A People's History of the Palisades Atomic Reactor(1)

The Palisades atomic reactor in Covert Township, Van Buren County, Michigan, on the Lake Michigan shore four miles south of South Haven, was conceived of and designed in the early to mid-1960s. It was constructed from 1967 to 1971, and fired up on New Year's Eve, 1971. The rushed start up was to take advantage of a tax incentive deadline. The original owner-operator, from 1967 to 2007, was Consumers Power, later renamed Consumers Energy.

Consumers also owned the highly polluting, experimental Big Rock Point atomic reactor on the Lake Michigan shore near Charlevoix, which operated from 1962 to 1997. Consumers also owned the Midland nuclear power plant, which was cancelled during the construction phase. The monetary loss was many billions of dollars (the largest infrastructure fiasco in Michigan history). Cancellation was due to safety-significant buildings sinking into the ground, like a nuclear Leaning Tower of Pisa.

Palisades started up more than a year later than scheduled, at around twice the initially estimated price tag.(2)

Its early operations were very troubled.

As documented by Dave Lochbaum, a nuclear engineer and retired director of nuclear safety at Union of Concerned Scientists, Palisades suffered its first control rod drive mechanism (CRDM) seal leak in 1972, an unsolved safety-significant problem that has plagued the reactor for more than fifty years, a uniquely bad operating experience in the nuclear power industry.(3) In fact, the reason Entergy shut down Palisades for good on May 20, 2022 — 11 days earlier than scheduled — was because of its latest CRDM seal leak.(4)

As recounted by Sierra Club Michigan Chapter, "Just 13 months after opening, Palisades experienced its first radioactive leak, prompting authorities to shut it down for over a year."(5)

The early 1973 incident was due to "tubes in the steam generator [springing] pinhole leaks, causing the plant to be shut down. It was an inauspicious start to what had been heralded as an economic windfall for Southwest Michigan."(6)

Later that same year, "more leaks in the steam generator, as well as other issues, caused the Atomic Energy Commission, which is now the Nuclear Regulatory Commission [NRC], to shut down Palisades for 19 months. In 1974, Consumers ultimately replaced 27,000 tubes in the steam generator."(7)

The troubled steam generators would be completely replaced by 1991, a very expensive job, akin to a major organ transplant in the human body. But the problems returned, and by May 10, 2006, Palisades' owner Consumers Energy admitted, the steam generators needed to be replaced a second time — rare to uniquely bad in nuclear power industry operating experience.(8) However, this never happened, during Entergy's ownership of Palisades from 2007 to 2022. While Holtec

has paid lip service to potentially replacing the steam generators, at a projected cost of $510 million, in a secret July 5, 2022 bailout application to the U.S. Department of Energy (DOE), there is no NRC requirement that it actually do so, which means it is very dubious that it will happen.(9)

Due to unacceptable safety risks, failures with brand new replacement steam generators led to the permanent closure of two atomic reactors at San Onofre, California in June 2013. But it was not the NRC that demanded closure for good — it was local concerned residents, and environmental groups, including Friends of the Earth (FOE). Arnie Gundersen, chief engineer at Fairewinds, served FOE as an expert witness for the ultimately successful closure campaign. Gundersen has served as expert witness for Palisades opponents as well, namely Beyond Nuclear, Don't Waste Michigan, and Michigan Safe Energy Future, for the past decade. Despite the San Onofre cautionary tales, Palisades operated from 2006 to 2022 with degraded steam generators its previous owner had acknowledged needed replacement.

As reported about Palisades by the *Kalamazoo Gazette/MLive*: In 1974, "Consumers Power Co. filed a $300 million lawsuit against Bechtel Power Corp. and four other companies, charging them with delivering 'defective equipment.' At the time, it was the largest lawsuit ever filed by a utility against its suppliers, according to news reports."(10)

Adjusted for inflation, $300 million in 1974 dollar figures would be nearly $5.5 billion in 2023 dollar figures.(11)

Consumers settled out of court with Bechtel for a mere $13 million — less than $82 million in today's dollar figures.(12)

As reported by the *Kalamazoo Gazette/MLive*, "by its third anniversary, the nuclear plant had been tagged with the label 'controversial,' which has stuck persistently" ever since.(13)

The local newspaper, which by the mid-2000s had well over a thousand articles in its archives about Palisades, went on: "Before the plant opened, environmentalists and fishing groups held up its licensing hearings while fighting for cooling towers and other equipment to protect Lake Michigan and its aquatic life. Consumers agreed to install the towers as part of $15 million [more than $94 million in 2023 dollar figures] worth of pollution control equipment before the Atomic Energy Commission issued its operating license."(14) The cooling tower precedent to partially protect surface waters against thermal wastewater impacts would be applied at many nuclear power plants thereafter.

The local paper reported "there were three shutdowns in 1973 — with the final starting in August of that year and lasting until March 1975."(15)

The *Gazette/MLive* went on: "In 1979, the NRC fined Palisades $450,000 — with the regulatory body and the plant ultimately settling for $225,000, the largest single fine the plant has paid. The NRC had issued at least $574,000 in fines to Palisades by 2001. (By way of comparison, the

largest fine the NRC has ever issued is the $5.45 million it slapped the Davis-Besse plant with in 2005 for severe damage to its reactor vessel.)”(16)

Davis-Besse’s Hole-in-the-Head fiasco — a very large corrosion cavity in its reactor vessel closure head, or lid, was the nearest-miss in the U.S. to a reactor meltdown since Three Mile Island. Consumers Energy admitted in spring 2006 that Palisades’ reactor lid was also severely degraded and in need of replacement. Despite this, Entergy never did so between 2007 and 2022 — NRC did not require it, despite the Davis-Besse cautionary tale. Holtec did not mention any need for reactor lid replacement in its secret July 5, 2022 bailout application and Palisades reactor restart strategy document submitted to DOE, strongly implying it has no plans to do so, despite the dangers.(17)

The *Gazette/MLive* continued: “Shutdowns remained common in the early years of operation of the plant — many because of the steam generators, which were replaced in 1990. At that time, a *Kalamazoo Gazette* article said Palisades had ‘one of the worst on-line records in the nuclear power industry.’ As of June 1990, the *Gazette* reported, Palisades had been running at less than 50 percent of its capacity since its opening.”(18)

The *Gazette/MLive* history continued: “The years 1993 and '94 marked a particularly troubled time for the plant. During a refueling shutdown in June 1993, workers discovered a broken fuel rod and leaking pipes and valves, causing the plant to remain shut down until November. Some of the radioactive fuel from the rod spilled out on the floor of the reactor, the Associated Press reported at the time.”

The article went on: “The NRC reacted with a series of fines and a special investigation: It fined Consumers $50,000 for the control-rod incident in 1993. In 1994, it issued another $50,000 fine for an electrical design problem at the plant, $50,000 for design problems in a cooling system, as well as another $25,000 fine for failure to protect vital security information.

That same month, the general manager was relieved of his duties and the vice president of operations resigned in a management shake-up.

In March of that year, the NRC launched a high-level probe of the plant and subsequently issued a report that said Palisades operations in 1993 showed poor communications, an inability to identify and fix mechanical and other problems, a staff that didn't fully understand its responsibilities and a management that denied there was a problem.”(19)

Also in 1993, Michael Keegan, co-chair of the Coalition for a Nuclear-Free Great Lakes, published a white paper, warning about the risks of neutron-embrittlement of the reactor pressure vessel at Palisades.(20) This problem would only grow worse with time, until Palisades was clearly recognized as the single worst such case in the country, and perhaps the entire world.

Yet another scandal began in 1993. Consumers began dry cask storage for high-level radioactive waste, on a pad just 150 yards, or less, from Lake Michigan. Don’t Waste Michigan and Lake

Michigan Federation demanded legal action, and "Eternal" General Frank Kelley did just that (Kelley served as attorney general for Michigan for 37 years, a national record). AG Kelley argued that Consumers did not have a safe unloading procedure in the event a dry cask failed. In response, Consumers hurriedly came up with one — simply reversing its loading procedure. An NRC staffer, under oath, assured the federal judge hearing the case in a Grand Rapids courtroom that the "unloading procedure" was sound, supposedly settling the dispute. But Don't Waste Michigan co-founder Dr. Mary Sinclair later alleged the NRC official had committed perjury on the witness stand.(21)

In addition, the 3-foot thick, steel-reinforced concrete cask pad was built atop 55-feet of loose sand beneath, anchored to nothing. This would quickly prove problematic.

By early 1994, an NRC whistleblower, Dr. Ross Landsman, warned the agency's chairman about earthquake risks to the Lakeside dry cask storage at Palisades. Landsman wrote: "Actually, its (sic) the consequences that might occur from an earthquake that I'm concerned about. The casks can either fall into Lake Michigan or be buried in the loose sand because of liquefaction…It is apparent to me that NMSS [NRC Office of Nuclear Material Safety and Safeguards] doesn't realize the catastrophic consequences of their continued reliance on their current ideology." Underwater submersion could lead to inadvertent nuclear chain reactions in the fissile materials still present in the wastes; burial under sand could cause the wastes to dangerously overheat.(22)

By 2006-2007, Dr. Landsman, at that point retired from NRC, served as an expert witness for an environmental coalition resisting Palisades' 20-year license extension. Landsman repeated his earthquake risk warnings, both about the 1993 pad nearer the Lake, and a newer pad built further inland — liquefaction risks at the former, transmission risks at the latter.(23) NRC rejected the coalition's emergency enforcement petition.(24) The coalition appealed the ruling to federal court, but was again rebuffed.(25) The earthquake risks have never been addressed.

However, in its December 23, 2020 *Post-Shutdown Decommissioning Activities Report* (PSDAR), Holtec included a plan to transfer dry casks from the 1993 pad nearer the Lake, to the newer pad further inland.(26) While a tacit acknowledgement of problems with the older pad, Holtec's plan failed to recognize Landsman's warning that the newer pad is also vulnerable to earthquake transmission, in violation of NRC safety regulations. The newer pad is also frighteningly close to the campground at the Van Buren State Park, raising concerns about radiation dose rates to campers there even during routine, incident-free storage operations.

In summer 1994, Consumers announced that the fourth cask it had loaded with highly radioactive waste was defective. Specifically, it had welding flaws. Remarkably, a Consumers vice president was quoted in a *Kalamazoo Gazette* article that the company would live up to its word, and offload the waste from defective cask #4 back into Palisades' indoor wet storage pool. However, when Consumers went to do so, it quickly realized the warnings watchdogs, and Michigan's attorney general, had raised, were valid. Consumers could not grind through the sealed lid of the defective storage cask, remove pressure-fit shims, transfer the waste into a radiation shielded transfer container, transport it to the pool, and lower it in, all in less than 40

hours. This meant technical specifications would be violated, including overheating of the waste, due to interruption of the storage cask's convection air current cooling design. Even once the contained waste entered the 100 degree Fahrenheit storage pool cooling water, the package would now be hotter than 750 degrees F, resulting in a radioactive steam flash (the pool water is radioactively contaminated to some extent), as well as thermal shock to the package, risking degradation. Consumers backed off its unloading pledge. To this day, 30 years later, defective dry cask #4 remains fully loaded with highly radioactive waste, precariously close to Lake Michigan.(27)

Major events took place at Palisades in the 2005 to 2007 time frame. Consumers applied for a 20-year license extension, and got it, despite concerted environmental coalition resistance. Consumers had admitted to the Michigan Public Service Commission (MPSC) in spring 2006 that not only did the reactor lid need replacing, and the steam generators too (for the second time), but that other serious problems existed, including embrittlement of the reactor pressure vessel. This latter issue became the main focus of the coalition's resistance. However, by early 2007, not only had the 20-year license extension been approved by NRC (from 2011 to 2031), but the MPSC had also approved a 15-year Power Purchase Agreement (PPA, 2007 to 2022), again steamrolling environmental coalition resistance. Under the PPA, the previous owner, Consumers, would purchase 100% of Palisades' electricity sales from the new owner, Entergy. But this would come at huge expense for Consumers ratepayers, who would be forced to pay up to a 57% surcharge on Palisades' electricity, for no good reason whatsoever, other than to enrich Entergy.(28)

The MPSC also approved a $316 million raid on the Palisades Decommissioning Trust Fund (DTF), from which it has never recovered to this day. A third went to the previous owner Consumers Energy, a third to the new owner Entergy, and a third was reimbursed to ratepayers. This raid on the DTF was approved by the MPSC appointed by Governor Jennifer Granholm (who now serves as U.S. Energy Secretary). But Michigan Attorney General Dana Nessel has concluded that the DTF is $200 million short to carry out Holtec's own decommissioning plan, as laid out in its December 23, 2020 *Post-Shutdown Decommissioning Activities Report* (watchdogs think the shortfall is much larger than that). If the shortfall is addressed at all, it will be the public that is looked to bridge the gap. Worse, if the shortfall is not addressed, and comprehensive radiological clean up is simply foregone, then radioactive contamination could hemorrhage over time into the surrounding environment, including such drinking water supplies as inland aquifers (including at the 125-year old neighboring Palisades Park resort community, with 200 cottages), and Lake Michigan. People and other living things, downwind, downstream, up the food chain, and down the generations, would "pay the price" for clean up failures or neglect at Palisades.

In fact, the end of the lucrative PPA, on May 31, 2022, marked the end of Palisades' operations. In early December, 2016, Entergy had actually announced a planned closure by October 1, 2018. But Entergy requested from MPSC a $172 million buyout, for ending the PPA 3.5 years early. But the MPSC offered "only" $136.6 million, $35.4 million short of Entergy's request. Shortly after MPSC's counter-offer, Entergy abruptly changed course, instead committing to operate

Palisades until the May 31, 2022 termination of the PPA.(29) Entergy's late 2018 closure announcement, despite permission to continue its gravy train joyride of a PPA for several more years, could have been an implicit acknowledgement of Palisades' worsening safety risks, although the company never made a public statement to that effect.

2005-2007 very widespread resistance efforts against the 2011-2031 license extension, and the 2007-2022 PPA, are documented at the archived website of one of the coalition groups, Nuclear Information and Resource Service (NIRS).(30) Legal counsel for the environmental coalition included Terry Lodge of Toledo, Ohio, and Kary Love of Holland, Michigan. In addition to retired NRC whistleblower Dr. Ross Landsman on the risks of dry cask storage, the coalition also had an expert witness on reactor pressure vessel embrittlement, retired NRC whistleblower Demetrios Basdekas. However, NRC's legal counsel frightened Basdekas off the coalition's team, by making a bogus threat, during unauthorized *ex parte* communications, that he faced jail time, a large fine, and loss of his pension, if he continued. In normal legal proceedings, such behavior by NRC's attorney could have resulted in severe sanctions, including disbarment.

The *Kalamazoo Gazette/MLive* litany of Palisades' problems continued: in 2007, "several incidents occurred, including the head of security resigning after it was discovered he had fabricated his credentials. Then in December, tritium was found in a test well at levels above the Environmental Protection Agency's limits for drinking water…The tritium was traced to corrosion in the underground pipes — a common problem at older reactors."(31)

The 2014 *Kalamazoo Gazette/MLive* article concluded with some explanation as to why Palisades was so very controversial in the aftermath of the Fukushima Daiichi, Japan triple-meltdown catastrophe, which began on March 11, 2011. The article reported:

"The years 2011 and 2012 saw a series of troubling incidents that led to the NRC downgrading Palisades to Column 3, classifying it as among the worst-performing reactors in the U.S. Plants placed in Column 4 receive the most attention and plants in Column 5 are permanently shut down.

In 2011, there were five shutdowns at Palisades — two of which prompted special investigations by the NRC and one of which led to a "yellow" finding of substantial significance to safety."(32)

The controversy and concern was so intense and deep that a new watchdog group formed, Michigan Safe Energy Future, with Kalamazoo and Shoreline chapters. MSEF then joined with decades-old Palisades watchdog Don't Waste Michigan, and national organization Beyond Nuclear, to seek Palisades' closure through legal interventions in NRC proceedings.

In late 2014, the environmental coalition undertook a major legal intervention against the latest NRC rollback of safety regulations on reactor pressure vessel embrittlement, designed to accommodate Palisades' continued operations.(33) In March-April 2013, the coalition had pressured NRC to acknowledge, in writing, that Palisades had the worst neutron-embrittled reactor pressure vessel in the U.S.(34) Terry Lodge served as the coalition's legal counsel, and

Arnie Gundersen as expert witness. (Wally Taylor simultaneously served as legal counsel for Sierra Club Michigan Chapter's Nuclear-Free Campaign, which also opposed the regulatory retreat.) The NRC Atomic Safety (sic) and Licensing Board (ASLB) pre-hearing proceedings dragged into the spring.(35) By summer solstice 2015, the ASLB had denied the coalition's primary hot-to-cold pressurized thermal shock risk intervention contentions, but later granted a hard won hearing on the merits regarding hot-to-hotter pressurized thermal shock (PTS) reactor pressure vessel vulnerabilities, a largely regulation-free zone of risk.(36) Although the coalition strove to defend its last remaining contention(37), the NRC Commissioners intervened in the ASLB proceedings, ruling in favor of an Entergy Palisades' appeal to dismiss the coalition's case entirely.(38) This locked in NRC's latest rollback on embrittlement/PTS risk regulatory retreat, allowing Palisades to continue operating till 2031,(39) despite the fact that the Associated Press had cited embrittlement/PTS risk as the top example of NRC regulatory retreat in a post-Fukushima investigative series.(40)

Meanwhile, Palisades' security failures, infamous since the 9/11 attacks in 2001,(41) continued into the summer of 2014,(42) and would persist for years after that.(43) This included an armed security guard suffering a nervous breakdown on the job, in the aftermath of the 9/11 attacks, because she had been forced to work 72 hours per week, for nearly a year. It also included an incident on the eve of the first anniversary of 9/11, when three suspicious cars entered the Palisades nuclear power plant property. The security guard force called the wrong local law enforcement agency for back up. By the time that mistake got sorted out, 45 minutes had passed, and the cars had driven off, never to be identified. The 2007 revelation of the "Zeke the Mercenary" security incident at Palisdes was mentioned above. In 2012, a security guard manager ordered a supervisor without proper training to conduct an armed patrol. The regulatory violation came to light via security guard whistleblowers, who were then, ironically enough, fired for their courageous, good deed, while the malefactor manager was promoted. In 2016, a fleetwide practice of Entergy's caused a scandal at Palisades: already overworked security guards were also ordered to conduct fire watch patrols. They falsified their paperwork, claiming to have conducted the fire watch patrols, when in truth, they had not done so. This left Palisades vulnerable to fire. Fire at nuclear power plants represents 50% of the risk of a meltdown. The "chilled work environment" and "broken safety culture" for security guards at Palisades led to a years-long NRC review, but according to yet more fired security guard whistleblowers who spoke out at an NRC public meeting, little to nothing had changed.

Another measure of Palisades' risks, and the controversy its large number of incidents created in the local community, were visits by four NRC commissioners in just a two-year period. Two were chairmen of the agency, and a third would later become chairman: Greg Jaczko visited Palisades on May 25, 2012; Kristine Svinicki a year later; and Allison Macfarlane 13 months after that. Commissioner William Magwood IV also visited in March 2013. All but Svinicki would also meet with large turnouts of grassroots watchdogs and concerned local residents.

But in fact, anti-nuclear activism and resistance to Palisades began even before ground was broken. For example, Bangor (within Palisades' 10-mile Emergency Planning Zone) resident

Maynard Kaufman, a WMU professor, author, and co-founder of the Michigan Organic Food and Farm Alliance, watchdogged Palisades from the 1960s until his passing in 2021. Petitions against Palisades were gathered in Kalamazoo prior to construction, and the U.S. Atomic Energy Commission licensing proceedings, including hearings held at the Kalamazoo Public Library, were well attended by concerned citizens, according to contemporaneous reporting by the *Kalamazoo Gazette*.

Groups like Don't Waste Michigan, Coalition for a Nuclear-Free Great Lakes, Palisades Watch, Michigan Safe Energy Future (MSEF), and Nuclear Information Resource Service of Chicago have kept the drumbeat going since the 1980s, till now, as have national groups like NIRS and Beyond Nuclear.

For example, a coalition of environmental groups and individuals across Michigan, and beyond, led by Beyond Nuclear, sent a letter and briefing paper to Michigan's Governor, Gretchen Whitmer, and Lt. Gov., Garlin Gilchrist II, regarding "Nuclear Power Safety Concerns in Michigan amidst the COVID-19 Pandemic." (See: https://archive.beyondnuclear.org/nuclear-reactors-whatsnew/2020/6/20/nuclear-power-safety-concerns-in-michigan-amidst-the-covid-1.html) Despite such efforts, Gov. Whitmer, less than two years later, on April 20, 2022, first floated the scheme to keep Palisades operating, even though Entergy was on the very brink of closing it for good, which it did do on May 20, 2022. Holtec has zealously pursued Whitmer's extremely high-risk, exorbitantly expensive, unprecedented reactor restart scheme ever since taking over Palisades on June 28, 2022.

As exhausting (and terrifying) as the risks described above have been, and still are, they are not exhaustive. For example, there is a broken fragment of an impeller blade, lodged within the reactor pressure vessel. Palisades' owners, and NRC, have simply allowed this metal fragment to remain in place, despite the high risks that could ensure if it were to become dislodged during full power operations.

Holtec's bait and switch trick — taking over Palisades under the pretense of decommissioning, only to then announce so-called Small Modular Reactor (SMR) new build construction plans there, as well as its unprecedented, insanely expensive, extremely high-risk zombie reactor restart scheme at the closed, more than 50-year old reactor — represents alarming, uncharted waters of increased, and still increasing, age-related degradation risk.

This is what motivated the environmental coalition — Beyond Nuclear, Don't Waste Michigan, and MSEF, with Terry Lodge as legal counsel, and Arnie Gundersen and Bob Alvarez as expert witnesses — to intervene against Holtec's takeover of Palisades in the first place. The coalition met NRC's short, strict deadline on February 24, 2021, raising numerous environmental contentions. Environmental Law and Policy Center, as well as the Office of the Attorney General of the State of Michigan, also intervened, focusing on the inadequacy of the the Palisades DTF to carry out Holtec's PSDAR plans. NRC kept the would be intervenors waiting for 17 months (so why had they been required to meet a short, strict deadline?!), only to then dismiss the

environmental groups outright. AG Dana Nessel's intervention efforts continued on for years thereafter.(44)

Environmental watchdogs showed up for each and every twist and turn of the NRC's various Palisades decommissioning proceedings, including public comment opportunities.(45) It was Orwellian, in that decommissioning was no longer even on the table — the SMR new build and zombie reactor restart schemes were the new plans. This was a reflection of NRC's check the box

approach to nuclear "regulation" in general — a rubber-stamp agency in collusion with the industry it is supposed to regulate, while treating the concerned public to bad faith, meaningless dog and pony shows for PR purposes only.

Watchdogs are also resisting the zombie reactor restart schemes at Palisades, as well as the SMR new build schemes there and at Palisades' sibling closed nuclear power plant, Big Rock Point in Michigan's northwest Lower Peninsula, near Charlevoix. Sierra Club Michigan Chapter, with 150,000 members, has spoken out against federal and state subsidies for the Palisades restart. Michigan Environmental Council, a 70-group coalition, has spoken out against Governor Whitmer's latest $150 million state bailout for Holtec's reactor restart scheme, as well.

The stakes are hard to overstate. A study commissioned by NRC, and carried out by Sandia National Lab, calculated casualties and property damages to be expected in the area around atomic reactor meltdowns. The study, most commonly referred to as CRAC-II (short for Calculation of Reactor Accident Consequences), is also called the 1982 Sandia Siting Study, or NUREG/CR-2239. For Palisades, acute radiation poisoning deaths were calculated as 1,000. Radiation injuries were calculated as 7,000. Latent cancer fatalities were calculated as 10,000. Property damages were calculated as $52.6 billion.(46)

But adjusting for inflation alone, those $52.6 billion in 1982 dollar figures would be more than $168 billion in Year 2023 dollar figures.(47)

And as AP reported post-Fukushima, populations have soared around U.S. atomic reactors like Palisades since 1982, meaning casualties would now be significantly worse.(48)

The restarted zombie reactor, co-located with two SMR-300s, as Holtec has proposed at the Palisades site, would represent both extremes of the risk spectrum — breakdown phase risks at the more than 50-year old reactor, and break-in phase risks at the new SMRs. Like at Fukushima Daiichi, Japan in March 2011, the risk of domino-effect multiple reactor meltdowns would also exist.(49)

As shocking as the CRAC-II figures are, Palisades indoor wet storage pool, if it were to lose its cooling water supply and the irradiated nuclear fuel were to catch fire, could unleash an even more nightmarish radioactive catastrophe. Palisades had a near-miss pool disaster in October 2005. The incident had been effectively covered up until December 2005, when watchdogs overheard an NRC staff question to Consumers that motivated them to file a Freedom of

Information Act request. The results led to front page, above the fold coverage in the *Detroit Free Press* in March 2006. When watchdogs confronted NRC Region 3 Office of Public Affairs spokeswoman Vika Mytling at a public meeting in South Haven in April 2006 about why the agency had effectively attempted to help the company cover up the close call with catastrophe, she called it an "un-reportable event."(50)

In early 2012, the Japanese Parliament published a root cause report on the Fukushima Daiichi nuclear catastrophe. Its conclusion was the collusion between the supposed safety regulatory agency, nuclear industry, and government officials is what left the three melted down reactors so very vulnerable to the earthquake and tsunami that hit them on March 11, 2011. But such collusion exists in spades at Palisades. Which is why the Great Lakes, and the Great Lakes State, are so in peril, given Holtec's schemes at Palisades, and Big Rock Point, as well as the betrayal of the public being perpetrated by the State of Michigan, federal government, and others in this regard.

See the backgrounders entitled "Palisades' 'Zombie' Reactor Restart and SMR New Build Schemes" and "Holtec: Criminality, Corruption, Incompetence, and Inexperience" for additional information, as well as the Beyond Nuclear website.(51)

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End Notes:

(1) Thanks to Howard Zinn for his iconic *People's History of the United States*. Zinn spoke in Kalamazoo, Michigan — just 35 miles downwind of Palisades — on Indigenous Peoples Day 1992, the 500th annual commemoration of Columbus's invasion of Native America. In Zinn's memoir *You Can't Be Neutral on a Moving Train*, his introduction, "The Question Period in Kalamazoo" described what gave him hope in a world whose history is so full of darkness. He answered: some of the people he met in Kalamazoo that evening, the hosts of his visit, and the peace and justice work they had devoted their lives to. These very individuals include a number who are mentors to the author of this backgrounder, who have themselves engaged in the many decades long local resistance against Palisades.

(2) https://www.mlive.com/news/kalamazoo/2014/08/palisades_nuclear_plant_histor.html
This *Kalamazoo Gazette/MLive* article, entitled "Palisades Nuclear Plant history: The problems started early," by Yvonne Zipp, dated August 24, 2014, was published at a time of extreme controversy at Palisades, due to a large number of mishaps and scandals, leading to demands for its permanent shutdown in the wake of the Fukushima Daiichi nuclear catastrophe in Japan that began on March 11, 2011.

(3) https://beyondnuclear.org/wp-content/uploads/2024/03/Lochbaum-Headaches-at-Palisades-CRD-seals-new-LG2-20100716-pal-ucs-brief-leaking-crd-seals-5.pdf; see also David Lochbaum's "Palisades [Events] History" at https://beyondnuclear.org/wp-content/uploads/2024/03/Lochbaum-Events-at-Reactor-Sites-Palisades-History-3.pdf
(4) Entergy press release, May 20, 2022, https://www.entergynewsroom.com/news/entergy-s-palisades-team-finishes-strong-as-facility-shuts-down/
(5) Sierra Club Michigan Chapter blog: https://www.sierraclub.org/michigan/blog/2024/02/should-palisades-nuclear-plant-be-brought-back-life
(6.) https://www.mlive.com/news/kalamazoo/2014/08/palisades_nuclear_plant_histor.html
(7.) *Ibid*.
(8.) http://archives.nirs.us/reactorwatch/licensing/pg2.jpg, and http://archives.nirs.us/reactorwatch/licensing/kampsconsbrifeinf051806.htm
(9.) https://beyondnuclear.org/5775-2/
(10.) https://www.mlive.com/news/kalamazoo/2014/08/palisades_nuclear_plant_histor.html
(11.) https://westegg.com/inflation/
(12.) https://www.mlive.com/news/kalamazoo/2014/08/palisades_nuclear_plant_histor.html and https://westegg.com/inflation/
(13.) https://www.mlive.com/news/kalamazoo/2014/08/palisades_nuclear_plant_histor.html
(14.) https://www.mlive.com/news/kalamazoo/2014/08/palisades_nuclear_plant_histor.html and https://westegg.com/inflation/
(15.) https://www.mlive.com/news/kalamazoo/2014/08/palisades_nuclear_plant_histor.html
(16.) *Ibid*. March 28, 1979 was the date Three Mile Island Unit 2 in Pennsylvania had a 50% core meltdown. $450,000 in Year 1979 dollars is the inflation-adjusted equivalent of nearly $2 million in 2023 dollar figures, per https://westegg.com/inflation/. $5.45 million in Year 2005 dollar figures is equivalent to nearly $8.7 million in Year 2023 dollar figures.
(17.) https://beyondnuclear.org/5775-2/
(18.) https://www.mlive.com/news/kalamazoo/2014/08/palisades_nuclear_plant_histor.html
(19.) *Ibid*.
(20.) http://archives.nirs.us/reactorwatch/licensing/071805pressurizedthermalshockpotentialpalisades.pdf
(21.) http://archives.nirs.us/reactorwatch/licensing/sinclairltr020697.pdf
(22.) http://archives.nirs.us/reactorwatch/licensing/021794rosslandsmanltrnrcchairmanselin.pdf
(23.) http://archives.nirs.us/reactorwatch/licensing/020207landsmandec.pdf
(24.) http://archives.nirs.us/reactorwatch/licensing/2206reviewlttr.pdf
(25.) http://archives.nirs.us/press/06-28-2007/1 and http://archives.nirs.us/press/08-23-2007/2
(26.) Holtec Decommissioning International submitted to NRC a "Post-Shutdown Decommissioning Activities Report, Including Decommissioning Cost Estimate for Palisades Nuclear Plant" dated December 23, 2020 (NRC ADAMS No. ML20358A232).
(27.) NRC, Director's Decision DD-97-1, Consumers Power Company (Palisades Nuclear Plant), 45 NRC57, 33, 37-38, 1997. See also Pages 37-39 in the environmental coalition's intervention petition and hearing requested to NRC in opposition to Holtec's takeover at Palisades, dated Feb. 24, 2021, at https://archive.beyondnuclear.org/decommissioning/2021/2/24/environmental-coalition-intervenes-against-holtec-takeover-o.html

(28.) https://www.bridgemi.com/michigan-environment-watch/owner-says-palisades-nuclear-plant-closed-good-michigan-has-other-ideas
And see a repository of documents regarding the widespread environmental coalition resistance to the 20-year license extension:
http://archives.nirs.us/reactorwatch/licensing/palisades.htm
Note also that NRC had previously granted Palisades a 4-year license extension, to "recapture the construction phase" from 1967 to 1971. The application and approval happened so quietly and suddenly, environmental opponents were unable to mount resistance in time to that "mini-" extension.
(29.) https://archive.beyondnuclear.org/reactors-are-closing/
(30.) http://archives.nirs.us/reactorwatch/licensing/palisades.htm
(31.) http://archives.nirs.us/press/05-15-2007/1 and https://archive.beyondnuclear.org/reports/ — see particularly the section on Palisades' leaks. For more information on Palisades' "Zeke the Mercenary" security scandal, which spanned both the late Consumers Energy and early Entergy ownership tenures, see https://www.esquire.com/news-politics/a2878/mercenary0607/ and http://archives.nirs.us/press/05-15-2007/1
(32.) https://www.mlive.com/news/kalamazoo/2014/08/palisades_nuclear_plant_histor.html
(33.) See multiple related posts here: https://archive.beyondnuclear.org/safety/month/december-2014. See also an annotated bibliography, chronicling reactor pressure vessel embrittlement risk concerns dating back to the 1940s(!), with a particular focus on the problem at Palisades: https://archive.beyondnuclear.org/safety/month/october-2014.
(34.) March 19, 2013: Kevin Kamps of Beyond Nuclear's questions to NRC re: the agency Webinar on RPV embrittlement/PTS risks at Palisades. On April 18, 2013, NRC released a summary of the Palisades embrittlement webinar it had held on March 19th. This document has been referred to as: J. Geissner, Summary of the March 19, 2013, Public Meeting Webinar Regarding Palisades Nuclear Plant. It is available at ADAMS Accession No. ML13108A336. The slides from the NRC Public Webinar, Basis for NRC Requirements on Pressurized Thermal Shock, are available at ADAMS Accession No. ML13077A156. See page 5 of 15, point #4, for the relevant section.
(35.) https://archive.beyondnuclear.org/safety/2015/3/17/coalition-to-press-its-case-against-palisades-rpv-safety-rol.html and https://archive.beyondnuclear.org/safety/2015/3/25/nuclear-licesning-board-examines-vessel-risks-at-entergys-pa.html and multiples entries here https://archive.beyondnuclear.org/safety/month/april-2015 as well as https://archive.beyondnuclear.org/safety/month/may-2015
(36.) https://archive.beyondnuclear.org/safety/month/june-2015
(37.) https://archive.beyondnuclear.org/safety/month/august-2015
(38.) https://archive.beyondnuclear.org/safety/2015/11/9/nrc-dismisses-beyond-nuclear-et-al-interventions-against-ent.html
(39.) https://archive.beyondnuclear.org/safety/2015/11/23/nrc-rubber-stamps-entergy-palisades-operation-till-2031-desp.html

(40.) https://www.ap.org/press-releases/2012/aging-nukes-a-four-part-investigative-series-by-jeff-donn — see Part I of IV.
(41.) https://www.pogo.org/reports/nuclear-power-plant-security-voices-from-inside-fences
(42.) https://archive.beyondnuclear.org/radioactive-waste-whatsnew/2014/8/22/will-entergy-clean-up-its-act-at-palisades-security-departme.html
(43.) https://archive.beyondnuclear.org/safety/2016/7/9/beyond-nuclear-backgrounder-re-fire-security-risks-at-palisa.html
(44.) https://archive.beyondnuclear.org/decommissioning/month/february-2021
(45.) https://archive.beyondnuclear.org/decommissioning/
(46.)https://beyondnuclear.org/wp-content/uploads/2024/03/CRAC-2-chart-for-drop-final.pdf
(47.) https://westegg.com/inflation/
(48.) https://www.ap.org/press-releases/2012/aging-nukes-a-four-part-investigative-series-by-jeff-donn — see Part III of IV.
(49.) See an image of "the bathtub curve" of nuclear reactor accident risks, prepared by David Lochbaum, nuclear safety director at Union of Concerned Scientists (now retired) in the early 2000s. The curve is named "bathtub" because of its shape: https://archive.beyondnuclear.org/nuclear-costs-whatsnew/2013/1/17/friends-of-the-earths-expert-arnie-gundersen-defends-emergen.html
(50.) http://archives.nirs.us/reactorwatch/licensing/caskdanglesummaryreport4406.pdf and http://archives.nirs.us/press/03-20-2006/1
(51.) https://beyondnuclear.org/palisades-backgrounders/