

February 8, 2009

Subject: Docket ID NRC-2008-0566

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The “Dirty Dozen” Reasons to Block the Proposed Fermi 3 Atomic Reactor
Environmental Scoping Comments to the U.S. Nuclear Regulatory Commission (NRC)

There are many reasons that DTE’s proposed new reactor at its Fermi Nuclear Power Plant near Monroe, Michigan on the Lake Erie shoreline is unacceptable. But the top twelve objections the environmental movement of the Great Lakes region cites against the dirty, dangerous, and expensive Fermi 3 reactor are:

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.
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.

3. **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.

4. **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), Sordt 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.

5. **"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.

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.

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.

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.

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.

- 6. 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.

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.

- 7. 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. 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. 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.

- 8. 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.

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.

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.

- 9. 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.
- 10. 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.

11. **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.
12. **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.

For the foregoing reasons, 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 alternative to Fermi 3.

Sincerely,

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