

**BEFORE THE UNITED STATES
NUCLEAR REGULATORY COMMISSION**

In the Matter of)	Docket No. 50-255
Holtec Palisades LLC and Holtec Decommissioning International)	
(Palisades Nuclear Plant Request for Exemption))	December 5, 2023

**PETITION TO INTERVENE AND REQUEST FOR ADJUDICATORY HEARING
BY BEYOND NUCLEAR, DON'T WASTE MICHIGAN, AND MICHIGAN
SAFE ENERGY FUTURE**

PETITIONERS' DECLARATION 10

Declaration of Arnold Gundersen, Nuclear Engineer	Appendix 10
---	-------------

**BEFORE THE UNITED STATES
NUCLEAR REGULATORY COMMISSION**

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

**DECLARATION OF ARNOLD GUNDERSEN
IN SUPPORT OF THE MOTION PETITION TO INTERVENE AND REQUEST
FOR ADJUDICATORY HEARING BY MICHIGAN SAFE ENERGY FUTURE,
DON'T WASTE MICHIGAN, 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. Pursuant 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, 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 has never been licensed to operate a nuclear power plant and is inexperienced in atomic regulations and nuclear design, engineering, and nuclear operation.
6. Moreover, my review of the regulatory record shows an utter lack of statutory authority and precedence for the changes Holtec has proposed. The inexperienced Holtec 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 be an end run around 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, which was a reprocessing center and a nuclear dump,

and they assisted in dismantling the Shippingport Reactor in Pennsylvania, which was the first commercial atomic reactor 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 is Attachment 1.
- 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.

Declaration Executive Summary:

11. The Palisades nuclear reactor was designed during the mid-1960s, with its on-site construction beginning in 1967. The Atomic Energy Commission (AEC) licensed it for full-power operation in 1971. It is one of the oldest nuclear reactors ever built, as it was built at the very beginning of the commercial atomic power industry. As explained below, its aging design does not meet current regulatory requirements, and it would not be allowed to be constructed and operated today if it applied for a new license in 2023.
12. Since its design began in the mid-1960s, it was licensed by the Atomic Energy Commission (AEC) —the agency that granted me my unique fellowship while I was a graduate student at Rensselaer Polytechnic Institute in 1971-2. In 1976, Congress changed the agency responsible for regulating atomic power to the Nuclear Regulatory Commission (NRC), the current regulatory body. Chartered by Congress, the old Atomic Energy Commission was created to fulfill two roles: promote and regulate nuclear power. Congress determined that these dual roles—promoting and regulating atomic power created irreconcilable safety concerns.
13. The NRC licensed the Palisades reactor to operate until 2031, despite Palisades having been approved long ago by the old AEC and not meeting current operational, metallurgical, or electrical standards. Palisades was closed in 2022 and sold for scrap before its 2031 license extension expired. Entergy, its owner at the time, determined there would be no profit to its corporation if it completed the required safety and operational improvements to the facility.

14. By the way, and of great concern, Palisades has undergone three ownership changes since it became operational in 1971. First owned by Consumers Power, the reactor was sold in 2007 because Consumers determined it was too costly to maintain in its condition. Then, the Palisades reactor was purchased by Entergy Corp, which also ascertained that electric production from this plant was too expensive. However, Entergy kept operating Palisades because it received a lucrative Power Purchase Agreement (PPA) that subsidized Entergy to keep it running. Knowing that the PPA would expire in 2022, Entergy stopped investing in plant improvements and made a simple economic decision to close the facility.
15. Entergy terminated Palisades' operating license in 2022, nine years earlier than the expiration of its NRC license. Entergy sold the remnants of the old Palisades reactor site to Holtec in 2022 as scrap without an operating license. As a demolition contractor, Holtec was scheduled to decommission and dismantle the entire site. Holtec has never designed, constructed, or operated a nuclear power plant. Instead, Holtec specializes in decommissioning, dismantling, and securing old radioactive nuclear sites while selling the non-radioactive parts for scrap.
16. After acquiring the defunct Palisades site for its supposed demolition, Holtec suddenly changed course. With no nuclear power operations, design, or engineering experience, Holtec Palisades LLC now attempts to relicense the obsolete and antiquated atomic reactor so the corporation can restart and operate a heavily subsidized Palisades reactor — that meets no current operational licensing and safety requirements.
17. Knowing Palisades would be uneconomical, Holtec has sought taxpayer-funded financial subsidies from the State of Michigan and the US Government. No federal agency, either the NRC or the original founding Atomic Energy Commission (AEC), has ever allowed or envisioned an old, degraded reactor whose previous owner renounced its operating license and sold the facility for scrap to be relicensed, refitted, and restarted.

18. Without these potential new state and federal subsidies totaling billions of dollars, the Palisades nuclear reactor is still not competitive financially with any renewable or sustainable electric generation facilities. After Holtec's proposed billions in repairs, it will continue to require State subsidies for any electricity it may produce.
19. Most disturbingly, the Palisades is one of the world's most decrepit and flawed atomic reactors. The Palisades nuclear reactor was operating with poorly maintained parts, woefully inadequate safety equipment, and outdated and outmoded components when Entergy sold it to Holtec less than 2-years ago. Further details on the degraded condition of the aged, old-fashioned, and unsafe reactor will be supplied later in this declaration.
20. In a 2022 filing with the US Department of Energy, Holtec admitted that applying to relicense and resurrect the shuttered and degraded nuclear plant at Palisades has never been attempted in the history of US nuclear power. Moreover, speaking to the NRC at its March 20, 2023, public hearing, Kelly Trice, President of Holtec Decommissioning International, said,
*"And I think, you know, the concept of reauthorizing reauthorizing (sic) power operation is a is a (sic) **new concept** ..."*¹

Qualifications of the Owner

21. Before Holtec bought Palisades to decommission and demolish it, Entergy was its previous owner. While Entergy had not invested heavily or upgraded its reactors responsibly, it still was a large nuclear power operations corporation that was an experienced owner of 10 nuclear power plants licensed and regulated by the Nuclear Regulatory Commission. The other nine reactors Entergy owned when it acquired Palisades in 2007 were Pilgrim, located near Boston, Massachusetts; Vermont Yankee; Indian Point Units 2&3 outside New York City; FitzPatrick, located in upstate New York near Oswego; Arkansas Nuclear One Units 1&2, and River Bend

¹ Statement at NRC Public Hearing, March 20, 2023

and Waterford in Louisiana. Since acquiring Palisades, Entergy has closed six out of its ten reactors because they were unprofitable and needed extensive upgrades and repairs. Pilgrim, Vermont Yankee, Indian Point 2&3, and Fitzpatrick (as well as Palisades) were all abandoned by Entergy because the electricity they generated was too costly compared to renewable sources produced by wind and solar. No firms have expressed interest in restarting any other former Entergy reactors.

22. Entergy’s nuclear organization once totaled more than 4000 individuals², including hundreds of operations personnel at each of its operating reactors. Additionally, Entergy maintained a separate home office staff headquartered in Jackson, Mississippi. More than 500 professional staff in Jackson supported the operations staff in the Entergy fleet of reactors with specialized engineering, design, and upgrading expertise that is usually not part of any on-site nuclear operations skill set. According to the State of Mississippi in 2019:

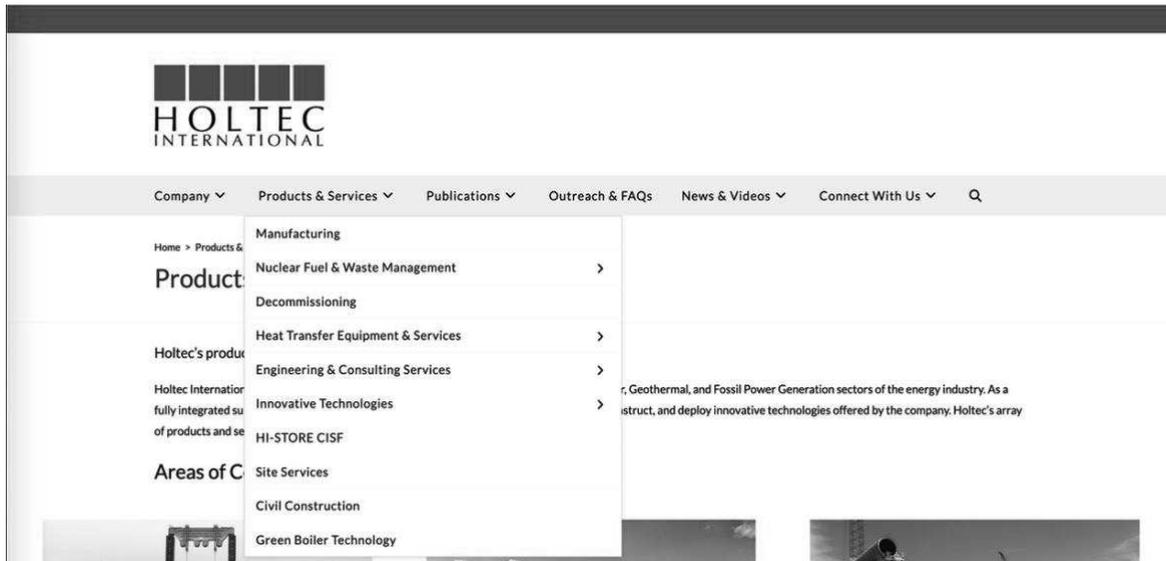
*The addition of more than 250 new jobs at Entergy Nuclear’s Jackson headquarters will double its workforce, which is comprised of professionals who work in a variety of capacities to support Entergy’s nuclear plants “Our Nuclear Strategic Plan is a five-year business strategy to provide robust governance, oversight and support of the fleet and to achieve excellence in all nuclear operations,” said Chris Bakken, Entergy Nuclear executive vice president. “The expansion of the headquarters building at Echelon allows our growing nuclear team to work in a single location, fostering unity, collaboration and team effectiveness.”*³

23. Contrary to Entergy’s “robust nuclear team,” Holtec has never designed, never constructed, and never operated a single nuclear plant anywhere in the world.
24. Holtec has admitted on its corporate website that it has no nuclear design, construction, or atomic operation product or service experience.⁴

²https://jobs.entergy.com/go/Nuclear/4350700/?_gl=1*ncuz90*_ga*MTgwODA2OTgzNC4xNzAxNDUzMTc4*_ga_HK6YSZ6LT0*MTcwMTQ1NTU5My4yLjEuMTcwMTQ1NTYwOC40NS4wLjA.

³ <https://mississippi.org/news/entergy-nuclear-expanding-operations-workforce-in-mississippi/>

⁴ <https://holtecinternational.com/company/corporate-overview/>



25. My concern is that Holtec may have an ulterior profit motive to pursue the restart of the aged, fragile, and vulnerable Palisades atomic reactor. It surprised many in the nuclear power industry when Holtec issued a press release in 2022 stating that installing its own Small Modular Reactors at the Palisades site is viable. However, Holtec has no engineering and design background and has not presented anything upon which it based such an out-of-scope analysis. In a roundabout way, keeping the Palisades site viable may create an unorthodox and poorly configured effort by Holtec to commercialize its own SMR design.

26. In a Holtec Press Release dated 12/4/2023, Holtec acknowledges that it will be building two new “Small Modular Reactors” at the Palisades site,

"Buoyed by the State of Michigan's commitment to expand in-state carbon-free generation as well as by the broad-based federal, state, and community support for repowering the Palisades Nuclear Power Plant, we have started the program to build our first two SMR-300 reactor units at the Palisades site."

27. Holtec's additional construction of two new reactors at Palisades will make the Palisades site one of the largest major construction sites in all of Michigan. Not only will there be approximately 1,000 contractors reconstructing the aging Palisades

reactor but there will also be thousands of additional construction personnel building these two new reactors simultaneously.

EXPERT OPINION: CONCLUSION #1

28. Holtec applied to the NRC requesting a license exemption for Palisades to resurrect the previously shuttered atomic reactor carcass at Palisades. It will cost many billions of dollars for Holtec to undertake this unprecedented project of refurbishing, constructing, partly reconstructing, and restarting the Palisades Nuclear Power Plant. Holtec has no demonstrated capability to achieve it.
29. Relicensing and resuscitating a shuttered aging atomic reactor by a corporation with no nuclear operations, engineering, or licensed reactor personnel is a recipe for an atomic disaster.
30. It is questionable that any competent nuclear energy operating organization could restart the degraded Palisades facility. Holtec lacks the requisite engineering or operational skills to do so.

Degraded Condition of Palisades Atomic Reactor

31. What are the financial risks to the limited liability corporation and the community where this degraded and shuttered energy generator is located? Fact: the viability of a principal nuclear corporation's capital improvements is determined by the time the energy generator recoups its investments. This financial term is known as the "investment horizon". While the NRC had licensed Palisades into 2031, Entergy knew its Power Purchase Agreement (PPA) would end in 2022. Therefore, closing the costly Palisades nuclear generator in 2022 made economic sense to Entergy's financial portfolio and stockholders, as well as significantly reducing the overall electric rates in Michigan by eliminating the PPA subsidized costs that the State of Michigan Public Service Commission had approved ratepayers paying to Entergy for

the PPA. On the other hand, Holtec has no investment horizon as it misuses public funds with no expectation of return.

32. I am familiar with Entergy's investment horizon as an energy expert witness in the State of Vermont, where Entergy's now-shuttered Vermont Yankee (VY) atomic reactor was located. I served the State of Vermont as the first Chair of the State's Public Oversight Panel (POP) for Entergy's Vermont Yankee (VY) nuclear power plant. Vermont's State Legislature authorized the Public Oversight Panel (POP) to evaluate Entergy's ability to maintain the VY atomic reactor as a reliable energy production source as it aged. In my role as Chair of the POP, I was able to analyze Entergy's short-term investment horizon philosophy. Vermont's Public Oversight Panel determined that Vermont Yankee's (VY's) outdated and outmoded condition would significantly impact its ability to generate reliable power as it aged.
33. Similar malfeasance existed at Palisades before its closure. Entergy's corporate laser-like focus on minimizing costs became apparent as Palisades approached 2022. Because Entergy couldn't make a profit at Palisades without the Michigan ratepayer-funded subsidy created by the Power Purchase Agreement, Entergy stopped investing in essential nuclear power plant repairs and upgrades made at other nuclear electrical generators during the years leading up to 2022. Simply put, Entergy risked the safety of the Palisades community and the atomic reactor's capacity to operate again in order to make a profit. By not making essential repairs and upgrades, Entergy drove Palisades into the ground before its 2022 closing.
34. If one of the seasoned owners/operators had planned to ultimately restart Palisades after its shutdown in 2022, the owner would have spent funds to place the secondary system in a wet layup status to prevent further degradation of the steam generators. The owner also would have spent funds to maintain pumps and valves properly through preventive maintenance practices. The main plant turbine generator weighs well in excess of one million pounds and is about 100 feet long. If left idle for extended periods, the weight of the turbine will cause the main shaft to bend and the bearings will develop flat spots. Hence, if Entergy had planned to restart Palisades, it

would have placed the turbine on a turning gear to keep it slowly rotating while it was shut down. Since Palisades was sold as scrap, no such precautions would have been taken. When a plant is decommissioned, no such wet layup and preventive maintenance would be required as the reactor has become non-functioning scrap. Holtec knew it bought a non-functioning scrap reactor from Entergy that was meant to be entirely dismantled.

35. Let's be clear: Holtec said it would buy the Palisades facility to decommission and demolish the uneconomical Palisades atomic reactor and create a greenfield, yet its recently unveiled corporate strategy is to acquire previously licensed sites to build Small Modular Reactors.
36. Even Holtec now acknowledges that at least \$2 billion would be required to reconstruct key components, make the necessary upgrades, and repair essential parts of Palisades' infrastructure that the Entergy Corporation ignored as it determined that this electric generator was so degraded it would be unsafe and unprofitable to operate ever again.
37. In its thoroughly aged and degraded condition, the Palisades reactor will never be fit to operate and risk the nearby populated areas of Palisades Park and Lake Michigan's fragile aquatic environment. A reactor disaster at Palisades would have consequences far beyond Palisades Park, downwind, downstream, up the food chain, and down through many generations. Along with Lake Superior, Lake Michigan is a critical headwater for the rest of the Great Lakes downstream, so the drinking water supply for more than 40 million people in eight U.S. states, two Canadian provinces, and many Indigenous Nations would be at risk. The Great Lakes hold 21% of the world's surface freshwater, 84% of North America's surface freshwater, and 95% of that of the United States.

38. Below is a partial list of defects requiring new construction at Palisades⁵.

*NOTE: The following tables were prepared by Holtec and summarize the significant areas of Holtec's assessment as to its estimated construction cost to restart Palisades and achieve full power operation.

Table 1: Replacement Fuel Budget Support [*no new fuel currently available, and this is a specialty item that takes about two years to create]

Item #1

New fuel for 2/3 Reactor Core due to excessive burn on the final operating cycle.

Includes core physics design. — Estimated Cost: \$240M

Table 2: Operating Budget Support

Item # 1

Labor for 2 years (Phase 1 staff retention) — Estimated Cost: \$77M

Item #2

Additional labor to recover and restart the plant ~ 400 people

Estimated Cost: \$155M

Item # 2a

Partner utility management contract — Estimated Cost: \$28M

Item # 3

Physically restore qualify simulator

Estimated Cost: \$2M

Item # 4

Operator and Technical Training programs recovery, recertification

Estimated Cost: \$6M

Item # 4a

Licensed Operator Training Programs

Estimated Cost: \$27M

Item # 4b

Technical Training Programs

Estimated Cost: \$18M

Item # 5

Engineering system configuration restoration

Estimated Cost: \$9M

⁵ Page 6 and following from the 7/5/22 Holtec application to DOE for CNC bailout funding.

Item #5a

*Update Reactor Vessel Fluence and disposition embrittlement results
Estimated Cost: \$7M*

Item # 5b

*Flow Accelerated Corrosion and Alloy-600 testing
Estimated Cost: \$4M*

Item #6

*Chemical cleaning for long-term ALARA
Estimated Cost: \$25M*

Item #7

*Licensing Basis Recovery
Estimated Cost: \$6M*

Item #8

*CRDM and Incore Detector and cable replacement
Estimated Cost: \$16M*

Item # 8a

*Reactor Vessel Head Penetration leak testing and repair/peening
Estimated Cost: \$90M*

Item #8b

*Steam Generator 100% eddy current testing and secondary side
chemical cleaning
Estimated Cost: \$12M*

Item #8c

*Reactor Coolant Pumps: Motor, pump and seal maintenance and/or
replacement
Estimated Cost: \$22M*

Item #9

*Software License Recovery
Estimated Cost: \$3M*

Item #10

*Quality Program/controls restoration and materials requalification
Estimated Cost: \$5M*

Item #10a

*Reestablish Q inventory (restock quality components)
Estimated Cost: \$18M*

Item #11
NRC Costs (Two years)
Estimated Cost: \$45M

Item #12
Real Estate Tax (One-year following restart)
Estimated Cost: \$7M

Total Table 2 Operating Support Budget: \$582M

Table 3: Capital Projects

Item #1
System Configuration major overhauls, equipment replacements
Estimated Cost: \$34M

Item #2
Switchyard upgrades (Tie-in, Open Phase)
Estimated Cost: \$7M

Item #3
*S/G design, fabrication, replacement (includes reactor coolant system
redesign, cold-hot-fuel testing)*
Estimated Cost: \$510M

Item #4
Spent fuel offload (dry storage) and new spent fuel racks
Estimated Cost: \$195M

Item #5
*Required Modifications; Fire Protection (NFPA-805), Cyber Security,
Plant Process Computer*
Estimated Cost: \$42M

Total (w/out contingency): \$788M
Contingency: \$325M

Table 4: Proposed Total Investment

Item #1
Total Investment (w/out contingency)
Estimated Cost: \$1.61B

Item #1a
Total Investment (w/contingency)
Estimated Cost: \$1.935B

EXPERT OPINION: Conclusion #2

39. As noted in Conclusion #1 above, Holtec lacks any nuclear reactor design, construction, or operation experience. In light of that lack of expertise, Holtec's "estimate" of at least \$2 Billion in construction costs to return the Palisades plant to operation must be viewed as merely a low-ball guess.
40. The list of construction problems that Holtec identifies is extraordinary and shows that the physical condition of the Palisades Plant deteriorated terribly while Entergy was the owner. There are many examples of this degradation, including but not limited to:
- The steam generators must be manufactured and constructed for the second time.
 - The reactor is dangerously embrittled because the wrong welding material was used in 1969 during manufacture.
 - The reactor head has needed replacement since at least 2009, which may account for continuing Control Rod Drive failures, which Palisades is infamous for.
 - The interior piping has become excessively radioactive and needs to be cleaned with caustic chemicals to reduce radiation exposure. (Item #6, \$25 Million)
 - Physical improvements to the switchyard are also identified (Table 3, Item #2) and require new construction.
 - Incredibly, Entergy appears to have sold its inventory of safety-related replacement parts, forcing Holtec to spend at least \$18 Million to find NOS (New Old Stock) replacement parts on eBay!
 - The Flow Accelerated Corrosion Program, similar to the failed program at the Surry reactor in Virginia that caused the death of four staff members at the Surry reactor when a pipe ruptured, must be recreated (Item# 5b Table 2, \$ 4 million).

- The safety-related wires operating the Control Rod Drives and Incore instrumentation have degraded and require construction (Item# 8, \$16 Million).

41. The net effect of all this safety-related physical degradation is that the required upgrade and rehabilitation construction at Palisades is extraordinarily complicated, time-consuming, and will require upwards of 1,000 construction and operation personnel for at least three years.

- The lack of remaining human infrastructure is just as critical to operations as any physical degradation. Therefore, the knowledge base of how Palisades operated must be recreated entirely.
- Holtec admits that Palisades has no trained and licensed operators and that its reactor simulator used to train those operators needs significant repairs before any training can begin (Table 2 – Items 3, 4,4a, \$35 Million).
- Training new mechanics and other new staff will cost an additional \$18 Million. (Table 2 – Item #5)

42. Two essential and primary safety programs (Quality Assurance and Configuration Management) must be implemented to ensure all safety-related equipment meets federal codes.

42.1. Holtec identified that the quality assurance program (QA) needs “restoration” (Table 2 — Item# 10, \$5 Million). 10CFR50 Appendix B requires that the “licensee” (Holtec) have a QA program, yet Holtec has admitted that it fails to meet this legal requirement.

42.2. Holtec has acknowledged losing control of the Configuration Management Program and that “*Licensing Basis Recovery*” will cost at least \$15 million (Items 5 and 7, Holtec Table 2 above).

43. These two programs would ensure engineers knew how the structures were designed and constructed so that consistent improvements would be made moving forward.

43.1. For example, Entergy has previously committed to improving the strainers on safety-related pumps, and unfortunately, those commitments were never implemented.

43.2. Entergy also committed to inspecting the impellers on the reactor coolant pumps as some impellers failed and now its broken impeller parts remain at the bottom of the Palisades reactor.

43.3. Neither of these Entergy commitments was ever implemented, and Holtec likely is unaware that these serious safety issues were previously ignored.

EXPERT OPINION: Conclusion #3

44. Whether any competent nuclear organization, let alone the inexperienced Holtec, could implement and construct parts that have been physically damaged and create the human and institutional improvements necessary to resurrect the Palisades atomic reactor successfully is questionable.

45. First, there is a genuine danger and risk from Holtec attempting to bring Palisades back to life for two reasons. The long-standing equipment problems at Palisades are substantial and extensive. Additionally, the expense for these repairs is completely underestimated in Holtec's entire proposal. Furthermore, the duration for making said repairs is laughably minimized.

46. Second, the institutional memory required to operate the old and outmoded atomic reactor was a skill belonging to the senior staff members, who no longer exist since Entergy terminated its operating employees and its license to operate the Palisades reactor. Newly trained people running an ancient plant create a recipe for disaster.

47. The already formidable changes identified by Holtec are likely only a fraction of the true extent of problems that will be determined. Thus, the construction and repair of

parts require copious amounts of construction transpiring over many years and involving more than 1,000 construction and operating personnel.

48. Ultimately, attempting to resurrect the 50+-year-old Palisades atomic reactor using new staff following Entergy's years of neglect and a long hiatus in operating this reactor presents an enormous risk to the health and welfare of the entire local community as well as to a significantly populated area of Michigan and beyond.

EXPERT OPINION: Conclusion #4

49. The overall design of the Palisades reactor is not licensable to the 21st century standards. Palisades was allowed to continue operations by the NRC between 1971 and 2031 due to the approval of its original Atomic Energy Commission (AEC) license. And, had the terms of its original AEC license been maintained by Entergy, the nuclear reactor might have continued its operational standing via a program that is called "Grandfathering." The old Palisades design was allowed to continue because the original AEC Operating License had been granted. But in 2022, Entergy terminated the Grandfathered license. Holtec seeks to recreate the old Grandfathered conditions in the expired license because it is obvious that Palisades cannot meet new licensing criteria.
50. Indeed, the new Small Modular Reactors Holtec may propose to build on the Palisades site will not be designed to the same 1960s standards as the existing Palisades reactor.
 - 50.1. One glaring example is the design of the turbine hall and how it is positioned adjacent to the Nuclear Reactor and Control Room.
 - 50.2. The turbine is tangential to the Control Room and Nuclear Reactor at the existing Palisades reactor. If, as sometimes happens, the turbine was to disintegrate destructively, the shrapnel would hit the reactor and the control room, creating a meltdown. Turbine disintegration is not an academic concept

but has occurred several times at other operating reactors including at Fermi 2 near Detroit. Fortunately, the type of shrapnel generated did not have the kinetic energy to puncture safety-related components.

50.3. When Palisades was built, Engineers were not aware of this design flaw.

While the NRC was well aware of the danger to the Palisades reactor, it allowed Palisades to continue to operate with this horrendous design flaw.

50.4. However, on the new Holtec SMR design, the turbine is located radially outward, allowing the shrapnel to avoid impacting safety-related structures.

51. NRC Commissioner Crowell has recognized that Entergy terminated the old Palisades operating license and that the permit cannot be reissued to Holtec without Palisades meeting the new, more stringent safety criteria of the 21st Century. He said,

“Certainly, the entire operation of the plant needs to be reassessed,” Crowell said. “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.”⁶

EXPERT OPINION: Conclusion #5

52. Holtec has made differing financial disclosures to the NRC concerning its use of the Decommissioning Trust Fund (DTF). My analysis of the record indicates that Holtec is using the DTF to simply maintain the Palisades staff in hopes of receiving funds to resurrect the reactor.

⁶ February 07, 2023, Exchange Monitor **To restart shuttered Palisades plant, Holtec would need to start ‘from scratch,’ NRC commissioner Crowell says**

53. As the March 20, 2023 Holtec-NRC meeting began, Kelly Trice, president of Holtec Decommissioning International ("HDI"), was asked by Jean Fleming, Holtec International's vice-president, to provide an overview of Palisades' status:

Speaker [Kelly Trice] [00:09:53] *So Palisades, I think everybody knows, was shut down roughly May last year, has been shut down ever since. **Generally, we've maintained the plant in its current status. Not a lot of decommissioning has started at this point.***⁷

54. Yet in Holtec's 2022 financial filing to the NRC, filed in March 2023, outlining expenditures from the DTF in just the first six months of its ownership, Holtec claims that it spent \$44 Million of the Trust fund to decommission the Palisades reactor.

55. These two Holtec positions (and others made to the Department of Energy) are obviously incompatible with each other. The Effective Full-Time Hours outlined in the Palisades PSDAR are dramatically different from the actual Palisades EFT hours stated by Holtec in its 2023 NRC filing, suggesting that Holtec is using the DTF to maintain the remaining Palisades professional staff to restart Palisades and not to dismantle it. Such usage is not a legally allowable use of the DTF. A full forensic audit by the IRS is appropriate to assess if Holtec has amassed a tax liability by using the DTF for non-approved expenditures.

EXPERT OPINION: Conclusion #6

56. Meeting notes for the December 5, 2023, Holtec and NRC meeting were belatedly placed into the NRC ADAMS document management system on November 29 and 30, 2023. This certainly did not give me or any experts requisite or adequate time to review these new PowerPoint slides. Therefore, I reserve the right to amend this report based on my complete forthcoming review.

⁷ Kelly Trice at Holtec Presentation

57. I had the opportunity to review only several slides, and the second Holtec PPT slide indicates that it is incorrect and most likely a Materially False Statement. On Slide 2 of the PowerPoint Presentation Slide, Holtec makes a totally erroneous claim:

*"Present proposed changes to the Palisades Nuclear Plant (PNP) operating license:
• Renewed Facility Operating License (RFOL)"*

58. I note that Palisades no longer has an "Operating License", which is a fact that must be already known to Holtec, but Holtec distorts this fact in an attempt to obfuscate the truth.

59. I reserve the right to comment further and amend this Declaration based upon this late Holtec submittal and the December 5, 2023 presentation by Holtec to the Nuclear Regulatory Commission (NRC) that this PowerPoint was part of.

Final Summary

1. Entergy, Palisades' prior owner, gave up the nuclear power plant's operating license because using the dilapidated and ramshackle reactor was unprofitable. Entergy knew the reactor was unprofitable, so the corporation neglected critical construction repairs and long-term maintenance investments that may have protected the reactor's electrical production capacity.
2. Instead of safeguarding Palisades' valuable components as the facility neared its 2022 closure date, Entergy ruined the decimated and derelict nuke facility. It sold Palisades to Holtec as scrap with useless components to be dismantled and destroyed.
3. Holtec is an industrial demolition contractor with no nuclear power plant design, engineering, construction, or operations experience.
4. Holtec acknowledges that the physical condition of Palisades is severely degraded and untenable.

5. Using billions of dollars in Federal and State subsidies and none of its cash assets, Holtec is attempting to grab funding and resurrect the 53-year-old derelict Palisades atomic reactor.
6. Such a resurrection is a preeminent construction project and a feat that has never been attempted.
7. The Palisades site, reactor, and crucial electric generating components are unsafe and incapable of reuse due to their poor condition and permanent flaws. More importantly, the most experienced staff left when the plant closed, and the entire Quality Assurance (QA) program was destroyed, meaning that every component, wire, electric bulb, etc., must be reevaluated and retested. Holtec claims it will replace all Palisades' staff and operate the defective and decimated reactor facility for 25 years.
8. Furthermore, the degraded condition of every aspect of this nuclear power plant, the lack of a long-term experienced, skilled staff, and the non-existent QA and management oversight programs flunk every atomic power failsafe feature that are hallmarks of our country's nuclear safety and licensing process and programs.
9. Additionally, should this decrepit and defective scrapped reactor somehow achieve licensure, its electricity will be too expensive to compete against renewable power sources. Thus, Holtec will demand additional subsidies from the State of Michigan to keep the aged and scrapped Palisades operating unsafely again.
10. Finally, let's put it all in perspective: operating the Palisades reactor will reduce global greenhouse gas emissions by less than seven-thousandths of one percent.

~ End ~

Exhibits

Curriculum Vitae, Arnold Gundersen

Declaration of Arnold Gundersen

I am the Chief Engineer for Fairewinds Associates, Inc, a paralegal services and expert witness firm. My Curriculum Vitae are attached.

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 St. Albans, VT
Telephone: 802-865-9955
Email: fairewinds@mac.com

Dated: December 5, 2023

**Arnold Gundersen, Curriculum Vitae
Chief Engineer, Fairewinds Associates, Inc
December 2023**

Education and Training

ME NE	Master of Engineering Nuclear Engineering Rensselaer Polytechnic Institute, 1972 U.S. Atomic Energy Commission Fellowship Thesis: Cooling Tower Plume Rise
BS NE	Bachelor of Science Nuclear Engineering Rensselaer Polytechnic Institute, Cum Laude, 1971 James J. Kerrigan Scholar
RO	Licensed Reactor Operator, U.S. Atomic Energy Commission, License # OP-3014

Patents

Energy Absorbing Turbine Missile Shield – U.S. Patent # 4,397,608 – 8/9/1983

Honors

U.S. Atomic Energy Commission Fellowship, 1972
B.S. Degree, Cum Laude, RPI, 1971, 1st in nuclear engineering class
Tau Beta Pi (Engineering Honor Society), RPI, 1969 – 1 of 5 in the sophomore class of 700
James J. Kerrigan Scholar 1967–1971
Publicly commended to the U.S. Senate by NRC Chairman Ivan Selin in May 1993 –
“It is true...everything Mr. Gundersen said was absolutely right; he performed quite a service.”

Expert Qualifications – including and not limited to:

- Chief Engineer, Fairewinds Associates, Inc, 2003 to present
- Nuclear Engineering, Safety, and Reliability Expert
- Federal and Congressional hearing testimony, Expert Witness testimony, Public Utility Commission Testimony, state legislative hearings, community stakeholder expert witness
- Vermont Community Research Fellow, University of Vermont
- Former Senior Vice President Nuclear Licensee
- Former Licensed Reactor Operator
- Atomic Energy Commission Fellow
- More than 50 years of nuclear industry experience and oversight

Publications

Co-author — *Radioactive Microparticles Related to the Woolsey Fire in Simi Valley, CA;*
Journal of Environmental Radioactivity, Volume 240, released October 8, 2021: Co-author with corresponding author Dr. Marco Paul Johann Kaltofen, Boston Chemical Data, Natick, MA, USA and Maggie Gundersen, Founder of Fairewinds Energy Education, Charleston, SC, USA.

Co-author — *Radioactive Isotopes Measured at Olympic and Paralympic Venues in Fukushima Prefecture and Tokyo, Japan, Journal of Environmental Engineering Science* Volume 38, Number 2, 2021, Mary Ann Liebert, Inc., DOI: 10.1089/ees.2020.0139

Co-author with corresponding author Dr. Marco Paul Johann Kaltofen, Department of Physics, Worcester Polytechnic Institute (WPI), Worcester, MA, USA, and Maggie Gundersen, Founder of Fairewinds Energy Education, Charleston, SC, USA.

Co-author — *Science of the Total Environment (STOTEN)* published a peer-reviewed article entitled: *Radioactively-hot particles detected in dusts and soils from Northern Japan by combination of gamma spectrometry, autoradiography, and SEM/EDS analysis and implications in radiation risk assessment*. Co-authored with Dr. Marco Kaltofen, Boston Chemical Data, it details the analysis of radioactively hot particles collected in Japan following the Fukushima Dai-ichi meltdowns.
[<http://www.sciencedirect.com/science/article/pii/S0048969717317953>]

Published Lecture — *The Lessons of the Fukushima Daiichi Nuclear Accident* published in the *International Symposium on the Truth of Fukushima Nuclear Accident and the Myth of Nuclear Safety*, August 30, 2012 University of Tokyo, Iwanami Shoten Publishers, Tokyo, Japan

Published Lecture -- *Crisis Without End: The Medical and Ecological Consequences of the Fukushima Nuclear Catastrophe, from the Symposium at the New York Academy of Medicine, The New Press, 2014, Chapter 12, What Did They Know and When*

Author — *The Echo Chamber: Regulatory Capture and the Fukushima Daiichi Disaster, Lessons from Fukushima*, February 27, 2012, Greenpeace International

Author — *Fukushima Daiichi: Truth and The Way Forward*, Shueisha Publishing, February 17, 2012, Tokyo, Japan. Written with Reiko Okazaki, Barrister, and Maggie Gundersen, Fairewinds' president.

Co-author — *DOE Decommissioning Handbook, First Edition*, 1981-1982, invited author.

Committee Memberships

Current and founding member, Board of Directors, Fairewinds Energy Education Corp, 501(c)3
Vermont Yankee Public Oversight Panel, appointed in 2008 by President Pro-Tem Vermont Senate
National Nuclear Safety Network (NNSN) – Founding Board Member
Three Rivers Community College, Thames, Connecticut – Nuclear Academic Advisory Board
Connecticut Low-Level Radioactive Waste Advisory Committee – 10 years, founding member
Radiation Safety Committee, NRC Licensee – founding member
ANSI N-198, Solid Radioactive Waste Processing Systems

University Fellowship, Teaching, and Academic Administration

University of Vermont Community Research Fellow, appointed from January 2016 through 2018
Community College of Vermont – Mathematics Professor – 2007 through Spring 2013
Rensselaer Polytechnic Institute (RPI) – Advanced Nuclear Reactor Physics Lab

Presentations, Events, & Media — located @ end of CV

Professional Films:

The Fukushima Disaster, by **Philippe Carillo, filmmaker**, released February 2023, There has been endless hand-wringing and finger-pointing following the 2011 Fukushima Nuclear Disaster. But the full effects of the disaster are still shrouded in secrecy, and both TEPCO and the Japanese Government have limited any meaningful analysis of the disaster's impact on health and the environment. Featuring interviews with scientists and whistle-blowers, this unwavering documentary reveals the political and financial interests at work behind the most severe nuclear accident since Chernobyl.

<https://exposurefilmstrust.com/index.html>

Netflix: *Meltdown: Three Mile Island*, Released May 2022, “This gripping four-part documentary series tackles the near catastrophe at Three Mile Island nuclear power plant in Pennsylvania through the lens of chief engineer and whistleblower, Richard Parks, as well as the community it impacted. Insiders recount the events, controversies and lingering effects of the worst nuclear incident in U.S. history.”

<https://www.youtube.com/watch?v=nAOIH8HRdDo>

Power Lines: Forage Films Documentary, **Laura Asherman, filmmaker and founder of Forage Films**, Released October 25, 2018

Power Lines is a short documentary about the expansion of Plant Vogtle, a nuclear power plant located in Waynesboro, Georgia. With a timeline already five years behind schedule and a current price tag of more than \$13 billion over original estimates, the addition of two nuclear reactors has proven to be a black hole for both citizens of Waynesborough and the state of Georgia as a whole.

<https://www.powerlinesfilm.com/>

Power Struggle, by **Turning Tide Production, Directed by Robbie Leppzer**, released 2019 in the U.S., shortened version released in Japan, 2018. Produced in conjunction with NHK TV, Japan.

Power Struggle portrays a heated political battle to shut down the Vermont Yankee nuclear power plant, located on the banks of the Connecticut River in southern Vermont. The film follows the unfolding drama as citizen activists and elected state officials—alarmed at increasing safety violations—take on the federal government and one of the biggest power companies in the United States and eventually win.

<https://www.powerstrugglemovie.com/>

Expert Witness Testimony and Nuclear Engineering Analysis and Consulting

September 22, 2023, Expert Report of Arnold Gundersen, Honeywell Metropolis and Its Failure to Follow Federal Nuclear Regulations; How Honeywell Metropolis Violated Nuclear Power Regulations and Standard Industry Practices Thereby Compromising Public Health And Safety

June 20, 2023, United States District Southern District of Illinois East St. Louis Division Declaration of Arnold Gundersen Civil Action Case No.: 3:22-cv-02114

September 29, 2022, United States District Court Southern District Of Illinois East St. Louis Division Case No.: 3:18-cv-01124-MJR-SCW Roger Steward, Sandra Steward, Clyde Schmidt, Joan Schmidt, Tim Beck, Charlotte Beck, Randy Langford, Brenda Langford, Todd Faulkner, And Kim Faulkner, Illinois residents, on behalf of themselves individually and all others similarly situated, Plaintiffs, v. Honeywell International, Inc., a Delaware corporation, individually and as successor-in-interest to Allied-Signal, Inc., Defendant.

July 28, 2021, Expert opinion by Arnold Gundersen, MENE, RO, submitted to the Department of Veterans Affairs regarding a U.S. Service Veteran with thyroid cancer due to their duty experiences in military service resulting from exposure(s) to ionizing radiation while serving their country.

Before The United States of America Nuclear Regulatory Commission Declaration of Arnold Gundersen, April 26, 2023. Amended Declaration of Arnold Gundersen of Fairewinds Associates, Inc., for Physicians for Social Responsibility Wisconsin (PSR-WI) Arnold Gundersen to review a license application to the Nuclear Regulatory Commission (NRC) to extend the licensed life of NextEra's Point Beach nuclear reactors until they have operated for 80 years, along with the related Environmental Report for NextEra Energy Point Beach, LLC's Point Beach Nuclear Plant, Units 1 and 2.

Before The United States of America Nuclear Regulatory Commission Declaration of Arnold Gundersen, March 21, 2023. Declaration of Arnold Gundersen of Fairewinds Associates, Inc., for Physicians for Social Responsibility Wisconsin (PSR-WI) Arnold Gundersen to review a license application to the Nuclear Regulatory Commission (NRC) to extend the licensed life of NextEra's Point Beach nuclear reactors until they have operated for 80 years, along with the related Environmental Report for NextEra Energy Point Beach, LLC's Point Beach Nuclear Plant, Units 1 and 2.

Before The United States of America Nuclear Regulatory Commission Office of The Secretary — December 7, 2020. Declaration Of Arnold Gundersen To Support The Motion To Reopen Proceeding And Request To Amend Contention By The Blue Ridge Environmental Defense League And Its Chapter Concerned Citizens Of Shell Bluff Regarding Southern Nuclear Operating Company's Request For A License Amendment And Exemption For Unit 3 Auxiliary Building Wall 11 Seismic Gap Requirements, Lar-20-001. In the Matter of the Southern Nuclear Operating Company License Amendment Application for Combined License NPF-91 at the Vogtle Electric Generating Plant Unit 3. Docket No. 52-025-LA-3

Before The United States of America Nuclear Regulatory Commission Office of The Secretary – May 11, 2020, In the Matter of the Southern Nuclear Operating Company License Amendment Application for Combined License NPF-91 at the Vogtle Electric Generating Plant Unit 3. Docket No. 52-025-LA-3 *Declaration of Arnold Gundersen to Support The Petition For Leave To Intervene And Request For Hearing By The Blue Ridge Environmental Defense League And Its Chapter Concerned Citizens Of Shell Bluff Regarding Southern Nuclear Operating Company's Request For A License Amendment And Exemption For Unit 3 Auxiliary Building Wall 11 Seismic Gap Requirements, Lar-20-001*

Before the State of Vermont Public Utilities Commission, Surrebuttal Testimony of Arnold Gundersen. December 1, 2017. VTPUC Docket 8880, Joint Petition of NorthStar Decommissioning Holdings, LLC.

Before the State of Vermont Public Utilities Commission, Testimony of Arnold Gundersen Supporting the New England Coalition: An Evaluation of The Financial Risks to Vermont In the Proposed Sale of The Entergy Nuclear Vermont Yankee Power Plant Site to NorthStar Decommissioning Holdings, LLC. August 30, 2017. VTPUC Docket 8880, Joint Petition of NorthStar Decommissioning Holdings, LLC.

Before the United States District Court Northern District Of Illinois, Steve Lawson And Darla Lawson, Other Similar Situated Individuals, Plaintiffs, Vs. General Electric, And Does 1-200, Defendants. Expert Witness Report by Arnold Gundersen, Prepared for Plaintiffs Attorney: Charles A. Bonner, Esq. Sb# 85413. May 25, 2017. Analysis of radiation exposure to GE journeyman welder.

Before the Public Utilities Commission of The State of California – January 27, 2017 – Prepared Direct Testimony of Arnold Gundersen of Fairewinds Associates, Inc., For San Luis Obispo Mothers for Peace regarding the: Application of Pacific Gas and Electric Company for Approval of the Retirement of Diablo Canyon Power Plant, Implementation of the Joint Proposal, and Recovery of Associated Costs Through Proposed Ratemaking Mechanisms Application 16-08-006 (Filed August 11, 2016)

Nuclear Regulatory Commission Before the Secretary – May 2, 2016, – Declaration of Arnold Gundersen To Support the Petition for Leave to Intervene And Request For Hearing By The Blue Ridge Environmental Defense League Regarding Southern Nuclear Operating Company's Vogtle Electric Generating Plant Units 3 And 4 Request For License Amendment And Exemption: Containment Hydrogen Igniter Changes (LAR-15-003)

Fairewinds Energy Education Report Submitted to NRC in Response to an Advance Notice of Proposed Rulemaking for Regulatory Improvements for Decommissioning Power Reactors: – March 17, 2016, The Nationwide Failures of Decommissioning Regulation: Decommissioning Trust Funds or Slush Funds?

Fairewinds Energy Education Report Submitted to NRC for Public Comment to Staff Regarding the Decommissioning of the Vermont Yankee Atomic Reactor – March 23, 2015, Vermont Yankee's Decommissioning as an Example of Nationwide Failures of Decommissioning Regulation

NRC Before the Atomic Safety and Licensing Board (ASLB) – December 1, 2014, Gundersen Declaration Palisades Embrittlement, Docket No. 50-255, Entergy, Palisades, Petition to Intervene and for A Public Adjudication Hearing of Entergy License Amendment Request for Authorization to Implement 10 CFR §50.61a, Alternate Fracture Toughness Requirements

For Protection Against Pressurized Thermal Shock Events.

NRC Before the Commission – November 6, 2014, *Second Supplemental Declaration of Arnold Gundersen*, In the Matter of Florida Power & Light Co., Docket No. 50-389, St. Lucie Plant, Unit 2.

NRC Atomic Safety and Licensing Board (ASLB) – October 10, 2014 – *Diablo Canyon Nuclear Power Plant, Units 1 and 2 – Gundersen Affidavit Supporting Friends of the Earth's Petition to Intervene: In the matter of Pacific Gas & Electric Company Docket No. 50-275-LR & Docket No. 50-323-LR, License Renewal Application.*

NRC Hearing Request – *Declaration of Arnold Gundersen Supporting Hearing Request*, March 10, 2014 – retained by Southern Alliance for Clean Energy (SACE) in the matter of Florida Power & Light Co., Docket No. 50-389, St. Lucie Plant, Unit 2

NRC ASLB Proceeding Fermi Unit 3 52-033-COL – October 30, 2013 – Retained by Don't Waste Michigan, Beyond Nuclear et al, Oral Expert Witness Testimony regarding Contention 15: Quality Assurance.

State of Utah Seventh District Court of Emory County – September 25, 2013 – Retained by HEAL Utah et al as an expert witness testifying on cooling tower consumptive use of water for a proposed nuclear power plant owned by Blue Castle Holdings and located on the Green River. Defendants were Kane County Water Conservancy District.

Canadian Nuclear Safety Commission – May 29-30, 2013 – Retained by Durham Nuclear Awareness to present expert witness testimony in hearings regarding the proposed life extension for the Pickering Nuclear Station owned Ontario Power Generation.

Nuclear Regulatory Commission – May 30, 2013 – Expert witness report Before the Secretary NRC *in the Matter of Detroit Edison Nuclear Power Station: Rebuttal Testimony of Arnold Gundersen Supporting of Intervenors' Contention 15: DTE COLA Lacks Statutorily Required Cohesive QA Program.* Retained by Don't Waste Michigan, Beyond Nuclear et al.

Nuclear Regulatory Commission – May 20, 2013 – Expert witness report Before the Secretary NRC *in the Matter of Davis Besse Nuclear Power Station: Expert Witness Report of Arnold Gundersen to Support the Petition for Leave to Intervene and Request for Hearing by Beyond Nuclear, Citizens Environment Alliance Southwest Ontario Canada, Don't Waste Michigan, and The Sierra Club.* Retained by Beyond Nuclear, Citizens Environment Alliance Southwest Ontario Canada, Don't Waste Michigan, and The Sierra Club.

Nuclear Regulatory Commission – May 6, 2013 – Expert witness report Before the Secretary NRC: *Expert Witness Report of Arnold Gundersen to Support the Petition for Leave to Intervene and Request for Hearing by The Blue Ridge Environmental Defense League, Bellefonte Efficiency and Sustainability Team, And Mothers Against Tennessee River Radiation.* Retained by BREDL et al.

Nuclear Regulatory Commission – April 30, 2013 – Expert witness report to Atomic Safety and Licensing Board: *Testimony of Arnold Gundersen Supporting of Intervenors Contention 15: DTE Cola Lacks Statutorily Required Cohesive QA Program.* Retained by Don't Waste Michigan, Beyond Nuclear et al.

Canadian Nuclear Safety Commission (CNSC) – April 29, 2013 – Expert witness report to Canadian Nuclear Safety Commission (CNSC): *Analysis of The Relicensing Application for Pickering Nuclear Generating Station*. Retained by Durham Nuclear Awareness.

Nuclear Regulatory Commission – January 16, 2013 – Expert witness presentation to NRC Petition Review Board: *2.206 Presentation San Onofre Units 2 and 3 Replacement Steam Generators Meeting with Petitioner Friends of the Earth, Requesting Enforcement Action Against Southern California Edison Under 10 CFR 2.206*

Expert Witness Report for Friends of The Earth – July 11, 2012 – *San Onofre's Steam Generators: Significantly Worse Than All Others Nationwide*, Fairewinds Associates, Inc

Expert Witness Report for Friends of the Earth – May 15, 2012 – *San Onofre Steam Generator Failures Could Have Been Prevented*, Fairewinds Associates, Inc

Expert Witness Report for Friends of the Earth – April 10, 2012 – *San Onofre Cascading Steam Generator Failures Created by Edison: Imprudent Design and Fabrication Decisions Caused Leaks*, Fairewinds Associates, Inc

Expert Witness Report for Friends of the Earth – March 27, 2012 – *Steam Generator Failures at San Onofre: The Need for A Thorough Root Cause Analysis Requires No Early Restart*, Fairewinds Associates, Inc

Expert Witness Report for Greenpeace – February 27, 2012 – *Lessons from Fukushima: The Echo Chamber Effect*, Fairewinds Associates, Inc

Nuclear Regulatory Commission – December 21, 2011 – Expert witness report to Atomic Safety and Licensing Board: *Prefiled Direct Testimony of Arnold Gundersen Regarding Consolidated Contention RK-EC-3/CW-EC-1 (Spent Fuel Pool Leaks)*

New York State Department of Environmental Conservation – November 15-16, 2011 – Expert witness report for Riverkeeper: hearing testimony regarding license extension application for Indian Point Units 2 and 3 – contention: tritium in the groundwater.

Nuclear Regulatory Commission – November 10, 2011 – Expert witness report entitled: *Fukushima and the Westinghouse-Toshiba AP1000, A Report for the AP1000 Oversight Group by Fairewinds Associates, Inc, and Video*. Submitted to NRC by the AP1000 Oversight Group.

Nuclear Regulatory Commission – October 7, 2011 – *Testimony to the NRC Petition Review Board Re: Mark 1 Boiling Water Reactors*, Petition for NRC to shut down all BWR Mark 1 nuclear power plants due to problems in containment integrity in the Mark 1 design.

New York State Department of Environmental Conservation – October 4, 2011 – *Prefiled Rebuttal Testimony of Arnold Gundersen On Behalf of Petitioners Riverkeeper, Inc., Scenic Hudson, Inc., And Natural Resources Defense Council, Inc. To The Direct Testimony of Matthew J. Barvenik (Senior Principal GZA Geoenvironmental, Inc.) Regarding Radiological Materials*

Southern Alliance for Clean Energy (SACE) submission to TVA Board of Directors – August 3, 2011– Expert witness report entitled: *The Risks of Reviving TVA's Bellefonte Project*, and Video prepared for the Southern Alliance for Clean Energy (SACE).

New York State Department of Environmental Conservation, July 22, 2011 – Prefiled Direct Testimony of Arnold Gundersen On Behalf of Petitioners Riverkeeper, Inc., Scenic Hudson, Inc., And Natural Resources Defense Council, Inc. Regarding Radiological Materials

Nuclear Regulatory Commission – May 10, 2011 – *Comment to the proposed rule on the AP1000 Design Certification Amendment Docket ID NRC-2010-0131 As noticed in the Federal Register on February 24, 2011* Retained by Friends of the Earth as Expert Witness.

NRC Advisory Committee on Reactor Safeguards (ACRS) – May 26, 2011 – Lessons learned from Fukushima and Containment Integrity on the AP1000.

Vermont Energy Cooperative (VEC) – April 26, 2011 – Presentation to the Vermont Energy Cooperative Board of Directors, *Vermont Yankee – Is It Reliable for 20 more years?*

Vermont State Nuclear Advisory Panel (VSNAP) – February 22, 2011 – Testimony and presentation entitled the *Vermont Yankee Public Oversight Panel Supplemental Report* regarding management issues at the Vermont Yankee Nuclear Power Plant to the reconvened Vermont State Nuclear Advisory Panel.

Vermont State Legislature Senate Committee on Natural Resources and Energy – February 8, 2011. Testimony: *Vermont Yankee Leaks and Implications*. (<http://www.leg.state.vt.us/jfo/envy.aspx>)

Vermont State Legislature – January 26, 2011 – House Committee on Natural Resources and Energy, and Senate Committee on Natural Resources and Energy – Testimony regarding Fairewinds Associates, Inc's report: *Decommissioning the Vermont Yankee Nuclear Power Plant and Storing Its Radioactive Waste* (<http://www.leg.state.vt.us/jfo/envy.aspx>). Additional testimony was also given regarding the newest radioactive isotopic leak at the Vermont Yankee nuclear power plant.

Vermont State Legislature Joint Fiscal Committee Legislative Consultant Regarding Entergy Nuclear Vermont Yankee – Decommissioning the Vermont Yankee Nuclear Power Plant and Storing Its Radioactive Waste January 2011. (<http://www.leg.state.vt.us/jfo/envy.aspx>).

U.S. Nuclear Regulatory Commission Advisory Committee on Reactor Safeguards (NRC-ACRS) AP1000 Sub-Committee – Nuclear Containment Failures: Ramifications for the AP1000 Containment Design, Supplemental Report submitted December 21, 2010. (<http://fairewinds.com/reports>)

Vermont State Legislature Joint Fiscal Committee Legislative Consultant Regarding Entergy Nuclear Vermont Yankee – Reliability Oversight Entergy Nuclear Vermont Yankee, December 6, 2010. Discussion regarding the leaks at Vermont Yankee and the ongoing monitoring of those leaks and ENVY's progress addressing the 90-items identified in Act 189 that require remediation. (<http://www.leg.state.vt.us/jfo/envy.aspx>).

U.S. Nuclear Regulatory Commission Atomic Safety and Licensing Board (NRC-ASLB) – Declaration of Arnold Gundersen Supporting Blue Ridge Environmental Defense League’s Contention Regarding Consumptive Water Use at Dominion Power’s Newly Proposed North Anna Unit 3 Pressurized Water Reactor in the matter of Dominion Virginia Power North Anna Power Station Unit 3 Docket No. 52-017 Combined License Application ASLBP#08-863-01-COL, October 2, 2010.

U.S. Nuclear Regulatory Commission Atomic Safety and Licensing Board (NRC-ASLB) – Declaration of Arnold Gundersen Supporting Blue Ridge Environmental Defense League’s New Contention Regarding AP1000 Containment Integrity on the Vogtle Nuclear Power Plant Units 3 And 4 in the matter of the Southern Nuclear Operating Company Vogtle Electric Generating Plant, Units 3&4 Combined License Application, Docket Nos. 52-025-COL and 52-026-COL and ASLB No. 09-873-01-COL-BD01, August 13, 2010.

Vermont State Legislature Joint Fiscal Committee Legislative Consultant Regarding Entergy Nuclear Vermont Yankee – July 26, 2010 – Summation for 2009 to 2010 Legislative Year for the Joint Fiscal Committee Reliability Oversight Entergy Nuclear Vermont Yankee (ENVY) Fairewinds Associates 2009-2010. This summary includes an assessment of ENVY’s progress (as of July 1, 2010) toward meeting the milestones outlined by the Act 189 Vermont Yankee Public Oversight Panel in its March 2009 report to the Legislature, the new milestones that have been added since the incident with the tritium leak and buried underground pipes, and the new reliability challenges facing ENVY, Entergy, and the State of Vermont. (<http://www.leg.state.vt.us/jfo/envy.aspx>)

U.S. Nuclear Regulatory Commission Atomic Safety and Licensing Board (NRC-ASLB) – Declaration of Arnold Gundersen Supporting Blue Ridge Environmental Defense League’s Contentions in the matter of Dominion Virginia Power North Anna Station Unit 3 Combined License Application, Docket No. 52-017, ASLBP#08-863-01-COL, July 23, 2010.

Florida Public Service Commission (FPSC)

Licensing and construction delays due to problems with the newly designed Westinghouse AP1000 reactors in *Direct Testimony in Re: Nuclear Plant Cost Recovery Clause by The Southern Alliance for Clean Energy (SACE)*, FPSC Docket No. 100009-EI, July 8, 2010.

U.S. Nuclear Regulatory Commission Advisory Committee on Reactor Safeguards (NRC-ACRS) AP1000 Sub-Committee – Presentation to ACRS regarding design flaw in AP1000 Containment – June 25, 2010 Power Point Presentation: <http://fairewinds.com/content/ap1000-nuclear-design-flaw-addressed-to-nrc-acrs>.

U.S. Nuclear Regulatory Commission Atomic Safety and Licensing Board (NRC-ASLB) – Second Declaration of Arnold Gundersen Supporting Supplemental Petition of Intervenors Contention 15: DTE COLA Lacks Statutorily Required Cohesive QA Program – June 8, 2010.

NRC Chairman Gregory Jaczko, ACRS, Secretary of Energy Chu, and the White House Office of Management and Budget – AP1000 Containment Leakage Report Fairewinds Associates - Gundersen, Hausler, 4-21-2010. This report, commissioned by the AP1000 Oversight Group, analyzes a potential flaw in the containment of the AP1000 reactor design.

Vermont State Legislature House Committee on Natural Resources and Energy – April 5, 2010 – Testified to the House Committee on Natural Resources and Energy – regarding discrepancies in Entergy’s TLG Services decommissioning analysis. See *Fairewinds Cost Comparison TLG Decommissioning* (<http://www.leg.state.vt.us/jfo/envy.aspx>).

Vermont State Legislature Joint Fiscal Committee Legislative Consultant Regarding Entergy Nuclear Vermont Yankee – February 22, 2010 – The Second Quarterly Report by Fairewinds Associates, Inc to the Joint Legislative Committee regarding buried pipe and tank issues at Entergy Nuclear Vermont Yankee and Entergy proposed Enexus spinoff. See two reports: *Fairewinds Associates 2nd Quarterly Report to JFC* and *Enexus Review by Fairewinds Associates*. (<http://www.leg.state.vt.us/jfo/envy.aspx>).

Vermont State Legislature Senate Natural Resources – February 16, 2010 – Testified to Senate Natural Resources Committee regarding causes and severity of tritium leak in unreported buried underground pipes, status of Enexus spinoff proposal, and health effects of tritium.

Vermont State Legislature Senate Natural Resources – February 10, 2010 – Testified to Senate Natural Resources Committee regarding causes and severity of tritium leak in unreported buried underground pipes. <http://www.youtube.com/watch?v=36HJiBrJSxE>

Vermont State Legislature Senate Finance – February 10, 2010 – Testified to Senate Finance Committee regarding *A Chronicle of Issues Regarding Buried Tanks and Underground Piping at VT Yankee*. (<http://www.leg.state.vt.us/jfo/envy.aspx>).

Vermont State Legislature House Committee on Natural Resources and Energy – January 27, 2010 – *A Chronicle of Issues Regarding Buried Tanks and Underground Piping at VT Yankee*. (<http://www.leg.state.vt.us/jfo/envy.aspx>).

Submittal to Susquehanna River Basin Commission, by Eric Epstein – January 5, 2010 – *Expert Witness Report of Arnold Gundersen Regarding Consumptive Water Use of the Susquehanna River by The Proposed PPL Bell Bend Nuclear Power Plant* in the Matter of RE: Bell Bend Nuclear Power Plant Application for Groundwater Withdrawal Application for Consumptive Use BNP-2009-073.

U.S. Nuclear Regulatory Commission Atomic Safety and Licensing Board (NRC-ASLB) – *Declaration of Arnold Gundersen Supporting Supplemental Petition of Intervenors Contention 15: Detroit Edison COLA Lacks Statutorily Required Cohesive QA Program*, December 8, 2009.

U.S. NRC Region III Allegation Filed by Missouri Coalition for the Environment – Expert Witness Report entitled: *Comments on the Callaway Special Inspection by NRC Regarding the May 25, 2009 Failure of its Auxiliary Feedwater System*, November 9, 2009.

Vermont State Legislature Joint Fiscal Committee Legislative Consultant Regarding Entergy Nuclear Vermont Yankee – Oral testimony given to the Vermont State Legislature Joint Fiscal Committee October 28, 2009. See report: *Quarterly Status Report - ENVY Reliability Oversight for JFO* (<http://www.leg.state.vt.us/jfo/envy.aspx>).

Vermont State Legislature Joint Fiscal Committee Legislative Consultant Regarding Entergy Nuclear Vermont Yankee – The First Quarterly Report by Fairewinds Associates, Inc to the Joint Legislative Committee regarding reliability issues at Entergy Nuclear Vermont Yankee, issued October 19, 2009. See report: *Quarterly Status Report - ENVY Reliability Oversight for JFO* (<http://www.leg.state.vt.us/jfo/envy.aspx>).

Florida Public Service Commission (FPSC) – Gave direct oral testimony to the FPSC in hearings in Tallahassee, FL, September 8 and 10, 2009 in support of Southern Alliance for Clean Energy (SACE) contention of anticipated licensing and construction delays in newly designed Westinghouse AP 1000 reactors proposed by Progress Energy Florida and Florida Power and Light (FPL).

Florida Public Service Commission (FPSC) – NRC announced delays confirming my original testimony to FPSC detailed below. My supplemental testimony alerted FPSC to NRC confirmation of my original testimony regarding licensing and construction delays due to problems with the newly designed Westinghouse AP 1000 reactors in *Supplemental Testimony in Re: Nuclear Plant Cost Recovery Clause by The Southern Alliance for Clean Energy*, FPSC Docket No. 090009-EI, August 12, 2009.

Florida Public Service Commission (FPSC) – Licensing and construction delays due to problems with the newly designed Westinghouse AP 1000 reactors in *Direct Testimony in Re: Nuclear Plant Cost Recovery Clause by The Southern Alliance for Clean Energy (SACE)*, FPSC Docket No. 090009-EI, July 15, 2009.

Vermont State Legislature Joint Fiscal Committee Expert Witness Oversight Role for Entergy Nuclear Vermont Yankee (ENVY) – Appointment from July 2009 to May 2010. Contracted by the Joint Fiscal Committee of the Vermont State Legislature as an expert witness to oversee the compliance of ENVY to reliability issues uncovered during the 2009 legislative session by the Vermont Yankee Public Oversight Panel of which I was appointed a member along with former NRC Commissioner Peter Bradford for one year from July 2008 to 2009. At the time, Entergy Nuclear Vermont Yankee (ENVY) was under review by Vermont State Legislature to determine if it should receive a Certificate for Public Good (CPG) to extend its operational license for another 20-years. Vermont was the only state in the country that had legislatively created the CPG authorization for a nuclear power plant. Act 160 was passed to ascertain ENVY's ability to run reliably for an additional 20 years.

U.S. Nuclear Regulatory Commission – Expert Witness Declaration regarding Combined Operating License Application (COLA) at North Anna Unit 3 *Declaration of Arnold Gundersen Supporting Blue Ridge Environmental Defense League's Contentions* (June 26, 2009).

U.S. Nuclear Regulatory Commission – Expert Witness Declaration regarding Through-wall Penetration of Containment Liner and Inspection Techniques of the Containment Liner at Beaver Valley Unit 1 Nuclear Power Plant *Declaration of Arnold Gundersen Supporting Citizen Power's Petition* (May 25, 2009).

U.S. Nuclear Regulatory Commission – Expert Witness Declaration regarding Quality Assurance and Configuration Management at Bellefonte Nuclear Plant *Declaration of Arnold Gundersen Supporting Blue Ridge Environmental Defense League's Contentions in their Petition for Intervention and Request for Hearing*, May 6, 2009.

Pennsylvania Statehouse – Expert Witness Analysis presented in formal presentation at the Pennsylvania Statehouse, March 26, 2009 regarding actual releases from Three Mile Island Nuclear Accident. Presentation may be found at: <http://www.tmia.com/march26>

Vermont Legislative Testimony and Formal Report for 2009 Legislative Session – As a member of the Vermont Yankee Public Oversight Panel, I spent almost eight months examining the Vermont Yankee Nuclear Power Plant and the legislatively ordered Comprehensive Vertical Audit. Panel submitted Act 189 Public Oversight Panel Report March 17, 2009 and oral testimony to a joint hearing of the Senate Finance and House Committee on Natural Resources and Energy March 19, 2009. <http://www.leg.state.vt.us/JFO/Vermont%20Yankee.htm>

Finestone v Florida Power & Light Company (FPL) (11/2003 to 12/2008) Federal Court – Plaintiffs’ Expert Witness in United States District Court for the Southern District of Florida. Retained by Plaintiffs’ Attorney Nancy LaVista, from Lytal, Reiter, Fountain, Clark, Williams, West Palm Beach, FL. Case# 06-11132-E. This case involved two plaintiffs in cancer cluster of 42 families alleging that illegal radiation releases from nearby nuclear power plant caused children’s cancers. Production request, discovery review, preparation of deposition questions and attendance at Defendant’s experts for deposition, preparation of expert witness testimony, preparation for Daubert Hearings, ongoing technical oversight, source term reconstruction and appeal to Circuit Court.

U.S. Nuclear Regulatory Commission Advisory Committee Reactor Safeguards (NRC-ACRS) – Expert Witness providing oral testimony regarding Millstone Point Unit 3 (MP3) Containment issues in hearings regarding the Application to Uprate Power at MP3 by Dominion Nuclear, Washington, and DC. (July 8-9, 2008).

Appointed by President Pro-Tem of Vermont Senate Shumlin (later elected as Vermont Governor) to Legislatively Authorized Nuclear Reliability Public Oversight Panel – To oversee Comprehensive Vertical Audit of Entergy Nuclear Vermont Yankee (Act 189) and testify to State Legislature during 2009 session regarding operational reliability of ENVY in relation to its 20-year license extension application. (July 2, 2008 to present).

U.S. Nuclear Regulatory Commission Atomic Safety and Licensing Board (NRC-ASLB) –Expert Witness providing testimony regarding *Pilgrim Watch’s Petition for Contention 1 Underground Pipes* (April 10, 2008).

U.S. Nuclear Regulatory Commission Atomic Safety and Licensing Board (NRC-ASLB) – Expert Witness supporting *Connecticut Coalition Against Millstone in Its Petition for Leave to Intervene, Request for Hearing, And Contentions Against Dominion Nuclear Connecticut Inc.’s Millstone Power Station Unit 3 License Amendment Request for Stretch Power Uprate* (March 15, 2008).

U.S. Nuclear Regulatory Commission Atomic Safety and Licensing Board (NRC-ASLB) – Expert Witness supporting *Pilgrim Watch’s Petition for Contention 1: specific to issues regarding the integrity of Pilgrim Nuclear Power Station’s underground pipes and the ability of Pilgrim’s Aging Management Program to determine their integrity.* (January 26, 2008).

Vermont State House – 2008 Legislative Session –

- House Committee on Natural Resources and Energy – Comprehensive Vertical Audit: *Why NRC Recommends a Vertical Audit for Aging Plants Like Entergy Nuclear Vermont Yankee (ENVY)*
- House Committee on Commerce – Decommissioning Testimony

Vermont State Senate – 2008 Legislative Session –

- Senate Finance – testimony regarding Entergy Nuclear Vermont Yankee Decommissioning Fund
- Senate Finance – testimony on the necessity for a Comprehensive Vertical Audit (CVA) of Entergy Nuclear Vermont Yankee
- House Committee on Natural Resources and Energy – testimony regarding the placement of high-level nuclear fuel on the banks of the Connecticut River in Vernon, VT

U.S. Nuclear Regulatory Commission Atomic Safety and Licensing Board (NRC-ASLB) – MOX Limited Appearance Statement to Judges Michael C. Farrar (Chairman), Lawrence G. McDade, and Nicholas G. Trikouros for the “Petitioners”: Nuclear Watch South, the Blue Ridge Environmental Defense League, and Nuclear Information & Resource Service in support of *Contention 2: Accidental Release of Radionuclides, requesting a hearing concerning faulty accident consequence assessments made for the MOX plutonium fuel factory proposed for the Savannah River Site.* (September 14, 2007).

Appeal to the Vermont Supreme Court (March 2006 to 2007) – Expert Witness Testimony in support of New England Coalition’s Appeal to the Vermont Supreme Court Concerning: Degraded Reliability at Entergy Nuclear Vermont Yankee as a Result of the Power Uprate. New England Coalition represented by Attorney Ron Shems of Burlington, VT.

State of Vermont Environmental Court (Docket 89-4-06-vtec 2007) – Expert witness retained by New England Coalition to review Entergy and Vermont Yankee’s analysis of alternative methods to reduce the heat discharged by Vermont Yankee into the Connecticut River. Provided Vermont’s Environmental Court with analysis of alternative methods systematically applied throughout the nuclear industry to reduce the heat discharged by nuclear power plants into nearby bodies of water and avoid consumptive water use. This report included a review of the condenser and cooling tower modifications.

U.S. Senator Bernie Sanders and Congressman Peter Welch (2007) – Briefed Senator Sanders, Congressman Welch and their staff members regarding technical and engineering issues, reliability and aging management concerns, regulatory compliance, waste storage, and nuclear power reactor safety issues confronting the U.S. nuclear energy industry.

State of Vermont Legislative Testimony to Senate Finance Committee (2006) – Testimony to the Senate Finance Committee regarding Vermont Yankee decommissioning costs, reliability issues, design life of the plant, and emergency planning issues.

U.S. Nuclear Regulatory Commission Atomic Safety and Licensing Board (NRC-ASLB) – Expert witness retained by New England Coalition to provide Atomic Safety and Licensing Board with an independent analysis of the integrity of the Vermont Yankee Nuclear Power Plant condenser (2006).

U.S. Senators Jeffords and Leahy (2003 to 2005) – Provided the Senators and their staffs with periodic overview regarding technical, reliability, compliance, and safety issues at Entergy Nuclear Vermont Yankee (ENVY).

10CFR 2.206 filed with the Nuclear Regulatory Commission (July 2004) – Filed 10CFR 2.206 petition with NRC requesting confirmation of Vermont Yankee's compliance with General Design Criteria.

State of Vermont Public Service Board (April 2003 to May 2004) – Expert witness retained by New England Coalition to testify to the Public Service Board on the reliability, safety, technical, and financial ramifications of a proposed increase in power (called an uprate) to 120% at Entergy's 31-year-old Vermont Yankee Nuclear Power Plant.

International Nuclear Safety Testimony – Ten Days advising the President of the Czech Republic (Vaclav Havel) and the Czech Parliament on their energy policy for the 21st century.

Nuclear Regulatory Commission (NRC) Inspector General (IG) – Assisted the NRC Inspector General in investigating illegal gratuities paid to NRC Officials by Nuclear Energy Services (NES) Corporate Officers. In a second investigation, assisted the Inspector General in showing that materially false statements (lies) by NES corporate president caused the NRC to overlook important violations by this licensee.

State of Connecticut Legislature – Assisted in the creation of State of Connecticut Whistleblower Protection legal statutes.

Federal Congressional Testimony –

- Publicly recognized by NRC Chairman, Ivan Selin, in May 1993 in his comments to U.S. Senate, “It is true...everything Mr. Gundersen said was absolutely right; he performed quite a service.”
- Commended by U.S. Senator John Glenn, Chair NRC Oversight Committee for public – for testimony to NRC Oversight Committee

PennCentral Litigation – Evaluated NRC license violations and materially false statements made by management of this nuclear engineering and materials licensee.

Three Mile Island Litigation – Evaluated unmonitored releases to the environment after accident, including containment breach, letdown system and blowout. Proved releases were 15 times higher than government estimate and subsequent government report.

Western Atlas Litigation – Evaluated neutron exposure to employees and license violations at this nuclear materials licensee.

Commonwealth Edison – In depth review and analysis for Commonwealth Edison to analyze the efficiency and effectiveness of all Commonwealth Edison engineering organizations, which support the operation of all of its nuclear power plants.

Peach Bottom Reactor Litigation – Evaluated extended 28-month outage caused by management breakdown and deteriorating condition of plant.

Presentations, Events, & Media

- *How to Dismantle an Atomic Lie—taking apart the nuclear falsehoods*, 2021 NEC Conference, April 29, 2021, Austria
- *Three Mile Island (TMI) Presentations and Events*, March 23 through March 27, 2019
 - *A Legacy of Lies*, PennState TMI 40th Commemoration Keynote, March 27, 2019, followed by 4-TV interviews, available on CSPAN
 - NBC TV Andrea Mitchell Interview, filmed 2019-3-26, aired March 28, 2019
 - Presentation Pennsylvania State House Rotunda, Harrisburg, PA, March 25, 2019
 - TMI Survivors Banquet, Keynote and Q&A, March 23, 2019
 - Media Interviews with WHP 21 (CBS), WGAL (NBC), WHP 27 (ABC)
 - Keynote Harrisburg Historical Society, keynote, Harrisburg, Pennsylvania March 23, 2019
- *The Fukushima Vogtle Connection*, hosted by Georgia Wand and Nuclear Watch South, March 9, 2019
- *Power Lines* Documentary Premier at Emory University, Atlanta, GA, October 2018
- CCTV, Nuclear Free Future TV with host Margaret Harrington, *Picking Up the Pieces from Atoms for Peace*, May 10, 2018
- CCTV, Nuclear Free Future TV with host Margaret Harrington, Nuclear Update with Fairewinds Energy Education - March 10, 2018
- Chicago, NIRS meetings and group presentations November 28 to December 4, 2017
- Radio Interviews, November 2017: David Goodman, October 25, 2017; Project Censored with Mickey Huff, November 2017
- Fukushima Prefecture, Japan, September 7-18, 2017, Arnie Gundersen and Dr. Marco Kaltofen, research and data review technical meeting with the Deputy Director General and the Senior Associate with the Japanese Atomic Energy Agency (JAEA). Trip to Japan was organized and funded by Fairewinds Energy Education.
- CCTV, Nuclear Free Future TV with host Margaret Harrington, *Fukushima, Three Mile Island, and Chernobyl*, March 30, 2017
- Radio Ecoshock, Alex Smith Interview, *Nuclear Power Is Not a Climate Change Solution*, January 26, 2017
- *38 Years and Five Meltdowns Later: The Real Lessons from TMI (Three Mile Island)*, March 25, 2017, keynote presentation hosted by Three Mile Island Alert, Harrisburg, PA
- *Arnie Gundersen speaks with Margaret Prescod*, March 14, 2017, Sojourner Truth Radio, Pacifica Radio on the Sixth-Year Commemoration of the Fukushima Daiichi nuclear power disaster.
- *Arnie Gundersen interviewed on Radiation Rattles Robot in Fukushima*, *Newsday - BBC World Service*, High levels of nuclear radiation have forced a robot to cut short its investigations of the Fukushima reactor in Japan. The probe's mission was to clean a passage to enable further robotic exploration, February 10, 2017.
- *Extreme Nuclear Dangers*, Radio Ecoshock host Alex Smith interviews Arnie Gundersen, the relationship between the nuclear power industry and nuclear weapons development, February 2, 2017.

- *Arnie Gundersen Appears on Project Censored with Dan Simon, Ted Rall, and Maggie Gundersen*, November 27, 2016
- *Arnie Gundersen Appears on Solartopia's Green Power and Wellness Hour*, November 16, 2016
- *Nuclear Power Is Not "Green Energy": It Is a Fount of Atomic Waste*, Published in Truthout, November 14, 2016
- *Powerstruggle Sneak Preview Panel Discussion*, Northampton, MA (October 23, 2016) Brattleboro, VT (Nov 3, 2016), organized by Turning Tide Productions
- *Is Solar Power in Nuclear Disaster Exclusion Zones Advisable?* published in *The Bulletin of the Atomic Scientists*, September 15, 2016
- *CO2 Smokescreen Presentation*, Montreal, Canada, invited speaker at the World Social Forum at the University of Quebec at Montreal (August 8, 2016) & McGill University, (August 10, 2016)
- *Gendai Business Online* exclusive interview with Fairewinds Chief Engineer Arnie Gundersen entitled: *American nuclear expert warns: "There is a possibility that now in Fukushima recontamination is occurring."*, June 14, 2016.
- *Seacoast Anti-Pollution League Annual Meeting*, Seabrook, NH, organized by the Seacoast Anti-Pollution League, open to the public, May 16, 2016
- *Arnie Gundersen Appears on Project Censored with Medea Benjamin*, March 30, 2016
- *Pilgrim Coalition Decommissioning Forum*, Plymouth, MA, organized by the Pilgrim Coalition, March 23, 2016
- *Osaka Global Environment Forum 2016*, in Osaka City, Japan, organized by Choetsu Kiko Association of Osaka and Friends of the Earth, February 27, 2016
- *Peace Forum Presentation*, in Kobe City, Japan, organized by YMCA, UNICEF, and Kobe Cooperative, February 22, 2016
- *Nuclear and Human Beings after Fukushima Event*, in Hiroshima City, Japan organized by Hiroshima YMCA, and Hiroshima Cooperative HANWA (Hiroshima Alliance for Nuclear Weapons Abolition), February 20, 2016
- *Peace Event at Jimmy Carter Civic Center*, in Konu-town Miyoshi, Hiroshima, Japan organized by Peace Platform, February 17, 2016
- *Middlebury College Student Global Affairs Conference: Power and Protest*, Middlebury, VT at Middlebury College, invited speaker for a student organized event, January 22, 2016
- *Ready for the Big One? Diablo Canyon Earthquake Vulnerability*, San Luis Obispo, invited guest of the San Luis Obispo Mothers for Peace, December 2, 2015
- *Expect the Unexpected: Nuclear Power's Unlearned Lessons*, California Polytechnic Institute, December 1, 2015
- *World in Danger: From Fukushima to California*, University of California at Berkeley, in conversation with Joanna Macy, November 22, 2015
- *World in Danger: The Fukushima - California Connection*, Point Reyes Station, in conversation with Mary Beth Brangan, November 21, 2015
- *World in Danger: Fukushima*, Sonoma State University, in conversation with Majia Nadesan, November 18, 2015
- *Fukushima's Impact at Five Years*, World Uranium Symposium 2015: Fukushima Workshop, April 2015, Quebec, Canada
- *Did Tesla Just Kill Nuclear Power?* May 1, 2015, Article written by journalist Jeff McMahon for *Forbes Magazine* that captures the excitement and buzz surrounding Tesla's big announcement and Arnie's auspicious speech
- *Building New Nukes Would Make Global Warming Worse* April 30, 2015, Presentation at Northwestern University, Chicago, IL

- *Fairewinds' Report: Vermont Yankee's Decommissioning As An Example of Nationwide Failures of Decommissioning Regulation presented to the Senate Committee for Natural Resources and Energy* April 22, 2015, Presentation Vermont Statehouse, Montpelier, VT
- *An Economic Analysis of the Cost of Nuclear Power* April 14, 2015, Presentation at the World Uranium Symposium, Quebec City, Quebec, Canada, Keynote Speaker
- *Commemoration of Meltdown at Fukushima Daiichi: 4-Years Later* March 11, 2015, Presentation to the House of Commons in London, England
- *Should Nuclear Energy Be Expanded to Help Create a More Sustainable Future?* November 20, 2014, Invited guest speaker in Debate at Hofstra University
- *Radiation Knows No Borders* August 2, 2014, Invited speaker at The Wave Conference, Life Chiropractic West, San Francisco, CA
- *Thirty-Five Years and Five Meltdowns Later: The Real Lessons of Three Mile Island* March 28, 2014, Three Mile Island at 35 (TMI@35) Symposium at Penn State, Harrisburg, PA, Keynote Speaker
- *The Nuclear Renaissance? Is It Too Big To Fail?* November 20, 2013, University North Carolina, Chapel Hill, NC.
- *Speaking Truth to Power* October 22, 2013 – Clarkson University, Potsdam, NY
- *The United States at A Crossroads: Two Futures* October 17 2013, Global Forum, Waitsfield, Vermont
- *A Road Less Taken: Energy Choices for the Future* – October 16, 2013, Johnson State College, Johnson, Vermont.
- *Fukushima: Ongoing Lessons for Boston* – October 9, 2013 – Boston, Massachusetts State House. Speakers were Arnie Gundersen, Former Japanese Prime Minister Naoto Kan, Former NRC Chair Gregory Jaczko, Former NRC Commissioner Peter Bradford, and Massachusetts State Senator Dan Wolf.
- *Fukushima: Ongoing Lessons for New York* – October 8, 2013 – New York City 82nd Street YMCA. Speakers were Arnie Gundersen, Riverkeeper President Paul Galley, Former Japanese Prime Minister Naoto Kan, Former NRC Chair Gregory Jaczko, Former NRC Commissioner Peter Bradford, and Ralph Nader.
- *Fukushima: Ongoing Lessons for California* – June 4, 2013 – New York City 82nd Street YMCA. Speakers were Arnie Gundersen, Riverkeeper President Paul Galley, Former Japanese Prime Minister Naoto Kan, Former NRC Chair Gregory Jaczko, Former NRC Commissioner Peter Bradford, and Friends of the Earth Nuclear Campaigner Kendra Ulrich.
- *What Did They Know and When? Fukushima Daiichi Before and After the Meltdowns*, Symposium: The Medical and Ecological Consequences of the Fukushima Nuclear Accident, The New York Academy of Medicine, New York City, NY, March 11, 2013
- *A Mountain of Waste 70 Years High*, Presentation: *Old and New Reactors*, University of Chicago, December 1, 2012
- Congressional Briefing September 20, 2012; invited by Representative Dennis Kucinich
- Presentations in Japan August/September 2012: Presentation at University of Tokyo (August 30, 2012), Presentation at Japanese Diet Building (members of the Japanese Legislature - August 31, 2012), Presentation to citizen groups in Niigata (September 1, 2012), Presentations to citizen groups in Kyoto (September 4, 2012), Presentation to Japanese Bar Association (September 2, 2012), and Presentation at the Tokyo Olympic Center (September 6, 2012)
- Multi-media Opera: *Curtain of Smoke*, by Filmmaker Karl Hoffman, Composer Andrea Molino, and Dramatist Guido Barbieri, Rome, Italy (2012-5-21,22)
- *Curtain of Smoke* Symposium (2012-5-21), with Dr. Sherri Ebadi 2004 Nobel Laureate

- The Italian National Press Club Rome (2012-5-21) with Dr. Sherri Ebadi 2004 Nobel Laureate: the relationship between nuclear power and nuclear weapons,
- Radio 3 Rome (2012-5-21) Discussion of Three Mile Island and the triple meltdown at Fukushima Daiichi (Japan),
- Sierra Club Panel Discussions (2012-5-5): Consequences of Fukushima Daiichi with Paul Gunter and Waste Disposal with Mary Olson,
- Physicians for Social Responsibility Seattle (2012-3-17),
- Fukushima Daiichi Forum with Chiho Kaneko, Brattleboro, VT (2012-3-11),
- Physicians for Global Responsibility Vancouver (2012-3-11) Skype Video Lecture,
- University of Vermont (2 – 2011),
- Boston Nuclear Forum, Boston Library (6/16/11),
- Duxbury Emergency Management (6/15/11),
- Vermont State Nuclear Advisory Panel (VSNAP),
- New Jersey Environmental Federation (5/14/11),
- Press Conference for Physicians for Social Responsibility (5/19/11),
- St. Johnsbury Academy – Nuclear Power 101.

More than 200 Educational videos on nuclear safety, reliability and engineering particularly Fukushima issues. Videos may be viewed @ fairewinds.org (501c3 non-profit)

Expert commentary (hundreds of TV, radio, print media, and internet interviews): CNN (8), The John King Show (16), BBC, CBC, Russia Today, Democracy Now, Al Jazeera America, KPBS (Radio & TV) VPR, WPTZ, WCAX, WBAI, CCTV, NECN, Pacifica Radio, CBC (radio & TV) (4), Rachel Maddow Show, *Washington Post*, *New York Times*, *Tampa Bay Times*, *The Guardian*, *Bloomberg* (print & TV), *Reuters*, *Associated Press*, *The Global Post*, *Miami Herald*, *Orange County Times*, *LA Times*, *Al Jazeera* (print), *The Tennessean*, The Chris Martinson Show, *Mainichi News*, TBS Japan, *Gendai Magazine*, NHK television, *Scientific American*. *Huffington Post* (Paris) named [Fairewinds.com](http://fairewinds.com) the best go to site for information about the Fukushima Daiichi accident (5/9/11).

Special Remediation Expertise:

Director of Engineering, Vice President of Site Engineering, and the Senior Vice President of Engineering at Nuclear Energy Services (NES) Division of Penn Central Corporation (PCC)

- NES was a nuclear licensee that specialized in dismantlement and remediation of nuclear facilities and nuclear sites. Member of the radiation safety committee for this licensee.
- Department of Energy chose NES to write *DOE Decommissioning Handbook* because NES had a unique breadth and depth of nuclear engineers and nuclear physicists on staff.
- Personally, I wrote the “Small Bore Piping” chapter of the DOE’s first edition *Decommissioning Handbook*, personnel on my staff authored other sections, and I reviewed the entire *Decommissioning Handbook*.
- Served on the Connecticut Low Level Radioactive Waste Advisory Committee for 10 years from its inception.
- Managed groups performing analyses on dozens of dismantlement sites to thoroughly remove radioactive material from nuclear plants and their surrounding environment.
- Managed groups assisting in decommissioning the Shippingport nuclear power reactor. Shippingport was the first large nuclear power plant ever decommissioned. The decommissioning of Shippingport included remediation of the site after decommissioning.

- Managed groups conducting site characterizations (preliminary radiation surveys prior to commencement of removal of radiation) at the radioactively contaminated West Valley site in upstate New York.
- Personnel reporting to me assessed the dismantlement of the Princeton Avenue Plutonium Lab in New Brunswick, NJ. The lab's dismantlement assessment was stopped when we uncovered extremely toxic and carcinogenic underground radioactive contamination.
- Personnel reporting to me worked on decontaminating radioactive thorium at the Cleveland Avenue nuclear licensee in Ohio. The thorium had been used as an alloy in turbine blades. During that project, previously undetected extremely toxic and carcinogenic radioactive contamination was discovered belowground after an aboveground gamma survey had purported that no residual radiation remained on site.

Additional Expert Qualifications – including and not limited to:

- Nuclear engineering management assessment, prudence assessment, contract administration, assessment, and review
- Nuclear power plant licensing and permitting – assessment and review
- Decommissioning experience: including radioactive waste processes, storage issue assessment, and waste disposal
- Nuclear safety and risk assessment, source term reconstruction, dose assessments, criticality analysis, and thermohydraulic assessment (i.e. power plant steam generation)
- Systems engineering and structural engineering assessments
- Cooling tower operation, cooling tower plumes, thermal discharge assessment, and consumptive water use
- Technical patents, nuclear fuel rack design and manufacturing, and nuclear equipment design and manufacturing
- Reliability engineering, & aging plant management assessments, in-service inspection
- Employee awareness programs, whistleblower protection, and public communications
- Quality Assurance (QA) & records

Nuclear Engineering Experience 1970 to Present

Expert witness testimony in nuclear litigation and administrative hearings in federal, international, and state court and to Nuclear Regulatory Commission, including but not limited to: Three Mile Island, US Federal Court, US NRC, NRC ASLB, ACRS, and Petition Review Board, California Public Utilities Commission, Canadian Nuclear Safety Commission (CNSC), Diet (Parliament) Japan, House of Commons (UK), Vermont State Legislature, Vermont State Public Service Board, Vermont Public Utility Commission, Florida Public Service Board, Czech Senate, Connecticut State Legislature, Western Atlas Nuclear Litigation, U.S. Senate Nuclear Safety Hearings, Peach Bottom Nuclear Power Plant Litigation, and Office of the Inspector General NRC, and numerous Congressional Briefings and Hearings.

Nuclear Engineering, Safety, and Reliability Expert Witness 1990 to Present

- Fairewinds Associates, Inc – Chief Engineer, 2005 to Present
- Arnold Gundersen, Nuclear Safety Consultant and Energy Advisor, 1995 to 2005
- GMA – 1990 to 1995, including expert witness testimony regarding the accident at Three Mile Island.

Nuclear Energy Services, Division of PCC (Fortune 500 company) 1979 to 1990

Corporate Officer and Senior Vice President - Technical Services – Responsible for the overall performance of the company's Inservice Inspection (ASME XI), Quality Assurance (SNTC 1A), and Staff Augmentation Business Units – up to 300 employees at various nuclear sites.

Senior Vice President of Engineering – Responsible for the overall performance of the company's Site Engineering, Boston Design Engineering and Engineered Products Business Units. Integrated the Danbury based, Boston based and site engineering functions to provide products such as fuel racks, nozzle dams, and transfer mechanisms and services such as materials management and procedure development.

Vice President of Engineering Services – Responsible for the overall performance of the company's field engineering, operations engineering, and engineered products services. Integrated the Danbury-based and field-based engineering functions to provide numerous products and services required by nuclear utilities, including patents for engineered products.

General Manager of Field Engineering – Managed and directed NES' multi-disciplined field engineering staff on location at various nuclear plant sites. Site activities included structural analysis, procedure development, technical specifications and training. Have personally applied for and received one patent.

Director of General Engineering – Managed and directed the Danbury based engineering staff. Staff disciplines included structural, nuclear, mechanical and systems engineering. Responsible for assignment of personnel as well as scheduling, cost performance, and technical assessment by staff on assigned projects. This staff provided major engineering support to the company's nuclear waste management, spent fuel storage racks, and engineering consulting programs.

New York State Electric and Gas Corporation (NYSE&G) — 1976 to 1979

Reliability Engineering Supervisor – Organized and supervised reliability engineers to upgrade performance levels on seven operating coal units and one that was under construction. Applied analytical techniques and good engineering judgments to improve capacity factors by reducing mean time to repair and by increasing mean time between failures.

Lead Power Systems Engineer – Supervised the preparation of proposals, bid evaluation, negotiation and administration of contracts for two 1300 MW NSSS Units including nuclear fuel, and solid-state control rooms. Represented corporation at numerous public forums including TV and radio on sensitive utility issues. Responsible for all nuclear and BOP portions of a PSAR, Environmental Report, and Early Site Review.

Northeast Utilities Service Corporation (NU) — 1972 to 1976

Engineer – Nuclear Engineer assigned to Millstone Unit 2 during start-up phase. Lead the high velocity flush and chemical cleaning of condensate and feedwater systems and obtained discharge permit for chemicals. Developed Quality Assurance Category 1 Material, Equipment and Parts List. Modified fuel pool cooling system at Connecticut Yankee, steam generator blowdown system and diesel generator lube oil system for Millstone. Evaluated Technical Specification Change Requests.

Associate Engineer – Nuclear Engineer assigned to Montague Units 1 & 2. Interface Engineer with NSSS vendor, performed containment leak rate analysis, assisted in preparation of PSAR

and performed radiological health analysis of plant. Performed environmental radiation survey of Connecticut Yankee. Performed chloride intrusion transient analysis for Millstone Unit 1 feedwater system. Prepared Millstone Unit 1 off-gas modification licensing document and Environmental Report Amendments 1 & 2.

Rensselaer Polytechnic Institute (RPI) — 1971 to 1972

Critical Facility Reactor Operator, Instructor – Licensed AEC Reactor Operator instructing students and utility reactor operator trainees in start-up through full power operation of a reactor.

Public Service Electric and Gas (PSE&G) — 1970

Assistant Engineer – Performed shielding design of radwaste and auxiliary buildings for Newbold Island Units 1 & 2, including development of computer codes.

Additional Publications (continued from front page)

Co-author — *Fairewinds Associates 2009-2010 Summary to JFC, July 26, 2010* State of Vermont, Joint Fiscal Office, (<http://www.leg.state.vt.us/jfo/envy.aspx>).

Co-author — *Supplemental Report of the Public Oversight Panel Regarding the Comprehensive Reliability Assessment of the Vermont Yankee Nuclear Power Plant July 20, 2010*, to the Vermont State Legislature by the Vermont Yankee Public Oversight Panel.

Co-author — The Second Quarterly Report by Fairewinds Associates, Inc to the Joint Legislative Committee regarding buried pipe and tank issues at Entergy Nuclear Vermont Yankee and Entergy proposed Enexus spinoff. See two reports: *Fairewinds Associates 2nd Quarterly Report to JFC* and *Enexus Review by Fairewinds Associates*.

Co-author — Fairewinds Associates, Inc *First Quarterly Report to the Joint Legislative Committee*, October 19, 2009.

Co-author — *Report of the Public Oversight Panel Regarding the Comprehensive Reliability Assessment of the Vermont Yankee Nuclear Power Plant*, March 17, 2009, to the Vermont State Legislature by the Vermont Yankee Public Oversight Panel.

Co-author — *Vermont Yankee Comprehensive Vertical Audit – VYCVVA – Recommended Methodology to Thoroughly Assess Reliability and Safety Issues at Entergy Nuclear Vermont Yankee, January 30, 2008 Testimony to Finance Committee Vermont Senate*.

Co-author — *Decommissioning Vermont Yankee – Stage 2 Analysis of the Vermont Yankee Decommissioning Fund – The Decommissioning Fund Gap*, December 2007, Fairewinds Associates, Inc. Presented to Vermont State Senators and Legislators.

Co-author — *Decommissioning the Vermont Yankee Nuclear Power Plant: An Analysis of Vermont Yankee's Decommissioning Fund and Its Projected Decommissioning Costs*, November 2007, Fairewinds Associates, Inc.

Media Organizations - including and not limited to:

Featured Nuclear Safety and Reliability Expert (1990 to present) for Television, Newspaper, Radio, & Internet – Including, and not limited to: CNN: JohnKingUSA, CNN News, Earth Matters; DemocracyNow, NECN, WPTZ VT, WTNH, VPTV, WCAX, RT, CTV (Canada), CCTV Burlington, VT, CAN TV (Chicago Access), ABC, TBS/Japan, Bloomberg: EnergyNow, KPBS, Japan National Press Club (Tokyo), Italy National Press Club (Rome), The Crusaders, Front Page, Five O'Clock Shadow: Robert Knight, Mark Johnson Show, Steve West Show, Anthony Polina Show, WKVT, WDEV, WVPR, WZBG CT, Seven Days, AP News Service, Houston Chronicle, Christian Science Monitor, Reuters, The Global Post, International Herald, The Guardian, New York Times, Washington Post, LA Times, Miami Herald, St. Petersburg Times, Brattleboro Reformer, Rutland Herald, Times-Argus, Burlington Free Press, Litchfield County Times, The News Times,

The New Milford Times, Hartford Current, New London Day, Vermont Daily Briefing, Green Mountain Daily, EcoReview, Huffington Post, DailyKos, Voice of Orange County, AlterNet, Common Dreams, Gendai Media, Truthout, Progressive Radio Network, Project Censored and numerous other national and international blogs

Public Service, Cultural, and Community Activities

2008 to Present –Fairewinds Energy Education Corp 501(C)3 non-profit board member

2005 to Present – Public presentations and panel discussions on nuclear power safety, reliability, economics, waste disposal, and decommissioning at numerous universities and colleges in the US, Canada, and Japan – including: DePaul University, Plymouth State University, Northwestern University, Life Chiropractic West, Middlebury College, McGill University, Hofstra University, New York School of Medicine, Cal Poly, Sonoma State, Amherst College, University of Vermont, Vermont Law School, Tokyo University, and before the Nuclear Regulatory Commission in hearings, Federal Court, Town and City Select Boards, Legal Panels, Local Schools, and via National & International Media: Television, Radio, Print, & Internet.

2007-2008 – Energy Production – created concept of Solar Panels on Burlington High School; worked with Burlington Electric Department and Burlington Board of Education Technology Committee on a Grant to install solar collectors for Burlington Electric peak summer use; Grant was developed with assistance from Senator Sanders.

Vermont State Legislature – Public Testimony to Legislative Committees regarding nuclear power and energy issues

NNSN – National Nuclear Safety Network, Founding Advisory Board Member, meetings with and testimony to the Nuclear Regulatory Commission Inspector General (NRC IG)

New York State Electric & Gas (NYSE&G) Speakers Club speaking about nuclear waste issues.

Northeast Utilities Representative Conducting Public Lectures on Nuclear Safety Issues with the Northeast Utilities Speakers Bureau

End