

**BEFORE THE UNITED STATES
NUCLEAR REGULATORY COMMISSION**

In the Matter of)
)
Holtec Palisades LLC and Holtec) Docket No. 50-255-LA-3
Decommissioning International)
)
(Palisades Nuclear Plant) November 12, 2024
Request for License Amendment)

**PETITIONING ORGANIZATIONS’ COMBINED REPLY TO ANSWERS FILED BY
NRC STAFF AND HOLTEC TO THE PETITION TO INTERVENE**

The Petitioning Organizations, Beyond Nuclear, Don’t Waste Michigan, Michigan Safe Energy Future, Three Mile Island Alert, and Nuclear Energy Information Service, by counsel, hereby reply to the Answers filed by the NRC Staff and Holtec.

**BEYOND NUCLEAR, DON’T WASTE MICHIGAN, MICHIGAN SAFE ENERGY
FUTURE AND THE SIX INDIVIDUAL DECLARANTS THEY REPRESENT HAVE
DEMONSTRATED REPRESENTATIONAL AND INDIVIDUAL STANDING**

Contrary to the assertions of the NRC Staff and Holtec Decommissioning International that Beyond Nuclear, Don’t Waste Michigan, Michigan Safe Energy Future and the six individual declarants they seek to represent have not demonstrated standing purportedly because they challenge only Holtec’s exemption request,¹ a fair reading of the individual declarants’ statements reveals that they readily fulfill the requirements for standing to intervene. These Petitioners show clearly that they oppose the restart of Palisades, they have demonstrated presence within the zone of interests and raise technical concerns with safety implications pertinent to the relicensing of Palisades. The NRC Staff and Holtec have taken a hypertechnical perspective of standing and claim that the declarants have to assert in so many words that they object to granting of the four license amendment requests (LARs). Their assertions are overblown.

¹ NRC Staff Answer p. 14; HDI Answer p. 75.

1. Review of the Six Individual Declarations

In each of the challenged individual declarations,² the declarant expressly conveys a detailed understanding of the nature of the proceedings: “The NRC is also considering amending the RFOL for administrative purposes to reflect the proposed transfer” and “is considering issuance of four amendments to RFOL No. DPR–20 that were requested by HDI on behalf of Holtec Palisades, LLC, to support the potential reauthorization of power operations at Palisades. HDI has submitted several requests for NRC approval to support allowing the resumption of power operations through March 24, 2031. These requests include four license amendment requests and an exemption request.” (¶ 3).

Each declarant conveys an explicit understanding of problems with the Palisades restart, citing multiple mechanical and operational problems related to safety: a “half-century-long plague of control rod drive mechanism (CRDM) seal leakage problems,” (¶ 5); chronic reactor vessel embrittlement (¶ 6); historically indicated replacement of the reactor pressure vessel head and replacement of the steam generators (¶ 7); subsurface geology instability beneath the concrete pads holding loaded nuclear waste storage casks perched on the Lake Michigan shoreline which have been found to violate NRC earthquake safety regulations (¶ 8); weld defects in Cask No. 4 dating to 1994, a cask loaded with spent nuclear fuel on one of the aforesaid concrete pads, which make opening the cask to stabilize the spent fuel contents highly hazardous (¶ 9); insufficient quality assurance record keeping (¶ 10); insufficient maintenance of key systems and components since power operations were permanently ended at Palisades in May 2022 (¶ 10).

² The challenged individual declarations are those of William D. Reed, Carolyn Ferry, Alice Hirt, Joseph C. Kirk, Ann Scott and James Scott.

Then, each declarant asserts that he or she fears radiation releases either by accident or via ongoing routine releases of radiation from plant operations if Palisades is restored to operability. (¶ 11). Each declarant explains that radiation releases would threaten the health of the declarant and family members as well as portend damage to real and personal property at their residences. Five of the six declarants live from .75 to two miles from the Palisades nuclear reactor. (¶ 11). Finally, four of the six declarants, James Scott, Ann Scott, Alice Hirt and Joseph Kirk, each “request leave to intervene in this license transfer and/or *amendment proceeding* and to have my interests advanced and represented by” Don’t Waste Michigan (Kirk and Hirt) or Michigan Safe Energy Future (Ann and James Scott). (¶ 12).

None of the factual assertions made by the individual Declarants are challenged by the NRC Staff or HDI.

2. Taken as a Whole, Each Individual Declaration Makes a Satisfactory Case for Standing

The NRC Staff and Holtec have seized upon the individual Declarants’ references to opposing the grant of HDI’s requested exemption to the exclusion of considerable other evidence of their knowledge and intentions. Additionally, the Staff and HDI have atomized the Individual Declarations, urging the Licensing Board to read each word or phrase in them as unrelated and unconnected bits of information instead of an integrated explanation and justification of each individual’s standing.

Each individual declarant established geographical proximity to the Palisades plant (less than one mile in two instances, with five being within two miles). They show significant understanding of the nature of the pending proceeding as involving an exemption request and four license amendment requests. They proceed to delineate multiple serious operational safety concerns at Palisades, express concerns for personal and family health and safety and designate

an organizational representative to oppose the restart of the Palisades reactor. Four of the six Individual Declarants “request leave to intervene in this license transfer and/or *amendment proceeding* and to have my interests advanced and represented by” Don’t Waste Michigan (Kirk and Hirt) or Michigan Safe Energy Future (Ann and James Scott). (¶ 12). If magic words references to the license amendment proceeding are obligatory, all but Beyond Nuclear’s two Individual Declarants have made them.

Even without using thaumaturgical “license amendment” language, though, the presentation in each Individual Declaration suffices for standing. The Individual Declarants stated they “oppose the granting of the exemption by the NRC because of concerns over safety, the potential for significant damage to public health and the environment, the lack of nuclear power generation experience and controversial historical performance of the parent company, Holtec International (“Holtec”), as a corporation.”

The Staff tries to maintain that the “Petition’s standing arguments, however, state that the six individuals BN, DWM, and MSEF seek to represent oppose [*sic*] HDI’s Exemption Request but does not state any opposition to or otherwise challenge the license amendment requests.” Besides the absurd implication that in order to intervene in the Palisades proceeding, one must have the acumen of a nuclear power engineer, the Declarants’ recitations of troubles with steam generators, control rod drive mechanisms, and metallurgically embrittled reactor components certainly constitute criticisms of the adequacy of the Palisades Decommissioning Safety Analysis Report (UFSAR Rev. 36), which contains the technical specifications of the shutdown Palisades reactor; the operations tech specs have been junked and/or deleted as a result of the permanent shutdown of Palisades and will have to be replaced with new ones. The Individual Declarants, have depicted half a dozen serious safety issues at Palisades, followed by clear expressions of

concern about possible routine or accidental radiation emissions from Palisades. The ASLB must conclude that each Individual Declarant has stated opposition to the restart of Palisades by saying, “I am afraid that *if Palisades is restored to operability* there could be incidents or accidents resulting in radiation releases. I also am concerned about the *prospect of ongoing routine releases of radiation from an operating Palisades.*” Each declarant has thus articulated detailed factual reasons for his or her opposition to the Palisades restart, which begins with the Exemption Request. The detailed declarations, taken as a whole, establish the Individual Declarants’ respective legal right under the Atomic Energy Act to be made a party to the proceeding, disclose their property, financial or other interest, and state the possible effect on their interest of any decision or order that might issue. 10 CFR § 2.309(d)(2), (3) and (4).

3. The Requirements for Standing Are Not As Rigorous As the NRC Staff and Holtec Claim

Petitioners have made clear that they are pleading their Petition in the alternative.³ They agree generally that “[a] request for an exemption is not among the listed actions subject to a hearing opportunity under section 189 of the AEA.” *Entergy Nuclear Operations, Inc. (Palisades Nuclear Plant & Big Rock Point Site)*, CLI-22-8, 96 NRC 1, 14 (2022). And if the Board decides otherwise, finding that, as the NRC Staff asserts, that “the Exemption Request is inextricably intertwined to the restart-related amendment requests, and therefore, can be challenged through the filing of contentions in this license amendment proceeding,”⁴ that finding will negate the NRC Staff and HDI objections to some of the Petitioners’ claims of standing.

As explained above, the Petitioners’ Declarants have described their interests in this

³ In their initial Petition to Intervene, Petitioners stated “The Petitioners herein, so as not to waive any procedural requirement, are submitting this Petition pursuant to 10 C.F.R. § 2.309, because the NRC’s consideration of Holtec’s Request for Exemption in their estimation comprises a licensing-related act that comprises a proceeding pursuant to § 2.309.” *Id.* at 19.

⁴ NRC Staff Answer to Intervention Petition of Beyond Nuclear, *et al.*, p. 31.

proceeding. Those standing allegations comply with the requirements for standing. The NRC Staff and Holtec are imposing hypertechnical standing requirements on the Petitioners that do not exist.

10 C.F.R. § 2.309(d)(1) affords standing to any party who alleges:

(1) the nature of the petitioner’s right under the governing statute to be made a party;

(2) the nature of the petitioner’s property, financial, or other interest in the proceeding;

(3) the possible effect of any decision or order on the petitioner’s interest.

In applying that regulation, the NRC uses judicial concepts of standing, so a petitioner must “(1) allege an injury in fact that is (2) fairly traceable to the challenged action, and (3) is likely to be redressed by a favorable decision.” *Florida Power and Light Co.* (Turkey Point Nuclear Generating Plant, Units 3 & 4), 82 NRC 389, 394 (2015). As to the second element, the cause of the injury need not flow directly from the challenged action, but the chain of causation must be plausible. *Id.*

With respect to the first element, as explained above, the standing declarants have set out in detail the injuries they will suffer if Palisades is restarted. And, of course, the result of the NRC granting the exemption and license amendments is ultimately the restart of Palisades, so the chain of causation is more than plausible. *Id.*

The second element of judicial standing is satisfied here because the Petitioners’ Petition is clear that the challenged action is the granting of an exemption and license amendments. The Petition must be considered in conjunction with the standing declarations. *Southern Nuclear Operating Co., Inc* (Vogtle Electric Generating Plant, Unit 3), 91 NRC 225, 237-238 (2020). The

NRC Staff and Holtec are improperly pointing to the standing declarations in isolation, without considering the allegations in the Petition.

The third element of judicial standing would clearly be satisfied by a favorable decision in denying the requested exemption and license amendments, which would prevent Palisades from restarting. Thus, the Individual Declarants' alleged injuries would be redressed by a favorable decision in this case, and they can be said to have established their claims to standing here.

4. Proximity Alone Dispenses With Relating Injury to the Licensing Action

The Individual Declarants' opposition to the intertwined Exemption Request, together with their geographical proximity to the Palisades reactor, dispenses with the need for showing a causal relationship between injury to their interests and the licensing action being sought in order to establish standing. *Armed Forces Radiobiology Research Inst. (Cobalt-60 Storage Facility)*, ALAB-682, 16 NRC 150, 153 (1982), citing *Virginia Elec. & Power Co. (North Anna Nuclear Power Station, Units 1 & 2)*, ALAB-522, 9 NRC 54, 57 n.5 (1979); *Georgia Inst. of Tech. (Georgia Tech Research Reactor, Atlanta, Ga.)*, LBP-95-6, 41 NRC 281, 287 (1995). A petitioner may base its standing upon a showing that its residence, or that of its members, is within the geographical zone that might be affected by an accidental release of fission products. *Houston Lighting & Power Co. (South Texas Project, Units 1 & 2)*, LBP-79-10, 9 NRC 439, 443 (1979). For example, the incremental risk of reactor operation for an additional 13–15 years is sufficient to invoke the presumption of injury-in-fact for persons residing within 10 to 20 miles of the facility. *Pacific Gas & Elec. Co. (Diablo Canyon Nuclear Power Plant, Units 1 & 2)*, LBP-93-1, 37 NRC 5 (1993). In such a case the petitioner does not have to show that his concerns are well-founded in fact, as such concerns are addressed when the merits of the case are reached.

Distances of as much as 50 miles have been held to fall within this zone. *Duquesne Light Co.* (Beaver Valley Power Station, Unit 2), LBP-84-6, 19 NRC 393, 410, 429 (1984).

The Individual Declarations show that the declarants would suffer distinct and palpable harm to constitute injury-in-fact within the zone of interest that is to be protected by the AEA, 42 U.S.C. 2011, *et seq.* and the injury can be fairly traced to the challenged action and the injury is likely to be redressed by a favorable decision. An alleged injury to health and safety, shared equally by many, can form the basis for standing. See *Philadelphia Elec. Co. (Limerick Generating Station, Units 1 and 2)*, LBP-82-43A, 15 NRC 1423, 1434 (1982). Even minor radiological exposures resulting from a proposed license activity can be enough to create the requisite injury-in-fact. See *Sacramento Mun. Util. Dist. (Rancho Seco Nuclear Generating Station)*, LBP-91-17, 33 NRC 379, 391 (1991).

In sum, the six challenged Individual Declarations adequately establish a basis for individual standing on which Beyond Nuclear, Don't Waste Michigan and Michigan Safe Energy Future can base legal standing to participate in this proceeding.

THE PETITION TO INTERVENE WAS TIMELY FILED

Holtec, but not the NRC Staff, argues that Petitioners' Petition was not initially filed in the newly created docket for this proceeding. The Federal Register notice for this proceeding was published on August 7, 2024.⁵ Pursuant to that notice, petitions to intervene were to be filed by October 7, 2024. As admitted by Holtec in its Answer, Petitioner's Petition was filed on October 7, 2024, in the docket identified in the Federal Register notice, 50-255. The Federal Register notice does not contain any reference whatever to the new number created for this docket.

As stated in Holtec's Answer, Petitioner's attorney received an email from the NRC Secretary's Office on October 8, 2024, notifying him that a new docket had been created for this

⁵ 89 Fed. Reg. 64486 (Aug. 7, 2024).

proceeding. Unfortunately, counsel was out of the office on October 8-10, 2024. The Secretary's followup email was sent on October 9, 2024. The October 8 email said, "Please refile your submission in the correct proceeding, which is named: Palisades 50-255-LR-3." The October 9 email said, "Since your submission was filed in the wrong proceeding, please let us know whether you intend to refile your submission to the correct proceeding, . . . Please confirm your intention to participate and confirm if continued access is warranted." So it is clear from those messages that the Petition was being treated as timely filed and that Petitioners were being allowed to refile their Petition in the correct docket, which they did.

When counsel returned to the office on October 10 and was able to respond to the emails, he did so and refiled the petition. In response to the filing of the Petition, the ASLB issued an Order setting the date of November 4, 2024, for NRC Staff and Holtec to file Answers to Petitioners' Petition. That date was based on the Petition filing date and the 25-day period set forth in 10 C.F.R. § 2.209(i) for filing Answers. So Holtec has not, and cannot, show any prejudice as a result of the October 10 filing date. And, significantly, Holtec has not pointed to any NRC regulation or decision that supports its argument that the Petition should be dismissed. The only authority provided is a federal court case involving an untimely notice of appeal, a situation that bears no relationship to this matter.

STANDARD FOR ADMISSIBILITY OF CONTENTIONS

The original Petition to Intervene set forth the standard for admissibility of contentions. That standard says that a petition to intervene and supporting contentions do not have to prove the case. An adversarial hearing is where proofs are compared. Contention admissibility only requires Petitioners to make a "showing sufficient to require reasonable minds to inquire further." *Vermont Yankee Nuclear Power Corp. v. NRDC*, 435 U.S. 519, 554 (1978). Petitioners

reiterate this standard here because the NRC Staff and Holtec in their Answers persist in holding Petitioners to a higher standard than is required.

As will be shown in the following discussion in response to the arguments of NRC Staff and Holtec, Petitioners have clearly set forth facts and authorities that establish a more than sufficient basis for admissibility of the contentions. Petitioners ask the Atomic Safety and Licensing Board to keep the appropriate standard for admissibility of contentions in mind as it considers the contentions presented in this case.

CONTENTION 1: HOLTEC'S EXEMPTION REQUEST SHOULD BE DENIED

A. Petitioners Agree With Holtec, As Explained In Holtec's Answer, That The Exemption Request Is Not A Licensing Action And Should Not Be Considered In This Proceeding.

As stated in Petitioners' Petition, Holtec's exemption request is the linchpin upon which the subsequent elements of Holtec's plan to restart Palisades rests.⁶ But it is not a licensing action. Even if the exemption were granted, the subsequent license amendments could still be denied. Moreover, the granting of the requested exemption would not change the status or any aspects of the license. It would simply allow Palisades to be removed from decommissioning status. So Holtec correctly argues that Contention 1 is outside the scope of this proceeding.

The Commission's decision in *Entergy Nuclear Operations, Inc.* (Indian Point Nuclear Generating Station, Units 1, 2, and 3 and ISFSI), 93 NRC 1 (2021) is instructive. In that case, as in this case, Holtec had obtained ownership of the nuclear plant for the alleged purpose of decommissioning. Holtec requested an exemption to use the decommissioning trust fund for non-decommissioning activities. The Commission held that the exemption request was properly addressed in the licensing proceeding because the exemption requests "were 'completely dependent on the [license-amendment request]' and 'cannot take effect unless and until the

⁶ Petition to Intervene, p. 30.

[license-amendment request] is approved.” *Id.* at 16, citing *Entergy Nuclear Vermont Yankee, LLC* (Vermont Yankee Nuclear Power Station), 82 NRC 68, 78 (2015). See *Id.* at 16, n. 78 (“Where a requested exemption raises questions that are material to a proposed licensing action and bear **directly** on whether the proposed action should be taken, however, a petitioner may propose exemption-related arguments in the licensing proceeding.”) (emphasis added). The requested exemption in this case does not depend on granting the LARs nor does it bear directly on whether the LARs should be granted.

Petitioners presented Contention 1 only because the NRC inferred that the exemption request was so closely intertwined with the license amendment requests that it must be included as a contention in this proceeding.⁷ Out of an abundance of caution, Petitioners have submitted Contention 1, so as not to waive any challenge to the exemption request, if indeed, the challenge to the exemption must be raised in this proceeding.

B. Alternatively, if Contention 1 is properly raised in this proceeding, then Contention 1 should be admitted.

An exemption can be granted only if it satisfies the requirements of 10 C.F.R. § 50.12(a). As set forth in Petitioners’ Petition, court decisions and NRC precedent hold that an exemption is justified only in exigent or extraordinary circumstances.⁸ The NRC Staff claims that because all of these precedents precede a 1985 amendment to 10 C.F.R. § 50.12, they are irrelevant. But the Staff has not explained or justified why the 1985 amendment allegedly changed the prior precedent.

The 1985 amendment apparently followed the Commission’s decision in *Long Island Lighting Co.* (Shoreham Nuclear Power Station, Unit 1), CLI-84-8, 19 NRC 1154 (1984). See, 50 Fed. Reg. 50764 (December 12, 1985). However, there is nothing in that Federal Register

⁷ Order of the Secretary, September 26, 2024.

⁸ Petition to Intervene, pp. 31-32.

notice that even hints that the prior requirement for exigent or extraordinary circumstances was rendered inapplicable to the consideration of an exemption request. In fact, that Federal Register notice states that the 1985 amendment was designed to clarify the requirements for an exemption and to comply with the Commission's decision in *Shoreham*.⁹ In *Shoreham* the Commission specifically relied on the criterion of exigent circumstances for determining whether an exemption was justified.

Prior to the 1985 amendment, 10 C.F.R. § 50.12(a) stated:

(a) The Commission may, upon application by any interested person or upon its own initiative, grant such exemptions from the requirements of the regulations in this part as it determines are authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest.¹⁰

This language is essentially the same as the language in the current 10 C.F.R. § 50.12(a)(1). What the 1985 amendment did was to add what is now 10 C.F.R. § 50.12(a)(2), which are simply clarifying provisions to provide some guidance to NRC staff in determining the appropriateness of an exemption. There is absolutely nothing in the 1985 amendment that in any way abandons the requirement that an exemption is justified only in exigent or extraordinary circumstances.

The Staff's view of an exemption would make it much easier to evade the requirements of a rule. It would make it possible for the injection of improper considerations, such as economic hardship, into the determination of whether or not to grant an exemption. If it becomes easier to evade a rule, there is no purpose to the rule. The exemption swallows the rule.

The NRC Staff in its Answer also claims that the Petitioners' pointing to the "undue risk" factor in 10 C.F.R. § 50.12(a)(1) is an indirect attack on "existing safety regulations," without

⁹ 50 Fed. Reg. at 50765

¹⁰ *Shoreham*, 20 NRC at 1352, n. 17.

specifying what safety regulations were allegedly being attacked. In any event, undue risk is one of the criteria that Holtec must show and the NRC must find in order to grant an exemption. So it is obviously and properly a relevant issue in challenging an exemption in this case.

The NRC Staff further claims that the declaration of Petitioners' expert, Arnold Gunderson, while establishing undue risk and that restarting Palisades is not in the public interest, made conclusory statements with no factual support. To the contrary, Mr. Gunderson's declaration is replete with detailed statements and facts. For example:

- In support of Conclusion 1, Mr. Gunderson explains why it is important that Holtec does not have any experience in operating a nuclear plant. He describes in detail the mechanical, technical and structural defects at Palisades and what it would take to restart the reactor safely. And Mr. Gunderson bases these statements on his own experience and qualifications as a nuclear engineer and former nuclear plant operator.

- Also, in support of Conclusion 1, Mr. Gunderson, recites in detail the defects at Palisades requiring new construction, as listed by Holtec itself in its application for funding from the Department of Energy.

- In support of Conclusion 2, Mr. Gunderson lists in detail the construction problems that would be encountered in attempting to restart Palisades. These are facts, not conclusory statements.

- Mr. Gunderson's Conclusion 3 continues with more facts about the problems Holtec would encounter in trying to restart Palisades, given the company's inexperience in operating a nuclear reactor and the lack of an experienced workforce.

- In support of Conclusion 4, Mr. Gunderson explains why Palisades must restart with a new design basis. As specific factual examples, Mr. Gunderson points to environmental impacts

of climate change that were not considered when Palisades was built, and the placement of the turbine, which can result in damage to the reactor core and cause a meltdown if there is damage to the turbine. Mr. Gundersen agrees with NRC Commissioner Bradley Crowell that in order to restart Palisades, Holtec will have to start from scratch.

- Conclusion 5 explains how Holtec has misused the decommissioning trust fund. In support of that point, Mr. Gundersen quotes a Holtec official as saying no decommissioning activity has been undertaken at Palisades, but as Mr. Gundersen explains, Holtec's decommissioning report lists \$44 million dollars in decommissioning expenses.

- In Conclusion 6, Mr. Gundersen notes that there is no precedent for restarting a reactor presently in decommissioning status. That, of course, is a fact that both the NRC and Holtec admit. Mr. Gundersen goes on to compare the attempted restart of the Bellefonte reactor in Alabama, with attempting to restart a decommissioning plant. Bellefonte had not even been constructed when it attempted to regain its construction permit, let alone been operational and in decommissioning status.

- Conclusion 7 discusses the impact of climate change. Mr. Gundersen goes into great detail in explaining the significant changes that would need to be made to the Palisades plant to account for increased temperatures and also how Lake Michigan will be impacted.

- In Conclusion 8, Mr. Gundersen describes in detail the requirement for proper layout of systems, structures and components of a nuclear reactor when it is taken out of service. Special concern is placed on the condition of the steam generators which have experienced corrosion.

- In Conclusion 9, Mr. Gundersen substantiates the fact that quality assurance records for Palisades have been destroyed. Without those records, Palisades cannot operate and the NRC has no regulatory control over the plant's safety systems.

Aside from the NRC Staff's baseless assertion that Mr. Gundersen's declaration contains nothing but conclusory statements, the Staff cannot simply disagree with Mr. Gundersen's statements to deny admissibility of the contention. The Board should not address the merits of the case or adjudicate facts when determining the admissibility of a contention. *Vermont Yankee Nuclear Power Corp.* (Vermont Yankee Nuclear Power Station), 28 NRC 440, 446 (1988); *Sierra Club v. NRC*, 862 F.2d 222, 228 (9th Cir. 1988). What is required is that the intervenor state the reasons for its concerns. *Public Service Co. of New Hampshire* (Seabrook Station, Units 1 & 2), 16 NRC 1649, 1654 (1982). The contention rules require only that contentions have "at least some minimal factual and legal foundation in support" and are not to be a "fortress to deny intervention." *U.S. Dept. of Energy* (High Level Waste Repository), LBP-09-06 (May 11, 2009).

Another argument by the NRC in support of its intent to grant Holtec an exemption is that the exemption is authorized by law, as required by 10 C.F.R. § 50.12(a)(1). The NRC Staff supports this argument by contending that the exemption is authorized by law because there is nothing in the law prohibiting it. But as the Petitioners said in their supporting statement of facts supporting Contention 4:

In *West Virginia v. EPA*, 142 S.Ct. 2587 (2022), the U.S. Supreme Court held that in cases addressing issues of economic and political significance an agency cannot act in the absence of clear Congressional authority. As the court put it:

Thus, in certain extraordinary cases, both separation of powers principles and a practical understanding of legislative intent make us "reluctant to read into ambiguous statutory text" the delegation claimed to be lurking there. *Utility Air*, 573 U.S. at 324, 134 S.Ct. 2427. To convince us otherwise, something more than a merely plausible textual basis for the agency action is necessary. The agency instead must point to "clear congressional authorization" for the power it claims. *Ibid.*

Id. at 2609.

The Fifth Circuit has applied West Virginia's "major questions" doctrine to conclude that "Disposal of nuclear waste is an issue of great 'economic and political significance.'" *Texas v.*

Nuclear Regulatory Commission, Case No. 21-60743, ___ F.3d ___ (Fifth Circuit, August 25, 2023). The circuit court noted Congress’ acknowledgment that “high-level radioactive waste and spent nuclear fuel have become major subjects of public concern,” citing 42 U.S.C. § 10131(a)(7) (findings section of the Nuclear Waste Policy Act). The Fifth Circuit then noted that “A decision of such magnitude and consequence rests with Congress itself, or an agency acting pursuant to *clear* delegation from that representative body,” citing *West Virginia*, 142 S. Ct. At 2616 (emphasis added).

Likewise, attempting the unprecedented action of restarting a decommissioning reactor is equally significant to the creation of a nuclear waste facility.

The NRC Staff also argues that the exemption is properly granted pursuant to 10 C.F.R. § 50.12(a)(2), which describes 6 alternative special circumstances that can justify an exemption. However, the conditions in § 5012(a)(1) must still be satisfied, as well. The special circumstances relied on by Holtec are those set forth in 10 C.F.R. §§ 50.12(a)(2)(ii), (iii), and (vi).

With respect to § 50.12(a)(2)(ii), the NRC Staff claims that the special circumstance justifying the exemption is Holtec’s desire to restart Palisades. But that is not the kind of special circumstance contemplated by the rule. The rule clearly contemplates a circumstance that would not serve the purpose of the rule. As explained in Contention 1, the purpose of the applicable rule, 10 C.F.R. § 50.82, is to place a reactor in decommissioning status. Using the exemption to allow Palisades to restart would clearly not serve the purpose of placing Palisades in decommissioning status. So § 50.12(a)(2)(ii) prohibits the granting of the exemption in a case such as this, where the special circumstance will not serve the purpose of the rule to place the

reactor in decommissioning status. In fact, the special circumstance (restarting Palisades) would do just the opposite.

Holtec claims that Petitioners are asserting on this point that § 50.82 precludes a decommissioning reactor from ever being restarted. That is not accurate. The point is that an exemption to allow restart would not serve the purpose of § 50.82, which is to place the reactor in decommissioning status.

Reliance on § 50.12(a)(2)(iii) requires a showing of undue hardship. The NRC Staff argues that the undue hardship is an alleged hardship on the people of Michigan by denying them nuclear power. But the Staff offers no authority for that argument. In fact, the Federal Register notice for the 1985 amendment to § 50.12 states:

[The undue hardship requirement] is intended to provide equitable treatment to applicants or licensees who, because of some unusual circumstance, are affected in a manner different than that of other similarly situated licensees or applicants.¹¹

Clearly, the undue hardship that would justify an exemption must be a hardship to the licensee and something unforeseen or beyond the control of the licensee. Holtec's profit-driven desire to restart Palisades is not an undue hardship.

The last subsection, § 50.12(a)(2)(vi), relied on by Holtec is a catch-all provision based on circumstances where it would be in the public interest to grant an exemption. The NRC Staff argue that the authorities relied on by the Petitioners are inapposite because they were allegedly applying § 50.12(b), not § 50.12(a), and that they predate the 1985 amendment to § 50.12. The Staff's complaint is the Petitioners' point that an exemption under the public interest criterion is stringent, must be used sparingly, and when it is, it is limited to extraordinary circumstances.

But, as discussed above, the 1985 amendment did not change that requirement. It only clarified the specific grounds for an exemption. The Federal Register notice for the 1985

¹¹ 50 Fed. Reg. at 50776.

amendment states that special condition (vi) was designed for circumstances “in which it would be equitable to provide relief from the regulations.”¹² As described in the discussion above on the other provisions of § 50.12, there is nothing inequitable about applying § 50.82 in this case.

The NRC Staff is also incorrect in claiming that the authorities relied on by Petitioners involved § 50.12(b), rather than § 50.12(a). In *United States Dep’t of Energy, et al. (Clinch River Breeder Reactor Plant)*, CLI-82-23, 16 NRC 412, 426 (1982), the exemption was requested pursuant to § 50.12(a). Section 50.12(b) was referred to only for guidance as to how to determine public interest. At that time § 50.12(b) listed several criteria that were used to determine public interest. Those criteria are no longer in § 50.12(b). Petitioners’ other reference was also based on § 50.12(a). See, *Washington Public Power Supply System (WPPSS Nuclear Power Projects Nos. 3 & 5)*, CLI-77-11, 5 NRC 719 (1977).

Further, with regard to the public interest criterion, the NRC Staff criticizes the declarations of Mark Jacobson, Arnold Gundersen, and Kevin Kamps, claiming that the statements in the declarations are irrelevant and outside the scope of this proceeding, or that the declarants are not qualified to make those statements. But it seems obvious that any facts relating to the lack of benefits of nuclear power and the connection of government support to the public interest are exactly what the NRC must consider in determining the public interest.

With respect to the claim that the declarants are not qualified to make their statements, Dr. Jacobson’s expertise and experience are clearly set out in his declaration and his CV. Likewise, Mr. Gunderson’s experience in the nuclear industry qualify him to comment on the financial implications of the attempt to restart Palisades. Mr. Kamps has experience in nuclear issues, and more importantly, his declaration does not express expert opinions. It just recites facts that are in the public record. It is troubling that the NRC Staff expects the Petitioners to support

¹² 50 Fed. Reg. at 50777.

their case with expert opinions by persons the Staff deems to be qualified. But Holtec is allowed to simply rely on its application, which does not indicate who prepared the application or what their qualifications are. Why are the Petitioners held to a higher standard than Holtec?

Holtec's Request for Exemption, in attempting to claim that restarting Palisades is in the public interest, cites nothing more than the support of the Governor of Michigan.¹³ Again, why are the Petitioners required to present extensive facts and expert statements, when Holtec has nothing more than an unsubstantiated statement that Michigan's Governor supports the project?

The concept of public interest in the context of granting an exemption must be viewed in light of the NRC's mission to protect public health and safety and the common defense and security. This principle was affirmed, resoundingly, by the NRC Office of General Counsel, which its October 8, 2024 "Mission Statement Update Options" memo states:

The ADVANCE Act does not change the NRC's core role as a non-promotional independent regulator. This section examines the text and legislative history of the ADVANCE Act and concludes that the ADVANCE Act does not alter the NRC's statutory mission as an independent, non-promotional safety and security regulator.¹⁴

Considerations of the public interest cannot lower the standard for safe operation by requiring less assurance of safety for exempted plants than would be afforded by compliance with the regulations. The grant of an exemption is constrained to the guardrails of the Atomic Energy Act. The NRC may issue a license (or license amendment) only to those applicants who are equipped to observe and who agree to observe such safety standards to protect health and to minimize danger to life or property as the NRC may by rule establish. 42 U.S.C. § 2133(b)(2). No variance from this requirement can be found in 42 U.S.C. § 2201(h), which governs consideration of license applications.

¹³ Holtec Request for Exemption p 11-12.

¹⁴ <https://www.nrc.gov/docs/ML2428/ML24281A192.pdf>.

The Federal Register notice relating to the 1985 amendment to § 50.12 also is instructive for purposes of analyzing the public interest factor in the rule. The notice states, "As long as a Commission decision adheres to the primary 'adequate protection' standard, the decision can legitimately take into account cost considerations."¹⁵ But Holtec's exemption request is not about the cost of complying with § 50.82; rather, it is about wanting to make money and obtaining corporate welfare from the government. There is no economic hardship alleged.

Holtec, in complaining about the Petitioners' evidence that restarting Palisades is not in the public interest, is arguing about the facts. The Board should not address the merits of the case or adjudicate facts when determining the admissibility of a contention. *Vermont Yankee Nuclear Power Corp.* (Vermont Yankee Nuclear Power Station), 28 NRC 440, 446 (1988); *Sierra Club v. NRC*, 862 F.2d 222, 228 (9th Cir. 1988). What is required is that the intervenor state the reasons for its concerns. *Public Service Co. of New Hampshire* (Seabrook Station, Units 1 & 2), 16 NRC 1649, 1654 (1982). The contention rules require only that contentions have "at least some minimal factual and legal foundation in support" and are not to be a "fortress to deny intervention." *U.S. Dept. of Energy* (High Level Waste Repository), LBP-09-06 (May 11, 2009).

In summary, there are no exceptional circumstances that justify an exemption in this case. An exemption should be granted only when specific circumstances that are applicable to a specific situation justify the exemption. Holtec has not shown any such circumstances and a decision in this case will be used as precedent to grant exemptions to allow restart of other reactors. Holtec is not entitled to an exemption just because it wants it. As the District of Columbia Circuit said in *WAIT Radio v. FCC*, 418 F.2d 1153, 1157 (D.C. Cir. 1969), "The agency may not act out of unbridled discretion or whim in granting waivers any more than in any other aspect of its regulatory function."

¹⁵ 50 Fed. Reg. at 50767.

For all of the reasons presented above, Contention 1 should be admitted.

CONTENTION 2: AN ENVIRONMENTAL IMPACT STATEMENT IS REQUIRED

The Petitioners maintain that an Environmental Impact Statement (EIS), not an Environmental Assessment (EA), must be compiled because of the major regulatory decision sought by Holtec, namely, a reversal of the shutdown prohibitions and restart of the reactor.

The NRC Staff suggests that it is gratuitously conducting an environmental assessment and treating Enclosure 2 of the HDI Exemption Request as an Environmental Report because it was submitted “voluntarily” by HDI and “NRC regulations do not require the submission of an Environmental Report for reactor license amendment requests in this context.”¹⁶

The Staff is playing a word game here. Holtec’s objective is to obtain a full power or design capacity license under 10 CFR § 51.20(b)(2), regardless of whether the NRC Staff calls it a no-longer-conditioned operating license. Consequently, the NRC must compile an Environmental Impact Statement to comply with 10 CFR § 51.21.

Notably, the NRC Staff refers to the HDI Exemption Request as a “major licensing action.”¹⁷ The Staff then asserts that “Because license amendments are typically used to change the authorities and requirements for a reactor in decommissioning, the amendment process may be used to restore those authorities so long as the amendment standards in 10 C.F.R. § 50.92(a) are met.”¹⁸

Petitioners agree that the standards of 10 C.F.R. § 50.92(a) must be met. According to § 50.92(a):

¹⁶ NRC Staff Answer p. 27.

¹⁷ NRC Staff Answer p. 78 (“[T]he Staff considers climate change to be within the scope of the NEPA environmental review for ‘major licensing actions,’ a term that the Staff concludes would apply to the restart and resumption of operations at Palisades.”)

¹⁸ NRC Staff Answer p. 23.

In determining whether an amendment to a license, construction permit, or early site permit will be issued to the applicant, the Commission will be guided by the considerations which govern the issuance of initial licenses, construction permits, or early site permits to the extent applicable and appropriate. If the *application involves the material alteration of a licensed facility*, a construction permit will be issued before the issuance of the amendment to the license. . . .

Alterations of the type that require a construction permit are those that involve substantial changes that, in effect, introduce significant new issues relating to the nature and function of the facility. See *Portland General Electric Co. (Trojan Nuclear Plant)*, LBP-77-69, 6 NRC 1179, 1183 (1977). To trigger the need for a construction permit, the change must “essentially [render] major portions of the original safety analysis for the facility inapplicable to the modified facility.” See *id.*; *Carolina Power & Light Co. (Shearon Harris Nuclear Power Plant)*, CLI-01-11, 53 NRC 370, 391-92 (2001).

Petitioners have previously provided evidence that Palisades is undergoing “material alterations” in the form of a new, dramatically different and larger capacity heat exchanger system. This is a safety-related feature addressed in the UFSAR¹⁹ and is an alteration that will, or should, require a construction permit. In conjunction with this material alteration, Petitioners’ expert nuclear engineer Arnold Gundersen reviewed the data submitted by Holtec via Answer regarding climate change effects and pronounced that “the Holtec Palisades Reactor has synoptic meteorological changes that adversely affect its design basis.”²⁰

Besides the systemic reset required by the heat exchanger replacement, the two steam generators at the plant will undergo either significantly unplugging and new plugging, or be replaced. These changes to steam generator functioning comprise more material alterations that will, or should, require one or more construction permits. A considerably reworked UFSAR Rev.

¹⁹ See, e.g., UFSAR Revision 35 at §§ 9.1.2.3 and 9.3.2.3 (ML21125A331).

²⁰ Supplemental Declaration of Arnold Gundersen, filed along with this Reply.

37 will be necessary to replace the Decommissioning SAR, Rev. 36, that currently pertains to plant operations.

Although the determination as to whether to prepare an EIS falls initially upon the Staff, that determination may be made an issue in an adjudicatory proceeding. In the final analysis, the significance of the impact of the project – in large part an evidentiary matter – will determine whether a statement must be issued. *Consumers Power Co. (Palisades Nuclear Plant)*, LBP-79-20, 10 NRC 108, 120 (1979). The NRC Staff and HDI attempt to haggle over facts, which is completely inappropriate to this stage of the proceeding, when the ASLB’s inquiry is quite limited and does not encompass making evidentiary findings. The significance of the material alterations to Palisades are an evidentiary matter, and Contention 2’s demand for an Environmental Impact Statement must be admitted to the proceeding.

CONTENTION 3: THERE IS NO REGULATORY PROCEDURE FOR RESTARTING PALISADES

In response to this Contention, the NRC Staff simply claims that there is a regulatory pathway to restarting Palisades. That sets up competing issues of fact for the Board to address and decide at a hearing.

CONTENTION 4: HOLTEC AND THE NRC ARE USING AN UNJUSTIFIED PROCEDURE THROUGH LICENSE AMENDMENTS TO APPROVE THE RESTART OF PALISADES

A. There Is No Statutory Authority For The Procedure Being Used To Authorize The Restart of Palisades

Petitioners have pointed out that there is no statutory basis for the procedure being used to justify restarting Palisades, and therefore, no authority for the NRC to approve the plan. In support, Petitioners have cited the Supreme Court decision in *West Virginia v. EPA*, 142 S.Ct. 2587 (2022). The point is that there is nothing in the Atomic Energy Act that gives the NRC

clear authority to use an exemption and license amendments to bring a decommissioning reactor back to operational status.

The only references Petitioners can find in the Atomic Energy Act relating to license amendments, and the only ones cited by the NRC Staff, are in 42 U.S.C. §§ 2232(b) and 2239, regarding review of license applications by the Advisory Committee on Reactor Safeguards and the alleged right to a hearing. And these are only oblique references to license amendments. To be clear, Petitioners are not saying that licenses cannot be amended, but when the license amendment process is being used to accomplish such a momentous unprecedented proposal as restarting a decommissioning reactor, which will be replicated at other reactors across the country, the *West Virginia* decision applies.

In a diversionary tactic, the NRC Staff argues that, allegedly unlike the facts in *West Virginia*, the Palisades restart scheme is premised on long-standing regulations. That argument fails for two reasons. First, the major question doctrine in *West Virginia* is based on a lack of statutory authority, not regulatory authority. Second, the statutory provisions of the Clean Air Act at issue in *West Virginia* were also long standing. The point of the decision in that case was that EPA was using the statute in a way which Congress had not clearly delegated to the EPA. Likewise, there is nothing in the Atomic Energy Act that indicates that using the licensing provisions of the Act to restart a decommissioning reactor has been clearly delegated to the NRC.

In another diversionary tactic, the NRC Staff claims that Petitioners are challenging the regulations being used to create a pathway to restart, in violation of 10 C.F.R. § 2.335. On the contrary, Petitioners are not challenging the regulations. They are challenging the agency's application of those regulations. So the NRC Staff's argument on that point fails.

Finally, the NRC Staff claims that if there is no statutory authority to allow the restart of a decommissioning reactor, then there would be no authority to license a new reactor. Of course, that is false. The Atomic Energy Act explicitly grants authority to the NRC to license new reactors. See, 42 U.S.C § 2132-2133. There is no reference in those sections, however, to license amendments or any other provision that would authorize what Holtec is proposing for Palisades.

B. 10 C.F.R. § 50.59 Cannot Transform Significant Changes Into Minimal Exchanges

As a part of the procedure connected with the proposed license amendments in the attempt to restart Palisades, Holtec proposes to use the application of 10 C.F.R. § 50.59 to reinstate UFSAR Revision 35. But turning a DSAR into a UFSAR cannot be attained within the narrow and minimal allowed changes under 10 C.F.R. § 50.59.

The NRC Staff claims that Petitioners' challenge to the use of § 50.59 is out of scope of this proceeding. But using that section to change the UFSAR is clearly an integral part of the Palisades restart process involving license amendments. In fact, the NRC Staff admits that in their Answer.²¹ And that is the essence of Contention 4. As a practical matter, if Petitioners cannot now challenge the use of § 50.59, there would apparently never be a way to challenge it.

In the August Federal Register notice, the NRC described an LAR "Request to Revise Operating License and Technical Specifications to Support Resumption of Power Operations" and another as a "Request to Revise the Administrative Technical Specifications to Support Resumption of Power Operations." The Petitioners forthrightly oppose revision of the operating license and tech specs to support resumed operations at Palisades because they are concerned that 10 CFR 50.59 will be used, in the absence of current, timely, contextualizing climate information, to justify a retrograde return to the tech specs of UFSAR Rev. 35. Petitioners have

²¹ Staff Answer to Beyond Nuclear *et al.* p. 65-66 ("Moreover, the Primary Amendment Request describes HDI's plan to 'implement[]' the § 50.59 process 'coincident with the associated license amendments.'").

provided authoritative evidence and argument showing that Palisades' design basis is now dramatically different because of anthropocene climate change effects on the air and water environment of the plant, and that consequently the tech specs will thus be dramatically affected and significant changes will be needed, well beyond the narrow parameters of 10 CFR § 50.59.

Notably, HDI expressly admits that its exemption *cum* application has not yet been completed, much less publicly disclosed, even as it maintains that its vaguely-worded four LARs are not proper for challenge. In fact, according to HDI, *there may never be any properly challengeable restart activities.*²² Posed with the perennial objection that interventions by

²² From HDI Answer pp. 19-21:

The four LARs are not the only regulatory actions necessary to resume power operations. In February 2023, HDI submitted a regulatory roadmap to NRC, describing at a high level the full scope of activities HDI expected to undertake to restart Palisades. . . . While some of the granular details of HDI's original roadmap have changed, the main categories of regulatory activity have not. In addition to the LARs and Exemption Requests, those activities include:

(1) HDI filed a license transfer application in December 2023 requesting approval to transfer licensed authority from HDI to Palisades Energy, LLC (a new operating company) contemporaneously with the reinstatement of the power operations licensing basis. That application is currently the subject of a separate adjudicatory proceeding before the Commissioners.

(2) HDI is reinstating training and qualification programs, most prominently for licensed reactor operators.

(3) HDI plans to evaluate the reinstatement of portions of the power operations licensing basis using the change processes in 10 CFR 50.54 and 50.59. Specifically, HDI plans to reinstate a power operations Physical Security Plan under the 10 CFR 50.54(p) process, and HDI plans to reinstate a power operations Final Safety Analysis Report using the change process in 10 CFR 50.59.

(4) HDI plans to rescind any remaining exemptions granted for decommissioning that are not applicable for an operating reactor and are not otherwise superseded by other restart regulatory actions.

(5) HDI will reinstate plant regulatory programs for power operations.

(6) HDI will docket plans to complete actions associated with NRC orders and industry initiative that were not completed prior to the 2022 shutdown.

(7) HDI will evaluate closed regulatory commitments to determine which commitments require reinstatement in connection with the restart.

The roadmap and HDI's execution of everything in it are not subject to adjudication in this proceeding on the four LARs. *Most of the activities described above do not give rise to a hearing opportunity under Section 189a of the Atomic Energy Act, they are certainly not within the scope of this proceeding on these four LARs, and indeed many of them are still in process such that there is no definitive action or docketed decision for Petitioners to dispute. It is of course entirely possible that during the course of this years-long process—which, beyond all the regulatory work also includes a significant capital project at the site involving refurbishment, inspection, and return to service plans for the physical plant systems themselves—could result in changes to any of these activities or could prompt Applicants to file requests for additional NRC approvals that they did not anticipate at the outset.* (Emphasis added).

members of the public are either too early, too late and never timely, Petitioners have credibly objected at this point to proposed LAR activities because there is no legitimate restart pathway for them to be considered, approved or implemented, but also, because HDI has obfuscated and confused its pathway plans, and isn't even through compiling them, all while aiming for a 2025 reactor restart. Instead of cooperatively piecemealing the HDI application, perhaps the NRC should require HDI to put the entirety of its request in one, unified, public location and let members of the public raise their challenges to a revealed plan.

Petitioners offer below some additional expert information that exposes the flawed assumption of HDI that a shallow procedural 10 CFR § 50.59 inquiry is all that's necessary before reinstating the UFSAR Rev. 35 tech specs, which HDI has broadly hinted all along to be their aim.

In the "Supplemental Declaration in Support of Petitioner to Intervene" filed along with this Reply, Petitioners' expert, Arnold Gundersen, observes that:

Not only has Holtec Palisades doubled the heat removal capacity of the single largest heat exchanger at Palisades (main condenser) to accommodate the "*continuing threat*" from climate change, but also, according to RAI-SW-11, Holtec Palisades has also replaced two other significant heat exchangers (Component Cooling Water Heat Exchangers) whose function is to cool the spent fuel pool indirectly using water from the ultimate heat sink, Lake Michigan.²³

HDI has "doubled the heat removal of the Main Condenser due to climate change, but it has also doubled the capacity of the Palisades Reactor's heat exchangers critical to cooling the spent nuclear fuel," according to Gundersen. He says, "Holtec Decommissioning International (HDI) and Holtec Palisades know that *the temperature of the UHS continues to threaten the safe operation of the Palisades Reactor. Due to this threat to the 1965 design bases, the entire safety of the Palisades Reactor is compromised.*"²⁴ (Emphasis added). "Increasing the temperatures in

²³ Gundersen Supplemental Declaration p. 6.

²⁴ *Id.* p. 8.

the Ultimate Heat Sink, creating a continuing threat to the design of the Palisades Reactor, adversely affects the 1965 Palisades Design Basis, requiring a complete reanalysis of the facility's design basis."²⁵

Mr. Gundersen notes that the NRC Staff, in a Request for Additional Information to HDI, expressed concern that more information is needed beyond the 2011 design basis data for Palisades to be licensed to operate for 60 more years, but that HDI replied that "More recent data is not expected to vary significantly from the historical data" and that "No significant changes to synoptic meteorology ... from the historical record has been observed."²⁶ Mr. Gundersen suggests that this HDI response is "materially false" because "the design basis meteorological data from before 2005 changed dramatically between 2006 and 2023."²⁷ By breaking the HDI's temperature data into two sets for analysis, the period 1983–2005 and then 2006–2023, he found that "[t]he ratio of temperatures classified by Holtec Palisades as being *much above* and *much below* average are diametric opposites from the interval before 2006 to the period after 2006."²⁸ In Mr. Gundersen's expert opinion, "Holtec Palisades is completely avoiding analyzing temperatures beyond 2006 due to temperatures that indicate synoptic meteorological changes" but that "the Holtec Palisades Reactor has synoptic meteorological changes that adversely affect its design basis."²⁹

As confirmation of his opinion, Mr. Gunderson compiled an EXCEL spreadsheet of the data to perform a simple linear regression analysis. After mapping HDI's data from 1983 to 2023, he ascertained that "[t]he linear regression indicates that air temperatures at Palisades have

²⁵ *Id.* p. 9.

²⁶ *Id.* p. 11.

²⁷ *Id.* p. 11.

²⁸ *Id.* p. 13.

²⁹ *Id.* p. 14.

not been stable and have increased by approximately 2.5 degrees Fahrenheit since 1983.”³⁰ He asserts that the “data submitted as evidence in this case for a new license by Holtec Palisades prove that climate change is a *continuing threat* adversely affecting the 1965 design basis of the Palisades Reactor” and further, that “[s]ynoptic meteorological changes are indeed occurring at Palisades as measured in the site’s air temperature and the temperature of Lake Michigan.”³¹

This is significant, according to Mr. Gundersen, because it means that accident dose calculations are wrong and the degree of change should force re-analysis of the plant’s design parameters:

The climate-change data implies that the Chi over Q (X/Q) dispersion coefficients used in accident dose calculations are no longer valid at the Holtec Palisades Reactor Site, thus making the potential accident dose calculations all wrong. Moreover, numerous design parameters at the Palisades Reactor rely on synoptic climate-change data from both Lake Michigan and the atmosphere so the effect on the Design Bases for the Holtec Palisades Reactor must be completely reanalyzed.³²

C. Plugging And Unplugging Steam Generator Tubes Is A Major Engineered Change

The NRC Staff argues that this aspect of Contention 4 is not supported because steam generators are mentioned many times in the LAR. But those mentions just reflect how the steam generators will function if Palisades is restarted. There is no discussion in the LAR about the deficiencies in the steam generators Arnold Gunderson describes in his declaration that should be addressed if Palisades is to be returned to operational status. The purpose of the LARs is to supposedly bring Palisades into a mechanical and functional condition to be returned to operational status. Correcting the deficiencies with the steam generators is certainly central to that purpose.

D. Mass Destruction Of Quality Assurance Records Undermines Continuity Of Operating Procedures

³⁰ *Id.* p. 15..

³¹ *Id.* p. 16.

³² *Id.* p. 16.

NRC Staff claims that the QA records have not been destroyed. However, that is a completely unsupported statement. Where is the evidence? Entergy was authorized to destroy the documents by NRC order entered on November 23, 2021.³³ Holtec did not take over Palisades until June 28, 2022. Why would Entergy, in that 7-month period, not have destroyed the documents? In fact, a March 20, 2024 NRC inspection report³⁴ contains this paragraph:

10 CFR 55.46(d)(1) requires facility licensees to conduct performance testing throughout the life of the simulation facility in a manner sufficient to ensure that paragraphs (c)(2)(ii), as applicable, and (d)(3) of this section are met. The results of performance tests must be retained for four years after the completion of each performance test or until superseded by updated test results. The failure to retain necessary records was determined to be a minor violation of 10 CFR 55.46(d)(1), as simulator fidelity was determined to not be impacted. The facility documented this issue in CR-PAL-1821.

Clearly, the QA records were not retained. At the least, NRC Staff's unsupported allegation that the records were not destroyed is a factual question that cannot be adjudicated at the contention admissibility stage. It is an issue appropriate for a hearing.

CONTENTION 5: HOLTEC'S "ER" DOES NOT HAVE A PURPOSE AND NEED STATEMENT

In response to this Contention, the NRC Staff claims that this contention is moot. That sets up competing issues of fact for the Board to address and decide at a hearing.

CONTENTON 6: HOLTEC'S "ER" DOES NOT CONTAIN A DISCUSSION OF ALTERNATIVES

In response to this Contention, the NRC Staff claims that Holtec's PSDAR contains a discussion of alternatives. Petitioners cannot find such a discussion in the PSDAR. That sets up competing issues of fact for the Board to address and decide at a hearing.

CONTENTION 7: HOLTEC'S LARs AND "ER" DO NOT CONTAIN A MEANINGFUL DISCUSSION OF THE IMPACTS OF CLIMATE CHANGE

³³ Exemption Order, ML21195A367.

³⁴ Inspection Report, ML24078A315.

Petitioners stand by this Contention as stated and as asserting issues for hearing. This position is reinforced by the NRC Staff's concession that at least part of the Contention is admissible.

CONCLUSION

Holtec is attempting, and the NRC is apparently more than happy to allow, the unprecedented plan to restart a nuclear reactor that has been shut down and moved to decommissioning status. Holtec and the NRC admit that there is no designated regulatory provision for doing this. Nor is there any statutory basis in the Atomic Energy Act for such a procedure. The reason for the absence of any basis for restarting a decommissioning reactor is that there are inherent risks and technological difficulties in such a project.

Even if the Commission's interpretation of the Atomic Energy Act to the present, that it is possible to grant exemptions from the requirements of the Act or its regulations, continues to be respected, there is no evidence of Congressional intent that the Act could be entirely swallowed up and bypassed via an exemption.

It is disappointing that the NRC is eager to be complicit in the scheme. As NRC Chair Christopher Hanson said, "This is something we have never done before and requires some creativity by the staff as well as Holtec's part." It is not the NRC's mission to promote whatever the nuclear industry wants to do. As the NRC's General Counsel said:

The ADVANCE Act does not change the NRC's core role as a non-promotional independent regulator. This section examines the text and legislative history of the ADVANCE Act and concludes that the ADVANCE Act does not alter the NRC's statutory mission as an independent, non-promotional safety and security regulator.

Granting an exemption just for the asking betrays the NRC's mission.

The NRC well knows that restarting a closed reactor is not just a matter of paperwork, as Holtec claims. As NRC Commissioner Bradley Crowell stated:

Certainly, the entire operation of the plant needs to be reassessed. It's not the same as a refueling outage, and it's not the same as a license renewal... I feel like it's difficult to get our ducks in a row for that because it changes almost on a monthly basis... I understand they [Holtec] are in a posture of wanting to find a buyer to do it... but I think at this stage of the game, you're gonna have to start from scratch.

Nor has Holtec or the NRC shown any benefit to the public that would justify restarting Palisades. There has been no showing that the people of Michigan need the power that would be generated by a relicensed Palisades. Palisades has been off line for over two years, and Holtec has not presented any evidence that Michigan consumers have had insufficient power. The only benefit shown in the record is the corporate welfare to Holtec from the federal government and the State of Michigan.

In their original Petition and this Reply, the Petitioners have demonstrated sound legal and factual grounds for the Board to find the Petitioners' contentions admissible. Holtec's risky and unprecedented plan to restart Palisades deserves a hearing to provide the Board a basis for an informed decision.

/s/ Wallace L. Taylor
Wallace L. Taylor, Esq.
4403 1st Ave. S.E., Suite 402
Cedar Rapids, Iowa 52402
Phone 319-366-2428
Fax 319-366-3886
wtaylorlaw@aol.com
Co-Counsel for Petitioners

/s/ Terry J. Lodge
Terry J. Lodge, Esq.
316 N. Michigan St, Suite 520
Toledo, Ohio 43604
Phone 419-205-7084
Fax 419-932-6625
tjlodge50@yahoo.com
Co-Counsel for Petitioners

**BEFORE THE UNITED STATES
NUCLEAR REGULATORY COMMISSION**

In the Matter of)	
)	
Holtec Palisades LLC and Holtec Decommissioning International)	Docket No. 50-255-LA-3
)	
(Palisades Nuclear Plant Request for License Amendment)	November 12, 2024
)	

CERTIFICATE OF SERVICE

Pursuant to 10 C.F.R. § 3.305, I certify that, on November 12, 2024, a copy of the foregoing Petitioning Organizations’ Combined Reply was deposited in the Electronic Information Exchange (the NRC’s E-Filing System) in the above captioned proceeding and that pursuant to the protocols of that system, copies were served upon all registered parties and counsel of record..

/s/ Wallace L. Taylor
Wallace L. Taylor, Esq.
Co-Counsel for Petitioners

**BEFORE THE UNITED STATES
NUCLEAR REGULATORY COMMISSION**

IN THE MATTER OF)	
)	Docket No. 50-255
HOLTEC PALISADES LLC)	
)	
(Request for Exemption))	

**SUPPLEMENTAL DECLARATION OF ARNOLD GUNDERSEN
IN SUPPORT OF PETITION TO INTERVENE
AND REQUEST FOR ADJUDICATORY HEARING BY
MICHIGAN SAFE ENERGY FUTURE, DON'T WASTE MICHIGAN,
NUCLEAR ENERGY INFORMATION SERVICE,
THREE MILE ISLAND ALERT, AND BEYOND NUCLEAR**

Under penalty of perjury, I, Arnold Gundersen, declare as follows:

1. I, Arnie Gundersen, am over eighteen (18) and have personal knowledge and specific recollection of the facts in this Affidavit. According to 28 U.S.C. Section 1746, I declare under penalty of perjury under the laws of the United States that the following is true and correct, to the best of my knowledge, information, and belief. I, Arnie Gundersen, submit the following:

2. Michigan Safe Energy Future, Don't Waste Michigan, Nuclear Energy Information Service, Three Mile Island Alert, and Beyond Nuclear have retained Fairewinds Associates, Inc to review the request for exemption from The Nuclear Regulatory Commission (NRC) by Holtec Palisades LLC. By instituting this process, Holtec Palisades LLC, a demolition contractor with a background limited to only nuclear power decommissioning and nuclear reactor dismantlement, has applied for significant exemptions to current nuclear operations regulations to restart and operate the derelict and decrepit Palisades nuclear reactor at one of the oldest atomic sites in the United States (US).

3. My observations and conclusions are offered to a reasonable degree of scientific certainty based upon my 50+ years of experience in the atomic power industry and my nuclear engineering background and professional certifications.
4. I have reviewed relevant information sources regarding Holtec Palisades LLC, its lack of atomic power operations expertise, and its background, which is limited to nuclear waste decommissioning and dismantlement processes.
5. The sources I have reviewed indicate that Holtec International, Holtec Decommissioning International (HDI), Holtec Palisades, and all their subsidiaries have never been licensed to operate a nuclear power plant and are inexperienced in atomic regulations, nuclear design, engineering, and operations. Throughout this declaration, all the Holtec Corporations and its many subsidiaries will be referred to as Holtec if they are not specified.
6. Moreover, my review of the regulatory record shows an utter lack of statutory authority and precedence for the changes proposed by Holtec Palisades. The inexperienced Holtec Palisades is begging the NRC to allow an operating license change that has never been attempted by even the most experienced firms in the nuclear industry's 60 years of operational history.
7. My declaration examines and analyzes the technical and environmental issues regarding Holtec's radical exemption request at its Holtec Palisades LLC. This request for exemption appears to circumvent regulations and the rights of the stakeholder communities to participate in proper safety reviews for the already closed, deficient, uneconomical, high-risk, and dilapidated Palisades reactor.

My Background

8. I hold a Bachelor of Nuclear Engineering (BSNE) degree cum laude and a Master of Engineering in Nuclear Engineering (MENE) from Rensselaer Polytechnic Institute (RPI) in Troy, New York. I earned my Master of Engineering in Nuclear Engineering (MENE) at RPI via a prestigious Atomic Energy Commission Fellowship. In addition, I taught reactor physics and was a licensed nuclear reactor operator at the university.

9. I have more than 50 years of experience as a nuclear engineer and atomic power executive. I am the former nuclear executive (Sr. VP) of Nuclear Energy Services (NES) in Danbury, CT, where I had extensive experience decommissioning different atomic facilities. In addition, I was a founding member of that firm's Radiation Safety Committee for its Nuclear Regulatory Commission (NRC) license, which I helped prepare. I am a chapter author of the first edition of the DOE Decommissioning Handbook. Since leaving NES, I have co-authored three peer-reviewed papers detailing how radioactive microparticles migrate into communities following nuclear disasters. Additionally, I am the co-author of a best-selling book in Japan about Japan's Fukushima Disaster and triple atomic power reactor meltdowns.

Relevant Experience

10. My relevant experience significant in these Proceedings includes and is not limited to:
 - 10.1. My unique background is in nuclear engineering, decommissioning, and tracing the migration of radioactive isotopes.
 - 10.2. As a nuclear engineer and executive officer for the corporation, I spent considerable time in decommissioning when employed by Nuclear Energy Services (NES).
 - 10.3. NES had extensive experience dismantling radioactively contaminated facilities and was awarded a contract by the U.S. Department of Energy to prepare the first edition of its *Decommissioning Handbook* (DOE/EV/10128-1). Therefore, I am one of the original chapter authors of the first edition of the Decommissioning Handbook.
 - 10.4. Furthermore, while I was a senior executive with NES, the groups reporting to me conducted radiological monitoring of the West Valley Nuclear Waste Site near Buffalo, New York, a reprocessing center and a nuclear dump. They also assisted in dismantling the Shippingport Reactor in Pennsylvania, the first commercial atomic reactor to be decommissioned.
 - 10.5. Additionally, the groups reporting to me also dismantled numerous other facilities containing extensive radioactive contamination, including, but not limited to, plutonium.

- 10.6. I began my career as a reactor operator and instructor in 1971. I progressed to Senior Vice President for a nuclear licensee before becoming a nuclear engineering and operations consultant and expert witness. My Curriculum Vitae (CV) was provided previously in these proceedings.
- 10.7. I have testified as an expert witness to the Nuclear Regulatory Commission (NRC), its Atomic Safety and Licensing Board (ASLB), and its Advisory Committee on Reactor Safeguards (ACRS). Additionally, I have testified in Federal Court and before the State of Vermont Public Service Board, the State of Vermont Environmental Court, the Florida Public Service Commission, and the California Public Utility Commission (CPUC), as well as numerous other state and local adjudicatory agencies, boards, and regulatory bodies. Finally, I will continue to testify worldwide to regulatory bodies and agencies.
- 10.8. I have more than 50 years of professional nuclear experience, including and not limited to Nuclear Plant Operation, Nuclear Management, Nuclear Safety Assessments, Reliability Engineering, In-service Inspection, Criticality Analysis, Licensing, Engineering Management, Thermohydraulics, Radioactive Waste Processes, Decommissioning, Waste Disposal, Structural Engineering Assessments, Nuclear Fuel Rack Design and Manufacturing, Nuclear Equipment Design and Manufacturing, Cooling Tower Operation, Cooling Tower Plumes, Consumptive Water Loss, Prudency Defense, Employee Awareness Programs, Public Relations, Contract Administration, Technical Patents, Archival Storage and Document Control, Source Term Reconstruction, Dose Assessment, Whistleblower Protection, and NRC Regulations and Enforcement.
- 10.9. I am the chief engineer for Fairewinds Associates Inc, an expert witness and paralegal services firm specializing in nuclear engineering, nuclear operations, nuclear power plant safety analysis and assessment, and atomic reactor operations and regulations.

Supplemental Declaration Executive Summary: Climate Change and Its Effect on Palisades' Design Basis

11. **Introduction:** I have reread my initial expert report filed in this case, focusing especially on the effects of climate change on the design of Holtec's Palisades decommissioned nuclear facility. I have also read Holtec Palisades' climate change reply to the Petitioner's brief. I conclude that my initial report was correct and that it underestimates the impact of a changing climate at Palisades. Holtec Palisades' response, while to be expected, is simplistic and incorrect. The information from Holtec Palisades and its actual admissions, actions, and data prove climate change is a *continuing threat* to the Palisades reactor and adversely affects its 1965 design bases.

12. **Admissions By Holtec:**

12.1. As provided in my previous expert report, Holtec International blustered about its technical prowess in a Press Release while acknowledging that climate change is a *continuing threat* that adversely affects the Palisades reactor's performance. In its press release¹, Holtec stated:

“The power output from power plants that rely on cooling water from proximate bodies of water, such as a lake, sea, or river, has been steadily eroding as their bulk temperature inches upwards because of global warming. **The temperature of Lake Michigan, which supplies cooling water to Holtec Palisades nuclear plant currently undergoing refurbishment and upgrades, has been ticking up like the rest of the world's water reservoirs and is expected to continue rising in the coming decades ...** To meet the projected rising lake water temperature, the new unit needed to be more than twice as large in heat transfer surface area as the existing unit.” **[Emphasis Added]**

12.2. Holtec has recognized and admitted that climate change at Palisades is a *continuing threat*. As a result, Holtec is spending millions of dollars of taxpayer funds to replace the main condenser of the Palisades facility that was based on 1965 design-based climate data.

¹ holtecinternational.com/2024/08/15/palisades-cooling-system-upgraded-to-counter-the-continuing-threat-of-global-warming/

12.3. Not only has Holtec Palisades doubled the heat removal capacity of the single largest heat exchanger at Palisades (main condenser) to accommodate the *continuing threat* from climate change, but also, according to RAI-SW-11², Holtec Palisades has also replaced two other significant heat exchangers (Component Cooling Water Heat Exchangers) whose function is to cool the spent fuel pool indirectly using water from the ultimate heat sink, Lake Michigan. In its press release that announces the size of its condenser will be doubled, Holtec indicates that the ultimate heat sink temperature, Lake Michigan, is rising and is a *continuing threat*. Yet in its response to the NRC, Holtec Palisades doubles the size of the two additional heat exchangers the Palisades reactor uses to cool its spent nuclear fuel while failing to acknowledge that the temperature in the Ultimate Heat Sink (Lake Michigan) is rising. According to an exchange between NRC and Holtec: **[Emphasis Added]**

NRC RAI Number: RAI-SW-11

Holtec is planning to replace both component cooling water (CCW) heat exchangers before restarting Palisades. Provide the following information related to the CCW heat exchangers:

- A description of the CCW system heat exchangers and all its interfaces with the surface water environment.
- Changes in the maximum and typical heat loads compared to the old CCW heat exchangers.
- Changes in the flow rate and consumptive use compared to the old CCW heat exchangers.

HDI Response to RAI:

Holtec is planning to replace both component cooling water (CCW) heat exchangers before restarting PNP. The following information is related to the CCW heat exchangers (CCWHX):

- A description of the CCWHX and all its interfaces with the surface water environment.

The existing CCWHX are two, nominally 50% capacity shell and tube horizontal single-pass heat exchangers. They are designed to cool the CCW (shell side) using Service Water (tube side). The CCW System is a closed loop secondary cooling system that is a monitored (for radioactivity) intermediate cooling system between radioactively contaminated systems requiring cooling and the tertiary cooling system, Service Water (SW). **The SW System is the open loop system that**

² <https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML24263A171>

serves as the ultimate heat sink for PNP and draws water from Lake Michigan and returns water to the Circulating Water System at the Makeup Basin (the source of water to the cooling towers (when in service) or discharge to Lake Michigan via the Mixing Basin (the interface with the surface water environment). The SW System is also monitored for potential radioactivity.

During normal plant operation, both heat exchangers are required to be in service due to equipment limitations associated with flow rates on the shell (CCW) side. The normal heat load is relatively low compared to their maximum capacity. **Maximum heat load is associated with the first several days after plant shutdown as plant cooldown operations are occurring. The proposed replacement CCWHXs will be two 100 percent capacity shell and tube horizontal single-pass heat exchangers.** The installation of 100 percent capacity heat exchangers will allow the operational flexibility to remove one of them from service by isolating both the CCW (shell side) and SW (tube side) and allowing maintenance on one heat exchanger at a time. **There is no change anticipated to the SW side and thus no change to the interface with the surface water environment.**

- Changes in the maximum and typical heat loads compared to the old CCW heat exchangers.

As there is no change to heat loads cooled by the CCWHXs, there will be no change to the maximum or typical heat loads because of replacing the heat exchangers.

Enclosure 7
HDI PNP 2024-037
Page 2 of 2

- Changes in the flow rate and consumptive use compared to the old CCW heat exchangers. There is no anticipated change in CCW or SW flow rates because of replacing the heat exchangers. What may change is whether SW flow is through both heat exchangers or only one at a time, but the total SW flow will not change (in order to preclude reducing flow to other SW cooled loads). There currently is not, nor will there be any, “consumptive” use – all CCW and SW water is returned to their respective system. The amount of SW that is consumed (by evaporation at the cooling towers) will be unchanged by replacement of the CCWHXs.
[Emphasis Added]

12.4. The answers to the NRC Requests for Additional Information by Holtec Palisades are incomplete. Holtec Palisades knows that the Ultimate Heat Sink (UHS) temperature is rising as our planet’s climate warms. The Ultimate Heat Sink is an assured water supply that absorbs the residual heat of a nuclear reactor after a normal reactor shutdown or

after a loss-of-coolant accident (LOCA). While the heat load from nuclear fuel in the spent fuel pool has remained constant into the shell side of the heat exchanger, the cooling water temperature on the tube side has increased due to rising temperatures in Lake Michigan, the Ultimate Heat Sink (UHS) for the Palisades Reactor. Holtec has not informed the NRC that the increase in the UHS temperature has created a *continuing threat* to the design basis of this Component Cooling Water (CCW) system.

12.5. Not only has Holtec Palisades doubled the heat removal of the Main Condenser due to climate change, but it has also doubled the capacity of the Palisades Reactor's heat exchangers critical to cooling the spent nuclear fuel. The temperature of the Ultimate Heat Sink (UHS) is a critical factor in determining the design bases for Palisades. Holtec Decommissioning International (HDI) and Holtec Palisades know that the temperature of the UHS continues to threaten the safe operation of the Palisades Reactor. Due to this threat to the 1965 design bases, the entire safety of the Palisades Reactor is compromised.

13. The NRC has also grossly mischaracterized my original expert report when it said:

The NRC Staff would like to provide clarification regarding HDI's replacement of the Component Cooling Water (CCW) heat exchangers. Petitioners' expert, Mr. Gundersen, uses a press release issued by Holtec about the replacement of the heat exchangers to form his factual basis for specific environmental impacts from the proposed action that climate change will intensify.³

13.1. I have carefully reviewed my original report and can find absolutely no reference to ANY discussion about the Component Cooling Water heat exchangers in my original report. The entire NRC discussion on pages 82 and 83 is a purely fictional representation of my original report.

13.2. Most importantly, the NRC has completely ignored the essential/crucial safety issue I addressed in both reports. First, in my original report and now in this supplemental

³ Page 82. NRC STAFF ANSWER TO INTERVENTION PETITION FROM BEYOND NUCLEAR, DON'T WASTE MICHIGAN, MICHIGAN SAFE ENERGY FUTURE, THREE MILE ISLAND ALERT, AND NUCLEAR ENERGY INFORMATION SERVICE IN PALISADES RESTART AMENDMENTS PROCEEDING

report, I have addressed an urgent safety issue that Holtec Decommissioning International (HDI) and the NRC are purposefully ignoring.

13.3. All the data reviewed proves that climate change has increased the temperature of the Ultimate Heat Sink. Now, HDI hopes to replace its heat exchangers without addressing the pivotal and underlying technical safety issue. Increasing the temperatures in the Ultimate Heat Sink, creating a continuing threat to the design of the Palisades Reactor, adversely affects the 1965 Palisades Design Basis, requiring a complete reanalysis of the facility's design basis.

14. **Data Submitted by Holtec**

14.1. Not only has Holtec Palisades acknowledged that the rising water temperature of the Ultimate Heat Sink is a *continuing threat* to the Palisades Reactor, but the raw data Holtec Palisades has provided to the NRC also show that atmospheric temperatures are rising and impacting the 1965 design bases due to the effects of climate change on Earth.

14.2. In its RAI, the NRC expressed concerns about the impact of global climate change on the Palisades Reactor that go beyond the 2011 licensing basis for a 60-year license for the Palisades Reactor. The NRC specifically asked Holtec Palisades to analyze *recent climatological data* and *synoptic meteorology* in RAI-MET-1⁴.

14.3. The responses by Holtec Palisades were both evasive and incorrect. The NRC's request and Holtec Palisades' reply are embedded below. My analysis of the numerous errors in Holtec Palisades' response follows below the NRC Requests and Holtec Responses.

NRC RAI Number: RAI-MET-1

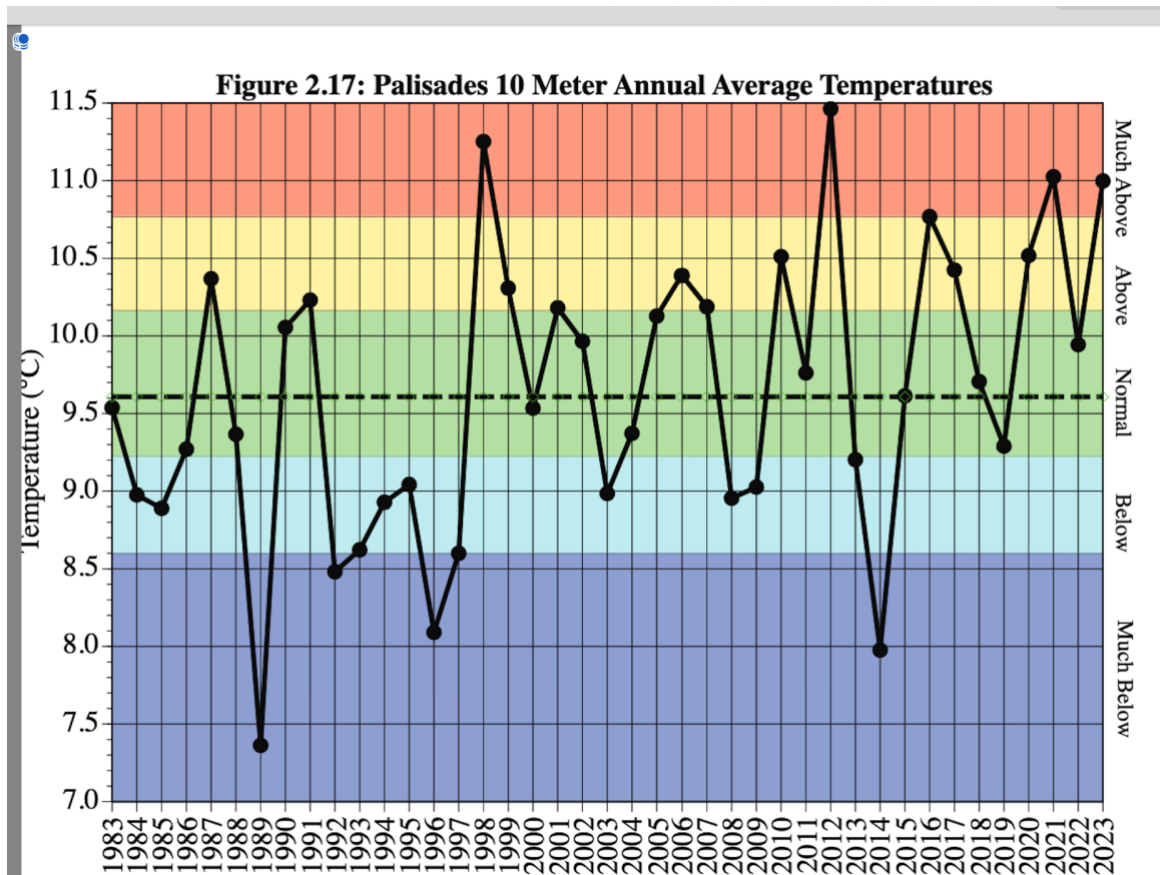
Provide recent climatological data, synoptic meteorology and extreme weather events. A climate summary has been provided in the License Renewal Environmental Impact Statement (EIS) Supplement based on

⁴ <https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML24278A027>

2005 data. **More recent data should be analyzed and provided and was not included** in the Enclosure 2, “Environmental New and Significant Review Proposed Resumption of Power Operations Palisades Nuclear Plant” submittal.

Holtec Palisades Response to NRC RAI:

The climate summary provided in the 2006 SEIS was based on between 30- and 50-years of historical data. **More recent data is not expected to vary significantly from the historical data and therefore was not evaluated. No significant changes to synoptic meteorology or extreme weather events from the historical record has been observed.** The 2023 annual summary of Palisades meteorological tower data with trending analysis is provided in Attachment 1. **[Emphasis Added]**



15. Most importantly, the NRC concern goes well beyond the old 2011 design basis data for the Palisades Reactor to be licensed to operate for 60 more years. In its Request for Additional Information (RAI), the NRC said,

“A climate summary has been provided in the License Renewal Environmental Impact Statement (EIS) Supplement based on 2005 data. **More recent data should be analyzed and provided and was not included.**” [Emphasis Added]

16. Synoptic meteorology is simply the study of large-scale weather systems, i.e., climate change. As I wrote earlier, Holtec has admitted that climate change at the Holtec Palisades Reactor is a *continuing threat*, and Lake Michigan is warming. The warming of Lake Michigan adversely affects the design bases of the Holtec Palisades Reactor. Lake Michigan is warming because the atmosphere is also warming. Both Holtec Corporations—International and Palisades—are aware that synoptic meteorology is causing Lake Michigan, the second largest by volume of the Great Lakes—to become warmer. Holtec Palisades claims that it is forced to invest millions of dollars in taxpayer funds to mitigate the damage of climate change upon Lake Michigan.

17. When asked about the changing climate in Michigan and its impact on the Holtec Palisades Reactor, Holtec understood climate change presents a *continuing threat*. Yet, in its response to the NRC RAI, Holtec Palisades gave an evasive non-response. In its response, Holtec Palisades said,

“The climate summary provided in the 2006 SEIS was based on between 30- and 50-years of historical data. **More recent data is not expected to vary significantly from the historical data** and therefore was not evaluated. **No significant changes to synoptic meteorology ... from the historical record has been observed.**” [Emphasis Added]

17.1. Additionally, Holtec Palisades must be aware that the only meteorological cause for Lake Michigan to become warmer is that the atmosphere surrounding Lake Michigan is also warming. Therefore, Holtec’s RAI response may be considered materially false because it seems designed to deliberately obfuscate any post-2005 climate-related trends.

17.2. Most importantly, the data presented by Holtec Palisades shows that the design basis meteorological data from before 2005 changed dramatically between 2006 and 2023. The NRC was concerned about climate conditions after 2006 and how that might impact the design basis of the Holtec Palisades Reactor. In my opinion, the response by Holtec to the NRC RAI (Request for Additional Information) is disingenuous at best, when Holtec Palisades said,

“More recent data is not expected to vary significantly from the historical data and therefore was not evaluated. No significant changes to synoptic meteorology... from the historical record has been observed.”

18. A proper analysis of the data presented by Holtec Palisades in Figure 2.17: Palisades 10 Meter Annual Average Temperature indicates many flagrant inaccuracies.
 - 18.1. To begin, Holtec Palisades presents a straight, flat line through the 38 years of temperature data at approximately 9.6 degrees Centigrade, and it represents this data as the *average* for those 38 years.
 - 18.2. First, this data was collected from one location at Holtec Palisades, the ten-meter elevation of the meteorological tower located on the Holtec Palisades Reactor site.
 - 18.3. Secondly, it is unclear what Holtec is suggesting when it uses the term *average* to characterize the temperature data at Palisades. In mathematics, the term *average* is conveyed by several different concepts: the mean, median, and mode. Based on Holtec’s discussion in the RAI response, it is most likely that Holtec is referring to the mean temperature at Palisades. Holtec's use of the term *average* is a simplistic and inaccurate approach of adding each of the 38 yearly temperature values and dividing by 38 disparate yearly intervals. The use of the mean to characterize any data only provides an accurate assessment when there are no long-term trends or large variations found in the original data.
19. To properly analyze the Holtec Palisades annual air temperature data for the entire period between 1983 and 2023, I broke the period into two distinct time frames: 1983–2005 and then 2006–2023. I used 2006 as a beginning point for the remaining analysis because that is the point that Holtec Palisades claimed it was unnecessary to analyze due to the supposed lack of any additional outcome-determinative data. More specifically, Holtec claimed that any data collected after 2006 was not expected to change or vary. According to Holtec, who declined to evaluate any data after 2006,

“More recent data is not expected to vary significantly from the historical data and therefore was not evaluated.”

18. To begin with, 2006 is when Entergy owned the Palisades Reactor and applied for its 20-year license extension. The temperature data collected before 2006 then became the design basis for the Palisades Reactor. I believe that Holtec is avoiding obvious meteorological changes in Michigan at its Palisades Reactor because those climate-induced changes would prove that the old design basis for the Holtec Palisades Reactor is outdated and invalid.
19. When I analyzed the data presented by Holtec Palisades, I applied proper scientific principles. My assessment showed that between 1983 and 2005, 22% of the years had average yearly temperatures *Much Below* average, with one year out of 23 years considered *Much Above Normal*. During the time interval between 2006 and 2023, there was a fluctuation in which 6% of the years had *Much Below* average yearly temperatures, while 22% were considered *Much Above Normal*. The ratio of temperatures classified by Holtec Palisades as being *Much Above* and *Much Below* average are diametric opposites from the interval before 2006 to the period after 2006. See Table Variances in Holtec's Yearly Average Temperature Analyses below:

Variances in Holtec's Yearly Average Temperature Analyses

Years	Years in Period	Years <i>Much Below</i> Normal	Percent % <i>Much Below</i> Normal	Years <i>Much Above</i> Normal	Percent % <i>Much Above</i> Normal
1983-2005	23	5	22%	1	4%
2006-2023	18	1	6%	4	22%

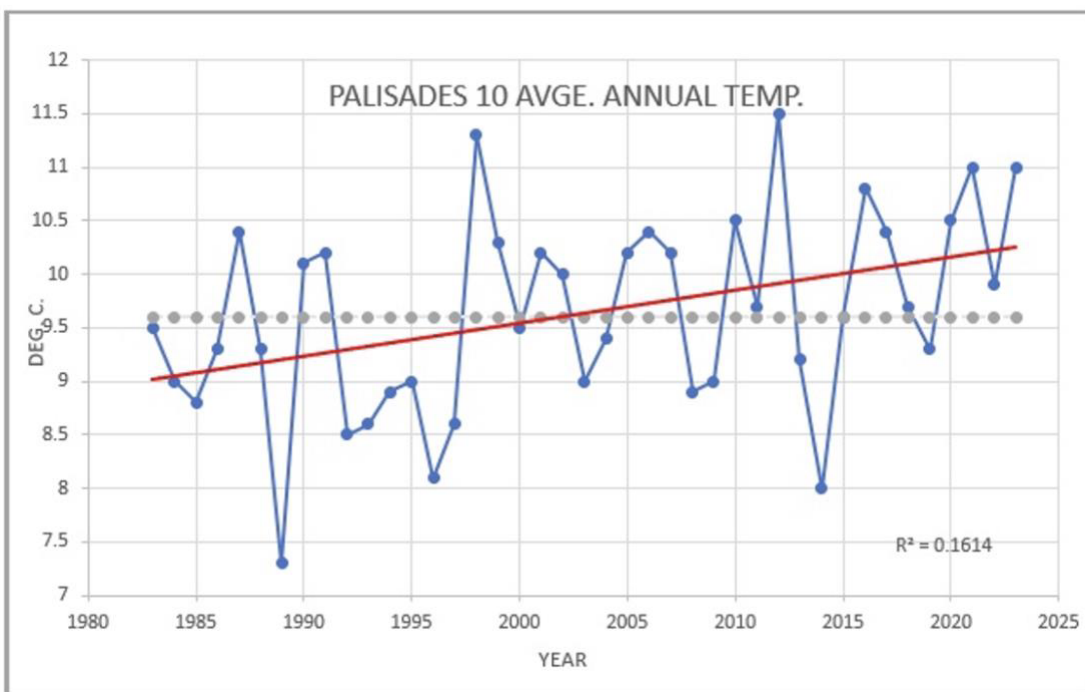
Note: The terms *Much Below* and *Much Above* are extracted from Holtec's Graph.]

20. In my professional opinion, Holtec Palisades is completely avoiding analyzing data beyond 2006 due to temperatures that indicate synoptic meteorological changes. The data I reviewed shows that the Holtec Palisades Reactor has synoptic meteorological changes that adversely affect its design bases.

20.1. Holtec Palisades and Holtec Decommissioning International have a federal requirement to accurately answer the RAIs from the NRC. If Holtec is unable to comply with the rigor of nuclear research and analysis, then Holtec is unable to meet the Code of Federal Regulations compliance issues and, therefore, incompetent to run an atomic reactor.

20.2. Additionally, the Holtec Palisades Reactor has inadequate assessment and analyses to comply with any relicensing attempts, which, according to federal regulations, requires federal hearings to assure regulatory compliance.

21. I performed one further analysis to verify the conclusion above. I entered Holtec's yearly temperature data for the entire period between 1982 and 2023 into an EXCEL spreadsheet and had the EXCEL program perform a simple linear regression analysis. This is a technique taught to freshman scientists and engineers. It would have been an obvious tool for competent Holtec Palisades or Holtec International scientists or engineers to apply. My EXCEL graph of temperature changes at Palisades is presented below.



22. Linear Regression Analysis

- 22.1. The flat horizontal line in the Holtec Palisades graph entitled Figure 2.17: Palisades 10 Meter Annual Average Temperature is an unscientific effort to create an *average number* that hides the fact that no accurate scientific research was initiated and completed by Holtec Palisades.
- 22.2. The red line is the EXCEL linear regression analysis that I completed, showing the original data for the Holtec Palisades Reactor. The linear regression indicates that air temperatures at Palisades have not been stable and have increased by approximately 2.5 degrees Fahrenheit since 1983.
- 22.3. The *average* figure placed in evidence by Holtec Palisades is consistently less than the linear regression line for every year after 2003. Holtec states that “*More recent data is not expected to vary significantly from the historical data and therefore was not evaluated. No significant changes to synoptic meteorology... from the historical record has been observed.*” The claims made by Holtec Palisades and Holtec Decommissioning International (HDI) regarding *synoptic meteorology* contrast markedly with the HDI data and, in my opinion, constitute a materially false statement.
- 22.4. It is not the purpose of this linear regression analysis to represent a precise representation of climate change at Palisades. More data and a quadratic regression or other techniques may indicate a more extreme temperature increase. An accurate analysis is the responsibility of Holtec, as the licensee, to truthfully provide.
- 22.5. It is obvious, however, from Holtec Palisades’ published statements and this linear regression analysis that HDI has not fulfilled its obligation for truthfulness to the NRC. In the RAI response, HDI stated,
- “More recent data is not expected to vary significantly from the historical data and therefore was not evaluated. No significant changes to synoptic meteorology or extreme weather events from the historical record has been observed.”
- 22.6. The public documents submitted to this licensing process, coupled with my linear regression analysis, indicate that Holtec’s RAI response appears to be materially false.

23. Conclusion

- 23.1. The actual admissions, actions, and data submitted as evidence in this case for a new license by Holtec Palisades prove that climate change is a *continuing threat* adversely affecting the 1965 design basis of the Palisades Reactor.
- 23.2. Synoptic meteorological changes are indeed occurring at Palisades as measured in the site's air temperature and the temperature of Lake Michigan. As I testified earlier, Holtec attempts to avoid the ramifications of synoptic changes, as these ramifications adversely change the Design Bases of its Palisades Reactor, making it less safe.
- 23.3. The climate-change data implies that the Chi over Q (X/Q) dispersion coefficients used in accident dose calculations are no longer valid at the Holtec Palisades Reactor Site, thus making the potential accident dose calculations all wrong. Moreover, numerous design parameters at the Palisades Reactor rely on synoptic climate-change data from both Lake Michigan and the atmosphere, so the effect on the Design Bases for the Holtec Palisades Reactor must be completely reanalyzed.
- 23.4. My analysis proves that Holtec is actively concealing significant temperature increases in Lake Michigan and the atmosphere that will adversely impact the design basis of the HDI Palisades Reactor. HDI (Holtec Decommissioning International) has relied upon materially false statements to avoid addressing design basis issues at the Palisades Reactor.
- 23.5. In conclusion, it is these new design-based analyses that Holtec Palisades and Holtec Decommissioning International (HDI) wish to avoid, along with the requisite public hearings.

~ End ~

Attachments – None

Declaration Electronic Signature Page

I am the Chief Engineer for the paralegal services and expert witness firm Fairewinds Associates, Inc.

I declare under penalty of perjury that the testimony submitted in this proceeding is true and correct to the best of my knowledge. The facts presented in this expert report are true and accurate to the best of my knowledge, and the opinions expressed are based on my best professional judgment.

Executed in accordance with 10 CFR 2.304 (d) and 2.326 (b),

(Electronically signed)

/S/

Arnold Gundersen, MENE, RO
Fairewinds Associates, Inc
Charleston, SC, and Burlington, VT
Telephone: 802-865-9955
Email: fairewinds@mac.com

Dated: Tuesday, November 12, 2024