proven to be seriously overstated. A comparison of actual peak demands from 2007 through 2011 and the Draft EIS Base Case forecast shows the discrepancy.

Table 1

Year	21st Century Plan "Base Case" Forecast Peak Demand in Detroit Edison's Service Area (MW)	Actual Detroit Edison Peak Demand (MW)	Percentage Difference Between 21st Century Plan Forecast and Actual Peak Demand
2007	12,579	12,313	-2.1%
2008	12,682	11.251	-11.3%
2009	12,666	10.627	-16.1%
2010	12,806	10,819	-15.5%
2011	12,955	12,547	-3.2%

2007 Sources: Draft EIS at 8-18; Michigan Public Service Commission, Michigan Energy Appraisals 2007-2008, 2008-2009, 2009-2010, 2010-2011 available at http://www.dleg.state.mi.us/mpsc/reports/energy/11winter/index.htm.

As Table 1 illustrates, peak demand decreased three of the five years since the 21st Century Plan was drafted, rather than steadily increasing as the Plan predicted - leading to peak demand projections that are off by orders of magnitude. While peak demand increased in 2010 and, dramatically so, in 2011, these increases were only enough to bring demand back to prerecession levels. (**0036-1-3** [Gleckner, Allen])

Comment: Looking to the future, contrary to the 21st Century Plan and NRC Staff's determination, there is no indication that electricity demand will continue to increase at levels close to 1.2 percent per year in the foreseeable future. Draft EIS at 8-23 ("the review team concurs with the MPSC Plan conclusion that the State will continue to experience growth in power demand into the foreseeable future.). Detroit Edison's own testimony before the MPSC anticipates slow demand growth and contradicts the Draft EIS' demand forecast.

In Detroit Edison's Application for Approval of Its Biennial Review and to Amend Its Energy Optimization Plan before the MPSC, the utility predicts a 0.9 percent annual average decrease in electricity sales between 2010 and 2015.[1] It further does not predict any dramatic demand growth after 2015. It finds that "[t]he economy will continue its plodding recovery in 2012," and that it does not expect any significant population growth to buoy an increase in demand since population in its service area "is expected to decline for an eighth consecutive year in 2012 and . . . will decrease for several more years."[2] Overall, Detroit Edison predicts that "economic activity in Southeast Michigan will almost certainly increase in 2012 but with most measures of activity lagging pre-recession levels."[3] It is plainly arbitrary and capricious for the Draft EIS to include a demand forecast that is directly contradicted by the same utility that is seeking a license.

Detroit Edison's predictions that future electricity demand in Southeast Michigan will be modest at best and much lower than the Draft EIS" projected 1.2 percent annual increase are corroborated by other Michigan and Midwest utilities. Consumers Energy, Michigan's other large utility, announced on December 2, 2011 that it is canceling its plan to build a new coal-fired power plant near Bay City, Michigan because of a lack of electricity demand.[4] The utility stated that the primary reasons for abandoning the coal plant construction "are reduced customer demand for electricity due to the recession and slow economic recovery, surplus generating capacity in the Midwest market, and lower natural gas prices linked to expanded shale gas supplies."[5]

Other Midwest utilities have echoed that demand is lacking. Minnesota-based Xcel Energy announced in November 2011 that it is not making generation-increasing upgrades to coal-fired and nuclear plants because of shrinking demand forecasts.[6] An Xcel Regional Vice-President stated that "[w]e are seeing a continuing economic downturn and that affects electricity demand. It doesn't make sense to build something before it's needed."[7] Minnesota's second largest electric company decided in November 2011 to mothball the Spiritwood plant in North Dakota - a brand new, state-of-the-art coal-fired plant - in part because of "slower-than-expected growth in electricity demand.[8]

Independent demand forecasts by the U.S. Energy Information Administration ("EIA") and the Midwest Independent Service Operator ("MISO"), although themselves likely overly optimistic, are also well below the draft EIS' forecast. The EIA's 2011 Annual Energy Outlook ("AEO") for the East Central Region (encompassing Michigan, Illinois, Indiana, Ohio, and Wisconsin)

projects a 0.62 percent annual average increase in delivered electricity consumption over the next ten years.[9] While EIA's forecast is still half of the Draft EIS' demand forecast, even that figure is very likely overstated as it conflicts with utility forecasts that are lower (as discussed above) and the EIA has often overestimated demand. In the AEO 2010 Retrospective, the EIA recognized that its past forecasts varied from actual electricity sales because it consistently: (1) overestimates GDP growth; (2) underestimates the price of electricity fuel stocks (coal and natural gas); (3) underestimates the pace of energy efficiency and consumption reduction technology development; and (4) underestimates structural shifts in the industrial sector away from energy-intensive industries.[10]

Similarly, MISO's 2009 Long-Term Assessment Reliability Report projected an even lower 0.5 percent annual increase in demand over a ten year period in the East Region - consisting of Michigan and Northern Ohio.[11] This figure is also likely overstated in light of a Global Energy Partners, LLC study contracted by MISO that, after factoring in state-level energy efficiency programs, projects electricity demand growth in the MISO region to be essentially flat through 2020.[12]

[1] MPSC Case No. U-16671, The Detroit Edison Company Direct Testimony of Sherrie L. Siefman (Sept. 2011), SLS - 6. See also MPSC Case No. U-16582, The Detroit Edison Company Direct Testimony of Sherrie L. Siefman (June 2011), SLS-7 - SLS-8 (Testifying that electricity demand in Detroit Edison's service area is predicted to decrease by 1.5% annually between 2010 and 2015).
[2] Id. at SLS - 10, SLS - 12.
[3] Id. at SLS - 13.
[4] Consumers Energy, News Release: Consumers Energy Announces Cancellation Of Proposed New Coal Plant, Continued Substantial Investments In Major Coal Units, Anticipated Suspension of Operation Of Smaller Units in 2015 (Dec. 2, 2011), available at http://www.consumersenergy.com/News.aspx?id=5167&year=201.
[5] Id.
[6] David Shaffer, Xcel's Power Pullback, Star Tribune (Dec. 1, 2011), available at http://www.startribune.com/business/134825258.html.
[7] Id.
[8] David Shaffer, Brand New Power Plant is Idled by the Economy, Star Tribune (Nov. 29, 2011), available at http://www.startribune.com/business/134647533.html.
[9] U.S. Energy Information Administration, Annual Energy Outlook 2011: Regional Energy Consumption and Prices by Sector - Energy Consumption by Sector and Source, Table 3 - East North Central (April 26, 2011), available at http://205.254.135.24/forecasts/aeo/tables_ref.cfm.
[10] U.S. Energy Information Administration, Annual Energy Outlook 2010 (Aug. 18, 2011), available at http://eia.gov/forecasts/aeo/retrospective/.
[11] Id. at 6.

[12] Global Energy Partners, LLC, Assessment of Demand Response and Energy Efficiency Potential for Midwest ISO. (Draft, July 2010), available at https://www.misoenergy.org/Library/Repository/Meeting%20Material/Stakeholder/DRWG/20100802/20100802%20DRWG%20Item%2003%20Midwest%20ISO%20DR%20and%20EE%20Potential%20Assessment%20Vol%201%20DRAFT.pdf. (**0036-1-4** [Gleckner, Allen])

Comment: The Draft EIS' demand forecast of a 1.2 percent yearly increase is at least twice as high as EIA and MISO regional projections that themselves are likely overstated. It is arbitrary and clear error for the Draft EIS to adopt as the main component of its cost-benefit analysis a demand forecast that is vastly greater than the licensee's own projections, other utility projections, and overly optimistic projections by EIA and MISO. Therefore, the Draft EIS' Need for Power analysis violates NEPA and is not "sufficient to reasonably characterize the costs and benefits associated with the proposed licensing actions." (**0036-1-5** [Gleckner, Allen])

Comment: B. The Draft EIS's Use of the 21st Century Plan's Out-Dated and Inaccurate Demand Forecast Contravenes NRC Guidance.

By adopting the 21st Century Plan's significantly overstated energy demand forecast, the Draft EIS violates NRC's NEPA Guidance, the Environmental Standard Review Plan ("ESRP"). The ESRP requires that in order for the NRC to incorporate a Need for Power analysis that is prepared by a state or regional authority, rather than the licensee, the NRC must determine that the analysis is: (1) systematic; (2) comprehensive; (3) subject to confirmation; and (4) responsive to forecasting uncertainties. NUREG-1555 (Oct. 1999); Draft EIS at 8-12. The Draft EIS' Need for Power analysis violates this Guidance because it is neither "subject to confirmation" nor "responsive to forecasting uncertainties." Moreover, the Need for Power analysis clearly disregards ESRP Guidance directing the agency to specifically include "economic recession" in its analysis. ESRP at 8.2.2-5.

The Draft EIS finds that the 21st Century Plan's forecast is "responsive to forecasting uncertainties" because the Plan was based on an "appropriate incorporation of existing and market conditions." Draft EIS at 8-14. This claim does not withstand scrutiny. While the 21st Century Plan might (or might not, realistically) have been based on existing conditions at the time it was drafted in 2006, the conditions the Plan was based on are plainly not current for the purposes of the 2011 Draft EIS. The 21st Century Plan cannot account for the recession and, therefore, cannot reasonably be considered to be "responsive to forecasting uncertainties" when the known current electricity market conditions are not taken into account. In short, the five-year old 21st Century Plan's stale, outdated, and inaccurate data and information should plainly not be the basis for a 2011 or 2012 decision.

The Draft EIS also concludes that the 21st Century Plan meets ESRP standards because it is "subject to confirmation." Draft EIS at 8-13. The Draft EIS finds that the 21st Century Plan meets this requirement because MISO's annual reliability assessments used the same data set

as the 21st Century Plan. Draft EIS at 8-18. Instead, as discussed above, MISO's 2009 Long-Term Assessment Reliability Report forecast a demand growth rate that is 60 percent less than the 21st Century Plan. Thus, MISO analysis does not provide confirmation for the 21st Century Plan, but instead contradicts it.

Finally, the Draft EIS--Need for Power analysis and its use of the 21st Century Plan does not heed the ESRP's suggestions for reviewing non-licensee forecasts. This Guidance suggests that NRC Staff "[a]nalyze the [ ] estimates of the effects of economic and demographic trends on the [ ] projected growth of electricity demand in the relevant service area." ESRP at 8.2.2-4. Further, the Guidance specifically highlights "economic recession" for identification as "an element[] that could have contributed to diminished growth." ESRP at 8.2.2-5. By using the 21st Century Plan, which cannot account for recession or the "economic and demographic trends" resulting from the recession, the Draft EIS fails to use the ESRP's specific tools for evaluating whether the 21st Century Plan is an appropriate forecast. (**0036-1-6** [Gleckner, Allen])

Comment: C. The Draft EIS' Reliance on an Outdated, Flawed Demand Forecast and Its Supporting Data Undercut NRC Staff's Conclusions.

The NRC Staff's conclusions regarding the need for a new nuclear power plant - and therefore the new plant's benefit - is undermined by the Draft EIS' use of the 21st Century Plan's inaccurate demand data and forecasting. Based on the 21st Century Plan and its demand forecast, the NRC Staff concludes that a new reactor is needed. Staff finds that "[t]he projected growth in power demand . . . further emphasizes the need for new sources of power in the Detroit Edison service area." Draft EIS at 8-23. Staff also finds that because of the supposed need for additional generating capacity, "the building and operation of the proposed Fermi 3 . . . would accrue benefits that most likely would outweigh the economic, environmental, and social costs associated with constructing and operating a new unit at the Fermi site." Draft EIS at 10-31. These conclusions are arbitrary and capricious because they are based on the 21st Century Plan which, as shown above, dramatically overestimates electricity demand in Detroit Edison's service area by failing to account for the recession and structural changes to the Michigan and Midwest economy.[13]

The NRC Staff's conclusion that there is a future need for power in Detroit Edison's service area is wrong. Staff's conclusion is wrong not only because it is based on an inaccurate demand forecast that does not account for the recession and structural changes, but because the Draft EIS's use of projected demand data for the last five years, rather than actual demand data yields an inaccurate 2025 demand projection off which Staff bases its conclusions. The Draft EIS determines that peak demand in 2025 will be 15,595 MW. Draft EIS at 8-19 (Table 8-4). However, even if one adopts the Draft EIS' significant overestimate of a 1.2 percent annual demand growth, this projection does not hold up because it uses outdated, stale data as a starting point.

The Draft EIS' 2025 demand figure is based on the 21st Century Plan's 2006 estimates rather than readily available, current peak demand numbers. Using the actual 2011 demand figure of 12,547 MW[14] and still assuming an annual demand growth of 1.2 percent from 2011 to 2025 yields a 2025 peak demand of 14,828 MW - 767 MW less than the Draft EIS projection. This 767 MW difference is half of Fermi 3's projected capacity and over two-thirds the capacity the Draft EIS finds would be needed after wind, solar, and energy efficiency are taken into account. Draft EIS at 8-1; at 9-64. Therefore, even when applying the Draft EIS' inaccurate demand forecast growth figure, simply using current data as a starting point shows that Staff's conclusions on future electricity need are based on an incorrect and overstated projection. Staff's failure to update the Draft EIS projections with current, known data is arbitrary and capricious, as is its conclusion that Fermi 3's generating capacity will be necessary in the future.

[13] Staff also concludes that "introduction of new generating capacity or importing power in an amount at least equivalent to that projected for Fermi 3 is minimally necessary to meet the current loads within the Detroit Edison service area." Draft EIS at 8-23 (emphasis added). This conclusion is also based on the 21st Century Plan's recommendations, and therefore is similarly based on outdated, pre-recession data. Draft EIS at 8-23. Further, any loss of generating capacity from the noted retirements in Southeast Michigan (Table 8-7) can be offset by importing power, as the Draft EIS recognizes that at least 2200 MW of imported power is available. Draft EIS at 8-21.

[14] Michigan Public Service Commission, Michigan Energy Appraisal: Semiannual Projections of Energy Supply and Demand Winter Outlook 2011-2012 (Oct. 6, 2011) available at http://www.dleg.state.mi.us/mpsc/reports/energy. (**0036-1-7** [Gleckner, Allen])

Comment: The NRC Staff's overall cost-benefit conclusion is similarly flawed because of its reliance on the Draft EIS' significantly overstated demand forecast. The NRC requires a Need for Power analysis in a licensing EIS "so that the NRC may weigh the likely benefits (e.g., electrical power) against the environmental impacts of constructing and operating a nuclear power reactor." Draft EIS at 8-1. Because the Draft EIS cannot validly demonstrate that Southeast Michigan has a need for power in the foreseeable future, there is no benefit from Fermi 3's potential generating capacity. Therefore, Fermi 3's many impacts - or costs - clearly outweigh its "benefit," and NRC Staff's contrary conclusion is clear error. Furthermore, since granting Detroit Edison a license to build Fermi 3 would not provide a benefit, NRC Staff's overall "preliminary recommendation to the Commission related to the environmental aspects of the proposed action" that Fermi 3's Combined License "should be issued" is unfounded and must be reversed in the Final EIS. Draft EIS at 10-31. (**0036-1-8** [Gleckner, Allen])

Comment: In the application which was issued in 2008, it was using the 21st century energy plan as a basis for the need for this plant. The 21st century energy plan, which I was on the Commission, one of the work groups, the report was issued in 2007, based on 2006 information that's like about five and a half years old. My question is, is there a process where the volume

forecast indicated a need for this plant is updated. Is there a process they updated? I mean nobody in this room would invest in the stock market based on a report from December of 2006. So, I think we should invest in a nuclear plant based on old information. What is the process to update to the new forecast? (**0040-5-1** [Zaski, Frank])

Comment: So anyway, first of all, I'm glad that the NRC is going to throughout the process update to newer numbers because I'm sort of a research geek, and I got into the 21st century energy plan, I was on that word group in 2006. I was on the Midwest Governors Renewable Energy Association, a couple of groups appointed by the Governor to follow energy matters in Michigan.

First of all, as I mentioned earlier, the sales forecast is five and a half years old. It's based on a document, and parts were actually seven years old, because I was part of that process. DTE obviously updates their forecasts all the time, they have a rate case in front of the Michigan Public Service Commission right now. And let me read you a few things from their current rate case. The service area sales are expected to decline to 46,000 gigawatts by 2020. This represents a point two percent average annual decrease in sales from a dismal year in 2009. Total sales are declining. And I've already submitted this to Bruce and to the official site and I'm more than happy to send all the links to anybody who would like them. The peak sales, peak demand in 2009, 2009 was kind of a recession year. It was 10,600 megawatts. This, their forecast for 2020 calls for a point seven percent decrease in sales. This is through 2020, so the demand for electricity is actually declining, this is per DTE's official filing with the public service commission. The actual load factor, now this is how much the capacities are using. In 2009 it was 54.6 percent and their forecast in 2020 is 54.4 percent. That's a smidgen lower utilization of their capacity in 2020 than they did in a recessionary year a couple years ago.

A lot of this has to do with our poor economy, unemployment, loss of jobs. We lost half our manufacturing jobs in twelve years. We were above the national average in income level, now we're below on the national average income level. We have lost population, we were only one of two states, the other one Rhode Island who have actually lost population in the last five years. So all these factors together help to reduce demand for electricity throughout the state. We also as a state enacted in 2008 PA295, which calls for, as Mr. McArdle mentioned, calls for a one percent energy efficiency improvement year after year after year, and it's ramping up now, and DTE is very good on this. Actually they hit 177 percent of their objective in 2010. This is far above other utilities in the State of Michigan. It also means that there's a lot of pent up demand to reduce electricity. I mean, we've been very inefficient for years because we didn't have such a program. Also it's a mandate for ten percent renewable energy, and DTE is doing well with that. They're going to get their thousand megawatts. But this takes away from conventional generation from coal or from nuclear. (**0040-15-1** [Zaski, Frank])

Comment: Frank Zaske's comments on December 14, 2011 for the NRC's 68FR55910 refer to his well researched statement, that the need for power must be addressed in connection with

new power plant construction. What it comes down to is that there is no need in Michigan for the power from these plants and, therefore the rate payers need to be free of paying for this unnecessary plant. Response to Frank Zaske's comments were extremely lame, much in keeping with what we've seen from the Nuclear Regulatory Commission throughout these proceedings. (**0040-17-3** [Noonan, Henry])

Comment: Now a third reactor is waiting in the wings, with no real need for additional capacity. Detroit Edison is now applying for a 20-year extension of its current license. Three on the fragile shore of Lake Erie. (**0056-11** [Ehrle, Lynn Howard])

Comment: The proposed Fermi 3 station would represent a 14% addition to Detroit Edison's reported 10,757 MW's[ii] capacity in 2011. However, comparing the proposed capacity to the existing capacity is an inadequate means of determining need. Factors which should be considered include the relative capacity factors of various choices, their cost, the timing of availability and the historical pattern of consumption. Doing this with great accuracy is challenged by the fact that Federal information on individual utility off-system sales is not reported as clearly as most statewide data, and the DEIS seems to be considering this plant in the context of "The Southeast Michigan Area" which is a jurisdiction which is not reported on by the Federal Energy Information Administration. Based on Exhibit A-3 Schedule C3 in the 2010 Detroit Edison rate case filing[iii] Detroit Edison's 2009 off-system sales appear to be no greater than 7.6% of their total revenues, and thus presumably a similar fraction of their total generation.

Fortunately, great accuracy is not especially valuable here, given the long term trend in Michigan electricity consumption and the rapidly shifting price relationships of various resource options. Much more important than five or six digit precision is a good understanding of the economics of the electric industry and how rapid changes in the industry are making long-held conventional assumptions obsolete.

The lack of growth in Michigan's electric industry is illustrated in the graph of generation from 1990 to 2009 below. Some documents in the DEIS suggest an assumed increase in electricity consumption of nearly 50% over the next thirteen years, but that would imply a 3.8% annual growth rate, which is a rate not seen in the United States since 1970. The current long term projection by EIA is hovering around 1.1%.

Furthermore, in its 2010 application for a rate increase, Detroit Edison included a projected sales path through 2020 which shows a decline in sales from today. This is a reasonable expectation given the early strong success of the Michigan Energy Optimization program, and Detroit Edison's high quality performance in 2010 in developing energy efficiency.

Even with a substantial post-recession bounce in consumption Michigan and Detroit Edison are unlikely to see anything like a three or four percent annual growth rate. A more germane reason

to examine new capacity additions is the fact that Detroit Edison's fleet includes several dozen ancient, dirty and expensive fossil fuel plants. In fact it may be prudent to retire more than the 2,039 MW's identified in the DEIS.

This report seeks to emphasize relative costs, availability and timing issues associated with electricity supply, and the critical importance of flexibility in planning. The generation potential of Fermi 3 will be used as a benchmark, not because there is any evidence that it is the right amount or the right sort, but because if the right economic signals are identified and responded too, Detroit Edison may seek to develop a larger amount of different sorts of resources, or alternatively (with less positive impact we believe) a smaller amount of different sorts of resources, and in either case is likely to map out an energy supply for Southeast Michigan which is preferable to the one which would result from Fermi 3.

Detroit Edison and Efficiency:
Michigan's current efficiency programs are growing robustly in accordance with PA 295. Detroit Edison is shown to have spent approximately $75 million in 2010, and to have saved approximately $374 million[iv]. (Chart 5 in the report referenced here details the Detroit Edison experience). This 1:5 cost:benefit ratio is typical of the lifecycle savings resulting from well run efficiency programs, and similar to results in Ohio, where a similar law is being implemented in a similar timeframe.

It is important to note that these programs typically install hardware in homes, businesses and factories, which save energy for an average life of about 12 years, with a wide range depending on the specific technology. Therefore, the total benefits are accrued over those years, with the single year savings being those set by the standard, or by the standard plus overcompliance. Thus, Michigan required Detroit Edison to save 0.3% in 2009, 0.5% in 2010, 0.75% in 2011, and 1% in 2012. Leaving aside the actual overcompliance, this standard would nominally create a net benefit which is expressed as the lifecycle savings (i.e. the $5 saved for every $1 spent) or alternatively, as the sum of the previous years' achievements. So by year end 2012, Michigan's standard would create an annual reduction in system energy requirements of 2.05%. PA 295's electric standard stops increasing at 1% in 2012, and holds steady. So each additional year adds an additional one percent to the cumulative savings. Since 1% is exactly what the most recent EIA Annual Energy Outlook projects for new growth in the U.S. a flat generation path is a reasonable prediction.

Efficiency savings are not permanent, but in practice over the last forty years the Federal efficiency standards plus gradual shifts in the marketplace have made most efficiency program savings permanent. It is only in the last four years that total U.S. savings from utility efficiency programs have passed the half-percent per year mark that the impact of this has become large enough to have a visible impact on the total electricity trend. The dynamic of efficiency programs creating savings and appliance standards shoring them up is likely to persist for several decades at least.

Efficiency Potential Is Not Limited:
Illinois, Indiana and Ohio all have standards that increase to 2% annual savings. There are five or six states whose utilities are presently actually achieving between one and a half and two percent per year, and there are historical examples of programs ranging from 4% to as high as 7% for periods of one or more years[v]. Ironically, all but two of these historical examples followed in the wake of nuclear plant construction project failures. One of those two was Three Mile Island (a plant failure, as opposed to a construction failure) and the other was the California natural gas crisis in 2001. The California crisis is instructive, because California had operated programs between one and two percent for over twenty years at the time, and the result was that California citizens and businesses had a better understanding of efficiency, and the delivery systems were in place to facilitate a sudden large increase in demand for efficiency. California's experience in 2001 simultaneously disproves claims which are often heard that efficiency potential is small, constrained, and will diminish over time. Certainly, it didn't do so in California after twenty years at a higher percentage savings level than Detroit Edison achieved in 2010. California is one of the states which has since increased program activity and is now approaching the 2% annual savings mark.

This is not the place for an extended discussion of the upward side of efficiency potential, but it is in the interest of Detroit Edison, and its customers, to be aware of the value of proper shared savings and cost recovery mechanisms. In this era the gulf between the cost of saving electricity and the cost of using it is widening rapidly. This is due to the increasing cost of energy and the falling cost of efficiency technologies.

Should Michigan's efficiency standard not be increased above 1%, but be preserved at 1% beyond the specific years stated in PA 295 the Southeast Michigan region will have seen 15% of its total electricity sales met with efficiency by 2025. The actual impact will be net of new growth. Efficiency programs such as those in Michigan are saving electricity at a cost of approximately 2 cents per KWH or less. The logic of restricting efficiency measures to those which cost less than three cents per KWH when construction of a massive new plant which will cost 9 or 12 or 18 cents per KWH is being considered, or even built, is not likely to have great appeal as we advance through this decade.

There remains some reason to believe that Michigan has not properly incentivized Detroit Edison to consider efficiency as a serious resource. Again, this is not the time or place to dig in to that issue, but the struggle to advance efficiency in the United States has always had its opposition rooted in the fact that we pay utilities quite handsomely to generate electricity, and regardless of the public benefit, the utility will conform to its own economic interest, rather than that of the public, unless the benefits are appropriately shared.

A much larger context for Efficiency:
Although this report addresses Fermi 3, the larger context in the U.S. electric industry is the pending pollution controls which will make the remaining 30% of the coal fleet impossible to

operate without massive new expenditures. Efficiency is unquestionably a cheaper resource than a new nuclear plant. Efficiency is able to save energy at a quarter or less of the cost of new natural gas generation and a fifth or less of the cost of new coal generation. But the real economic question which faces most of the Eastern U.S. and the lower Midwest more than anywhere else is the comparison of the cost of efficiency versus the cost of pollution controls and sustained fuel and operation of the remaining unscrubbed fraction of the coal fleet.

Given the timing of engineering and construction, compliance decisions must be nearly completed for most high coal utilities in the next 24 months. That means that regulatory support and proper compensation for strong efficiency programs must be sufficient to allow the utility to decide how large the programs should be, and to find out how large they can be, and all on a fairly short timeline.

Ironically, the decision point on all these pollution controls and plants is almost completely independent of the presence or absence of Fermi 3. The nuclear plant cannot be completed in time to make any difference in the coal plant utilization question.

The point of making these comments here is that all of this revolves around a comprehensive understanding of the economics, not just the simplistic cost per MW or the price of the output, but the economic impact on customer, utility, and the effect of time and timing on cost and availability. Fermi 3 should be part of an Integrated Resource Planning Process which is in place in Michigan. There seems to be a requirement for an Integrated Resource Plan to be developed before Fermi 3 can be approved by the MPUC. Unfortunately, the time for such a process to provide maximum benefit is nearly past, without reference to Fermi 3, but with reference to the pollution regulations. This is not the NRC's responsibility, but it does underscore the lack of planning which is associated with the proposal of a 1600 MW nuclear generating station for this utility in this region at this point in time.

[ii] Testimony of Paul Fessler in DTE-2011-Hearing-Vol6 page 429 Case No. U-16472
[iii] http://efile.mpsc.state.mi.us/efile/docs/16472/0005.pdf
[iv] http://www.michigan.gov/documents/mpsc/eo_legislature_report2011_369985_7.pdf
[v] http://www.aceee.org/research-report/e115 (**0077-6-14** [Lodge, Terry])

Response: *The NRC review team relied on the Michigan 21st Century Energy Plan as the primary basis for its need for power analysis, finding that it conformed to NRC guidance (NUREG-1555) and was compatible in its projections with other contemporaneous independent power planning initiatives covering the region of interest.*

Because of the severity of the economic recession in Michigan and its impact on electricity demand in all sectors, the NRC review team determined that a supplemental review of the need for power analysis was warranted. This review can be found in the EIS in Section 8.1.

Comment: No new nuclear or coal plants may ever be needed in the United States, the chairman of the Federal Energy Regulatory Commission said today. “We may not need any, ever,” Jon Wellinghoff told reporters at a U.S. Energy Association forum. Building nuclear plants is cost prohibitive, he said, adding that the last price he saw was more than $7,000 a kilowatt -- more expensive than solar energy. “Until costs get to some reasonable cost, I don’t think anybody’s going to [talk] that seriously,” he said. “Coal plants are sort of in the same boat, they’re not quite as expensive. There’s enough renewable energy to meet energy demand, Wellinghoff said. “There’s 500 to 700 gigawatts of developable wind throughout the Midwest, all the way to Texas. There’s probably another 200 to 300 gigawatts in Montana and Wyoming that can go West. He also cited tremendous solar power in the Southwest and hydrokinetic and biomass energy, and said the United States can reduce energy usage by 50 percent. “You combine all those things together ... I think we have great resources in this country, and we just need to start using them,” he said. But planning for modifying the grid to integrate renewables must take place in the next three to five years, he said. “If we don’t do that, then we miss the boat,” Wellinghoff said. “That planning has to take place so you don’t strand a lot of assets, a lot of supply assets.” (**0003-5-5** [Anderson, Christy])

Response: *In Chapter 9 of the EIS, to determine the overall feasibility of renewable energy sources, NRC evaluated the quality of wind and solar resources that are practicably available in Michigan. No changes to the EIS were made as a result of this comment.*

Comment: In section 9 of the DEIS for Fermi 3, there is predicted an increase in the need for electricity of 30 percent, over a few decades. I believe the amount of electricity that could be freed up, by conservation over that time, according to Detroit Edison, is much too low. The 30 percent predicted growth in electricity demand may be too high. Conservation may well, be able to replace a significant portion of the 1,600 megawatts, that would be produced by Fermi 3. (**0021-1** [Newman, Kent])

Response: *Section 9.2 of the EIS identified all the options available that would not require the development of new generation resources, including conservation and demand-side management. In evaluating alternatives, NRC also considered a combination of alternatives that included demand-side management. The NRC concluded that conservation, including demand-side management, could not be reasonably expected to reduce power demands to the extent necessary to replace the power that would be provided by the proposed Fermi 3. No changes were made to the EIS as a result of this comment.*

Comment: Regarding the statement, “Detroit Edison has indicated that new base load electric generating capacity will be needed to compensate for the expected retirement of aging base load generating units and diminishing availability of the Midwest Independent Service Operators region’s base load generation capacity.” (v 1, p 1.9 & p 8.2) So there is no need for the electric now? (**0016-1-9** [Collins, Jessie])

Response: *Generators and transmission system operators continuously evaluate whether the existing array of generation resources can meet demand. Announced retirement schedules for coal plants do not directly influence electricity demand, but they do directly influence the way in which that demand is satisfied. NRC considered information regarding publicly announced baseload coal plant retirements, because the continued availability of those plants would be central to meeting current and projected demand. Chapter 9 provides the NRC evaluation of the various alternative technologies that could provide an amount of power equivalent to the proposed Fermi 3. No changes were made to the EIS as a result of this comment.*

Comment: The DEIS (p. 8-1) says that Fermi III is expected to have an electrical output of 1605 MW plus or minus 50 MW. In a year, assuming nearly 100% uptime in plant operation, this would amount to a little over 14,000 million kilowatt-hours in a year. If this plant were needed to meet the demand originally anticipated, it is clearly not needed to meet the lower demand that would now be anticipated by the same formula. The DEIS further says that the output for Fermi II is 1122 MW (p.2-5). By the same assumption as used above, this amounts to approximately 9,800 million kilowatt-hours in a year. The two plants together would produce a maximum of 23,800 million kilowatt-hours per year. Neither one of these nuclear power plants will be needed in 2025, if actual demand is lower by 39,200 million kilowatthours. This Analysis was done by Art Myatt (**0026-6-36** [Macks, Vic])

Comment: There was also considerable surplus electric generating capacity in the midwest. I just want to read you one example, American Electric Power, AEP, this is in Ohio, has one gigawatt more power than it needs in Ohio according to the company's long term forecast, and this is their forecast filed with their public service commission, public utilities commission, Ohio. Our neighbor, Consumers Energy has just two weeks ago dropped plans for a new coal plant in Bay City. They also dropped, are going to phase out, seven existing coal plants, and let me read you directly from Consumer's public relations press release, reduce customer demand for electricity due to the recession and slow economic recovery, surface generating capacity in the midwest market, and lower natural gas prices linked to expanding -- gas supply. So, Consumers is phasing down. Actually DTE is phasing down if you look at their investors presentation, they indicate that there is at least one, or probably more coal plants, to be shuttered in the next five years. (**0040-15-2** [Zaski, Frank])

Response: *Chapter 8 of the EIS discusses the staff's determination of the need for power consistent with the output of the proposed Fermi 3. Because of the severity of the economic recession in Michigan and its impact on electricity demand in all sectors, the NRC review team determined that a supplemental review of the need for power analysis was warranted. This review can be found in the EIS in Section 8.1.*

Comment: CONTENTION 13 (Amended):

The Draft Environmental Impact Statement (DEIS) is inadequate to meet the requirements of NEPA or the Atomic Energy Act because it does not provide a reasonable cost/benefit basis for the NRC to decide to issue a combined operating license for the proposed Fermi 3 nuclear reactor. The DEIS analyses of Need for Power, Energy Alternatives and Cost/Benefit analysis are flawed and based on inaccurate, irrelevant and/or outdated information.

Intervenors consider the comments submitted on the DEIS by the Environmental Law and Policy Center to be authoritative and incorporate them herein by reference and summarize portions of them as they make their case for reinstatement of Contention 13. In further support of Contention 13, Intervenors proffer the declaration statements made by their expert, Ned Ford, whose declaration, report and curriculum vitae are attached to this Motion and incorporated into it, and whose opinions are reproduced in this Motion, below.

The NRC mandates that an EIS associated with plant licensing must include a Need for Power analysis as part of the EIS' cost-benefit analysis. 68 FR 55905, 55909. That analysis attempts to determine whether there is future electricity need that a proposed plant could supply. In so doing, the Need for Power analysis measures the benefit of a new nuclear plant in the EIS' cost-benefit analysis, as a plant supplying electricity that is not needed does not provide a benefit.

While the Need for Power analysis "should not involve burdensome attempts to precisely identify future conditions . . . it should be sufficient to reasonably characterize the costs and benefits associated with the proposed licensing actions." 68 FR 55910.

The Draft EIS's Need for Power analysis fails to meet this requirement because it relies entirely on the Michigan Public Service Commission ("MPSC") 21st Century Plan ("21st Century Plan"), a 2006 energy planning report that was prepared before the recession. DEIS pp. 8-7, 8-23. Because the electricity demand forecast contained in the 21st Century Plan was made before the recession and fails to account for the dramatic reduction in electricity demand that followed, its predicted 1.2% annual demand increase is far greater than what has actually occurred since 2007, and is much higher than current estimates of future demand. A Need for Power analysis that completely omits the second largest economic downturn in American history in its demand forecasting cannot be "sufficient to reasonably characterize" a realistic demand for power in Southeast Michigan over the next 15 years. In light of its inaccuracy, the Fermi DEIS 'Need for Power analysis violates NEPA and does not suffice "to reasonably characterize the costs and benefits" of the proposed plant.

A comparison of the actual recent electricity demand from the last five years to the 21st Century Plan's 1.2% annual forecast for that period shows that the recession drastically changed everything. Additionally, nothing suggests that the aggressive growth forecast in the

21st Century Plan and adopted in the Draft EIS will materialize in the near future. Testimony by Detroit Edison, other Michigan and Midwest utility information, and independent demand forecasts show that the forecast of 1.2% annual growth is a significant overestimation. Peak demand for electricity in Michigan decreased three of the five years since the 21st Century Plan was drafted, rather than steadily increasing as the Plan predicted - leading to peak demand projections that are off by orders of magnitude. While peak demand increased in 2010 and, dramatically so, in 2011, these increases were only enough to bring demand back to prerecession levels. ELPC letter.

Detroit Edison's own testimony before the Michigan Public Service Commission anticipates slow demand growth and contradicts the DEIS' demand forecast. In Detroit Edison's "Application for Approval of Its Biennial Review and to Amend Its Energy Optimization Plan before the MPSC, the utility predicts a 0.9% annual average decrease in electricity sales between 2010 and 2015. It further does not predict any dramatic demand growth after 2015. DTE finds 4 that "[t]he economy will continue its plodding recovery in 2012," and that it does not expect any significant population growth to buoy an increase in demand since population in its service area "is expected to decline for an eighth consecutive year in 2012 and . . . will decrease for several more years. Overall, Detroit Edison predicts that "economic activity in Southeast Michigan 5 will almost certainly increase in 2012 but with most measures of activity lagging pre-recession MPSC Case No. U-16671, The Detroit Edison Company Direct Testimony of Sherrie L. 4 Siefman (Sept. 2011). Id. at SLS – 10, SLS – 12. 5 levels." Thus the DEIS contains a demand forecast that is directly contradicted by the same 6 utility that is seeking a license. ELPC letter. Too, independent demand forecasts by the U.S. Energy Information Administration ("EIA") and the Midwest Independent Service Operator ("MISO"), although themselves likely overly optimistic, are also well below the Draft EIS' forecast. The Draft EIS' demand forecast of 7 a 1.2% percent yearly increase is at least twice as the EIA and MISO regional projections that themselves are likely overstated. It is arbitrary and clear error for the DEIS to adopt as the main component of its cost-benefit analysis a demand forecast that is vastly greater than the licensee's own projections and overly optimistic projections by EIA and MISO. ELPC letter.

The DEIS's reliance on the 21st Century Plan's demand forecast contravenes NRC guidance.. NRC's NEPA guidance document, the Environmental Standard Review Plan ("ESRP"), requires that in order for the NRC to incorporate a Need for Power analysis that is prepared by a state or regional authority rather than the licensee, the NRC must determine that the analysis is: (1) systematic; (2) comprehensive; (3) subject to confirmation; and (4) responsive to forecasting uncertainties. NUREG-1555 (Oct. 1999); Draft EIS at 8-12. The Draft EIS' Need for Power analysis violates this guidance document because it is neither "subject to confirmation" nor "responsive to forecasting uncertainties." The Need for Power analysis clearly disregards ESRP Guidance directing the agency to specifically include "economic recession" its analysis. See ESRP at 8.2.2-5. The DEIS contains the extraordinary finding that the 21st Century Plan's

forecast is “responsive to forecasting uncertainties” because the Plan was based on an Id. at SLS – 13. 6 See ELPC comment letter p. 4. 7 “appropriate incorporation of existing and market conditions” - the inaccurate 2006 project. DEIS at 8-14. While the 21 Century Plan may have been based on existing conditions at the time it was drafted in 2006, the conditions the Plan was based on are plainly not current for the purposes of the 2011 DEIS. ELPC letter.

The 21st Century Plan did not predict or account for the recession and, therefore, cannot reasonably be considered to be “responsive to forecasting uncertainties” in light of the known electricity market conditions since it was prepared. The NRC Staff’s conclusion that there is a future need for power in Detroit Edison’s service area is wrong not only because it is based on an inaccurate demand forecast that does not account for the recession, but because the Draft EIS’ use of projected demand data for the last five years, rather than actual demand data, yields an inaccurate 2025 demand projection which is the predicate for the Staff’s conclusions. The DEIS determines that peak demand in 2025 will be 15,595 MWe. Draft EIS at 8-19 (Table 8-4). However, even if one adopts the Draft EIS’ overestimate of a 1.2 percent annual demand growth, this projection does not hold up because it uses pre-recession data as a starting point. The DEIS’ 2025 demand figure is based on the 21st Century Plan’s 2006 estimates rather than readily available current peak demand numbers. Using the actual 2011 demand figure of 12,547 MWe 8 and still assuming an annual demand growth of 1.2 percent from 2011 to 2025 yields a 2025 peak demand of 14,828 MWe – 767 MW less than the Draft EIS projection. ELPC letter. According to Intervenors’ expert, Ned Ford, Michigan’s overall electric industry has a similarly low capacity factor it is extremely likely that Michigan and Detroit Edison have a Michigan Public Service Commission, Michigan Energy Appraisal: Semiannual Projections of 8 Energy Supply and Demand Winter Outlook 2011-2012 (Oct. 6, 2011) available at http://www.dleg.state.mi.us/mpsc/reports/energy.

“needle peak” problem, meaning that more than twenty or thirty percent of its peak MW demand level exists for less than ten percent of the year. Ford Report (attached). The proposed Fermi 3 station would represent a 14% addition to Detroit Edison’s reported 10,757 MWe capacity in 2011. While some documents in the DEIS suggest an assumed increase in electricity consumption of nearly 50% over the next thirteen years, that would implies a 3.8% annual growth rate, which is a rate not seen in the United States since 1970. Id. Southeast Michigan’s electricity future is uncertain, highly variable, and promises some tremendous economic benefits if options are kept open to the rising wave of cheap clean energy. Fermi 3 is a good choice for only one very specific, very rigid, and increasingly unlikely possible future - provision of baseload power for wholesale distribution through the grid. Even that possible future won’t favor Fermi 3 if the cost of the plant rises too high. Ford Report. In its 2010 application for a rate increase, Detroit Edison included a projected sales path through 2020, which shows a decline in sales from today. This is a reasonable expectation given the early strong success of the Michigan Energy Optimization program, and Detroit Edison’s high quality performance in 2010 in developing energy efficiency. Even with a substantial post-recession bounce in consumption

Michigan and Detroit Edison are unlikely to see anything like a three or four percent annual growth rate. A more germane reason to examine new capacity additions is the fact that Detroit Edison's fleet includes several dozen ancient, dirty and expensive fossil fuel plants. In fact it may turn out to be prudent to retire more than the 2,039 MW identified in the DEIS. Id.

Should Michigan's efficiency standard be preserved at 1% annually beyond the specific years stated in PA 295 the Southeast Michigan region will have seen 15% of its total electricity sales met with efficiency by 2025. The actual impact will be net of new growth. Efficiency programs such as those in Michigan are saving electricity at a cost of approximately $.02 per KWH, or less. The logic of installing efficiency measures costing less than $.03 per KWH when construction of a massive new plant which will cost 9 to 18 cents per KWH - and that, not predictable sufficiently ahead of time - should have significant appeal. Id.

Respecting alternative sources of energy, Michigan has a massive potential for onshore wind energy development, approximately 175,000 MWe of potential at 30% capacity factor and 100 meter hub heights. Id. Indeed, most of Michigan's better wind resource is in and around the Detroit Edison Service area. Id. At a 30% capacity factor, 175,000 MWe of wind could theoretically generate the same amount of power as 58,000 MWes of nuclear power. At today's prices for wind turbines, large swaths of the United States are prime candidates for generation of new wind power that can be sold at wholesale for six cents per KWH or less. The 30% capacity factor measure indicates economic viability at today's prices. Michigan's wind resource is equivalent to at least thirty-seven Fermi 3's, when what is called for is approximately one percent of that resource, in conjunction with a strong efficiency program and a few other resource decisions. Approximately 1/3 of Fermi 3's potential generation be met with wind power, while the other two-thirds of it can be met with efficiency and other renewable resources, a mix in which photovoltaics likely will be the most important new renewable by 2025. This combination of efficiency plus wind is a net zero cost strategy to meet Michigan's future electricity requirements and is the only strategy that can meet Michigan's future electricity needs without substantial increases in the price of electricity and the total cost. Efficiency savings are large enough to permit the full replacement of nuclear and fossil fuel generation as needed, provided the right balance of efficiency and renewables is achieved. Id.

As previously noted, Detroit Edison has a "needle peak" problem, and with a load shape like that, a massive nuclear plant, a single generating unit upon which the region would depend for 29.7% of its power or more, is simply a grossly inappropriate choice. To respond to the load shape issues, we advocate efficiency, load management, and exploration of photovoltaics as prices continue to fall. Even without photovoltaics in the mix, the variability of wind might allow Detroit Edison to utilize its existing peak generation resources more efficiently. Id.

Besides existing load management resources that make the first 30% to 40% of wind benign without substantial new load management resources to most utilities, there are a group of emerging technologies that store energy. Two in particular deserve mention, compressed air

storage (CAES), which is fully technologically available, using underground caverns or above-ground storage tank systems. There are only a handful of completed utility-scale CAES projects in the world, with only one in operation in the U.S. (Louisiana) and two recently announced new projects (Nebraska and Ohio). But pricing is such that wind plus CAES can provide a 100% dispatchable electric resource at half the cost of a new coal plant per MW of capacity. Since a single MW of Compressed Air Energy Storage would typically provide storage for two or more MWe of wind generation, this is likely to erupt into a major new energy resource in the very near future. Id.

The other energy storage technology which deserves mention is Ice Storage Thermal Cooling for large commercial buildings, which is likely to supplant conventional air conditioning. It is cheap enough to produce a net benefit merely by allowing utilities to provide cooling for buildings when demand is low. Id. These and the other energy storage technologies are not household names or concepts, but will either be developed rapidly to protect ourselves from higher electric costs due to more expensive resource choices, or will be developed less rapidly in response to higher electric costs due to more expensive resource choices. Id. In Michigan, electricity which costs six or seven cents per KWH, which will never experience a fuel cost increase, which will never be incapacitated by a single event at a single location, and which can bring billions of dollars of new investment and thousands of jobs should be seriously considered. Michigan is one of the top two manufacturers of wind turbine components in the United States. Id.

Photovoltaics (PV) have experienced a two-decade sustained drop in cost, and are now becoming almost ten percent cheaper each year. Id. As prices drop, the region where PV is competitive against the average cost of power becomes larger and more national. Within three to five years PV will be competitive with fossil resources in the Midwest. Id. Moreover, PV is already economic if it is recognized as a peaking resource. PV always works best when the local utility experiences its daytime peak energy loads, because both are driven by sunlight. The regional market for peak power can reach multiples of the retail price of electricity very quickly. For Detroit Edison, with so much capacity needed for so few hours of the year, PV may be more economic than elsewhere in the U.S. Id. It must be remembered that, as in the case of wind power, the opportunity for DTE and for the Michigan economy is not just the potential for low cost power, but the potential for manufacturing and installation jobs, which will in turn create a foundation for those jobs and that economic activity in the DTE service area which can become economic health to ensure Detroit Edison’s own future. Id.

There is a serious economic decision facing DTE near-term respecting its coal-fired plants. Michigan and DTE must soon determine how to meet the pending air pollution regulations, which decisions will affect about 61% of Detroit Edison’s generation resources, to be completed in the next two years or so, with the implementation of those decisions to be largely completed by the end of 2015. None of these determinations can be affected by Fermi 3, which will not be

available for years beyond 2015. Id. However, if those decisions favor rapid expansion of efficiency and renewables in concert with the real economics and the real flexibility of those resources, it is entirely possible to provide more capability than Fermi 3 offers for a fraction of the cost. The right mix of efficiency plus renewables is likely to cost less than the current cost of electric generation from existing fossil fuel plants or a new nuclear unit through the next fifteen years and beyond. This right mix is not just cheaper than new nuclear power, it is cheaper than any other resource strategy which meets the needs of the service area and is flexible in the face of any sort of unanticipated change in the service area conditions or unanticipated change in the availability of other generation. Id. The conventional wisdom that historically has applied to new power plant applications was not whether the utility will need additional generating capacity, but when. Commonwealth Edison Co. (Byron Nuclear Power Station, Units 1 and 2), LBP-80-30, 12 NRC 683, 691 (1980).

The standard for judging the “need-for-power” was whether a forecast of demand is reasonable and additional or replacement generating capacity is needed to meet that demand. Carolina Power & Light Co. (Shearon Harris Nuclear Power Plant, Units 1-4), ALAB-490, 8 NRC 234, 237 (1978). Those days are gone, perhaps forever, in Michigan, and certainly have vanished over the coming decade and a half, which is the period in which power from Fermi 3 is conjectured to be needed. The question for Fermi 3 is most definitely “whether” the Michigan economy and overall electrical capacity for power generation can economically withstand, much less utilize, addition of a huge new baseload generating facility, one which is not justifiable in terms of need and crowds out less expensive, more economically beneficial and environmentally benign alternatives, which have the added advantage of being incrementally available if, and when, the need for additional electricity generating capacity arises. The environmental review mandated by NEPA is subject to a rule of reason. While it need not include all theoretically possible environmental effects arising out of an action, it draws direct support from the judicial interpretation of the statutory command that the NRC is obliged to make reasonable forecasts of the future. Northern States Power Co. (Prairie Island Nuclear Generating Plant, Units 1 & 2), ALAB-455, 7 NRC 41, 48, 49 (1978); Hydro Res., Inc., LBP-04-23, 60 NRC 441, 447 (2004), review declined, CLI-04-39, 60 NRC 657 (2004). In the DEIS, the NRC Staff has not made a reasonable forecast of the future need and economic justification for the proposed Fermi 3 plant.

The poorly-evaluated economics and need in justification of Fermi 3 have directly implications for meaningful consideration of alternatives. Until the preliminary matter of cost is more realistically addressed, there cannot be meaningful discussion of preferable alternatives. “The NEPA phrase ‘alternatives to the proposed action’ is understood to mean ‘alternatives to achieve the underlying purpose and need for the action.’ (See the remarks of Sen. Jackson in 115 Cong. Rec. 40,420, Dec. 20, 1969).” “Policy Issue Notation Vote,” SECY-02-0175, 9/27/02. If, under NEPA, the Commission finds that environmentally preferable alternatives exist, then it must undertake a cost-benefit balancing to determine whether such alternatives should be

implemented. Florida Power & Light Co. (Turkey Point Nuclear Generating Plant, Units 3 & 4), ALAB-660, 14 NRC 987, 1004 (1981), citing Consumers Power Co. (Midland Plant, Units 1 & 2), ALAB 458, 7 NRC 155 (1978). “In the context of the environmental impact statement drafting process, when a reasonable alternative has been identified it must be objectively considered by the evaluating agency so as not to fall victim to ‘the sort of tendentious decision making that NEPA seeks to avoid.’“ Private Fuel Storage, L.L.C. (Independent Spent Fuel Storage Installation), LBP-01-34, 54 NRC 293, 302 (2001), citing I-291 Why? Association v. Burns, 372 F. Supp. 223, 253 (D. Conn. 1974), aff’d 517 F.2d 1077 (2d Cir. 1975). A hard look for a superior alternative is a condition precedent to a licensing determination that an applicant’s proposal is acceptable under NEPA. Public Service Co. of New Hampshire (Seabrook Station, Units 1 & 2), ALAB-471, 7 NRC 477, 513 (1978).

It is precisely a hard, serious look that is missing from the DEIS discussion of alternatives because of the incomplete and skewed need analysis presented by the NRC Staff. NEPA’s implementing regulations recognize that the consideration of alternatives is “the heart of the environmental impact statement” 40 CFR §1502.14, but in this DEIS, the heart is porous. Pursuant to NEPA §102(2)(E), the Staff must analyze possible alternatives, even if it believes that such alternatives need not be considered because the proposed action does not significantly affect the environment. “Some factual basis (usually in the form of the Staff’s environmental analysis) is necessary to determine whether a proposal ‘involves unresolved conflicts concerning alternative uses of available resources’ - the statutory standard of Section 102(2)(E).” Virginia Electric & Power Co. (North Anna Power Station, Units 1 & 2), LBP-85- 34, 22 NRC 481, 491 (1985), quoting Consumers Power Co. (Big Rock Point Nuclear Plant), ALAB-636, 13 NRC 312, 332 (1981). See also Vermont Yankee Nuclear Power Corp. (Vermont Yankee Nuclear Power Station), LBP-88-26, 28 NRC 440, 449-50 (1988), reconsidered, LBP-89-6, 29 NRC 127, 134-35 (1989), rev’d on other grounds, ALAB-919, 30 NRC 29 (1989). (**0077-5-1** [Lodge, Terry])

Response: *This comment is a contention submitted by the intervenors in the Fermi 3 licensing proceeding before the ASLB. The ASLB has rejected this contention, noting that the draft EIS addressed issues of uncertainty in the 21st Century Plan. Nevertheless, the review team determined that a supplemental review of the need for power analysis was warranted in order to confirm that the projections in the 21st Century Plan remain valid. This review can be found in the EIS in Section 8.1.*

E.2.25 Comments Concerning Alternatives - No-Action

Comment: I request the NRC to take, “The no-action alternative would result in the proposed facility not being built, and the predicted environmental impacts from the project would not occur.” (v 2, p 9.3) That would greatly encourage the DE wind farm in the Thumb. (**0016-4-38** [Collins, Jessie])

Comment: I am the Chair of the Nuclear Issues Committee at the Ohio Sierra Club. So, our Nuclear Issues Committee, we are astonished by the continuing push for new nuclear power in the light of the ongoing tragedy at Fukushima, Japan. Reports this week are saying that there is a danger of the now melted fuel cores eating through the cement floor, in fact Unit 1 has eaten through about two feet now. Eaten through the cement floor, reaching water and causing monumental explosion, something, the China Syndrome was the name for that. Photos reveal that the outside wall of the reactor building four has collapsed, exposing the spent fuel pool to the danger of rupture from the slightest future earthquake. The buildings are now so radiologically hot that humans cannot enter, rendering what is happening there to guesses based on radionuclides being released.

We submit that the very long term environmental impact of any nuclear reactor is difficult to measure. The dangers of and impacts of high level waste after 1,000 or 10,000 years has passed are outside the scope and understanding of our society, let along the draft EIS. And energy technology that could render large parts of the planet uninhabitable is immoral. While accounting for the environmental impact of constructing a Fermi 3 reactor at this location, it is of critical concern. There is a certain irony in this exercise since wherever nuclear is located grave threats to the future of the area are at hand. Within the scope of the DEIS the economically simplified boiling water reactor will add to the thermal, chemical and radioactive burden in Lake Erie, as well as in the surrounding communities. And it was mentioned before about the thermal pollution in Lake Erie and the record number, record covering of, of blue green algae on the lake last season, this will certainly not help with that enormous problem.

So, planned and unplanned radiological releases regularly occur at all reactors, and these things are certainties. The DEIS allows us to bury our heads in the sand when it comes to the question of radiological catastrophe. We are here to testify that the no build option is the only one that is environmentally sound. (**0040-33-1** [Marida, Patrica])

Response: *The radiological impacts of routine operation are addressed in Section 5.9 of the EIS, while impacts of postulated accidents are addressed in Section 5.11. Possible severe accident mitigation alternatives are also addressed in Appendix I.*

The impacts of a no-action alternative are discussed in Section 9.1 of the EIS. Selecting the no-action alternative would mean a license would not be issued for the proposed reactor and impacts from its construction and operation would not occur. Such a decision would also mean, however, that the purpose and need of the proposed action would have to be satisfied by other means. The environmental impacts of meeting the need for power by these other means are discussed in Section 9.2, and the review team concluded that none of the feasible alternatives was environmentally preferable to the proposed action. The comments did not provide any information that would change the review team's conclusions. Therefore, no changes to the EIS were made as a result of these comments.

E.2.26 Comments Concerning Alternatives - Energy

Comment: The F3EIS has not demonstrated how natural gas can fulfill the projected energy needs as a reliable source of base load power. (**0003-1-12, 0003-5-3** [Anderson, Christy])

Response: *In Section 9.2.2.2 of the EIS, the review team identified natural gas-fired combustion turbines operating in a combined cycle configuration (NGCC) as a power generating technology that could serve as a discrete alternative to the proposed nuclear reactor. NGCC is a proven technology capable of meeting the purpose and need of the proposed project, and the comment did not provide any information that would indicate otherwise. No changes to the EIS were made as a result of this comment.*

Comment: Since Germany and Italy are phasing out all nuclear produced power, and other countries are debating following suit, why is our government promoting nuclear? “Finally, renewable generation technologies are projected to enjoy the largest growth, from 9 percent in 2008 to 17 percent in 2035.” (v 2, p 9.6) Here’s DE’s opportunity to provide jobs building a future for us all with renewable energy. Bill Clinton said on the Jon Stewart show that nuclear was too dangerous, and that solar and wind were the way our country should go. (**0016-3-10** [Collins, Jessie])

Comment: We must close the existing dangerous and aging nuclear power plants and build only solar, wind, and geothermal energy systems that are safe and non destructive to our precious environment and the people of this country.

We should follow the Germans example with plans to change from nuclear to solar and wind, develop a timeline and get it started immediately, not act like idiots and create more nuclear problems. (**0042-8** [Barnes, Kathryn])

Response: *The NRC does not promote nuclear energy over other forms of power-generating technologies. The energy policy in the United States is established by Congress. NRC’s authority extends only to ensuring that the nuclear power plants that it licenses are designed and operated safely. Decisions with respect to how electricity demand will be met are the province of State or local authorities or Federal authorities other than NRC. As discussed in Section 9.2 of the EIS, the review team considered alternative means of meeting the need for power and concluded that none of the feasible alternatives was environmentally preferable to the proposed action. This conclusion is a key input to the NRC staff’s recommendation whether the Commission should issue the combined license. The comments did not provide any information that would change the review team’s conclusions. Therefore, no changes to the EIS were made as a result of these comments.*

Comment: I believe DE can obtain the energy needed to replace electricity for the power producing units scheduled to be retired by the year 2024 (v 1, p 8.22) wind power. Or by one of

the four alternatives listed in the NUREG, 1/purchase the power from other suppliers; 2/reactivate retired power plants; 3/extend the operating life of existing power plants; 4/implement conservation. (v 2, p 9.3, 9.4) (**0016-4-39** [Collins, Jessie])

Comment: 4.) In the Christian Science Monitor article, "After Oil How We'll Live" page 25 of October 10, 2011, we read, Choices made now about the coming energy transition will have a global effect; on page 27 they show a City Block of Solar. All the articles on U.S. and World energy policy in this issue are relevant background information for this discussion.

Renewable energy and Energy Efficiency would provide for our future power requirements in a much safer way, at a lower price; and every effort should be made to put those into operation before any new nuclear power plant is ever even considered much less licensed. (**0029-1-3** [Newnan, Hal])

Response: *The energy policy in the United States is established by Congress. NRC's authority extends only to ensuring that the nuclear power plants that it licenses are designed and operated safely. Decisions with respect to how electricity demand will be met are the province of State or local authorities or Federal authorities other than NRC. The NRC staff's responsibility under NEPA is to ensure that the Commission, when considering the license application before it for a new nuclear reactor, is fully informed regarding the technically feasible and practically available alternatives for satisfying the stated purpose and need of the proposed action, production of a specified amount of baseload electric power, and the environmental and socioeconomic impacts associated with each. The review team's evaluation of the technical and practical feasibility and environmental and socioeconomic impacts of energy alternatives to the proposed action are contained in Section 9.2 of the EIS. None of the alternatives mentioned in the comment were capable of meeting the purpose and need of the proposed action if pursued as a discrete alternative. However, the review team included some of these alternatives in a combination with other alternatives in Section 9.2.4. The review team concluded that this alternative was not environmentally preferable to the proposed action. The comments did not provide any information that would change the review team's conclusions. Therefore, no changes to the EIS were made as a result of these comments.*

Comment: Clean energy and energy efficiency are better- The most cost-effective and job-creating source of energy available to Michigan is through energy efficiency programs that help ratepayers reduce energy waste. Weatherizing homes and businesses, upgrading appliances, and modernizing lighting, heating and cooling systems could produce as much as 5,000 MW of power in Michigan. (**0019-5** [Hartung, Tiffany])

Response: *In Section 9.2.1 of the EIS, the review team evaluated all the energy conservation methods mentioned in the comment. Rather than rely on the maximum potential reduction in power demand from these methods, the review team considered empirical data to estimate the amount of power reductions that could reasonably be anticipated from each of these methods*

and compared those savings with the projected power generation of the proposed reactor. The review team concluded that, by itself, energy conservation was not a feasible alternative to the proposed project. However, in Section 9.2.4, the review team included 218 MW of savings from energy efficiency programs (above savings that are already planned) as a portion of a combination of energy alternatives. The comment did not provide any information that would change the review team's conclusions. Therefore, no changes to the EIS were made as a result of this comment.

Comment: On public radio's Science Friday show, recently, two men who are in the solar panel business, said the cost of photovoltaic electricity, on hot sunny days, is equal to nuclear or natural gas generated electricity. A combination of conservation and installing solar panels, could make building a large nuclear power plant, Fermi 3, or an equally large coal, or natural gas power plant, unnecessary. (**0021-2** [Newman, Kent])

Response: *The review team evaluated the feasibility of solar energy acting as a discrete substitute for the proposed nuclear reactor in Section 9.2.3.3 of the EIS. Although solar power offers many positive environmental attributes, the quality of the solar resource in Michigan, the current state of both photovoltaic and concentrated solar power technology with respect to power conversion efficiency, and the intermittent nature of the power that can be produced erode solar power's attractiveness as a discrete alternative for a baseload power source. A baseload power source must deliver power efficiently and continuously within the control of the facility operator, and not be subject to the vagaries of weather conditions. The review team concluded that solar power was not a feasible alternative to the proposed action. The comment did not provide any information that would change the review team's conclusions. Therefore, no changes to the EIS were made as a result of this comment.*

Comment: We request that the DEIS revisit the concept of "base load". Base load favors and is defined by large, centralized energy sources. Base load discounts decentralized sources such as rooftop solar and small wind. Base load ignores efficiency, which is the cheapest of all energy sources. Without changing the way energy sources are tabulated, it is impossible for the NRC to accurately calculate future energy generation capacity. (**0027-5** [Marida, Patricia A.])

Response: *In Chapter 8 of the EIS, the review team reviewed projections for the power system in the region of interest and concluded that there will be a need for baseload power in excess of that which can be provided by the proposed plant in the time frame that the plant would start operating. Both DTE Energy and the MPSC use the concept of baseload power in their analyses, and the review team also used this concept. The commenter did not provide a basis for not using the concept of baseload power other than to indicate that it doesn't favor decentralized sources. But the review team does not consider this to be an adequate reason to abandon the concept of baseload power. The comment did not provide any information that would change the review team's conclusions. Therefore, no changes to the EIS were made as a result of this comment.*

Comment: 6. Why not invest in a much safer technology like wind (Lake Erie + lots of wind = cheap electricity). (**0030-7** [Podorsek, Edward])

Response: *NRC has no authority to dictate to Michigan the manner in which electricity demand will be satisfied. Under NEPA, NRC has the obligation of evaluating the license application that has been submitted. The decision being requested is outside of NRC's authority. The licensing decision is informed not only by this EIS but also by a separate evaluation (i.e., the Fermi 3 SER) of the safety of the reactor being proposed. No change to the EIS was made as a result of this comment.*

Comment: II. THE DRAFT EIS' ALTERNATIVES ANALYSIS IMPROPERLY REJECTS CLEAN ENERGY ALTERNATIVES TO NEW NUCLEAR POWER.

The Draft EIS' Alternatives analysis is insufficient because it improperly disregards the combined alternative of renewable energy sources, energy efficiency, and natural gas generation. Developing renewable energy, particularly wind and solar power, and energy efficiency is a more cost-effective option for supplying electricity to Southeast Michigan than a new nuclear power plant that also has fewer adverse environmental impacts.

Renewables and energy efficiency are faster and more flexible to implement, much less expensive, cleaner, and safer than a new nuclear power plant in Michigan. This combination is faster and more flexible because building out renewables and implementing energy efficiency takes much less time than one large investment in a single plant, which, in the case of a the proposed new Fermi reactor, is not planned to go online until 2021. Draft EIS at 8-14. Moreover, renewables' and energy efficiency's siting flexibility and speedy deployment allows them to be deployed as demand and supply in the regional power market becomes clearer over time. The renewable and energy efficiency combination is cheaper than a new nuclear plant because it has much lower capital costs, shorter construction times - which leads to less expensive financing, no fuel costs, and far lower operational costs. Finally, renewables and energy efficiency are cleaner and safer because they have very limited ecological impacts, no low-level radioactive waste, no high-level radioactive waste, and no risk of catastrophic disasters.

Nonetheless, the Draft EIS' Alternatives analysis fails to "rigorously explore and objectively evaluate" these better, lower-cost, safer and environmentally preferable renewable energy and energy efficiency alternatives as NEPA requires. 40 C.F.R. 1502.14(a). The Draft EIS' analysis of alternatives to a new Fermi reactor is flawed because it improperly concludes that a new Fermi reactor is environmentally preferable to the wind and solar power, energy efficiency, and natural gas combination alternative and because it completely omits cost comparisons from the analysis. Draft EIS at 9-64 - 9-67. (**0036-2-1** [Gleckner, Allen])

Comment: The Draft EIS rejects a combination of energy efficiency programs, wind and solar power, and natural gas as a viable alternative to a new Fermi reactor because it finds that the combination alternative would have a larger land use and air quality impact. Draft EIS at 9-68, Table 9-6. The claimed difference in land use impacts is that wind and solar power would require large land areas. Id. The air quality difference is attributed to the natural gas component of the combination alternative and its potential pollutant and green-house gas ("GHG") emissions. Draft EIS at 9-65, 9-67 - 9-69. However, the Draft EIS finds that "[t]he impact of the emissions from the [natural gas] plant would be noticeable but would not be sufficient to destabilize air resources," at 9-35, and that air impacts on human health would likewise be "small." Draft EIS at 9-37. And while a natural gas component would have GHG emissions, it is disingenuous to dismiss a combination of alternatives that includes a significant amount of renewable power generation and energy efficiency savings - and potentially a majority amount if these options are aggressively pursued - based on GHG impacts.

Therefore, the Draft EIS' reasons for concluding that a new Fermi reactor is environmentally preferable to the combination alternative do not withstand scrutiny. This is especially true when one considers the potential impacts from a major accident, such as the Midland disaster or Fukushima, among others. It is arbitrary and capricious to claim that nuclear power - an energy source that presents potentially catastrophic environmental and human health risks - is environmentally preferable to a clean energy alternative that does not, particularly when the claim that the combination alternative is not environmentally preferable is otherwise based on such weak footing. (**0036-2-2** [Gleckner, Allen])

Comment: The Draft EIS' Alternatives analysis also fails to "rigorously explore and objectively evaluate" renewables and energy efficiency because it does not include any discussion of the relative costs of different alternatives. Energy efficiency and wind and solar power are much cheaper than new nuclear power. Comparing the levelized capital costs of these options is revealing: for wind and solar photovoltaic, the cost is $1900 - $2500/kW and $2,000 - $4,000/kW respectively, compared to $6,325 - $8,375/kW for new nuclear - approximately triple the cost of wind and double the cost of solar.[15] Energy efficiency programs are even less expensive - often times paying for themselves.[16] Even basic cost comparisons demonstrate that, as John Rowe, the CEO of Exelon, the largest nuclear utility in the U.S. stated, new "nuclear can't compete" economically.[17]

Without considering the costs of alternative energy options, the Draft EIS cannot reasonably evaluate these alternatives. For example, wind power is disregarded as a stand-alone alternative largely because of transmission costs and uncertainty as to whether wind farms will be built despite the fact that the Draft EIS acknowledges that the Detroit Edison service area has the wind energy potential to match the capacity of a new Fermi reactor and more. Draft EIS at 9- 50 (Wind capacity on the "Thumb" area could produce 12,000 - 12,400 GWh of electricity). However, if relative costs were analyzed, the Draft EIS might well conclude that transmission

and wind farm build-out could be accomplished for only a portion of the new Fermi reactor's projected $6.4 billion cost. Draft EIS at 10-26 (This figure is the "overnight capital cost." Actual costs would be much higher, as discussed in section III). Therefore, the NRC Staff must reconsider its rejection of clean energy alternatives, and engage in the rigorous and objective analysis of such alternatives that is required by NEPA, but not found in the Draft EIS. (**0036-2-3** [Gleckner, Allen])

[15] Lazard. Levelized Cost of Energy Analysis - Version 3.0 (June 2009).
[16] Rowe, John, Fixing the Carbon Problem Without Breaking the Economy, Resources for the Future Policy Leadership Forum Lunch (May 12, 2010); American Enterprise Institute, Energy Policy: Above All, Do No Harm (Mar. 8, 2011).
[17] Rowe, John, Fixing the Carbon Problem Without Breaking the Economy, Resources for the Future Policy Leadership Forum Lunch (May 12, 2010).

Response: *The review team evaluated wind and solar energy as alternatives to the proposed reactor in Sections 9.2.3.2 and 9.2.3.3 of the EIS, respectively, and found neither to be a feasible discrete alternative to the proposed reactor. The review team identified a combination alternative involving natural gas-fired combined cycle turbines, energy efficiency, and contributions from wind and solar as a technically feasible alternative to the proposed Fermi 3. The review team evaluated the environmental and socioeconomic impacts of such a combination alternative, summarizing the projected impacts in Table 9-5. In Table 9-6, the review team compared the projected impacts of the proposed reactor against all the alternatives that the team found to be technically feasible. The review team applied objective criteria in its evaluation of all the options that were considered to be technically feasible and practically available alternatives to the proposed reactor for satisfaction of the stated purpose and need of the license application that was submitted, and concluded that the combination of energy alternatives was not environmentally preferable to the proposed action. In accordance with NRC guidance (NUREG 1555, Section 9.2.3), because this alternative was not environmentally preferable to the proposed action, no comparison of the costs of the options was performed. The comments did not provide any information that would change the review team's conclusions. Therefore, no changes to the EIS were made as a result of these comments.*

Comment: With a low-end price estimate that has been calculated at some $10 billion, I find the acronym more than a little ironic. In my opinion, that $10 billion provided by DTE Energy ratepayers would be so much better spent by robust investment in wind farms located in Michigan's thumb area in tandem with solar energy, biomass, and comprehensive energy efficiency and conservation programs. (**0037-11** [Gunter, Keith])

Comment: Don't send $15 billion down a rat hole. Let's spend that money on windmills. I commend Detroit Edison for their solar and their windmills and their geothermal weatherization programs. So Detroit Edison's doing some good things. So I'm trying to help my company, which I do own, to do the right thing, and I hope I, I'm trying to save them from themselves. So

please listen up and do look at the record and reconcile that for me. Thank you. (**0039-24-5** [Keegan, Michael J.])

Response: *The review team identified a combination alternative involving natural gas-fired combined cycle turbines, energy efficiency, and contributions from wind and solar as a technically feasible alternative to the proposed Fermi 3. The review team evaluated the environmental and socioeconomic impacts of such a combination alternative in Section 9.2.4 of the EIS, summarizing the projected impacts in Table 9-5. In Table 9-6, the review team compared the projected impacts of the proposed reactor against all the alternatives that the team found to be technically feasible. The review team applied objective criteria in its evaluation of all the options that were considered to be technically feasible and practically available alternatives to the proposed reactor for satisfaction of the stated purpose and need of the license application that was submitted, and concluded that the combination of energy alternatives was not environmentally preferable to the proposed action. In accordance with NRC guidance (NUREG 1555, Section 9.2.3), because this alternative was not environmentally preferable to the proposed action, no comparison of the costs of the options was performed.*

It is beyond NRC's authority to direct how DTE Energy applies ratepayer funds to meet the electric power demands of its customers. The MPSC has the authority to review DTE Energy's power generation portfolio for its conformance with State legislation, applicable regulations, and Commission orders. The comments did not provide any information that would change the review team's conclusions. Therefore, no changes to the EIS were made as a result of these comments.

Comment: I'm representing Michigan Sierra Club, and also the Southeast Michigan Group of the Sierra Club. And I want to make my comments directed towards the document itself. There are many deficiencies in the DEIS that I believe need to be considered and addressed. First, is the biased premise that there's a need for large base load electrical plant, and the resulting conclusion that there's no alternative except to build this plant. In fact, many alternatives exist now and are still being developed. DTE's energy efficiency programs were given only one paragraph based on outdated information as Mr. Zaske will point out from 2009. I would point out that DTE is doing a decent job of advertising and implementing successful energy efficiencies for their customers. They're saving megawatts, and that's the cheapest megawatt you can have is a saved megawatt. However, the state law requiring only one percent reductions per year is at least required by most other states and counties. Some environmental groups such as us, are requesting that the legislature double this requirement to two percent. We have barely started to reap the benefits of energy efficiency, and I don't think this is properly addressed in the DEIS documents.

Other sources of energy overlooked by the review includes is the potential for co-generation of -- or grey power from present sources such as steel mills, food processors, paper mills and other industrial facilities. According to an analysis by Recycled Energy Development the Libby Glass

plant in Toledo, the Mid-America Steel in Cleveland, and the Cognis Chemical Plant in Cincinnati produce enough waste heat to generate 145 to 285 megawatts of electricity. And the study indicates that our neighbors in Ohio have enough co-generation potential to retire up to eight nuclear power plants. And according to the Oak Ridge National Laboratory this strategy would cost less than half of a single coal plant and have a pay back period of approximately three years. So, Michigan also has steel mills, paper mills and big industrial facilities that can be tapped. And this would have the double strategy of enabling these industries to be more competitive and save jobs, and we need manufacturing jobs saved.

So, Michigan law requires each utility to produce only ten percent of their total electric output with renewable sources, such as wind and solar, by 2017. Again, this is the lowest of all the surrounding Great Lakes states and again environmental groups are pushing for 25 percent renewable power. Michigan has good wind that could be further developed and the review casually dismissed the potential of offshore wind in Lake Michigan, where we are also looking to pass offshore wind regulation so that, that can happen. Part of the reasoning being that there should be electricity generated within the DTE territory. However, DTE is currently in partnership with Consumers Energy with the pump facility in Ludington which is, you know far northwest of the DTE area.

There's strong likelihood of offshore wind development and there are proposals for other large wind farms, and according to the MPC, Michigan is on track by the end of 2012 to get 700 megawatts from wind. And we're approaching half of what the proposed megawattage is for Fermi 3 and we just heard the gentleman from DTE say that they're going to put a thousand megawatts of wind on line. Well, if we double the requirement they would put more megawatts on line, further negating the need for Fermi 3. (**0040-14-1** [McArdle, Ed])

Response: *In the introductory paragraphs to its energy alternatives analysis (Section 9.2), NRC established that to be considered as a reasonable alternative to the proposed reactor, an alternative needed to be both technically feasible and reasonably available at the scale necessary to produce the amount of power substantially equivalent to the proposed project and with the same level of reliability. The need for this power is discussed in Chapter 8 of this EIS.*

In evaluating renewable energy technologies, including wind, NRC considered all relevant data available at the time of its analysis. The NRC review team's detailed analysis of wind is included in Section 9.2.3.2 and was based on the current state of development and current energy policies (the Renewable Portfolio Standard), estimates of available wind energy by the MPSC's Wind Energy Resource Zone Board, as well as factors directly related to the quality and availability of the individual renewable energy resources, the adequacy of existing transmission lines to deliver power from both onshore and offshore wind resource areas, and publicly announced and MPSC-approved plans for transmission system build-outs. The analysis also extended to an evaluation of the impact on overall feasibility of wind energy when coupled with an energy storage technology. NRC believes that its evaluation of wind energy as

a reasonable discrete alternative to the proposed reactor is correct. Doubling the requirements of the RPS as was suggested would likely increase the pace of wind energy development in Michigan, but would not address the fundamental issue that wind power is intermittent. No changes were made to the EIS as a result of this part of the comment.

The second part of the comment suggests that bottom-cycle cogeneration may be a feasible alternative to the proposed action. Bottom-cycle cogeneration refers to using waste heat from industrial processes to generate electricity. The heat that is used in this bottoming cycle typically comes from fossil fuels such as coal and natural gas. The electrical power generated by CHP may be used by the industrial facility (thus reducing its demand for electricity from the grid) or, if excess power is generated, it may be sent to the grid.

In 2010, all generation sources in Michigan produced 111,551,371 MWh of electricity (DOE/EIA 2012a). Of that amount, 1,840,000 MWh (1.6 percent) was produced by sources classified as commercial or industrial combined heat and power (DOE/EIA 2012a). The EIA data indicates that CHP facilities have made only modest contributions to the Michigan energy grid. The annual generation of 1,840,000 MWh equates to an average generation rate of about 210 MW (assuming each CHP facility, on average, were generating power continuously). The annual amount of power attributable to CHP facilities equates to approximately 15 percent of the annual power expected to be delivered to the grid by the proposed reactor (12.4 million MWh, see Section 9.2.2.1).

EIA does not publish specific projections of the growth in CHP generation. However, it does project the growth in end-use generation, which may act as a reasonable surrogate for the growth in CHP. For the ReliabilityFirst Corporation-Michigan region, EIA projects that end-use generation will increase by a factor of 2.5 from 2010 to 2025 (DOE/EIA 2012b). Applying this growth to the amount of generation by CHP in 2010, CHP generation in 2025 in Michigan would be around 525 MW on average, an increase of 315 MW from the 2010 value. If that growth projection is realized, CHP contributions will rise to 4,600,000 MWh, which is approximately 37 percent of the expected Fermi 3 output. (The growth from 2010 to 2025 would be about 2,760,000 MWh, or about 22 percent of the expected Fermi 3 output.) The power resulting from this rate of growth is far less than the output of the proposed reactor and would not meet the purpose and need of the project. Actual growth in CHP generation will be highly dependent on the decisions whether to implement CHP by the many industrial facilities that are producing waste heat. Based on the preceding analysis, the review team concludes that CHP would not be capable of meeting the purpose and need of the proposed action.

The comment did not provide any information that would change the review team's conclusions. Therefore, no changes to the EIS were made as a result of this comment.

Comment: Solar and wind power are faster to build and install; either can be ready in months, rather than years. The cost of clean energy in Michigan is cheaper than new coal and nuclear

plants. DTE will be purchasing 120 MW from a wind farm in Tuscola, Bay and Saginaw counties for $60.05 per Megawatt Hour, making it one of the best rates in the US and best in Michigan for a wind energy project and significantly cheaper than a new nuclear plant. It is also creating much needed Michigan jobs and generating income for local farmers and local governments. Consumers Energy has lowered costs for customers because renewable energy costs were lower than they expected.

DTE should instead invest in cleaner, cheaper energy efficiency and clean energy that is safe and will keep electric rates low. (**0019-6** [Hartung, Tiffany])

Comment: One of the contentions that has already been downplayed is that renewable energy and energy efficiency efforts would make much better sense that licensing this unneeded, proposed stupidly expensive and hideously dangerous nuclear power plant. (**0040-17-5** [Noonan, Henry])

Comment: Today the Toledo Blade reports the plant at estimate of 15 billion dollars. If you took that 15 billion dollars and spent it elsewhere you would be able to go a long ways in renewable, alternative energy, solar, wind, geo thermal. But the lowest hanging fruit is energy efficiency, that's where we need to go. There's not a need for the plant. (**0040-9-2** [Keegan, Michael J.])

Comment: Start planning to create more wind and solar, geothermal and non-dam water systems for a living future. (**0042-11** [Barnes, Kathryn])

Response: *The review team evaluated wind and solar as alternatives to the proposed reactor in Sections 9.2.3.2 and 9.2.3.3, respectively, and found neither to be a feasible discrete alternative to the proposed reactor. Likewise, geothermal energy was also evaluated and found to not qualify as a discrete alternative to baseload power in Michigan. However, in Section 9.2.4 of the EIS, the review team determined that both wind and solar could be effectively used in combination with energy efficiency, demand-side management, and natural gas combined cycle to comprise a combination alternative that could be considered as an alternative that could meet the stated purpose and need of the proposed reactor. But in Section 9.2.5, the review team concluded that this alternative was not environmentally preferable to the proposed action. In accordance with NRC guidance (NUREG 1555, Section 9.2.3), because this alternative was not environmentally preferable to the proposed action, no comparison of the costs of the options was performed. The comments did not provide any information that would change the review teams' conclusions. Therefore, no changes to the EIS were made as a result of these comments.*

Comment: I realize you deal with only Nuclear plant decisions, but as an example for Renewable power; someone wants to put a Wind farm in Monroe County, Michigan too! (**0023-3** [Lankford, R.E.])

Comment: Fermi 3 is not needed, and rather would displace safer, cheaper, and cleaner energy alternatives such as efficiency and wind power, that better fit Michigan's electricity and job creation needs. Michigan's economic depression requires cost-effective green job creation, affordable electricity rates to spur business development, and 21st century environmental entrepreneurship. Investment in efficiency represents the lowest hanging energy fruit, with tremendous potential for ratepayer cost savings, cost-effective climate mitigation, and widespread job creation. As reported by the National Renewable Energy Lab, Michigan has the potential to develop 16,000 megawatts of land-based wind power. In addition, MSU's Land Use Institute reported in Oct., 2008 that over 320,000 megawatts of wind power is available to the Great Lakes State off-shore; environmentally-sensitive, strategic development of even a very small fraction of that huge potential could supply Michigan's electricity needs for the foreseeable future, at more affordable rates than Fermi 3, while more cost-effectively creating much larger numbers of jobs. (**0058-21** [Kamps, Kevin])

Comment: Michigan has a massive potential for onshore wind energy development, approximately 175,000 MW of potential at 30% capacity factor and 100 meter hub heights[vi]. (This reference includes a wind map which shows that most of Michigan's better wind resource is in and around the Detroit Edison Service area). Offshore wind development is still in a pilot stage, and is irrelevant to the question of resource decisions through this decade and into the early years of the 2020's.

At 30% capacity factor, 175,000 MW of wind could theoretically generate the same amount of power as 58,000 MW of nuclear power. At today's prices for wind turbines, large swaths of the United States are prime candidates for generation of new wind power that can be sold at wholesale for six cents per KWH or less. The 30% capacity factor measure indicates economic viability at today's prices, and the point here is that Michigan's wind resource is equivalent to at least thirty-seven Fermi 3's, when what is called for is approximately one percent of that resource, in conjunction with a strong efficiency program and a few other resource decisions.

In other words, we are not suggesting that Fermi 3's potential generation be met with wind power. We are suggesting that approximately a third of it can be met with wind power, while the other two-thirds of it can be met with efficiency and other renewable resources, and that we suspect that photovoltaics will be the most important of those other resources by 2025. More text supporting the comment is also provided by the commenter. (**0077-6-15** [Lodge, Terry])

[VI] http://www.windpoweringamerica.gov/wind_resource_maps.asp?stateab=mi. The map at this link shows that much of the best wind in Michigan is in or near the Southeast Michigan region. The graph below the map shows the doubling of wind generation potential which results from raising the hub height from 80 meters to 100 meters.

Response: *Although NRC's licensing authority for power plants extends only to nuclear facilities, it has the obligation under NEPA to evaluate all commercially available power-*

generating technologies, as well as strategies for reducing demands for power, for their feasibility as replacements for the proposed nuclear reactor. The review team's analyses of these alternatives considered wind, both when operating as a discrete alternative (augmented by energy storage capabilities) in Section 9.3.2.2 of the EIS and when operating in combination with other generating technologies and energy reduction strategies in Section 9.2.4. The review team's analysis considered the potential for wind in the region, legislation and regulations already in place that would promote or facilitate wind energy development, the location of wind resources in relation to the major load centers in the DTE Energy service territory, and the available capacity in the existing transmission system that would deliver wind-derived energy from those geographic regions to DTE Energy load centers. The review team also considered the limited extent to which wind resources in the region have been developed to date. The review team concluded that wind energy would not be a feasible discrete alternative to the proposed reactor. However, in Section 9.2.4, the review team determined that both wind and solar could be effectively used in combination with energy efficiency, demand-side management, and natural gas combined cycle to comprise a combination alternative that could be considered as an alternative that could meet the stated purpose and need of the proposed reactor. In Section 9.2.5, the review team concluded that this alternative was not environmentally preferable to the proposed action.

The comments did not provide any information that would change the review team's conclusions. Therefore, no changes to the EIS were made as a result of these comments.

E.2.27 Comments Concerning Alternatives - System Design

Comment: The prediction that Fermi 3 will use 49 million gallons of lake water a day, and then discharge 17,000 gallons of water a minute as a vapor is concerning. Fermi 3 should be required to capture and cool this water then return it to our lakes. (**0040-34-3** [Berlucourt, Kerry])

Response: *In Section 9.4.1 of the EIS, the review team presents its analysis of the alternative cooling systems that could satisfy the heat rejection demands of the proposed reactor. The impact on Lake Erie from the operation of the proposed cooling system is addressed extensively in Section 5.2. The review team concluded that the impacts on water use and quality from the operation of the new unit would be SMALL and that additional mitigation was not warranted. The comment did not provide any information that would change the review team's conclusions. Therefore, no changes to the EIS were made as a result of this comment.*

E.2.28 Comments Concerning Alternatives - Sites

Comment: The EIS has not adequately resolved conflicts or addressed resource use, the practicability of using practicable and reasonable alternative locations AND/OR METHODS to accomplish the objective of proposed structure. (**0003-1-11, 0003-5-2** [Anderson, Christy])

Response: *NRC's evaluation of the environmental impacts that would result from construction and operation of the proposed Fermi 3 at alternative sites is presented in Section 9.3 of the EIS. NRC evaluated the methodology DTE Energy used in selecting candidate sites and then proceeded to evaluate the environmental and socioeconomic impacts that would result if the proposed reactor were to be constructed and operated at each of those alternative sites. The NRC analysis identified the impacts on resources if any of the alternative sites were selected for the proposed reactor and also evaluated the other actions that would need to occur to support the operation of a nuclear reactor at any of the alternative sites, including, for example, modifications to transportation infrastructures that may be necessary to support construction and modifications to the transmission grid necessary to deliver power from the reactor throughout the DTE Energy service territory. Options to mitigate the expected impacts on the resources are also provided. The review team concluded that DTE Energy employed a process that could reasonably be expected to identify sites among the best available in the region and that none of the alternative sites was environmentally preferable to the proposed site.*

Section 9.2 identifies the alternative means of providing an amount of power to the DTE Energy service territory equivalent to the power projected from the proposed reactor. Potential impacts on resources associated with each of those alternatives are also provided. The review team concluded that none of the energy alternatives capable of meeting the purpose and need of the proposed project were environmentally preferable.

The comment did not provide any information that would change the review team's conclusions. Therefore, no changes to the EIS were made as a result of this comment.

Comment: "Based on its analysis, the staff determined that there are no environmentally preferable or obviously superior sites." (v 2, p iii) A superior site does exist! In the document, the area of Michigan known as "...the Thumb possesses wind resources of sufficient value to support utility-scale wind generation...the Thumb is within the DE service area." (v 2, p9.50) On the same page, DE admits they could transmit electricity produced there on the existing transmission lines. Thereby saving a lot of wetlands, a lot of flora and fauna, and best of all, Lake Erie. It is such a win-win situation. We opponents would save a lot of time and energy in stopping Fermi 3 and DE can be champions of sustainable energy! Everyone will be happy! (**0016-1-20** [Collins, Jessie])

Response: *The alternative sites analysis provided in Section 9.3 of the EIS considered sites that would serve as acceptable locations on which to build and operate the proposed nuclear reactor. From that perspective, no alternative site was considered environmentally preferable or obviously superior for the proposed reactor when compared to the Fermi power plant site. In searching for sites, DTE Energy used a region of interest defined as its traditional service territory, which includes the "thumb." The review team concluded that the choice of this region of interest was consistent with the guidance in NUREG 1555, 9.3.*

The review team did evaluate wind energy for its ability to serve as an alternative power-generating technology to the proposed reactor, as discussed in Section 9.2.3.2. The review team's analysis considered the potential for wind in the region, legislation and regulations already in place that would promote or facilitate wind energy development, the location of wind resources in relation to the major load centers in the DTE Energy service territory, and the available capacity in the existing transmission system that would deliver wind-derived energy from those geographic regions to DTE Energy load centers. The review team also considered the limited extent to which wind resources in the region have been developed to date. The review team concluded that wind energy would not be a feasible discrete alternative to the proposed reactor. In Section 9.2.4, the review team included wind as a contributor to a combination of energy alternatives. However, the review team concluded that this alternative was not environmentally preferable to the proposed project.

The comment did not provide any information that would change the review team's conclusions. Therefore, no changes to the EIS were made as a result of this comment.

E.2.29 Comments Concerning Benefit-Cost Balance

Comment: Increases in the estimated costs for new nuclear plants make new investments in nuclear power uncertain. Implementing task force recommendations to allow for all the UNEXPECTED events that may be likely to occur would make a new reactor economically unfeasible. Four new nuclear power plants are completed in the Reference case, all of which are brought on line by 2020 to take advantage of Federal financial incentives. High construction costs for nuclear plants, especially relative to natural-gas-fired plants, make other options for new nuclear capacity uneconomical even in the alternative electricity demand and fuel price cases. http://www.eia.gov/forecasts/aeo/source_nuclear.cfm (**0003-5-4** [Anderson, Christy])

Comment: Fermi 3 will make DTE's electric rates unaffordable - The high cost of Fermi 3 will be passed onto ratepayers. DTE already has a large uncollectible expense and the rate impact of Fermi 3 will make it more difficult for ratepayers to afford their electric bills and will increase DTE's uncollectible rate. (**0019-2** [Hartung, Tiffany])

Comment: Enter a new and untried category of reactor. The name Economically Simplified Boiling Water Reactor (ESBWR) should cause reasonable people to pause. It actually tells the public that simplifying the economics is the major concern. Not safety or waste. The technology of renewables, solar, wind, and energy storage is improving every year, and supports new entrepreneurs. The cost is going down. With nuclear, the cost continues to climb, so much so that the industry is unwilling to financially guarantee any estimates. Though supposedly economically simplified, this new reactor carries a hefty price tag, $12 + billion and rising. Other U.S. utilities have rejected the "Economically Simplified" design. (**0027-4** [Marida, Patricia A.])

Comment: The nuclear industry has been subsidized by the public throughout most of its long and polluting chain. This year the Union of Concerned Scientists released a report Nuclear Power Subsidies: The Gift that Keeps on Taking. This report shows that in some cases subsidies were greater than the value of the electricity produced. The costs are born by the public, but the profits go to private interests. With this peculiar financial arrangement, we can hardly expect less than an industry push for Fermi 3. Public relations firms are hired, exaggerated numbers of jobs are cited, and donations are made to political campaigns and charities in the local community. Even so, polls show that the majority of Americans favor renewables over nuclear. The 1% is attempting to manipulate the 99%. The 99% want something more than grooming ourselves to work for the 1%. (**0027-6** [Marida, Patricia A.])

Comment: The cost of building Fermi 3 would financially take-off-the-table more favorable employment and environmental grand scale renewable energy options.

Apparently consideration of this has been taken-off-the-table by the NRC based on the opinions of the very utility operators who would benefit more from public subsidies for nuclear power, subsidies that are very likely to mushroom with cost over runs as many nuclear power plants have done while being built. This is a very bad scenario for the taxpayers who would have to pay for it; but also for the future of all mankind as this kind of economic and energy travesty is multiplied across the country and the planet. We need to make better resource decisions than this. (**0029-2-4** [Newnan, Hal])

Comment: Naturally with resources running out worldwide, and our facing increasing competition from countries like China and India we can only expect worse cost overruns than ever before. (**0029-2-6** [Newnan, Hal])

Comment: The review team concludes that cumulative impacts on the nonradiological health of the public and workers would be SMALL, and that mitigation beyond what is discussed in Sections 4.8 and 5.8 would not be warranted.

If the review team were willing to stipulate that Fermi III is overpriced and unnecessary, then they might concede that the misuse of ratepayers' resources presents an opportunity-cost that would quite likely affect both the quality of life, and the health of those ratepayers. If ratepayers miss the opportunity to hold well-paid jobs in the efficiency improvement and distributed renewable energy sector, then those ratepayers might well have to make do with minimum wage, service sector jobs that do not offer health insurance. A lack of health insurance will, in turn, impose grave impacts on the health of Detroit Edison's ratepayers. (**0034-5-2** [Welke, Jim])

Response: *The staff analyzed the costs and benefits of the proposed action in Chapter 10 of the EIS and did not identify new and significant information concerning the projected financial costs of the proposed Fermi 3. Cost estimates for Fermi 3 relied on the best available estimate of project timing and duration, noting uncertainties associated with projections into the future.*

NRC's responsibility is to regulate the nuclear industry to protect the public health and safety policy. NRC is not involved in regulating the costs of power generation that are passed on to customers or establishing the rates paid by customers. Judgments concerning the appropriate level of public funding for energy infrastructure are most often the role of State regulatory authorities, such as public service commissions. Any additional consideration by the review team would be speculative because of the dynamic nature of the rate-setting process. Loan guarantees for new nuclear power plants authorized by the Energy Policy Act of 2005 are contingent on utilities receiving all regulatory approvals, including a COL.

NRC does not have the authority to grant or restrict loan guarantees. NRC does not have authority to ensure that the proposed plant is the least expensive alternative to provide energy services under any particular set of assumptions concerning future circumstances. Under its guidance in NUREG 1555 (NRC 2000), NRC considers only the cost of energy alternatives if the alternatives are found to be environmentally preferable to the proposed nuclear alternative and if the energy alternatives satisfy the purpose and need for the proposed project. Chapter 9 of the EIS considered the potential for alternative non-nuclear technologies to provide electricity that could be generated by the proposed plant and their environmental impacts. The staff concluded that, from an environmental perspective, none of the viable energy alternatives is clearly preferable to construction of a new baseload nuclear power-generating plant. These comments provided no new information and, therefore, do not warrant changes to the EIS.

Comment: "Operation of Fermi 3 will cause physical impacts, including noise, odors, exhausts, thermal emissions, and visual intrusions." (v 1, p 5.54) So the proposed Fermi 3 doesn't have any benefits besides economic? (**0016-4-10** [Collins, Jessie])

Response: *The review team discussed the benefits and costs from construction in Sections 4.4 and 4.5 of the EIS. The review team discussed the benefits and costs from operations in Sections 5.4 and 5.5. Benefit-cost balance is discussed in Section 10.6. This comment provided no new information and, therefore, does not warrant changes to the EIS.*

Comment: Improving the NRC's Cost-Benefit and Risk-Informed Analyses: The NRC should increase the value it assigns to a human life in its cost-benefit analyses so the value is consistent with other government agencies. (**0026-6-62** [Macks, Vic])

Response: *The staff analyzed the costs and benefits of the proposed action in Chapter 10 of the Draft EIS in accordance with its guidance document, NUREG 1555, the Environmental Standard Review Plan, which defines the methodology for addressing a benefit-cost balance. The NRC does not consider the value of a life in its calculations, because the process is considered remote and speculative. Cost estimates for Fermi 3 relied on the best available estimate of project timing and duration, noting uncertainties associated with projections into the future. No changes were made to the EIS in response to this comment.*

Comment: Finally, EPA would like more information in the Final EIS on the sources of the required construction materials, as listed in table 10-4, on page 10-26 under "Material and Resources." Please outline whether this material can be made of second-sourced material (i.e., reclaimed aggregate). EPA understands there could be specific safety codes that prevent this; however, we recommend that any auxiliary buildings, new roads, and other non-safety related structures be constructed with materials that are recycled, if possible. If you need more information about this, please see our website about environmentally responsible purchasing at www.epa.gov/epp. Recommendation: EPA strongly encourages the Applicant to consider environmentally friendly purchasing and sourcing, as well as sustainable development of the facility. Any plans currently proposed by the Applicant to pursue programs or initiatives listed above should be disclosed in the Final EIS along with information listed above. (**0078-33** [Westlake, Kenneth A.])

Response: *Safety-related construction materials are a part of the Fermi 3 FSAR. The topics in this comment are outside the scope of the NRC's EIS process. This comment provided no new information and, therefore, does not warrant changes to the EIS.*

Comment: So talk about half baked, but it's kind of a good segue into my next point, which is the subsidies. There was a good editorial in the Toledo Blade today that pointed out that really what this whole paper game is about is Detroit Edison's pursuit of what the Toledo Blade put the figure at $300 million in tax incentives and tax breaks. They were rushing to be, you know, towards the front of the line for these tax incentives and tax breaks and the hundreds of millions of dollars that were passed as part of the Energy Policy Act of 2005, a controversial, to put it mildly, bill that, you know, that lobbying power of the nuclear power industry had a little hand in. So from 1999 to 2009, a ten-year period of time, the nuclear power industry, Detroit Edison, the Nuclear Energy Institute, you name the nuclear utilities, they spent $645 million lobbying the executive level of our federal government. That's more than a million dollars per week for a decade on end. That rate of spending is at least happening now, if now more so, since Fukushima Daiichi, and look at the rate of return you get. The Energy Policy Act of 2005 immediately granted the nuclear power industry $13 billion in subsidies. And that's where that $300 million figure comes in for Detroit Edison. Racing after those subsidies, getting a half baked, that's giving it a lot of credit, half baked reactor design in there so it could qualify for these subsidies. So, on the subsidies part, here's a statement from three years ago. Taxpayer and rate payer subsidies for Fermi 3 represent opportunity costs lost to safer, cheaper and cleaner alternatives, such as energy efficiency and renewable sources of electricity. The nuclear power industry has enjoyed hundreds of billions of dollars in public support over the past half century. DTE's Fermi Nuclear Power Plant has already benefitted for decades from federal research and development, as well as liability insurance against major accidents. The Price Anderson Act was mentioned by Joe DeMare earlier. The Federal 2005 Energy Policy Act provided yet another $13 billion in subsidies, tax incentives and additional support for new reactors. The industry has already successfully lobbied for $18.5 billion for new reactor federal

loan guarantees, approved in December, 2007, making taxpayers co-signers on financially risky nuclear construction projects. Now DTE, as well as Nuclear Energy Institute lobbyists are seeking additional tens of billions of dollars in nuclear loan guarantees as part of the federal economic stimulus bill. This was three years ago. Even though Fermi 3 cannot even break ground in the next two years. (**0039-28-2** [Kamps, Kevin])

Comment: At the state level, DTE has received approval to charge electric rate payers hundreds of millions of dollars to pay off its construction debt for Fermi 2. And it recently applied to the Michigan Public Service Commission for tens of millions of dollars from rate payers to fund its application costs for Fermi 3. Such public funds would be much better invested in energy efficiency, which is seven to 10 times more cost effective than a new atomic reactor at reducing greenhouse gas emissions. Or in wind power, so plentiful in Michigan and twice as cost effective as nuclear power at carbon reductions. So I mentioned those tens of billions of dollars in additional nuclear loan guarantees, and those would be the very ones that Detroit Edison would apply for. They've yet to apply because there's not enough money out there for all these proposed new reactor designs. And we have this poster out front that you can take a closer look at. It really focuses on the Obama administration's call for a $36 billion increase in that new reactor loan guarantee fund, which is currently at $18.5 billion. It was mentioned earlier today that $8.3 billion of that, Obama himself made the announcement, going towards two new reactors in Georgia at Vogtel. We'll see if that goes belly-up because then we're the co-signers who get to pay it back. You think the Solyndra solar loan guarantee scandal is big at $535 million of taxpayer money down the tubes? Try $8.3 billion. That's 15 times bigger, and that's about the size that Fermi 3 would eventually look for if they get the chance to do so. And I would just conclude by pointing out that the next loan guarantee that was up for approval was the South Texas project, two new reactors, and who were some of the business partners involved with that? Well, the reactor design was another GE Hitachi design, the advanced boiling water reactor. Toshiba of Japan was a partner. Tokyo Electric Power Company was a partner. The Japan Bank for International Cooperation, that's the Japanese federal government. So at a time of economic collapse in this country, why is the U.S. taxpayer being looked to to bear the financial burdens for a highly profitable industry, because they've externalized all their costs onto the public? That, needless to say, the Fukushima Daiichi disaster has really stopped that proposal. But here we still fight this one. (**0039-28-3** [Kamps, Kevin])

Comment: Fermi 3 would pose considerable risk to DTE. You know, if the price of the plant is 12 billion or 15 billion, DTE's total market capitalization is 8.8 billion. And their credit rating is not as superlative as one would hope or one would like. So anyway, it would really be tough to loan on this. And if they ever did do this and if it ever passed, we would pass all of this on to rate payers. -Uprates would probably go up 20 or 30 percent. Even Michigan's Attorney General has questioned the economic viability to quote him, Detroit Edison's current excess generating capacity declining sales, questionable economic viability of constructing a nuclear plant, lack of a concrete plan for when the construction would occur and no comparative analysis of the costs

and benefits of a nuclear plant compared to other generating possibilities. This is an Attorney General Schuette's comments and a public service commission filing, there's the link in here. Anyway, overall there's just no justification for this plan. In regarding communities, every community in Michigan wants jobs. Every community in this country wants more jobs and tax revenue. But the words jobs and tax revenues seem to blind people to the two words, risk and debt. So, risk, it could be risky, it could be, the debt could be passed along to rate payers. It can be overall a very risky situation if you overlook reality. (**0040-15-3** [Zaski, Frank])

Comment: I do want to note that as someone said if there's a severe accident in a nuclear plant that the people who pay for the repair of that plant are the general public. As I understand, nuclear plants are not insurable. And so it's the American taxpayer who will pay for whatever cleanup happens. And I just have to note that the 2010 tax return of DTE Energy shows that they made $950 million in profit, they had $172 million as a tax dividend, so that their effective tax rate was minus 18.1 percent. I would like to close with just a quotation by Robert F. Kennedy, Jr., of course. The same DOE loan guarantee program that supported solar projects, gave an astonishing $8.3 billion dollar loan guarantee, many times the size of the solar projects, to a southern company to build two nuclear plants. Nuclear power is an industry with a product so expensive it cannot compete in any version of the free market capitalism. Big nuke is totally dependent on massive, monstrous, public and government subsidies at every stage of its life. (**0040-19-3** [Dean, Dan])

Comment: Taxpayer and ratepayer subsidies for Fermi 3 represent opportunity costs lost to safer, cheaper, and cleaner alternatives such as efficiency and renewable sources of electricity. The nuclear power industry has enjoyed over half a trillion dollars in public support over the past half century. DTE's Fermi Nuclear Power Plant has already benefitted for decades from federal research and development, as well as liability insurance against major accidents. The federal 2005 Energy Policy Act provided yet another $13 billion in subsidies, tax incentives, and additional support for new reactors. The industry has already successfully lobbied for $18.5 billion for new reactor federal loan guarantees, approved in Dec. 2007, making taxpayers co-signors on financially risky nuclear construction projects. Now DTE as well as Nuclear Energy Institute lobbyists are seeking additional tens of billions of dollars in nuclear loan guarantees as part of the federal economic stimulus bill, even though Fermi 3 cannot even break ground in the next two years. At the state level, DTE has received approval to charge electric ratepayers hundreds of millions of dollars to pay off its construction debt for Fermi 2. It recently applied to the Michigan Public Service Commission for tens of millions of dollars from ratepayers to fund its application to NRC for Fermi 3. Such public funds would be much better invested in energy efficiency, which is seven to ten times more cost effective than a new atomic reactor at reducing greenhouse gas emissions, or in wind power, so plentiful in Michigan and twice as cost effective as nuclear power at carbon reductions. (**0058-20** [Kamps, Kevin])

Comment: Detroit Edison proposes to build a nominal 1600 MW nuclear plant at the existing Fermi site, named Fermi 3. The proposed plant would produce 1535 MW's of net generating capacity. Should this plant operate at 90% capacity factor, a level which is often stated as a reasonable value for the function of a new nuclear plant, it would generate 12,108,847 MWH's per year. This would represent 29.7% of Detroit Edison's 2010 sales.

However, based on our review of available data, Michigan's nuclear fleet operates at a mere 66% capacity factor. While this may be due to economic sales opportunities and a poor fit between Michigan's general consumption pattern and nuclear generation rather than poor operation of the plants in question it creates an overwhelming burden of proof that a new nuclear plant which is massive relative to the proposing utility will not create an unacceptable negative economic impact. It may be possible for Detroit Edison to show that its operation of Fermi II has a better track record, but the recent years do not give that suggestion much support. Since Michigan's overall electric industry has a similarly low capacity factor it is extremely likely that Michigan and Detroit Edison have a "needle peak" problem, meaning that more than twenty or thirty percent of its peak MW demand level exists for less than ten percent of the year. This presentation challenges the appropriateness of the Fermi 3 proposal on economic grounds, by comparing it on several terms with available clean energy alternatives.

Natural gas is not clean energy, but it is regarded as very important these days. It will be discussed briefly, and shown to have important limitations. To address a low capacity factor or "needle peak", the lowest cost option is efficiency, which can easily be oriented to address peak demand (high efficiency commercial lighting and all air conditioning efficiency and all refrigerator efficiency in air-conditioned space will have high impact on demand). Load management programs are considered to be similarly inexpensive, but there may be limits on the level of participation which is available at low cost when real curtailment of service is required.

One of the key issues in comparing Fermi 3 to alternatives is the current pace of price shifts. During the last ten years the cost of new coal plants has increased three to four times. The cost of new natural gas plants has increased nearly that much. The cost of wind turbines has more than doubled (although it has dropped 30% in the last three years), and the cost of a new nuclear plant remains speculative, but is unquestionably at least three or four times as much as it was the last time a nuclear plant was completed in the United States. By contrast, efficiency has held pretty steady in cost over thirty years, gaining ground through better technologies and the rising value of the savings. In other words, the cost of efficiency has held steady, while the efficiency potential has increased faster than U.S. citizens and businesses have installed the technologies. Photovoltaics have fallen almost ten percent in price per year for almost twenty years, and are cheaper than new natural gas in the Southwest U.S. The same cost/benefit can be expected in three to five years in the Midwest, due to our lower sunlight index.

Since the value of wind and photovoltaic technology is a function of the available wind or solar resource as well as the equipment, there is a real revolution in U.S. electric technology under

way. In 2011 the price of electricity from a new wind turbine became unequivocally cheaper than any new fossil resource generation in most of the U.S. With the wind production tax credit, new wind costs less than four cents per KWH in many states with good wind resources. The wind production tax credit is under fire, but in 2011, the tax credit was 2.11 cents per KWH, while the cost of coal per KWH was 2.35 cents, so the tax credit pays for itself.

Similarly photovoltaics are crossing paths with fossil and nuclear options. In the Southwest U.S. where solar resources are better than across the Midwest, photovoltaics are deemed cheaper than natural gas by several State regulatory orders. Following the long term trend of price reductions, photovoltaics are likely to become cheaper than new coal in the Midwest in three to five years. When the current market price of photovoltaics is compared to the marginal cost of peak energy in summer peaking utilities, it is already cheaper than existing supply in most places. Since this analysis is not consistently performed in utility planning, there is a huge potential relative to the current size of the photovoltaic market in nearly all of the U.S. Even if the peaking service which is cost-effective today is small compared to total U.S. consumption, meeting it will drive the price of the technologies even lower, and make a much larger fraction of the market cost-effective from PV. This isn't theory. It is what is happening today.

Comparing all these factors is challenging. The biggest uncertainty is the price of a new nuclear plant. Estimates range from $6,000 to $12,000 per KW of capacity. But even if this amount were fixed, it understates the cost of a plant which takes ten to twelve years to construct. Engineering costs, which must be expended before ground is broken, can be thirty to forty percent of the plant cost, but accrue interest and carrying charges for the eight or nine years during which the plant is under construction, as does much of the early heavy construction itself. And then once the plant is completed the unamortized debt continues to accrue interest and carrying costs. Although these are factored into rates and do not increase the unpaid balance of the plant cost, they extend the amortization period substantially. Like a home mortgage carried to completion after thirty years, the new power plant will actually cost two to three times its initial "price".

By contrast, efficiency, wind and photovoltaics are added incrementally, and in today's world are more often financed by independent power producers. They have nearly fixed operation and maintenance costs and zero fuel price uncertainty. These carry real and important long term economic value which is obscured by the practice of calculating "net present value" of investments with varying timeframes. "Net Present Value" calculation diminishes the future cost or future benefits of a given choice by adjusting the future year price for interest and inflation. It tends to discount everything beyond twelve or fifteen years as having zero value. Net Present Value calculations are useful when applied thoughtfully and correctly. They are often applied without full consideration of the future value of real future economic benefits. For example, the value of superinsulation in a new home is considered not to exist after twelve to fifteen years. Yet the value of that insulation in thirty or forty or fifty years is not only significant,

but it can easily exceed the entire cost of the initial application each year, for the life of the structure, due to the known and predictable inflation of fuel costs.

Southeast Michigan's electricity future is uncertain, highly variable, and promises some tremendous economic benefits if options are kept open to the rising wave of cheap clean energy. Fermi 3 is a good choice for only one very specific, very rigid, and increasingly unlikely possible future. Even that possible future won't favor Fermi 3 if the cost of the plant rises too high.

The Death Spiral:
In the 1980's a number of nuclear plants were completed after having exceeded initial cost predictions by multiple times. Utilities discovered the "death spiral", which was the point, around 14 to 15 cents per KWH, where it became impossible to raise revenues by raising rates. Customer conservation was and is induced by high electricity costs. While one might hypothesize that the trigger point has risen due to inflation, it is more likely that the present trend of electricity consumption in Michigan is evidence that it has lowered due to economic pressures from other factors.

One important aspect of this is that a nuclear plant project, even with Federally backed loan guarantees, cannot make a profit for its owners if it cannot sell power into the wholesale market, unless a regulatory or legislative mandate is made to force ratepayers to take power above the market rate. The cost of nuclear power is highly debated, and highly speculative, especially because of the lack of real life experience in the United States during the last quarter century. Many references suggest that a nuclear power plant which has an "overnight" cost of $6,000 per KW can sell power at slightly more than six cents per KWH. That general set of assumptions is used widely in industry "levelized cost" comparisons such as Lazard and recent (not current) EIA comparisons and those produced by many other government and private entities.

The principle of levelized costs is a legitimate one. The problem is that few publications allow the reader to review the basic assumption, and fewer are available outside of proprietary groups, which are less than four or five years out of date. For example the EIA levelized cost graph which is presently a part of the 2011 Annual Energy Outlook is based on 2009 data. Although it shows that a new nuclear plant would sell power at 11.39 cents (compared to today's wholesale market price of slightly less than four cents) per KWH, it also shows that wind would sell power at 9.7 cents (all the end values are 2016 values). This fails to reflect the modest peak in wind turbine prices in 2009 followed by a 30% drop by early 2011.

And while it might be possible to follow the data trail which EIA is particularly good at presenting, find out the assumed cost per KWH and the size of the assumed reference facility, it is extremely unlikely that the assessment presented by EIA reflects the true cost of a plant which takes twelve years to complete, since the example is presented in 2009 dollars, in 2011,

projecting a 2016 in-service date. The much longer construction timeframe increases the cost logarithmically. (**0077-6-13** [Lodge, Terry])

Response: *The topics in thes comments are outside the scope of the NRC's EIS process. These comments provided no new information and, therefore, does not warrant changes to the EIS.*

Comment: External costs of nuclear power generation are never quantified in this Draft EIS nor are they referenced in NRC documents or in corporate annual reports. (**0056-1** [Ehrle, Lynn Howard])

Response: *The NRC's guidance document for Environmental Impact Statements, NUREG 1555, guides the staff's assessment of the external costs of construction and operation of nuclear power plants. As Table 10.4 of the EIS indicates, however, it is likely that most of the external costs, with the exception of cultural resources (demolition of Fermi 1) and traffic costs, would be minor in significance. NRC concludes that the costs of constructing and operating Fermi 3 would be small compared to the benefits of the plant on the local and regional economy. This comment provided no new information and, therefore, does not warrant changes to the EIS.*

Comment: The cost of building Fermi 3 would financially take off the table more favorable employment and grand scale renewable energy options. Apparently consideration of this has been taken off the table by the NRC based on the opinions of the very utility operators who benefit more from public subsidies, for nuclear power subsidies that are very likely to mushroom with cost overruns as many nuclear power plants have done while being built. This is a very bad scenario taxpayers who would have to pay for it, but also for the future of all mankind, as this kind of economic and energy travesty, if multiplied across the country and the planet, would be bad. (**0040-17-7** [Noonan, Henry])

Response: *The staff reviewed alternative energy technologies in Section 9.2 of the EIS. This comment provided no new information and, therefore, does not warrant changes to the EIS.*

Comment: According to the DEIS Fermi 3 will have a generating capacity of 1535 ± 50 MW and a capacity 93 percent capacity factor. Draft EIS at 6-1; 6-19. Therefore Fermi 3 has an expected capacity of 1428 MW. If the Draft EIS puts a construction cost of a new Fermi 3 reactor at $6.4 billion that means that Fermi 3 construction cost is expected to be $4,483.21/kW. Id. at 10-26. This simple figure "which is merely a simple calculation" is not included nor explained in the Draft EIS. (**0036-3-12** [Gleckner, Allen])

Response: *This comment provided no new information and, therefore, does not warrant changes to the EIS.*

Comment: The Draft EIS not only makes no attempt to quantify, even generally, the potential financing costs of a new Fermi reactor, but it fails to even explicitly state that financing costs are a major component of nuclear costs.

The Draft EIS also omits a number of other known costs of building new nuclear plants and, therefore fails to provide the public or decision-makers with a complete cost summary. First, the Draft EIS omits summary of levelized cost. This comprehensive cost summary includes capital costs, fuel, fixed operations and maintenance, variable operations and maintenance to create a complete summary of the total cost of a new Fermi reactor. It also does not include decommissioning costs, which are about nine to fifteen percent of the initial capital cost of a nuclear power plant. Further, the Draft EIS also does not consider escalations in material costs nor length of construction period as it relates to added cost. 21 Finally, it also fails to translate its cost estimate into a figure that the public can use to readily compare the costs of different energy sources, such as cost per kW.22

The Draft EIS' use of only one misleading cost figure while failing to include any other available and more complete cost estimates prevents the public and decision-makers from understanding the true financial costs of a new Fermi reactor - violating one of NEPA's central purposes. At the same time, the Draft EIS' omissions undermine its cost-benefit analysis by understating the real costs of a new Fermi reactor thereby failing to satisfy NEPA's requirement that a cost-benefit analysis is accurate and meaningful. (**0036-3-2** [Gleckner, Allen])

Response: *The staff performed its cost analysis in Section 10.6 of the EIS in accordance with NUREG 1555, the Environmental Standard Review Plan, which is the staff's guidance for such analyses. Costs of operations, including fuel and operations and maintenance costs, are found in Section 10.6 of the EIS. Decommissioning costs are part of the safety analysis and therefore outside the scope of this analysis. This comment provided no new information and, therefore, does not warrant changes to the EIS.*

Comment: THE DRAFT EIS IS INCOMPLETE BECAUSE IT ANALYZES ONLY "OVERNIGHT" CAPITAL COSTS.

The Draft EIS' cost description for a new reactor at the Fermi site violates NEPA because it includes only "overnight capital costs" without mentioning financing costs or providing a comprehensive cost summary. This selective information presents a misleadingly low cost figure. Including an incomplete cost figure violates NEPA because it contravenes one of NEPA's central purposes, to inform the public, and it undermines the Draft EIS's cost-benefit analysis. The purpose of the NEPA process is twofold. First, it ensures that federal decision makers fully and fairly consider all of the environmental consequences of their actions before deciding to proceed, and, thus, helps agencies make more fully informed and well-considered decisions. Second, the EIS process provides important information about a project to the public, which may then, in turn, assist the agency in making better decisions through public comments.

Baltimore Gas & Elec. Co. v. Natural Res. Def. Council, 462 U.S. 87, 97 (1983). A key part of better agency decision-making is the EIS' cost-benefit analysis, and it must therefore, adequately quantify costs and benefits. See 40 C.F.R. 1502.3; Hughes River Watershed Conservancy v. Glickman, 81 F. 3d 437 (4th Cir. 1996).

For the purposes of its cost-benefit analysis, the Draft EIS puts the construction cost of a new Fermi reactor at $6.4 billion. Draft EIS at 10-26. The Draft EIS states that this figure is the "overnight capital cost," which "assume[s] that the plant is constructed "overnight," with no interest included in the capital cost estimate." Draft EIS at 10-25. While it states that interest is not included in the cost figure, the Draft EIS fails to mention that financing costs are one of the main expenses in building a nuclear plant, and would significantly add to the cost of a new Fermi reactor.

Georgia Power's proposed new reactors at its Vogtle plant offer a good example. The Vogtle EIS estimated overnight capital costs for the new units to be between $7.1 and $7.8 billion.[18] Yet, the current total cost estimate for the new units including financing is $14 billion - almost twice the overnight capital costs.[19] Therefore, if financing costs are included, one could expect the total cost estimate for a new Fermi reactor to be approximately $12 billion, assuming everything goes smoothly.[20] A cost estimate that is half of the actual total is not sufficient to inform the public of potential costs or to conduct an accurate cost-benefit analysis. Moreover, the Draft EIS not only makes no attempt to quantify, even generally, the potential financing costs of a new Fermi reactor, but it fails to even explicitly state that financing costs are a major component of nuclear costs.

The Draft EIS also omits a number of other known costs of building new nuclear plants and, therefore fails to provide the public or decision-makers with a complete cost summary. First, the Draft EIS omits summary of levelized cost. This comprehensive cost summary includes capital costs, fuel, fixed operations and maintenance, variable operations and maintenance to create a complete summary of the total cost of a new Fermi reactor. It also does not include decommissioning costs, which are about nine to fifteen percent of the initial capital cost of a nuclear power plant. Further, the Draft EIS also does not consider escalations in material costs nor length of construction period as it relates to added cost. [21] Finally, it also fails to translate its cost estimate into a figure that the public can use to readily compare the costs of different energy sources, such as cost per kW.[22]

The Draft EIS' use of only one misleading cost figure while failing to include any other available and more complete cost estimates prevents the public and decision-makers from understanding the true financial costs of a new Fermi reactor – violating one of NEPA's central purposes. At the same time, the Draft EIS' omissions undermine its cost-benefit analysis by understating the real costs of a new Fermi reactor thereby failing to satisfy NEPA's requirement that a cost-benefit analysis is accurate and meaningful. (**0036-3-1** [Gleckner, Allen])

[18] U.S. Nuclear Regulatory Commission, Final Environmental Impact Statement for an Early Site Permit (ESP) at the Vogtle Electric Generating Plant Site, Final Report, NUREG-1872 (Aug. 2008), at 11-16.

[19] Kristi E. Swartz, Vogtle Construction Costs Rise; Project Remains Under Budget, Atlanta Journal Constitution (Nov. 21, 2011), available at http://www.ajc.com/business/vogtle-construction-costs-rise-1236442.html.

[20] In the past, cost over-runs have been even more costly. A 2007 Moody's Investor Services analysis of 75 nuclear plants constructed between 1965 and 1986 found a 207% average cost increase from the initial estimate. In other words, the actual average cost of the plants was about triple their initial estimated costs. Moody's Investor Services, New Nuclear Generation in the United States (Oct. 2007).

[21] *See* The Keystone Center, Nuclear Power Joint Fact-Finding, (June 2007), *available at* http://www.ne.doe.gov/pdfFiles/rpt_KeystoneReportNuclearPowerJointFactFinding_2007.pdf (Describes cost implications of materials cost increases and construction durations).

[22] According to the DEIS Fermi 3 will have a generating capacity of 1535 ± 50 MW and a capacity 93 percent capacity factor. Draft EIS at 6-1; 6-19. Therefore Fermi 3 has an expected capacity of 1428 MW. If the Draft EIS puts a construction cost of a new Fermi 3 reactor at $6.4 billion that means that Fermi 3 construction cost is expected to be $4,483.21/kW. *Id.* at 10-26. This simple figure – which is merely a simple calculation – is not included nor explained in the Draft EIS.

Response: *The staff analyzed the costs and benefits of the proposed action in Chapter 10 of the EIS under the guidance of NUREG 1555. Cost estimates for Fermi 3 relied on the best available estimate of project timing and duration, noting uncertainties associated with projections into the future. This comment provided no new information and, therefore, does not warrant changes to the EIS.*

Comment: The premise of the NRC's environmental impact statement is to assess the environmental effects of building, and operating Fermi III (for up to 60 years). If it were true that the construction and operation of Fermi III were essential to the well being of Southeast Michigan's residents, then the conclusions drawn by the NRC review team might seem plausible, even reasonable. But Fermi III is not an essential future element of Southeast Michigan's electricity supply, and thus any environmental impact of Fermi III, not to mention negative economic impact, is detrimental to the well-being of Southeast Michigan's residents.

The residents of Southeast Michigan would be better off from an environmental perspective, health-perspective, and economic perspective if Fermi III were never built. The cost of nuclear power is exorbitant, cost overruns of several multiples are standard, construction delays are

endemic, fuel costs are unpredictable, and waste disposal costs are unknown. It will take decades for ratepayers to repay the loans for Fermi III.

Alternatively, Detroit Edison could invest in efficiency gains and distributed renewable energy, and instead of burdening ratepayers and the environment of Southeast Michigan, benefit ratepayers with long-term, well-paid jobs and clean, non-toxic, terrorism-proof energy, and protect their environment from the inevitable and potentially catastrophic environmental impact Fermi III will impose. Yet, rather than doing well by doing good, Detroit Edison would build an overpriced, toxic, national health and security risk in our backyard, which in the event of catastrophic failure, will force the permanent evacuation of Monroe, the Detroit and Toledo metro areas, and render Lake Erie permanently toxic.

Risk permanent evacuation (for hundreds of years, at least)? Why? Not to provide consumers with essential electricity, because it has been shown in California and other states that demand for the foreseeable future can be met with efficiency improvements and distributed renewables at lower cost and better reliability (http://www.ucsusa.org/clean_energy/solutions/big_picture_solutions/dowe-need-coal-and-nuclear-power.html, http://www.completelybaked.blogspot.com/2009/02/renewables-intermittencyreliability.html). (**0034-1-3** [Welke, Jim])

Response: *In Chapter 8 of the EIS, the staff concluded there was a need for the power that would be generated by the proposed nuclear unit. The staff analyzed alternative generating technologies in Section 9.2 and the costs and benefits of the proposed action in Chapter 10 of the EIS. These analyses were undertaken in accordance with the NRC's guidance document, NUREG 1555, the Environmental Standard Review Plan. The concerns listed in this comment are outside the scope of the NRC's environmental review process. This comment provided no new information and, therefore, does not warrant changes to the EIS.*

Comment: No, Detroit Edison is not building Fermi III to provide Southeast Michigan with an inexpensive, reliable source of energy -- nuclear power is anything but that -- they are building Fermi III to provide their shareholders with profit. There are two reasons nuclear power offers a good return to shareholders -- neither of which has anything to do with the economics of nuclear power. The first reason is that federal law compels taxpayers to guarantee construction loans ($4 or $5 billion dollars) in the event Detroit Edison defaults, thus indemnifying Detroit Edison's shareholders and executives against loss. The second reason Fermi III benefits shareholders and executives is that while electric utilities are currently de-regulated and subject to competition, utilities petition the state to allow them to add surcharges to their published rates to recoup "power supply" costs via Michigan Power Supply Cost Recovery (PSCR) plans submitted each year for state approval. The 2011 plan: http://efile.mpsc.state.mi.us/efile/docs/16434/0001.pdf; and PSCR is defined here: http://www.michigan.gov/documents/mpsc/electric_residential_bill_charges_final_318312_7.pdf,

and its meaning to ratepayers here: http://www.michigan.gov/documents/mpsc/mpscca_understandingyourelectricbilll_329339_7.pdf).

In the future, these surcharges will be used to cover the cost of building and operating Fermi III without impacting Detroit Edison's bottom line or their published, "competitive" rates (which if these surcharges were included in their published rates, their rates would no longer be competitive -- so much for free-markets and de-regulation). Thus, all of the revenue derived from the sale of Fermi III electricity -- less administrative costs -- represents profit to shareholders and executives.

Improved efficiency and distributed renewables, while cheaper and healthier to ratepayers, would most likely be sold by companies other than Detroit Edison in a true free market, and therefore are less desirable options to Detroit Edison executives and shareholders. Also, efficiency improvements and renewables create more jobs. But, companies other than Detroit Edison will likely provide these jobs, which surely offers Detroit Edison's executives and shareholders no personal benefit. On the other hand, Fermi III is capital intensive, meaning it costs a lot to build, but creates few long-term jobs. This is undoubtedly preferable to Detroit Edison shareholders and executives, as it easier to manage money and add surcharges to customers' bills than it is to manage employees, especially unionized employees fanned out across the state implementing efficiency improvements and distributed renewables, which ultimately cut revenue to Detroit Edison. And that last point is very important to keep in mind when contemplating why Detroit Edison prefers big, toxic, expensive, capital-intensive generating plants over small, distributed, clean, cheap, job-intensive efficiency and distributed renewables -- Detroit Edison will be subject to real competition in the sale of efficiency and renewables, and likely will fail in a true free-market arena. Thus, Detroit Edison sticks ratepayers with a toxic behemoth they don't need, but must pay for. (**0034-1-4** [Welke, Jim])

Response: *The staff analyzed alternative generating technologies in Chapter 9 of the Draft EIS. These analyses were undertaken in accordance with the NRC's guidance document, NUREG 1555, the Environmental Standard Review Plan. This comment provided no new information and, therefore, does not warrant changes to the EIS.*

Comment: And make no mistake, Fermi III is toxic. The NRC draft environmental impact statement makes this clear: look at the list of toxic emissions enumerated in Table 6-1. The NRC often makes comparisons of these emissions to background levels of these toxins, or the quantity of toxins emitted by coal-fired plants of equal capacity to Fermi III. But those are irrational comparisons. It is like a drunk saying, "Well, I'm already drunk, so what's the difference if I have one more drink?" or a gambler saying, "Well, I'm already broke, so why not play another hand." The point is, these emissions are bad, and more of them make things worse, and more people and ecosystems dead, even if by comparison to deadlier coal-fired plants, Fermi III emits less. We are already drunk with toxins, so what's the harm in adding a little more? We are already environmentally impoverished, so what's the harm in taking another

gamble? Well, if we absolutely needed this electricity, if we had no other choice, maybe the NRC's comparisons and conclusions would be valid. But we do not need the power that Fermi III will provide (http://www.ucsusa.org/clean_energy/solutions/big_picture_solutions/do-we-need-coal-and-nuclear-power.html). Further, if we did need the electricity, we derive more bang for the buck -- power-wise, job-wise, and safe-wise -- if we choose other alternatives, namely end-use efficiency improvements and distributed renewables (see Amory Lovins: http://www.completelybaked.blogspot.com/search/label/Energy,http://www.rmi.org/). End use efficiency improvements and renewables will also help prevent catastrophic global warming because they install quickly using existing technology. Fermi III -- or any new nuclear power plant -- will do nothing to prevent catastrophic climate change because they take too long to build and will complete too late to do any good -- the catastrophic climate change will already be upon us when Fermi III comes on line (if it ever does) with overpriced, unneeded electricity from unproven technology.

Once we stipulate that the power Fermi III will provide is unnecessary -- and it is -- then it becomes eminently clear that any environmental impact from Fermi III is unacceptable -- it is unacceptable to throw away acres of essential wetlands, unacceptable to pollute our air and groundwater with radionuclides and other shorter-lived, but equally deadly toxins (via mining, processing, plant operation, and waste disposal). And it is unacceptable to draw billions of gallons of water from Lake Erie and kill millions of adult fish, fish eggs, and larvae; amphibian adults, eggs, and larvae; adult insects, insect eggs and larvae that go with that intake water, along with the myriad wildlife that depend on these animals and insects. And it is unacceptable to dump billions of BTU's of heat, and tons of atmosphere-heating water vapor from cooling towers into the air and water. These environmental impacts are not now and never will be benign (http://www.eoearth.org/article/Thermal_pollution?topic=49471).

And there are always longs lists of unintended consequences that come after the fact - - and are irreparable -- when we pollute and tweak environmental systems the way Fermi III will (in conjunction with Fermi II and other thermal power plants along the western shore of Lake Erie). And for no good reason. We don't need the power Fermi III might one day provide -- we can get electricity elsewhere for less cost, with more and better jobs, and with catastrophic global warming mitigation. (http://www.ases.org/climatejobs) (**0034-1-5** [Welke, Jim])

Response: *In Chapter 8 of the Draft EIS, the staff concluded there was a need for the power that would be generated by the proposed nuclear unit. Chapter 9 of the Draft /EIS discusses alternative generating technologies. This comment provided no new information and, therefore, does not warrant changes to the EIS.*

Comment: Fermi 3 would pose considerable risk to DTE and its' ratepayers - Fermi 3 is estimated to cost $12 billion and DTE's total market cap is only $8.8 billion. The huge debt to finance this plant would pose considerable financial risk to DTE's shareholders, lenders and ratepayers. http://finance.yahoo.com/q?s=DTE Michigan's overall electric rate is higher than in

36 other states. The substantial rate increase required to pay for this plant would put severe financial strain on Michigan's fragile economy and particularly on our poorest ratepayers. Only 11 states have residential electric rates higher than in Michigan. Our residential rates increased 19% since 2009, a faster rate than in almost all other states.
http://www.eia.gov/cneaf/electricity/epa/fig7p5.html (**0035-5** [Zaski, Frank])

Response: *Rate increases are outside the scope of the NRC's licensing authority. This comment provided no new information and, therefore, does not warrant changes to the EIS.*

Comment: Michigan's Attorney General has questioned the economic viability of Fermi 3 - "In his exceptions, the Attorney General points to several reasons why the COLA-related projections should not be included: Detroit Edison's current excess generating capacity, declining sales, the questionable economic viability of constructing a nuclear plant, the lack of a concrete plan for when construction will occur, and no comparative analysis of the costs and benefits of a nuclear plant compared to other generating possibilities."
http://efile.mpsc.state.mi.us/efile/docs/16472/0374.pdf (**0035-6** [Zaski, Frank])

Response: *After reviewing the cited document, the staff determined this comment provided no new information and, therefore, does not warrant changes to the EIS.*

Comment: Since local leaders have emphasized the alleged local economic development benefits from the proposal, such as construction jobs and a few operation jobs, the DEIS in fairness should evaluate such claims in terms of a full cost/benefit analysis, accounting for all alternatives and all their statewide and bioregional economic effects. This analysis should specifically include the investment of the equivalent capital in renewable power sources such as wind, solar and geothermal, and in energy conservation. DTE's proposal to take the massive resources needed to construct a commercial nuclear reactor away from such authentic green alternatives, as we struggle to find adequate responses to the dual crises of climate change and peak oil, is outrageous. (**0033-8** [Stephens, Thomas])

Response: *The staff analyzed alternative generating technologies in Chapter 9 and the costs and benefits of the proposed action in Chapter 10 of the EIS. These analyses were undertaken in accordance with the NRC's guidance document, NUREG 1555, the Environmental Standard Review Plan, which defines the methodology for addressing a benefit-cost balance. This comment provided no new information and, therefore, does not warrant changes to the EIS.*

E.2.30 General Comments in Support of the Licensing Action

Comment: The City of Monroe Water System is generally in favor of the overall Fermi 3 project. The City of Monroe is located adjacent to Frenchtown Charter Township such that the City & Frenchtown co-own a raw water facility (Raw Water Partnership) used to serve potable water to their respective retail and wholesale customers. The City of Monroe maintains the raw

water facility for the partnership were Lake Erie is the raw water source. Between both water systems, approximately 75,000 people are served potable water. (**0024-1** [Laroy, Barry])

Comment: I have the privilege to serve as the mayor of the City of Monroe. Thank you for this opportunity to comment about the Draft Environmental Impact Statement concern DTE Energy's proposed new Fermi unit. I support the NRC's Environmental Impact Statement conclusion, and commend the commission both for reaching that conclusion and the transparency in the process of reviewing DTE's license application being open to expressions of individual's and group concerns just as we're able to do here this evening, and I'm sure there will be more.

Transparency is important in the matter of public trust. It is also important in the relationships that create a community. The City of Monroe has that kind of relationship with DTE Energy and government officials in Frenchtown Township. That's why when it comes to those items identified as moderate impacts, I have every confidence that they will be mitigated or addressed. DTE has demonstrated that it is proactive in addressing issues. They communicate with elected officials and community leaders and have been true to their word.

I believe it's because DTE Energy isn't just a company doing business in our community, they are part of our community. Many of their employees live in the City of Monroe and surrounding townships. They are involved in the communities day to day as residents, as patrons of our local businesses, as volunteers in the community and activities. We see the men and women who work in DTE Monroe County's plant and have personal connections to them as friends and neighbors. This inspires a great deal of confidence knowing they're here.

I would be remiss if I did not acknowledge the tremendous boost in economic activities that our region will see if the license is approved and when the project commences. We saw with the construction and operation at Fermi 2. I expect we'll see the same thing with a Fermi 3. Individuals who come to our community to work, some and maybe many of them will decide to stay and to live to raise their families to become part of our community. In short, I welcome the project and I thank you again for this opportunity. (**0039-11-1** [Clark, Robert])

Comment: I'm a former Monroe County commissioner, and thank you for this opportunity to offer the perspective of a lifelong Monroe County resident, a Frenchtown resident within that 10-mile area of Fermi, and someone who has been involved in this community for decades. I support the DTE Energy's interest in building a new nuclear unit at Fermi, and the conclusion reached by those who drafted the Draft Environmental Impact Statement.

It is my belief that not only are there no environmental impact reasons why a license should not be issued. There are a multitude of reasons for why a license should be issued. Very simply, the construction of a new unit at Fermi would be good for Monroe County. I am thinking, specifically, and first of the great number of jobs that will be created, and the economic activity that will be generated by the construction. Second, it will provide much needed electricity for our homes,

offices and businesses. Because I am an optimist at heart, I know that Michigan's economy will turn around, and we will need to power produced by a Fermi 3.

My confidence in nuclear power and DTE Energy is built on my experiences taking children on field trips to the plant in the years before 9/1a, getting to see things up close, and getting to talk with their employees. Additionally, in many years of involvement in the community, I am hard pressed to think of any significant endeavors that did not involve DTE Energy or its employees. In fact, as chair of Monroe County Michigan week, I nominated DTE Energy and Fermi 2 with the Minuteman and Corporate Citizens Awards. They are interested and active in the community. DTE Energy is always there to help. They have demonstrated that they are good stewards of the environment through their involvement with the Detroit River International Wildlife Refuge and the attention that they devote to their property in partnership with the Wildlife Habitat Council. When I think of a good neighbor, sorry State Farm, I think of DTE Energy. Thank you. (**0039-12-1** [Mentel, Floreine])

Comment: My home is about 150 to 200 feet from the lake itself, and I have a beautiful view over it. I can see the Davis Bessie Plant at 26 miles away, and I can see the wildlife that is nearby and flourishing in the Fermi property. Last year, last winter, there were a number of deer who managed to escape from the Fermi property, and I feed birds underneath my spirea bush. I use that because Cooper's Hawks they get tangled up there and the rest of the birds can escape pretty well. But the deer discovered that and started eating my birdseed. So my birdseed bill went up substantially, and the number of deer increased out there. I think they spread the word.

My background is with a very, very large number of construction sites, starting at Prairie Island up in Minnesota. I've been to the D.C. Cook plant over on the other side of the state. I've been to Marble Hill down there in southern Indiana, the Perry Plant over on Lake Ontario. I spent two sessions trying to mitigate some of the problems at Three Mile Island by writing radiological control procedures and chemical control procedures and others for their particular Unit 2 problem. I worked for a submarine commander for the first trip, a guy by the name of David Limroth who was a nuclear sub guy, and the second time was for Bill Kelly who was an engineer who wrote the training materials for reactors operators and had experience down in Bardwell, South Carolina.

My background includes a tremendous amount of instrumentation and electrical equipment. I was a missile guidance instructor in the Army, and I also worked on test equipment in large quantities at the guided missile school. The tracking ship that I worked on was the General H.H. Arnold, which was the first one out of the box of the two ships that were intended to track our own missiles and those of the Soviet Union and anybody else who cared to get into the game.

The sister ship, the Hoyt S. Vandenberg, is now a reef down there by Key West. It was another radar ship that was specially built at Sperry Radars that had a very sophisticated capabilities,

trying to determine the actual physical size and shape of an object being tracked with a non-ambiguous range up to 32,000 miles, although with sufficient power, we could track the moon. Of course that was a wandering kind of ranger system, but my technical background also goes back to chemistry, what I majored in in college. Dr. Paul O'Connor was my freshman chemistry teacher, and I learned back in 1955 about one of the secrets of a hydrogen bomb and that American Lithium was distilling lithium to get the lithium six isotope separated.

I have had a great deal of confidence in nuclear power. I'm very fond of the idea that we are progressing here to a situation where we may be able to replace the very dirty and very harmful prospects of coal being one of the sole sources of our energy. Right now, we're building electric powered cars, but there's a little bit of ambiguity there in the fact that if we don't provide some way to give them power outside of coal, that's going to be kind of a missed opportunity. My home, I've been there since 1977. I lived in Monroe there for about six months while I was trying to get a place to live out by the lake. The Donald C. Cook Plant, that's another big job that we did. I worked for Comstock, the electrical contractor. (**0039-14-1** [Meyer, Richard])

Comment: I am the vice chairman of the Utility Workers Union of American, the Fermi division. I am a lifetime resident of Frenchtown Township, living within three miles straight line as the bird flies radius of the power house today. I have been working at the nuclear power plant here in Monroe, Newport, Frenchtown, however we want to describe it, for the last 23, maybe 23-1/2 years straight, day in, day out.

What I can tell you is the dedication of each and every one of these employees out there. There is a questioning attitude day in and day out. The contractors that come onsite pick up on this, and also enjoy challenging if there's something that they do not believe is right, or do not believe is proper. Detroit Edison has given to us employment for many, many people, has given us economic growth into this community. The proposal of a new nuclear plant here is a good thing for each and every one of us. Efforts have been continuously made and improvement on how we protect our environment, how we protect the fuel, how we protect our neighborhood.

My family, my children all live in this community. And it's very important to me to verify and make sure that their safety and the safety of each and every one of us around here is important. For a number of years, I served on the local school board here, daily involving looking at making sure that a reliable, safe industry is there. It is important to each and every one of us to voice our opinions. I will not speak of opinions that I find that were close to falsehoods.

But, at the same time, when we take and look at what this area is, which is a very, very pristine, environmentally friendly area, DTE Energy and the people there on that site have taken a place that was fairly barren when I was a teenager driving out there enjoying the sights, to a wildlife preserve. You cannot ask for more than that. The animal population out there to me is almost a nuisance it is so heavy, because we take care of it. We make sure it's a safe environment.

This is the type of place, a friendly neighborhood, that you would like to have. Security is not a question to me because I live with it day in, day out. We make sure that each and every person that comes into our area is proper and follows all documentations and following of the federal law. This is important to each and every one of you. I do believe and strongly support in the possibility of having another nuclear plant there. I look at it as a way, a continuation of the betterment of our community, and for each and every one of you, a better, safer way of life. (**0039-15-1** [McDevitt, Richard])

Comment: Good evening, everyone. I appreciate the opportunity to stand here and talk to you a little bit about the things that my organization and our company have been working on for a number of years now. I want to start by telling everyone that I appreciate the diversity of comment. I think it's a hugely beneficial activity to have points of view and dissenting opinion, and pointing out areas where we may not be quite as diligent yet. It's great to have a draft of a program so that you can take a look at it. And those of you that really feel that there are things that need to be improved, the comments are welcomed.

I give the NRC staff and those from the Army Corps a lot of credit for working so diligently and so completely on our application over the last three years. This is a big deal to our company. We live here. This is our community. We cover a large portion of the state with customers, and I would bet just about everybody in this room is a customer of ours. We have an obligation, a long-term obligation, to provide power, to do that in a safe way, and to do that in a way that is economical and affordable for all of us.

I do want to say we haven't started one thing yet out at the site. And I don't know where that may have come from. We don't have an early site permit. We certainly don't have authorization by our leadership, and I certainly haven't authorized any construction. And I think it's important that we do things in the order by which they're most logical. Let's make sure we get the design right. Let's make sure we get the siting right. Let's make sure we get the environmental right. And then, when it's possible, let's build a plant at the right time for the right price for all of us.

We haven't decided to do that yet, and we don't have a timetable yet. But as far as this community is concerned, yeah, we think that this is the right location for this plant, and we wouldn't be standing here and talking about it with all the sincerity and all of the conviction that we have. This is a very important project to us in the sense that it provides opportunity and it really provides flexibility for our portfolio as we go forward into the future.

I think that the fossil plant fleet that we have is an older fleet. It's, some of the fleet has been around since the '50's. They're inefficient plants. They're not as cost-effective as this nuclear plant would be. They also have commitments and obligations for environmental equipment. We've done that at Monroe, of course, so you can go see it. But some of the smaller plants, that wouldn't be the case. And that's true across the mid west. This is the only site that, and you can look to see if there are any other applications out there for a mid west site. This would be an

asset for the whole of us, and I think that for our company, specifically, if we retire fossil plants, this would be a good replacement and a good opportunity to consider.

One more thing, we're building windmills. We're not talking about it. We're building them. Within this month, we will commission and put in commercial operation 60 windmills. We're building windmills in the thumb of Michigan. We've built on campus here solar facilities, and we have implemented an environmental program that is cleaning the air. We have a program, also, for efficiency, and we think all of those are really important. But I think it would be foolish to exclude the opportunity of perhaps having nuclear facility if we need it. Thank you. (**0039-16-1** [May, Ron])

Comment: I live in Berlin Township, about five miles away. I moved down here seven years ago to the Monroe area. I like the farmland, and I work for the City of Riverview, and that was made possible, actually, through a DTE subsidiary, with the City of Riverview where their farming gas off of a landfill area. It's really improved life for myself and my family, and I want to see that happen for others through the, not just the construction jobs it'll provide over the next five years, but also for the long-term jobs.

I was over in Japan during that disaster. I seen it. I also see that DTE has learned from this, and they're putting everything in place to make sure it doesn't happen here. And another thing I seen over there is an average household cost of $400 to $500 for electricity. And I think that kind of points to the work DTE's doing here so we don't run into that. We have $100 bills instead of $500 bills. But I'm definitely for this project, and I appreciate the meeting tonight. (**0039-17-1** [Stickel, John])

Comment: First off, I'd like to thank everybody for the opportunity to speak on behalf of my family who lives in this area. I think that the best thing we could do is to build a new nuclear plant in our area. To decommission the old one, which is safe as it is, but I just, I just love the fact of DTE brings in new technology. And they don't stop, they don't stop. Right now he was talking about, I forget your name, sorry sir. But I work at the coal burner plant right now on outside construction, and it is more efficient than you're letting off, I'll tell you that right now.

You guys have done many things to make our environment a better place. And I applaud you for that. There's about a hundred people in here that live within 10 miles from there. And the fact that everybody gets to come up here and stand and say their piece, I think it's a great thing. It's a great thing. And there's negatives and there's positives for everything. And like I said, I work at the coal burner plant right now, and when they built that plant, they didn't have the technologies that they have now.

But DTE has done it, and they will continue to do that. And I believe they will do that with their nuclear plants, also. Right now there's not answers for some of the questions that we have, but science and technology, they bring us along the way. And they've spared no expense, and we

pay for that, I understand that. But they make it safe for us to walk our kids to school and everything else. And I applaud you guys for that.

And on another note, too, Ms. Mentel, I applaud you for the years of service that you've given us. And also, I would like to say, too, that everybody in here that stands up, even when they're out of turn, they've got a voice. Everybody here has a voice, and if you don't get up here and you don't express it, then you're not going to get anywhere in life, and you're not going to feel good about yourself when you go home. So, thank you all. (**0039-18-1** [Sandel, Ron])

Comment: I'm the executive director of the local United Way, the United Way of Monroe County. And it's my understanding, as I've been told, and as I've heard tonight, that we're here to talk about the environmental impact that another possible nuclear facility will have on this community.

The word environment simply means relating to our surroundings. As executive director of the United Way of Monroe County, I must be concerned with our economic environment, as well as our natural environment. Looking around Monroe County, we see an environment of high unemployment and economic deficiency. It's had a significant effect on local support for the United Way and other philanthropic endeavors in Monroe County. Local fund raising results have decreased significantly.

United Way of Monroe County, alone, has experienced a decrease of 25 percent over the last five years in our funding to help those who need it the most. Against this backdrop, DTE Energy, the DTE Energy Foundation and the company's employees are a continuing resource and support system for the economic growth and stability needed in Monroe County today. DTE Energy continues to be the largest single employer in Monroe County. The company and its employees are also the single largest charitable contributors in the community.

Not only do they contribute monetarily to the United Way of Monroe County and many other non-profits, they give freely of their volunteer time and services; everything from holding coat drives for needy children to working with the local community meals programs that feeds the hungry and the homeless. The construction of Fermi 3 would most definitely positively affect the economic environment in Monroe County. It will mean new jobs for our community. It will boost rental and retail income.

I'm certain it will have a positive impact on the local philanthropic outlook. As a representative of the non-profit sector, I am endorsing the construction of a third unit at the Fermi Nuclear Power Plant. Thank you very much. (**0039-19-1** [Carroll, Connie])

Comment: I president and executive director of the Southern Wayne County Regional Chamber. We're a membership-based organization made up of roughly a thousand businesses in 21 communities north of Monroe County, east of Washtenaw County, and south of Dearborn.

The vast majority of the chambers members are small businesses. Roughly 85 percent have a hundred or fewer men and women working for them. About half have 25 or fewer employees.

The chamber's mission is to improve the overall business climate for its members through action that stimulates economic growth, inner-business communication, and member education. The proposed new unit at Fermi Power Plant is nothing, if not an opportunity for economic growth and improved business climate. That's why the chamber has long been on record as supporting its development. The Draft Environmental Impact Statement cites Southeast Michigan Council of Governments estimates that the region lost 210,000 manufacturing jobs between 2000 and 2009. Worse, the loss had a ripple effect across Michigan in the form of three jobs to every manufacturing job that disappeared.

When the state began to feel the recession, southeast Michigan and, specifically, southern Wayne County, felt it first, felt it most deeply, and is feeling it the longest, I think. Only now are we beginning to see some positive signs in local hiring. From our perspective, a new unit at Fermi would be a positive development, and continue the progress on this front. While the economic impact of a new unit is important, the Southern Wayne County Regional Chamber also strongly believes in the development of clean, affordable energy. Nuclear energy, in our opinion, is among the very best options in that regard. Thank you for this opportunity to comment. (**0039-20-1** [Mull, Sandy])

Comment: I am the president of Monroe County Community College. It is my honor to welcome you to this discussion tonight, and my honor to welcome, once again, the Nuclear Regulatory Commission to this campus. We think it's especially fitting for the NRC to host these public meetings here on campus because the institution, of course, is the place for debate and discussion, where we respect all opinions. But we are especially grateful because we feel that we are developing an academic environment for being the nuclear energy-related educational activity in this area.

While the Draft Environmental Impact Statement comments only about potential increase in demand for education among elementary and high school students for any workers moving into the area, Monroe County Community College has approached the topic from another perspective, jobs. That of preparing individuals for positions in the nuclear energy industry, in high skill, high pay jobs. According to the Nuclear Education Institute, NEI, to maintain the current nuclear industry workforce in America, an additional 25,000 more workers will be needed by 2015.

Here at Monroe County Community College, successful candidates for the current program for an Associate of Applied Science Degree with a specialization in nuclear engineering technology are prepared for entry-level employment as mechanical technicians, electrical technicians, instrumentation and control or INC technicians. Those who go for additional training will have

opportunities as radiation protection technicians and non-licensed operators, as well as senior reactor operators.

Now while the DTE Energy personnel were instrumental and invaluable in working with the college to develop that program, and we're grateful for that partnership, I would suggest that the entire industry would benefit. In fact, the very first graduate of that program in 2009 was someone with a prior degree in construction management, out of a job, unemployed from the auto industry who, ironically, wanted to stay in Michigan. He took the training, was successful, and upon completion of the nuclear tech program, was hired away to Texas.

Today the program enlists 44 students, 30 of those have completed and are either working or seeking positions in the industry. Twelve of them, by the way, are working locally. When MCCC partnered with DT Energy to offer the selective program, it was decided that the program would rise to the level of national standards by participating in the Nuclear Energy Institute's nuclear uniform curriculum. So this MCCC/DTE Energy partnership facilitates the transitioning of graduates into the nuclear energy industry utility training programs in accordance with all of the requirements of the uniform curriculum guide for nuclear power plant technician, maintenance and non-licensed operations personnel associate degree programs as developed by the NEI.

Additional curriculum is being offered next semester, two courses, Newitt 120 radiation protection and Newitt 130 plant systems I. It should be then, therefore, no surprise that Monroe County Community College supports the development of the new unit at the Fermi complex. (**0039-29-1, 0040-29-1** [Nixon, Dave])

Comment: I'm a member of Utility Workers Union Local 258, and as a member of that union, I am a delegate to the Monroe Lenawee County Central Labor Council. And, as a delegate there, I was elected president of that body. That organization is where all the unions in Monroe and Lenawee County come together around one table, and they work on three issues, education, community service and political action.

I'm here today to speak on behalf of over 12,000 active union members, and over 28,000 active and retired union members, speaking on their behalf. We're here today to speak in support of DTE's proposal to build a Fermi 3 Nuclear Power Plant. Allowing DTE to build this proposed power plant would have substantial positive impact on our local economy. We need to make every effort possible to create jobs for local workers, and this is an opportunity to put thousands of local residents to work.

The building of a power plant would create nearly 3,000 construction, good paying construction jobs. The plant would also create hundreds of direct and indirect jobs related to its daily operation. Additionally, by ensuring that we have a stable supply of electricity and can keep up with the demand, we allow for further economic growth and prosperity. Approving DTE's

application for a license is the right choice for our community and our local economy and our workers.

I want to thank you on behalf of giving organized labor a voice in this process, and it was organized labor, for the lady that was up here earlier, that helped take the indentured workers in the coal mines away from the company store, the company rented house. Don't forget where organized labor came from, and we're still here today to be part of our community. We're a member of our community first, and then we are a union member. Thank you. (**0039-33-1** [Conner, Bill])

Comment: I'm the Executive Director of the United Way of Monroe County. It's my understanding as with you, we're here today to talk about the economic and the environmental impact that a construction of another Fermi facility nuclear energy plant will have on this community. As Executive Director of the United Way, I must be concerned with our economic environment, as well as our natural environment. Looking around in Monroe County, we see an environment of high unemployment and economic deficiency. It's had a significant effect on local support for the United Way, and other philanthropic efforts in Monroe County. Local fund-raising results have been decreasing significantly. United Way alone has experienced a loss of 25 percent in our charitable gifts over the last five years. Against this backdrop, DTE Energy, the DTE Energy foundation and the company's employees are a continuing resource and support system for the economic growth and stability needed in Monroe County.

DTE Energy continues to be the largest single employer in Monroe County. The company and its employees are also the single largest charitable contributors to the community. Not only do they contribute monetarily to the United Way of Monroe County and many other non-profit organizations, but they give freely of their volunteer services. Everything from holding a coat drive for needy children, to working with the local community meals to feed the hungry and the homeless. The construction of Fermi 3 will most definitely, positively impact the economic environment of Monroe County. It will mean new jobs for our community, it will boost rental and retail income. I'm certain it will have a positive impact on the local philanthropic needs. As a representative from the non-profit sector, I'm endorsing the construction of a third unit, at the Fermi nuclear energy plant in Newport. (**0040-10-1** [Carroll, Connie])

Comment: I'm Tracey Oberliter, Chairman of the Monroe County Economic Development Corporation. Thank you for this opportunity to comment about this very important matter. My comments will be offered from two perspectives, one professional and one very personal.

Professionally, the Monroe County Economic Development Corporation is dedicated to promoting county wide economic growth and employment stability to improve the quality of life for all people living and working in Monroe County. We do this by attracting and retaining business development, through effective partnerships with government units, business, industry and labor. There can be no doubt that the construction and operation of a new unit at DTE

Energy's Fermi complex will promote the economic activity and employment on a scale seen perhaps once in a generation. For that reason alone the EDC supports the conclusions and recommendations made in the draft environmental impact statement.

Secondly, we achieve our economic development objectives through effective partnerships. I can say with great confidence that there's probably no, no more effective partner anywhere in Monroe County than the one we enjoy with the men and women of Detroit Energy, DTE Energy. Time and time again the talent and the effort of DTE's officers, employees have engaged in the ongoing effort to improve the quality of life here in Monroe County. Examples of this and they serve on our city council, they have leadership positions on our community foundation, various township boards throughout the community and other organizations, such as the United Way. (**0040-16-1** [Oberleiter, Tracy])

Comment: I'm a life-long Monroe County resident and the incoming president and CEO of the Monroe County Industrial Development Corporation. Monroe County has long viewed, been viewed as a crossroad of commerce and for more than three decades the IDC has been helping industry and business capitalize on the opportunities to grow and expand in this dynamic portion of southeast Michigan. The proposed Fermi 3 unit is one central marketable opportunity.

First, the draft environmental impact statement is right, a new nuclear unit economic impact on our region cannot be discounted or dismissed. If it's built it will provides thousands of jobs. And as important as that is, it's very important that the power it will provide, the power is even more important. From my vantage point, working with our small business community, and especially our large manufacturing community, affordable, reliable power is already an essential commodity.

For most companies, electricity represents one of their largest costs. Additionally, some of these companies also happen to be the county's largest employers. It's vitally important to retain those that we have, and obviously attract more of those employers. Stable, reasonable electricity rates are critical, and nuclear is the path to that low cost reliable, high quality power.

My personal belief is that nuclear power is one of the smartest things that we could be doing to prepare for our future. My personal fear is that we're falling behind other countries that are developing nuclear power more aggressively than we are. That puts us at a disadvantage of attraction of the world class industry to our area. Nuclear power is efficient and clean, and it just makes good sense to have more in the portfolio. (**0040-18-1** [Lake, Tim])

Comment: I am the Chairman of an organization called DTE Shareholders United. It's an organization of more than 12,000 DTE shareholders across the country. Our organization is committed to insuring that public policy proposals debated and enacted by public officials, treat

customers, employees, shareholders fairly, preserve the reliability of the energy delivery system, and protect Michigan's economic security.

The proposed Fermi 3 nuclear unit is a project that ultimately will address the latter two points. Preserving the reliability of the electric system in the state of Michigan, and enhancing our state's economy. We know from experience the benefits of nuclear power, in terms of diversifying the company's generation portfolio and its impressive service performance. As a Detroit Edison employee during the construction of the Fermi 2 unit, I also know firsthand the kind of economic impact that a project of this magnitude can have on a local economy.

DTE Shareholders United applauds the company for its foresight in planning for a new unit at the Fermi complex. We are especially pleased with the draft environmental impact statement, finds that there are no broad environmental reasons why the project should not be granted a license. (**0040-20-1** [Sobzab, Jerry])

Comment: I have lived in the City of Monroe for many years. I am also what some would call a city booster. I am an outdoorsman and an avid conservationist. I have the great honor to serve as Chairman of the Detroit River International Wildlife Refuge alliance, a friend's organization that helps the U.S. Fish and Wildlife Service to deliver on the mission of the refuge. I am here this afternoon to offer my personal perspective as a resident, booster and conservationist.

As a resident I believe that when it comes to electricity we can't put all our eggs in one basket. We need something more than coal and I don't think wind and hydro are going to solve all the problems. Certainly not here in the southeast corner of Michigan. We need more nuclear energy in the mix, so I welcome continued progress on a new unit at Fermi. (**0040-21-1** [Micka, Richard])

Comment: I'm a lifetime area resident. I currently reside just north of here in Huron Township. I'm also a 30 year member of the Operating Engineers Local 324. I'm here today to urge you to approve DTE's proposal for a new nuclear power plant in Monroe. Making sure that we can produce enough electricity to serve our current and future needs is crucial for economic security in Michigan. Obviously, we all know what we're going through economically. Demand for electricity has been growing in our area, and without new sources of power there's no way that all of our needs will be met.

Our economic stability and future growth depend on having access to affordable, reliable electricity such as nuclear power. DTE's proposed nuclear power plant would help us meet our rising energy needs by employing local workers to produce electricity. This will put more money into our local economy and more money in the pockets of the local workers. It will also insure that we have the kind of stable electricity supply that is necessary for future economic growth in the region.

Supporting this project makes sound economic sense for Michigan, and I urge the federal government to approve this proposal. (**0040-23-1** [Page, Scott])

Comment: I'm supervisor of French Town Charter Township, the proud home of the Fermi complex. It has been said in the growth is the most basic and universal of drives and is applicable to people, business organizations, cities and towns. DTE Energy's proposed Fermi 3 project represents an opportunity for renewed growth in the population and economical future for French Town, Monroe County and the region. Our experience with Fermi 2 supports that view. The population in my community grew steadily from 12,000 people in 1960 to well over 21,000 in 2000. We saw the population dip a little over the past decade, but the decline was much less than the southeast Michigan governmental councils had anticipated. Clearly people have, and continue to say, as they say, vote with their feet by moving to French Town in the Monroe area. They saw the quality of life available in our community. Many of those who put down roots in our community work at the Fermi complex. Many of those are still living there and their kids live there, and hopefully their kids will continue to live there in a new Fermi plant. They undoubtedly view it, as I do, as a source of safe, reliable, reasonably-priced power and economic opportunities and stability, that's why I support Fermi 3, and encourage the recommendations in the draft environmental impact statement. I encourage the Commission to endorse the conclusion in the statement, and to move to issue DTE the license it seeks. I look forward to a shot in the arm, for the pre-construction and construction jobs that it will mean to our area. Construction workers and increased economic activity it would produce in our businesses.

My sense is this give a sustainable boost to the community and the environment to the area. The DEIS cites an average on-site work force of 1,000 employee during the construction phase, and 2900 workers on-site as of peak construction. The environmental impact statement review team estimates a total construction phase payroll of more than $50 million dollars. Another factor is impact of the direct construction related local purchases, according to DEIS Detroit Edison estimates that approximately $53 million worth of material supplies could be purchased from local suppliers during the construction phase. And also, when the construction phases down and the operation starts, there will be about 850 new employees there. Yes, it would substantially boost the area, it is no wonder that so many residents, French Town, Monroe, and Monroe County communities are eager to see the new unit licensed and be built. (**0040-24-1** [McDevitt, Richard])

Comment: I am a Superintendent of Monroe County Intermediate School District. Within that capacity, we serve the nine local school districts, in addition the parochial and charter schools districts in Monroe County, about 28,000 students.

I strongly support DTE Energy's application. This opinion is grounded on my observation as a citizen and as an educator for 36 years in Monroe County. Historically, the generation of energy has come with a great human cost. Over my lifetime I've watched as rescue workers seek to

free coal miners trapped in underground mines. I've had friends and neighbors go to fight in far off places due to our dependence on foreign oil. In recent years we are beginning to see results of global warming, which to a great extent is a result of our dependence on fossil fuels. I see the Fermi 3 as one of the pieces needed to lower that human cost.

During my time, I have also been exposed to living in the vicinity of a nuclear energy plant operated by DTE Energy, Fermi 2. As a school leader, I cannot begin to tell you how impressed I have been with the community outreach provided by DTE through company representatives, such as -- in addition, over the years DTE Energy and their employees have worked to include us in grant programs, and provided us with many volunteers for our educational efforts. Monroe County Intermediate School District and the thousands of county students whom we serve also greatly benefit from the tax base generated by Fermi 2.

DTE Energy has publicly supported our county wide technology millage, the only such millage in the state which generates over five million dollars annually for technology in our county schools. But there is no amount of money that would cause me to stand up here and stress my support for DTE's license application, if I did not believe that they maintain the highest industry standards, and then some. Our region of the state has undergone a traumatic time in recent years. The poverty rate in Monroe County has skyrocketed amongst the children in our communities. So, the reality is that because of Fermi 2 and DTE's presence, Monroe County has not been hit as hard as other areas in southeastern Michigan. The DTE Fermi 3 and its many potential jobs, career opportunities and outstanding employees, give me hope as an educational leader, as a father, and as a grandfather to be. I want our state to be able to meet its energy needs in the future, to provide a strong economic base for our community, and provide a clean and environmentally responsible energy alternative. For these reasons, I strongly support the DTE Energy licensing request to construct Fermi 3. (**0040-30-1** [Spencer, Dr. Donald A.])

Comment: I'm an Operations Assistant for the Monroe County Chamber of Commerce... Monroe Chamber is an organization dedicated to stimulating economic growth, and enhancing Monroe County's quality of life. DTE has, and continues to be involved, deeply in our community. They have more than proven, time and time again, that Monroe County is a top priority to them.

Their partnership with the chamber continues to help develop community leaders, support economic growth and development, and enhance the quality of life in Monroe, which coincides with the message of the chamber. The chamber supports Fermi 3 because of the job creation that it promises. As Jim McDevitt said, the draft environmental impact statement indicates the creation of 150 jobs associated with the pre-construction activities. A peak workforce of 2,900 jobs during construction and 850 permanent and local jobs once the plant begins operations. We represent that many of those jobs won't materialize until the project is well under way. But that's why it's important for the commission to act prudently, responsibly, but

expeditiously. The DEIS states that there is no environmental reason for the license to be denied. That is a step in the right direction. Therefore, we continue to support DTE in their efforts to move forward. (**0040-31-1** [Mataya, Diana])

Comment: I'm President of The Detroit Edison Alliance of Retirees, we call it DEAR, D-E-A-R. It's approximately 9,000 members. And our organization is dedicated to speaking in a uniformly united voice in an effort to maintain the retirement benefits of all Detroit Edison and MichCon retirees that were covered under their respective retirement plans.

We are working to provide for our security and the retirement that was earned over our many years of dedicated service. DEAR is not affiliated in any way with DTE Energy. Clearly, though, we are interested in anything that involves or affects the financial health of DTE Energy, and its ability to honor the obligation to the retirees. We want the company to succeed, because many of us continue to be customers, we also want to see the cost to the customer continue to go down. Most of our members devoted their working lives to meeting the energy needs of Michigan's residents. We also have strong feelings about the electric industry in Michigan and its future.

Many of the DEAR members share a concern about the volatility of fossil fuel prices. That's why we are pleased that the DEIS acknowledges that unlike some other energy sources, nuclear energy is not subject to unreliable weather or climate conditions, unpredictable cost fluctuations or dependence on the foreign suppliers. So, we support the DEIS. Nuclear energy is a dependable source of electricity that can be provided to the customer at relatively stable prices, over a long period of time. We look forward to seeing continued progress in the license application, and we hope to the eventual construction of the new unit Fermi. (**0040-35-1** [Thompkins, Bob])

Comment: I currently serve as Chairman of the Monroe County Board of Commissioners, and I thank you for the opportunity to speak today. I am here today to endorse the work of the NRC staff. Members who engaged in conducting the recently released comprehensive environmental review, and assembling the draft environmental impact statement for the proposed Fermi 3 Unit in Monroe County. It is my view, and that of my fellow commissioners, that the negative impacts of the proposal before you are few and we are further convinced DTE Energy will do whatever is necessary to mitigate those impacts. The board of commissioners strongly agrees with the conclusion that the license should be issued. Unfortunately Monroe County has not been spared the effects of the decade long decline in automotive and other manufacturing activities including during the most recent economic downturn, including the draft environmental impact statement is a point that Monroe County lost significant numbers of jobs in manufacturing and construction and retail and the wholesale trade. But has experienced a modicum of increasing jobs between 2008 and 2010. The draft EIS correctly acknowledges that the recent recession listed unemployment in Monroe County to more than fourteen percent at its highest, however, we are now beginning to see the first signs that we may be turning the corner. We are still concerned

about the rate of change and if it can be sustained, but the economic activity and jobs created in preparing for the construction and building of the new unit at the Fermi complex will be a much needed shot in the arm for this county and for the region. DTE energy is one of the county's largest employers with roughly 1,500 employees. I, for one, would welcome the additional permanent high paying jobs that the new unit would bring not to mention the additional short terms jobs associated with the periodic refueling activities. On behalf of the board of commissioners, I encourage this commission to adopt the draft environmental impact statement recommendation, and in due course issue the COL sought by DTE. (**0040-7-1** [Frederick, Lamar])

Comment: I'm the Senior Vice President for DTE Energy, and I'm responsible for major enterprise projects. This project is one of those that we consider to be a major project. I'm pleased that the NRC has progressed to this point. I know there's been a lot of hard work on a number of you that I see here today, and it's just a major milestone for us to be here in front of you all, talking about the environmental impact statement in its draft form. We really appreciate the opportunity to have transparency in the process, have all participate. We want to take the time to understand all of the comments and concerns, and we certainly want to work with the NRC, the Army Corps, to resolve any questions and work through all issues. So, I just want to thank you all for that.

DTE plays a unique role in Michigan. We have customers throughout the state, both gas and electric. We have an obligation to serve those customers, and some of the obligation really takes into consideration very long term planning. So, it's not a short term activity that we're involved with of course, and completely looking at the long term, 40, 50, 60 years, to insure that we have an obligation to serve and that we can meet that obligation. We try very hard to optimize the work that we do, both in terms of reliability, in terms of the cost of what we do, and are very cognizant of the environmental that we all live in it.

I'm a long term Michigan resident, I went to school, public schools here, and the University of Michigan, and I find that our community is one of vibrancy and great acknowledgment of our past. And as a company, we pledge to serve with our energy, that we want to be a life line and the life blood of the communities we serve in and provide progress going forward. We're a company that takes our environmental stewardship very seriously and we're very involved in most of our power plants with environmental activities beyond just compliance. We have habitat councils and a corporate habitat of the year award in 2009. We were a finalist on a variety of awards for that activity. But, specifically at Fermi, we're a national reserve and we intend to keep it that way. One of the concerns that we have going forward is the fact that we're also worried about our coal plants. Many of those, as you may know in Monroe specifically, we've worked pretty hard to clean the air and comply. But there are new rules, there are new things coming, and we want to make sure that if we retire those older units, some built in the 50's and 60's, that we have other base loaded units coming behind. And we're not predicting that those retirements are going to occur tomorrow or the next day. But we are saying that they're going to

occur over a period of the next decade or so, and we need to make sure that as we go through that that our obligations to provide electrical power still persist. There are choices in that regard, of course. There are the nearly 1,000 megawatts of wind power that we're building, that I'm also responsible for. Solar power, and you can see that right out back here at this college, and end efficiency usage programming to make sure that those work. Those don't completely fill the need, and base load units like Fermi 3 will be really an important source of clean energy going forward. So with that, I want to thank the NRC one more time. (**0040-8-1** [May, Ron])

Comment: I am lifelong resident of Monroe County and own a family business founded in 1953. For the past three decades, I have been involved in several community organizations. My background includes ten (10) years serving on the Raisinville Township Board as a constable and trustee, and I have served as a Monroe County Commissioner for the past twenty (20) years, and most recently, being elected to the Michigan House of Representatives. Additionally, as a county commissioner, I was commissioned by then Chairman V. Lehr Roe to reorganize the Monroe County Economic Development Corporation, and created the "Monroe First" program to assist existing and new business development in the county.

I have no doubt that the Commission will hear from many Monroe County and Michigan residents concerning this matter. I do believe the vast majority, of those comments will be supportive of the Draft Environmental Impact Statement and its conclusions. As I express my perspective, it is shaped upon the experiences that I have had living and serving in Monroe County.

On an economic point, the siting and construction of Fermi 1 and 2 bought unprecedented investment and development throughout the region. Michigan's future looks bright as it recovers from the economic turndown; the development of Fermi 3 will undoubtedly help rebound our region and state with good paying construction jobs.

Over the past twenty years, I have had the opportunity to see firsthand Detroit Edison and DTE Energy responsibly manage the construction and operation of the plants. In the case of Fermi 1, I have also been witness to its decommissioning and have participated in the high level nuclear waste disposal discussion. I have witnessed DTE Energy's stewardship of the both the Fermi complex and the Monroe Power Plant site, and their willingness to protect the environment by updating plants to be emission compliant and to partner with public and private organizations to create and protect wildlife habitats.

Fermi 3 represents another significant opportunity for Monroe County. The statistics, estimates, and projections cited in the Draft Environmental Impact Statement speak for themselves;

- An estimated 2,900 peak period construction and skilled trade's workers on the site,
- An estimated construction phase payroll of more than $50 million,
- Local purchasing of supplies and materials in excess of $50 million,

- More than 800 workers employed in the plant once it goes into operation.

There is no doubt this type of development will help Monroe County and Michigan rebuild its economic base.

From a policy perspective, there needs to be a strategy to meet Michigan's future demand for electricity, to reduce emissions from coal-fired power plants and to develop the state's renewable energy, resources. We know that Michigan has one of the oldest power plant fleets in the country; and with new and proposed environmental rules, some difficult decisions will have to be made. Some older coal units will be retired, as we are witnessing with the Whiting Plant in Luna Pier, Monroe County. Natural gas fired generating plants may be a part of future generation production. However, none of that changes the fact that in the long term, nuclear energy for the production of electricity gives the best longevity for the clean production of electricity.

I support the issuance of license for the proposed Fermi 3 and applaud DTE Energy for its foresight, and those who researched and assembled the Draft Environmental Impact Statement that will move Monroe County a step closer to the issuance of a license for the proposed Fermi 3 unit. (**0074-1** [Zorn, Dale])

Response: *These comments express general support for the proposed Fermi 3 COL. No changes were made to the EIS in response to these comments.*

E.2.31 General Comments in Support of Nuclear Power

Comment: One of the things I wanted to point out was the wildlife out there is exceptional. There's one problem that we have, I think it's a non-native species called a double crested cormorant, which has multiplied up into the thousands. And it's one of those kinds of things that a fish eater that it can possibly decimate the population of the walleyes and perch and so forth that are such a good part of our lake.

We also have a little windmills that have been so popularized, and as part of making them able to advertise their actual cost instead of the high amount of subsidies that they get for building them, should be placed along super highways so that they can recharge these forthcoming electric vehicles. And the State of Michigan, if they can see in a little window of opportunity here, should become the state where Yucca Mountain being closed we could possibly take over and reprocessing a site that takes care of so-called nuclear waste, which is actually largely still useable stuff. And make a, something that makes a financial blessing to this state that lasts at least 200 years. So, this is part of what I'm all about, and my scientific and studying background and experience leads me to believe that's the way we should go. Thank you. (**0039-14-2** [Meyer, Richard])

Comment: That is not only selective for simply the nuclear tech program, but also the other alternative energy programs that are emerging on the Monroe campus. So we support the other alternative energies, as well, solar jobs, wind jobs, et cetera. So from a broad perspective, I conclude tonight by reminding all of us that we have heard other speakers about the need for energy and clean energy.

So in the last several years here at Monroe County Community College, we have expanded these programs looking toward alternative energy, including the addition of new faculty, most recently a full-time faculty who specialize in alternative energies. We at Monroe County Community College are committed to the alternative energies. In this case, I would suggest at this particular time our view that the dependable source of electricity is nuclear power. (**0039-29-3** [Nixon, Dave])

Comment: From a broader perspective you may have heard from other speakers you may have heard about the need for clean energy, when I came from Iowa in 2003, my knowledge of alternative energy was limited to wind, which was being rapidly developed in that part of the nation. So, since that period of time, the last eight years have been a growing period for me, and as President of Monroe County Community College and a resident of the county, I've worked real hard to expend my knowledge about all types of alternative energy, and that would include solar and, of course, nuclear, and now wind, in Michigan. Qualified faculty have been hired to teach nuclear and energy sources, energy courses, including the fact that another full time faculty person who specializes in alternative energies was hired this past year. So we can say with great conviction that the college supports all forms of alternative energies.

Personally, I've come to understand and appreciate that the most dependable and reliable source of electricity is that of nuclear power. We commend the NRC staff for supporting the findings in the draft EIS. (**0040-29-3** [Nixon, Dave])

Comment: Pricing schemes and regulatory oversight for greenhouse gas emissions are increasingly becoming a reality as more countries look to ensure reduction targets, but so does the opportunity for volatility of natural gas prices.

We believe that nuclear power fits into a portfolio of power generation that also includes conventional and renewable generation. Nuclear power must be a key energy component to reduce dependency on foreign fuel sources, as well as meeting state and federal emission reduction targets. (**0079-1** [Harrison, James])

Response: *These comments express general support for nuclear power. No changes were made to the EIS in response to these comments.*

E.2.32 General Comments in Support of the Existing Plant

Comment: I live in Frenchtown Township. I live within the five-mile circle around the Fermi plant. I didn't plan on speaking when I came here, so if I get lost in my scribbles here, just please be patient. Actually, I don't feel uncomfortable with Detroit Edison. When I was a kid, I'd take our blown fuses down to the Detroit Edison building in downtown Monroe, turn them in, and the man there would say why is this 30 amp fuse here? You shouldn't have a 30 amp fuse in your house. And I said don't worry, my dad said it was okay, we've got a pump, we need a 30 amp fuse.

So, I'm comfortable with Detroit Edison. People who work there are my neighbors. I trust that they have the ultimate safety of the plant and the public at heart. I'm relieved when the power comes back on after an outage. I say, wow, we really depend on electricity. (**0039-27-1** [Kaufman, Hedi])

Response: *This comment expresses support for the existing operating unit (Fermi 2) at the Fermi site. No changes were made to the EIS in response to this comment.*

E.2.33 General Comments in Opposition to the Licensing Action

Comment: Michigan, and more importantly the people of Monroe County, are tired of playing Russian Roulette with a nuclear reactor. DTE's track record is ABMYSSAL! There is increasingly more and more pollution being dumped into Lake Erie evidenced by huge algae blooms, Monroe's cancer rates are up tremendously, the plant is NOT prepared for ANY type of catastrophic event such as extreme flooding or drought, it's waste collection pools are bursting at the seams as if millions of people weren't counting on the fresh water source of Lake Erie! What about Michigan's federally designated pristine coastal wetlands? Lake Erie has a shallow basin, it is very fragile and is the most biologically productive of All the Great Lakes and DTE, the USACE and NRC are all asking John Q. Public to unequivocally TRUST it with ALL of our drinking water. NO. WAY. NO HOW! (**0003-4-9** [Anderson, Christy])

Comment: I am opposed to the construction of the proposed new nuclear power plant, Fermi 3.

I believe that it is illegal to destroy the habitat of endangered species. The plant is proposed to be built upon a site including wetlands where the beautiful and very endangered species of the Fox Snake lives. I have only seen this beautiful snake once in my life of almost sixty years as a Michigan resident. It is a very special, beautiful creature and whatever habitat is left must be preserved. Building a nuclear power plant on the land is the most destructive use of land and a death threat, perhaps complete extinction of a priceless natural resource .

I am also against the building of a nuclear power plant because it is environmentally destructive in that it will create nuclear waste when operating. There is no answer to what to do with nuclear waste. It is highly toxic, dangerous, and remains a terrorist target because nuclear waste can be used by terrorists to create nuclear weapons.

I am also opposed to the building of Fermi 3 because what happened at Fukushima will ultimately happen to every nuclear power plant that exists unless they are decommissioned. At this point in time there are regularly occurring mishaps at all of the nuclear power plants on the Great Lakes. Do we need one more potential Fukushima? Wouldn't it be wiser to build wind farms and use the power of the sun to harvest clean energy than to build more monstrous financially insolvent time bombs waiting to become Chernobyl, Three Mile Island or Fukushima? The public does not want the destruction of the Great Lakes.

To build nuclear power plants near areas of population density is the epitome of a lack of sound judgment. To invest more money into a failing, dangerous, deathly industry is not only unwise, it is criminal. To sacrifice another species for the profit of a few corporate greedy individuals is illegal and criminal. The destruction of our ecosystems and world must stop. There is no reason why the Fermi 3 project should continue. There are as many reasons to stop the project as there are stars in the Heavens and people in Detroit, Monroe, and the Great Lakes region. You shouldn't even consider the project. You should only consider how you are going to decommission the existing nuclear reactors before one more nuclear accident happens. Before any more tritium contamination and massive "releases" of gas and contaminated effluents occurs.

If you allow one more nuclear reactor to be built after all the things that have happened and with the current situation, it will be evident that you are not capable of making good decisions.

Instead, I am asking that you admit responsibility for the total future of your decision. I ask that you stop the building of Fermi 3 and start seriously protecting the public from radiation exposures and nuclear holocaust/ nuclear waste/nuclear reactors/wetland destruction/species extinction and the demise of the world we hope to leave for our children's children.....a world clean and beautiful, where the natural world is alive, not a world to toxic to live in...the air and water and soil polluted with toxins/nuclear waste/fallout. Do not build Fermi 3. Do not destroy our world. (**0004-1** [Barnes, Kathryn])

Comment: I plan to attend the NRC hearing on December 15th, 7-9 pm regarding Detroit Edison's Application to build a New nuclear Reactor, Fermi 3 at Monroe, Michigan.

I want you to have the attached fact sheet and article so you can read them and have them via computer so they can be shared easily.

I personally know some Japanese whose lives have been forever changed by the nuclear power catastrophe of Fukushima. In 1963 I have visited some survivors of the nuclear bomb dropped on Hiroshima, so have understood the reality of the negative health risks of nuclear radiation for 48 years. This included helping some Russian teenagers spend 6 weeks in the U.S., after Chernobyl's meltdown, so their immune systems had a chance to be strengthened.

I have also heard both Dr. Helen Caldicott and John LaForge, of Nukewatch, speak and consider them key teachers of mine. Please read her article and Nukewatch's fact sheet as considerations are made to NOT build a new Fermi 3 nuclear power plant.

There are much healthier and less expensive ways to increase energy production, as Helen Caldicott outlines in her article and book, Nuclear Power is Not The Answer. Thank you for your consideration. (**0005-1** [Bergier, Kim])

Comment: I am disappointed and shocked that DTE is even considering adding another nuclear power plant to an already dangerous situation. After witnessing the horrors of Fukushima, Three Mile Island and Chernobyl, why can't we learn? After paying extra to support DTE's Green Current's program, why aren't they moving more strongly into renewable energy? I resent that they are putting my health and the welfare of this region in jeopardy.

I understand that the cancer rate in Monroe has increased 30% since Fermi 1 and 2 have gone in. That is documented by the Center of Disease Control. Fermi 1 was a partial meltdown which is told in the book "We Almost Lost Detroit". I do not want to be a victim of their carelessness.

We have no permanent place to store radioactive waste. Until we find such a place it should not even be considered.

After Fukushima, when other countries such as Germany, "got it", and are moving away from nuclear, we, like fools, keep our heads in the sand. I understand that Fermi 2 is the same design as Fukushima.

I do not have to be a scientist to realize that nuclear power and nuclear arms could be the way the world ends. Please, for the welfare of the people in southeastern Michigan, reject this dangerous proposal. (**0006-1** [Bettega, Gayle])

Comment: Fermi 3? NO!!!!!

The peoples, politicians, scientists, historians, military, agriculturalists, economists, etc. of the world are not favorable to yet another nuclear plant, with the catastrophic nuclear plant events showing repeatedly the foolishness of such investments. And unnecessary, with the many alternative and far safer ecological technologies now available. Common sense must prevail, as well as recognition of all of the above, and more. Fermi 3--NO!!!! (**0007-1** [Carey, Corinne])

Comment: As a concerned citizen who resides within 15 air miles of the existing Fermi reactors, and knowing of the contamination accumulated from those reactors, and the dangers facing the bioregion, I do not wish another reactor in our area. (**0016-1-1** [Collins, Jessie])

Comment: Is it true that five of the six new nuclear reactors of the Fermi 3 proposed design ordered have been cancelled? Well, let's make it unanimous and cancel this one as well, and join the rest of the world in a nuclear moratorium. (**0016-1-3** [Collins, Jessie])

Comment: "Climate changes are under way in the United States and globally, ...changes include rising temperatures and sea levels, ..." (v 1, p 2.220) "By the end of the operating license period of Fermi 3 (about 2060) annual average air temperatures are projected to have increased by at least 2-3 degrees Fahrenheit under the lower-emissions scenario and 3-4 degrees under the higher-emissions scenario." (v 1, p 7.14) The temperature increase could result in increase in precipitation; more intense rainstorms; increased erosion; increased sediment loading in Lake Erie; less dilution would take place with lower lake levels; and the size of the thermal plume would increase. Your agency needs to say, "No action on this application because you've done enough damage. It's time to be Stewards of the Earth, not Destroyers." (**0016-3-17** [Collins, Jessie])

Comment: We are very much opposed to building a FERMI 3. There are environmental issues too many to count. The first is that THERE IS STILL NO SOLUTION TO THE additional NUCLEAR WASTE that would be generated!!! The additional cancers that would certainly happen for people close to it. These are just 2 regarding the environment. The cost too would be prohibitive. And have we learned nothing from FERMI I? What is needed for the 21st century is renewable energy!!! Most countries are far ahead of us on solar as well as wind energy. These are free. When we could send people to the moon we can surely develop the system to save solar energy for when it is needed and Michigan would greatly profit from building the wind turbines. There is just no will. NO ON FERMI 3!!! (**0017-1** [Dale, Sigrid & Ron])

Comment: I am hereby recommending that the proposed Enrico Fermi Unit 3 not be completed and that the operating permit to DTE Energy Utility Company be denied for the following reasons:

The Business case for Electric Power demands on the Grid for Metro Detroit, and surrounding areas does not warrant the excessive cost expenditures to build Fermi 3 at the request of DTE Energy. The City of Detroit has lost its population base (now down to slightly over 700,000 based upon the last Census.DTE Energy would not try to build Fermi 3 without the Federal Govt funding support. This is a waste of Tax Payer $Dollars and contributes to the Federal Budget deficit, now already out of control!

The environmental impact on the immediate Monroe area and on Lake Erie for wildlife; water quality thermal and radioactive pollution, cancer threats to the area citizens propose unacceptable risks.

The NRC has no permanent solution for the storage and disposition of nuclear waste rods. Yucca Mt is no longer viable because it is on an earthquake fault zone. These toxic waste rods continue to build up in all the States with Nuclear Reactors (l05 and counting). There are no dedicated storage facilities in the US and none of the states want Nuclear Waste rods moved across their state to any designated storage facility. I have not seen any viable storage options from the Dept of Energy either.

Any jobs creation arguments for the area to justify FERMI 3 is a weak one because all such new reactor based are only temporary and will come from other outstate locations.

High risk of future reactor based meltdown and corresponding contamination for the whole region. Unlikely, but possible! (**0018-1** [Englund, Lance])

Comment: I attended the hearing in Monroe regarding the construction of this new plant. I am dismayed that the building of this facility is being planned, despite the appalling dangers the various speakers cited that would be involved in the operation of such a plant. It should be eminently clear after the disaster at Fukushima that the operation of this plant presents an unacceptable risk to the environment and to the population of the area.

I urge the consideration of the many other potential alternative sources of energy that were cited at the meeting, such as wind power, solar energy, etc. (**0025-1** [Lent, Patricia L.])

Comment: We do not want Fermi 3.

In fact, reactors cannot be made safe. Reactor failure cannot be designed out. Worker infallibility cannot be achieved. Aging degradation of reactors cannot be adequately tracked and proactively repaired. Reactor explosions will happen; that's a fact of life. The biosphere and the human gene pool is degraded and that will continue to increase. Reactor owners and the NRC cannot be trusted to honor licensing obligations. Stop public financing of all kinds and reactors will not be built or relicensed. Greed, with access to the public tax dollars and higher utility rates, drives reactors. (**0026-6-65** [Macks, Vic])

Comment: One of the contentions that has already been down-played is that renewable energy and energy efficiency efforts would make much better sense than licensing this unneeded, stupidly expensive and hideously dangerous proposed nuclear fuel fed plant. (**0029-2-2** [Newnan, Hal])

Comment: Once again, how dare you subject our ratepayers and world citizens to the consequences of licensing this plant? What a huge blunder. (**0029-2-3** [Newnan, Hal])

Comment: I refer you to the Macomb Daily article, Panel: Nuke chief damages agency, page 51 Saturday, December 10, 2011, which slams NRC Chairman Gregory Jaczko for his decision to shut down the technical review of a proposed nuclear waste dump at Yucca mountain in Nevada. Jaczko is reported to have said earlier this week that U.S. nuclear plant operators have become complacent. This is naturally bad news for people living in the vicinity of Fermi 2, which if it melted down would be a worse catastrophe than any single of the same design plants of Fukushima. DTE and the NRC are clearly complacent in the planning and licensing of FERMI 3. Stop! Don't Do it. (**0029-3-5** [Newnan, Hal])

Comment: So, I am absolutely opposed for many reasons to the licensing of Fermi 3 to DTE; and so are the SEMG of the Sierra Club, The Michigan Chapter of the Sierra Club, and the National Sierra Club through its anti-nuclear policies. (**0029-3-8** [Newnan, Hal])

Comment: Risking this is so unethical as to be criminal. Any citizens should be asking themselves, "How dare they?" How dare you? (**0029-3-9** [Newnan, Hal])

Comment: Opposed, actually outraged, to the building of a new nuclear plant in Monroe Michigan. I am a taxpayer in Monroe County and enough is enough. (**0030-1** [Podorsek, Edward])

Comment: If DTE and their cronies are so hell bent on Fermi 3 in Monroe, Let DTE, at market value, buy out all of us property owners in the "Iodine Pill" zone of Fermi 2. We're stuck with Fermi 2 until the 20 year permit expires-oh wait-that got renewed for another 20 years, didn't it? permit get ready to expire, 10. Let DTE pay for totally independent impact research studies from companies/specialists, chosen by the people impacted-property owners, and not by DTE's choice. While we're at it, why not let's let the wolfs design the alarm system on the hen house?

If DTE must build another nuclear plant, build it in the middle of nowhere, FAR from one of the largest fresh water supplies in the country.

Otherwise, here's my challenge to the President of DTE: Buy a home within the six mile zone of Fermi, move your family into that house, and become part of our community-in other words, put your money where your mouth is (if you can bend down that far).

Any government agency/entity that would sanction Fermi 3 to be build here with all the potential risks, should be driven out of office and publically chastised. I hope the tens of thousands of people that will be affected can find the few minutes in their busy schedule to publically revolt against this sham. (**0030-11** [Podorsek, Edward])

Comment: Regarding the official NRC public comment procedures for the subject DEIS, I write to urgently demand the DENIAL of any construction or operating license or permit for the construction or operation of another nuclear reactor ("Fermi 3") in Monroe, Michigan. (**0033-1** [Stephens, Thomas])

Comment: Preliminary Remarks

It is necessary and appropriate to begin by commenting on the very strange idea that, under prevailing circumstances in 2011 after the nuclear disasters at Three Mile Island, Chernobyl and Fukushima Daiichi, there is any need at all to have this discussion. If mass commercial nuclear power generation is not a failed, extremely dangerous and uneconomical technology, what would one look like?

The obviously biased and preconceived opinions of DTE spokesmen and local Monroe County economic development advocates articulated at the public hearing on December 15, 2011, exemplify the inability to learn from history. If allowed to determine policy and decisions regarding this bioregional and global issue, this narrow, self-interested mind set guarantees the repetition of this poisonous, deadly history. Building giant nuclear plants in the 21st century, in the wake of this industry's literal, financial and liability meltdown over the past 50 years, on the basis of local economic development and corporate profit opportunities, would be objectively insane.

It is vital to keep the proposal's basic insufficiency to meet the most elementary test of logic or history in mind throughout the course of any discussion of these topics. Otherwise we risk falling into the trap of a "crackpot realism" that accepts dictates of power and greed, and limits debate to trivial, marginal issues; as if the request for a license backed by great financial power equates to a "right" to pollute and abuse. It is critical to expressly reject that premise at the outset and throughout. (**0033-2** [Stephens, Thomas])

Comment: The very consideration of such a proposal at this stage of our society's tragic and failed experiments with nuclear power evidences a corrupt intellectual and regulatory system environment. It is as if Goldman Sachs, in the wake of the Wall Street collapse in the Fall of 2008, were to propose some new derivative investment scheme "weapon of financial mass destruction," akin to the creative frauds that critically wounded the global economy; as if financial regulatory authorities were to give it respectful consideration; and as if its employees were enlisted to publicly claim what all now know to be false: that their private gamble with the lives and health of our communities represents sound public policy and economic development.

Nuclear reactors are weapons of radioactive mass destruction. Their record of failure, cost overruns, and now repeated "grade 7" disasters causing mass death establishes this beyond reasonable contention at this point. DTE, the NRC and the federal and local government officials seeking to perpetuate the failed legacy of the Fermi 1 meltdown, the massive cost

overruns of Fermi 2 (as well as those of every other US reactor), and this deadly industry's subsequent, even more catastrophic failures, should be ashamed of themselves. Stop giving DTE permission to threaten the lives and health of our communities and bioregion! (**0033-3** [Stephens, Thomas])

Comment: I am opposed to the construction and operation of Fermi III. Due to time constraints, I have restricted my comments to Chapters 6-8 (document: sr2105v1-chp6-chp8.pdf). (**0034-1-1** [Welke, Jim])

Comment: There is no justification for Fermi 3. Regarding Monroe, it is easy for a community to be blinded by the words jobs and tax revenue and ignore the words risk and debt. (**0035-7** [Zaski, Frank])

Comment: My name is Keith Gunter, a concerned resident of Livonia, Michigan, who resides approximately 35 air miles from the Fermi nuclear power complex located near Monroe, Michigan. In the interests of openness and disclosure, I am the younger brother and brother-in-law of Paul and Linda Gunter of Beyond Nuclear in Takoma Park, Maryland. I am also one of a number of Launch Partners for the Beyond Nuclear organization. My interest, concern, and activities regarding the multitude of issues surrounding nuclear power spans more than three decades.

Due to Detroit Edison and DTE Energy's storied and controversial history with that technology (including the partial core melt at Fermi-1 on October 5, 1966; the turbine missile event at Fermi-2 on Christmas Day 1993 that ultimately resulted in the release of three million gallons of radioactive water into Lake; and other outstanding safety-related issues), I am opposed to the construction and operation of a third reactor by DTE Energy. (**0037-1** [Gunter, Keith])

Comment: So let me read into the record, whereas the Nuclear Regulatory Commission Region III has a clear record of putting profit and production ahead of health and safety, whereas there's no way to dispose of high level radioactive waste safely, whereas the worst nuclear disaster in history at Fukushima has reminded the world of the dangers nuclear energy poses to us all, whereas the NRC is attempting to play a manipulative numbers game using gross exaggerated and fraudulent projections for Michigan electric usages in this Draft Environmental Impact Statement, whereas the NRC cannot be trusted to protect the citizens of the great lakes and the Lake Erie basin, we denounce this ridiculous public meeting as nothing but a dog and pony show prioritizing the profits of Detroit Edison over the health and safety of the citizens of this region and the natural environment.

Furthermore, we find you, the representatives of the NRC, criminally responsible for endangering the citizens of this region with your ridiculous Environmental Impact Statement. We will do everything in our power to stop this plant from being built. We are the 99 percent. And I've got to say I agree wholeheartedly with everything on that statement that I found on the floor.

In addition, this past week, the largest environmental coalition in the great lakes basin, consisting of over 170 environmental groups, Great Lakes United, a huge coalition, has passed a resolution in opposition to building of Fermi 3. (**0039-24-3** [Keegan, Michael])

Comment: And then, the other underlying principal of what I'm saying is I have to recognize that, as has been said so many times, it's very difficult to convince someone of the truth of a proposition when their paycheck depends on them believing that it's not true. So I'm not going to try to convince anybody who doesn't already agree with me of anything, but what I do want is I want to say there's a thing about relationships, you know. A weak relationship is where you say, oh, somebody's going to do something, you say oh, whatever. But a strong relationship is when you say, you know what, what you're about to do, you need to think about this. You need to look at what you're doing, because we have a strong relationship.

So think about me, you know, if you're in the Monroe community, in the chamber of commerce or the college or connected to DTE, think about how, think of this as being, trying to have a stronger relationship with you. And when you frame this facility as it's going to bring some jobs here, it's going to bring some economic development here, there's going to be some good things going on, they're good stewards of the wildlife and so forth and so on, this is not a local issue folks.

We all know this isn't a local issue. This is a continental issue, it's a global issue. We've had Three Mile Island. We've had Chernobyl. We've had Fukushima Daiichi, now. This is a failed industry. The power isn't too cheap to meter. It's fantastically, unimaginably, totally unaffordably too expensive. We don't need it in Michigan. And to sit here and say that because there's going to be some local benefits, there's a way for somebody to make some money, there's a way for DTE to make a lot of money off of this, and people die because their power's cut off in Detroit and they have to go out and try to find a way to keep their children warm in the winter, as Michelle said. To say that you should build another reactor here, I don't know if whistling past the graveyard is a strong enough term for the denial that's involved in that.

And to that, we heard the official from this college say that this college is the center of education about nuclear matters. What a lot of baloney. It may be the center of vocational education, but Mike Keegan and Michelle Martinez and Kevin Kamps and Terry Lodge and Ed McArdle and the other people here who have talked about nuclear power in realistic terms, they're the center of education about nuclear power in this region, and don't forget it. And it's an honor that I call them my friends. (**0039-32-2** [Stephens, Thomas])

Comment: I'll conclude since I know that everybody's been here for a long time, by saying that there's an old notion that applies to this idea of building a third nuclear reactor here in this community after the horrible record of these first two. And that is, if you hire working class, if you pay them, they'll build their own gallows. That's what you're asking them to do. And you know, for many years that's what they've been doing.

But it's just possible, and we heard a taste of it this morning in that disruption with the mic check and the use of the people's microphone. There's been some people who've been thinking about this a little differently. And I hope they'll continue to think about it differently and, you know, I predict that if the American people and the people in this region undertake our responsibilities as educators, as parents, as family members, as citizens, as members in relationships with each other in a responsible way, the NRC won't permit this. And, even if the NRC does permit it, they won't build it. Even if they try to build it, we won't let them build it. (**0039-32-4** [Stephens, Thomas])

Comment: So, I would say to vote no, if there is ever a vote, which there probably isn't, I'm imagining the tools and equipment has already been ordered, but I agree with the other comments that this means it's to be a lip service meeting, unless it actually does result in the application being denied. (**0040-13-6** [Lankford, R.E.])

Comment: I'm a intervenor, as a school board trustee and elected official I'm a rate payer and I'm the Chairman of the southeast Michigan group of the Sierra Club. I pay DTE's green currency rates for renewable energy. The amount of money DTE gives away is a small part of its marketing budget. Every nuclear power plant is a catastrophe even before it melts down. As a school board member I'm shocked at the lack of precautionary principle being displayed here. In the Christian Science Monitor article, After Oil How We'll Live, page 25 of October 10, 2011 we read, Choices made now about the coming energy transition will have a global effect. On page 27 they show a city block of solar power. I object to the licensing of Fermi 3 to DTE and so do the SEMG of the Sierra Club, the Michigan chapter of the Sierra Club, and the National Sierra Club through its anti-nuclear policies. Renewable energy and energy efficiency would provide for future power requirements in a much safer way at a lower price. The biggest thing is that the cautionary principle needs to be applied to all the consideration that members of the nuclear free Great Lakes coalition have brought up, even though those contentions have almost all been already rejected. (**0040-17-1** [Noonan, Henry])

Comment: And did I mention that nuclear fuel is not a renewable energy source. In the book, the Weather Makers, we find strong reasons to not consider nuclear energy to be a suitable response to climate change or our country's long term energy needs. A full build out of nuclear power plants would result in running out of fuel in a few decades leaving us with lots of long term liabilities and civilization would still need to turn to energy efficiency and renewable energy, but it will probably be too late by then. The answer with resources running out worldwide and facing increasing competition from countries like China and India, we can only expect worse cost overruns than ever before. Once again, how dare you subject our rate payers and world citizens to the consequences of licensing this plan. What a huge blunder. (**0040-17-6** [Noonan, Henry])

Comment: I work at Beyond Nuclear in Washington, D.C., but I'm from Kalamazoo and a board member of Don't Waste Michigan, and I thought what I might do is read something that

we submitted three years ago. It's entitled, The Dirty Dozen Reasons to block the proposed Fermi 3 atomic reactor, environmental scoping comments to the U.S. Nuclear Regulatory Commission, submitted February 8th, 2009. And signed by 38 groups throughout the Great Lakes basin, Clean Water Action, Citizens for Alternatives to Chemical Contamination, Citizens Resistance of Fermi 2, Environment Michigan, Great Lakes United, which is a coalition of over 100 groups in the U.S. and Canada, Sierra Club, Michigan Environmental Council, which is itself a coalition of over 70 groups here in Michigan. Also the Western Lake Erie Water Keeper Association. And then our allies on the ground in Canada, Citizens, Canadian Coalition for Nuclear Responsibility in Montreal, which happens to be down stream of here on the Great Lakes. Citizens for Renewable Energy, Citizens Environmental Alliance of Southwestern Ontario, the Windsor Essex County Environmental Committee.

So, what I'll do is read the headlines from this, and then I'll focus on the first one. The first one says there are no safe, sound solutions for the deadly radioactive waste that Fermi 3 would generate. Number two, the inevitable safety risks of accidents associated with Fermi 3, favor efficiency and renewables as safer alternatives. Number three, given the inherent vulnerability of Fermi 3 to terrorist attack, efficiency and renewables are more protective and secure energy choices. Number four, Fermi's emergency evacuation plan is already unworkable making yet another reactor unacceptable. Number five, so called routine radioactivity releases from Fermi 3 would harm human health. Number six, Fermi 2's operations are correlated with local increases in cancer rates, and other diseases, a radioactive health risk that Fermi 3 would make even worse. Number seven, toxic discharges from Fermi 3 would threaten Lake Erie's fragile ecosystem. Number eight, Lake Erie's shallow western basin cannot tolerate the thermal pollution from yet one more large scale thermo-electric power plant. Number nine, Fermi 3 would harm Lake Erie's remarkably productive fisheries. Number ten, DTE has proposed economically simplified boiling water reactor, within quotes, design is woefully incomplete and thus the current NRC licensing proceeding is premature. Number eleven, taxpayer and rate payer subsidies for Fermi 3 represent opportunity costs lost to safer, cheaper and cleaner alternatives such as efficiency and renewable sources of electricity. And number twelve, Fermi 3 is not needed and rather will displace safer, cheaper and cleaner energy alternatives, such as efficiency and wind power that better fit Michigan's electricity and job creation needs.

Therefore, be it resolved our organizations call upon NRC to undertake a careful review of the energy efficiency and renewable energy potential available in DTE's service area and to find that they are the preferred alternatives to Fermi 3. (**0040-22-1** [Kamps, Kevin])

Comment: Just one more thing, just one more thing. Meanwhile the Great Lakes are daily assaulted by releases allowed under federal rules permitting them. Our lakes were never meant to bear the burden that constantly pollutes its waters. The life sustaining capacities of 20 percent of the earth's fresh water, are precious resources, beyond any attempt at cost benefit analysis. They are posed by their very existence, the life destroyers that are in all the

Fermi's of the world. We need look no further than we almost lost Detroit. To see the remains of a decaying monument at Fermi 1 where the section of the EIS lavishes praise on its possible designation as a historic storage site on the national register... We're talking about life threatening situations... I'm asking for an injunction against Fermi 3. (**0040-26-9** [Johnston, Mary])

Comment: I see the impact that toxic industry has on a population. Oregon, Ohio is a very high industrial toxic area. I see the effects it has on cancer patients that I treat, and I'll speak to that later. I would like to speak out against the proposed Fermi 3 nuclear power plant. I'm concerned for our future generations. I have three boys that are in their early 20's and in college, and I've always wanted them to pick careers and stay close hopefully to home, and live in the Michigan area where I currently reside. The proposal for Fermi 3 has put the thought in my head that perhaps that should not be the area of my concern for them. (**0040-34-1** [Berlucourt, Kerry])

Comment: I sold my house and moved to Monroe, Michigan, which may have now been a mistake. The issues of continually storing additional radioactive waste in our state is concerning to all. If all of you in the audience could have cancer and go through surgery, chemotherapy and radiation treatments, perhaps you'd be more concerned about our environment, and realize that the proposal of Fermi 3 nuclear power plant is not an option... I believe the need to explore environmentally friendly power resources is what Michigan needs. We have wind. I want my state of Michigan to be an example in my country of responsible environmental choices. Our billboards advertise our environment to tourists, and they're all over Ohio before you come into Michigan.

What is going to happen when our lake is no longer useable and our environment is radioactive? The recent nuclear disaster in Japan is moving countries away from nuclear power plants, and the United States needs to do the same. The idea that Michigan is proposing to build Fermi 3 with a document that has 1,600 pages of information, with multiple unresolved environmental issues, speaks to the problems of this endeavor, and demands that it be rejected at this time. (**0040-34-6** [Berlucourt, Kerry])

Comment: I'm with the Don't Waste Michigan statewide coalition, legal intervenor on the Fermi, proposed Fermi 3. We all live, we now all live in Fukushima, it's here, it's going to be with us. The Fermi 2 is a Mark I design, the same exact design as the Fukushima plants. It is the largest of Mark I in the world. A station blackout at Fermi 2 in 1988, in May of 1988 a raccoon took the plant out. Just over a year ago a tornado took the plant out, a station blackout. I appreciate having the opportunity to speak to you today, but this is all about getting the yes, this is a dog and pony show. There is no application that the NRC will turn down. So this is a good feel process, feel good process, let the air out of the balloon, let the public come out, thank you very much for coming out, good to see you. But this whole application is half baked. We have legal contentions that have been admitted before the Atomic Safety Licensing Board on the quality assurance of the application, the -- application itself totally lacks quality assurance. They didn't do their math. This is about greed, not need. This whole process is premature, it's half

baked. I sat on the phone call on Tuesday where they said we'll figure, we'll flesh out those engineering issues later on. It's half baked. It's all about getting the yes and pursing the almighty buck, federal tax guarantees, loans, taxpayer money, and soon they'll be coming to the state for a construction while in progress to get the rate payers to build it and pay for it as being built. (**0040-9-1** [Keegan, Michael J.])

Comment: The science is in the wallet, the science is in your wallet next to your ethic, and I ask you not to pursue greed. It's not needed and not to pursue this avenue. I would like to be able to save my company, which I own stock in Detroit Edison, I'd like to save my company from going down this terrible path. So, please don't do it. The NRC's not going to stop them from doing it, they rubber stamp everything. So --... The largest environmental coalition in the Great Lakes basin has passed a resolution in opposition to the building of Fermi 3. So I want jobs, I want tax revenue, but this is not the way to do it. (**0040-9-14** [Keegan, Michael J.])

Comment: I am again writing to express my adamant opposition to the plans to build a new nuclear power plant, Fermi 3. (**0042-1** [Barnes, Kathryn])

Comment: It is not right to risk the sacrifice of the Fox Snake, the waters of the Great Lakes, the air, and the soil, and the future of our children's children by creating another nuclear power plant. (**0042-7** [Barnes, Kathryn])

Comment: If we are supposed to be the world's super power, shouldn't we act with some intelligence and get on track or should we not learn from the grave mistakes of the nuclear age and continue on the path of self destruction by creating one more nuclear disaster waiting to happen?

I hope you really listen to this sincere appeal by someone who is deeply patriotic and loves humanity and the earth, considering both to be a part of the Creator. Life is sacred. Isn't it about time to stop destroying it? Do not allow another nuclear power plant to be built.

Stop the plans for Fermi 3. (**0042-9** [Barnes, Kathryn])

Comment: WHEREAS Great Lakes United has resolved (1987) to oppose new construction, and / or completion / start-up of nuclear power plants within the Great Lakes Basin, and that those plants already built within the Basin be phased out as soon as possible; and

WHEREAS Great Lakes United has resolved (1996) to support the phase-out of nuclear generation stations; and,

WHEREAS The Detroit Edison Company / DTE Energy is currently pursuing an environmental assessment approval and license to construct one additional nuclear reactors at the Fermi complex, near Monroe, Michigan; and,

WHEREAS The design chosen for the proposed Fermi 3 has seen all other orders for this (ESBWR) design canceled; and

WHEREAS In October 1966 the Fermi I Breeder Reactor located on the Fermi complex experienced a core melt accident, narrowly averting a Fukushima scale disaster; and

WHEREAS Lessons learned from Fukushima nuclear disaster must include prevention; and

WHEREAS The Michigan Department of Environmental Quality refers to the Fermi 3 as proposed would be one of the largest impacts to coastal wetlands in the history of Michigan's wetland statue.

THEREFORE BE IT RESOLVED that Great Lakes United stands in opposition to the proposed Fermi 3 nuclear reactor project and urge the suspension of the licensing process currently underway, so that precious resources of time and money can be dedicated elsewhere. (**0046-1** [Cheal, Lauren])

Comment: OPPOSITION TO FERMI 3

NIRS opposes the licensing of the proposed Fermi 3 Nuclear Power reactor for economic, environmental, health, safety, security, survival, land-use, democracy, human rights, and environmental justice reasons. We simply do not need more nuclear power, radioactive wastes and routine radioactive and hazardous emissions into the air, water, environment, food chain, soil, sediment, ecosystem and planetary systems. Nor do we need to put the health of the Great Lakes ecosystem at greater risk. There is nowhere for the nuclear waste to go, whether it is stored for decades, centuries and beyond on the shores of Lake Erie or transported to other areas, it threatens precious resources - water, air, flora, fauna, communities, individuals in this and all future generations. (**0050-2** [D'Arrigo, Diane])

Comment: Precautionary principles must be applied. Prevent the generation of the nuclear waste in the first place. Build some wind mills. No Fermi 3. (**0050-22** [D'Arrigo, Diane])

Comment: Others have cited the dangerous chain of disastrous consequences following technological or human failures and unforeseen events such as weather, earthquakes, or terrorism. While the EIS ascribes numerous mitigation measures and assurances by DTE that the experience acquired over the last 40 years is more than sufficient to negate any concerns of these occurrences, sufficient justification for constructing another dangerous plant alongside Fermi 2 with the potential for a double atomic "bomb" is not found. (**0070-6** [Rivera, Ethyl])

Comment: The economic environment and the potential for jobs that have been cited as justification for approval are being used as excuses for this project. The estimates cited for electricity to be needed are grossly exaggerated. The potential costs in both financial and

human terms, the irreversible loss of one of the nation's largest supplies of fresh water, and the serious threats to our children and future generations are not sufficiently covered in this report. That DTE and the NRC have collaborated to impose this terrible plan on the public in the guise of providing safe, clean, energy as stated in this report is not only a waste of our taxpayers dollars, but a misuse of our national institutions which were created to "protect people and the environment," not to continually expose us to one of the most dangerous developments of man's scientific endeavors.

On behalf of my family, friends, neighbors and the thousands of Michigan residents that are still unaware of this environmental injustice, I urge the NRC to reconsider its recommendation and deny the construction and operation of Fermi Unit 3. (**0070-7** [Rivera, Ethyl])

Comment: As a resident of Michigan, I feel it is my duty to consider the proposal to build FERM III on the shores of Lake Erie. First of all, do we really need more electricity? After all, remember the Gifts of our forefathers: freedom, courage, democracy; all produced without electricity. Second, what cost electricity? If the cost to have lights and machines comes at the expense of clean water and living things, is it worth it? (**0082-1** [Sontag, Cady])

Response: *These comments express general opposition to the proposed Fermi 3. They do not provide any specific information relating to the environmental effects of the proposed action. No changes were made to the EIS in response to these comments.*

E.2.34 General Comments in Opposition to the Licensing Process

Comment: I could not attend Thursday's meeting concerning Fermi 3. I could not, cannot, even think of a further nightmare than we already have here. I live within the 5-mile death zone of Fermi 1, have lived here before Fermi I was even built, and was totally against it even then.

I shudder whenever I think of the "jelly" goat kid (remember the poor Bikini Island" jelly babies" that were sacrificed for the Bomb?) we had this kid born on our farm, so I looked upon that terror after the Fermi I Meltdown. We also had 5 kittens born joined at the stomach on our farm at that time.

Regulation in this nation is a joke. You should be ashamed to sign your names under that guise. I pray the Occupy movement has not come too late to save us! (**0032-1** [Steinman, Shirley])

Response: *This comment expresses general opposition to the NRC licensing process. It does not provide any specific information relating to the environmental effects of the proposed action. No changes were made to the EIS in response to this comment.*

E.2.35 General Comments in Opposition to Nuclear Power

Comment: I view with alarm the prospect of another reactor producing additional ionizing radiation and nuclear "waste" (spent fuel plus related toxins) for which there is no solution. This includes the prospect of further "normalizing" of man-made ionizing radiation into the biosphere, including the human gene pool, and the arrogance of moving forward with avoidance/denials of the consequences of major nuclear accidents, meltdowns and explosions. All of this is on top of the burden of radionuclides loaded into the human family and the environment by the manufacture and explosion of atomic and thermonuclear weapons. From the beginning, the U.S. has;

- led the proliferation of nuclear weapons/nuclear reactors,
- subsidized the private nuclear industry with tax payer dollars and loan guarantees,
- indemnified private reactor owners from catastrophic financial loss from catastrophic reactor malfunctions and explosions (Price-Anderson Act 1957 as amended 2005) without which, there would be no commercial nuclear reactors,
- withheld information, misled the public, and suppressed credible science on effects of radiation on human health,
- avoided adequate measurement of release radioactive doses and biological effects,
- avoided and marginalized the study of the biological effects of man-made ionizing radiation
- and blurred the inherent connection between nuclear weapons and nuclear power which are joined at the hip spawning each other (reactors have led to nuclear weapons and thermonuclear fuel components production, i.e. commercial reactors {Watts Bar, TN} producing tritium for thermonuclear weapons).

In so doing it was necessary and convenient to mislead the public on the serious risks of x-rays so as to have less public concern about the risk of gamma rays. Hence, the ubiquitous refrain, "...it's no more than the risk of an x-ray..." when reassuring the public about radioactive nuclear releases. This in turn has impacted public health more broadly. (see http://www.ratical.org/radiation/KillingOurOwn/KOO.pdf).
Below are my comments on the NRC Environmental Impact Statement for Combined License for Enrico Fermi 3 and on the NRC itself. It was not possible to comment on the entire three inch thick NRC environmental impact statement in the time allowed before the January 11, 2012 deadline. (**0026-6-1** [Macks, Vic])

Comment: The Nuclear Issues Committee of the Ohio Sierra Club is astonished by the continuing push for new nuclear power in the light of the ongoing tragedy at Fukushima, Japan. Reports this week are saying that there is a danger of the now-melted fuel cores eating through the cement floor of the reactor buildings, reaching water and causing monumental explosions. Photos reveal that the outside wall of Reactor Building 4 has collapsed, exposing the spent fuel pools to danger of rupture from the slightest future earthquake. The buildings are so

radiologically hot that humans cannot enter, rendering what is happening there to guesses based on radionuclides being released.

We submit that the very long-term environmental impact of any nuclear reactor is difficult to measure. The dangers and impacts of high-level waste after a thousand or ten thousand years has passed are outside the scope of understanding of our society, let alone the DEIS. An energy technology that could render large parts of the planet uninhabitable is immoral. (**0027-1** [Marida, Patricia A.])

Comment: Nuclear power is bringing us a security state. No guards are needed for solar panels and windmills. There is an elephant in the room. It is nuclear tyranny. (**0027-8** [Marida, Patricia A.])

Comment: The DEIS allows us to bury our heads in the sand when it comes to the question of radiological catastrophe. We are here to testify that the No Build option is the only one that is environmentally sound. (**0027-9** [Marida, Patricia A.])

Comment: I strongly object to the NRC's licensing of FERMI 3 to DTE.
My reasons include: 1.) Every nuclear power plant is a catastrophe even before it melts down. As a school board member I am shocked at the lack of the precautionary principle being used here. (**0029-1-1** [Newnan, Hal])

Comment: I live in Sumpter Township about 12 air miles from the proposed reactor site. I'm against the licensing, but I'm here tonight to participate in democracy just like the other like-minded people, including those we favor the licensing. I read both volumes of the NUREG-2105 and learned a lot, not only from the government and Detroit Edison's studies, but also from those public comments submitted from that 2009 scoping meeting, which I did not attend.

We often hear the term lessons learned from nuclear cartel, and that's what I wish to address here today, my lessons learned from the nuclear industry. In 1983 in eastern Oklahoma, I was an active member in Native Americans for a Clean Environment, NACE, which proposed the contamination of our community from a facility called Sequoyah Fuels. Owned and operated by Kerr-McGee, the facility converted mill uranium, called yellow cake, into uranium hexafluoride, the third step in the nuclear fuel cycle.

NACE's efforts to stop the company's waste disposal by an injection well caused the community to polarize into a situation very much like here in Monroe. Contamination became jobs versus the environment. We never thought our ourselves as environmentalists until we read that in the paper. We thought we were just concerned citizens trying to protect our family and the future like the Iroquois say, down to the next seven generation.

Then in January, 1986, Sequoyah Fuels had an accident that killed one worker instantly and hospitalized over a hundred people within an hour. Besides workers, those hospitalized included the fishermen out on the river and travels passing down Interstate 40 straight into a toxic plume. The hospitalized included a Sequoyah County Sheriff, who later successfully sued the company for not properly educating him to the dangers he faced by entering a toxic plume to deal with the traffic. He died as a result of his exposure.

Four days after that disaster, a woman approached me at a meeting and asked to speak to me alone. Once alone, she explained that her husband worked for the Oklahoma Department of Health, and he had signed off on the facility safety reports against his better judgment. He felt doing so was the environment versus his job. The wife said he could not sleep or eat since the accident. Signing off on unsafe reports made him feel personally responsible for the accident. His guilt provided us with documents showing the dangers that were never made public. The injection wells stopped, and eventually the facility was shut down.

So, a thing I learned from that was that, another thing, was that when people learn about the dangers that face their family and their future, they begin to educate themselves against the nuclear threat. They speak to friends and family until the majority of the area is united against the danger. When that happens here, there'll be no Fermi 3. The process is slow, but it works. And with my lessons learned from those years of activism, I know there's good people working for the NRC, the Corps of Engineers and Detroit Edison. But those people, if forced to, will sign off on documents against their better judgment.

I also learned, and I never really wanted to know, that there's no safe way to produce electricity from nuclear energy. The risk, the pollution, the waste and the accidents far outnumber the benefits. But there exists a possibility for a win-win situation here. NUREG-2105 states that Michigan's thumb area has enough wind power to produce electricity commercially. The thumb is already within DE's corridor and the electricity can be transferred without constructing any new power lines or another transmission corridor through wetlands.

DE could be on the forefront of sustainable energy, which the NUREG states is the fastest growing source of energy. And Bill Clinton said on the John Stewart Show that nuclear is a technology of the past. The country needs to move forward with solar or wind. It's time for everyone to be stewards of the earth, not destroyers. And so, I say to Detroit Edison more local jobs would be made by erecting wind turbines than installing another nuclear reactor. Provide jobs by producing the electricity with wind, and we'll be happy. (**0039-22-1** [Collins, Jessie])

Comment: And my final point is that I've had a number of discussions with people in the nuclear industry. A lot of really brilliant, really committed people are going down the road of a technology which will conclude, which will be shut down with the next major nuclear power plant meltdown. And that is inevitable given the state of our current nuclear fleet, aging, leaking and breaking down. My main point is that this technology is hurting us in thousands of ways, and

those ways are not reflect in this Environmental Impact Statement. Thank you. (**0039-23-5** [Demare, Joe])

Comment: I'm an activist in the State of Michigan. We have so many nuclear problems today. We have to worry who is going to drop a nuclear bomb? Will it be Iran, Israel or the United States? Frankly I know very little about nuclear energy. But I have heroes, Zoltan -- who had been chair of the Michigan Democratic Party was very much against nuclear energy. He left the Democratic party over the war against Vietnam, but he supported the decommissioning of Michigan's existing nuclear power plants. Over the years, I have had no reason to change my mind, to know that he was right. And what has recently happened in Japan has only reinforced my beliefs. This is a terribly dangerous period, and it needs all of us to put a stop to these nuclear dangers and save the earth. Save mother earth. Save the animals, they're not to blame. We can change Michigan by putting proposals on the Michigan ballot. We can't change Congress. Like Michael Moore said, it's in the employ of Wall Street. But we can change Michigan, we can set an example. We can put everything to right by putting proposals on the ballot. This is democracy. The people putting the proposals on the ballot and the people deciding yes, I want this, or no, I don't. (**0040-11-1** [McNulty, Regina])

Comment: Officials of DTE Energy who approve of this unconscionable devils bargain, and profit from it, must be called to account. Site preparations must be stopped, injunctions put in place and investigations begun into the conclusions of this environmental impact statement. The environmental impact of accidents on populations worldwide are a continual indictment of nuclear power. Its destructive imprints are visible from space and are irreversible. To claim, as this EIS does, that no environmental issues exist, is quite frankly, preposterous. And it denies totally, and factually, the past history of this flawed and dangerous technology. Vic has already talked about Wind Scale in England and Urals Mountains in the former Soviet Union, the devastation at Chernobyl, Three Mile Island in the U.S., and Fukushima in Japan, are warnings that are ignored at great peril to all life. How much more can the earth withstand before its ecosystems falter and fail entirely. Fermi 3 will contain within its core the gas capacity to render not just this area, but many thousands of miles beyond the State of Michigan, unlivable and uninhabitable. Within the two emergency planning zones, 92,000 live within ten miles, and 4,799,000 live within 50 miles. The city of Detroit is within 30 miles. Evacuation is impossible with such numbers. (**0040-26-5** [Johnston, Mary])

Comment: I see all the NRC people and there seem to be, you know, fairly decent guys, and they tell me about the literature and everything else. But, my gosh, I mean, this stuff, this stuff is evil. I mean, I mean the nuclear power plants, like my wife said, they produce this U238, you know, and the spent, depleted Uranium, so called, if you, and you know when it comes to hurting people, I'm 79 years old, okay, so I'm probably radiation hardened somewhat by this environmental thing, but, and I don't have that much time to go, too. What about children, I mean what about the infants and babies that, you know, and small children. All you have to do

to concentrate on the evil of continuing to have these things, I mean, we're already awash in this stuff, this radioactive waste. It's all over the world, the Russians, us, you know, the Chinese. We can hardly get out of the situation we're into now what are we going to do, why should we expand any of it. I cannot understand why any reasonable person would think there's any reason to go on with this. I don't care how many people are established and have good jobs and talking about this and that and everything else. I just don't see how, and especially people with families, people with children. I don't see how they can, in conscience, go on with this. And if you want, want to get a little more exact idea of what this radioactive contamination -- just look up on the internet some pictures about the children in Iraq that have been, have been born with horrible deformities, no arms, maybe half of an arm, some pictures so horrible you can't even look at it. And what is it from? It's from the U238 which is produced by the nuclear power plants, which is shipped free all around the country, and all around it, right next to, right near us in Farmington Hills up there, the tank plant, other places like that, for cladding these tanks and for putting them on, on missiles and other things that they use, because it's so good, it's so hard it penetrates so well, and it leaves places like Iraq, as radioactive hell holes, where children can't even be born normally. (**0040-27-1** [Johnston, Bruce])

Comment: Enter a new and untried category of reactor. The name, economically simplified boiling water reactor, should cause reasonable people to pause. It actually tells the public that simplifying the economics is the major concern, not safety or waste. The technology of renewables, solar, wind and energy storage, is improving every year and the cost is going down, and this supports new entrepreneurs. With nuclear, the costs continue to climb, so much so that the industry is unwilling to financially guarantee any estimates. Though supposedly economically simplified, this new reactor caries a heavy price tag. When I wrote this this morning I put down twelve billion dollars, but now I understand that the Toledo Blade has said it's 15 billion dollars. That's currently. Other U.S. utilities have rejected the economically simplified design. The nuclear industry has been subsidized by the public throughout most of its long and polluting chain. This year the Union of Concerned Scientists released a report, nuclear subsidies the gift that keeps on taking. This report shows that in some cases subsidies were greater than the value of the electricity produced. The costs are borne by the public but the profits go to private interests. With this peculiar financial arrangement, we can hardly expect less than an industry push for Fermi 3.

Public relations firms are hired, exaggerated numbers of jobs are cited and donations are made to political campaigns and charities in the local community. Even so, polls show that the majority of Americans favor renewables over nuclear. The one percent is attempting to manipulate the 99 percent. So, what do we have in our future, grooming ourselves to work for the 99 percent, or grooming ourselves to work for the one percent, and appealing to the one percent for our jobs. Those areas that have preserved their environmental quality are the areas and places in the country that have the most and best quality of jobs. And we notice base load being talked about,

but base load does not include efficiency, and base load does not include many things that are farther away from a central space such as local wind and solar.

So, we've talked, I've heard it talked about also about the security that's needed for a nuclear power plant. We don't need guards around solar, we don't need guards around wind or geo-thermal. We're setting up, we are setting up a security state. So, there's an elephant in the room, and that is nuclear tyranny. (**0040-33-2** [Marida, Patrica])

Comment: Start planning to decommission all US nuclear power plants. (**0042-10** [Barnes, Kathryn])

Comment: I am unconditionally opposed to all nuclear power plants because they are dangerous and produce nuclear waste. As they age they become a threat to public health with leaks, accidents, and accumulated nuclear waste and highly toxic reactor components. (**0042-2** [Barnes, Kathryn])

Comment: Nuclear power plants are bad neighbors. Usually when a Neighborhood deteriorates, a Blight is declared and the structures are torn down and the land reclaimed. (**0023-2** [Lankford, R.E.])

Comment: It is illegal. It is something wasteful, unnecessary, and short-sighted. For the benefit of everyone, we must start thinking in long term and beyond the financial considerations of a tiny minority of nuclear profiteers with pork barrel projects. To that end, we must start to act like responsible, intelligent beings who care about the planet and are not hell-bent on self destruction. We must become worthy of living on this beautiful earth and start to really protect it. (**0042-6** [Barnes, Kathryn])

Comment: We are opposed to the construction of any more nuclear power plants. They do not provide cheap electricity and they do leak toxic materials into the environment thus affecting all forms of life. They both use and contaminate vast quantities of water, which would be better used for agriculture or left in situ. There is still no known way of safely disposing of the toxic wastes. Haven't General Electric's faulty designs caused enough damage already? The Palisades has recently been downgraded due to failure to address safety issues and the Besse Davis Plant is well known to be a danger from cracked cement in the casing. Also hasn't Lake Erie endured enough insult already. Please abandon this project. (**0045-1** [Bray, Anne & Peter])

Comment: We are like the fabled "frogs in hot water" as we increase the amount of man-made ionizing radioactivity in our environment and food chain. Every step of the nuclear fuel chain releases radioactive and hazardous emissions regularly with inevitable "accidental" releases such as the continuing catastrophe at Fukushima which began ten months ago today releasing untold, unmonitored radioactivity and hazardous materials into the earth's atmosphere, oceans, communities and the gene pools of all species. Not only have Three Mile Island, Chernobyl and

Fukushima increased - and continue to increase - the radioactivity in the water, air, food and materials we rely on constantly for survival, but every reactor and every nuclear fuel chain ("cycle") facility and all nuclear waste management and release from control emits radioactivity. As decision makers ignore and obscure the continually increasing generation and release of radioactivity, denying its known and potentially-unknown-impacts on individuals, species and biosystems, irreversible changes are being made, and the politicians and "regulators" routinely shift all responsibility and liability from the profit-making polluters to the public, the commons, to random exposed individuals and targeted groups. (**0050-3** [D'Arrigo, Diane])

Comment: The NRC has never engaged the public in a serious discussion of damage to the human gene pool from reactor emissions. Of course, that may mean phasing out all nuclear power plants. In his 1946 Nobel lecture Hermann J. Muller concluded there is no safe threshold and he further stated, With the coming increasing use of atomic energy, even for peace-time purposes the, problem will become very important of insuring that the human germ plasm, the all- important material of which we are the temporary custodians, is effectively protected from this additional potent source of permanent contamination. Irreparable damage is our fate so let's compound the problem! (**0056-12** [Ehrle, Lynn Howard])

Comment: Preface: these comments are directed to nuclear reactors, not specifically to the EIS. Although, all are pertinent to said subject.

As the regulating agency, "you" know that: "Nuclear power facilities release a variety of cancer-causing radionuclides, including Tritium, Strontium-90, Cesium-137, Plutonium-239 and dozens more. Nuclear reactors also release other toxins into our air and water." Any amount of exposure is too much, as it is in addition to "naturally occurring sources". "Radiation is a toxic, persistent, and long-lasting pollutant" [http://www.nirs.org/nukerelapse/obama/nuclearenergyisdirtyenergy.pdf]

Do you, your family and/or friends occupy the region in and around nuclear reactor(s) 24/7/365? Been tested for cancer?

The draft is supposed to be about the impact on the environment, the community surrounding the proposed reactor site, and, I would suppose, how to best prevent any untoward effects. Is this the case? There is, and will be, many negative factors affecting, but not limited to:

- As quoted above, the health of unknown numbers of animals (human included) and plant species. - The land/soil. - Our very precious and vanishing resource: clean / un-contaminated water for human, animal, plant consumption and use.

- A large portion of 20 % of the world's fresh water (Lake Erie; local streams and rivers, other lakes) will be heated (an unnatural effect), have toxic radioactive materials expelled into it. The

future, if we do not stop negligent treatment to and using it as a dumping grounds, will see this liquid being the most valuable commodity on this Earth.

- Water: millions of gallons wasted (would you re-use that “used” liquid?) to “cool” the reactors! Wrong use.

- Air quality. Every living organism breathes.

Nuclear power (with emphasis on power, as in weapons; it’s original purpose?) IS very expensive. And, operates, only with governmental subsidies.

Can never be considered 100 % safe. Effects are long reaching and forever.

Then there is the waste..... Stop producing it; that which has already been made will be a huge problem to contain, some of the elements for days together for millions of years. Another large cost, health hazard, very dangerous.

There are and must be, for the safety and health of today’s living things and of generations to come, other sources of energy utilized. They are known, and their use can be expanded.

Utilize the millions (billions?) of dollars, now directed into nuclear, to produce clean, renewable usable power.

We, as human beings, should care: - About the condition of the earth and its resources. - The well-being of its inhabitants. - Today, tomorrow, next year, the next generation, and all those that follow on this planet. ---> If so, stop this use of destructive nuclear energy. We do not need it. (**0057-1** [Filanda, Bobbi])

Comment: I went to the last meeting at MCCC and left so frustrated! NRC people don’t listen. If they did the Fermi 3 plan would be stopped. I listened as many people who have nothing to gain (monetarily) talked about the problems caused by nuclear power and how it’s not needed. These were intelligent people who I trust because I know money is not their driving force. Come on, think outside the box! Be creative! Leave this earth a better place not a place with nuclear waste still radiating it’s poison!

Seems like this would be a great opportunity for Detroit Edison and the NRC to be the bigger person... It’s not fair that we have to be subjected to the dangers and negative effects of nuke plants! Why can’t we vote on whether we want a nuke plant in our back yard? We have no say, it’s all about profits!!!!! The guy who yelled at the beginning of the meeting was right “we are the 99%” and you and your rich corporation heads force this mess down our throats . (**0066-1** [Meyers, Marcee])

Comment: I do not believe Fermi 3 is required to meet future needs. A crew is still in Fermi 1 after 30 years of supposedly still cleaning up the mess and radiation, paid for by the US government, and atomic waste is still on site from Fermi (2). There is no place on earth to store the waste. Japan is a good example of what will happen often now, and they have a hundred miles of dirt contaminated and no where to put it. Russia has SO miles of waste land because of a blow out of atomic waste. This will kill mankind in the end. STOP ALL ATOMIC POWER NOW, or follow the money trail to hell. I don't know about you but I want my great grand children to live. (**0072-1** [Gill, James])

Comment: It's depressing as I start this, to know it will be disregarded.

I've been against Fermi since, 70's, energy conference in Detroit. I said where is the storage for depleted uranium? They responded, we11 solve that. Nothing has changed, nothing has been solved. They even considered the salt mines, how wrong was that, even to consider? They considered cooking it into some kind of a glass, not feasible due to shattering and storage problem. At Palasades on the west coast of Michigan, they store depleted uranium in cement casts 100 yards from Lake Michigan, not considering the stresses of cold and heat, cracking leaking.

Fermi 2, Canadian's joined us in the fight to end nuclear energy. To have built it was a mistake, we pay for the construction, cost over runs, then the energy itself. We own the thing, yet no say in the process. The total error is in having no energy plan, they cannot even get the grid to function when there is an outage due to storms, How long it takes to start up. Yes, having our heat and light, has become habit, It's lovely. If as much, was spent on clean energy, we'd be better off right now. You, in the industry, can't see that. As Grama said, you have to know which side your bread is buttered. We need a new lot of people in industry, who consider the precautionary principle. Come to clean Michigan is such a joke. It's got to start from the politicals, and they don't have the strength, because our election system is based on money provided by industry, so corporations are people now.

My awareness of nuclear, is from my working in cancer therapy, seeing the results of radium implants, radiation poisoning, reading about some Russian guy poisoned in England. (**0075-1** [Doherty, Carolyn])

Comment: After the tsunami hit the Fukushima plants and Japan and the world began trying to adjust to, and learn from, the ongoing disaster, it seemed obvious to many people around the world that the costs and risks of nuclear energy were too high. Many governments responded with proposals to stop or to phase out nuclear energy. Why not the US? It is true that the NRC is an industry with a long track record of broken promises? (Union of Concerned Scientists, 2006). In today's economy, it is no small think that the NRC boasts of being one of the best places to work. Parents have to make incredible sacrifices and students need to jump through an ever-increasing number of high fiery hoops to get through college. At graduation, it's time to

begin paying back the loans. Before approving any permits for the construction of more nuclear reactors, obtain from the best and brightest of the NRC, professionals detailed studies of tritium's effects on plants, insects, worms, birds, fish and other wildlife. Find a cost-effective way to prevent the release of tritium in reactor steam and waste water. Develop an ethic, an explanation and a solution for future generations who will have to deal with a toxic legacy.

With zoning regulations and building codes, neighbors have an opportunity to consider proposals and make comments. Thank you for providing this courtesy. In several communities, people have been banned from owning pit-bulls after incidents of mauling's. After numerous auto accidents, people are required to have insurance. As a whole, the nuclear industry has had thousands of accidents, and has caused hundreds of thousands of people to become sick and to be forced to evacuate their homes. Who pays insurance in case of a nuclear accident, particularly one requiring large-scale evacuation? Who pays for the food and lodging, the costs of relocation, the medical treatment, the pain and suffering, the life insurance for people in a region affected by a nuclear accident? Of course no one can predict when, where, how, or why, but yes, Accidents Happen.

No one could have predicted the tsunami and earthquake in Japan. As a genius said, the only viable way to proceed with nuclear power is to ban all further acts of God. With a worldwide terror alert for American travelers, it seems at this time we're far away from God and from our fellow human beings, not to mention the voiceless creatures whose future, too, depends on our decisions and actions. What are we learning from Three Mile Island, Chernobyl, and Fukushima? How are we taking responsibility for what we know? So as not to burden future generations, may we put our priorities, our resources, and our minds and efforts toward finding a solution to the problem of radioactive waste, and to helping people who have been victimized by nuclear accidents?

Heaven forbid the wrath of the nations and the damage to ourselves, if we of this current generation, witnesses to Fukushima, the worst nuclear catastrophe in human history, should proceed to continue in the path of business as usual, blind and callous t the suffering of others, especially both the victims in Japan and the young people with cancer right in Monroe. Heaven help us if we who are so fortunate and blessed to live in the Great Lakes Watershed should take it for granted and even contaminate it with radioactive waste.

I know we are better than that. I believe that, as every person employed by the NRC was born to a human mother and every funder as well, as long as we all must coexist and share the same air and water, that conscientiousness, responsibility to self and others, and appreciation for life with rule the day. (**0082-3** [Sontag, Cady])

Response: *These comments express general opposition to nuclear power. They do not provide any specific information relating to the environmental effects of the proposed action. No changes were made to the EIS in response to these comments.*

E.2.36 Comments Concerning Issues Outside Scope - Emergency Preparedness

Comment: "If a severe accident occurred at a reactor located at the Fermi site, it is likely that Federal, State, and local officials would take various measures, including limiting access to contaminated areas and interdiction of drinking water and fishing to reduce exposures." (v 1, p 5.133) Who would be notified? What expectation can the public have of being notified? In every major nuclear reactor accident on record, the public was not notified without significant delay. Governments downplayed the past accidents and denied seriousness of the risk to the public. A severe accident at the Fermi site would contaminate an extremely large area and immediately and seriously irradiate anyone within 50 to 100 miles and further, depending on wind and weather conditions. There is no way to avoid that or mitigate it. To pretend otherwise indicates a callous disregard for public health and safety. The NRC does not require or evaluate or address mitigating public exposure, evacuation, management of evacuated populations, mitigation of air, land, water, food, and human contamination. No state or federal agency claims responsibility or presents a plan to address the consequences of a serious nuclear reactor accident in the past, present, or future. (**0026-6-22** [Macks, Vic])

Comment: In reading the Environmental Impact Statement, I found that there was many places in it in which data recorded to be factual that was questionable, or in some respects out of date, and even incorrect. And let me give you one example. If there were to be a huge emergency at Fermi 2 or 3 in the future, or any of the nearby facilities, the responders to these emergencies are very, very few. The data that was included in the EIS referred to firefighters back in 2008. Because of our economic situation over the past six, seven years, the numbers of those firefighters have dwindled because local governments can no longer afford to pay them. And many of those in this area are volunteer firefighters, not career people. Going onto another area, I would like to mention that, in plain language, although it has been stated by several people here this evening in other terms, all nuclear power plants are nothing but nuclear bombs. I think that if we become acquainted with the information that surrounds this industry, we will become better informed citizens, which we need to be in all matters of major importance. Whether we understand who we vote for when we go to the polls, on what decisions we make on hiring people in our businesses, or in matters such as these, where it's the common good that is going to be the end result of any suffering that's going to be taking place. We are representative in a microcosm of the greater community that extends for many miles. And when you look at that large concentric circle, which is in the EIS limited to 50 miles, we must keep in mind that it would affect many, many more people beyond that. (**0039-30-2** [Rivera, Evelyn])

Comment: The environmental impact statement does not present an evacuation plan, leaving it up to local and state governments and they don't have a plan. In fact it would impossible to evacuate millions of people from the area, and we can see the results of that kind of thinking, as we did in Chernobyl, in Three Mile Island, and in Fukushima. And that result is people left to experience additional radiation, struggling to survive, some buying their own Geiger counters

and being lied to by government and the industry on the severity of the catastrophe. It's not a question of whether a meltdown and explosion will take place. It's a matter of when and where it could be. We know that from the facts of our actual experience, it is reckless to assume otherwise. Damage to people and the earth cannot be undone when an explosion takes place. It may be that as the NRC calculates, that the risk of an explosion is relatively small. But that's not an acceptable risk, because it's permanent. It's permanent. (**0040-12-2** [Macks, Vic])

Comment: And in final, I discovered something here better than a Stephen King novel. It's the Emergency Preparedness for Monroe County and Wayne Counties, drafted 2011/2012. If you get a copy and read it, it'll scare you silly. (**0040-13-7** [Lankford, R.E.])

Comment: The DEIS fails to provide adequate information on how the population in the vicinity of the proposed Fermi 3 and existing Fermi 2 nuclear reactors, will be protected from major or minor accidental releases. Fermi 2 is a Mark 1 Boiling Water Reactor, like the Fukushima reactors, thus vulnerable and with an inadequate design basis. A clear lesson from Fukushima is that an accident at one reactor can involve others at the site. Thus even greater emergency planning is necessary for vicinity around the Fermi reactors. (**0050-5** [D'Arrigo, Diane])

Comment: From firsthand experience, emergency response is completely inadequate for Fermi 2, thus an additional reactor can only make the prospects more dangerous. During one "incident" involving a potential release from Fermi 2, we determined that ALL information came from the utility - all NRC, police, state and local emergency responders and media outlets were quoting and releasing only verbatim information from the utility, with no independent analysis or instructions (**0050-7** [D'Arrigo, Diane])

Comment: NIRS called the utility customer service number to learn what we could to more adequately respond to the numerous calls and questions we were receiving from the Monroe area, only to be told by the Detroit Edison representative that there was no nuclear reactor at Fermi or in the Detroit or Monroe area so there could not be a nuclear accident, problem or release - to relax and forget about it! We were never able to determine whether this was intentional misinformation or a completely uninformed staff person. (**0050-8** [D'Arrigo, Diane])

Comment: Fermi's emergency evacuation plan is already unworkable, making yet another reactor unacceptable. NRC's ten mile emergency planning zone is arbitrarily small. Hazardous and even deadly radioactivity could extend over a much greater distance. Emergency planning should extend at least 50 miles, and should include the surrounding major population centers of Detroit/Windsor, Toledo, and Ann Arbor. Current evacuation routes are too narrow, and must be expanded to accommodate a mass exodus in the event of a major accident or attack. During severe winter weather, current road clearing capabilities are woefully inadequate and must be upgraded in surrounding areas. The Jefferson public school system, so near Fermi, does not even have an adequate school bus fleet to perform an emergency evacuation.

The Jefferson Schools District should be provided with enough buses and drivers to evacuate the entire student population in a single run - North Elementary School, Jefferson Middle School and Jefferson High School (all less than three miles from the Fermi II site), Sodt Elementary School (~3.5 miles), and Hurd Road Elementary School (within the 5-mile radius). This egregious emergency preparedness inadequacy must be rectified before Fermi 3 is licensed. Potassium iodide tablets, along with instructions for proper usage, should be distributed regularly within the 50 mile emergency planning zone, as should emergency evacuation plan instructions. (**0058-4** [Kamps, Kevin])

Comment: The Proposed Fermi 3 Radiological Emergency Response Plan Lacks Adequate Resources and Planning to Evacuate Monroe, County and Southeastern Michigan (**0061-1** [Keegan, Michael J.])

Comment: During severe winter weather, current road clearing capabilities are woefully inadequate and must be upgraded in surrounding areas.

This inadequacy is common knowledge in the Community of Monroe as exhibited by the attached letter to the editor of the Monroe Evening News dated January 21, 2009 from John Pipis, Monroe. And from Article published at MonroeNews.com on Feb 1, 2009 entitled: Road-plowing plan in works.

Both of these documents demonstrate and document the contention above with regard to the Emergency Evacuation and Radiological Emergency Response Plan. They are attached to this document. (**0061-2** [Keegan, Michael J.])

Comment: Emergency planning should extend at least 50 miles, and should include the surrounding major population centers of Detroit/Windsor, Toledo, and Ann Arbor. Current evacuation routes are too narrow, and must be expanded to accommodate a mass exodus in the event of a major accident or attack. While the Emergency Evacuation documents identify staffing needs for an evacuation. The procurement of these resources are dubious. It has not been demonstrated that they actually exist other than on paper. i.e. all the funding cuts relating to road work has rippled throughout the all services. (**0061-3** [Keegan, Michael J.])

Comment: Lack of attention in the Environmental Report document to the feasibility of the existing Emergency Evacuation Plan for Fermi II during the construction phase of the proposed Fermi III. (**0061-4** [Keegan, Michael J.])

Comment: During a construction phase of several years, the report projects a workforce of 2900 workers (4.4.1) who are not expected to re-locate from their current homes, and states that many of these workers will drive 50 miles, and some, up to 70 miles to the work site. In this report there is no mention of the current “Evacuation Plan” let alone that it will even work with such a large number of vehicles on the road. Those who live near Fermi during the construction

of Fermi II experienced high traffic volume on Dixie Highway at shift change times. When construction related to Fermi 3 coincides with Fermi 2 outage swell of workers, a combined traffic volume of 5,000 vehicles is reported by DTE as possible. (**0061-5** [Keegan, Michael J.])

Comment: In Chapter 4, “Environmental Impacts of Construction” (DTE Energy, Fermi 3 Combined License Application, Part 3: Environmental Report, Revision 0, September 2008). From 4.4.2.4, referring to the Pijawka study: “Traffic congestion, however, was found to be a serious problem at most sites.” No follow-up or response to this statement, which cites a “serious problem” to be expected during the construction phase. This lack of response to the “serious problem” of traffic congestion is a glaring omission in the report.

There are two main routes from the Fermi site to I-75:

> Fermi Drive via Dixie Highway to Exit 15, a distance of 5 miles, the first two miles two lanes and the last three miles (nearest to I-75) three lanes;

> Fermi Drive to Dixie Highway , Post Road, War Road, Nadeau Road, I-75 Exit 18, a distance of 6 miles along two-lane local and primary roads.

There are other routes extending northeasterly toward the down river communities of Wayne County.

Dixie Highway is the main road into and out of the Fermi site and, in the case of an emergency, would be the main exit route for approximately 10,000 people who live between Dixie Highway and the Lake Erie shoreline as well as several thousand more who live on the opposite side of the highway. (**0061-6** [Keegan, Michael J.])

Comment: The Jefferson public school system near Fermi lacks an adequate school bus fleet to perform an emergency evacuation. The Jefferson Schools District does not have enough buses and drivers to evacuate the entire student population in a single run. North Elementary School, Jefferson Middle School, Jefferson High School are all less than 3 miles from the Fermi 2 site and from the proposed Fermi 3. Sodt Elementary School 3.5 miles away, and Hurd Road Elementary School within the 5-mile radius. In the absence of Fermi 2 and proposed Fermi 3 Emergency Evacuation preparedness on such a scale would not be necessary.

Potassium iodide tablets, along with instructions for proper usage, should be distributed regularly within the 50 mile emergency planning zone, as should emergency evacuation plan instructions. It is necessary to have immediate access to Potassium iodide in order to prevent thyroid ingestion / uptake. Currently Potassium Iodide tablets are not readily available. (**0061-7** [Keegan, Michael J.])

Comment: The following mitigation measures are requested to be taken and that full funding be provided to implement them. A thorough study of all measures necessary to protect the public may indicate the need for further mitigation measures.

Mitigation Remedy:

- widen to three lanes, upgrade and pave the above-cited access routes from the Fermi site to I-75 as well as other routes to points north;
- provide salt storage in the immediate vicinity for Monroe County Road Commission application during snowy and icy weather;
- provide at least two sets of three extra Monroe County Road Commission snow plows/salt spreaders (total 6) along with operators (12), to be stationed in the immediate vicinity during winter months to keep routes clear during winter weather; DTE must provide the Monroe County Road Commission with Garages with three snow plows each at both ends of the North Dixie Highway. To provide financial resources for 24 hour staffing of those snow plows and garages. This will allow for adequate snow removal, for North Dixie highway as well as the immediate roads necessary for an Emergency Evacuation.
- provide the Jefferson Schools District with enough buses and drivers to evacuate the entire student population in a single run - North Elementary School, Jefferson Middle School and Jefferson High School (all less than three miles from the Fermi II site), Sodt Elementary School (~3.5 miles), and Hurd Road Elementary School (within the 5-mile radius);
- provide additional full-time staffing for Monroe County Sheriff coverage for traffic and crowd control in the event of an emergency requiring evacuation.
- Build separate road access to service 5,000 plus vehicles related to construction and refueling outages at the Fermi site. Residents should not be forced to compete with workers for access to evacuation routes. Workers should be evacuated on separate additional route designed to mitigate impact of inadequate evacuation routes.
- Provide Potassium Iodide tablets to individual homes within 50 mile radius so that there immediate access to block thyroid uptake. Provide these whether the proposed Fermi 3 goes forward or not. They are needed because of the existence of Fermi 2.
- The financial burden of these upgrades must be borne by Detroit Edison Company as they are the proponent of the proposed Fermi 3. It is the existence of the Fermi 2 and the proposed Fermi 3 which necessitates these resources be made whole.

Special Events

1. River Raisin Jazz Festival

A special event scenario (Scenario 13) is considered for the River Raisin Jazz Festival. The River Raisin Jazz Festival is held each summer at St. Mary's Park in the City of Monroe. This year's festival is scheduled for August 8th through 10th. The festival typically attracts as many

as 50,000 people. Based on discussions with the director of the Monroe County Tourism & Convention Department, at most 20,000 people will be in the park for this event at any given time. He also indicated that 2/3 of these people are coming to the event from out of the area. Vehicle occupancies range from 1 to 4 persons per vehicle; we assume 3 people per vehicle. There are 1,300 public parking spaces available. People also park along local streets and in private parking lots. There are approximately 13,350 additional people (20,000 x 2/3) and 4,450 additional vehicles for this scenario. The additional vehicles are loaded on the analysis network on the links in the vicinity of St. Mary's Park.

2. Construction

A special event scenario (Scenario 14) which represents a typical summer, midweek, midday with construction workers at the FNPP site constructing the new unit (Fermi 3) when an emergency occurs at Fermi 2, is considered. Based on discussions with Black & Veatch, the peak construction will be in the Year 2018, with a workforce of 2,900 construction workers. The workforce will be split equally between two 10 hour shifts; thus there will be as many as 1,450 construction workers at a given time. We also assume that refueling of Fermi 2 will be occurring for this scenario. There are 1,500 additional workers needed for refueling, also split equally between two shifts. The average vehicle occupancy of 1.02 workers per vehicle is used to estimate the additional vehicle demand. A new access road from the FNPP site to Dixie Highway is considered in this study, based on the information provided. It is assumed that a traffic signal is present at the intersection of Dixie Highway and the new access road. Those workers present for construction of the new unit will use the existing access road (Enrico Fermi Drive), while the refueling workers and the Fermi 2 employees will use the new access road. There are a total of 1,425 vehicles loaded onto Enrico Fermi Drive for this scenario, and 1,175 vehicles (735 for refueling employees and 440 for those commuting into the EPZ to work at Fermi 2) loaded onto the new access road. There are a total of 2,160 additional vehicles for this special event. Permanent resident population and shadow population are extrapolated to 2018 for this scenario.

The computation of ETE assumes that a portion of the population within the EPZ but outside the impacted region, will elect to "voluntarily" evacuate. In addition, a portion of the population in the Shadow Region beyond the EPZ that extends a distance of 15 miles from FNPP, will also elect to evacuate. These voluntary evacuees could impede those who are evacuating from within the impacted region. The impedance that could be caused by voluntary evacuees is considered in the computation of ETE for the impacted region.

Voluntary evacuation is considered as indicated in the accompanying Figure 2-1. Within the circle defined by the distance to be evacuated but outside the Evacuation Region, 50 percent of the people not advised to evacuate are assumed to evacuate within the same time-frame. In the annular area between the circle defined by the central "key-hole" of the Evacuation Region and the EPZ boundary, it is assumed that 35 percent of people will voluntarily evacuate. In the area

between the EPZ boundary and a 15-mile annular area centered at the plant (the “Shadow region”), it will be assumed that 30 percent of the people will evacuate voluntarily. Sensitivity studies explored the effect on ETE, of increasing the percentage of voluntary evacuees in the “Shadow Region”. See Appendix

2.3 Study Assumptions

1. The Planning Basis Assumption for the calculation of ETE is a rapidly escalating accident that requires evacuation, and includes the following:

a. Advisory to Evacuate is announced coincident with the siren notification.

b. Mobilization of the general population will commence within 10 minutes of the Advisory to Evacuate.

c. ETE are measured relative to the Advisory to Evacuate.

2. It is assumed that everyone within the group of PAA forming a Region that is issued an Advisory to Evacuate will, in fact, respond in general accord with the planned routes.

3. It is further assumed that:

a. Schools may be evacuated prior to notification of the general public, if possible.

b. 62 percent of households in the EPZ have at least one commuter, 64 percent of which await the return of a commuter before beginning their evacuation trip, based on the telephone survey results.

4. The ETE will also include consideration of “through” (External-External) trips during the time that such traffic is permitted to enter the evacuated Region. “Normal” traffic flow is assumed to be present within the EPZ at the start of the emergency.

5. Access Control Points (ACP) will be staffed within approximately 90 minutes of the siren notifications, to divert traffic attempting to enter the EPZ. Earlier activation of ACP locations could delay returning commuters. It is assumed that no vehicles will enter the EPZ after this 90 minute mobilization time period.

6. Traffic Control Points (TCP) within the EPZ will be staffed over time, beginning at the Advisory to Evacuate. Their number and location will depend on the Region to be evacuated and personnel resources available. It is assumed that drivers will act rationally, travel in the directions identified in the plan (as documented in the public information material), and obey all control devices and traffic guides.

7. Buses will be used to transport those without access to private vehicles:

a. If schools are in session, transport (buses) will evacuate students directly to the assigned Reception Centers and host schools.

b. Schoolchildren, if school is in session, are given priority in assigning transit vehicles.

c. Bus mobilization time is considered in ETE calculations.

d. Analysis of the number of required “waves” of transit vehicles used for evacuation is presented.

8. It is reasonable to assume that some of transit-dependent people will rideshare with family, neighbors, and friends, thus reducing the demand for buses. We assume that the percentage of people who rideshare is 50 percent. This assumption is based upon reported experience for other emergencies. The remaining transit-dependent portion of the general population will be evacuated to reception centers by bus.

9. Two types of adverse weather scenarios are considered. Rain may occur for either winter or summer scenarios. In the case of rain, it is assumed that the rain begins at about the same time the evacuation advisory is issued. Thus transient populations are not affected. That is, no weather related reduction in the number of transients who may be present in the EPZ is assumed.

Snow may occur in winter scenarios. Transient population reductions are not assumed for snow scenarios. Further, it is assumed that roads are passable and that the appropriate agencies are plowing the roads as they would normally.

Adverse weather scenarios affect roadway capacity, free flow highway speeds and the time required to mobilize the general population. The factors assumed for the ETE study are:

10. School buses used to transport students are assumed to have the capacity to transport 70 children per bus for elementary schools, and 50 children per bus for middle and high schools. Transit buses used to transport the transit-dependent general population are assumed to
transport an average of 30 people per bus.

Institute for Environmental Studies, University of Toronto, THE MISSISSAUGA EVACUATION FINAL REPORT, June 1981. The report indicates that 6,600 people of a transit-dependent population of 8,600 people shared rides with other residents; a ride share rate of 76% (Page 5-10). Agarwal, M. et. Al. Impacts of Weather on Urban Freeway Traffic Flow

Characteristics and Facility Capacity, Proceedings of the 2005 Mid-Continent Transportation Research Symposium, August, 2005.

7.1 Voluntary Evacuation and Shadow Evacuation

We define “voluntary evacuees” as people who are within the EPZ in Protective Action Areas (PAA) located outside the Evacuation Region, for which an Advisory to Evacuate has not been issued, yet who nevertheless elect to evacuate. We define “shadow evacuation” as the movement of people from areas outside the EPZ for whom no protective action recommendation has been issued. Both voluntary and shadow evacuation are assumed to take place over the same time frame as the evacuation from within the impacted Evacuation Region.

The ETE for FNPP addresses the issue of voluntary evacuees as discussed in Section 2.2 and displayed in Figure 7-1 (same as Figure 2-1). Figure 7-2 presents the area identified as the Shadow Evacuation Region. This region extends radially from the boundary of the EPZ to a distance of 15 miles from FNPP.

Traffic generated within this Shadow Evacuation Region, traveling away from the plant, has the potential for impeding evacuating vehicles from within the Evacuation Region. We assume that the traffic volumes emitted within the Shadow Evacuation Region correspond to 30 percent of the residents there plus a proportionate number of employees in that region. All ETE calculations include this shadow traffic movement.

7.2 Patterns of Traffic Congestion During Evacuation

Figures 7-3 through 7-6 illustrate the patterns of traffic congestion that arise for the case when the entire EPZ (Region R03) is advised to evacuate during the summer, weekend, midday period under good weather conditions (Scenario 3). Traffic congestion, as the term is used here, is defined as Level of Service (LOS) F.

LOS F is defined as follows (2000 HCM):

Level of Service F is used to define forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount that can traverse the point. Queues form behind such locations. Operations within the queue are characterized by stop-and-go waves, and they are extremely unstable. Vehicles may progress at reasonable speeds for several hundred feet or more, then be required to stop in a cyclic fashion. Level of Service F is used to describe the operating conditions within the queue, as well as the point of the breakdown. It should be noted, however, that in many cases operating conditions of vehicles or pedestrians discharged from the queue may be quite good. Nevertheless, it is the point at which arrival flow exceeds discharge flow, which causes the queue to form, and Level of Service F is an appropriate designation for such points.

This definition is general and conceptual in nature, and applies primarily to uninterrupted flow. Levels of Service for interrupted flow facilities vary widely in terms of both the user's perception of service quality and the operational variables used to describe them. All highway "links" which experience LOS F at the indicated times are delineated in these Figures by a heavy red line; all others are lightly indicated. Congestion develops in areas with high population density and at traffic bottlenecks. Figure 7-3 presents the traffic congestion patterns at 30 minutes after the Advisory to Evacuate (ATE). The approach to I-275 from Carleton, I-75 northbound, the approach to I-75 from North Dixie Highway, and all major evacuation routes leading out of the City of Monroe (I-75 southbound, Michigan Highway 50 westbound, US-24 southbound and Michigan Highway 125 southbound) are congested at this time.

Figure 7-4 presents the traffic congestion patterns at the peak of congestion, 1 hour after the ATE. Congestion intensifies within the City of Monroe and within Carleton. Congestion propagates upstream along I-75 northbound and I-75 southbound. US Turnpike/Jefferson Ave is congested northbound traveling out of the EPZ. US Highway 24 northbound and the approaches to US 24 are also congested in Flat Rock.

The congestion patterns at 2 hours after the ATE are displayed in Figure 7-5. The patterns are similar to those at 1 hour, though the congestion in Carleton and northbound on US Turnpike/Jefferson Ave is beginning to dissipate. At 3 hours after the ATE (Figure 7-6), all of the congestion in the northern portion of the EPZ has cleared. Congestion still persists on the major evacuation routes leaving the City of Monroe. Congestion is also observed leaving Sterling State Park and approaching I-75 southbound along Dixie Highway. The last path to clear is the approach to southbound I-75 from Laplaisance Rd in Monroe, which clears at 3 hours and 30 minutes after the ATE.

There is significant congestion within the City of Monroe; however, this congestion does not persist beyond the 4 hour mobilization time period (5 hours for snow scenarios). Therefore, the ETE is driven by the mobilization activities of the evacuating population. As a result, it is recommended that the 95th percentile ETE (Table 7-1C) be used when making protective action decisions.

7.3 Evacuation Rates

Another format for displaying the dynamics of evacuation is depicted in Figure 7-7. This plot indicates the rate at which traffic flows out of the indicated areas for the case of an evacuation of the entire EPZ (Region R03) under the indicated conditions. Appendix J presents these plots for all Evacuation Scenarios for Region R03.

As indicated in Figure 7-7, there is typically a long "tail" to these distributions. Vehicles evacuate an area slowly at the beginning, as people respond to the Advisory to Evacuate at different rates. Then traffic demand builds rapidly (slopes of curves increase). When the system

becomes congested, traffic exits the EPZ at rates somewhat below capacity until some evacuation routes have cleared. As more routes clear, the aggregate rate of egress slows since many vehicles have already left the EPZ. Towards the end of the process, relatively few evacuation routes service the remaining demand.

This decline in aggregate flow rate, towards the end of the process, is characterized by these curves flattening and gradually becoming horizontal. Ideally, it would be desirable to fully saturate all evacuation routes equally so that all will service traffic near capacity levels and all will clear at the same time. For this ideal situation, all curves would retain the same slope until the end – thus minimizing evacuation time. In the real world, this ideal is generally unattainable reflecting the variation in population density and in highway capacity within the EPZ.

The time-varying external circumstances are represented as Evacuation Scenarios, each described in terms of the following factors: (1) Season (Summer, Winter); (2) Day of Week (Midweek, Weekend); (3) Time of Day (Midday, Evening); and (4) Weather (Good, Rain, Snow). Two special event scenarios were considered: the River Raisin Jazz Festival in St. Mary's Park in the City of Monroe, and the construction on Fermi 3 during refueling of Fermi 2 in the Year 2018. (**0061-8** [Keegan, Michael J.])

Response: *These comments relate to the adequacy of emergency plans, which is a safety issue that is outside the scope of the NRC staff's environmental review. As part of its safety review, the NRC staff will determine, after consultation with the U.S. Department of Homeland Security (DHS) and the Federal Emergency Management Agency (FEMA), whether the emergency plans submitted by the applicant are acceptable. The currently operating unit has an emergency plan in place that has been reviewed and approved by both the NRC and DHS/FEMA. No changes were made to the EIS in response to these comments.*

Comment: The section of the report which assessed the impact on public services did not address the need for emergency preparedness by local government due to the location of a reactor within the county. Significant public resources are allocated to plan and prepare for potential emergencies related to the presence of a nuclear reactor within the county, although it is assumed that the related costs will not be significantly increased due to the addition of a second facility adjacent to the existing reactor. The COL application will undergo a separate Safety Evaluation Report (SER) which will assess the suitability of the proposed emergency preparedness program. (**0067-11** [Peven, Robert])

Response: *The comment is noted. No change was made to the EIS in response to this comment.*

Comment: "If a severe accident occurred at a reactor located at the Fermi site, it is likely that Federal, State, and local officials would take various measures, including limiting access to contaminated areas and interdiction of drinking water and fishing to reduce exposures." (v 1,

p 5.133) Does that mean they would tell people they couldn't go home? And fisherman to stay out the water? (**0016-4-17** [Collins, Jessie])

Response: *Each U.S. nuclear plant has an emergency plan that is coordinated with local, State, and Federal departments and agencies to ensure the safety of the public within the Emergency Planning Zone (EPZ). In addition, NRC regulations require plants to have plans in place that would allow them to mitigate even worst-case scenarios. Since the event of September 11, 2001, NRC has implemented requirements for licensees to have additional response capabilities for extreme situations. If a severe accident were to occur, the Federal, State, and local officials would interdict and prevent individuals from spending time on the contaminated areas and consuming the contaminated water and foodstuff. This could include evacuating individuals and preventing the use of water or making contaminated food difficult to obtain. No changes were made to the EIS as a result of this comment.*

Comment: The DEIS Volumes I and II, raise concerns pertaining to emergency planning but do not fully address them, making the EIS incomplete. Although emergency planning is reportedly detailed in separate documents created in conjunction with State, Local and Federal Agencies such as FEMA and the NRC, there are some emergency planning issues within Volume I. For example, on page 5-126, in examining the fatalities relating to exposure, estimates of a population within 50 miles of the nuclear plant was used. How does this correspond to the current emergency planning zone of 10 miles? Does this insinuate that an expansion of emergency planning should be made? The DEIS needs to more fully describe how the population within 50 miles of the Fermi site will be protected. (**0050-6** [D'Arrigo, Diane])

Response: *The comment relates to the adequacy of emergency plans, which is a safety issue that is outside the scope of the staff's environmental review. As part of its site safety review, the NRC staff will determine, after consultation with the DHS and FEMA, whether emergency plans submitted by the applicant meet applicable requirements. There are two EPZs established around a nuclear power plant. The first zone, the 10-mi EPZ, is where exposure from a radiological release event would likely be from the radioactive plume, and it is in this EPZ where protective actions such as sheltering and/or evacuation would be appropriate. Beyond the 10-mi EPZ and out to the 50-mi EPZ is the ingestion exposure pathway where exposure to radionuclides would likely be from ingestion of contaminated food/milk and surface water. In general, the evaluation of accident consequences, as is the case for this EIS, is based on the evacuation of individuals within the first 10-mi radius of the site. Because severe accidents leading to core damage develop over time, there would be sufficient time for people to evacuate the area near the site. No changes were made in the EIS as a result of this comment.*

E.2.37 Comments Concerning Issues Outside Scope - Miscellaneous

Comment: The EIS as written is deficient in its details of the environmental impacts of past Fermi 1 and 2 performance including accidents which resulted in "hot shutdowns" radioactive

spillage, employee mishandlings, safety record and-lack of proper public disclosure. The latter allows the public to question the ability to trust a facility as it's track record and past performances ARE indicators of future performance. (**0003-1-9** [Anderson, Christy])

Response: *The environmental review of the Fermi 3 COL is limited to evaluating the environmental impacts of constructing and operating the proposed Fermi 3. The environmental impacts of past performance issues or accidents at Fermi 1 and Fermi 2 are outside the scope of the Fermi 3 environmental review except to the extent they may relate to current or expected environmental impacts associated with the construction and operation of the proposed facility. A safety analysis report was provided as part of the COL application. The NRC staff is developing a Safety Evaluation Report that analyzes all aspects of reactor and operational safety. No changes were made to the EIS as a result of this comment*

Comment: Why did DTE submit (July 18, 2011) a "letter of intent to the NRC to file an application in 2014 for renewal of the operating license of Fermi 2" (v 1, p 1.8) when the existing license does not expire for more than a decade? (**0016-1-7** [Collins, Jessie])

Comment: Why did DTE submit (July 18, 2011) a "letter of intent to the NRC to file an application in 2014 for renewal of the operating license of Fermi 2" (v 1, p 1.8) when the existing license does not expire for more than a decade? Has NRC ever refused to renew a reactor license anywhere in the U.S.? (**0026-6-4** [Macks, Vic])

Response: *The license renewal of Fermi 2 is outside the scope of the environmental review for the Fermi 3 COL. However, under the NRC's regulations, a nuclear power plant licensee may apply to the NRC to renew a license as early as 20 years before expiration of the current license. The NRC staff has determined that 20 years of operating experience is sufficient to assess aging and environmental issues at the site. A licensee may submit an application for license renewal at a plant that has less than 20 years of operating experience; however, an exemption to the regulations is required. A major consideration for seeking license renewal so far in advance of the expiration date of the current license is that it takes about 10 years to design and construct major new generating facilities, and long lead times are required by energy-planning decision makers. License renewal applicants are expected to apply at least 5 years before their license expires. No changes were made to the EIS in response to these comments.*

Comment: 2. The US Nuclear Regulatory Commission Current Power Reactor Status Report for February 11, 2011, listed the reactor as operating at 2 percent of 100 percent capacity. No one could be reached at the facility had any direct knowledge of the event, and responsible parties could not return telephone calls. Hmmm .. wonder why? http://www.nrc.gov/reading-rm/doc-collections/event-status/reactorstatus/ps.html (**0003-4-3** [Anderson, Christy])

Response: *The capacity factor of Fermi 2 at any given point in time is outside the scope of the environmental review of the Fermi 3 COL and is not considered in the EIS. The EIS for Fermi 3 does assume certain capacity factors for evaluating environmental impacts. For example, in its evaluation of uranium fuel cycle impacts from the new unit at the Fermi site, Detroit Edison assumed a capacity factor of 93 percent for the ESBWR design (see Chapter 6 of the EIS). No change was made to the EIS as a result of this comment.*

Comment: Fermi 3 has had at least 14 Quality Assurance Contentions filed against it to which 5 have been acted upon. http://www.beyondnuclear.org/nrc/2010/6/16/qualityassurance-contention-against-fermi-3-new-reactor-acc.html (**0003-4-7** [Anderson, Christy])

Response: *This comment addresses a quality assurance contention that was admitted by the ASLB in the Fermi 3 COL adjudicatory hearing and is outside the scope of the environmental review. To construct and operate a nuclear power plant, an applicant must submit a FSAR to the NRC for review and approval. This document contains, among other things, information about the applicant's quality assurance program. The NRC staff develops a Safety Evaluation Report to document its review of the FSAR. The licensee's quality assurance program includes all the planned and systematic actions necessary to provide adequate confidence that a structure, system, or component will perform satisfactorily when in service. In addition to reviewing and inspecting applicant activities, the NRC reviews and inspects the quality assurance programs, including their implementation, for all nuclear suppliers, architect engineering firms, suppliers of safety-related and commercial-grade products and services, calibration and testing laboratories, and holders of NRC construction permits, operating licenses, and combined licenses in quality-related areas. No change was made to the EIS in response to this comment.*

Comment: 32. The Port of Monroe provides a point of access for Great Lakes shipping and transport through the Great Lakes-Saint Lawrence Seaway (v 1, p 2.139). In case of a Fermi disaster, would DTE be financially liable for interference with Interstate Commerce? (**0016-2-13** [Collins, Jessie])

Comment: The Port of Monroe provides a point of access for Great Lakes shipping and transport through the Great Lakes-Saint Lawrence Seaway (v 1, p 2.139). In case of a Fermi disaster, would DTE be financially liable for interference with Interstate Commerce? (**0026-6-10** [Macks, Vic])

Response: *Liability resulting from a nuclear accident is outside the scope of the environmental review. However, the Price-Anderson Act is designed to ensure that adequate funds would be available to satisfy liability claims of members of the public for personal injury and property damage in the event of a catastrophic nuclear accident. The legislation helped encourage private investment in commercial nuclear power by placing a cap, or ceiling, on the total amount of liability each holder of a nuclear power plant license faced in the event of a catastrophic*

accident. Over the years, the "limit of liability" for a catastrophic nuclear accident has increased the insurance pool to more than $10 billion. Under existing policy, utilities that operate nuclear power plants pay a premium each year for $300 million in private insurance for offsite liability coverage for each reactor unit. This primary insurance is supplemented by a second policy. Because virtually all property and liability insurance policies issued in the United States exclude nuclear accidents, claims resulting from nuclear accidents are covered under the Price-Anderson Act. It includes any accident (including those that come about because of theft or sabotage) in the course of transporting nuclear fuel to a reactor site; in the storage of nuclear fuel or waste at a site; in the operation of a reactor, including the discharge of radioactive effluent; and in the transportation of irradiated nuclear fuel and nuclear waste from the reactor. The Energy Policy Act of 2005 extended the Price-Anderson Act to December 31, 2025. No change was made to the EIS in response to these comments.

Comment: In these times of world crisis, few people may care about the disappearance of one species, but in the macro overview, other species are depending on this one. The unionid mussel is a small issue compared to, "The western basin contains important fish spawning and nursery areas and is also important to commercial and recreational fisheries." (v 1, p 2.75) Doesn't the current Fermi pollution reports gives standing for commercial fisheries, both international and interstate, to file lawsuits? (**0016-2-16** [Collins, Jessie])

Comment: "Lake Erie supports one of the largest freshwater commercial fisheries in the world, with the majority of commercial fishing occurring along the Canadian border." (v 1, p 2.82) There are many tribal fishing enterprises on the Canadian side of the lake, and most Tribes have dual citizenship in the United States and Canada. Have they no standing as American citizens for tribal fishing rights to have un-poisoned spawning beds for fish? (**0016-2-17** [Collins, Jessie])

Response: *The NRC describes the aquatic biota that occur in Lake Erie in Chapter 2 of the EIS and potential construction and operational impacts on aquatic biota in Chapters 4 and 5 of the EIS. However, whether the existing aquatic conditions in Lake Erie or potential impacts from construction or operation of the proposed Fermi 3 give legal standing to Tribal fishing enterprises to file lawsuits is beyond the scope of the environmental review. Therefore, no changes were made to the EIS as a result of these comments.*

Comment: Has Fermi 2 even turn a profit yet after all these years and this plant has lowered out electric bill by how much over the years? (**0030-4** [Podorsek, Edward])

Response: *Whether Fermi 2 has made a profit for its owners or whether operation of Fermi 2 has lowered electric rates for its customers is outside the scope of NRC's authority and responsibility. No changes were made to the EIS as a result of this comment.*

Comment: Is it accurate that five of the six new nuclear reactors of the Fermi 3 GE-Hitachi proposed design ordered have been cancelled? Fermi 3 is a loss leader for GE-Hitachi hoping

to have a demonstration up and running to sell others? The GE-Hitachi Economically Simplified Boiling Water Reactor (ESBWR) is experimental, untried and its cooling system questionable and unproven in real life experience. NRC proposes to allow this to be built and licensed without safety design validation. (**0026-6-2** [Macks, Vic])

Comment: If my understanding of the current situation is correct, DTE's proposed Fermi-3 ESBWR is the only one of six originally contemplated for construction that has not yet been cancelled. If that in fact is the case, it is my fervent hope that DTE will consult with, and follow the examples set by, the other utilities that considered and rejected the prospect of ESBWR construction and operation. (**0037-6** [Gunter, Keith])

Comment: And I wanted to speak this evening about a couple issues. One is the status of the design of this proposed new reactor, and the other is about the subsidies involved. So regarding this reactor design, we have the statement that we wrote three years ago, and among the signatories on the statement are the five interveners in the licensing proceeding against this proposed new reactor and Terry Lodge is our attorney.

Those groups are Beyond Nuclear, Citizens for Alternatives to Chemical Contamination, Citizens Environmental Alliance of Southwestern Ontario, Don't Waste Michigan and the Sierra Club Michigan Chapter. Those are the five intervening groups. They're signed on to this. There's 35 more groups throughout Michigan and neighboring states that are signed on to this statement. And there's two coalitions, Great Lakes United was mentioned, the 170 groups throughout the great lakes basin, both sides of the border, and also Michigan Environmental Council, more than 70 groups here in Michigan.

And we presented this three years ago during the environmental scoping. So here we are the Draft Environmental Impact stage, and it's remarkable that these issues are still very relevant. These questions are still not answered. So this particular point, DTE's proposed so called economically simplified boiling water reactor design is woefully incomplete. And, thus, the current NRC licensing proceeding is premature. Hundreds of thorny technical questions have yet to be answered, and no date certain has been established for the final NRC certification for this reactor design.

The two largest nuclear power utilities in the United States, Exelon of Chicago and Entergy of New Orleans have canceled four ESBWR's due to the design's uncertain status. It is absurd for the concerned public to be asked to comment on the environmental impacts of a proposed reactor design that does not yet exist. This proceeding should be suspended until the ESBWR design is finalized and NRC certified. And, you know, this was written three years ago, so since that time, yet another large nuclear utility, Dominion of Virginia, has walked away from this reactor design. In fact, that was the reference reactor in the country to get this thing certified so other could follow as a model. They walked away. They've chosen another reactor design to try to pursue.

So what do these companies know that Detroit Edison doesn't seem to get? In fact, I've since learned, since this statement three years ago, and this is from Ed Lyman at the Union of Concerned Scientists who have done some preliminary analysis of this reactor design, that the ESBWR actually generated 6,000 requests for additional information from the Nuclear Regulatory Commission. (**0039-28-1** [Kamps, Kevin])

Comment: DTE's proposed "Economically Simplified Boiling Water Reactor" (ESBWR) design is woefully incomplete, and thus the current NRC licensing proceeding is premature. Hundreds of thorny technical questions have yet to be answered, and no "date certain" has been established for final NRC certification. The two largest nuclear power utilities in the U.S., Exelon of Chicago and Entergy of New Orleans, have cancelled four ESBWRs due to the design's uncertain status. It is absurd for the concerned public to be asked to comment on the environmental impacts of a proposed reactor design that does not yet exist. This proceeding should be suspended until the ESBWR design is finalized and NRC-certified. (**0058-19** [Kamps, Kevin])

Response: *The COL applicant is responsible for selecting the reactor design that it wishes to have reviewed by the NRC during the licensing process. The NRC then reviews the application in accordance with the regulations and its licensing procedures. The NRC issued its final design approval for the standard ESBWR design on March 9, 2011. These comments are outside the scope of the environmental review. No change was made to the EIS as a result of these comments.*

Comment: Any sort of -- how dare they. My understanding is that the Nuclear Regulatory is relicensing any plant nationwide for continued operation and this involves refurbishment. (**0040-17-10** [Noonan, Henry])

Response: *License renewal is outside the scope of the environmental review of the Fermi 3 COL application. The Commission has established rules for the environmental and safety reviews to be conducted regarding a license renewal application. Section 54.17(c) of 10 CFR 54.17(c) allows licensees to submit license renewal applications up to 20 years before the expiration of the current license. More information about license renewal can be found at the NRC Web site, http://www.nrc.gov. No changes were made to the EIS as a result of this comment.*

Comment: Financial resources should be provided to the City to higher staff to operate, maintain, and calibrate equipment and then to provide reports for public consumption. (**0059-3** [Keegan, Michael J.])

Response: *The proposed provision of financial resources to the City of Monroe to operate and maintain equipment to detect potential chemical contamination allowed under the Fermi NPDES*

permits is outside the scope of the environmental review and NRC's mission and authority. No changes were made to the EIS is response to this comment.

Comment: Germans are really smart-that's a historic fact. Why then, is Germany decommissioning all their plants? Wake UP! (**0030-10** [Podorsek, Edward])

Response: *The NRC is not involved in establishing energy policy. The NRC has no role in promoting nuclear power. Issues relating to the national policy on decommissioning existing reactors or building new reactors are outside the scope of NRC's mission and regulatory authority. Rather, the Congress and the President establish the energy policy of the United States, and the DOE implements that policy at the direction of the President. The NRC was created by Congress and designed so that it would not report to the same part of the government that was in charge of setting energy policy. The public has been given the opportunity to participate in the rulemaking process that established the regulations that govern its review process. No changes to the EIS were made as a result of this comment.*

Comment: Finally, I request the information that David Lochbaum, Union of Concerned Scientists, made in his Demand for Information regarding the boiling water reactor licensees with Mark I and Mark II containment designs, of which Fermi 2 is and Fermi 3 is proposed.

And I would also like a copy of the NRC's Lessons Learned report from the Fukushima disasters. (**0016-4-40** [Collins, Jessie])

Response: *The requested information can be found in the public ADAMS library on the NRC Web site, http://www.nrc.gov. The NRC's response to David Lockbaum's request on behalf of the Union of Concerned Scientists that the NRC issue a Demand for Information to a number of BWR licensees with Mark I and Mark II containment designs can be accessed through ADAMS at ADAMS Accession No. ML112800606 or ML112800629. The response indicates that the NRC Petition Review Board (PRB) determined that the petition meets the criteria for review. The PRB also noted that the topic of the petition, "the effects of the spent fuel pool during an accident," is currently undergoing NRC review as part of the lessons learned from the Fukushima event to inform its final decision on whether to implement the actions requested in the petition. The NRC's* Near-Term Task Force Review of Insights from the Fukushima Dai-Ichi Accident *can be accessed from ADAMS at ADAMS Accession No. ML111861807 (NRC 2011c). On March 19, 2012, the NRC issued three Orders and a request for information to holders of U.S. commercial nuclear reactor licensees to begin implementation of several recommendations for enhancing safety at U.S. reactors based on lessons learned from the event at Japan's Fukushima Dai-ichi nuclear power plant. One of the orders identifies requirements for reliable spent fuel pool level instrumentation and requires licensees to install enhanced equipment for monitoring water levels in each plant's spent fuel pool (77 FR 16082). No change was made to the EIS as a result of this comment.*

Comment: DTE plans on using the old boiling water technology instead of the more expensive, safer French method/reactor type. Why is that-well it's pretty simple- It's again, all about the $$$$$$$$$$$$$$$$$$$$$$$$$ (**0030-6** [Podorsek, Edward])

Response: *The COL applicant is responsible for selecting the reactor design it wishes to have reviewed by the NRC during the licensing process, and the cost of the particular reactor design is not within NRC's regulatory jurisdiction. The NRC then reviews the application in accordance with its regulations and its licensing procedures. By separate action, the NRC has certified certain reactor designs as conforming to its safety standards, including the design selected by the applicant for Fermi 3. Final design certification rulemaking is expected to be completed by early 2013. In addition to the environmental impacts of the proposed reactor discussed in this EIS, the Commission's decision whether to license the proposed reactor is also informed by the safety evaluation that NRC also separately conducts. The results of that safety evaluation are available on the NRC Web site. No change was made to the EIS as a result of this comment.*

Comment: 1. DTE Officials (Privately told me directly) and records show concern for loss of revenue, less demand, less coal-rail hauling revenue projections.
2. DTE Board of Directors and Management team respond to stock holder, wall street expectation of decisions to serve stockholders (& bonus, comp, incentives)
3. NRC is subject to intense lobby efforts - political pressures and NEI influence
Therefore
The conflict of interest - career and professional survival mandate to serve those expectations
DTE's proposal serves stockholders, their industry partners and SEC's historical "oversight"
Risk is all public - not corporate. (**0081-1** [Anonymous])

Response: *The comment does not provide information relevant to the EIS and is outside the scope of the EIS. No change was made to the EIS as a result of this comment.*

E.2.38 Comments Concerning Issues Outside Scope - NRC Oversight

Comment: The EIS is deficient because it doesn't take into account the environmental impact of poor regulatory policy. (regulatory capture or deep capture). (**0003-1-6** [Anderson, Christy])

Comment: More recently the NRC has been accused of doing an inadequate job by the Union of Concerned Scientists. On March 17, 2011, the Union of Concerned Scientists (UCS) released a study critical of the NRC's 2010 performance as a regulator. The UCS said that over the years, it had found the NRC's enforcement of safety rules has not been "timely, consistent, or effective" and it cited 14 "near-misses" at U.S. plants in 2010 alone.
http://www.washingtonpost.com/business/economy/democrats-step-uppressure-on-nuclear-regulators-over-disaster-preparedness/2011/03/17/ABLd66n_story.html

So let's be perfectly clear here because we HAVE to get this right. The Chairman of the NRC and David Lochbaum from the Union of Concerned Scientists have repeatedly questioned the safety of nuclear plants in the US including the Fukushima Plant's general Electric Mark 1 reactor design (that is also a quarter of the US' nuclear fleet.) That, along with a WHOLE host of other nuclear watchdogs, whistleblowers, industry people and regulatory people(which are too long to list here http://files.asme.org/asmeorg/NewsPublicPolicy/GovRelations/PublicPolicyAgenda/30117.pdf) are critical of current nuclear policy but the USACE and NRC have produced an EIS that the people of Monroe are expected to be satisfied with. The F3EIS addresses some safety and technical points but doesn't sufficiently address even the "experts in the fields" concern? Some of these standard's deficiencies will take years upon years to implement and the current F3EIS has not even acknowledged them in light of the latest disaster. (**0003-2-2** [Anderson, Christy])

Comment: The EIS is deficient because it doesn't take into account the environmental impact of poor regulatory policy which includes regulatory capture, deep capture, and the Japanese term 'soteigai' all of which invite public distrust and possible disaster.

Soteigai was a term used in one of the reports prepared for government and public awareness after the Fukushima disaster. Soteigai means "outside our imagination," which the report said, "implied authorities were shirking responsibility for what had happened. The report said by labeling the events as beyond what could have been expected, officials had invited public distrust." http://www.washingtonpost.com/world/asia-pacific/japan-investigation-findsnuclear-disaster-response-riddled-with-problems/2011/12/26/gIQA7kqNIP_story.html

Frank N. von Hippel, Professor and Co-Director, Program on Science and Global Security, states: "Nuclear power is a textbook example of the problem of "regulatory capture" - It is a form of government failure in which an industry gains control of an agency meant to regulate it. Regulatory capture can be countered only by vigorous public scrutiny and Congressional oversight, but in the 32 years since Three Mile Island, interest in nuclear regulation has declined precipitously."

Then-candidate Barack Obama said in 2007 that the five-member NRC had become "captive of the industries that it regulates" and Joe Biden indicated he had absolutely no confidence in the agency.

Regulatory capture occurs because groups or individuals with a high-stakes interest in the outcome of policy or regulatory decisions can be expected to focus their resources and energies in attempting to gain the policy outcomes they prefer, while members of the public, each with only a tiny individual stake in the outcome, will ignore it altogether.

Likelihood of regulatory capture is a risk to which an agency is exposed by its very nature. This suggests that a regulatory agency should be protected from outside influence as much as

possible. Alternatively, it may be better to not create a given agency at all lest the agency become victim, in which case it may serve its regulated subjects rather than those whom the agency was designed to protect. A captured regulatory agency is often worse than no regulation, because it wields the authority of government or can ignore the authority it wields.

A perfect example of regulatory capture (or sheer negligence) in our own backyard would be this: The Nuclear Regulatory Commission has violated the Administrative Procedures Act through improper notification of the public with regards to modifications of the Fermi 2 license as it pertains to storage of high level nuclear waste on the shores of Lake Erie. Site Specific concerns have been raised by the Interveners which provide an “Opportunity for Hearing”, but the public was not properly notified. Hmmmm....a mere oversight by a government regulatory agency with an outcome that just so-happens to favor private industry? Deep capture is a phenomenon that extends beyond just political agencies and organizations. Businesses have an incentive to control anything that has power over them, including institutions from the media to academia to popular culture, and thus will try to capture them as well. They call this phenomenon “deep capture.” (**0003-2-8** [Anderson, Christy])

Comment: The NRC has given a license to every single reactor requesting one, prompting Greenpeace USA nuclear policy analyst Jim Riccio to refer to the agency approval process as a “rubber stamp”. In Vermont, ten days after the 2011 Tohoku earthquake and tsunami that damaged Japan’s Daiichi plant in Fukushima, the NRC approved a 20-year extension for the license of Vermont Yankee Nuclear Power Plant, although the Vermont state legislature had voted overwhelmingly to deny such an extension. The Vermont plant uses the same GE Mark 1 reactor design as the Fukushima Daiichi plant. The plant had been found to be leaking radioactive materials through a network of underground pipes, which Entergy, the company running the plant, had denied under oath even existed. Representative Tony Klein, who chaired the Vermont House Natural Resources and Energy Committee, said that when he asked the NRC about the pipes at a hearing in 2009, the NRC didn’t know about their existence, much less that they were leaking. On March 17, 2011, the Union of Concerned Scientists (UCS) released a study critical of the NRC’s 2010 performance as a regulator. The UCS said that through the years, it had found the NRC’s enforcement of safety rules has not been “timely, consistent, or effective” and it cited 14 “near-misses” at U.S. plants in 2010 alone Tyson Slocum, an energy expert at Public Citizen said the nuclear industry has “embedded itself in the political establishment” through “reliable friends from George Bush to Barack Obama”, that the government “has really just become cheerleaders for the industry.” http://en.wikipedia.org/wiki/Regulatory_capture#Nuclear_Regulatory_Commission_.28NRC.29 There have also been instances of a revolving door. Jeffrey Merrifield, who was on the NRC from 1997 to 2008 and was appointed by presidents Clinton and Bush, left the NRC to take an executive position at The Shaw Group, which has a nuclear division regulated by the NRC.

A year-long Associated Press (AP) investigation showed that the NRC, working with the industry, has relaxed regulations so that aging reactors can remain in operation. The AP found that wear and tear of plants, such as clogged lines, cracked parts, leaky seals, rust and other deterioration resulted in 26 alerts about emerging safety problems and may have been a factor in 113 of the 226 alerts issued by the NRC between 2005 and June 2011. The NRC repeatedly granted the industry permission to delay repairs and problems often grew worse before they were fixed.
http://en.wikipedia.org/wiki/Regulatory_capture#Nuclear_Regulatory_Commission_.28NRC.29

(**0003-2-9** [Anderson, Christy])

Comment: On Wednesday, Dec. 1, 2011 the Fermi 2 nuclear power plant in Monroe, Michigan experienced radioactive floodwaters pouring through walls and ceilings and standing one to two inches deep in plant buildings. This happened when a waste water holding tank valve stuck open, causing the tank to overflow. A half dozen workers' shoes and clothes were saturated by the radioactive water. Although Detroit Edison officials were quick to say "no radiation dose" was suffered by any workers, this simply cannot be the truth, as tritium (radioactive hydrogen), almost certain to have been in the radioactive water, can pass through human skin. Thus, the workers' radiation dose was more than zero. And although NRC, as is its habit, downplayed any radiological risk to the public, the fact that at least 100 gallons of the radioactive water did reach the Monroe County sewer system and water treatment plant means that at least some radioactivity was discharged into Lake Erie. Again, the radiation release to the environment, and potential for radiation doses to members of the public, although diluted and perhaps small, is greater than zero. As Dr. Rosalie Bertell has said, "Dilution is not the solution to radioactive pollution!" DTE Energy's website has yet to publicly report the incident at its reactor. And although the story appeared in the small local Monroe Evening News, it has yet to be picked up by any large circulation US newspapers or television news programs. Only 100 gallons? Yeah. Right. It could be 10,000 gallons for all we know. http://www.beyondnuclear.org/tritium/
(**0003-4-10** [Anderson, Christy])

Comment: Following the October 20 release of a vote of the 5-member Commission, a press release stated that "The Nuclear Regulatory Commission has directed the agency's staff to begin immediately implementing seven safety recommendations from the NRC's Near-Term Task Force on lessons learned from the reactor accident at Fukushima." These seven safety recommendations were categorized by the staff as actions that could be taken "without delay." They include a crucially important upgrade to the requirements for nuclear plants to be able to cool the reactor core and spent fuel during a station blackout - when there is no AC electrical power. Such a "station blackout" resulted from the tsunami in Fukushima and led to the reactor meltdowns.

However, the Commission took a step backwards in a second vote on December 15. The Commission has now reserved for itself the future right to reject any of the safety upgrades the

NRC staff is now working to implement, even though it originally instructed the staff to implement them without delay.

Instead of determining that these safety upgrades as a group are necessary to ensure "adequate protection to the health and safety of the public" - the standard set by the Atomic Energy Act - the Commission ordered the staff to submit further justifications for each new regulatory requirement. This means that the Commission will have the opportunity to vote on each proposed new requirement separately as to whether or not it is needed for "adequate protection." (**0026-6-41** [Macks, Vic])

Comment: According to the NRC regulation known as the "backfit rule," if the Commission decides that a proposed new regulatory requirement is not needed for "adequate protection," then it cannot be adopted unless it passes a cost-benefit test. And since the guidelines for how the NRC conducts cost-benefit analyses are rooted in a pre- Fukushima way of thinking, there is little chance that any regulatory action based on a post-Fukushima understanding of risk would pass the test.

Here is a simple example why this is the case:

One of the Fukushima Near-Term Task Force's recommendations is to modify emergency planning guidelines to address the potential for multi-unit accidents. Yet the analyses that would be used to assess the risk reduction associated with this upgrade are based only on single-unit accidents. So in effect, the current framework assumes that the risk of a multi-unit accident is so small that it is essentially zero, and does not consider the potential for a single event to affect multiple units. Therefore, there would be virtually no risk reduction associated with the emergency planning upgrade and it would fail the cost-benefit test.

One might think, therefore, that the NRC should modify its cost-benefit analysis guidelines to incorporate lessons learned from Fukushima before using such an analysis to assess the costs and benefits of the other recommended upgrades to safety requirements. Indeed, the Near Term Task Force considered development of a new post-Fukushima regulatory framework to be its top recommendation.

However, the Commission ordered the staff to put such an effort on the back burner, effectively leaving it to be resolved only after all the other recommendations had been addressed. This has created a pattern of circular reasoning that could endanger the implementation of all the other proposed actions, and could leave the NRC chasing its tail for years to come.

The Commission could - and should - give the NRC staff an unequivocal green light to proceed with implementing the full set of post-Fukushima safety upgrades. The NRC's broad authority to decide on what constitutes "adequate protection" is, according to a presentation by NRC Commissioner William Ostendorff earlier this year, "virtually unique in administrative law."

Former NRC Chairman Joseph Hendrie, in a 1979 speech quoted by current Chairman Gregory Jaczko in a recent vote, summed it up as “adequate protection means what the Commission says it means, and we mean it to require a very high level of safety.”

The NRC has used this power in the past to authorize sweeping regulatory upgrades, most recently in the aftermath of the 9/11 attacks. The Near-Term Task Force has made a very compelling case why this should set a precedent for the Commission to redefine adequate protection again today:

The Task Force notes that, after the attacks of September 11, 2001, the Commission established new security requirements on the basis of adequate protection. These new requirements did not result from any immediate or imminent threat to NRC-licensed facilities, but rather from new insights regarding potential security events. The Task Force concluded that the Fukushima Dai-ichi accident similarly provides new insights regarding low likelihood, high-consequence events that warrant enhancements to defense-in-depth on the basis of redefining the level of protection that is regarded as adequate.

However, instead of modeling its post-Fukushima response on its response to the 9/11 attacks, the Commission is holding the sword of Damocles over each proposed new safety requirement. Each will take months to years of NRC staff time to develop, yet will be subject to the whims of the current or future Commissioners. This uncertainty has created a process that is at best highly inefficient and at worst a recipe for many years of inaction. The vote was quite lopsided. NRC Commissioners Apostolakis, Magwood, Ostendorff, and Svinicki all voted to assess each potential new regulatory requirement separately; only Chairman Jaczko voted to move forward more expeditiously. The bottom line is that the majority decision in this case could potentially undermine the NRC’s ability to promptly address critical safety vulnerabilities at U.S. plants that could well result in a Fukushima-scale disaster occurring here. Ed Lyman, Union of Concerned Scientists http://allthingsnuclear.org/post/14624150915/nrcs-post-fukushimaresponse-going-in-circles

- The NRC blocked implementation of its staff recommendations for safety improvements as indicated in Summary and excerpts from Congressman Makey’s report:

- Four NRC Commissioners attempted to delay and otherwise impede the creation of the NRC Near-Term Task Force on Fukushima;

- Four NRC Commissioners conspired, with each other and with senior NRC staff, to delay the release of and alter the NRC Near-Term Task Force report on Fukushima;

- The other NRC Commissioners attempted to slow down or otherwise impede the adoption of the safety recommendations made by the NRC Near-Term Task Force on Fukushima;

- NRC Chairman Greg Jaczko kept the other four NRC Commissioners fully informed regarding the Japanese emergency, despite claims to the contrary made by these Commissioners. http://markey.house.gov/docs/regulatory_meltdown_12.09.11.pdf

The consideration of the Fukushima safety upgrades is not the only safety-related issue that the other NRC Commissioners have opposed. The Commissioners currently serving at the NRC regrettably have a history of voting against the safety recommendations put forward by technical experts, including its own advisory committees. Some of these votes have occurred since the March 11 earthquake and tsunami. What follows is a summary of these votes:

April 15, 2009: The Commission voted 4-1 (Chairman Jaczko disapproved, Commissioner Svinicki approved, and the other Commissioners who voted have since left the NRC) to support a proposal to enhance the security associated with cesium chloride sources rather than to phase out the most dispersible form of the material altogether as recommended by the National Academies of Science in 2008. Cesium chloride is so dangerous that after scavengers found a small amount in Brazil in 1987 and children and others spread it on their bodies, 250 people were contaminated, 20 became ill with symptoms of radiation poisoning and 4 died.

June 30, 2009: The Commission voted 2-2 (Chairman Jaczko approved, Commissioner Svinicki disapproved, and the other Commissioners who voted have since left the NRC)) to defeat a staff proposal to expand the National Source Tracking System to include Category 3 radioactive sources, which the International Atomic Energy Agency says, if not safely managed or securely protected, could cause permanent injury to a person who handled them, or were otherwise in contact with them, for some hours.

June 1, 2010: The Commission voted 4-1 (with only Chairman Jaczko voting to disapprove) in support of a proposal to reduce the limitation on the number of work hours for employees who perform quality control and quality verification functions at nuclear power plants.

September 7, 2010: The Commission voted 4-1 (with only Chairman Jaczko voting to disapprove) to support a proposal to stop having separate votes on all requests to be exempted from the requirement that “near-site emergency operations facilities” be located near to the site of where the actual nuclear reactor emergencies or accidents might occur. Licensees have instead proposed the creation of centralized emergency operations facilities’ that are hundreds of miles away from the nuclear reactors located in multiple States they are intended to serve.

December 2, 2010: The Commission voted 4-1 (with only Chairman Jaczko voting to approve) to disapprove a proposal to require specific NRC licenses for radioactive materials that could be used to make a dirty bomb whose activity level is greater than 1/10th of “Category 3,” even though a previous Commission had supported such a proposal. Requiring a license would have alleviated some concerns related to the potential for a terrorist to aggregate these smaller sources to create a larger improvised dirty bomb.

March 15, 2011: The Commission voted 4-1 (with only Chairman Jaczko voting to disapprove) to approve a staff proposal to ignore a recommendation by NRC's Advisory Committee on Reactor Safeguards to ensure that safety measures that are assumed to address the hotter reactor cores and higher pressures associated with power up-rates (which enable nuclear reactors to produce more electricity) would work to prevent a melt-down in the event of an accident. The Advisory Committee believed that the possibility that a fire or earthquake could breach the containment of the nuclear reactor needed to be considered.

March 30, 2011: The Commission voted 4-1 (with only Chairman Jaczko voting to approve) to disapprove a staff proposal to add requirements for personnel seeking access to nuclear reactor construction sites to ensure that appropriate security screening was conducted. The Commission instead decided to rely on a voluntary Nuclear Energy Institute personnel security initiative.

November 8, 2011: The Commission voted 3-2 (with Chairman Jaczko and Commissioner Ostendorff voting to approve) to disapprove a staff proposal that the Commission adopt an amendment to its Reactor Oversight Process,95 described as "a means to collect information about licensee performance, assess the information for its safety significance, and provide for appropriate licensee and NRC response," to add a new performance measure related to leaks of radioactive materials from nuclear reactors.
http://www.nrc.gov/reactors/operating/oversight/rop-description.html
See also: http://allthingsnuclear.org/post/9622364770/nrcs-path-after-fukushima-still-lined-with-pitfalls New York Times May 7, 2011 (**0026-6-42** [Macks, Vic])

Comment: Nuclear Agency Is Criticized as Too Close to Its Industry - By TOM ZELLER Jr.
In the fall of 2007, workers at the Byron nuclear power plant in Illinois were using a wire brush to clean a badly corroded steel pipe - one in a series that circulate cooling water to essential emergency equipment - when something unexpected happened: the brush poked through. The resulting leak caused a 12-day shutdown of the two reactors for repairs.

The plant's owner, the Exelon Corporation, had long known that corrosion was thinning most of these pipes. But rather than fix them, it repeatedly lowered the minimum thickness it deemed safe. By the time the pipe broke, Exelon had declared that pipe walls just three-hundredths of an inch thick - less than one-tenth the original minimum thickness - would be good enough. Though no radioactive material was released, safety experts say that if enough pipes had ruptured during a reactor accident, the result could easily have been a nuclear catastrophe at a plant just 100 miles west of Chicago. (**0026-6-43** [Macks, Vic])

Comment: Exelon's risky decisions occurred under the noses of on-site inspectors from the federal Nuclear Regulatory Commission. No documented inspection of the pipes was made by anyone from the N.R.C. for at least the eight years preceding the leak, and the agency also failed to notice that Exelon kept lowering the acceptable standard, according to a subsequent

investigation by the commissions inspector general. Exelon's penalty? A reprimand for two low-level violations - a tepid response all too common at the N.R.C., said George A. Mulley Jr., a former investigator with the inspector general's office who led the Byron inquiry. "They always say, 'Oh, but nothing happened,' " Mr. Mulley said. "Well, sooner or later, our luck - you know, we're going to end up rolling craps."

Critics have long painted the commission as well-intentioned but weak and compliant, and incapable of keeping close tabs on an industry to which it remains closely tied. The concerns have greater urgency because of the crisis at the Fukushima Daiichi plant in Japan, which many experts say they believe was caused as much by lax government oversight as by a natural disaster.

The Byron pipe leak is just one recent example of the agency's shortcomings, critics say. It has also taken nearly 30 years for the commission to get effective fireproofing installed in plants after an accident in Alabama. The N.R.C.'s decision to back down in a standoff with the operator of an Ohio plant a decade ago meant that a potentially dangerous hole went undetected for months. And the number of civil penalties paid by licensees has plummeted nearly 80 percent since the late 1990s - a reflection, critics say, of the commission's inclination to avoid ruffling the feathers of the nuclear industry and its Washington lobbyists.

Although the agency says plants are operating more safely today than they were at the dawn of the nuclear industry, when shutdowns were common, safety experts, Congressional critics and even the agency's own internal monitors say the N.R.C. is prone to dither when companies complain that its proposed actions would cost time or money. The promise of lucrative industry work after officials leave the commission probably doesn't help, critics say, pointing to dozens over the years who have taken jobs with nuclear power companies and lobbying firms. Now, as most of the country's 104 aging reactors are applying for, and receiving, 20-year extensions from the N.R.C on their original 40-year licenses, reform advocates say a thorough review of the system is urgently needed. (**0026-6-44** [Macks, Vic])

Comment: The agency's shortcomings are especially vexing because Congress created it in the mid-1970s to separate the government's roles as safety regulator and promoter of nuclear energy - an inherent conflict that dogged its predecessor, the Atomic Energy Commission.

"It wasn't much of a change," said Peter A. Bradford, a former N.R.C. commissioner who now teaches at Vermont Law School. "The N.R.C. inherited the regulatory staff and adopted the rules and regulations of the A.E.C. intact."

Mr. Bradford said the nuclear industry had implicitly or explicitly supported every nomination to the commission until Gregory B. Jaczko's in 2005. Mr. Jaczko, who was elevated to chairman by President Obama in 2009, had previously worked for both Representative Edward J. Markey, the Massachusetts Democrat and longtime critic of the nuclear industry, and Senator Harry

Reid, the Nevada Democrat and current Senate majority leader who sought to block a nuclear waste repository in his state.

Mr. Jaczko acknowledges that the agency needs to move faster on some safety issues. But he defends its record. “I certainly feel very strongly that this is an independent regulator that will make what it thinks are the right decisions when it comes to safety,” he said. “There will be people who will agree, and some people who will disagree. That’s part of the process.”

For all the agency’s shortcomings as a regulator, even the most vocal critics acknowledge that it should not be compared to the Minerals Management Service, the scandal-plagued agency that oversaw the oil and gas industry and was reorganized by Mr. Obama after the BP oil spill last year. Still, David Lochbaum, a frequent critic of the N.R.C. who recently worked as a reactor technology instructor there, said the agency too often rolled the dice on safety. “The only difference between Byron and Fukushima is luck,” he said. (**0026-6-45** [Macks, Vic])

Comment: No Rejections
In recent years, the Vermont Yankee nuclear plant in Vernon, Vt., has had several serious operational problems. Situated on the banks of the Connecticut River, the 39-year-old Vermont Yankee, whose reactor is similar in design to the stricken plant in Japan, suffered the partial collapse of a cooling tower in 2007. In January 2010, the plant’s operator, Entergy, discovered that nearby soil and groundwater had been contaminated by radioactive tritium, which had apparently leaked from underground piping. Just months before, the company assured state lawmakers that no such piping existed at the plant. The Vermont Senate, concerned about the problems, voted overwhelmingly last year to prevent the plant from operating beyond the scheduled expiration of its license on March 21, 2012 - invoking a 2006 state law, unique to Vermont, that requires legislative approval for continued operations.

But one day before the quake and tsunami that set Japan’s crisis in motion, the N.R.C. approved Vermont Yankee’s bid for license renewal - just as it has for 62 other plants so far. Its fate is now the subject of a federal lawsuit. “How does a place like that get a license renewal” Mr. Lochbaum said. “Because they asked for one. Absent dead bodies, nothing seems to deter the N.R.C. from sustaining reactor operation.” (**0026-6-46** [Macks, Vic])

Comment: Indeed, no renewal application has been turned down by the agency since the first one was granted in 2000, although some have been sent back for more work before winning approval. It was not always so. When the industry first set out in the 1980s to prove that the original 40-year licenses on its aging plants could be safely renewed for 20 years, two plants - Yankee Rowe in Massachusetts and Monticello in Minnesota - were offered as test cases. The N.R.C.’s criteria for relicensing essentially required that operators prove that they were in compliance with their current license and that they had an adequate plan to manage the aging equipment for the extra 20 years. That tripped up Yankee Rowe’s bid, because inspectors

looking at its current operations found serious flaws in its reactor vessel. Rather than earn a renewal, the plant shut down with eight years left on its original license. (**0026-6-47** [Macks, Vic])

Comment: The failure threw the industry into turmoil. In 1992, Northern States Public Power, owner of the Monticello plant, complained that the agency was examining details beyond those necessary for license renewal. With billions of dollars of revenue and investment at stake for each plant, the N.R.C. changed the rules in 1995, scrapping the requirement that operators prove they were complying with their current license. Instead, the renewal process would focus only on the aging management plan. The agency described the change as providing a "more stable and predictable regulatory process for license renewal."

But James Riccio, a nuclear policy analyst with Greenpeace, said, "The N.R.C. rule change gutted a substantive process and replaced it with a rubber stamp. They placed industry profits ahead of public safety."

To be sure, license renewal is still arduous. According to a 2007 audit by the inspector general's office, an operator typically spends two years and up to $20 million preparing an application, and the commission on average spends two years and $4 million reviewing it.

But the audit also concluded that it was often impossible to know whether the agency had truly conducted an independent review of an application or why approval was granted. In some cases, for example, long passages in the commission's assessment of a renewal appeared to have been simply copied and pasted directly from the application. And in a 2008 follow-up memo described to a reporter, the N.R.C.'s inspector general, Hubert T. Bell, went further, suggesting that the N.R.C. staff was unable to adequately document its reviews and may have destroyed essential records.

Asked about those issues, Mr. Jaczko said that the copying and repetition was intentional. "We want licensees to take those programs that we find are the best practices and use those," he said. "So in many cases, those were showing up in applications and the staff was then looking at those and saying yes, those were acceptable."

As for the lack of documentation backing up each decision, "not all of that information gets incorporated into a formal docket for license renewal," Mr. Jaczko said. "We did reconfirm that there had not been any information that had been missed or any information that would change any of the conclusions in the license renewal decisions." (**0026-6-48** [Macks, Vic])

Comment: Deference to Industry
The N.R.C.'s slowness in addressing serious problems is another concern. In 1975, a blaze at the Browns Ferry plant in Alabama crippled electrical wiring used to control critical cooling equipment in one of the reactor units. The incident set off alarm bells at the N.R.C., which issued new fire protection regulations in 1980. But over the next three decades, according to

two internal agency investigations, the commission approved a succession of faulty or ineffective fire barrier materials. It then dragged its feet in the face of mounting evidence that the materials, even after being installed in dozens of plants, were failing to perform as advertised. One of the earliest materials, Mr. Mulley said, was a product called Thermo-lag, which the commission approved based on what turned out to be fraudulent lab tests submitted by an obscure company. “No inspector ever bothered to check out the lab or to question the results,” said Mr. Mulley, who investigated the case for the agency.

Last year, the N.R.C. issued a 355-page report in which it suggested that the fire barrier issue had been finally sorted out, even though most plants were technically still not complying with the regulations. The agency has little choice but to tolerate violations, said Mr. Lochbaum, who heads the Nuclear Safety Project with the Union of Concerned Scientists, an environmental and nuclear watchdog group based in Cambridge, Mass. “Otherwise, nearly all the U.S. reactors would have to shut down,” he said.

Asked about the fire barrier fiasco, Mr. Jaczko said he would like the agency to put safety rules into effect more quickly. “I’ve certainly been pushing for some time that we do these things in a more timely manner,” he said. But the issues are complicated. “They involve very complex, technical findings, and then ultimately they involve complex plant modifications in some cases,” he said.

Mr. Mulley suggested that the companies themselves played a role in delaying the rules. “There were good fire barrier materials on the market from 3M and other companies that people knew and trusted,” he said. “But these plant operators kept complaining that they were too expensive. So some company that no one has ever heard of comes along, with tests from a lab that no one has ever heard of, for a material that’s cheaper than anything else on the market, and the N.R.C. says, “Perfect! Use this!.” (**0026-6-49** [Macks, Vic])

Comment: The agency’s deferential attitude also brought the Davis-Besse plant in Ohio to the brink of the worst American nuclear accident since the Three Mile Island meltdown of 1979. On Aug. 3, 2001, armed with mounting evidence of potentially dangerous cracks and leaks in control nozzles that penetrate the vessel heads at most reactors, the commission asked 12 nuclear plants to conduct inspections. The inspections required a temporary but expensive shutdown, so regulators gave the plants until the end of the year to comply, and most did so. But FirstEnergy, owner of Davis-Besse, said it would look for the cracks during its next planned refueling shutdown - on March 22 the following year. In the test of wills that followed, the agency’s inspector general later concluded, it was the N.R.C. that blinked, agreeing to allow FirstEnergy to operate until mid- February. On March 6, 2002, workers finally conducted the inspections and found that acid used in the cooling water had eaten almost completely through the lid of the reactor. The plant was closed for two years for emergency repairs, two FirstEnergy engineers were convicted of lying to investigators and the company paid more than $33.5 million in civil and criminal penalties. “They should have just shut them down,” said

Mr. Mulley, who investigated the case. “But the attitude at N.R.C. was always, - You can’t shut them down. They’ll fight us in court.” (**0026-6-50** [Macks, Vic])

Comment: The Byron case in Illinois, while not as dangerous as Davis-Besse, was similar in that it revealed the industry’s predilection for deferring maintenance until more serious safety problems developed. Indeed, since the Three Mile Island accident, at least 38 nuclear power reactors have been forced to shut down for a year or more because of an accumulation of safety problems.

Marshall Murphy, an Exelon spokesman, said the company took “good learnings” from the Byron incident and improved its procedures. Eliot Brenner, an N.R.C. spokesman, said in an e-mail that the agency had also made several changes to its guidelines after the Byron case, including provisions that require inspectors to “tour areas that become accessible on an infrequent basis to assess the material condition and status of safety systems, structures, and components.”

But Mr. Lochbaum said the slap on the wrist delivered to Exelon ensured that similar incidents would occur in the future. “There’s no real regulatory discomfort imposed, so this sort of thing just continues,” he said.

Agency’s Gains
What frustrates some critics is that the N.R.C. has the expertise and resources - a staff of 4,000 and one of the highest densities of Ph.D.’s in government - to do a better job. (**0026-6-51** [Macks, Vic])

Comment: Indeed, there are some examples of the commission making tough decisions. In 2008, for example, workers at the Oconee plant in South Carolina discovered that a crucial line in the cooling system at Reactor Unit 1 was blocked by a broken gasket. The workers fixed it and the reactor was restarted. But the two N.R.C. inspectors assigned full time to Oconee quickly began asking why Duke Energy, the operator, wasn’t also inspecting corresponding valves and lines at the plant’s other two reactors. Duke said the clogging was isolated and a blocked line could be bypassed in a pinch. In February 2010, when the company finally agreed to look at the other two reactors, it discovered that the lines there had the same problem and that the bypass option would never have worked. The commission issued a “yellow finding” to Duke, its second-highest category of safety problem. The finding, which is rarely imposed, generally brings far more N.R.C. and media scrutiny, and can have financial implications for the company on Wall Street. N.R.C. officials said that the current oversight system, begun in 2000 and refined since then, has improved safety by focusing on the reactor systems most prone to failure - and most likely to pose a safety risk. Fewer violations are issued, but when they are, the agency uses different colors - green, white, yellow and red - to signal the severity of the problem in a public way.

“Bottom line is, we drive for long-term improvements in safety,” Mr. Brenner said. And by several measures, the N.R.C. notes, the nation’s nuclear plants appear to be getting safer. Incidents of worker radiation exposure and safety system failures are at their lowest levels in more than a decade. The number of “scrams” - which the N.R.C. defines as “the sudden shutting down of a nuclear reactor by rapid insertion of control rods, either automatically or manually by the reactor operator” - has been dropping as well. (**0026-6-52** [Macks, Vic])

Comment: Still, the nuclear industry is not shy about complaining, and if necessary, throwing around its weight with Congress, which approves the N.R.C.’s budget of roughly $1 billion a year. That was borne out in June 1998, when then-Senator Pete V. Domenici, a New Mexico Republican with strong ties to the nuclear industry and chairman of the subcommittee that funded the N.R.C., threatened to slash the agency’s budget.

Although the budget was not ultimately cut, Shirley Ann Jackson, then chairwoman of the commission, said in a speech to her staff that the industry had sent a clear message: “That we are inefficient, that we over-regulate, that we inspect too much, assess too much, enforce too much, take too long on licensing actions and employ an overly restrictive body of regulation.”
Industry Connections

As with many regulatory agencies, the movement from N.R.C. jobs to industry jobs - and sometimes vice versa - is a recurring issue. Many engineers and technicians, of course, join the agency directly out of school, work in the field and remain with the commission their entire careers. But for others, particularly officials at the highest levels, the commission can be a steppingstone to more lucrative work in the private sector. That was certainly the case for one commissioner, Jeffrey S. Merrifield. Shortly after Mr. Merrifield retired from the commission in 2007, Shaw, a nuclear services company, announced that he was taking a top executive position with the company. That stirred the suspicions of the Project on Government Oversight, a nonprofit watchdog group, which complained to the N.R.C. (**0026-6-53** [Macks, Vic])

Comment: Federal law prohibits government employees from taking part in matters that they know could financially benefit them or anyone with whom the employee is negotiating or seeking employment. But according to an inspector general’s report on the case, Mr. Merrifield sought employment with not just Shaw but also General Electric and Westinghouse, both nuclear reactor makers, while still voting on two issues that affected them.

The conflict-of-interest case - which also included an allegation that Mr. Merrifield failed to disclose, upon departing the government, that he accepted travel reimbursements of $3,552.47 during his job hunt - was referred by the N.R.C. to the Justice Department for possible civil action and to the United States attorney’s office in Maryland for potential criminal action. Both offices declined to pursue it. Mr. Mulley, who took part in the investigation, was outraged. “Even if the lawyers don’t want to go after him, the N.R.C. could make an example of him if they wanted to,” he said. “They could speak out in some way. But they don’t.”

In a statement last month, Mr. Merrifield said he told investigators and prosecutors that he did not believe, based on legal advice, that he had acted inappropriately, but that if he had been told a conflict existed, he would have recused himself. He added that when he was alerted to the disclosure oversight, he immediately filed the correct forms. “Though the antinuclear community continues to try to raise these concerns,” Mr. Merrifield said, “I firmly believe that throughout my time as an N.R.C. commissioner, I acted in a fair and impartial manner and in the best interest of public health and safety.” Other commissioners have also had close ties to the industry. Environmental groups and industry monitors were angered, for example, when Mr. Obama nominated William D. Magwood, a former employee of Westinghouse Electric and more recently director of the Energy Department’s nuclear expansion program, to fill a vacant seat on the commission last year.

“Given his more than a dozen years promoting nuclear power, we do not believe Mr. Magwood has the independence from the nuclear power industry, nor the security oversight background, to regulate it,” said Danielle Brian, executive director of the Project on Government Oversight. In a letter in March to the oversight project about the Merrifield case, Mr. Jaczko rejected the group’s recommendation that job-seeking employees be required to recuse themselves in writing from matters affecting possible postcommission employers. “The failure of employees to disqualify themselves has not previously been an issue at the N.R.C., and absent evidence of a wider problem, the N.R.C. does not believe that additional reporting requirements are warranted,” he wrote.

Marvin S. Fertel, the president and chief executive of the Nuclear Energy Institute, the main industry lobby, took issue with the notion that the N.R.C. was captive to business interests. “Is there too much coziness? No,” Mr. Fertel said. “Do I think there’s respect? Yes.” That includes a willingness on the part of N.R.C. to consider the financial impact of its rules on operators, he said. Mr. Fertel said that as the N.R.C. has expanded to deal with the flood of relicensing applications, it has increasingly hired talent from within the industry. “It’s only a problem if you think getting good expertise is a problem,” he said. But Mr. Mulley argued that the prospect of one day landing a lucrative position with a private company almost certainly played a role in softening the positions of some commission employees. “The N.R.C. is like a prep school for many of these guys, because they know they’ve got a good shot at landing much higher-paying work with the people they’re supposed to be keeping in line,” (**0026-6-54** [Macks, Vic])

Comment: The biggest thing is that the cautionary principle needs to be applied to all the considerations that members of the nuclear free great lakes coalition have brought up, even though those contentions have almost all been already rejected by the NRC. (**0029-1-4** [Newnan, Hal])

Comment: So I find myself thinking that DTE and the NRC are in fact not listening to the public, but rather rationalizing decisions that merely maximize industry profits at great risk to the public (financial/health etc.), despite the mission statements of the NRC. (**0029-1-5** [Newnan, Hal])

Comment: Rubber stamping the license for DTE seems to be what the NRC is all about; and that is to be expected from a quasi-governmental regulatory agency that has been taken over by the industry it is supposed to regulate. (**0029-2-1** [Newnan, Hal])

Comment: On a personal note, I want to remind the NRC review team that they, to quote a character in the TV drama, The West Wing, "are supposed to be the good guys -- act like it." I know there are a lot of smart, caring, well-meaning folks on the NRC review team. I know that you don't want to turn the Detroit metro area into an uninhabitable wasteland. I also know that many on the NRC team would be willing to concede that not everyone in opposition to this thing is a radical, misinformed, tree-hugging, hippie who wants to send us all back to the Dark Ages. But you folks work for the taxpayers, not the nuclear power industry. Even if you hope one day to work for the nuclear power industry where the pay might be better and respect more forthcoming, you must also be willing to concede the possibility of cognitive capture on the part of at least some of the folks at the NRC. There are better options to nuclear power, I am sure of that, and I am a decent, well-meaning, tree-hugging, hippie -- at least according to some (my wife included). Give alternative views a chance. Consider that the industry might be going in the wrong direction. Remember it is your job to keep the industry from taking the rest of us with them when they do go in the wrong direction. Thanks for your efforts! You have my respect and admiration for doing a difficult job in the absence of sufficient praise and appreciation. (**0034-1-6** [Welke, Jim])

Comment: A couple of points to begin. First of all, though I live on the east side of Detroit, I grew up in Trenton, Michigan, a little bit north of here, about halfway between, roughly about halfway between Detroit and Monroe, as Monroe is about halfway between Toledo and Detroit. So when I hear people talk about the importance of being within a 10-mile radius of Fermi 2, or whether you can see if from your backyard, or whether you're connected to the Monroe community, I was six years old the first time DTE, Detroit Edison's predecessor, was trying to mess around with that reactor in Monroe, having no idea what their interventions would do, because they couldn't possibly in the that state of technology, and risking the lives of everybody in this area. I take it very personally what goes on with these kinds of decisions. I have two children that live within the blast range or the contamination range of this area. So this is a very personal issue for me. And you know, frankly, with what's going on in the world, what's going on out in Lake Erie, with what's going on in the great lakes bio-region, to be perfectly honest, I am both extremely angry and extremely fearful. And I think I feel that fear in this room, and I heard it in people. What's going on right now and what has happened with, you know, the way our industrial society, the power industry, DTE and other similar corporations have bought our Congress and manipulated our regulatory system. Are still trying to take over the NRC as we

know with the scandal in Washington with the plant from the former Tepco, Japanese, Tokyo Electronic Power Company agent who's trying to take over the NRC. I mean, we have a textbook case, the textbook case of regulatory capture here by an industry that is a failed industry. So I'm trying to stay civil here, in spite of my anger and my fear for my life and the life of my family, and my whole region, my whole community. (**0039-32-1** [Stephens, Thomas])

Comment: So, I find myself thinking that DTE and the Nuclear Regulatory Commission are in fact not listening to the public, but rather rationalizing decisions that merely maximize industry profits at great risk to the public, despite the mission statements of the NRC. (**0040-17-2** [Noonan, Henry])

Comment: Rubber stamping a license for DTE seems to be what the NRC is all about, and that is what is expected from a -- governmental regulatory agency that has been taken over by the industry to -- to regulate. (**0040-17-4** [Nixon, Dave])

Comment: Members of the Nuclear Regulatory Commission (hereinafter referred to as the NRC) have conflicts of interest that prevent an unbiased decision as regards the Draft Environmental Impact Statement (DEIS Fermi 3) or any other environmental impact statement. None have training in low dose radiation risk, dosimetry, cell biology, or environmental causation of disease. Furthermore, three commissioners are trained as engineers and have no academic background in radiation risk assessment. Two have worked for the Department of Energy, whose remit is to promote atomic power, and three have held congressional staff positions. These conflicts may interfere with their mandate under the Atomic Energy Act of 1954 "to protect health and safety and minimize danger to life or property." For most of its existence the NRC has been dominated by the nuclear industry and has operated in the private interest. Commission approval of over 60 requests to extend for another 20 years the licenses of existing reactors without independent scientific review and the callous disregard for public input (without adequate funding for intervenors) does not inspire confidence that the Commission will protect the public health and safety.

The Conflicted Commissioners

1. Gregory B. Jaczko, PhD, physics; designated Chairman of the U.S. Nuclear Regulatory Commission by President Barack Obama on May 13, 2009. He was first sworn in as a Commissioner on Jan. 21, 2005, and his term runs through June 2013; served as appropriations director and science advisor for U.S. Sen. Harry Reid.

2. Kristine L. Svinicki, BS, nuclear engineering; spent over a decade as a staff member in the United States Senate; served as a professional staff member on the Senate Armed Services Committee for the Committee's former Chairman, Sen. John Warner, R-Va., and, subsequently, for the Committee's ranking Republican member, Sen. John McCain, R-Ariz. Previously, Ms. Svinicki worked as a nuclear engineer in the U.S. Department of Energy's Washington, D.C.

Offices of Nuclear Energy, Science and Technology, and of Civilian Radioactive Waste Management, as well as its Idaho Operations Office, in Idaho Falls, Idaho; longstanding member of the American Nuclear Society.

3. George Apostolakis was sworn in as a Commissioner of the U.S. Nuclear Regulatory Commission (NRC) on April 23, 2010, to a term ending on June 30, 2014. Dr. Apostolakis has had a distinguished career as an engineer, professor and risk analyst. Before joining the NRC, he was the Korea Electric Power Corporation professor of Nuclear Science and Engineering and a professor of Engineering Systems at the Massachusetts Institute of Technology. He was also a member and former chairman of the statutory Advisory Committee on Reactor Safeguards of the NRC. Dr. Apostolakis received his diploma in electrical engineering from the National Technical University in Athens, Greece in 1969. He earned a master's degree in engineering science in 1970 and a Ph.D. in engineering science and applied mathematics in 1973, both from the California Institute of Technology.

4. William D. Magwood, IV, BS in physics and B.A. in English; reappointment term ending June 30, 2015; served seven years as the Director of Nuclear Energy with the U.S. Department of Energy (DOE); senior nuclear technology policy advisor to the Secretary of Energy; founded and headed Advanced Energy Strategies, a company that provided strategic advice to domestic and international organizations; managed electric utility research and nuclear policy programs at the Edison Electric Institute (an industry think tank); also a scientist at Westinghouse Electric Corporation. (**0056-13** [Ehrle, Lynn Howard])

Comment: 5. William C. Ostendorff was sworn in as a Commissioner of the U.S. Nuclear Regulatory Commission (NRC) on April 1, 2010, to a term ending on June 30, 2011 (term renewed). Mr. Ostendorff has a distinguished career as an engineer, legal counsel, policy advisor, and naval officer. Before joining the NRC, Mr. Ostendorff served as the Director of the Committee on Science, Engineering and Public Policy and as Director of the Board on Global Science and Technology at the National Academies. Principal Deputy Administrator at the National Nuclear Security Administration from April 2007 until April 2009. From 2003 to 2007, he was a member of the staff of the House Armed Services Committee. There, he served as counsel and staff director for the Strategic Forces Subcommittee with oversight responsibilities for the Department of Energy's Atomic Energy Defense Activities as well as the Department of Defense's space, missile defense and intelligence programs. Mr. Ostendorff earned a bachelor's degree in systems engineering from the United States Naval Academy and law degrees from the University of Texas and Georgetown University. (**0056-14** [Ehrle, Lynn Howard])

Comment: The composition of the NRC Advisory Committee on Reactor Safeguards (ACRS) represents a blatant violation of the Federal Advisory Committee Act (FACA). Under 5 USC TITLE 5 - APPENDIX 01/02/01-- Sec. 5. (a) Responsibilities of Congressional committees; Any such legislation shall--

(1) contain a clearly defined purpose for the advisory committee;

(2) require the membership of the advisory committee to be fairly balanced in terms of the points of view represented and the functions to be performed by the advisory committee;

(3) contain appropriate provisions to assure that the advice and recommendations of the advisory committee will not be inappropriately influenced by the appointing authority or by any special interest, but will instead be the result of the advisory committee's independent judgment.

11 of 13 committee members have advanced degrees in engineering and/or lengthy engineering work in industry, a clear FACA violation requiring fair balance. Furthermore, 7 members had careers in nuclear industries and 9 had posts in government nuclear agencies. 4 hold memberships in the American Nuclear Society, the top cheerleader for the nuclear power industry. In addition to this gross imbalance and lack of independence the engineering course of study does not include radiation dosimetry, low-dose health risks, medical physics, or radiation environmental impacts. This deficiency is prima facie evidence of an inability and/or unwillingness of the Committee to carry out its Congressional mandate "to advise the Commission on the hazards of proposed and existing reactor facilities and the adequacy of proposed reactor safety standards."

Its advisories to the NRC should be rejected, as per the FACA rules.

1.Said Abdel-Khalik, Chair; PhD, mechanical engineering; Fellow- American Nuclear Society (industry think tank).

2. Dr. Sam Armijo earned his BS and MS degrees in Metallurgical Engineering and, his PhD degree in Materials Science from Stanford University. He worked for General Electric Nuclear Energy as general manager of the nuclear fuel business and was president, GE-ENUSA Nuclear Fuels; also director, Japan Nuclear Fuel Co., Ltd.

3. Dr. Sanjoy Banerjee, PhD, chemical engineering; Professor in the Department of Chemical Engineering, with a joint appointment in Mechanical Engineering at UC Santa Barbara; acting director, Applied Science Division, Atomic Energy Canada.

4. Dennis C. Bley, PhD, nuclear reactor engineering; president of Buttonwood Consulting, Inc., with more than 30 years of experience in nuclear and electrical engineering, reliability and availability analysis; technical review panels for NRC and DOE.

5. Mr. Charles H. Brown, Jr., M.S., engineering, B.S. in electrical engineering; 22 years as director of Instrumentation and Control Division of the Naval Nuclear Propulsion Program. Currently, Senior Advisor for Electrical Systems with BMT Syntek Technologies, Inc.

6. Dr. Michael Corradini, PhD, nuclear engineering and BS degree in mechanical engineering; chair of the Nuclear Engineering and Engineering Physics program at the University of Wisconsin; Fellow-American Nuclear Society; consultant to the NRC Advisory Committee on Reactor Safeguards (1982-1997). (**0056-15** [Ehrle, Lynn Howard])

Comment: 7. Dana A. Powers, PhD, chemistry, chemical engineering and economics; began his career with Sandia National Laboratories in 1974 as a Staff Member in the Chemistry and Metallurgy Division. Presently, a Senior Scientist, Nuclear Technology Center. He is responsible for the development of safety research programs for Department of Energy nuclear facilities.

8. Harold Ray, B.S. degree in mechanical engineering and M.S. degree in Management; reactor engineer in the Naval Reactors Division, U.S. Atomic Energy Commission, during 1964-1969, during which time he completed the reactor engineering certification at the Bettis Atomic Power Laboratory; served as the Chief Nuclear Officer at Southern California Edison (SCE) from 1990 until his retirement in 2006. Mr. Ray is also a past President of the American Nuclear Society and served in industry leadership positions as part of the Nuclear Energy Institute and at the Institute of Nuclear Power Operations.

9. Joy L. Remke, PhD, nuclear engineering; directorate fellow and group leader, Idaho National Laboratory; member of several advisory groups reviewing the US Department of Energy's Office of Nuclear Energy Research and Development programs; board of directors, American Nuclear Society.

10. Michael T. Ryan, PhD and BS, radiological health physics and a Master's degree in Radiological Sciences and Protection; Editor-in-Chief of the Journal, Health Physics since 2000; Chairman of the External Advisory Board for Radiation Protection at Sandia National Laboratories from 1999-2007. Dr. Ryan previously worked for Chem-Nuclear Systems, Inc., as Vice President and General Manager for operations and previously as Vice President for Regulatory Affairs for the low-level radioactive waste disposal and service facilities in Barnwell, South Carolina. Dr. Ryan also spent 7 years in operational and environmental health physics at Oak Ridge National Laboratory.

11. William J. Shack, PhD, applied mechanics and BS in civil engineering; In 1968, joined the Mechanical Engineering Department at the Massachusetts Institute of Technology as an Assistant Professor. He taught there until 1975. In 1975, he joined the Argonne National Laboratory, retiring in 2007.

12. Mr. John Sieber, BS and M Ed; attended Purdue University to study reactor core physics in 1973, and in MIT to study reactor safety in 1981. His 45-year career involved numerous positions in management at Duquesne Light Company, including core engineering, fuel manager, licensing manager, station manager, vice president - nuclear power division and senior vice president - chief nuclear officer.

13. John W. Stetkar, BS, nuclear and environmental engineering; is a principal of Stetkar & Associates and has more than 27 years of experience as an engineering consultant; internationally recognized expert in the fields of risk assessment and reliability analysis; technical expert for the International Atomic Energy Agency. Prior to his career as a consultant, he was a licensed senior reactor operator at the Zion nuclear station. (**0056-16** [Ehrle, Lynn Howard])

Comment: The Utility Workers also comment that for nuclear energy to expand, the public must trust the nuclear industry. It must trust reactor owners to run their reactors safely. The public must trust regulators to ensure there is adequate oversight. And, it must trust reactor designers to create new reactors that do not share the vulnerabilities of older ones. A sober and careful assessment for all new construction must be done to recognize and correct any deficiencies in the industry's approach to construction, environment and safety both long term and short-term to ensure the highest standards are met (**0079-2** [Harrison, James])

Response: *These comments, in general, express criticism of NRC's oversight of the nuclear industry, including perceived conflicts of interest of the Commissioners and Advisory Committee on Reactor Safeguards members. The NRC takes seriously its statutory responsibilities to protect the health and safety of the public and the environment in regulating the U.S. nuclear power industry. More information on NRC's roles and responsibilities is available on NRC's Web site, http://www.nrc.gov/about-NRC.html. While NRC oversight of the industry and operational safety are outside the scope of the environmental review, the following are examples of how NRC addresses operational safety issues. NRC maintains resident inspectors at each reactor site. These inspectors monitor the day-to-day operations of the plant and perform inspections to ensure compliance with NRC requirements. In addition, the NRC has an operational experience program that ensures that safety issues found at one plant are properly addressed at the others, as appropriate. Finally, the design of any new reactors or storage facility will have already benefited from lessons learned at existing reactors and incorporate new safety features that would be impracticable to backfit onto existing plants. The NRC will only issue a license or permit if it can conclude that there is reasonable assurance (1) that the activities authorized by the license or permit can be conducted without endangering the health and safety of the public and (2) that such activities will be conducted in compliance with the rules and regulations of the Commission. In addition, to ensure objectivity and independence in its regulatory activities, the NRC and the Office of Government Ethics have stringent rules and procedures to ensure that employees of and advisors to the NRC are free of conflicts of interests and the appearance of conflicts of interest. The comments did not provide new information relating to the environmental effects of the proposed action and are considered outside of the scope of the environmental review. No changes were made to the EIS in response to these comments.*

Comment: The NRC is not a credible agency for protection of the public safety and health and taken together with its predecessor, the AEC, continues a long history of obfuscation, denial and Orwellian newspeak. Federal and state agencies have recurrently denied the need for study of biological effects by denying radionuclide release dosage. The same agencies have suppressed credible research. Those scientists who did report on net increases of illness, morbidity, and death from nuclear radiation were subject to harassment, firing, and suppression of research, loss of funding, and marginalizing by government agencies and the nuclear industry. By 1980, this included Drs. John Gofman, Alice Stewart, Karl Z. Morgan, Rosalie Bertell , Irwin Bross, Thomas Mancuso, Edward Sternglass, and Linus Pauling.
http://www.ratical.org/radiation/KillingOurOwn/KOO.pdf (**0026-6-39** [Macks, Vic])

Response: *The NRC takes seriously its responsibility under the Atomic Energy Act to protect the health and safety of the public and the environment in regulating the U.S. nuclear power industry. The NRC's mission is to protect the public health and safety and the environment from the effects of radiation from nuclear reactors, materials, and waste facilities. The NRC's regulatory limits for radiological protection are set to protect workers and the public from the harmful health effects (i.e., cancer and other biological impacts) of radiation on humans. The limits are based on the recommendations of standards-setting organizations. Radiation standards reflect extensive scientific study by national and international organizations. The NRC actively participates in and monitors the work of other organizations to keep current on the latest trends in radiation protection. If the NRC determines that there is a need to revise its radiation protection regulations, it will initiate a rulemaking. The public has been given the opportunity to participate in the rulemaking process that established the regulations that govern its review process. More information on NRC's roles and responsibilities is available on NRC's Web site, http://www.nrc.gov/what-we-do.html. No change was made to the EIS as a result of this comment.*

Comment: As a result of an Turbine Missile Accident on Christmas day 1993 over 2 million gallons of water became contaminated and were eventually dumped into Lake Erie. In the past year the Fermi 2 has experienced a major leak where contaminated and radioactive water did make it into the Monroe Water Intake system.

Below is the table of contents on the DEIS for Radiological Impacts. It is precisely because the operation of a nuclear power plant allows for the routine effluents of gaseous, liquid and solid radionuclides below 'permissible allowable levels' and during routine operation, and during accidental discharges, that Independent Monitoring is needed.

The DEIS and the Environmental Report have omitted a great deal in the consideration of Water Intake and Safe Drinking Water. What has been provided is a tertiary overview which does not address the gravity of the situation. (**0059-14** [Keegan, Michael J.])

Response: *The NRC licensing process for nuclear power plants includes a thorough review of all the plant's radioactive, gaseous, liquid, and solid waste systems; components; and programs to ensure that radioactive material is safely controlled in accordance with NRC regulations. The licensing process evaluates the plant's ability to safely handle, store, monitor, and discharge radioactive effluents in accordance with NRC requirements. These requirements include safety limits on radiation dose to plant workers and members of the public. During operation of the plant, the NRC continuously inspects licensee performance through the use of resident inspectors stationed at each plant and the use of technical specialist inspectors from the NRC regional offices. If there is an abnormal situation at a plant, the resident inspector and regional specialists become involved to assess the licensee's response to the situation to ensure NRC requirements are met. As part of NRC requirements for operating a nuclear power plant, licensees must (1) keep releases of radioactive material to unrestricted areas during normal operation as low as reasonably achievable (as described in the Commission's regulations in 10 CFR 50.36a) and (2) comply with radiation dose limits for the public (10 CFR Part 20). No changes were made to EIS as a result of this comment.*

E.2.39 Comments Concerning Issues Outside Scope - Safety

Comment: The EIS is deficient because it doesn't take into account the environmental impact of poor or defective materials such as concrete or steel and the effect it can have on a facility. (**0003-1-7** [Anderson, Christy])

Response: *Though not part of the environmental review, part of the NRC's responsibility in licensing applicants to build and operate nuclear facilities is to verify that the facility has been constructed in accordance with the approved design and the applicable regulations. This verification is performed by the NRC's construction inspectors. The licensee's quality assurance program includes all the planned and systematic actions necessary to provide adequate confidence that a structure, system, or component will perform satisfactorily when in service. In addition to reviewing and inspecting applicant activities, the NRC reviews and inspects the quality assurance programs, including their implementation, for all nuclear suppliers, architect engineering firms, suppliers of safety-related and commercial-grade products and services, calibration and testing laboratories, and holders of NRC construction permits, operating licenses, and combined licenses in quality-related areas. No changes were made to the EIS in response to this comment.*

Comment: II. The EIS is deficient because it does not take into account the environmental impact of the human condition which is prone to error. Such was the case at Michigan's own Palisades plant. The U.S. Nuclear Regulatory Commission says a week-long shut-down of the Palisades Nuclear Power Plant in September was of "substantial safety significance." The plant is located in South Haven about 55 miles southwest of Grand Rapids. The plant was offline because of an electrical outage at the plant. The NRC investigation shows the outage happened because a worker didn't follow proper procedures when he was doing routine maintenance.

As usual the NRC spokeswoman Victoria Midlyng seriously downplays the event and says the procedures the worker was supposed to follow were improper anyway. And she says managers at the plant had given that worker the green light to do things differently. “Nobody took the time to really focus on the safety significance of this activity,” Midlyng said, “Nobody stopped in their tracks and said ‘hey, what are we doing here? We need to rethink this.’”
http://michiganradio.org/post/investigation-shows-event-palisades-nuclear-plant-wassubstantial-safety-significance

Another example of a nuclear “accident” as a result of human error and lack of oversight is the Vermont Yankee Nuclear Reactor resulting in radioactive leakage tritium into the Connecticut River. The two root causes as stated from the Vermont Dept. of Health are: “Inadequate construction and housekeeping practices employed when the AOG Building was constructed in the late 1960s and early 1970s, and when the AOG drain line was added in 1978.” Ineffective monitoring and inspection of vulnerable structures, systems and components that eventually leaked radioactive materials into the environment.
http://healthvermont.gov/enviro/rad/yankee/tritium_root_cause_analysis.aspx
Here is another example of how John Q. Public is supposed to have 100% complete trust in our government regulatory bodies, worker competence, the nuclear industry itself, and the USACE. This policy of industry self-regulation is failing, and has failed us in the past, present and unfortunately into the future. Although there was no major fallout from this potential disaster, dilution is NOT the solution! There are no SMALL accidents when it comes to nuclear plants! (**0003-2-7** [Anderson, Christy])

Comment: Despite overarching recommendations aimed at “Ensuring Protection,” “Enhancing Mitigation,” and “Strengthening Emergency Preparedness,” the Task Force nonetheless, asserts that business as usual should continue at US nuclear power plants during what will be a lengthy and uncertain regulatory overhaul.

To the contrary, lessons learned from the Fukushima Dai-ichi accident warrant immediate regulatory responses and enforcement actions, particularly regarding the 31 US reactors of similar design to those in Japan that underwent core melt and explosions - the 23 US BWRs with Mark I containment and the 8 with Mark II containments.

In addition, NRC consideration of power up-rates and license extensions for operational US reactors should be held in abeyance until the full lessons of Fukushima have been absorbed, the feasibility of all necessary safety upgrades demonstrated, and then these upgrades mandated for each reactor involved in a power up-rate or license extension proceeding. As part of these processes, the likelihood of successful evacuation, the potential economic consequences, and the effect of off-site radiological contamination must be assessed, particularly for US reactors whose surrounding population density (within a 50-mile radius) is comparable to, or larger than, that at Fukushima Dai-ichi. Where prompt large-scale evacuation appears infeasible in the face of radiological consequences, or intolerable levels of economic

damage may result, license extensions and power up-rates must be denied and the reactors phased out.

NRDC notes that during the 90 Day Review the Task Force consulted with the nuclear industry but there was an absence of any meaningful consultation with other outside experts or the public. (curious, why is that?) In moving forward to the next "six month" stage of the post-Fukushima nuclear safety review, the extent of outside involvement remains unclear. On July 15, 2011, NRDC was contacted by the NRC about possible involvement on an external stakeholder panel for the six month review. While we need substantially more information to make any judgment on the adequacy of what the NRC has in mind, extensive public participation must be an intrinsic part of the next stage of the review.

NRDC has previously suggested that the NRC direct the Staff to document, for each of the 104 operational reactors, all deviations and exemptions from the current "best practices" as set forth in the most up-to-date regulations, regulatory guides, standard review plans, information bulletins and the like, including exemptions from license conditions granted pursuant to 10 CFR 50.12. By providing this information prior to the onset of the longer-term review, and seeking initial public comment on the scope of its six-month review, the NRC would be promoting a far less insular approach than what was practiced in the initial 90-day review. If we are to improve the safety of existing nuclear power plants, following the Japanese disaster and a reinvigorated US inspection effort, understanding and precisely documenting those variances and exemptions from current best practices will be a critical element, especially in terms of public transparency and accountability for the NRC's future enforcement efforts.

The Task Force explicitly states that "the NRC's approach is incomplete without a strong program for dealing with the unexpected, including severe accidents. Moreover, this group states that the NRC has established severe accident requirements for new reactors, and that taking a similar action with regard to operating reactors would promote increased safety. Nonetheless, the recommendations in certain instances could remain just that, with others possibly being implemented in rulemaking efforts that could take years to resolve. (**0003-3-4** [Anderson, Christy])

Comment: All of the reactor accidents, meltdowns, explosions that have occurred are not only historical events but ongoing present realities, in that radionuclides released and dispersed widely remain a threat to human health. The thrust of the nuclear industry and government is to "normalize" ever expanding man-made ionizing radiation into the biosphere by minimizing or denying statements of the risk to cell tissue. (**0026-6-34** [Macks, Vic])

Comment: I want to also point out I want to enter into the transcript, the article I just picked up on the internet, for the first time recent data reveal large spikes and radioactive releases during refueling operations in nuclear power plants and I don't believe this was in the DEIS. (**0040-14-3** [McArdle, Ed])

Comment: I lived in Oregon, Ohio, a high industrial area, for seven years. I had no family history or risk factors for cancer. I was diagnosed at the age of 38 with stage two breast cancer, and I firmly believe this was caused by the industrial environment I lived in. Enviro safe still contains the radioactive waste that was buried there over 30 years ago, and it was still a health hazard to its residents. (**0040-34-7** [Berlucourt, Kerry])

Comment: It also will increase the amount of radioactive waste to be managed and isolated if the situation gets under control enough to begin managing full scale cleanup efforts. (**0050-10** [D'Arrigo, Diane])

Response: *These comments address safety issues at nuclear facilities not operated by DTE Energy that, in part, may have been caused by human error or improper oversight by the licensee. Operational safety issues are outside the scope of the environmental review and will not be addressed in the EIS, though the NRC has an operational experience program that ensures that safety issues found at one plant are properly addressed at the others, as appropriate. The environmental consequences of severe accidents to the air pathway, including those initiated by human error, are considered in the EIS. See EIS Section 5.11.2.1. No change was made to the EIS as a result of these comments.*

Comment: The EIS is deficient because it does not take into account the environmental impact of the human condition which is prone to error. (**0003-1-5** [Anderson, Christy])

Comment: Recently, Mr.Greg Jaczko, Chairman of the NRC recently stated that, "He wasn't ready to declare a decline in safety performance at US plants but problems were serious to indicate a "Precursor" to performance decline. http://www.manufacturing.net/news/2011/12/nrc-nuke-industry-must-heed2 lesson-of-japan Also, "instances of human error and other problems have endangered workers and threatened safety at a handful of at least 65 of the 104 operating nuclear power plants in the United States." (Excuse the acronym but WTF does "precursor to a performance decline" mean)? Would a good example of human error or employee mishandling at Fermi be this? http://michiganmessenger.com/53564/fermi-guard-shoots-his-own-foot I guess they're overpaying those $8 security guards now aren't they? So much for inspiring public confidence. Also, Mr. Jaczko said he's noticed an increase in "possible declines in performance" at some facilities including instances that have exposed workers to high levels of radiation such as what happened at incidents at Cooper Nuclear Station in Nebraska and Perry Nuclear Power Plant in Ohio which "almost led to workers getting very, very significant doses" of radiation. While three other plants were shut down for months because of safety problems, the first time in more than a decade that several plants have been shut down at the same time. http://pbadupws.nrc.gov/docs/ML1110/ML111020025.pdf http://www.google.com/url?sa=t&rct=j&q=precursor%20to%20a%20performanc%20decline&source=web&cd=1&sqi=2&ved='0CCMQFjAA&url=http%3A%2F%2Freadersupportednews.org%2Fnewssection2%2F312-16%2F8789-nrc-chief-nuke-industry-must-heed-lesson-ofjapan&ei=2dIMT_anG6SksQKiqOiABg&usg=AFQjCNHE6Zj82z1rjTTF_3WIp6JVSJ6ReA

Also see: http://www.nrc.gov/reading-rm/doc-collections/event-status/prelim-notice/2011/

In October 2011 Mr. Jaczko, also described “a tension between wanting to move in a timely manner on regulatory questions, and not wanting to go too fast” In November 2011, U.S. Nuclear Regulatory Commissioner Gregory Jaczko warned power companies against complacency and said the agency must “push ahead with new rules prompted by a nuclear crisis in Japan while also resolving long-running issues involving fire protection and a new analysis of earthquake risks. The new safety standards will take up to five years to fully implement. (My emphasis) http://thehill.com/blogs/e2-wire/e2-wire/188767-federal-regulators-agree-to-implement-tighter-nuclear-standards and http://files.asme.org/asmeorg/NewsPublicPolicy/GovRelations/PublicPolicyAgenda/30117.pdf (**0003-2-1** [Anderson, Christy])

Comment: IV. The EIS is deficient because it doesn’t take into account the environmental impact of poor or defective materials such as concrete or steel and the effect it can have on a facility. Examples of this include the New Hampshire Seabrook Nuclear Reactor and the Michigan Palisades plant shutdown. “A recent investigation by the Nuclear Regulatory Commission found that the failure of a water pump due to the corrosion of certain kinds of stainless steel components caused an August 2011 shutdown of the Palisades nuclear power plant in Covert, Michigan.” Despite scientific findings and industry experience reporting its vulnerability to cracks and corrosion, the types of stainless steel “known as 410SS and 416SS” continues to be used in water pumps used to provide cooling water to critical safety-related equipment, diesel generators, and containment vessel air coolers for nuclear power plants throughout the U.S. http://robertsingleton.wordpress.com/2011/12/03/nrc-warns-nukes-of-dangers-of-bad-steelcrumbling-concrete/

What type of stainless steel will Fermi 3 use in the GEH ESBWR water pumps, diesel generators, containment vessels air coolers and component cooling water vessels? This steel is prone to corrosiveness, yet it was still used and not replaced and Palisades had to shut down because of it. How is John Q. Public supposed to take government regulatory agencies, the nuclear industry and the USACE at face value when they all state they have our safety and best interests in mind? The F3EIS doesn’t provide peace of mind to John Q. Public and neither does the agencies and industry’s “bad material usage” policy. (**0003-3-1** [Anderson, Christy])

Comment: From the Natural Resource Defense Council (NRDC): “On July 12, 2011 the US Nuclear Regulatory Commission (NRC) issued its report: “Recommendations for Enhancing Reactor Safety in the 21st Century: The Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident.” http://pbadupws.nrc.gov/docs/ML1118/ML111861807.pdf This report summarizes the results of a swift “90 Day Review” of US reactor safety that the NRC pledged to conduct in response to President Obama’s request to review the safety of all operational reactors in the US commercial fleet, a request which the President made to the NRC in the early, frightening days of the Japanese disaster.

The Task Force's first overarching recommendation is a remarkably strong criticism of the current regulatory framework: "The Task Force recommends establishing a logical, systematic, and coherent regulatory framework for adequate protection that appropriately balances defense-in-depth and risk considerations." The implied premise of this primary recommendation "that the current NRC regulatory framework falls short of being - logical, systematic or coherent" - suggests the public should not have high confidence in the safety of the 104 currently-operating nuclear power plants in the United States. The 90 Day Review summarizes disturbing problems with the effectiveness of the NRC's efforts to minimize nuclear accident risks stemming from seismic hazards, flooding and fires, station blackout, hydrogen gas production, the vulnerability of spent fuel pools and multi-unit accidents. (**0003-3-3** [Anderson, Christy])

Comment: In February of 2011, After being idled for repairs for two weeks, the Fermi 2 reactor of the Enrico Fermi Nuclear Generating Station was restarted Thursday night and then shut down again Saturday due to discovery that condenser tubes were leaking, the Monroe Evening News reported. After two weeks of repairs at the Fermi 2 plant the reactor was launched on Thursday evening only to be shut down again on Saturday due to a leak in the condenser tubes? http://www.google.com/url?sa=t&rct=j&q=fermi%20idled%20again%20after%202%20weeks%20of%20repair&source=web&cd=8&ved=0CEoQFjAH&url=http%3A%2F%2Fwww.monroenews.com%2Fapps%2Fpbcs.dll%2Farticle%3FAID%3D%2F20110211%2FNEWS01%2F702119977&ei=X7UMT8mdCdL3gAeS6Ym2Bw&usg=AFQjCNFJ2KpdyRMCrMRjSjIL4MT_heXz0g The DTE site features the words of Senior Vice President and Chief Nuclear Officer Jack Davis, who reports that: "Fermi 2 has been providing reliable, cost-effective power to the 2.2 million electric customers of Detroit Edison in Southeast Michigan for more than 20 years. The plant also has been designated as one of the nation's best-performing nuclear facilities." Oy. If this is one of the safest and cleanest what the heck do the other ones look like?! (**0003-4-2** [Anderson, Christy])

Comment: 3. On June 6, 2010 Fermi was hit by a small Tornado.(Pardon the acronym again, but WTF is a small tornado? Is that like the oxymoron, jumbo shrimp? (None the less, it IS a tornado) Causing damage to the outside building and forcing it to scram. (**0003-4-4** [Anderson, Christy])

Comment: 4. The Fermi 1 reactor experienced a serious emergency on October 5, 1966 - a partial core meltdown. After attempts to repair it, the reactor was completely shut down in 1975. Only a core meltdown folks, nothing to see here. Move along....

5. 1993: Merry Christmas! A radioactive spillage accident and fire are blamed on a turbine blade that snapped off and smashed through its protective casing. But it only took a year to clean up a million gallons of radioactive water released into Lake Erie by the accident and repair the turbine. Not a good way to start off the New Year is it though? (**0003-4-5** [Anderson, Christy])

Comment: 6. An incident involving a nuclear reactor going into “hot shutdown” at DTE Energy’s Fermi II power generation station in Monroe County In March 2011 went largely unnoticed locally and is raising questions about what exactly happened at the plant. DTE officials have minimized the incident, stressing that it’ dangerous to make assumptions about the safety of the reactor after high vibrations from a bearing in the plant’s main turbine caused operators to manually switch the reactor into shutdown.

According to a report by the plant to the Nuclear Regulatory Commission, the 1,100 megawatt boiling water reactor was operating at 23-percent power on March 28 when at 1:46 a.m. the shutdown began. The plant was running at the reduced power level as part of a ramping down of operations in advance of a planned shutdown for refueling and maintenance.

“The cause of the high main turbine vibrations is currently under investigation,” according to the report.” There was no maintenance or testing in progress that would explain the high turbine vibration levels. “The report went on to state that the lowest reactor water level reached during the incident was 162 inches, and”[a]ll isolations and actuations for reactor vessel water level 3 occurred . “As you shut down the reactor quickly the pressure becomes higher and the water level goes down,” said Viktoria Mytling, a Nuclear Regulatory Commission spokeswoman again downplaying the event. “The reactor water level does go down a certain amount as a consequence of a SCRAM [sudden shutdown]. What happened at Fermi in terms of the water level going down was expected Mytling said that the normal reactor vessel water level is 197 inches and the minimum level is 150 inches. http://michiganmessenger.com/16404/dte-seeks-to-downplay-incident-at-fermi-iinuclear-power-plant (**0003-4-6** [Anderson, Christy])

Comment: “Additional discharges to Lake Erie could include treated liquid radwaste.” (v 1, p 3.14) “The monthly average anticipated water intake from Lake Erie would vary between approximately 23,750 and 33,500 gallons per minute (Table 3.5).” “monthly discharge to Lake Erie (blowdown) would vary between 11,868 and 16,743 gallons per minute.” (v 1, p 3.30) Are there emergency shut off values to stop the discharge when samples exceed radiation/contamination limits? (**0016-3-20** [Collins, Jessie])

Comment: “Liquid, gaseous, and solid radioactive waste management systems would be used to collect and treat the radioactive materials produced as byproducts of operating Fermi 3” (v 1, p 3.31). “Waste-processing systems would be designed to meet the design objectives’“ (v 1, p.3.32). If the systems haven’t been designed yet, shouldn’t the NRC withhold the normal licensing procedure until the systems are invented and manufactured? (**0016-3-22** [Collins, Jessie])

Comment: DTE’s has a bad track record as a nuclear operator. Both Fermi 1 and 2 have had never close calls in the past. It’s too high a risk when there are more viable alternatives. (**0019-4** [Hartung, Tiffany])

Comment: Bessie-Davis Reactor was allowed to operate in very serious unsafe condition and senior NRC managers stated they would do the same in future: "...NRC senior managers rejected their own staff's recommendation and allowed Davis-Besse to continue operating into 2002. When the plant was finally shut down and the belated inspections finally performed, the situation was far worse than the NRC staff believed. The NRC later determined that Davis-Besse came closer to meltdown than any U.S. reactor since the Three Mile Island accident in March 1979. In other words, hindsight showed the NRC staff to have been absolutely right." (**0026-6-55** [Macks, Vic])

Comment: When interviewed under oath by the NRC's Office of the Inspector General, the NRC senior managers who shelved their staff's shut down order defended that decision. Both stated that they would make the same decision again if confronted with the same facts. They insisted that "absolute proof was required before they would order an operating reactor to be shut down for safety reasons." http://allthingsnuclear.org/post/11986415149/ to-flee-or-not-to-flee-that-was-the-question Inadequate seismic protection: NRC Commissioners voted to delay safety improvements after Fukushima. ".... the August 23 earthquake in Mineral, Virginia should be a further call to action for NRC. That magnitude 5.8 earthquake caused ground motion that exceeded the "design basis" at the nearby North Anna nuclear plant, even though Dominion, the plant operator, originally had said the plant was designed to withstand an earthquake of magnitude 5.9-6.2." (**0026-6-56** [Macks, Vic])

Comment: This event highlights the knowledge gaps in seismic protection at US nuclear plants and supports the Task Force's recommendation that the NRC should "order licensees to reevaluate the seismic and flooding hazards at their sites against current NRC requirements and guidance, and if necessary, update the design basis and SSCs [structures, systems, and components] important to safety to protect against the updated hazards." http://allthingsnuclear.org/post/9622364770/nrcs-path-after-fukushima-still-lined-with-pitfalls

Vulnerabilities to Reactor Operation that weren't or can't be designed out: See Fission Stories at http://allthingsnuclear.org/tagged/fission-stories Reactor near misses due to impaired safety equipment or poor worker performance leading toward catastrophic outcomes in 2010: for description of each situation go to http://www.ucsusa.org/assets/ documents/nuclear_power/nrc-2010-full-report.pdf
Nuclear One, Russel, AR owner: Entergy
Briarwood, Joliet, IL owner: Exelon
Brunswick, Southport, NC owner: Progress Energy
Calvert Cliffs, Annapolis, MD owner: Constellation Energy
Catawba, Rock Hill, SC owner: Duke Energy
Crystal River 3, Crystal River, FL owner: Progress Energy
Bessie-Davis, Toledo, OH owner: First Energy
Diablo Canyon, San Louis Obispo, CA owner: Pacific Gas & Electric

Farley, Dothan, AL owner: Southern Nuclear
Fort Calhoun, Omaha, NE owner: Omaha Public Power District
HB Robinson, Florence, SC owner: Progress Energy
HB Robinson, Florence, SC owner: Progress Energy
Surry, Newport News, VA owner: Dominion Generation
Wolf Creek, Burlington, KS owner: Wolf Creek Nuclear (**0026-6-57** [Macks, Vic])

Comment: Public vulnerability and risk from reactors is exposed in recommendations for improved reactor safety from the Union of Concerned Scientists.

Preventing and Mitigating the Effects of Severe Accidents:

- Extend the scope of regulations to include the prevention and mitigation of severe accidents.
- Require reactor owners to develop and test emergency procedures for situations when no AC or DC power is available for an extended period.
- Modify emergency planning requirements to ensure that everyone at significant risk from a severe accident-- not just the people within the arbitrary 10-mile planning zone--is protected.

Improving the Safety and Security of Spent Fuel:

- The NRC should require plant owners to move spent fuel at reactor sites from storage pools to dry casks when it has cooled enough to do so.
- The NRC should require reactor owners to improve the security of existing dry cask storage facilities.
- The NRC should require plant owners to significantly improve emergency procedures and operator training for spent fuel pool accidents

Making Existing Reactors Safer:

- The NRC should enforce its fire protection regulations and compel the owners of more than three dozen reactors to comply with regulations they currently violate.
- The NRC should establish timeliness goals for resolving safety issues while continuing to meet its timeliness goals for business-related requests from reactor owners.
- The NRC should treat generic and unique safety issues alike. Until a generic issue is resolved, the NRC should account for it as a potential risk factor in its safety analyses and decision making related to all affected reactors. (**0026-6-58** [Macks, Vic])

Comment: The NRC should require plant owners to use multiple inspection techniques to ensure detection of any degradation in aging, high-risk equipment. The NRC should require plant owners to periodically inspect equipment outside the scope of normal inspections, both to

determine whether that scope is appropriate and to detect problems before safety margins are compromised. (**0026-6-59** [Macks, Vic])

Comment: The NRC should revise its regulations for the licensing of “high burn-up” fuel to ensure public safety, and restrict how this fuel is used until the revisions are complete. The U.S. government should prohibit the use of plutonium-bearing mixed-oxide (MOX) fuel in reactors, and end the program to produce MOX fuel from excess weapons plutonium. Ensuring the Continued Safety of Reactors with Renewed Licenses: Before granting a license renewal, the NRC should review all differences between current regulations and any past decisions specific to the aging reactor, to confirm that these differences will not compromise public safety going forward. (**0026-6-60** [Macks, Vic])

Comment: The NRC should require plant owners to calculate the risk of fuel damage in spent fuel pools as well as reactor cores in all safety analyses. The NRC should not make decisions about reactor safety using probabilistic risk assessments (PRAs) until it has corrected its flawed application of this tool. (**0026-6-63** [Macks, Vic])

Comment: VI. THE DRAFT EIS FAILS TO ADEQUATELY ADDRESS IMPACTS FROM POSSIBLE GEOLOGICAL EVENTS AFFECTING A NEW FERMI REACTOR. The Draft EIS does not fully analyze the risk and impacts from earthquakes and other geological events that could affect a new Fermi reactor. The Draft EIS finds that the risk of an earthquake at the Fermi site is not well understood, but still fails to address the environmental impacts of such an event and does not include analysis of injection well-caused earthquakes. In addition, the Draft EIS also downplays impacts from Karst geology and Lake Erie wave events.

A. Long-Term Risk Exposure From Major Earthquakes Is Not Fully Understood And Earthquake Impacts Are Not Fully Considered. The Draft EIS and supporting documents do not fully characterize exposure to risks from major seismic events that could cause damage to reactor containment and radioactive waste storage structures at the Fermi 3 site. While the applicant refers to numerous geological studies and modeling efforts, the totality of these do not overcome the significant uncertainties that still remain about the dynamics and periodicity of major earthquakes in this region of North America.

Scientists generally understand the cause of earthquakes that occur along well established fault lines where different crustal plates adjoin. Much less is known about the cause of major earthquakes that happen far from plate boundaries such as in the Eastern and Central regions of the United States. These regions happen to feature relatively rigid bedrock that allows seismic waves to travel farther without losing intensity. Earthquakes here can be felt in an area up to ten times larger than a comparable magnitude earthquake west of the Rocky Mountains. Despite what is already known about existing faults in the crucial New Madrid Seismic Zone, the U.S. Geological Survey concludes that there must be additional, unknown faults that can generate earthquakes capable of being felt 1,000 miles away, such as the notable 1811-1812

events. The Final Safety Analysis Report (FSAR), Appendix 2.5BB (Updated Characterization of Large-Magnitude New Madrid Seismic Zone Earthquake Model) underscores the uncertainty in making accurate predictions about major earthquakes in the Eastern U.S. For example, Appendix 2.5BB cites a new tectonic model that "helps explain large magnitude earthquakes in the New Madrid region, but does not provide additional information on the location, recurrence, or size of these earthquakes." At 2-2109 (emphasis added). Other cited research used "high precision GPS measurements to measure crustal motion within the New Madrid seismic zone." The Draft EIS nevertheless concludes that "[t]here is uncertainty as to the significance of data gathered to date." Id. (emphasis added). Although the nature and magnitude of this data uncertainty are not described, the Draft EIS hopefully adds, "the precision of velocity measurements is expected to increase as further measurements are made, such that these measurements eventually may be used to help delineate faults and determine present-day strain rates throughout the New Madrid seismic zone." Id. (emphasis added). Therefore, as the Draft EIS plainly indicates, the capability to accurately characterize this critical geological information does not yet fully exist. In the face of this uncertainty, the Draft EIS must include potential environmental impacts that would result from a serious earthquake affecting a new Fermi nuclear plant. (**0036-3-5** [Gleckner, Allen])

Comment: Further, the Draft EIS does not include up-to-date seismic data in its analysis. The Fermi 3 FSAR relies on previously published reports for the Fermi 2 power plant, historic geologic literature, field and aerial reconnaissance, and subsurface hydrogeological and geotechnical investigations conducted in 2007. FSAR at 2.5.1. The geological and seismological characterization in the application is not current and does not include up to date data on U.S. injection well information in the Fermi 3 vicinity, which can affect seismic risk. Greater seismic risks may currently exist in the region than reported in 2007, as confirmed by various experts and government agencies, including Ohio's Department of Natural Resources (ODNR). Youngstown, Ohio recently experienced an earthquake caused by a class two injection well, owned and permitted by Northstar Disposal Services. ODNR has adopted an approach requiring prudence and caution regarding the site, and this should be considered by NRC as an issue in Michigan as well. However, the Draft EIS includes no injection well information for Southeast Michigan and surrounding areas. Injection wells in the United States are regulated by the federal Underground Injection Control (UIC) program and according to the 2010 UIC Well Inventory, Michigan has a total of 10,470 injection wells.23 In light of post- 2007 seismic data and the recent injection well-caused earthquake in Ohio, information about injection well-caused earthquakes and their potential impacts must be considered in the EIS. (**0036-3-6** [Gleckner, Allen])

Comment: Further, the Draft EIS does not include up-to-date seismic data in its analysis. The Fermi 3 FSAR relies on previously published reports for the Fermi 2 power plant, historic geologic literature, field and aerial reconnaissance, and subsurface hydrogeological and geotechnical investigations conducted in 2007. FSAR at 2.5.1. The geological and seismological

characterization in the application is not current and does not include up to date data on U.S. injection well information in the Fermi 3 vicinity, which can affect seismic risk. Greater seismic risks may currently exist in the region than reported in 2007, as confirmed by various experts and government agencies, including Ohio's Department of Natural Resources (ODNR). Youngstown, Ohio recently experienced an earthquake caused by a class two injection well, owned and permitted by Northstar Disposal Services. ODNR has adopted an approach requiring prudence and caution regarding the site, and this should be considered by NRC as an issue in Michigan as well. However, the Draft EIS includes no injection well information for Southeast Michigan and surrounding areas. Injection wells in the United States are regulated by the federal Underground Injection Control (UIC) program and according to the 2010 UIC Well Inventory, Michigan has a total of 10,470 injection wells.23 In light of post- 2007 seismic data and the recent injection well-caused earthquake in Ohio, information about injection well-caused earthquakes and their potential impacts must be considered in the EIS. B. Karst Geology Is Not Sufficiently Characterized At The Fermi Site. Section 2.5.3.8.2 of the FSAR claims that "the potential for nontectonic deformation at the Fermi 3 site is negligible," and that "there is no evidence of nontectonic deformation at the Fermi 3 site in the form of unloading phenomenon (i.e., pop-up features), glacially-induced faulting, salt migration, dissolution or collapse related to karst, or volcanic intrusion." But Figure 1 (below), which identifies several known Karst areas in Monroe County, Michigan where the Fermi site is located, demonstrates that a more thorough search for this type of subsurface formation in the area is warranted. Two concerns related to this issue include: - Risk of future subsidence at the site that could damage the structural integrity of the reactor containment building, existing or potential radioactive waste storage facilities, and other important structures. - Risk of contamination of groundwater beyond the Fermi site via unknown flow pathways that are typically inherent in Karst formations even where obvious underground voids are not identified through bore sampling and other techniques. More evaluation of these risks is necessary to reduce the uncertainty raised by the existence of multiple Karst formations so near to the proposed project site as shown in Figure 1. 23 EPA, UIC Well Inventory (2010), available at - Inventory_2010-2.pdf; EPA, Underground Injection Wells in Region 5, available at . Figure 1. Karst areas identified in Monroe County, MI (Source: SEMCOG, 2010) (**0036-3-8** [Gleckner, Allen])

Comment: The U.S. NRC and the U.S. nuclear power industry have too many unresolved issues to justify approval of NUREG 2105. To name a few: 1) Existing reactors with the GE BWR Mark-1 design at Fermi-2 and elsewhere regarding the vent stack and pressure suppression containment 2) The extraordinary risk demonstrated by the existence of high-level radioactive waste spent fuel pools in elevated locations outside of primary containment structures without emergency backup power sources in the GE BWR design (**0037-7** [Gunter, Keith])

Comment: 4) Ongoing fire safety protection issues that have remain unresolved for decades. (**0037-9** [Gunter, Keith])

Comment: I participated in a series of phone calls, conference calls with the NRC, and during one I learned that the soil structure analysis is not going to rely on the standard accept methodology. They're looking to develop an alternative methodology because the standard methodology would call for concrete backfill down a foundation. I heard Colette Luff from the U.S. Army Corps of Engineers talk about dredgings and landfill and backfill. Is it planned to use this backfill as the foundation for the Fermi 3? And that's my question to whomever can answer. (**0039-7-1** [Keegan, Michael])

Comment: MR. KEEGAN: Also during those meetings that I sat in, it was talked about to do the concrete backfill down to foundation would use as much concrete as the entire complex itself, so essentially double the amount of concrete. And so what I picked up was that they're looking for an alternative methodology that is not currently accepted in engineering to use a lesser backfill. So what I was wondering are they going to use the dredgings and landfill to do the backfill? I mean, is it going to be built on a garbage pit? What's going on? (**0039-7-2** [Keegan, Michael])

Comment: As far back as 1986, Harold -- Director of the NRC's Office of Nuclear Reactor Regulations, when speaking about the GE Mark One boiling water reactor, right here, the design, he told that is the containments, especially being smaller with lower design pressure and in spite of the suppression pool, if you look at the Wash 1400 safety study, you'll find something like a 90 percent probability of that containment failing, right next to the proposed Fermi 3. (**0040-26-2** [Johnston, Mary])

Comment: The best scientific minds of the 20th century discovered a fission process that combines some of the most poisonous elements on earth, in order to produce electrical energy. Consequently a nuclear reactors coolant must constantly bathe the core to prevent a serious accident that could result in the burning through of the containment as we are witnessing today in Fukushima, Japan. (**0040-26-6** [Johnston, Mary])

Comment: I would like to know about, there was an incident, this goes back to DTE's operation of Fermi 2 and I wonder how this is going to translate for Fermi 3. There was a period in the past where the cooling system, I don't know whether the pumps, or the controls for the emergency generator were not working properly for a long time, actually years, I believe. And the NRC, NRC inspectors did not catch it either. I wondered about if somebody could elaborate on that question (**0040-3-1** [Johnson, Bruce])

Comment: and somebody just told me that there is not going to be any emergency cooling water system for this new reactor? I'd like to know about that, too please. (**0040-3-2** [Johnson, Bruce])

Comment: The accident was in 1993. That turbine missile accident was predicted by myself two months before it occurred. I'm not clairvoyant, I read the documents. There were vibration

patterns on that. In fact, the person who installed it said they were not were not going to be around when it got started up. (**0040-9-9** [Keegan, Michael J.])

Comment: Also, details on the Fermi 3 containment system to be used are not available. Any potential radioactive leakage from the containment system into the lake is not desirable due to the amount of customers served by both water systems and limited raw water sources. The partnership currently has a DTE provided & maintained radioactive metering system used to detect any radioactive raw water while being drawn in via intakes such that it is desired that the system continue to be maintained and or upgraded with the project with newer technology to allow both water systems adequate time to change raw water sources or alternatives in the event of a catastrophic event. (**0059-9** [Keegan, Michael J.])

Comment: Not contained in the report are reports by independent scientific experts which are highly critical of both the Fermi 2 and Fermi 3 designs. (**0070-17** [Rivera, Ethyl])

Response: *The NRC's principal responsibility is to protect the health and safety of the public when authorizing the use of radioactive material. Because NEPA regulations do not include a safety review, the NRC has codified the regulations for preparing an EIS separately from the regulations for reviewing safety issues. The regulations governing the environmental review are set forth in 10 CFR Part 51, Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions, and the regulations covering the safety review are in 10 CFR Part 52, Licenses, Certifications, and Approvals for Nuclear Power Plants, and other regulations referenced therein. For this reason, the license process includes an environmental review that is distinct and separate from the safety review. Because the two reviews are separate, operational safety issues are considered outside the scope of the environmental review, just as environmental issues are not considered part of the safety review. However, the staff forwards safety issues that are raised during the environmental review to the appropriate NRC organization for consideration and appropriate action. These comments are related to safety and are outside the scope of the staff's environmental review. Therefore, no changes were made to the EIS in response to these comments.*

Comment: And my question is how can the NRC stand by such blanket assurances of safety with pool storage, let's say, or dry cask storage, when in Japan before our very eyes there is very strong evidence that there was a fire in the Unit 4 at Fukushima Daiichi. And we have the exact same design here at Fermi Unit 2, only there's over 500 tons of waste in that pool, whereas the pool in Japan, there's 130 tons. So, given a real world accident that's still unfolding as we speak, how can you give such blanket assurances of safety when you can see from Japan what's possible. It's happened now. You can't deny that it's possible. Same design here. And with the dry cask storage, the NRC should be well aware that there are industry and even NRC whistle blower allegations about the whole -- casks. And Fermi 2's had a permit from the NRC to move that waste into dry casks and hasn't done it in years. Why is that? To the best of our knowledge, it's because the structures at Fermi 2 are not strong enough to support the

weight of the crane and the dry casks. So here we are years into dry cast storage. There's not been a single dry cask loaded, and you've got every single fuel rod ever generated at that plant, sitting in that pool that could boil down, that could drain down instantly through various terrorist attack or accident scenarios, but you assure the public that everything's fine and will be for centuries to come. It's hard to understand. (**0039-9-1** [Kamps, Kevin])

Response: *This comment is related to the current operation of the Fermi 2 reactor, which is beyond the scope of the Fermi 3 EIS. Detroit Edison is planning to move the cooled spent nuclear fuel from the Fermi 2 fuel pool to a dry storage installation facility onsite. The location of this facility is already identified in the Fermi 3 EIS (see Figure 3-1). An engineering evaluation has been performed to ensure that movement of storage casks would not result in any undue risks to the reactor building, should an earthquake occur during its movement. DTE Energy is in the process of performing additional analyses for the needed modifications and will move fuel once modifications were completed.*

During the events in Fukushima, responders were without reliable instrumentation to determine the water level in the spent fuel pool. This caused concerns that the pool may have boiled dry, resulting in fuel damage. Numerous attempts were made to refill the spent fuel pools, which diverted resources and attention from other efforts. While the current international consensus is that a spent fuel pool fire did not occur at Unit 4, the events at Fukushima demonstrated the confusion and misapplication of resources that can result from beyond-design-basis external events when adequate instrumentation is not available.

On March 12, 2012*, the NRC issued three Orders and a RFI to holders of U.S. commercial nuclear reactor licenses and construction permits to enhance safety at U.S. reactors based on lessons learned from the event at Japan's Fukushima Dai-ichi nuclear power plant. The first and third Orders apply to every U.S. commercial nuclear power plant, including recently licensed new reactors. The first Order requires a three-phase approach for mitigating beyond-design-basis external events. Licensees are required to use installed equipment and resources to maintain or restore core, containment, and spent fuel pool cooling during the initial phase. During the transition phase, licensees are required to provide sufficient, portable, onsite equipment and consumables to maintain or restore these functions until they can be accomplished with resources brought from offsite. During the final phase, licensees are required to obtain sufficient offsite resources to sustain those functions indefinitely (77 FR 16091). The second Order requires reliable hardened vent systems at boiling water reactor facilities with "Mark I" and "Mark II" containment structures (77 FR 16098). The third Order requires reliable spent fuel pool level instrumentation (77 FR 16082). The RFI addressed five topics: (1) seismic reevaluations; (2) flooding reevaluations; (3) seismic hazard walkdowns; (4) flooding hazard walkdowns; and (5) a request for licensees to assess their current communications system and equipment under conditions of onsite and offsite damage and prolonged station blackout and perform a staffing study to determine the number and*

qualifications of staff required to fill all necessary positions in response to a multi-unit event (NRC 2012c, d).

The ESBWR containment design differs from those identified in the second Order; therefore, this Order is not applicable to Fermi 3. The NRC staff issued RAIs to Detroit Edison requesting information to address the requirements of the first and third Orders, and information sought in the RFI (NRC 2012e, f, g). NRC's evaluation of Detroit Edison's responses is addressed in the NRC's Final Safety Evaluation Report, and any changes to the COL application that are deemed necessary will be incorporated into the applicant's FSAR. Additionally, the severe accident scenarios analyzed in Section 5.11 include those initiated by external events, including flooding and those that involve fission product releases.

As indicated in prior NRC documents and SECY 12-0025 (NRC 2012b), the NRC staff has determined that the current fleet of nuclear power plants is safe to continue operation. Additionally, the Commission has determined that enhanced spent fuel pool instrumentation being ordered by the Commission represents a substantial increase in protection to public health and safety. Section 5.11 of the EIS was revised to include the recent NRC actions related to the lessons learned from the event at Japan's Fukushima Dai-ichi nuclear power plant.

Comment: The NRC has never analyzed the impact of a serious accident at the Fermi site. Fermi 1 sits disabled and shuttered and Fermi 2, a copy of the Fukushima reactors, is an accident waiting to happen. (**0056-10** [Ehrle, Lynn Howard])

Response: *Fermi 1 is being decommissioned. The NRC has already evaluated the Fermi 2 operational risks as documented in NUREG-0769,* Final Environmental Impact Statement Related to the Operation of Enrico Fermi Atomic Power Plant, Unit 2 *(NRC 1981). This document is referenced in the Fermi 3 EIS Section 5.11.2, where the probability-weighted consequences (i.e., risks) of severe accidents from Fermi 3 operations are presented. No changes were made to the EIS as a result of this comment.*

Comment: There is no discussion in the DEIS or in the Environmental Report of the increased risk of running an untested, skeletally designed, largest, hottest, most fueled, most enriched, largest fuel rod array configuration reactor. The DEIS and Environmental Report does not address mitigation from such an escalated risk brought forth by these design dynamics. The proposed Fermi 3 ESBWR design reactor is the proverbial "Twisting the Tiger by the Tail" scenario. These tables suggest why:

ESBWR Design Control Document/Tier 2
1.3-2
Table 1.3-1
Comparison of Reactor System Design Characteristics
Design Characteristic (1) (2) Units ESBWR to the BWR/1 Dodewaard and to the ABWR

Thermal and Hydraulic (Section 4.4)	ESBWR	BWR/1	ABWR
Vessel inside diameter m (in)	7.06 (278)	2.79 (110)	7.06 (278)
Number of fuel bundles	1132	156	872
Rated power MWt	4500	163.4	3926
Design power(ECCS design basis) MWt	4590	196	4005
Steam flow rate Metric ton/hr (Mlbm/hr)	8757 (5) (19.307)	256 (0.564)	7640 (16.843)
Core coolant flow rate Metric ton/hr(Mlbm/hr)	34,453(75.955)	4500 (9.92)	52,200 (115.1)
Feed water flow rate Metric ton/hr(Mlbm/hr)	8736 (19.260)	~243 (~0.54)	7624 (16.807)
Absolute pressure in steam dome Mpa (psia)	7.17 (1040)	7.10 (1030)	7.17 (1040)
Average power density kW/liter	54.3	36.3	50.6
Maximum linear heat generation rate kW /m(kW/ft)	44.0 (13.4)	50.1 (15.3)	44.0 (13.4)
Average linear heat generation rate kW/m (kW/ft)	15.1 (4.6)	17.8 (5.4)	20.3 (6.2)
Average heat flux kW/m2 (Btu/hr-ft2)	458.53 (145,430)	367.57 (116,630)	524.86(166,470)
Operating limit MCPR	1.31 (7)	N/A	1.17
Coolant enthalpy at core inlet kJ/kg	ESBWR	BWR/1	ABWR (Btu/lbm)
	1190 (511.7)	1240 (533.8)	1230 (527.7)
Maximum void fraction within fuel assemblies	0.90	0.64	0.75

1.3-3
Table 1.3-1
Comparison of Reactor System Design Characteristics Design Characteristic (1) (2) Units ESBWR BWR/1 ABWR

Core average exit quality % steam	25	6.6	14.5
Feedwater temperature *C / (*F)	215.6 (3) /(420)	125/ (257)	215.6 /(420)
Design power peaking factor Maximum relative assembly power	1.33	1.30	1.40
Local peaking factor	1.36	1.15	1.25
Axial peaking factor	1.44	1.55	1.40
Total peaking factor	2.60	2.32	2.45
Nuclear (first core) (Section 4.3)			
Water/UO2 volume ratio (cold)	2.90	2.6	2.95
Reactivity with highest reactivity worth	control	rod	out
Keff	<0.99	<0.99	<0.99
Initial average U235 enrichment (%)	2.08	2.50	2.22
Initial cycle exposure MWd/MTU (Mwd/STU)	11,750(10,660)	17,600(16,000)	10,945(9,950)
Fuel Assembly (Section 4.2) Fuel rod array	10x10	6x6	8x8
Number of fuel rods per assembly	92	36	62
Fuel rod cladding material	Zircaloy-2	Zircaloy-2	Zircaloy-2
Overall length cm(in)	379 (149)	179 (70.5)	447 (176)

1.3-4
Table 1.3-1
Comparison of Reactor System Design Characteristics
Design Characteristic (1) (2) Units ESBWR BWR/1 ABWR

Weight of UO2 per assembly kg (lbm)	163 (360)	68.9(152)	197 (435)
Weight of fuel assembly (includes channel without UO2) kg (lbm)	78 (172)	101 (223)	109 (240)
Fuel Channel (Section 4.2)			mm
3.05/1.91	1.5	2.5	
(in)	(0.120 /0.075)	(0.06)	(0.100)
Cross section dimension mm	140	110	139
(in)	(5.52)	(4.35)	(5.48)
Material	Zircaloy-2	Zircaloy-4	Zircaloy-4
Core Assembly (Section 4.1)			
Fuel weight as UO2 kg	184,867	10,750	172,012
(lbm)	(407,562)	(23,704)	(379,221)
Core diameter (equivalent) mm	5883	1788	5164
(in)	(231.6)	(70.39)	(203.3)
Active fuel length mm	3048	1793	3708
(in)	(120.0)	(70.59)	(146.0)
Reactor Control System (Chapters 4 and 7)			
Method of variation of reactor power	Control rods and FW temperature	Control rods	Control rods and core flow
	ESBWR	BWR/1	ABW
Number of control rods	269	37	205
Shape of control rods	Cruciform	Cruciform	Cruciform
Pitch of control rods mm	309.88	305	309.88
(in)	(12.20)	(12.01)	(12.20)

On the December 13, 2011 Conference Call with Safety Evaluation Review working group on the proposed Fermi 3. Mr. Michael J. Keegan, Fermi 3 Intervenor with Don't Waste Michigan asked all Conference Call attendees: "What was the fuel enrichment level of the fuel that would be used at the proposed Fermi 3 ESBWR?"' No one in the room knew or would share the answer. Keegan further raised concerns about "Positive Void Coefficient" of the reactor after hearing discussion, asking about that potential. Again, no one in the room would or could respond to that question, but he was promised that the NRC would respond. Mr. Keegan was told that the NRC would respond to him with an answer to those questions. The NRC indicated that they had his email address of mkeeganj@comcast.net and would be responding to him.

On December 15, 2011 at the evening session of the DEIS public meeting on the proposed Fermi 3 in Monroe, Michigan, Mr. Keegan asked again what would be the fuel enrichment level of the fuel that would be used at the proposed Fermi 3. Mr. Hale, Project Manager at Fermi 3, responded, that Mr. Keegan had asked that question at a previous meeting and that the NRC would get back to him on that.

By email letter January 9, 2012, Mr. Keegan requested that Mr. Hale provide exact citations and all citations where that information could be found. Mr. Keegan informed Mr. Hale that groups that he was writing on behalf of are in legal proceedings and that information is needed in a timely manner. Mr. Hale did respond to Mr. Keegan on January 10, 2012 as follows:

Mr. Keegan: In response to your questions we recommend that you review the technical information cited as follows for the ESBWR design:
1. Fuel Enrichment Levels – Refer to ESBWR DCD Tier 2 Chapter 1 Table 1.3-1
2. Positive Void Coefficients – Refer to ESBWR DCD Tier 2 Chapter 4 Sections 4.3 and 4B.3

While Intervenors appreciate Mr. Hale's belated response, a review of his citations proves that nowhere in the Environmental Report or the DEIS is there any discussion of the potential of an accident scenario resulting from a "Positive Void Coefficient"'. With the ESBWR projected to use enriched fuel at 4.6% U-235 by weight and running at over 4500 MW thermal, and with so many firsts for this reactor design, the public can have little confidence that there are not present the dynamics for an unparalled disaster. The lack of discussion of an accident scenario encompassing the potential of "Positive Void Coefficient" has been omitted from the NEPA process. NEPA's emphasis on "the importance of coherent and comprehensive up-front environmental analysis. . . ensure[s] informed decision-making to the end that the agency will not act on incomplete information, only to regret its decision after it is too late to correct." Blue Mtns. Biodiversity Project v. Blackwood, 161 F.3d 1208, 1216 (9th Cir. 1998). Because critical information has been omitted from the key NEPA disclosure document, Intervenors have no opportunity to conduct their own investigation with experts in engineering, nor to comment meaningfully under NEPA. (**0077-6-16** [Lodge, Terry])

Response: *This comment is a contention submitted by the intervenors in the Fermi 3 licensing proceeding before the ASLB. The ASLB has rejected this contention, noting that it is not based on any information that is new, materially different, or previously unavailable and has been available in the DCD at least since December 2, 2010, or in the ER since March 2011 when Revision 2 was submitted. No changes were made to the EIS in response to this comment.*

E.2.40 Comments Concerning Issues Outside Scope - Security and Terrorism

Comment: Making Existing Reactors More Secure against Terrorist Attacks: The NRC should revise its assumptions about terrorists' capabilities to ensure nuclear plants are adequately protected against credible threats, and these assumptions should be reviewed by U.S. intelligence agencies. The NRC should modify the way it judges force-on-force security exercises by assessing a plant's "margin to failure," rather than whether the plant merely passes or fails. The U.S. government should establish a program for licensing private security guards that would require successful completion of a federally supervised training course and periodic recertification. Making New Reactors More Secure against Terrorist Attacks: The NRC should

require new reactor designs to be safer than existing reactors. The NRC should require new reactor designs to be more secure against land- and water-based terrorist attacks. (**0026-6-61** [Macks, Vic])

Comment: P. 6-40, 41 For example, if all of the dry active waste, approximately 12.827 ft3 of the 15,859 ft3/yr LLRW (GEH 2010) were to be shipped in approximately 20-ft Sealand containers (1,000 ft3, 1 container per truck), approximately 50 shipments per year to a disposal site would be required, assuming a shipment capacity of 2.34 m3 of waste per shipment for the remaining waste as was assumed in WASH-1238. For comparison to the 46 annual shipments of radioactive waste for the reference reactor, the normalized number of shipments required for Fermi 3 radioactive waste would then be 30 shipments rather than the 114 shipments identified in Table 6-13.

And we assume all of these many, less-guarded shipments arrive at their intended destinations. Has the possibility of hijacking been considered? What if one of these containers is driven into a city and exploded or burned? Would that not have a grave environmental impact? What if the container is dumped into a drinking water reservoir and no one knows it is there until two years later when radiation happens to be detected in someone's drinking/bathing water? (**0034-3-4** [Welke, Jim])

Response: *Comments related to security and terrorism are safety issues that are not within the scope of the staff's environmental review. The NRC is devoting substantial time and attention to terrorism-related matters, including coordination with the DHS. As part of its mission to protect public health and safety and the common defense and security pursuant to the Atomic Energy Act, the NRC staff is conducting vulnerability assessments for the domestic utilization of radioactive material. In the time since September 2001, the NRC has identified the need for license holders to implement compensatory measures and has issued several orders to license holders imposing enhanced security requirements. Finally, the NRC has taken actions to ensure that applicants and license holders maintain vigilance and a high degree of security awareness. Consequently, the NRC will continue to consider measures to prevent and mitigate the consequences of acts of terrorism in fulfilling its safety mission. There are requirements for the physical protection of spent nuclear fuel in transit as set forth in 10 CFR Part 73. Recent proposed revisions to 10 CFR Part 73 would provide additional security enhancements in several areas including communications, procedures and training, armed escorts, and deadly force. Additional information about the NRC staff's actions regarding physical security since September 11, 2001, can be found on the NRC's Web site (http://www.nrc.gov). No changes were made to the EIS in response to these comments.*

Comment: p 6-41... For example, if all of the dry active waste, approximately 12,827 ft3 of the 15,859 ft3/yr LLRW projected (GEH 2010) were to be shipped in standard 20-ft Sealand containers (1,000 ft3, 1 container per truck), approximately 50 shipments per year to a disposal site would be required, assuming a shipment capacity of 2.34 m3 of waste per shipment for the

remaining waste as was assumed in WASH-1238. For comparison to the 46 annual shipments of radioactive waste for the reference reactor, the normalized number of shipments required for Fermi 3 radioactive waste would then be 30 shipments rather than the 114 shipments identified in Table 6-13.

And we assume all of these many, less-guarded shipments arrive at their intended destinations. Has the possibility of hijacking been considered? What if one of these containers is driven into a city and exploded or burned? Would that not have a grave environmental impact? What if the container is dumped into a drinking water reservoir and no one knows it is there until two years later when radiation happens to be detected in someone's drinking/bathing water?

p. 6-42 - Because of the conservative approaches and data used to calculate impacts, the actual environmental effects are not likely to exceed those calculated in this EIS. Thus, the NRC staff concludes that the environmental impacts of transportation of fuel and radioactive wastes to and from the Fermi site and alternative sites would be SMALL, and would be consistent with the environmental impacts associated with transportation of fuel and radioactive wastes to and from current-generation reactors presented in Table S-4 of 10 CFR 51.52.

Yet, NRC's conclusion is based on assumptions that will not necessarily apply, so it is MEANINGLESS, no?

...The distance from the Fermi site or any of the alternate sites to any new planned repository in the contiguous United States would be no more than double the distance from the Michigan site to Yucca Mountain. Doubling the environmental impact estimates from the transportation of spent reactor fuel, as presented in this section, would provide a reasonable bounding estimate of the impacts for NEPA purposes. The NRC staff concludes that the environmental impacts of these doubled estimates would still be SMALL.

What if the spent fuel is sent to China, Africa, or Russia? Then the distance is more than doubled, and transportation modes will vary more, right? And could we rely on other nations to adhere to our standards for disposal and security? Or, might they just toss this stuff in a landfill, and let it come back to us in "dirty" bombs? (**0034-3-10** [Welke, Jim])

Comment: V. THE DRAFT EIS DOES NOT ADDRESS POTENTIAL TERRORIST ATTACKS. The Draft Environmental Impact Statement fails to comply with NEPA's requirement that an EIS include an analysis of impacts from potential terrorist attacks. San Luis Obispo Mothers for Peace v. NRC, 449 F.3d 1016 (9th Cir. 2006), cert. denied, 549 U.S. 1166 (2007), held that the environmental impacts of potential terrorist attacks cannot be ignored in the EIS. In that case, the court found that the NRC acted unreasonably when it categorically refused to consider environmental effects of a terrorist attack on a spent fuel storage facility. Id. at 1028- 1035. The Draft EIS both fails to provide a reasonable explanation for its failure to include terrorism impacts as in Mothers for Peace, and it provides no discussion whatsoever of the impacts from

a potential terrorist attack. This complete omission without explanation does not comply with NEPA's requirements. (**0036-3-4** [Gleckner, Allen])

Comment: It was stated several times that spent fuel can be safely stored and is being stored and has been stored. However, I have not heard any of the potential events that would translate to these storage facilities being unsafe. Primarily, we are in an age of terrorism, and I don't see anything, and I haven't seen anything I any of the literature that I've been reading that we have any kind of security that would prevent any kind of terrorism, an act of terrorism being conducted either at this facility or any others. Can you please comment on that. (**0039-5-1** [Rivera, Ethyl])

Comment: And our Homeland Security Act expands any kind of movement that a nuclear power plants makes. Our shorelines have to be extended one mile away from an active power plant in order to provide security. So if Fermi stretches, the area of impact goes one mile out into the water and stretches. That's a no drive zone for boats, fishing and public access. (**0040-13-3** [Lankford, R.E.])

Comment: Given the inherent vulnerability of Fermi 3 to terrorist attack, efficiency and renewables are more protective and secure energy choices. Fermi is located midway between the major population centers in the Detroit/Windsor and Toledo metro areas. It is on the shore of Lake Erie, upstream of the drinking water supply for tens of millions in the U.S. and Canada. Fermi 2's reactor and on-site wastes are already at risk of terrorism. Fermi 3 would effectively double these risks of attack. As with accidents, a malicious large scale radiological release from Fermi 3 would result in countless casualties and unimaginable property damages downwind and downstream, not to mention catastrophic ecological havoc. (**0058-3** [Kamps, Kevin])

Comment: OIG files include with evidence, false reporting national security violations. Failures with security guards cheating on scenario test with repeated use, cheat sheets and still ?terrorists get in" thus regulatory oversight problematic. Nuclear Waste Corp Co has had leader with direct ties to organized crime involved in trans-global smuggling operations response to federal law enforcement.
(**0081-2** [Anonymous])

Response: *Security and terrorism are safety issues that are not within the scope of the staff's environmental review. The NRC devotes substantial time and attention to terrorism-related matters, including coordination with the DHS. As part of its mission to protect public health and safety and the common defense and security pursuant to the Atomic Energy Act of 1954, the NRC staff is conducting vulnerability assessments for the domestic utilization of radioactive material. Since the events of September 11, 2001, the NRC has identified the need for license holders to implement compensatory measures and has issued several orders to license holders imposing enhanced security requirements. Finally, the NRC has taken actions to ensure that applicants and license holders maintain vigilance and a high degree of security awareness.*

Consequently, the NRC will continue to consider measures to prevent and mitigate the consequences of acts of terrorism in fulfilling its safety mission. Additional information about the NRC staff's actions regarding physical security since September 11, 2001, can be found on the NRC's Web site (http://www.nrc.gov). No change was made to the EIS in response to these comments.

E.2.41 General Editorial Comments

Comment: "DE plans to have an initial workforce at the Fermi plant site in 2011... this first phase would occur over 2 years, and would contribute to readying the site for subsequent building of Fermi 3." (v 1, p 4.64) Doesn't subsequent mean following; as in a sure thing? (**0016-1-5** [Collins, Jessie])

Comment: "Development of Fermi 3 would encroach into approximately 45 acres or about 7 percent of the Lagoona Beach Unit of the Detroit River International Wildlife Refuge." (v 1, p 4.39) Too bad about the protected species living there; but how can it be named International if one Michigan company can destroy it? (**0016-3-30** [Collins, Jessie])

Comment: "Temporary or permanent loss of some aquatic habitat in Lake Erie could result from the building of the intake and discharge structures and development of the barge slip for Fermi 3." (v 1, p 4.45) How cavalier! (**0016-3-31** [Collins, Jessie])

Comment: "Radiation protection experts conservatively assume that any amount of radiation may pose some risk of causing cancer or a severe hereditary effect and that the risk is higher for higher radiation exposures." Why was this sentence used more than once in the document? (v 1, p 5.112 & 5.122, & 6.12, & 6.23, etc) Surely it wasn't to encourage the idea that low level radiation is not as dangerous as high level. (**0016-4-12** [Collins, Jessie])

Comment: **"....**and the stagnation of the nuclear power industry in the United States..." (v 1, p 6.2) Ah, I love that phrase! (**0016-4-20** [Collins, Jessie])

Comment: "Cumulative Impacts can result from individually minor, but collectively significant, actions taking place over a period of time.... The review team considered, among other actions, the cumulative effects of Fermi 3 with current operations of Fermi Unit 2 on the Fermi site. " (v 1, p 7.1) I am glad you established the three significance levels as Small, Moderate, and Large. That is easier to understand than the phosphorus classifications of oligotrophic (low), mesotrophic (moderate), and entrophic (high). (v 1, p 2.72) (**0016-4-33** [Collins, Jessie])

Comment: "The review team concluded the cumulative impacts on surface water quality would be Moderate." (v 1, p 7.15) At least they had enough conscience not to classify the degradation as Low. (**0016-4-34** [Collins, Jessie])

Comment: "DE plans to begin the preconstruction work specific to Fermi 3 in 213 and to complete all construction activities in 2020." (v 1, p 4.64) I submit Fermi Winds as an alternative to the name Fermi 3. (**0016-4-42** [Collins, Jessie])

Comment: "Radiation protection experts conservatively assume that any amount of radiation may pose some risk of causing cancer or a severe hereditary effect and that the risk is higher for higher radiation exposures." Why was this sentence used more than once in the document? (v 1, p 5.112 & 5.122, & 6.12, & 6.23, etc) (**0026-6-21** [Macks, Vic])

Comment: Historic and cultural resources are nonrenewable; therefore, the impacts on historic and cultural resources within the APEs are cumulative. Section 4.6 described how building activities for Fermi 3 would result in the demolition of one onsite property (Fermi 1) that is eligible for listing in the National Register of Historic Places (NRHP) and located within the associated APEs.

It is nice to see the NRC acknowledge that historic and cultural resources are "nonrenewable" -- unlike wetlands, which can be restored and enhanced. The part about Fermi I being eligible for listing in the National Register of Historic Places is just funny. Nice to see the NRC review team has a sense of humor (and irony, and perspective). (**0034-4-11** [Welke, Jim])

Response: *These comments reflect the commenters' personal commentary on the wording used by the NRC staff in various places in the Draft EIS. No changes were made to the EIS as a result of these comments.*

Comment: Staff found several errors of fact in the report, which should be corrected in the final draft. None of these errors had any bearing on the report's conclusions. (**0067-2** [Peven, Robert])

Response: *The NRC staff response to the corrections suggested by the commenter are discussed below.*

Comment: The length of the document was cumbersome and redundant. I only hope that was done to be thorough, and not to be a state-of-the-art literacy test set forth to discourage affected citizens from participating in Democracy. For example, relating the paper numbers for my questions would have been easier if Vol. 1 had been numbered 1 through 804, instead of 1.1 through 8.25; and Vol.2, 1 through whatever, instead of iii through - L-5. (**0016-1-2** [Collins, Jessie])

Response: *In developing the EIS, the Commission has tried to balance the guidance in CEQ regulations concerning page limits with the need to present enough of the information on which the staff's analysis is based for a reviewer to understand the staff's conclusions. The staff followed its standard practice of using a chapter and page number format rather than a consecutive page numbering format in preparing the Draft EIS. The NRC's intent is to foster*

rather than hinder the public's participation in the process. No changes were made to the EIS in response to this comment.

Comment: EPA understands that incorporation by reference is an effective way to conserve resources, particularly when the reference is lengthy. However, the Environmental Report (ER), which is referenced extensively throughout the Draft EIS, was not included with the document. We appreciate that NRC sent a copy of the ER upon request; however, the ER's absence delayed EPA's review. We remain concerned that its unavailability, specifically to those who do not have access to the Internet, prevented readers from understanding the full extent of actions, impacts, and mitigation. Recommendation: EPA recommends the ER be added as an appendix to the Final EIS. (**0078-37** [Westlake, Kenneth A.])

Comment: Most references to the ER were to the whole document and not specific lines, pages, or chapters. This made EPA's review very difficult, as the document is over 1,900 pages in length. We appreciate where specific references were employed, for example, in section 5.2.3.1, page 5-10, line 29. Recommendation: We recommend that in locations where narrative was used to describe information found in the ER, the actual data, figure, table, etc. be inserted into the Final EIS, including, but not limited to, noise and air dispersion models, noise receptors, and radiation monitoring locations. Other references should include section, page, and line numbers. (**0078-39** [Westlake, Kenneth A.])

Response: *In developing the EIS, the Commission has tried to balance the guidance in CEQ regulations concerning page limits with the need to present enough of the information on which the staff's analysis is based for a reviewer to understand the staff's conclusions. No changes were made to the EIS as a result of these comments.*

Comment: Page 2-6 line 3 The International Wildlife Refuge extends further south than described (also Fig. 2-3 is incorrect). (**0067-3** [Peven, Robert])

Comment: Page 2-7 line 6 The Monroe County Planning Commission does not have zoning authority. Similar errors appear on lines 16 and 21, on page 4-7 line 11 and on page 5-2 line 30. Perhaps should state that the Fermi site is "designated" Industrial rather than "zoned" industrial by the County Planning Commission. (**0067-4** [Peven, Robert])

Comment: Page 2-234 line 23 States that there is very little federal land within 50 miles of the site. Perhaps should reference the FWS refuge and the NPS battlefield park. (**0067-5** [Peven, Robert])

Comment: Page 3-16 line 31 (also page 2-12 line 22, page 3-17 line 6, and 3-35 line 19) References Frenchtown Township Sewage Treatment Facility. Should be Monroe Metropolitan Wastewater Treatment Facility. (**0067-6** [Peven, Robert])

Comment: Per Executive Order 12866 and the Plain Writing Act of 2011, there are several instances in the Draft EIS that do not adhere to the government-wide directive to commit to writing in plain language. Below are terms or figures that should be clarified or corrected in the Final EIS or ER:

- The northerly run of the transmission line is parallel to I-275, not I-75 (page 2-10, line 9).
- The status of the Coastal Zone Management Act Certification (page 2-7, lines 1-3).
- Wells referenced on page 2-31, lines 21 through 26 should be identified on a map.
- Keys should be added to figures 2.1-4 and 4.2-1 in the ER.
- Category 1 structures (page 3-2, line 4) should be defined.
- The definition for "standard noise control measures" (page 4-61) should be clarified.
- Identify the "four pieces" of equipment and their potential noise levels (page 4-1 09).
- "Blowdown" should be defined (as referenced throughout the document) earlier than Section 5.2.3.1, page 5-10, lines 6 through 14.
- Page 5-43, paragraph beginning on line 29 references Table 2-15, which should be Table 2-13.
- According to EPA's databases and the project workplan, the Pointe Aux Peaux Wetlands Restoration project, referred to on page 7-21, lines 14 and 15, is located in the Pointe Aux Peaux State Wildlife Area, which is adjacent to the Fermi complex, not within it. Please make this correction in the Final EIS.
- Maps that rely on color ramp symbology should be printed in color.
- Several industry terms that should be defined, including, but not limited to: startup, hot shutdown, stable shutdown, cold shutdown, and refueling.

Recommendation: The Final EIS should be more reader-friendly. EPA recommends the above issues be addressed in order to accomplish this. (**0078-40** [Westlake, Kenneth A.])

Comment: DEIS page 1-2, lines 17-19, and DEIS page 1-8, lines 29-31, state that the ESBWR (Economic Simplified Boiling Water Reactor) final design certification rule was published in the Federal Register (76 FR 14437) on March 16, 2011. The final design certification rule for the

ESBWR has not yet been published, however the ESBWR final design approval was published in the Federal Register (76 FR 14437) on March 16, 2011. The text, “final design certification rule,” should be corrected to “final design approval.” (**0083-1** [Smith, Peter])

Comment: DEIS page 3-3. The legend of this figure, which identifies the structures on the Fermi 3 site, should be corrected to represent the structures as identified by Fermi 3 ER Figure 2.1-4 (ER Revision 2, ML 110600498, Figure 2.1-4 updated via Detroit Edison letter NRC3-11-0026, dated July 15, 2011, ML 112000169). Specifically, identified structure numbers 10 through 22 within the DEIS Figure 3-1 legend are currently inaccurate. (**0083-2** [Smith, Peter])

Comment: DEIS page 3-15, lines 29-34, discuss Fermi 3 standby diesel generators, the auxiliary boiler, and the diesel fire pumps. For consistency with related DEIS descriptions (e.g. DEIS page 3-35 line 26, page 5-55 line 35, page 5-931ine 23, Table 5-22, etc.) and the Fermi 3 ER (ER Revision 2, ML 11 0600498), section 3.2.2.3 should also discuss the Fermi 3 Ancillary Diesel Generators (ADGs). (**0083-3** [Smith, Peter])

Comment: DEIS page 3-33, line 29, references ESBWR DCD Figure 11.4-1 . The Fermi 3 COLA replaces DCD Figure 11.4-1 in Chapter 11 of the FSAR with Figure 11.4-1 R as shown in FSAR (FSAR Revision 3, ML 110600475). The figure was originally included in the Fermi 3 FSAR as submitted in Detroit Edison letter NRC3-10-0010 on February 16, 2010 (ML 10050278), and most recently updated in Detroit Edison letter NRC3-11-0034 on August 24, 2011 (ML 11238A049). The DEIS description of waste management systems, as relates to this figure, is accurate; however Fermi 3 FSAR Figure 11.4-1 R should be referenced instead of the DCD figure. (**0083-4** [Smith, Peter])

Comment: DEIS page 3-33, lines 35-36, refer to solid radioactive waste management system (SWMS) temporary storage in the “Auxiliary and Radwaste Buildings” prior to being shipped. The Fermi 3 COLA plant design describes an Auxiliary Boiler building adjacent to the Radwaste building; however temporary storage is not planned in the Auxiliary Boiler building. Fermi 3 FSAR Chapter 11 describes Fermi 3 radioactive waste management, including the SWMS and storage within the Radwaste building (FSAR Revision 3, ML 110600475). This statement should be reworded to describe SWMS storage in the Radwaste building only. (**0083-5** [Smith, Peter])

Comment: DEIS page 4-5, lines 26-27, and page 4-7, lines 24-25. Text on these two DEIS pages indicates that the Fermi 3 switchyard will be constructed on the farmland southwest of Fermi Drive. The Fermi 3 site plan indicates that the switchyard will be constructed on the other side of Fermi Drive (see ER Figure 2.1-4). In addition, the site plan described in the Fermi 3 ER involves no permanent impacts to prime farmland. The impacts associated with the farmland on the southwest side of Fermi Drive are temporary to support Fermi 3 construction laydown areas (see ER Figure 2.1-4). This text should be corrected to represent the site plan as discussed in the Fermi 3 ER (ER Revision 2, ML 110600498, Figure 2.1-4 updated via Detroit Edison letter NRC3-11-0026, dated July 15, 2011, ML1 12000169). (**0083-6** [Smith, Peter])

Comment: DEIS page 4-12. The Fermi 3 areas affected by construction, identified in DEIS Figure 4-1, should be corrected for consistency with the Fermi 3 ER and discussion in the DEIS. The DEIS figure does not identify the small areas of permanent impacts (approximately 2-1/2 acres) near the planned meteorological tower which are identified in the Fermi 3 ER (see ER Figures 2.1-4 and 4.2-1). Also, the impacted areas along the north east side of Fermi Drive should be extended all the way to Fermi Drive instead of showing a strip of un-impacted land (see ER see ER Figures 2.1-4 and 4.2-1). In addition, the previously developed area associated with the Fermi 3 discharge pipe should be extended further into Lake Erie to accurately represent the current site condition and past site development (see discussion in ER Section 4.3.2.2 "Impacts to Lake Erie," and ER Figure 4.3-5). See Fermi 3 ER Revision 2 (ML 11 0600498) with pertinent updates submitted via Detroit Edison letter NRC3-11-0026, dated July 15, 2011 (ML 112000169). (**0083-7** [Smith, Peter])

Comment: DEIS page 5-23, lines 18-19 refer to 29 acres of restored prairie that will be permanently converted to use by Fermi facilities. This should identify only 10 acres of permanent impacts. As shown in Fermi 3 ER Figure 2.1-4 (see also ER Figures 4.2-1, 4.3-2 and 4.3-3), ER Table 4.1-1, and discussed in ER section 4.1.2, approximately ten acres of this area will be permanently impacted by construction of the Fermi 3 switchyard. Temporary construction impacts are identified for the remaining prairie restoration area. See Fermi 3 ER Revision 2 (ML 11 0600498), with pertinent updates submitted via Detroit Edison letter NRC3-11-0026, dated July 15,2011 (ML 112000169). (**0083-8** [Smith, Peter])

Comment: DEIS page 5-91, lines 26-27, and DEIS Table 5-35, page 5-140 (Air Quality and Meteorology section) indicate that cooling water is treated to reduce salt concentrations in the context of cooling tower drift and drift deposition. DEIS Table 5-35, page 5-137 (Land Use Impacts section) appropriately states that salt drift mitigation, beyond the use of cooling tower drift eliminators, is not required. The relationship of cooling water treatment in the DEIS context associated with cooling tower drift is unclear. It is unclear how cooling water blowdown discharge water treatment affects drift deposition as implied by its inclusion in DEIS Section 5.7.1.3. (**0083-9** [Smith, Peter])

Response: *These comments are editorial in nature. The EIS was changed to address these comments.*

E.3 References

10 CFR Part 20. Code of Federal Regulations, Title 10, *Energy*, Part 20, "Standards for Protection against Radiation."

10 CFR Part 50. Code of Federal Regulations, Title 10, *Energy*, Part 50, "Domestic Licensing of Production and Utilization Facilities."

10 CFR Part 51. Code of Federal Regulations, Title 10, *Energy*, Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions."

10 CFR Part 52. Code of Federal Regulations, Title 10, *Energy*, Part 52, "Early Site Permits; Standard Design Certifications; and Combined Licenses for Nuclear Power Plants."

10 CFR Part 54. Code of Federal Regulations, Title 10, *Energy*, Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants."

10 CFR Part 71. Code of Federal Regulations, Title 10, *Energy*, Part 71, "Packaging and Transportation of Radioactive Material."

10 CFR Part 73. Code of Federal Regulations, Title 10, *Energy*, Part 73, "Physical Protection of Plants and Materials."

10 CFR Part 100. Code of Federal Regulations, Title 10, *Energy*, Part 100, "Reactor Site Criteria."

33 CFR Part 332. Code of Federal Regulations, Title 33, *Navigation and Navigable Waters*, Part 332, "Compensatory Mitigation for Losses of Aquatic Resources."

40 CFR Part 93. Code of Federal Regulations, Title 40, *Protection of Environment*, Part 93, "Determining Conformity of Federal Actions to State or Federal Implementation Plans."

40 CFR Part 98. Code of Federal Regulations, Title 40, *Protection of Environment*, Part 98, "Mandatory Greenhouse Gas Reporting."

40 CFR Part 141. Code of Federal Regulations, Title 40, *Protection of Environment*, Part 141, "National Primary Drinking Water Regulations."

40 CFR Part 190. Code of Federal Regulations, Title 40, *Protection of Environment*, Part 190, "Environmental Radiation Protection Standards for Nuclear Power Operations."

40 CFR Part 230. Code of Federal Regulations, Title 40, *Protection of Environment*, Part 230, "Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material."

40 CFR Part 423. Code of Federal Regulations, Title 40, *Protection of Environment*, Part 423, "Steam Electric Power Generating Point Source Category."

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74 FR 66496. December 15, 2009. "Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act. *Federal Register*. Environmental Protection Agency.

76 FR 66925. October 28, 2011. "Children's Health Protection Advisory Committee (CHPRAC): Notice of Charter Renewal." *Federal Register*. Environmental Protection Agency.

75 FR 31514. June 3, 2010. "Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule." *Federal Register*. U.S. Environmental Protection Agency.

76 FR 14437. March 16, 2011. "Economic Simplified Boiling Water Reactor Standard Design: GE Hitachi Nuclear Energy; Issuance of Final Design Approval." *Federal Register*. U.S. Nuclear Regulatory Commission.

77 FR 16082. March 19, 2012. "In the Matter of All Power Reactor Licensees and Holders of Construction Permits in Active or Deferred Status: Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation (Effective Immediately)." *Federal Register*. U.S. Nuclear Regulatory Commission.

77 FR 16091. March 19, 2012. "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Effective Immediately)." *Federal Register*. U.S. Nuclear Regulatory Commission.

77 FR 16098. March 19, 2012. "In the Matter of All Operating Boiling Water Reactor Licensees with Mark I and Mark II Containments; Order Modifying Licenses with Regard to Reliable Hardening Containment Vents (Effective Immediately)." *Federal Register*. U.S. Nuclear Regulatory Commission.

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11. ABSTRACT (200 words or less)

This environmental impact statement (EIS) has been prepared in response to an application submitted to the U.S. Nuclear Regulatory Commission (NRC) by Detroit Edison for a construction permit and operating license (combined license or COL). The proposed actions related to the Detroit Edison application are (1) NRC issuance of a COL for a new power reactor unit at the Detroit Edison Enrico Fermi Atomic Power Plant (Fermi) site in Monroe County, Michigan; and (2) U.S. Army Corps of Engineers (USACE) permit action to perform certain regulated activities on the site. The USACE is participating with the NRC in preparing this EIS as a cooperating agency and participates collaboratively on the review team.

After considering the environmental aspects of the proposed action, the staff's recommendation to the Commission is that the COL be issued as proposed. This recommendation is based on (1) the application, including the Environmental Report (ER) submitted by Detroit Edison; (2) consultation with Federal, State, Tribal, and local agencies; (3) the staff's independent review; (4) the staff's consideration of comments related to the environmental review that were received during the public scoping process and on the draft EIS; and (5) the assessments summarized in this EIS, including the potential mitigation measures identified in the ER and this EIS. The USACE permit decision would be made following issuance of this final EIS and completion of its permit application review process and permit decision documentation.

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