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Comment On: NRC-2014-0109-0033
DTE Electric Company; Fermi 2 Nuclear Power Plant; Issuance of Draft Environmental Impact Statement

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Submitter Information

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RULES AND DIRECTIVES
BOARD OF DIRECTORS

General Comment

See attached file.

Docket ID NRC-2014-0109

December 28, 2015

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FR 68881

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Today, on behalf of the Alliance to Halt Fermi 3 organization, I am submitting the attached document file as our official written public comment for this proposed federal action.

David Schonberger
Authorized Representative for the Board of Directors
Alliance to Halt Fermi 3 (ATHF3)
<http://www.ATHF3.org>

Attachments

Docket ID NRC-2014-0109

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| E-RIDS= ADM-03 |
| Add= E. Keegan (ENK) |

**U.S. Nuclear Regulatory Commission (NRC)
Docket Nos. 50-341; NRC-2014-0109**

**Fermi Nuclear Power Plant, Unit 2 (Fermi 2)
License Renewal Application (LRA) Environmental Review
Applicant/Licensee: DTE Electric Company (DTE)**

Generic Environmental Impact Statement [GEIS] for License Renewal
of Nuclear Plants (NUREG-1437), Supplement 56, Regarding Fermi 2
Nuclear Power Plant, Vol. 1 and 2

(Draft Report for Comment)

also known as:

**Draft Supplemental Environmental Impact Statement
(Draft SEIS or DSEIS)**

December 28, 2015

Public Comment

Submitted to:

<http://www.Regulations.gov>

Docket ID NRC-2014-0109

Submitted by:

Alliance to Halt Fermi 3 (ATHF3)

Board of Directors

Livonia, Michigan U.S.A.

<http://www.athf3.org>

Introduction:

Alliance to Halt Fermi 3 (ATHF3) is a 501(c)(3) organization based in Southeast Michigan representing numerous individual and organizational members, the majority of whom reside within fifty (50) miles of DTE's Fermi 2 nuclear reactor and are subjected to its adverse environmental impacts. In addition to opposing the construction of Fermi 3, the Alliance unconditionally opposes the relicensing of Fermi 2 for the 2025 – 2045 timeframe and calls on DTE to:

- 1) Withdraw its Fermi 2 License Renewal Application, and
- 2) Shutdown the Fermi 2 reactor as soon as possible.

Concurrently, as stated in our Bylaws, we encourage and advocate for the development and expanded use of sustainable, reliable, clean, safe and affordable alternatives to nuclear power, such as renewable energy sources and robust energy efficiency and conservation programs.

Preface:

In addition to the specific items that follow, we present these comments to document our opposition to the NRC's blanket overuse and misapplication of assessments and findings from the Generic Environmental Impact Statement (GEIS) and the determination of certain environmental impacts to be "generic" to *all* nuclear power plants, "...or in some cases, to plants having specific characteristics [shared in common] such as a particular type of cooling system." (Scoping Summary). Due to the NRC's "copy and paste" approach for developing the Draft SEIS, we contend that numerous plant-specific, site-specific environmental impacts associated with the continued

operation of Fermi 2 have been incorrectly designated as “generic” (Category 1) resulting in such issues being dismissed as falling outside the scope of the NRC’s Fermi 2 LRA Environmental Review.

Equally, the narrowly-defined scope of the NRC’s Fermi 2 LRA Safety Review serves, by design, to eliminate the consideration of numerous safety, security, and emergency planning/preparedness issues which the vast majority of members of the public would consider as pertinent and vital to the question of license renewal.

Therefore, it is in that context that ATHF3 wholly reiterates and resubmits our official written Public Comment from August 29, 2014 which pertained to the NRC’s Scoping Process for the Draft SEIS related to the proposed Fermi 2 federal relicensing action. ATHF3’s public submission from 2014 is on file with the NRC and is also available for viewing at: <http://www.ATHF3.org/Fermi-2>.

Let it be clear we continue to stand by our previous assessment that the proposed federal relicensing action would be “inimical . . . to the health and safety of the public.” (Atomic Energy Act (AEA), 42 U.S.C. § 2133(d)). Further, ATHF3 contends that the Draft SEIS is deficient such that further analysis is called for, pursuant to federal law (NEPA). Through omissions, errors and misleading assumptions, the NRC has failed to comply with the “hard look” requirements established for proposed federal actions.

ITEM # 1

Uranium mining and processing: (offsite fuel cycle front end impacts during the period of extended operation)

The *Atomic Energy Act (AEA)* precludes the U.S. NRC from licensing any new nuclear power plant or re-licensing any existing nuclear power plant if it would be "inimical . . . to the health and safety of the public." 42 U.S.C. § 2133(d).

The Draft Supplemental Environmental Impact Statement (DSEIS) cites numerous reports on evidentiary reviews, assessments, and the results of those actions. It is glaringly deficient, however, by the absence of an important area in which the relicensing of DTE Electric Company's Fermi 2 nuclear reactor does, and would continue to, negatively impact the health and safety of "the public" in direct contradiction to the above-cited United States Code.

While repeatedly relying on the Generic EIS and applying assessments and "generic environmental impacts" from data pertaining to numerous nuclear power plants across the country, the NRC has selectively limited its documented reviews and assessments to environmental impacts within the narrow geographical/physical confines of the Fermi 2 plant and its surrounding environs. Excluding certain off-site issues from the Scope of the SEIS and Environmental Review of the Fermi 2 License Renewal Application (LRA) has resulted in totally eliminating from consideration several important environmental issues affecting the health and safety of the public through negative physical, economic, and environmental justice impacts.

While Federal law (NEPA) requires the NRC to apply a “hard look” analysis for evaluating the reasonably foreseeable environmental and public health consequences of the proposed relicensing action and to consider the potential impacts of both mitigating and fundamental alternatives, it is noted that the NRC did not prepare a separate biological assessment for the proposed Fermi 2 license renewal.¹ In its October 20th letter to the Fish and Wildlife Service, the NRC states that “.... the SEIS constitutes the NRC’s biological assessment”

The Draft SEIS for the Fermi, Unit 2 LRA states that it “considers the environmental impacts across several impact categories, including land use, visual resources, air quality and noise, geologic environment, water resources, ecological resources, historic and cultural resources, socio-economics, human health, environmental justice, and waste management.” In our review of the Draft SEIS, however, no mention can be found of a realistic analysis of the significant offsite public health consequences of front end activities related to the nuclear fuel cycle during the proposed license renewal period. In particular, ATHF3 contends that the Fermi 2 relicensing would result in widespread impacts in resource-specific regions due to additional Uranium Mining, Milling, Processing and Transportation. In-scope impacts would fall into the categories of public health, environmental justice, land use, socio-economic justice and the often overlooked biological effects.

The Human Health, Environmental, Cultural, and Socio-Economic Effects resulting from the contamination of human populations, surface and groundwater and the surrounding environment are not addressed in this document, albeit disproportionately high environmental impacts from this activity are well recognized and documented. The fact that they occur outside the regional area of Fermi 2 (primarily in low-income or minority communities, predominantly on Aboriginal or indigenous

lands) should not automatically exclude them from the identification, review, and assessment of environmental impacts, impacts that primarily affect geographically dislocated or dispersed minority or low-income populations, indigenous populations and their habitats.

Reference:

1. Letter to Messrs. Tom Melius and Scott Hicks, Fish and Wildlife Service Regarding the Availability of the Fermi Draft SEIS, October 20, 2015, from David J. Wrona, Chief, Environmental Review and Guidance Update Branch, Office of NRC Regulation.

ITEM # 2

High-Level Radioactive Waste (HLRW) impacts during the period of extended operation:

The NRC's conclusions are truly remarkable. It is reasonable to estimate that during the 20-year license renewal period, Fermi 2 would generate an amount of spent nuclear fuel (HLRW) from normal operations equal to about 50% of that which it produced during the original 40-year operating license period. Concurrently, the self-described "structured coordination" between the nuclear industry and the federal regulator appears to be heading towards a condition of potentially indefinite "continued storage" of spent nuclear fuel with no technical specifications in place, now or for the foreseeable future.

As a consequence of several re-racks implemented as part of an extremely misguided policy, the Fermi 2 spent fuel pool currently stores approximately twice the amount of spent fuel as it was originally designed to hold (4600 vs. 2300 design), resulting in a precariously vulnerable condition which must be actively managed at all times.

Adding to the danger is that Fermi 2's GE Mark I BWR design locates the spent fuel pool in an elevated position inside what is now an age-degraded structure. Fermi 2 has a uniquely large spent fuel pool capacity relative to other boiling water reactors in the U.S. commercial fleet; hence Fermi 2 has the potential for uniquely severe consequences in the event of a severe accident.

Thus, the impact of spent nuclear fuel generation and storage at Fermi 2 is a plant-specific issue which pertains directly to the license renewal period. To get some idea of how much HLRW is at issue here, ATHF3 did our own calculations which we submit for the record. We note as well that we had to refer back to a 2002 U.S. Department of Energy (DOE) document and then extrapolate. Apparently, the NRC does not require licensees such as DTE to disclose exactly how much HLRW they have generated at any given time, so additionally, ATHF3 calls for more accountability and transparency in the NRC's Final SEIS.

The 2002 DOE Yucca Final EIS, Tables A-7 and A-8, revealed that by spring 2010, Fermi 2 would have 523 metric tons of irradiated nuclear fuel stored on site. Fermi 2 generates about 20 metric tons more irradiated nuclear fuel each year it operates. Therefore, by spring 2016, Fermi 2 will have 20 metric tons/year X 6 years = 120 metric tons, plus the 523 metric tons that already existed, for a grand total of 643 metric tons by spring 2016.

2016 to 2045 is 29 more years. 29 years X 20 metric tons/year = 580 metric tons, for a grand total by 2045 of 580 + 643 = 1,223 metric tons.

The above metric ton figure for **2045** can be converted to U.S. tons by multiplying by 1.1023. 1,223 metric tons X 1.1023 = **1,348 U.S. tons**.

ITEM # 3

Public Health impacts during the period of extended operation:

Fermi 2 violates the most basic human right, the right to life:

The U.S. Nuclear Regulatory Commission (NRC) gives some limited acknowledgment of this human right violation in the Generic EIS for License Renewals as follows:

“Sodium hypochlorite is added as a biocide to the circulating water to limit biofouling of condenser tube surfaces.”

“The plant’s NPDES permit does not impose any thermal effluents limits, such as either a maximum temperature or a change in receiving water temperatures per unit of time.”

“All nuclear plants were licensed with the expectation that they would release radioactive material to both the air and water during normal operations.”

“The radioactive material removed from the effluents is either released into the environment or converted into a solid form for disposal at a licensed radioactive disposal facility.”

“Cumulative impacts on the terrestrial Ecology would be Moderate to Large. The cumulative impacts on the aquatic resources would be Large.”

From NUREG-2105 (Fermi 3 EIS) acknowledging the serious disease causing impact of reactor operations on public health:

“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)

The most fundamental violation of the right to life was the decision, made in secret by a few individuals from the U.S., U.K. and Canada, to build atomic fission reactors in order to generate nuclear weapons material and that the entire biosphere would be irradiated and the public would be misled as to the seriousness of it:

Based on the National Academy of Sciences, Committee on the Biological Effects of Ionizing Radiation (BEIR):

At 100 Rems or 1 Sievert (Sv) the risk of cancer is 1 in 10.

At 10 Rems or 100 mSv the risk of cancer is 1 in 100.

At 1 Rem or 10 mSv the risk of cancer is 1 in 1,000.

Low dose radiation is defined as near zero to 100 mSv.

The BEIR 2007 report predicts cancer and genetic damage below 20 mSv per year and subsequent research indicates that there is an increased magnitude at lower doses than previously seen. Japan (*after the meltdown of 3 GE Mark 1 reactors*) is allowing (and coercing) return to Fukushima evacuated areas and has raised the allowable dose from 1 mSv per year to 20 mSv per year. For women and children (girls higher than boys), the risk of cancer is much higher than for a 25 year old healthy white adult male (the standard used since the flawed studies---- begun 5 years after and based only on estimates of external radiation--- of Hiroshima and Nagasaki victims). Japanese returning to evacuated

areas will have a risk of cancer of 1 in 500 at the 20 mSv dose, but a 5 year old girl will have a risk of cancer of 1 in 100. That risk will multiply for each year of exposure. Furthermore, the above statements assess external gamma radiation exposure only and leave out alpha and beta particles that are breathed in or ingested in air, water and food and become a continuing internal emitter source not measured.

Bearing in mind that man-made ionizing radiation can cause almost the whole spectrum of human illness, that it is cumulative, that it combines with natural occurring radiation in the environment such as radon, and that it combines with the huge load of ionizing radiation from uranium mining and milling, nuclear weapons manufacture and testing, as well as the excessive use of medical X-rays and nuclear medicine procedures. All of these items in this list have been linked together by the common thread of government and media misrepresenting the real risk in order to promote nuclear weapons/nuclear energy production as a normal, desirable, acceptable part of modern life. The attitude of governments and the nuclear industry has been: Don't measure doses, and conflate "allowable" with "safe."

The NRC addresses the risk of catastrophic failure of containment of Fermi 2 as though it existed in isolation and not one of a total of 391 reactors operating in 30 countries. Fermi 2's license renewal would add to the cumulative risk of catastrophic failure at a greater frequency world wide and of global fallout. From the landmark book *CHERNOBYL: Consequences of the Catastrophe for People and the Environment* (<http://stopnuclearpoweruk.net/sites/default/files/Yablokov%20Chernobyl%20book.pdf>): "...For the past 23 years it has been clear that there is a danger greater than nuclear weapons concealed within nuclear power. Emissions from this one reactor exceeded a hundredfold the radioactive contamination of the bombs dropped on Hiroshima and Nagasaki. No

citizen of any country can be assured that he or she can be protected from radioactive contamination. One nuclear reactor can pollute half the globe. Chernobyl fallout covered the entire Northern Hemisphere.”

Fermi 2 violates the right to life of this generation and all future generations as seen in the effort to abandon radioactive material:

The process of the U.S. NRC's Supplemental Environmental Impact Statement (SEIS) on the license application (long languishing and long opposed) for a deep nuclear underground dump (Yucca Mountain) recently concluded the required public comment period. This deep underground dump is for high-level radioactive material (withdrawn nuclear fuel rods) -- lethal in minutes and dangerous for up to a million years. We have approximately 72,000 tons and Canada about 50,000 tons of that material. Approximately 600 tons sit outside of containment next to Fermi 2 near Monroe, Michigan. If a centralized repository and/or interim regional repositories were to be implemented, we would have Fukushima Freeways with this material on highways, barges and rail lines moving across the country. The push for all of the above is money to be made. Utilities want the burden of management of this material off their books. It then becomes the taxpayers' burden. The utilities then produce more. Worse though is the potential for accidents, public exposure to traveling radiation, terrorist attack, and possibly rendering areas or regions uninhabitable.

The overall issue regarding the proposed Yucca Mountain Nuclear Waste Repository is that the idea is without substance in fact, when considering science and engineering, as there is no data from experience to validate hypotheses about the behavior of abandoned man-made radionuclides over up to a million years. The only two

commenced underground dumps have had unresolved failures in Germany and at WIPP near Carlsbad, NM. Both have suspended operations. What is known is that ionizing radiation cannot be turned off, must be shielded and monitored through every generation into eternity, unless at some future time a better management of the accumulated and accumulating nuclear material is discovered, validated, and implemented. Until then, it is the moral obligation of this generation to stop making radioactive material and to educate succeeding generations on the best shielding and monitoring practices. The current best practice (not embraced by the NRC and the nuclear industry) is Hardened Onsite Storage (HOSS). Furthermore, it is disingenuous of nuclear advocates and profiteers who have little financial risk or liability in the production of the nuclear waste legacy (due to federal loan guarantees, the Price-Anderson Act, rate payer bailouts, federal ownership of nuclear waste once removed from the utilities' site) to ignore the cost burden on this and all future generations of the management of the nuclear waste utilities are producing. Utilities bear little financial risk, gain the profit, and the public carries the financial burden that has yet to be calculated or even discussed. Most important, however, is the known impact of ever expanding exposure to man-made radionuclides: broad spectrum illness, morbidity, and genetic mutations.

Bottom line, continuing to produce lethal withdrawn reactor fuel rods knowing they are lethal with no plan for their management through every generation into eternity is inexcusable and constitutes an extreme betrayal of the public trust. Such behavior on the part of DTE and NRC with regard to advancing the Fermi 2 license renewal action demonstrates arrogant, dangerous and reckless disregard for this generation and all future generations of life on Earth.

ITEM # 4

NRC's Solar Alternative analysis fails the "hard look" test:

The NRC's rejection of solar power as a viable alternative to nuclear power is both erroneous and based on obsolete standards.

"Solar PV resources in the ROI [Region of Influence] and across Michigan range from 4.0 to 4.5 kilowatt hours per square meter per day (kWh/m²/d) (NREL 2013c). Economically viable solar resources are considered to be 6.75 kWh/m²/d and greater (BLM and DOE 2010)." (Draft SEIS, p. 2-13).

Let's see just how wrong the NRC's Draft SEIS is. Solar power in Germany consists almost exclusively of photovoltaics (PV) and accounted for an estimated 6.2 to 6.9 percent of the country's net-electricity generation in 2014. ("Solar Power in Germany" article, *Wikipedia*).

Out of its total 13,041 MW of electric generating capacity in 2005 (1.22% of the U.S. total), DTE Energy produces 61.3% from coal, 16.4% from natural gas, 11.7% from oil, 9.3% from nuclear, and 0.2% from biomass. DTE Energy owns power plants in Alabama, California, Illinois, and Michigan; 95.5% of the company's generating capacity comes from power plants in Michigan. ("DTE Energy" article, *Wikipedia*).

The Fermi 2 Nuclear Power Plant is owned and operated by DTE and provides electricity through the Midcontinent Independent System Operator (MISO) to an 11-county service area in southeastern Michigan. This service area constitutes the Region of Influence (ROI) for the NRC's analysis of replacement power alternatives. (Draft SEIS at 2-5).

“Solar insolation” is a measure of solar radiation energy received on a given surface area in a given time, or in other words, how much sunlight is shining down on us. For comparison, Germany has significantly less sunlight to work with than does Michigan but still manages to use solar PV panels to generate much of its electricity. As a matter of fact, Germany’s solar resources are closer to 3.0 kWh/m²/d than to 4.0 - 4.5 kWh/m²/d. Therefore, if the equivalent of Germany's 2014 solar PV panels were installed within DTE’s service area in Michigan, the installed solar capacity would have generated between 8.2% to 10.3% of Michigan's electrical power. As shown above, that is roughly the same percentage of power now provided by Fermi 2. In other words, the solar alternative has already proved in the real world to be viable both as a utility-scale source of power and as a potentially cost-effective replacement for Michigan’s nuclear plants.

(See “solar insolation world map,” Internet search;

<http://solargis.info/doc/pics/freemaps/1000px/dni/SolarGIS-Solar-map-DNI-World-map-en.png>).

On the issue of grid reliability, the NRC points out that solar panels provide intermittent power and do not provide baseload power the way a nuclear reactor does. This is true. However, solar panel output is very closely matched with peak power demand. When solar panels provide predictable peak power, the need for baseload power is greatly reduced. Again, Germany is an excellent example of how solar panels can be integrated with the electrical grid, thus entirely eliminating the need for nuclear power.

ATHF3 contends that the NRC has chosen to ignore the well-known examples of countries such as Germany which successfully use renewable solar solutions to displace conventional power sources on a

modern electrical grid despite such countries having significantly less sunlight to work with than is available in Michigan. It would be even easier for Michigan to make solar work.

The NRC has also chosen to ignore other well-known economic facts and trends which favor solar power over nuclear power looking ahead to the 2025 – 2045 timeframe. Using an outdated figure from 2010 for the intensity of sunlight required for PV panels to be “economically viable” is just absurd. The price of solar panels has dropped precipitously in the last five years, while the efficiency of the average commercial panel has increased. As a result, the fact is that solar panels today are approximately at grid parity with steam-generated electricity, and there is broad agreement that the price of solar panels will continue to improve for customers in the coming years.

In short, solar power IS a viable alternative to nuclear power. The NRC is completely wrong to dismiss it.

ITEM # 5

NRC omits a “hard look” at the future demand for electricity:

In the Environmental Impact Statement (Fermi 3 EIS, 2013) for the proposed Fermi 3 nuclear power plant, there is an entire section (Section 8) entitled “Need for Power.” It discusses power planning in Michigan, power demand and power supply, giving references with specific projected figures out to 2025. Surely, specific figures for projected electrical demand are just as relevant for relicensing Fermi 2 as for licensing Fermi 3, but there is no such section in the Fermi 2 Draft SEIS.

According to data published by the U.S. Energy Information Administration (EIA), the amount of electricity generated in Michigan over the ten year period from 2005 to 2014 actually declined by roughly 1% per year, more exactly, an average annual decline of 0.985%. There are other ways of looking at the data which would show an even steeper decline, such as over the last seven or eight years coinciding with the global financial crisis and severe recession. Detailed figures are shown at an ATHF3 website:

<https://athf3.wordpress.com/2015/12/16/michigans-electricity-industry>.

If this declining trend were to continue through 2025, the difference between electricity generated in 2014 (the last year for which the EIA has data) and 2025 would be 21 million megawatt-hours. To make this unambiguously clear – the amount of electricity generated in 2025 would be 21 million megawatt-hours less than was generated in 2014. As it happens, 19-21 million megawatt-hours is the combined annual generating capacity of both Fermi 2 and the proposed Fermi 3, using capacity factors of 80% to 90%. The straightforward conclusion if the current trend continues is that, by 2025, neither Fermi 2 nor Fermi 3 would be needed to generate electricity.

ATHF3 understands that the NRC heavily relies on other agencies to calculate future demand for electricity in the region. For transparency, the NRC should therefore specify which agencies and studies it relies on. Then, members of the public can evaluate whether those projections and forecasts are in line with reality. If it turns out that the demand for more electrical generating capacity does not exist in the actual future, then it would make much more sense to close the Fermi 2 plant when its original 40-year operating license expires than to continue operating the unnecessary power plant for an additional twenty years until 2045.

ITEM # 6

NRC's Energy Efficiency Alternative analysis fails the "hard look" test:

"Michigan has only begun to scratch the surface of energy savings. Our energy efficiency industry can secure savings at a 2% standard per year very easily with existing technology."

(Michigan Energy Efficient Contractor's Coalition, Comments to the question about the feasibility of energy efficiency in Michigan - MI Energy Report 2012)

According to the MI Energy Report 2012, the Michigan Public Service Commission (MPSC) reports that the overall cost of conserved energy through EO (Energy Optimization) programs was \$20/megawatt hour. The MPSC reports that every dollar spent on EO returns \$3.55 - \$4.88 in savings. It is noteworthy that the utilities have exceeded the EO targets each year since 2009 with the passage of new state legislation (PA 295). (<http://www.michigan.gov/energy>).

In November 2013, at the behest of the MPSC and DTE Energy Company, GDS Associates, Inc. (an engineering & consulting firm) released the Michigan Electric & Natural Gas Energy Efficiency Potential Study. It concluded that a very large cost-effective energy efficiency potential remains untapped. According to the study, there is a 10-year achievable potential of 1.5% per year in electrical savings (the current standard is 1.0% per year). The study notes that the maximum economically cost-effective potential was more than double this amount. Of course, what is technically achievable is even greater but given realistic achievability, there is sufficient cause to push for higher EO standards that will begin to pave the way to greater long-term sustainability. The 10-year projection looked at the period of January 2014 - December 2023.

In a February 2015 letter to Michigan's Governor Rick Snyder, a coalition of four energy efficiency organizations (MI Energy Innovation Business Council, MI Solid State Lighting Association, US Green Building Council - MI Chapter, and American Council for an Energy Efficient Economy) concluded that increasing the EO goal to 1.5% per year would yield a \$22 billion impact on Michigan's economy over the next ten years. This is \$14 billion more than the business-as-usual projections under the current 1% goal. Increasing the goal would also result in an additional 100,000 job years and \$5 billion in additional employment compensation.

According to Martin Kushler, Ph.D. with the ACEEE (American Council for an Energy-Efficient Economy), the rationale for energy efficiency as a utility system resource is simply this:

- 1) Utility systems need to have adequate supply resources to meet customer demand.
- 2) To keep the system in balance, you can add supply resources, reduce customer demand, or a combination of the two.
- 3) In virtually all cases today, it is much cheaper to reduce customer demand than to acquire new supply resources (we save electricity for about 1/3 the cost of producing it through a new power plant).
- 4) Over a dozen states (including Michigan) are saving enough energy with their utility programs to displace existing power plants.

In a special message from Michigan's Governor Rick Snyder (March 2015), he urges a call to action: "We should meet at least 15% more of Michigan's energy needs in the next decade by eliminating energy waste."

An ambitious plan that includes clean, renewable energy sources plus the achievable elimination of energy waste through energy efficiency programs could result in 40% of our electricity coming from renewables and efficiency improvements by 2025. The energy efficiency component of this pie chart is 21%. (Martin Kushler, ACEEE report). Notably, Members of the U.S. House of Representatives have introduced and are co-sponsoring a new initiative which is even more ambitious, citing the well-known research of Dr. Mark Jacobson at Stanford University. Such research is applicable to the country as a whole as well as to Michigan specifically, as the analysis includes a unique roadmap for each state to achieve a 100% efficient, renewable-based energy system. The Stanford research conclusions are bolstered by independent work conducted by the Rocky Mountain Institute (RMI) and the Institute for Energy and Environmental Research (IEER), among others. (<http://www.congress.gov/bill/114th-congress/house-resolution/540/cosponsors>)

Meanwhile, the NRC “considered but dismissed” the role that energy efficiency and conservation programs (demand-side management) could play as a reliable, standalone alternative to the proposed Fermi 2 license renewal. The NRC has irresponsibly issued a *generic* conclusion that “while the [energy efficiency and conservation] potential in the United States is substantial,” such programs are “unlikely” to be “implemented expressly to replace or offset a large baseload generation station.” (Fermi 2 DSEIS at 2-14, 2-15 citing GEIS).

So, even while acknowledging the MPSC’s 2013 determination that “energy efficiency programs potentially could reduce demand in the DTE service area by approximately 800 MW [(2/3 of Fermi 2’s output)] by 2023,” the NRC nevertheless explicitly eliminated the energy efficiency and conservation alternative from “detailed study” in the

Fermi 2 Draft SEIS. (Fermi 2 DSEIS at 2-14, 2-15). Why does the future demand for electricity lie outside the scope of whether or not to relicense Fermi 2 for another 20 years?

Clearly, as indicated, ATHF3 has a genuine dispute with the NRC's generic determinations pertaining to the feasibility of replacing Fermi 2 with commercially-available energy efficiency technologies and renewable energy sources. We believe it is short-sighted to dismiss the potential for achieving the kinds of savings through energy efficiency that have been demonstrated by recent studies. The future of energy in Michigan is at a crossroads. We expect the NRC to take another look at this obvious oversight and evaluate in depth the potential of eliminating energy waste through energy efficiency before granting a 20-year operating license extension to DTE for the Fermi 2 nuclear reactor.

ITEM # 7

Environmental Justice impacts on Monroe County residents:

Pertaining to Executive Order 12898 and the Environmental Justice requirements under NEPA and 10 CFR Part 51, ATHF3 contends that the Fermi 2 License Renewal would cause significant and cumulative adverse impacts to residents of Monroe County, Michigan and that such impacts would be disproportionately high as a function of a resident's relative proximity to the point source of emissions, effluents and routine releases from normal operations. Furthermore, during the proposed period of extended operation, Monroe County residents living nearby the Fermi 2 facility would face a disproportionately higher risk of exposure to radioactive contaminants in the event of an unplanned off-site release caused by a severe accident.

ATHF3 contends it is no accident that industrial facilities and power plants such as Fermi 2 are targeted for construction and license renewal in minority and/or lower-income communities such as Monroe County, thus subjecting marginalized populations to disproportional impacts from cumulatively higher doses of toxic and radioactive pollutants. The predictable consequences show up in community public health metrics.

Indeed, it is already the case that a longitudinal public health study indicates the residents of Monroe County suffer from morbidity and mortality at higher rates than the U.S. average, and such disturbing historical data points and trends are correlated with the specific time period during which the Fermi 2 nuclear plant has been in operation. (Mangano, Docket Nos. 50-341; NRC-2014-0109). The NRC has gone out of its way to dismiss and discredit the peer-reviewed research of public health professionals in the U.S. and Europe; the NRC's real agenda is transparent, even while the NRC itself is not. ATHF3 contends that further analysis is called for pursuant to federal law prior to issuance by the NRC of a license extension for the continued operation of Fermi 2 beyond 2025. (NEPA).

ITEM # 8

Refurbishments: recent onsite events require a "hard look":

ATHF3 contends that a pattern of unplanned adverse events which occurred in 2015 calls into question the determination by DTE and the NRC that there is no need to undertake any major refurbishment or replacement activities associated with license renewal in accordance with 10 CFR Part 54.21 and within the scope of 10 CFR Part 51. As part of the license renewal application process, DTE performed an onsite evaluation of major passive structures, systems, and components (SSCs)

such as BWR recirculation piping. As a result of its evaluation, “DTE did not identify the need” to repair or replace any major SSCs in order to provide adequate protection and reasonable assurance of safety to “support the continued operation of Fermi 2” beyond 2025. Likewise, the NRC therefore has “not discussed” refurbishment activities associated with license renewal in the Draft SEIS. (Fermi 2 DSEIS at 2-2).

ATHF3 contends that new and significant information from License Event Reports (LERs) of adverse incidents in 2015 renders DTE’s assessment premature and inaccurate, and consequently, we contend that the NRC’s omission of discussion and further analysis in the Draft SEIS represents a material deficiency pursuant to 10 CFR Part 51.

The Draft SEIS is also deficient in that it fails to recognize the emerging, plant-specific signs and symptoms of a dangerous tipping point which may be developing at the age-degraded Fermi 2 nuclear plant. Indeed, this year was marked by a pattern of dangerously poor performance at Fermi 2. Rather than generating electricity in 2015, DTE is now competing for the embarrassing title of generating the most LERs in the entire U.S. commercial fleet, indicating a serious deterioration of reliability.

In September 2015, for example, the Fermi 2 nuclear plant went into Emergency Operating Procedure mode with another scram, causing significant, unplanned offsite releases which occurred during hot shutdown as Fermi’s operators maintained equilibrium pressure in the reactor vessel by cycling the Safety Relief Valve mechanism.

ATHF3 contends that the Draft SEIS is deficient because the NRC fails to document and analyze the environmental and public health impacts of the reasonably-foreseeable, ever-increasing frequency of similar adverse

events which are likely to occur at the aging reactor site during the period of extended operation. We contend that the adverse events of 2015 are a harbinger of things to come, a “new normal.” If we are correct, the likelihood is that Fermi 2 would experience more downtime and increased maintenance costs during the proposed license renewal period. All the while, the potential severity of environmental impacts in the event of a catastrophic accident would increase significantly as Fermi 2 generates more and more high-level radioactive waste (HLRW) to be stored onsite indefinitely. Thus, further analysis is called for.

ITEM # 9

License Renewal impact on Fermi 2 decommissioning:

The NRC has *generically* concluded that nuclear plant license renewal “would have a negligible (SMALL) effect” on the environmental impacts of decommissioning no matter what point in time the inevitable termination of operation occurs. That is, the NRC has concluded that twenty additional years of operation of a nuclear power plant would have no significant effect on the impacts of decommissioning the facility at the end of its operating life. Pertaining to the Fermi 2 nuclear plant, the NRC has concluded that there are “no site-specific issues related to decommissioning.” (Fermi 2 DSEIS at 2-2)

ATHF3 contends that the NRC’s conclusions are ludicrous. Twenty years of additional production of spent nuclear fuel to be stored onsite indefinitely under the current protocol would undoubtedly add to the task of remediating and decontaminating the facility. Further, it is not possible that the passive systems, structures, and components (SSCs) at the Fermi 2 nuclear plant would escape significant age-related degradation during the twenty year period of extended operation. Therefore, it is reasonable to conclude that the process of dismantling

and decommissioning the contaminated equipment would entail a greater amount of risk to plant workers and would subject the public to a greater risk of impacts from the removal and transport of the radioactive materials, including those materials created uniquely as a result of extended operations.

ATHF3 also contends that there *are* site-specific issues related to decommissioning the Fermi 2 nuclear plant and that the Draft SEIS is deficient in that such issues are omitted from the NRC's discussion. The issue comes down to three famous words: "location, location, location." The Draft SEIS fails the "hard look" test because the NRC did not include a plant-specific analysis, updated specifically for the 20-year license renewal period, of reasonably-foreseeable risks associated with Fermi 2's proximity to a vulnerable international border accessible by land, air, water and cyberspace. Indeed, it is a matter of public record that DTE spent much of last year under NRC probation for violating federal site-security safeguards and protocols which were in place to prevent unauthorized individuals from gaining access to sensitive areas of the facility. (Docket No. 50-341).

Another site-specific issue related to decommissioning the Fermi 2 nuclear plant and applicable to the license renewal action is the impact of *climate change* on the proposed decades-long deferral of commencing the decommissioning process. In other words, as climate change causes the Great Lakes region to experience more frequent severe weather events, declining lake levels and other phenomena which are pertinent to operations at the Fermi 2 site, the notion is the longer decommissioning is postponed into the future, the more risky and complicated the eventual process will be. Given that this issue is omitted from consideration in the Draft SEIS, ATHF3 contends that further analysis is called for under federal law. (NEPA).

ITEM # 10

Fukushima Lessons *not* Learned:

Specific to the Fermi 2 nuclear power plant and to the proposed license renewal period, the Draft SEIS is deficient in that the NRC omits a discussion of the site-specific impacts of DTE's failure to fully implement and comply with all of the recommendations issued by the Fukushima Lessons Learned Task Force which was convened as a result of an NRC Commission Order following the March 2011 nuclear disaster in Japan.

The vast majority of spent nuclear fuel at the Fermi 2 site is not in dry storage. Further, it is well-known that the Nuclear Energy Institute (NEI), which functions as DTE's lobbying arm in Washington, D.C., lobbied successfully for the NRC Commission to reject widespread calls for requiring the expedited transfer of spent nuclear fuel from wet to dry storage, that is, from spent fuel pools to dry casks. Hot spent nuclear fuel must initially be stored in a cooling pool for at least five years in order to stabilize it enough to allow for transfer to dry casks. There is ample evidence to show that transferring spent fuel from wet to dry storage as soon as is technically feasible is the more environmentally preferable alternative to unnecessary, continued storage in a spent fuel pool. Although dry cask storage has its own substantial list of safety and environmental risks, the Fukushima disaster dramatically illustrated why it is preferable to transfer spent nuclear fuel out of wet storage pools as soon as is technically feasible, particularly in the case of GE Mark I BWRs such as Fermi 2. ATHF3 reiterates our contention that the NRC has failed to properly apply its own rules pertaining to consideration of severe accidents involving spent fuel pools, and ATHF3 again calls for returning the Fermi 2 spent fuel pool to its original low-density, open-frame storage design and for placing the bulk of the spent fuel in onsite

hardened dry casks (HOSS), expeditiously. (Docket Nos. 50-341; NRC-2014-0109).

Additionally, ATHF3 now contends that an NRC ruling issued in November 2015 will have the effect of increasing the risk of adverse environmental impacts at the Fermi 2 nuclear power plant during the proposed license renewal period. Specifically, the NRC's recent ruling pertains to a petition filed pursuant to 10 CFR 2.206, the "Lochbaum petition" which sought NRC enforcement action on the Current Licensing Basis (CLB) of GE Mark I BWRs such as the Fermi 2 nuclear power plant. In the wake of the Fukushima disaster, the Lochbaum petition asserted by incorporation that DTE Electric Company has never established under 10 CFR Part 50 that the Fermi 2 spent fuel pool cooling system meets *all* of the General Design Criteria (GDCs) applicable to secondary containment. Even with the Fukushima accident in the background, DTE has allegedly failed to provide reasonable assurance that the integrity of secondary containment at the Fermi 2 nuclear reactor complex will be maintained under all reasonably-foreseeable conditions to adequately protect the public. After four years of internal bureaucratic process, the NRC unfortunately chose to reject the Lochbaum petition, thus allowing certain reactor licensees such as DTE to continue to operate indefinitely with sub-optimal safety margins.

ATHF3 argues that the Fermi 2 Draft SEIS is deficient pursuant to 10 CFR Part 51 because the NRC wholly omits any discussion and consideration of this issue and fails to assess the relative environmental risk profiles of the following three independent alternatives which apply site-specifically to the Fermi 2 nuclear power plant during the proposed period of extended operation:

- 1) the environmental impact of applying some of the GDCs all of the time;

- 2) the environmental impact of applying all of the GDCs some of the time; and,
- 3) the environmental impact of applying all of the GDCs all of the time.

Bottom line, the NRC has not fooled ATHF3. The Draft SEIS is inadequate, and further analysis is called for under the provisions of NEPA.

(<http://adamswebsearch2.nrc.gov/webSearch2/view?AccessionNumber=ML15132A625>).

ITEM # 11

NRC's Alternatives analysis relies on misleading assumptions:

The *climate change* implications for operations at Fermi 2 during the proposed license renewal period are considered outside the scope of the license renewal environmental review. In other words, the NRC's environmental review documents the potential impacts of continued operation on the environment, not vice versa. The NRC concluded that the "environmental impacts from all other alternatives would be larger than the proposed license renewal, . . . [and] the environmentally preferred alternative is the granting of a renewed license for Fermi 2." (Draft SEIS at 2-21). In that context, ATHF3 contends that the Fermi 2 Draft SEIS is deficient in that the NRC relies on misleading assumptions and omissions in its comparison of alternatives to the proposed relicensing action.

Fundamentally, ATHF3 argues that the NRC failed to consider a combination power replacement alternative which does not rely on a conventionally-fueled baseload generation station as part of the

combination alternative. Moreover, the NRC failed to further evaluate in depth alternatives which do not rely on a conventionally-fueled baseload generation station. For example, the NRC neglected to consider the feasibility or to evaluate in depth a *combination alternative* consisting entirely of an integrated mix of renewables, clean storage solutions, and energy efficiency and conservation. Numerous hypothetical combination alternatives exist which could provide virtual baseload power without relying on a conventional baseload generation station as part of the mix.

One such combination alternative has indeed been subjected to high-level scrutiny and has been validated in principle for technical and commercial viability. ATHF3 enters into the record a summary of this research:

2015 Summary of “The Solutions Project” for Michigan

Using only existing known technology, Michigan can transition to 100% wind, water and solar energy for all purposes (electricity, transportation, heating/cooling and industry) by 2050. That's the message from Dr. Mark Jacobson of Stanford University. The obstacles are purely political.

By this plan, Michigan's projected 2050 energy mix would be:

- 40% Onshore wind turbines
- 31% Offshore wind turbines
- 18.8% Solar panel plants (utility-scale solar farms)
- 3.5% Residential rooftop solar panels
- 3.2% Commercial and government rooftop solar panels
- 2% Concentrated solar power plants (utility-scale thermal from sunlight)
- 1% Wave devices
- 0.5% Conventional hydroelectric

The number of jobs created where a person is employed for 40 consecutive years would be **178,200**; 108,700 in construction and 69,500 in operation.

Using renewable energy sources (wind, water and solar) and improving energy efficiency would reduce the need for energy. **Instead of 100 units** of energy used today, **only 36 units** would be needed in 2050. Part of this savings comes from the greater efficiency of electric motors over gasoline and diesel motors. Part of it comes from better-insulated buildings and direct use of solar heat. Using less energy obviously saves money.

Other savings come from death and illness avoided because the pollution associated with burning fossil fuels would be avoided. The savings due to illness would amount to 4% of the state's "Gross Domestic Product," in economic terminology. **1,740 deaths from air pollution would be avoided.** The plan pays for itself in as little as 11 years from air pollution and climate cost savings. The new energy generators would have a direct footprint of 0.37% of Michigan's land, plus another 4.97%, mostly for adequate spacing between wind towers. The spaces between can still be used for farming.

Future energy costs in the period 2020-2030 are projected to be:

- Average fossil fuel/**nuclear energy** costs = **20.1 cents** per Kilowatt-hour.
- Health and climate costs of fossil fuels add **5.7 cents** per Kilowatt-hour.
- Wind, water and solar average electricity = **6.2 cents** per Kilowatt-hour.

The annual energy, health and climate savings per person in 2050 = **\$8000**.

The annual savings on energy alone per person in 2050 = **\$5000**.

All the above information comes from
<http://thesolutionsproject.org/infographic>

ATHF3 contends that the potential environmental impacts of Fermi 2's continued operation during the proposed license renewal period are lost in the discussion when the NRC fails to recognize that nuclear power has the largest carbon footprint and climate change impact of any non-carbon-based-fuel energy source. One reason it is important to consider a combination power replacement alternative which does not rely on a conventionally-fueled baseload generation station as part of the combination alternative is that, in the case of DTE, the baseload station would likely use hydrofracked methane gas as a fuel source, with dramatic climate change implications. ATHF3 argues that the Jacobson alternative referenced above would have a smaller long-term climate change impact on the environment than would either the proposed Fermi 2 nuclear power plant license renewal or any of the power replacement alternatives which were evaluated in depth, including the NRC's hypothetical combination alternative.

Therefore, ATHF3 disagrees with the NRC's conclusions and calls for further analysis in accordance with the NRC's own regulations. The NRC is "obligated to consider reasonable alternatives" to the proposed relicensing action. Further, the analysis of alternatives in the SEIS must "tak[e] into account changes in technology and science since the preparation of the GEIS." However, despite the above, the NRC proceeds to refer directly back to the conclusions of the GEIS, thus

effectively ignoring the latest factual information on replacement power alternatives. (Draft SEIS at 2-3).

ITEM # 12

NRC's Severe Accident analysis relies on misleading assumptions:

Within the scope of the Environmental Review for the proposed Fermi 2 relicensing action, DTE and the NRC must consider Severe Accident Mitigation Alternatives (SAMAs) in order to identify potentially cost-beneficial plant improvements subject to license renewal requirements. Phase 1 screening by DTE reduced the original list of 220 SAMA candidates to 79 candidates applicable to the Fermi 2 plant though not necessarily required to be implemented as part of license renewal. On further review, DTE and the NRC determined that seven (7) SAMA candidates were potentially cost-beneficial. However, none of these seven candidates are required to be implemented as part of license renewal because they do not relate to managing the effects of aging during the period of extended operation in accordance with 10 CFR Part 54. (Draft SEIS at F-56).

The NRC Staff reviewed DTE's SAMA analysis, which was based on DTE's data information, and concludes that "the methods used and the implementation of the methods were sound" and "reasonable." The NRC Staff further notes that "DTE's assessment was based on generally conservative treatment of costs, benefits, and uncertainties." (Draft SEIS at F-56).

ATHF3 contends that the SAMA analysis referenced above is deficient in that it is fundamentally based on misleading assumptions which serve to underestimate and minimize the projected economic costs and

consequences of a severe accident as well as, in at least one instance, to overestimate and overinflate the projected economic cost of implementation and installation of a particular SAMA. Furthermore, the Draft SEIS is deficient in that the NRC fails to discuss whether any of the original 220 SAMA candidates were in fact within the scope of license renewal pursuant to 10 CFR Part 54, so that had such SAMA candidates been deemed to be cost-beneficial such SAMAs would have indeed been required for license renewal.

ATHF3 reiterates our detailed objection to using the MACCS2 computer code model for probabilistic offsite consequence analysis of a nuclear accident postulated to occur at some unknown time in the future. Again, we point out the fact that the actual code writer himself has publicly disavowed his own work. As a result, the NRC is using a discredited, unreasonable, and illegitimate methodological modeling software tool to assess the economic costs and consequences of a postulated severe accident at Fermi 2. (Docket Nos. 50-341; NRC-2014-0109).

ATHF3 also objects to the particular assumptions and input parameter values pertaining to site-specific meteorological data in the offsite consequence analysis. "Meteorological data from 2007 were selected for input to the MACCS2 code. . . . Meteorological data included wind speed, wind direction, atmospheric stability class, precipitation, and atmospheric mixing heights." The NRC Staff accepts the use of the 2007 data set in DTE's SAMA analysis, noting that "results of previous SAMA analyses have shown little sensitivity to year-to-year differences in meteorological data." (Draft SEIS at F-18). ATHF3 contends that the NRC Staff has made a giant and dangerous leap of logic in assuming that historical patterns will continue in a predictable manner given the emerging impact of climate change on meteorological conditions in

different locations. Thus, the Draft SEIS is incomplete, and further analysis is called for.

ATHF3 also takes issue with the NRC's use of obsolete severe accident cost estimates which fail to consider "new and significant information" released to the public in a July 2014 report by the National Academies of Sciences (NAS). The NAS study challenges current NRC assumptions and identifies serious incongruities between the hypothetical presumed cost of a postulated severe nuclear accident and the actual empirical cost, still open-ended, of the real 2011 Fukushima Dai-ichi nuclear accident in Japan. One of the basic reasons the NAS study is directly applicable to Fermi 2 and to the Fermi 2 license renewal qualification is that both the Fermi 2 reactor and the Fukushima Dai-ichi reactors reference the GE Mark I BWR atomic reactor design. The NAS study released in July 2014 estimated that the "total cost of the Fukushima Daiichi accident could . . . exceed . . . \$200 billion . . ." Eighteen months later, it is now reasonable to conclude that the final cost will *far* exceed previous estimates. In any event, the point is that the NAS's 2014 cost estimate for the Fukushima accident is "about 33 times higher" than the NRC's hypothetical presumed cost of a postulated severe nuclear accident. Thus, the NAS study concludes "severe accidents . . . can have large costs and other consequences that are not considered in USNRC . . . analyses." So, therefore, ATHF3 concludes that the NRC's SAMA analysis applied to Fermi 2 deviates far from the most up-to-date, best available science and hence is unreasonable, incorrect, and fails to meet NEPA's "hard look" requirements.

In addition, ATHF3 contends that the NAS report reveals a conspicuous discrepancy regarding the actual prospective cost of one of DTE's most well-known SAMA candidates, specifically SAMA 123, involving the possible installation of an ATWS-sized filtered containment vent to

remove decay heat with less environmental impact than would occur if venting without high-capacity filtration. (Draft SEIS at F-36). Filtration conceivably would reduce the concentration of radionuclides released into the environment by about 50%, thus making this particular mitigation alternative quite appealing for defense-in-depth. Indeed, the NAS report emphasizes that “managing both pressure and thermal loads is critically important” for “[p]reventing containment failure” and “requires the capability to safely vent hydrogen in a timely fashion with a *minimum* release of fission products to the environment.” (emphasis added). Nevertheless, in direct contradiction, DTE and the NRC determined that SAMA 123 is not cost-beneficial based on an analysis of the supposed cost of the installed plant modification versus the assumed probability-weighted averted cost risk (that is, benefit) of having the plant modification in place in the event of a severe accident scenario at the Fermi 2 nuclear power plant. ATHF3 asserts that DTE’s quoted projected cost of implementing SAMA 123 (filtered containment vent) at the Fermi 2 plant would be \$40 million; *but*, the 2014 NAS report referencing SECY-12-0157 suggests this particular “backfit” would actually only cost an “estimated \$15 million” to install. ATHF3 contends that this substantial discrepancy must be reconciled with a thorough explanation in the NRC’s Final SEIS.

Finally, ATHF3 contends that if DTE did indeed report Fermi 2-specific “core damage frequencies” which assume one accident every 50,000 years on average, consistent with SECY-12-0157 pertaining to a GE Mark I BWR, then there is no basis whatsoever in reality to accept the conclusions of DTE and the NRC Staff regarding their risk assessment of projected offsite consequences stemming from a severe accident at the Fermi 2 nuclear power plant. In any event, it speaks volumes that during thirty years of operation at Fermi 2 until now, DTE has never conducted nor been required to conduct an investigation to evaluate

potential plant modification alternatives to mitigate the costs and consequences of a severe accident.

Reference:

National Research Council, *Lessons Learned from the Fukushima Nuclear Accident for Improving Safety of U.S. Nuclear Plants*, Washington, DC: The National Academies Press, 2014. (Appendix G and Appendix L).

In conclusion, for the above reasons, ATHF3 resoundingly rejects the NRC's conclusions pertaining to the Environmental Review for the proposed federal relicensing action, Docket Nos. 50-341; NRC-2014-0109.