

April 23, 2019



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Testimony before the Ohio House Energy Generation Subcommittee
In opposition to Ohio HB 6

Chairmen Stein and O'Brien and members of the Energy Generation Subcommittee, thank you for allowing me to speak here today.

Terming nuclear power as "zero emissions," as "clean energy" and equating it with clean air is a reversal of reality.

What clean air? Nuclear is an immense industry that uses lots of carbon-emitting energy. Uranium mining, milling, refining, conversion and enrichment; nuclear fuel fabrication, transportation throughout the industry, and building reactors and these many other facilities emits lots of carbon. Energy use is ongoing, including making more canisters for waste. And does not take into account the amount of energy needed to keep nuclear waste isolated for hundreds of thousands of years.

What zero emissions? Nuclear power plants are allowed to, and all do, have regular radioactive releases into the air and water. They all leak tritium. Uranium mining, milling and refining all produce dangerous waste piles and emissions of radioactive and other hazardous materials, including radon gas. Groundwater, surface water and community drinking water systems have been contaminated. Radioactive contamination occurs all throughout the industrial facilities that make nuclear fuel.

What clean energy? One thing that FirstEnergy does not talk about is radioactive waste. After searching for 70 years, the U.S. has yet to find a permanent location for a waste repository. The reality is that there is no real "disposal" solution for nuclear waste. Moving it around the country with no final plan can only cause more problems. It is currently being stored in dangerously overcrowded cooling pools and in thin dry canisters that are welded shut and cannot be monitored or repaired. This waste is going to remain in its current locations for a long time, if not indefinitely. More waste will compound this problem. A 1000-MW nuclear plant produces about 27 tons of spent nuclear fuel every year. Immediate steps must be taken to store this waste more safely than currently -- a large, expensive but critically important undertaking. It defies credibility that federal regulatory agencies could be compromised on issues of safety. But look at the Federal Aviation Administration letting Boeing do its own safety checks. Similar things have been going on with the Nuclear Regulatory Commission for decades. Both agencies have been captured by the industries they were designed to regulate, putting the public at risk. I list hyperlinked references in your electronic copies: [Spent Nuclear Fuel Pools in the U.S.: Reducing the Deadly Risks of Storage. Nuclear Regulatory Commission \(NRC\) states the waste may need to be stored at current sites indefinitely. NRC documents provide data that indicate thin storage containers can fail 16 years after a crack initiates.](#)

Maintenance, repairs and upgrades are being deferred. Longer periods between inspections. Emergency plans not updated. Flooding and other recommendations from Fukushima Lessons Learned not implemented. Davis-Besse's shield building continues to crack. Our committee has submitted a 4-page paper with hyperlinked references to problems at Davis-Besse and Perry and maintenance deferrals and exemptions given by the NRC. NBC NEWS/AP 3-15-19: [Nuclear industry pushing for fewer inspections at plants.](#)

FirstEnergy is dishonest. Strong legal objections to FirstEnergy Solutions' restructuring plan were filed by the U.S. Securities and Exchange Commission, the NRC, FERC, U.S. EPA, the federal bankruptcy court's

U.S. Trustee, Ohio Consumers' Counsel, and the Environmental Law and Policy Center. The court has rejected the plan. The court also denied FirstEnergy a bonus plan that excluded union members. The Environmental Law and Policy Center challenged FirstEnergy Solution's plan to not fully fund its Decommissioning Trust. FirstEnergy "competes" by pushing legislation for a wind setback, then wants a bailout due to their failure to modernize like other utilities have done.

How long can you drive an old car? Davis-Besse is operating past its 40-year engineered lifespan. Nuclear reactors have a problem that old cars don't – weakening of concrete and steel by continuous radioactive bombardment. Lake Erie is a critical resource for drinking water, recreation and livelihoods for millions of people. Even a "small" accident could wreak billions of dollars in property damage, with life-altering health consequences for tens of thousands. FirstEnergy's Beaver Valley reactors sit only 4 miles east of the Ohio border in Pennsylvania. In HB 6 proponent testimony, it was noted that the Bennett Carroll Salem School District superintendent could not be at the hearing because he was attending an evacuation drill at Perry. No evacuation drills or potassium iodide tablets are needed for solar and wind. Nor are they terrorist targets, like the Indian Point nuclear reactor that the 9-11 terrorists flew over and had considered targeting.

FirstEnergy is already getting a \$200 million per year bailout from the PUCO. This has caused a 5% increase in FirstEnergy electric bills. PJM, the regional authority over electricity capacity, says nuclear is not needed to ensure electric supply in Ohio and surrounding states. Forbes also says the same in an April 20 article, "State Nuclear Subsidies Not Needed."

SO WHAT SHOULD THE OHIO LEGISLATURE DO?

Develop an energy policy. "All of the above" is not an energy policy. Bailouts put off the inevitable, while delaying the solution.

Promote sustainable energy. The Ohio legislature must remove obstacles to wind and solar. **This will lower electric bills.** Wind is available in Ohio for less than 3 cents per KWh. Utility scale solar is available in Ohio for less than 4 cents per KWh. Efficiency saves electricity at about 1.7 cents per KWh. Nuclear's cost before profit is estimated to be between 6-7 cents. Wind and solar generation distributed around Ohio will distribute tax revenues more fairly than the current central generators.

Create jobs by advancing renewables. There are now more jobs in solar and wind than in nuclear or coal. Jobs in solar energy are growing all across Ohio. Wind was booming across Ohio until 2014 when Ohio legislators gave wind the harshest setback regulations in the nation. Ohio Power Siting Board applications for new solar in 2018 were 7 times the total existing solar in Ohio.

Communities need aid, not utilities. Unemployed workers, vacant homes, decreased tax revenues, business closures – can constitute a vicious circle. It is counterproductive to give billions to utilities that have failed to modernize, failed to compete, and "cannot afford" to make critical safety upgrades. So much more could be done if money went directly to communities. Electric rate increases double the unfairness because they hurt poor families most. Ohio can and should support reactor communities.

Nuclear jobs can be retained. It is cost effective, more efficient and decreases safety risks if decommissioning begins as soon as a nuclear plant closes. The workers at Davis-Besse and Perry are experts on the workings of their plants. The smartest thing would be to rehire these experienced workers to begin decommissioning. FirstEnergy wants their reactors to be put into Safstor, which simply means postponing decommissioning for 60 years while conditions deteriorate. Waiting and hiring new workers unfamiliar with these plants would pose significant cost increases and safety concerns.

Thank you again for allowing me to testify here today.



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OHIO MUST NOT SUBSIDIZE FIRST ENERGY: A BANKRUPT COMPANY CUTTING CORNERS ON NUCLEAR MAINTENANCE

FirstEnergy is in bankruptcy court. Ohio should not bail out a bankrupt company. Not by increasing electric rates. Not by manipulating regulatory or regional transmission rulings. Not by calling nuclear by another name, such as zero emissions facilities. And not in a bill that gives a few nods to renewables and efficiency. YES, Ohio indeed needs renewables and efficiency – without outdated, expensive, dangerous nuclear power.

FirstEnergy is deferring maintenance, repairs and upgrades to its nuclear facilities. Longer periods between inspections. Emergency plans not updated. Flooding and other recommendations from Fukushima Lessons Learned not implemented. Not meeting its obligation to fully fund decommissioning at Davis-Besse and Perry. All too burdensome for the industry.

Risk of nuclear catastrophe: Davis-Besse is already operating past its 40-year engineered lifespan. Davis-Besse and Perry are on Lake Erie, a critical resource for drinking water, recreation and livelihoods for millions of people. How long can you drive an old car? Nuclear reactors have a problem that old cars don't – embrittlement, or weakening of concrete and steel by continuous radioactive bombardment. A nuclear accident could wreak hundreds of billions of dollars in property damage with life-altering health consequences for tens of thousands. Or even worse, turning a large part of Ohio into a sacrifice, uninhabitable zone. FirstEnergy's Beaver Valley reactors sit only 4 miles east of the Ohio border in Pennsylvania.

The Nuclear Regulatory Commission (NRC) is giving waivers and deferrals to FirstEnergy (FENOC) on nuclear inspections, standards, maintenance, repairs and upgrades.

License amendment requests NRC has granted FirstEnergy include: Many of these items do not come to light until months after they occur.

- 1) 3/4/2019 NRC Response to Request for Deferral of Actions Related to **Beyond-Design-Basis Flooding Hazard Reevaluations** for Davis-Besse Nuclear Power Station, Unit 1 **ML19031C930**
- 2) 2/27/2019 FENOC sheds workers and regulations: **ML19058A328**. Document Title: Davis-Besse Nuclear Power Station, Unit No. 1 - Supplement to License Amendment Request - **Proposed Changes to Technical Specifications Sections 1.1. "Definitions," 5.0., "Administrative Controls."** for Permanently Defueled Condition. License-Application for Facility Operating License (Amend/Renewal) DKT 50
- 3) 2/19/2019 License Amendment Request to **avoid current regulation on core cooling system strainer debris**. DTE slides **ML19045A269**. Proposing to use a risk-informed analysis of the impact of additional emergency core cooling system strainer debris that is beyond the current design basis values. Results of the analysis will provide the justification for the additional debris sources in the license amendment in accordance with Regulatory Guide 1.174.
- 4) 9/7/2018 Barbed wire is now grandfathered in as a security standard. FENOC Fleet - Individual FR Notice - Notice of Issuance of Exemption re: **Exemption from the Definition of Physical Barrier ML18178A588**. Barbed Wire document: FENOC Fleet - Beaver Valley; Davis-Besse; Perry - Environment Assessment and Finding of No Significant Impact Related to Exemption Request for a Physical Barrier Requirement **ML18130A885**, 8-29-2018. **Approval of Barbed Wire As Is:** Davis-Besse Nuclear Power Station, Unit 1 - FirstEnergy Nuclear Operating Company (FENOC); FirstEnergy Nuclear Generation, LLC; Environmental Assessment **ML18130A849** 8-29-2018.
- 5) 1/22/2018 NRC has given permission to FirstEnergy to run its 4 reactors with **leaking on Class 2 & 3 Piping**.
- 6) 4/6/2017 Document Title: Davis-Besse Nuclear Power Station, Unit No. 1 - **Request for Withholding Information From Public Disclosure** (CAC NO. MF9126). **ML17093A614**

- 7) 1/10/2017 The NRC **allowed Davis-Besse to increase liquid effluents tenfold**, with a Finding Of No Significant Impacts (FONSI) approved. The NRC notice of this FONSI did not come through to the public until December 2017. Full document here: [Final EA and FONSI Davis-Besse Effluent Release Controls](#).
- 8) 5/10/2016 According to these documents Davis-Besse **exceeded standards of radiological releases for several isotopes** including: Co-57, Co-60, Sr-90, Cs-134, Cs-137, K-40, Xe-65, Fe-55, Pu239/240. [ML16147A007](#) 2-11-16 and [ML16147A006](#)
- 9) **Missile generation by tornado deferred**. External objects and equipment on the ground that can become flying debris. This already occurred when a tornado hit Davis-Besse in 1998. [Ottawa County Tornado 6/24/98: Storm Shuts Down Ohio Nuclear Plant](#)
- 10) NRC has neglected to update US nuclear regulations to meet the International Atomic Energy Agency (IAEA) recommendations.

[The Environmental Law and Policy Center \(ELPC\) sued FirstEnergy for avoiding its obligation to fully fund the Decommissioning Funds for its nuclear reactors](#). Exchange Monitor 1-10-19: [NRC Set to Reject Petition to Penalize FirstEnergy Over Decommissioning Funds](#). Can get links to ELPC excellent legal documents.

[FirstEnergy has had multiple unplanned shutdowns and Event Notifications](#) (problems and breakdowns that require notification of the NRC). These occur on a regular basis.

- Leak in turbine building during heavy rain shuts Davis-Besse for days. Toledo Blade 9-13-16: [Davis-Besse to stay idle a few days due to leak](#).

[Ice-Wedging Crack Propagation](#): Organizations that intervened in Davis-Besse's license renewal challenged that the shield building over the reactor was continuing to crack, caused by moisture in the outer concrete continually freezing and thawing. The building had never been painted. **Falling concrete could cause major damage both by hitting the reactor inside and by hitting essential equipment outside**. FirstEnergy maintained that the cracks were caused by the blizzard of 1978, and that the cracks were not increasing since that time, thus not aging related. Yet they then painted the building. The cracks indeed continue to expand, but now they are expanding much faster because the new paint sealed in moisture.

- FirstEnergy kept the water-locked-in-the-walls after painting secret for 2.5 years, just long enough to get the legal intervention before the NRC Atomic Safety and Licensing Board dismissed.
- There were several root causes for the cracking, likely acting in synergy, and most definitely aging related, as FENOC itself admitted in July 2014, as soon as the interventions were dismissed.
- Two NRC engineers calculated that during a minor earthquake or a minor to moderate accident causing heat to permeate the interior wall, up to 90% of the 2.5-foot thick wall of the shield building could collapse into rubble on top of the reactor. [Intervenors' Fifth Motion to Amend and/or Supplement Proposed Contention No. 5](#) (Shield Building Cracking), Aug. 16, 2012 pp. 37-41.
- It would cost several billion dollars to replace the shield building.
- In 2018 FirstEnergy began drilling core boring holes into the concrete wall of the shield building, installing relative humidity probes. Core bores for monitoring conditions are up to 4 inches in diameter. Holes for relative humidity probes are 1-inch diameter or less. 113 sq. ft. has been bored. Some holes have been left open. This **methodology is experimental** and suspect, as these holes further weaken the concrete. The NRC conclusion was that "the effect of drilling is small." This has not been substantiated.
- In the event of an accident, any breached containment would let catastrophic amounts of hazardous radioactivity escape downwind and into Lake Erie.
- Kevin Kamps, Radioactive Waste Watchdog for Beyond Nuclear, points out that Davis-Besse's severely cracked concrete shield building grows worse by a half-inch or more in circumferential orientation each time a freeze-thaw cycle happens, which is many times each autumn, winter, and spring. Davis-Besse is very vulnerable to an "additional load" such as an earthquake – whether it is a natural earthquake or one that is induced by fracking. LiveScience 1-5-15: [Fracking Led to Ohio Earthquakes](#).

Additional Waste Adds to Reactor Community Burden: The longer Davis-Besse and Perry operate, the greater the amount of high-level nuclear waste (HLW) onsite. HLW is spent (meaning used) nuclear fuel, also termed SNF. Neither the U.S. nor the world has any idea for what to do with HLW/SNF. In reality, it is highly unlikely that HLW will be moved very far from the site of generation. Even imagining “permanent disposal” in someone else’s back yard, reactor communities will be saddled with HLW for decades to come. Amount of HLW at Davis-Besse: Reference is Bob Alvarez’ 2011 report: *Spent Nuclear Fuel Pools in USA & Reducing Risks*. See page 25, table of SNF Inventory plant by plant. As of 2010 there were 505 Metric Tons at Davis-Besse. ***That is about 16 tons of high-level waste generated per year.*** There are numerous risks at these pools. Davis-Besse has more than twice as many rods in the pools as the pools were designed to hold.

FirstEnergy is duplicitous: (Cleveland) Plain Dealer 11-30-18 **Bankruptcy judge approves acrimonious deal between FES and its unions on nuclear plant shutdown bonuses** US Bankruptcy Court Judge Alan Koschik has approved a \$126 million bonus plan by FirstEnergy Solutions for retaining critical workers during the closure of several nuclear plants. The authorized plan includes bonuses for unionized employees, in contrast to a previous plan that would have only given \$100 million in bonuses to non-unionized workers.

FirstEnergy lobbies against competition, supporting the Ohio wind setback rule.

NRC gives reactors good safety marks, ignoring problems: Toledo Blade 3/8/2019: **Davis Besse, Fermi 2 nuclear plants get good safety marks** Online comment to this article: Dear Blade Readers, ***Nowhere in the Fermi 2 Annual Assessment letter and Inspections does the NRC discuss this October 19, 2018 Event Report.*** Where Fermi discovered that for thirty years they had not recognized that the Low Pressure Core Injection Pumps (essential component of Emergency Core Cooling) were Incapable of Automatic Startup. Fermi 2 Event Reported October 22, 2018 LOW PRESSURE CORE INJECTION PUMPS INCAPABLE OF AUTOMATIC STARTUP "On 10/19/2018, at approximately 0400 EDT, during an investigation into a failed surveillance test for a Loss of Offsite Power (LOP) coincident with a Loss of Coolant Accident (LOCA), it was identified that the Engineered Safety System Bus degraded voltage relay scheme contained a time delay setting that could inhibit all Low Pressure Core Injection (LPCI) pumps from automatically starting and operating during a LOP/LOCA, ***thus making LPCI incapable of meeting its functional requirement of automatic startup and operation regardless of the availability of offsite power*** supply (UFSAR Section 6.3.1.4 and Tech. Spec. Surveillance Requirement 3.8.1.17). "The condition was identified during the first-time performance of a revised surveillance procedure for a LOP coincident with a LOCA signal. Fermi is currently in Mode 4 (Cold Shutdown) and LPCI auto start on a LOP/LOCA signal is not required. However, the initial investigation identified ***the condition likely existed in the past*** during modes of operation where LPCI auto start on LOP/LOCA was required. Investigation into the cause and corrective actions is ongoing.

THIN CANISTERS: Unbelievably, NRC has licensed thin-wall stainless steel dry storage canisters for high-level waste that are only 1/2- to 5/8-inch thick. Thin canisters are accumulating at almost every commercial nuclear site. They can crack through and **cause major radioactive leaks and explosions** in as little as 17 years. They are welded shut and cannot be maintained or repaired. They cannot be inspected or monitored internally or externally. Peak radiation levels from outlet air vents **are kept from the public.** **RECOMMENDATION:** Waste must be stored in thick wall casks designed to be monitored, maintained, and transportable. **These are proven international standard.**

HIGH BURNUP FUEL: “High burnup” nuclear fuel has been used for over 20 years. This fuel is “burned” longer and at hotter temperatures. It is over twice as radioactive and thermally hot as traditional waste, requiring 7-30 years cooling in fuel pools before dry storage. High burnup damages both fuel and cladding, making it **unstable for transport.** Hydrides are created that increase risks for hydrogen gas explosions. There are many tons of spent high burnup fuel at Davis-Besse and Perry.

WORKERS AT PERRY CONTINUE TO FAIL DRUG TESTS: In September 2002, a urine adulterant was found in the trash and the day’s applicants were retested, with **nine testing positive for marijuana.** Perry was the **target of NRC safety inspections** for more than three years because of what U.S. regulators call “human performance” issues in safety management. In 2017, 27 workers failed drug tests.

License amendment requests NRC has granted FirstEnergy for the Perry Nuclear Reactor include:

- ML19022A324 **Implementation of 'leak before break'**. Perry Nuclear Power Plant, Unit 1 - Issuance of Amendment No. 185 Concerning Extension of Containment Leakage Test Frequency (EPID L-2018-LLA-0055). Biweekly Federal Register Notice - Applications and Amendments to Facility Operating Licenses and Combined Licenses Involving No Significant Hazards Considerations - Publication Date: 03/12/2019. **Excerpt:** FirstEnergy Nuclear Operating Company, Docket No. 50-440, Perry Nuclear Power Plant, Unit No. 1, Lake County, Ohio. Date of amendment request: March 7, 2018, as supplemented by letter dated October 26, 2018. Brief description of amendment: The amendment revised Technical Specification 5.5.12 to replace the reference to Regulatory Guide 1.163, "Performance-Based Containment Leak-Test Program," with a reference to Nuclear Energy Institute (NEI) 94-01, Revision 3-A, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," and the conditions and limitations specified in NEI 94-01, Revision 2-A, of the same name, and deleted two of the four listed exceptions to program guidelines in TS 5.5.12. Date of issuance: February 25, 2019.
- ML18178A588 **Skimping on the barbwire**. FENOC Fleet - Individual FR Notice - Notice of Issuance of Exemption re: Exemption from the Definition of Physical Barrier.
- ML17257A098 **Revisions to Environmental Protection Plan**. Perry Nuclear Power Plant, Unit 1 - Issuance of Amendment Concerning Revisions to the Environmental Protection Plan (CAC No. MF9652; EPID L-7017-LLA-0226) (L-17-043). 10/19/2017
- ML17270A030 **Alternatives for Repair of Emergency Service Water System Piping**. Perry Nuclear Power Plant, Unit 1 - Approval of Alternative to Use ASME Code Case N-513-4 For Repair of Emergency Service Water System Piping (CAC No. MG0130; EPID L-2017-LLR-0080) (L-17-278) 10/16/2017