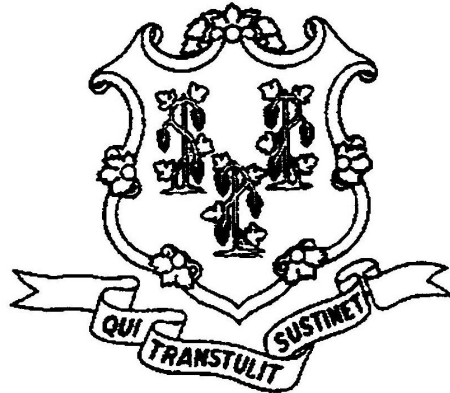


STATE OF CONNECTICUT



THE NUCLEAR ENERGY ADVISORY COUNCIL REPORT

2023

Established Pursuant to Public Act 96-245

Rep. Kevin Ryan, Chairperson

Nuclear Energy Advisory Council
2023 Report

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Charge to the Council

While recognizing the regulatory authority of the U. S. Nuclear Regulatory Commission (NRC) over commercial nuclear power facilities, the State of Connecticut maintains a very serious interest in matters that could affect the health and safety of the public and the natural resources of the state. As such, section 17 of Public Act 96-245 (now CGS16-11a, as amended) authorizes the creation of a Nuclear Energy Advisory Council (the Council) and requires the Council to:

1. Hold regular public meetings to discuss issues relating to the safety and operations of nuclear power plants and to advise the governor, legislature, and municipalities within a five-mile radius of the plants on these issues;
2. Work with federal, state, and local agencies and the companies operating such plants to ensure public health and safety;
3. Discuss proposed changes in, or problems arising from, the operation of the plants;
4. Communicate, through reports and presentations, with the plants' operators about safety or operational concerns at the plants, and
5. Review the current status of the plants with the Nuclear Regulatory Commission.

Council Members

The Council consists of fourteen (14) members appointed by the Governor, legislative leadership, and the executive bodies in the towns in or near which the state's nuclear power plants are located. No new members were appointed to the Council in 2023. There were nine active members at the end of 2023. Five vacancies remain. The Council urges the appointing authorities to work with the Council Chair to appoint new members. (Appendix 1).

Executive Summary

This is the twenty-ninth annual report presented by the Nuclear Energy Advisory Council (the Council). During calendar year 2023, the NEAC met four times and received reports from representatives of the U.S. Nuclear Regulatory Commission (NRC), the Federal Emergency Management Administration (FEMA), and Dominion Energy Nuclear Connecticut (Dominion) as well as a written status report from Connecticut Yankee Independent Spent Fuel Storage Installation (ISFSI). The Council received and reviewed Routine and Special NRC inspection reports on the safety and operation of Millstone Power Station (MPS) as well as other documents related to MPS and NRC activities. These documents are publicly¹ available and listed in the meeting minutes (Appendix 2).

The Council continues to examine issues relating to the safety and operations of nuclear power plants and advise the governor, legislature, municipalities, and residents within a five-mile radius of the plants on these issues.

The Council concurs with the NRC that during 2023, Dominion safely operated the nuclear plants at Millstone Power Station. Spent nuclear fuel continues to be safely stored and monitored in wet and dry storage at Millstone Power Station and at the ISFSI at Connecticut Yankee. NRC and DEEP provide effective oversight of activities. Millstone continues to safely operate providing a source of carbon free energy to the citizens of Connecticut.



¹ <https://portal.ct.gov/DEEP/Radiation/Nuclear-Topics>

Council Recommended Actions

State:

- Facilitate and encourage the Division of Emergency Management and Homeland Security (DEMHS)/DEEP nuclear emergency preparedness collaboration and continue executing current responsibilities and duties in kind.
- The Governor/General Assembly/DEEP should endorse a nuclear waste strategy that includes consent based consolidated interim storage.
- Elected officials responsible for appointing Council members should work with the Council Chair to identify and appoint new members to fill existing vacancies.
- DEEP should continue its effective environmental monitoring program to ensure that operations of Millstone do not have an adverse impact on the public or the environment.
- DEEP should dedicate sufficient resources to the review of Millstone's application for renewal of its National Pollutant Discharge Elimination System (NPDES) permit to ensure a timely determination decision.

The Council:

- The Council will continue to discharge its duties as specified by Section 17 of Public Act (PA) 96-245 (now section 16-11a of Connecticut General Statutes as amended).
- The Council monitored station performance and trends identified in previous years. Based upon the presentations and documents reviewed, the Council observed more operational events, forced outages, extended outages and more reportable events. The Council notes that the station has also experienced significant staffing changes and loss of organizational knowledge, a reliance on outside vendors which have the potential to lead to performance issues affecting safe operations of Millstone Power Station.
- The Council noted that the state has implemented policies to encourage development of and reduce barriers to new nuclear development including lifting of the new construction moratorium at Millstone station (PA 22-76, "An Act exempting Existing Nuclear Power Generating Facilities in the State from the Nuclear Power Facility Construction Moratorium"). The Council continues to monitor policies and progress of new nuclear development in the United States. The Council concludes that the existing operational, safety, and security infrastructure developed around Millstone permits safe deployment of additional reactors. The Council reviewed recommends that they review safety designs and plans for any advanced reactors proposed for siting in Connecticut.

Highlighted Findings

Millstone Operations

Based upon presentations of Millstone Power Station (Millstone) in Waterford, CT performance made to the Nuclear Energy Advisory Council (the Council) by the U.S. Nuclear Regulatory Commission (NRC) and Dominion Nuclear Energy, Inc. (Dominion) in conjunction with the Council’s review of NRC and Dominion correspondence and reports, the Council:

- Concludes the NRC continues to provide effective regulatory oversight.
- Identified the following trends related to Station performance:
 - Increase number of operational events requiring reductions in station power level, forced shutdowns and significant extensions to planned outages.
 - Increased number of Licensee Event Reports issued by the station.
 - Increase number of NRC identified findings.
- While the Council did not identify any significant safety or operational concerns with the plants, the increased number of operational events and issues could present challenges to station operators.

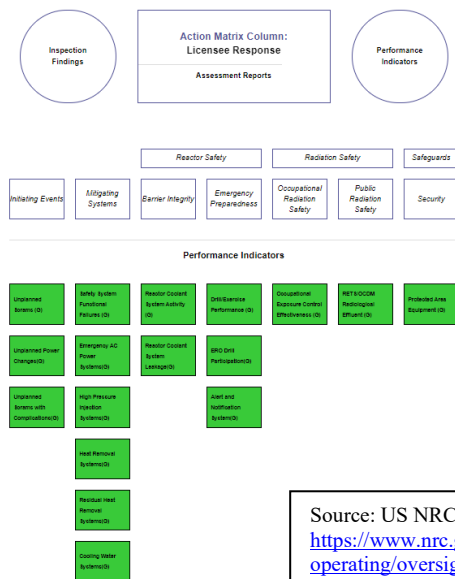
NRC Assessment of Performance

The NRC briefed the Council on its annual assessment of performance at Millstone. This assessment was informed by the observations, reports, and inspections conducted by NRC Resident Inspectors and supplemented with regional and headquarters inspectors in areas such as security, cybersecurity, health physics and engineering design basis. The NRC concluded that Dominion Nuclear Energy continues to operate Millstone Power Station safely, protect public health and safety, and protect the environment. Millstone Units 2 and 3 both remain in the Licensee Response column of the Regulatory Response Matrix (the highest level of performance) and will therefore remain under baseline inspection.

All NRC performance indicators remain Green.

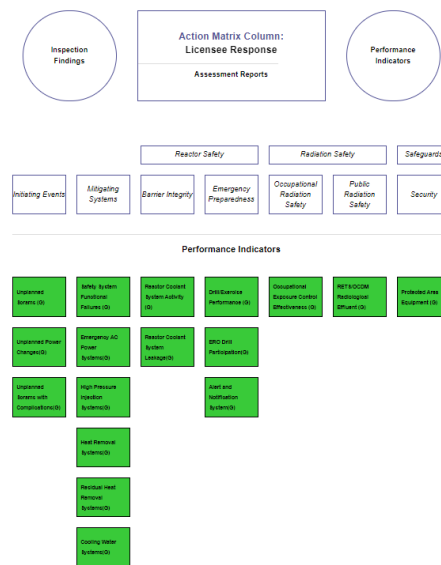
Millstone 2 - Quarterly Performance Summary

Q4/2023 Performance Indicators



Millstone 3 - Quarterly Performance Summary

Q4/2023 Performance Indicators



Source: US NRC available at <https://www.nrc.gov/reactors/operating/oversight/plant-by-plant-summaries.html>

Since the last Council report:

- There were two planned refueling and maintenance outages:
 - Millstone Unit 2 conducted a planned refueling outage, which began on April 6, 2023. The outage was extended to complete repairs to the safety related service water piping system and reactor coolant pump seals. The unit returned to rated thermal power on July 4, 2023.
 - On October 19, 2023, Millstone Unit 3 was shut down for a scheduled refueling outage. On December 1, 2023, the unit was placed online, and power was raised to approximately 50 percent.
- There were no unplanned shutdowns of Millstone Unit 2.
- There were two unplanned shutdowns of Millstone Unit 3:
 - On May 30, 2023, an automatic reactor trip occurred due to a main generator ground fault. The unit returned to rated thermal power on July 3, 2023.
 - On December 2, 2023, the unit was shut down due to a condenser tube leak. On December 13, 2023, the unit returned to 100 percent rated thermal power.
- There were six (6) unplanned power changes of Millstone Unit 2:
 - On February 14, 2023, Unit 2 reduced power to 34 percent due to an emergent feedwater heater tube leak. The unit returned to rated thermal power on February 19, 2023
 - On July 11, 2023 Unit 2 reduced power to approximately 86 percent to troubleshoot and repair the turbine driven auxiliary feedwater steam supply check valve from the #2 steam generator. Unit 2 returned to rated thermal power on July 26, 2023.
 - On September 6, 2023, Unit 2 reduced power to approximately 82 percent due to condenser fouling.
 - On September 11, 2023, Unit 2 decreased reactor power from 82 to 68 percent for removal and cleaning of condenser waterboxes and replacement of the 'C' circulating water pump. Unit 2 raised power to 92 percent on September 17, 2023, after cleaning the condenser waterbox.
 - On September 20, 2023, Unit 2 decreased power to 60 percent due to issues with the 'A' circulating water pump and a 'C' intake bay outage. On September 23, 2023, Unit 2 raised power to 80 percent after cleaning the 'A' condenser waterbox and continued replacement of the 'C' circulating water pump.
 - On September 24, 2023, Unit 2 reduced power back to 68 percent due to continued issues with the 'A' circulating water pump. Unit 2 returned to rated thermal power on October 5, 2023
- There were seven (7) unplanned power changes of Millstone Unit 3:
 - On January 6, 2023, Unit 3 reduced power to 16 percent for planned maintenance on a disconnect switch located in the Millstone switchyard. The unit returned to rated thermal power on January 9, 2023.
 - On March 4, 2023, Unit 3 reduced power to 83 percent due to degraded condenser backpressure during a winter storm while the 'B' circulating water pump was out of service for planned maintenance. The unit returned to rated thermal power on the same day, March 4, 2023.
 - On September 1, 2023, Unit 3 reduced power to 92 percent due to a feedwater heater transient.
 - On September 2, 2023, Unit 3 reduced power to 80 percent due to thermal well leakage associated with a temperature element for the first point feedwater heater. Unit 3 returned to rated thermal power on September 8, 2023.
 - On September 22, 2023, Unit 3 reduced power to 85 percent to support service water pipe inspection. Unit 3 returned to rated thermal power on September 23, 2023.

- On December 18, 2023, the operators performed a rapid downpower to approximately 57 percent due to the failure of a circulating water pump traveling screen. The unit returned to rated thermal power on December 21, 2023.
- On December 23, 2023, the operators performed a rapid downpower to 84 percent as required for the loss of a second off-site power line. The unit returned to rated thermal power later that day and remained at or near rated thermal power for the remainder of the year.
- No station emergency events were declared.
- The NRC identified thirteen non-cited inspection findings - all were determined to be of very low safety significance (Green).
 - Nine (9) of these violations were identified by the NRC.
- Dominion made two (2) Licensee Event Reports (LERs) at Millstone Unit 2 pursuant to 10 CFR § 50.73:
 - Millstone Unit 2 LER 2023-001-00, “Structural integrity of "A" Train Service Water header piping could not be demonstrated causing the unit to operate in a condition prohibited by Technical Specifications.”
 - Millstone Unit 2 LER 2023-002-00, “Failed check valve resulted in an unanalyzed condition.”
- Dominion made six (6) Licensee Event Reports (LERs) at Millstone Unit 3 pursuant to 10 CFR § 50.73:
 - Millstone Unit 3 LER 2022-03-00, “Gas Void in the Emergency Core Cooling System Resulted in a Condition Prohibited by Technical Specifications.” (condition discovered by NRC 8/31/2023)
 - Millstone Unit 3 LER 2023-001-00, “Automatic reactor trip due to main generator output breaker ground fault.”
 - Millstone Unit 3 LER 2023-002-00, “Auxiliary Feedwater Control Valve Failure Resulting in a Condition Prohibited by Technical Specifications.”
 - Millstone Unit 3 LER 2023-003-00, “RCS Temperature Detector Exceeded Time Response Acceptance Criteria Resulting in a Condition Prohibited by TS [Technical Specifications].”
 - Millstone Unit 3 LER 2023-004-00, “Reactor Coolant System Pressure Isolation Valves Operational Leakage Exceeded the Acceptance Criteria Resulting in a Condition Prohibited by Technical Specifications.”
 - Millstone Unit 3 LER 2023-005-00, “Oil Leakage From "C" RSS Pump Motor Challenged Meeting Its Mission Time Resulting in a Condition Prohibited by Technical Specifications.”
- The NRC conducted one reactive Special Inspection related to security at Millstone Station.

Operational Events

Dominion briefed the Council on its internal assessment of performance including one unplanned shutdown on May 30, 2023, an automatic reactor trip which occurred due to a main generator ground fault. The shutdown was caused by moisture in the B phase of the main generator output breaker (MGOB) that caused an electrical ground fault and resulted in a 30-day forced outage. In response to Council questions, Dominion stated that one of the air compressors (air is used to quench electrical arc when breaker is opened under load) was determined to be cycling more than it should be. This resulted in moisture not clearing due to extended run time. Operators had noted the compressor was running more often and they had planned maintenance to replace the compressor, but a fault occurred before they could conduct the maintenance.

Dominion briefed the Council on the extended outage at Millstone Unit 2. The outage was expected to be approximately 30 days for refueling and maintenance but lasted 86 days. The major reason for unplanned outage extension was related to two safety related service water piping issues that were identified by NRC inspectors. First was degradation of sections of piping in the turbine building identified during the outage. The second was a through wall leak in a section of 24-inch service water pipes that was identified while addressing the first identified degradation. This pipe is ductile iron with cement casting and additional polymer lining. Dominion determined that the leak resulted because the polymer lining in the vicinity of leak was six times thinner than other locations. All sections of piping affected were re-coated or replaced. Repairs to piping took a long time due to difficulty of access and the need to make repairs compliant with American Society of Mechanical Engineers (ASME) codes. During the outage, Dominion also implemented a design change to check valve 2-MS-4B, Steam Supply Check Valve to the Turbine Driven Auxiliary Feedwater (TDAFW) Pump in order to resolve a historical issue of chatter. Upon startup, Dominion determined the design change did not solve the issue. Unit 2 operated was required to reduced power until they changed the valve to a different type of check valve which resolved the issue.

Council Assessment

Based upon the information presented and detailed in the minutes, the Council identified an increase in operational events including some events impacting safety related systems. The Council notes the following:

- Several operational and reportable events were related to repeat issues including repeat failures of a Millstone Unit 2 steam supply check valve to the safety-related auxiliary feedwater pump, reactor coolant pump seal failures at both Millstone Units 2 and 3, non-safety feedwater heater failures, and challenges to circulating water systems at the cooling water intakes from Long Island Sound.
- The Council notes turnover in station personnel continues to be 20 to 40 staff per year. The Council noted that some operational occurrences may have been impacted by loss of experienced personnel. The Council will monitor performance to identify if any other events may be impacted by a loss of organizational knowledge.
 - Engineering error is calculating gas void volume (Millstone Unit 3 LER 2022-03-00)
 - Installation errors associated with Reactor Coolant Pump seals installed during the Millstone Unit 2 refueling outage.
 - Failure to properly troubleshoot Auxiliary Feedwater Control Valve Failure (Millstone 3 LER 2023-002-00)
 - Improper installation of temperature detector (Millstone Unit 3 LER 2023-003-00)
 - Improper evaluation of motor oil leakage (Millstone Unit 3 LER 2023-05-00)
 - Improper maintenance preventing fire pump from starting (NRC NCV 05000423, 05000336/2023004-0)
 - Failure to identify and correct a degraded overspeed relay on an Emergency Diesel Generator at Millstone Unit 3 (NCV 05000423/2023004-04)

The Council notes that Dominion made several management changes at the end of 2023. The Council will continue to monitor performance at Millstone with respect to these issues and trends as well as monitor the impact of new management on station performance.

The Council recommends the NRC and Dominion evaluate the increased operational and regulatory challenges for common causes and organizational issues.

Station Economic Viability

The operating licenses for both Millstone Unit No. 2 and Unit No. 3 have been extended from the original 40 years to 60 years. Millstone Unit No. 2 is currently in its period of extended operations. In 2023, Dominion notified the NRC that it intends to file a license amendment request to extend the operating licenses to 80 years at both Millstone Units 2 and 3. The Council continues to monitor information related to aging management of the plants and on regulatory issues related to extending the licenses for plant operations to 80 or 100 years.

Dominion briefed the Council that the current Power Purchase Agreement (PPA) for Millstone power runs through 2029. Dominion told the Council that it is a priority for Dominion in 2024 to manage the PPA going forward. Dominion also noted the exemption on the moratorium for construction of new nuclear applies to existing operating nuclear stations so that new nuclear requires sustaining existing nuclear.

The Council did not identify any adverse impacts from fiscal considerations to safety and security at Millstone Power Station.

Emergency Events

Dominion did not declare any emergency events at Millstone in 2023.

Environmental Monitoring and Events

There were no environmental impact events at Millstone in 2023 requiring reporting to the state.

Advanced Nuclear

Dominion briefed the Council that there is increased bipartisan support for nuclear energy in the state. Both Gov Lamont and DEEP Commissioner Dykes have visited the site and discussed new nuclear and Small Modular Reactors (SMRs). Public Act 23-102 created a Connecticut Council for Advancing Nuclear Energy Development, different from the Nuclear Energy Advisory Council, to bring together nuclear people in the state to discuss the future of nuclear. In section 35, PA 23-102 directs a DEEP study to evaluate deploying new nuclear in the state and directs DEEP to work with the Council on this. The DEEP representative on the Council has agreed to forward the draft study to the Council for comment in first quarter of 2024. PA 23-102 makes nuclear a class 1 renewable and is only the second state to do this.

Dominion briefed the Council on the company's interest in new nuclear and small modular reactors (SMRs). Dominion is looking at deploying SMRs in the 2030 to 2035 including a consortium with utilities in Romania, Poland, and Czech Republic, but currently is only exploring these options with no specific deployment plans. With respect to domestic deployment of SMRs, Dominion is exploring viable options in its regulated markets in Virginia and South Carolina. Dominion currently has no plans to deploy SMRs at Millstone as commercial viability remains years away.

The Council received a briefing from the NRC and FEMA on the recent NRC Commission vote that allows advanced reactors to be sited without an offsite Emergency Planning Zone (EPZ) (ie. A so-called fence line EPZ). New SMRs and advanced reactors take advantage of smaller reactor cores (less nuclear material) and passive safety features that delay releases to result in accident releases with smaller source terms (that is less radioactive material released). Offsite planning senior advisors from the NRC and

FEMA both emphasized that a fence line EPZ does not mean offsite emergency planning is not required. It only means that preplanned immediate actions such as planned evacuations are not required and that there is time for all-hazards planning to be used. However, offsite emergency planning needs for such things as assessment of radiation dose to the public, interdiction of food and water, and ability to measure radiation offsite may still be required and will need to be agreed to by offsite authorities and companies deploying new reactors. The Council noted that the current Connecticut law only allows deployment of new reactors at sites operating existing reactors which leverages the existing offsite planning relationships and infrastructure.

Connecticut Yankee

The Connecticut Yankee Atomic Power Company (CY) plant began commercial operation in 1968 and produced more than 110 billion kilowatt-hours of electricity during its 28-year operating history. In 1996, the CY Board of Directors voted to permanently close and decommission the power plant. After two years of planning and preparation, actual decommissioning began in 1998 and was completed in 2007. CY has operated the NRC licensed Independent Spent Fuel Storage Installation (ISFSI) at the Haddam Neck site since 2004. The spent nuclear fuel and GTCC waste at the ISFSI facility is stored in 43 dry casks containing dual purpose canisters licensed by the NRC for both storage and transportation. The NRC approved the NAC-MPC Dry Cask Storage System Certificate of Compliance (CofC) renewal in 2023. The U.S. Department of Energy remains obligated under the Nuclear Waste Policy Act and by contract with CY to remove and dispose of the spent nuclear fuel and high-level radioactive waste.

CY Site Update:

There were no ISFSI lost time accidents, OSHA recordable injuries, or first aid cases in 2023.

ISFSI concrete pad repair work was completed in 2023.

2023 Emergency Plan Exercise:

A CY emergency plan exercise was successfully held in 2023 including participation by state and local agencies.

NRC Inspections

The NRC performed the CY Security Inspection on September 13 and 14, 2023. The inspection involved three NRC Security Inspectors evaluating the security plan and process at the facility. The inspection examined activities conducted under the CY license related to security and compliance with the Commission's rules and regulations and with the conditions of the site license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel. Based on the results of the inspection, no findings or violations were identified.

Decommissioning:

Millstone - No significant decommissioning activities were conducted at the unit during 2023.

Connecticut Yankee – Normal operations, no regulatory findings were identified during 2023.

High Level Nuclear Waste:

Department of Energy

The US Department of Energy (DOE) continues to focus on their consent-based siting process for a federal consolidated interim storage facility as directed by Congress.

During the Decommissioning Plant Coalition's (DPC) annual meeting in Washington, DC in November, the DPC met with Paul Murray, the Deputy Assistant Secretary for spent fuel and waste disposition. Mr. Murray reported that DOE is making efforts to restart an integrated SNF management program that includes a national repository – but currently only has limited direction and funding from Congress – so in the next year will focus on projects to garner public confidence in the DOE regarding the safe transportation of SNF. Mr. Murray also outlined several efforts for implementation to build that confidence, such as conducting a demonstration transportation project using the recently approved Atlas rail car as well as performing transport canister integrity tests involving a cask drop, fire, submersion, etc. These efforts will require appropriations funding and it is not expected that funding will be available in the FY 2024 Appropriations package.

Congress

FY 2023 Funding Bills

In November the President signed a Continuing Resolution that funds some government agencies until January 19th and some until February 2nd.

The House FY 2024 Energy & Water Development Appropriations bill includes a prohibition on the use of federal monies for private Consolidated Interim Storage (CIS) entities until such time that both the host state and local governments as well as any affected Indian tribes have formalized their consent.

The Senate has authorization for pilot CIS focusing on stranded fuel. The House-Senate conference for these two bills will have to resolve the prohibition in the House bill and pilot provision in the Senate bill. This could include removing the language from both bills – which is what occurred in last year's fiscal year bill.

Nuclear Regulatory Commission

Decommissioning Rulemaking

The NRC staff expects to provide the final Decommissioning Rulemaking to the Commission in the first quarter of 2024 with the Agency expecting to publish it before the end of the year.

Private Consolidated Interim Storage Facility (CIS) Status

The NRC licensed Holtec New Mexico and Texas Interim Storage Partners NRC CIS facilities remain subject to ongoing litigation and strong state political opposition.

The Texas CIS facility remains in litigation where Texas has challenged the NRC license to Interim Storage Partners (ISP). A three-judge panel of the Fifth Circuit ruled last year that the NRC lacks the statutory authority to grant licenses to private entities for the storage of used fuel at reactor sites and vacated the ISP license. This decision is at variance with two other appellate courts (the DC and tenth Circuits) who have previously upheld the NRC's licensing action.

On October 24th, the Department of Justice and NRC in a joint motion and separately Interim Storage Partners, requested a full circuit court (en banc) review of the panel's ruling. The Nuclear Energy Institute and HOLTEC subsequently filed supportive amicus briefs. On 12/11/23 Texas and Fasken Land filed oppositions to the petitions for rehearing en banc. There is no time limit on the court's response to these motions.

Petitioner challenges to the NRC's grant of a CIS facility license to Holtec for its proposed New Mexico facility continue in the DC Circuit Court of Appeals. Additional challenges to the original complaints, rooted in NRC internal procedures have raised the issues that were crystalized by the Fifth Circuit panel decision in the ISP case. All briefs have been filed supporting and opposing those challenges and we await a decision by the panel.

Litigation over the legitimacy of both licenses is likely to consume much of this year and might well require action by the Supreme Court.

Fusion Energy

On April 14, 2023, the Nuclear Regulatory Commission directed NRC staff to create a regulatory framework for fusion energy systems, building on the agency's existing process for licensing the use of byproduct materials. "Dozens of companies are developing pilot-scale commercial fusion designs, and while the technology's precise future in the United States is uncertain, the agency should provide as much regulatory certainty as possible given what we know today," said NRC Chair Christopher T. Hanson. "Licensing near-term fusion energy systems under a byproduct material framework will protect public health and safety with a technology-neutral, scalable regulatory approach."

NRC staff will begin a limited revision to materials licensing regulations, including consideration of whether the revision should create a new rule category specifically for fusion energy systems. The

Commission also directed the staff to take several related actions, including expanding materials license guidance to cover fusion systems nationwide.

Fusion systems would generate electricity from the energy released when hydrogen atoms are combined to form helium; current nuclear reactors use the splitting, or fission, of uranium atoms. The staff had earlier determined fusion systems fall outside of the requirements to be regulated as nuclear reactors.

Council Activities in 2023

As required by CGS16-11a (PA 96-245) as amended, the Council held four public meetings. The purpose of these meetings was to provide a venue for discussion of issues relating to the safe operation of the state's nuclear power plants. Detailed meeting minutes are included in Appendix 2.

- March 16, 2023 (Waterford Town Hall): This was a joint meeting with the NRC Region I staff and focused on the Annual Assessment Report of Millstone Power Station Units 2 and 3 for the four quarters of calendar year 2022 by US Nuclear Regulatory Commission (NRC): Matt Young, Chief, Projects Branch 2, Division of Operating Reactor Safety; E. Bousquet, Resident Inspector; E. Allen, Resident Inspector; J. DeBoer, Senior Project Engineer; S. Elkhiamy, Senior Project Engineer. The NRC reported that both Millstone Units 2 and 3 were operated in a manner that preserved public health and safety and fully met NRC cornerstone objectives.
- September 13, 2023 (Waterford Town Hall): Todd Smith, PhD, Senior Level Advisor for Emergency Preparedness and Incident Response in the Office of Nuclear Security and Incident Response (US Nuclear Regulatory Commission (NRC)) and CAPT Janis McCarroll, P.E., USPHS, Senior Policy Advisor for the Technological Hazards Division (FEMA) provided the Council with a briefing on Emergency Planning requirements for advanced reactors. These senior staff from the NRC and FEMA provided a brief overview of the changing landscape of nuclear power and actions being taken at the federal level to ensure the safe use of advanced nuclear technologies and adequate radiological emergency preparedness for the whole community.
- October 5, 2023 (Waterford Town Hall): Dominion Nuclear Energy Inc. representatives Ms. Lori Armstrong, Director of Nuclear Safety and Licensing (DNSL), Mr. Guy Blackburn, Plant Manager, and Ms. Susan Adams, State Policy Director for New England provided an update of activities at Millstone Power Station.
- December 14, 2023 (Waterford Town Hall): The Council discussed trends and observations for preparing the 2023 annual report.

Millstone 1 Decommissioning Advisory Committee (M1DAC): Since Millstone 1 remains in Safe Storage (SAFSTORE) and no significant activities were conducted at the Unit during the past calendar year, M1DAC did not meet in CY2023.

FSAC Meeting:

The CY Fuel Storage Advisory Committee meeting was held on May 10, 2023. Two members of the Council, Mr. Craig Salonia and Dr. James Sherrard attended.

Recommendations

State

1. DEMHS and DEEP should continue to address any emergency preparedness issues at Connecticut's nuclear sites.
2. DEEP, in conjunction with Connecticut State Police should continue to address any security issues at Connecticut's nuclear sites.
3. DEEP should continue radiological and environmental monitoring of Connecticut's nuclear sites.
4. DEEP should dedicate sufficient resources to the review of Millstone's application for renewal of its National Pollutant Discharge Elimination System (NPDES) permit to ensure a timely determination decision
5. The Governor, General Assembly, DEEP, and the Council should continue to insist that the NRC continue vigilant oversight of Connecticut Yankee and Millstone Power Station sites for as long as high-level nuclear waste remains on site.
6. The Governor, General Assembly, and DEEP should encourage the federal government to develop a solution to the spent fuel storage. Specifically, The Governor, General Assembly and DEEP should endorse a nuclear waste strategy that includes consent based consolidated interim storage that gives priority to removal of waste from permanently shutdown reactors.
7. Elected officials should work with the Council to make appointments necessary to fill vacant Council positions.

The Council

1. Continue to monitor the stability of the Employee Concern Program and Safety Conscious Work Environment and Corrective Action Program at Millstone Power Station.
2. Continue to monitor operations and activities at Millstone Power Station and Connecticut Yankee Site, including the dry cask storage programs.
3. Continue to encourage the development of a solution to the problem of Spent Nuclear Fuel, High Level Waste and Greater Than Class C Low-Level Radioactive Waste and the safe transfer of this nuclear waste from Connecticut. Including the establishment of a consent based consolidated interim storage that gives priority to removal of SNF and GTCC waste from permanently shutdown and operating reactor sites and transfers title of SNF to DOE upon receipt.
4. The Council should facilitate an effective interface for the industry and the public as a forum to discuss safety and environmental costs and benefits of extending the existing nuclear fleet and deployment of new nuclear reactors in the state.
5. The Council should monitor actual and proposed changes to the Millstone emergency plan and as well as implementation of these changes to ensure effective regional preparedness.

Conclusions

Dominion continues to safely operate the nuclear plants at Millstone Power Station. Spent nuclear fuel is safely stored and monitored in wet and dry storage at Millstone Power Station and in ISFSI at Connecticut Yankee. NRC and DEEP oversight provide effective oversight of activities. All oversight entities and stakeholders must continue vigilant oversight of Connecticut Yankee and Millstone Power Station sites for as long as high-level nuclear waste remains on site.

Appendix 1 Nuclear Energy Advisory Council Membership

Chair, Representative Kevin Ryan Oakdale: OD, Pennsylvania College of Optometry. State Representative serving the towns of Bozrah, Montville and Norwich in the 139th House District, Adjunct Faculty, University of New Haven.

Arnold “Skip” Jordan. Noank: BSME, Maine Maritime Academy; MBA, Boston University. Retired, former Vice President Dominion Support Services and Site Vice President Millstone Station. Former Reactor Operator at Millstone Unit 2.

John McGunnigle East Lyme: BS, Computer Science, US Naval Academy; MS Operations Research, US Naval Postgraduate School; former Commanding Officer, Nuclear Powered Submarine; Former Submarine Squadron Commander; Navy Captain.

Senator Catherine Osten Sprague: Mohegan Community College; State Senator and Deputy President Pro Tempore representing the residents of the 19th state Senatorial District communities of Columbia, Franklin, Hebron, Lebanon, Ledyard, Lisbon, Marlborough, Montville, Norwich, and Sprague

Craig Salonia Haddam: BS in Medical Technology from Northeastern University. Account manager and trainer for GE Health care Life Sciences division.

Deputy Chair, Jeffrey Semancik Groton: BS Physics, US Naval Academy. MS, Electrical Engineering, RPI. MBA UCONN. Former qualified engineer, nuclear powered aircraft carrier. Former Senior Reactor Operator at Millstone Unit 3. Director, Radiation Division, Department of Energy and Environmental Protection representing Commissioner Dykes.

John W. (Bill) Sheehan Waterford: BS, Naval Science, US Naval Academy; MBA, Rensselaer Polytechnic Institute; former Commanding Officer, Nuclear powered submarine.; retired Navy Captain

James Sherrard Mystic: PhD Nuc. & Mech Eng. MIT/UCONN. Chairman, Nuclear Engineering Technology Department, Three Rivers Community College.

Raymond D. Woolrich Waterford: BS, Nuclear Science, US Naval Academy; MS Computer Systems and Financial Management, US Naval Postgraduate School; former Commanding Officer, Nuclear Powered Submarine; retired Navy Captain; Naval Analyst, Sonalysts, Inc.

Appendix 2 Nuclear Energy Advisory Council Meeting Minutes

NUCLEAR ENERGY ADVISORY COUNCIL
March 16, 2023 6:30 PM
Waterford Town Hall

MINUTES

Members Present

Rep Kevin Ryan, Chair

Alternate Chair Mr. Jeffrey Semancik representing DEEP Commissioner Dykes

Mr. James Sherrard

Mr. R. Woolrich

Mr. Bill Sheehan

Sen Cathy Osten

Members not present:

Mr. A. Jordan

Mr. John McGunnigle

Mr. Craig Salonia

1. Call to Order of Meeting

The Council's Chair called the meeting to order at 6:30.

2. Approval of Minutes of the December 15, 2022 NEAC meeting.

A motion was made to approve the minutes was made by Mr. Woolrich and seconded by Mr. Sherrard. Minutes were approved without objection.

3. NRC Reactor Oversight Program/Millstone End of Cycle Report – Briefing on Millstone Power Station Annual Assessment by US Nuclear Regulatory Commission (NRC): Matt Young, Chief, Projects Branch 2, Division of Operating Reactor Safety; E. Bousquet, Resident Inspector; E. Allen, Resident Inspector; J. DeBoer, Senior Project Engineer; S. Elkhiamy, Senior Project Engineer.

- a. Mr. Young introduced himself and discussed his experience. He noted that the NRC has three fulltime resident inspectors (RIs) with unfettered access to all areas of Millstone Power Station. These RI's conduct the baseline inspections and supplements them with technical specialists from the Region 1 office in King of Prussia, PA and from NRC Headquarters in White Flint, MD.
- b. Resident Inspectors (RIs) Mr. Allen and Mr. Bosquet introduced themselves and stated their experience and education. Mr. Allen noted that the Senior Resident Inspector was not able to attend the meeting due to a schedule conflict.
- c. Mr. Allen briefed the Council on overall NRC assessment of performance related to Dominion Energy's operation of Millstone in 2022. He stated that Millstone continues to operate safely and securely, protect public health and safety, and protect the environment. The NRC conducted over 9,054 hours of inspections of Millstone in 2022. Based upon NRC's assessment, both Millstone Units 2 and 3

remain in the Licensee Response Column of the Regulatory Response Matrix (the highest level of performance) and will therefore remain under baseline inspection. All NRC performance indicators (PIs) are Green. The NRC has not identified any cross-cutting issues. The NRC identified ten inspection findings. Two were evaluated under the traditional enforcement program and determined to be severity level IV violations.

- d. Mr. Allen discussed the Reactor Oversight Program including a discussion on the action matrix. Mr. Allen noted that both Millstone Units remain in the Licensee Response column. Nationally 87 operating reactors are in the Licensee Response Column and 6 are in the Regulatory Response Column.
- e. Mr. Allen discussed how the significance determination process is used to evaluate the risk significance of findings which are reflected in the color from Green to Red. He noted that nationally there were 381 Green findings, 1 greater than green finding and 6 white findings collectively at the 93 operating reactors in 2022. He also noted that collectively all 6247 of the performance indicators at the 93 reactors were all Green.
- f. Mr. Allen stated the NRC has no Safety Conscious Work Environment (SCWE) concerns for 2022 at Millstone. The NRC assesses safety culture as part of Problem Identification and Resolution (PI&R) inspections. In the 2022 PI&R inspection the NRC inspection team determined Dominion's corrective action (CA) process was effective and that there were no challenges to SCWE with Millstone staff willing to raise concerns. There were three allegations in 2022 which is not excessive when compared to the industry average. NRC RI's remain available and accessible to all staff working at Millstone.
- g. Mr. Allen discussed NRC actions in response to the COVID-19 public health emergency (PHE). NRC learned that RI's could monitor the plants using technology. Mr. Woolrich asked how they could do that from home. Mr. Allen responded that the RI's have remote connection access to the same Plant Process Computer as the operators in the control room and can monitor the same parameters. RI's have also been given access to the Dominion databases for corrective actions and work control used by the plant. During 2021, the SRI and RI's rotated so as to ensure one NRC inspector was on site at a time. Now they have a dedicated continuity of operations plan that integrates technology with on site time focused on the most risk significant components at the plants.
 - i. Mr. Semancik noted the NRC has always placed great emphasis on licensed operators and asked how the NRC is monitoring licensed operator performance and standards. Mr. Allen noted that although during 2021 with higher transmission rates they used a hybrid approach to minimize the risk of infecting the operators while monitoring risk significant activities, the NRC is back to full baseline inspections including monitoring operator activities in the plant. RI's walkdown safety significant areas of the plant on a daily basis.

- ii. Mr. Young also noted that NRC inspection procedures require RI's spend a minimum of 4 hours per calendar quarter directly observing activities in the control room and that other offsite inspectors also observe more activities.
4. **Public Comment.** There were four members of the public present. Mr. Young asked if any members had any questions or comments.
- a. Ms. Nancy Burton had several questions for the NRC. Ms. Burton asked what the community lost out on during COVID. Specifically, she asked if the required environmental monitoring was performed and whether anything unusual was identified. Mr. Allen responded that Dominion maintained the staffing to complete required environmental monitoring. He noted that experts from regional offices inspect the environmental monitoring program annually. He stated that it was his opinion that Dominion fully met all monitoring requirements. Ms. Burton asked why information was missing from the website. Mr. Young responded that as part of the environmental monitoring program, Dominion must submit its report annually. He noted that the 2022 report and data is expected to be submitted in April and that all the reports are publicly available on the NRC website.^{1, 2}
 - b. Ms. Burton asked if a list of the Council members was available to the public. Mr. Semancik noted that the list of members is included as Appendix I to the NEAC 2022 Annual Report which is publicly available on the DEEP website.³
5. **Questions from the Council**
- a. Mr. Sheehan asked what mechanism Dominion uses to ensure employees can express their frustrations and raise safety concerns. Mr. Allen stated that everyone on site gets training on how to raise safety concerns. The preferred path is through their supervisor but they can also report their concerns through the Dominion Employee Concerns Program (ECP) coordinator or can go directly to the NRC. Mr. Sheehan recalled that Dominion moved the ECP program to corporate in Richmond and asked if employees still have a place on site to voice concerns. Mr. Young responded that Dominion maintains an ECP contact on site that is available to employees. He reiterated that the NRC has assessed the station as a having a healthy safety culture.
 - b. Mr. Sheehan asked about the corrective action backlog especially in light of supply chain issues related to the PHE. He asked if corrective actions are being addressed in a timely fashion or are they languishing in a backlog. Mr. Allen replied that most corrective actions are completed in 1 to 2 weeks. He also

¹ <https://www.nrc.gov/reactors/operating/ops-experience/tritium/plant-specific-reports/mill2-3.html>

² DEEP's independent environmental data is also publicly available and can be accessed from <https://portal.ct.gov/DEEP/Radiation/Millstone-Nuclear-Power-Plant>

³ <https://portal.ct.gov/DEEP/Radiation/Nuclear-Topics>

noted that many equipment issues require a plant shutdown to fix and that these are scheduled for refueling and maintenance outages.

- c. Mr. Sheehan noted that license extension has been approved for Millstone and further license extension is currently being considered in the industry. He also stated that further analysis demonstrating adequate safety margin of reactor vessels to the effects of neutron embrittlement was likely to be a limiting factor. He asked if the NRC keeps track of commitments associated with the period of extended operations⁴. Mr. Allen noted the NRC now has an inspection for aging management⁵ and noted that he recently watched Dominion repair a concrete crack that maintenance personnel had identified in an aging management activity. He further noted that Millstone Unit 2 is in its 20 year license extension period but that Unit 3 is still within its originally licensed period. He stated that NRC assesses the Millstone aging management program to be acceptable and robust.
- d. Mr. Woolrich noted recent reports that Dominion is considering integrating a data center on site. He asked if the NRC has a position on that. Mr. Allen responded that the NRC has not seen an application for modifying the plant to incorporate a data center yet, but that the NRC would evaluate any such proposal for impact on public safety including a public comment period. Mr. Young noted that other nuclear power plants have sited data centers on site. For such applications, he stated the NRC ensures that it does not adversely affect the plant or present an increase to the risk of a loss of offsite power. Mr. Semancik noted that licensees have the ability to change a plant design without prior NRC approval if they evaluate that the proposed change does not represent a new failure or present a significant reduction in safety margin. He asked if a data center might fall under this provision and not require prior NRC review and approval nor public comment period. Mr. Young states that 10 CFR 50.59 does allow the licensee to make changes to the plant without prior NRC approval. In these cases, the NRC would conduct inspections to verify that design and the associated safety evaluation meet all requirements.
 - i. Senator Osten noted that entity that approached Dominion about siting a data center has tried to site them in other locations and has not yet been successful. She cautioned against assuming he would be successful at Millstone.
- e. Mr. Semancik noted that every performance indicator at every site in the country was Green in 2022 and questioned how good the indicators were if none ever exceeded green. Mr. Allen responded that the reactor oversight program is

⁴ The Atomic Energy Act authorizes the NRC to issue licenses for commercial power reactors to operate for up to 40 years. These licenses can be renewed for an additional 20 years at a time. The time beyond 40 years is known as the "period of extended operation."

⁵ "Aging management" is the term used by the NRC to describe the licensee program required by 10 CFR §54.21(a)(1)(i) and (ii) to demonstrate the company is adequately managing the effects of aging of the plant systems, structures, and components during the period of extended operation.

a mature program with 20 years of operating experience that focuses on risk significant equipment. Mr. Young added that NRC management also noticed this fact and couldn't explain why. However, he noted that plant performance across the nation was reflective of this with low numbers of complicated and unplanned scrams.

- f. Mr. Semancik noted that Millstone was unique in having a railroad track that goes through a portion of the owner controlled area. In light of the train derailment and chemical release that occurred in East Palestine, Ohio, how does the NRC review potential impacts of a train derailment to Millstone? Mr. Young responded that as part of the original licensing, the NRC reviewed the potential impact of train accidents as a hazard that could affect the station. They ensured the licensee had appropriate processes, plans, and procedures in place to protect the workers (including licensed operators) needed to assure plant safety. They also review impacts to evacuations and offsite response. Mr. Semancik asked if there were any periodic reviews of the what might be shipped by rail to ensure this analysis remains bounding. Mr. Young said there was no periodic review, but that the station has emergency preparedness and operating procedures necessary to take appropriate actions to ensure public protection.
 - g. Mr. Woolrich noted that there was no media present and challenged to Council to ask local media why they no longer cover Council meetings.
6. **Additional Public Comment.** Mr. Young asked if there were further questions from the public.
- a. Ms. Burton said she was not aware that ECP had moved to Virginia and asked for clarification about the presence of staff on site to address safety allegations. Mr. Allen responded that although ECP has a smaller footprint on site than in the past, Dominion maintains an ECP coordinator in site. He also reiterated that employees can report allegations to the NRC RI's on site.
 - b. Ms. Burton asked if there was somebody who keeps track of commitments made as part of the life extension license amendment. Mr. Young replied that in order for a plant to be granted a license extension beyond its original 40-year license period, the Aging Management Program is reviewed and approved by the NRC. While the NRC reviews and approves the program, Dominion maintains the documentation and tracks the commitments. The NRC then conducts license renewal inspections to verify the licensee is completing its commitments. The results of these inspections are publicly available in the inspection reports.
 - c. Ms. Burton asked about any changes in fish populations around Millstone. Mr. Allen responded that Dominion will update its radiological effluent report at the end of April.
 - d. Ms. Burton asked for more information about the concrete crack mentioned by Mr. Allen. Specifically, she wanted to know where the crack was, how big was it, and what was the cause. Mr. Young responded that the crack was repaired by the licensee before it reached a threshold that would adversely affect any

structure and that it was repaired proactively. Typically, such cracks are caused by shifting ground and that the program is designed to identify and repair these types of cracks.

- e. Ms. Burton asked to follow up on the issue with train tracks near the station and asked for clarification whether NRC had a program to identify materials transported by rail on this line. Mr. Young replied that in the original analysis of the plant, the NRC reviews a worst case scenario and ensures the licensee has necessary plant and emergency procedures to handle this worst case.
- f. Ms. Burton asked if there was any progress of Company towards closed cooling water systems. Mr. Allen stated there is no current application to the NRC to modify the plant to change to closed cooling water. Mr. Young added that the NRC only reviews the plant design as built or submitted.

7. NEAC Business

a. **NRC Correspondence Reviewed since past meeting.**

The following NRC Correspondence was reviewed by the Council:

- i. Request For Withholding Information from Public Disclosure for Dominion Fleet - Response to Request for Additional Information Regarding NRC Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors" (EPID L-2017-LRC-0000 dated December 21, 2022
- ii. Millstone Power Station, Units 2 and 3 – Security Baseline Inspection Report 05000336/2022401 and 05000423/2022401 and Preliminary Finding(S) of Greater than Very Low Significance and Apparent Violation(S) dated January 26, 2023.
 - 1. DEEP Radiation Division staff reviewed the security related information concerning these findings and details of the issues. DEEP staff met with the NRC security inspectors during their inspection to discuss all potential findings and with Dominion Security staff to review the specific findings including a walkdown at the site. DEEP reviewed the OUO (Official Use Only) version of the notice of violation. Based upon this review, DEEP concluded that Dominion has taken appropriate and adequate compensatory and corrective actions to eliminate any potential vulnerabilities and ensure the security of the station. The NRC has done a thorough job in their inspection, and Dominion has responded appropriately. There is no existing threat to station security or the health and safety of the public.

- iii. Annual Assessment Letter for Millstone Power Station, Units 2 and 3 (REPORTS 05000336/2022006 and 05000423/2022006) dated March 1, 2023.

b. Other Correspondence Reviewed since past meeting.

The following other Correspondence was reviewed by the Council.

- i. CTInsider article, “The changing face of nuclear power: New tech could lead to an energy renaissance” dated February 22, 2023
- ii. Connecticut General Assembly raised bills:
 - 1. S.B. No. 1170 (RAISED) An Act Concerning the Procurement of Zero-Carbon Resources from Eligible Nuclear Power Generating Facilities.
 - 2. S.B. No. 1101 (RAISED) An Act Concerning Revisions to the Nuclear Moratorium Statute.
 - 3. S.B. No. 1099 (RAISED) An Act Creating a Connecticut Nuclear Advisory Council
- iii. Arkansas House Bill 1142, An Act to Create the Arkansas Nuclear Recycling Program.

c. Future Council Meetings.

- i. June 15, 2023 – Public Forum on Deployment of Additional Reactors at Millstone (proposed)
 - 1. Mr. Semancik will explore potential presenters.
 - 2. Sen Osten recommended more advance outreach to bolster public engagement.
- ii. September 21, 2023 – Millstone Operations Update (Dominion Presentation)
- iii. December 14, 2023 – Annual Report Writing Meeting

8. Adjournment

Motion was made by Mr. Sheehan and seconded by Mr. Sherrard to adjourn; no objections; unanimous vote in favor; meeting adjourned at 8:02 PM.



Millstone Units 2 & 3

Annual Assessment Meeting for 2022

Reactor Oversight Process

**Nuclear Regulatory Commission
Region I**

March 16, 2023





Agenda

- **Opening Remarks – Matt Young**
- **2022 Millstone ROP Assessment Summary – Eben Allen**
- **COVID–19 Response Update – Eben Allen**
- **Q&A – Matt Young**





Overall Assessment

**Millstone Units 2 and 3 operated safely in 2022
and continue to do so today**





Inspection and Oversight

- **Three full-time residents assigned to Millstone**



Justin Fuller
Senior Resident



Eben Allen
Resident Inspector



Earl Bousquet
Resident Inspector

- **Inspectors have unfettered access to all areas of the site**
- **Technical specialists conduct additional inspections**

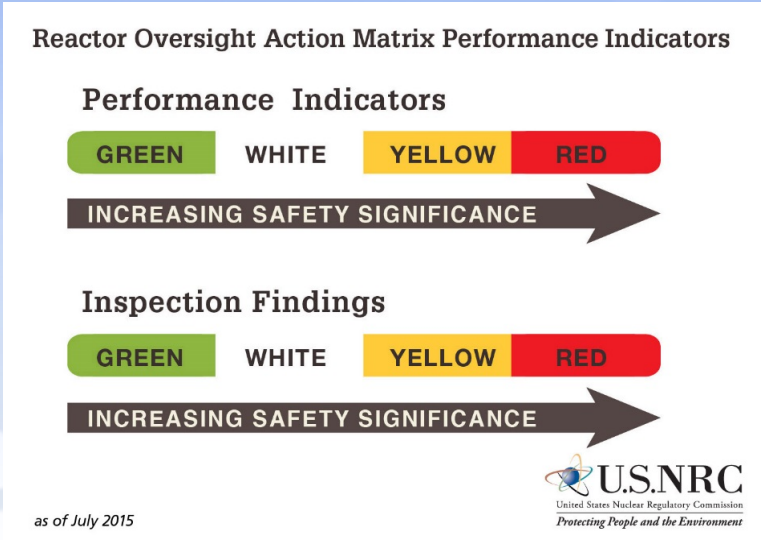
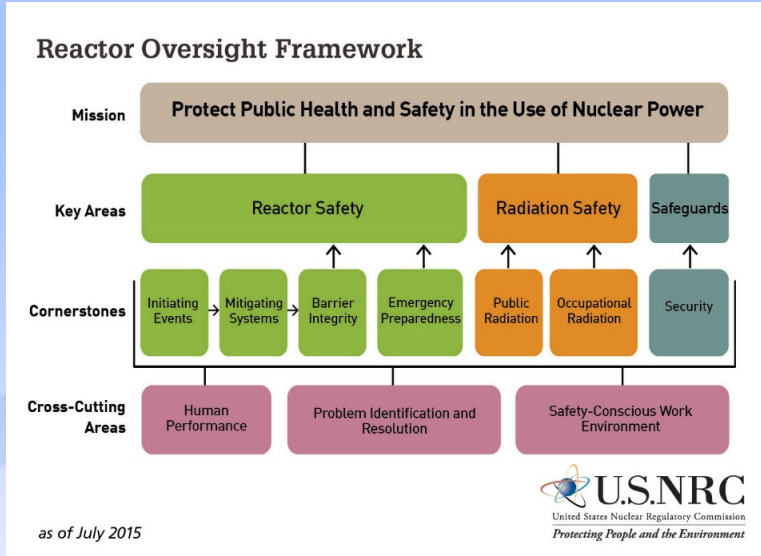


Millstone Units 2 & 3 2022 Assessment Summary

- **Operated safely and in a manner that preserved the public health and safety and protected the environment**
- **Licensee Response Column**
- **9054 hours of inspection and related activities**
- **Green Performance Indicators**
- **10 Green Findings and 2 Severity Level IV violations**
- **1 Apparent Violation – Significance not finalized in Security Cornerstone**



Reactor Oversight Process





Action Matrix Concept

Licensee Response	Regulatory Response	Degraded Performance	Multiple/Repetitive Degraded Cornerstone	Unacceptable Performance
--------------------------	----------------------------	-----------------------------	---	---------------------------------



Increasing Safety Significance

Increasing NRC Inspection Efforts

Increasing NRC/Licensee Management Involvement

Increasing Regulatory Actions



National Summary of Plant Performance

Status as of 12/31/2022

Licensee Response	87
Regulatory Response	6
Degraded Cornerstone	0
Multiple/Repetitive Degraded Cornerstone	0
Unacceptable Performance	0
IMC 0350 Oversight	0
Total	93



National Summary

- **Performance Indicator Results for 2022***

– Green	6247
– White	0
– Yellow	0
– Red	0

*PIs are counted per plant per quarter

- **Total Inspection Findings in 2022#**

– Green	381
– Greater-than-Green	1
– White	6
– Yellow	0
– Red	0

Finding data current as of 2/24/2023



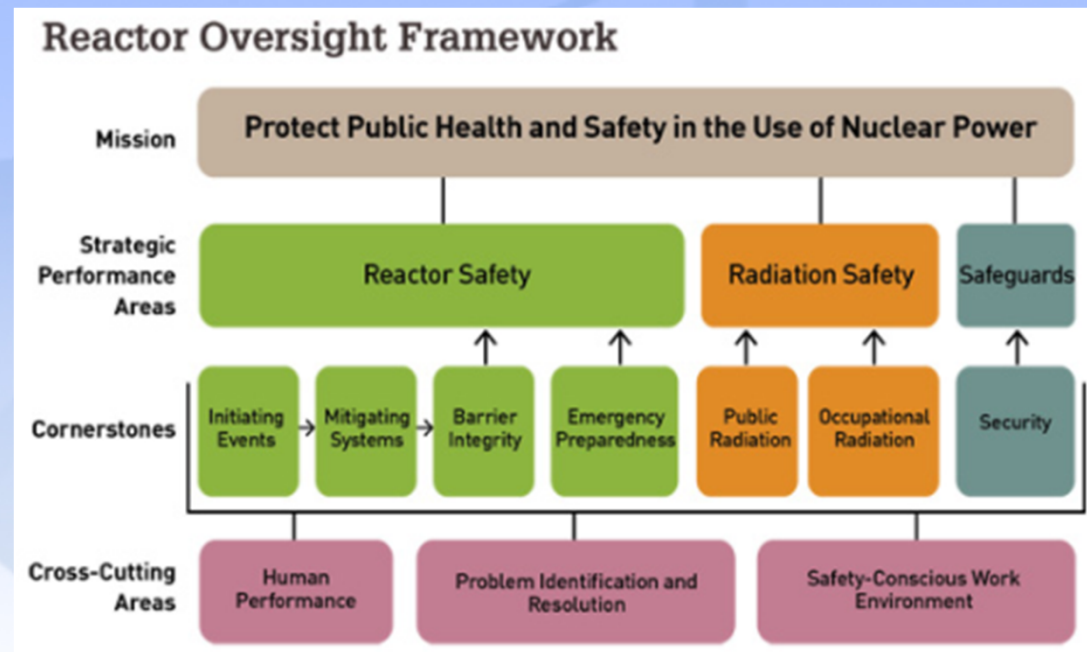
Safety Conscious Work Environment (SCWE)

SCWE

- No SCWE concerns
- The last PI&R was September 2022

Allegations

- 3 allegations in 2022
- Resident inspectors and regional staff are highly accessible and take all allegation matters seriously





NRC Actions in Response to COVID-19

- **Monitored plant activities through inspections and oversight**
- **Maintained emergency response capabilities within Regional Incident Response Centers and our headquarters Operations Center**





NRC Response to COVID-19

- **Additional Actions:**
 - Expanded use of telework where appropriate
 - Dedicated Continuity of Operations Plan
 - Coordinating actions with industry on best practices to minimize impacts
 - Risk-informing “eyes-on” inspections through residents’ and regional inspections



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NRC Social Media Channels

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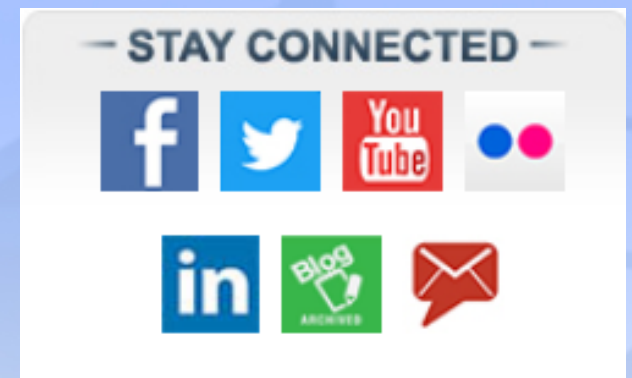
www.flickr.com/photos/nrcgov/

LinkedIn

www.linkedin.com/company/u-s--nuclear-regulatory-commission/

RSS

www.nrc.gov/public-involve/listserver.html#rss





Annual Assessment Meeting Feedback

NRC FORM 659 U.S. NUCLEAR REGULATORY COMMISSION **APPROVED BY OMB: NO. 3150-0217** **EXPIRES: 02/28/2026**
02-21-2023

NRC PUBLIC MEETING FEEDBACK

Estimated burden per response to comply with this voluntary information request: 15 minutes. The information will be used to assess the effectiveness of NRC staff communications and outreach with the public. Feedback concerning the website is the Data, Library, and Information Collection Branch (DILIB), U.S. Nuclear Regulatory Commission, Washington, DC 20545-0001, via email to: lib@nrc.gov and the OMB reviewer at: OMB Office of Information and Regulatory Affairs (OIR-0217), Attn: Desk Officer for the Nuclear Regulatory Commission, 1215 21st Street NW, Washington, DC 20037, email: omb.info@omb.eop.gov. The NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

Meeting Date: 03/16/2023 Meeting Title: Milestone Annual Assessment Meeting 2022

Thank you for attending this public meeting hosted by the NRC. In order to help us understand your views about this meeting and improve future meetings, please take a couple minutes to answer the questions below.

There are several ways you can provide your feedback:

- 1) Scanning the Quick Response (QR) Code on the back of this form with your smartphone to link directly to our feedback page. If you do not have a QR reader on your mobile device, you can use your App store to access available QR scanning applications suitable for your device.
- 2) Through any computer by going to the [Public Meeting Schedule](#) and pressing the "Meeting Feedback" link for the specific meeting, or pressing the "[...more]" link for a specific meeting and then pressing the "Meeting Feedback" link on the "Meeting Details" page.
- 3) By filling out this hard copy of our "Public Meeting Feedback Form" and providing it to an NRC staff member or mailing it in.

Please fold on the dotted lines with **Business Reply** side out, tape the bottom, and mail back to the NRC.

Note: You have up to 30 days after the meeting has ended to submit feedback on the public meeting that you've attended. Thank you again for your participation.

Please address the following statements in terms of your experience at the meeting. 1 is "strongly disagree" and 5 is "strongly agree."

	STRONGLY DISAGREE	DISAGREE	NEUTRAL (NEITHER DISAGREE NOR AGREE)	AGREE	STRONGLY AGREE
1. The meeting achieved its stated purpose.	1	2	3	4	5
2. This meeting helped me to understand the topics discussed.	1	2	3	4	5
3. The meeting location, format, starting time, and duration were reasonably convenient.	1	2	3	4	5
4. The meeting facility, room set up, microphones, and visuals used contributed to the success of the meeting.	1	2	3	4	5
5. Attendees, including those participating remotely, were given sufficient opportunity to ask questions or express their views.	1	2	3	4	5
6. Attendees were listened to and understood by NRC staff.	1	2	3	4	5
7. The presentations and explanations given by the NRC staff were understandable, fair and balanced.	1	2	3	4	5
8. I am satisfied overall with the NRC staff who participated in the meeting.	1	2	3	4	5

OPTIONAL

Name: _____ Organization: _____

Telephone No. _____ E-Mail: _____ Check here if you would like a member of NRC staff to contact you.

NRC FORM 659 (02-21-2023)



Submit feedback: Through any computer by going to the Public Meeting Schedule and pressing the "Meeting Feedback" link for this meeting, or pressing the "[...more]" link for this meeting and then pressing the "Meeting Feedback" link on the "Meeting Details" page.

Meeting number: 20230220



Questions and Answers





This ends the Meeting

Thank You for Attending

NUCLEAR ENERGY ADVISORY COUNCIL
September 13, 2023 7:00 PM
Waterford Town Hall

MINUTES

Members Present

Rep Kevin Ryan, Chair

Alternate Chair Mr. Jeffrey Semancik representing DEEP Commissioner Dykes

Mr. James Sherrard

Mr. R. Woolrich

Mr. John McGunnigle

Mr. Craig Salonia

Sen Cathy Osten

Members not present:

Mr. A. Jordan

Mr. Bill Sheehan

1. Call to Order of Meeting

The Council's Chair called the meeting to order at 7:00 PM.

2. Special Presentation on Emergency Planning for Advanced Reactors – Todd Smith, PhD,

Senior Level Advisor for Emergency Preparedness and Incident Response in the Office of Nuclear Security and Incident Response (US Nuclear Regulatory Commission (NRC)) and CAPT Janis McCarroll, P.E., USPHS, Senior Policy Advisor for the Technological Hazards Division (FEMA) provided the Council with a briefing on Emergency Planning requirements for advanced reactors. These senior staff from the NRC and FEMA provided a brief overview of the changing landscape of nuclear power and actions being taken at the federal level to ensure the safe use of advanced nuclear technologies and adequate radiological emergency preparedness for the whole community.

- a. NRC and FEMA work together with state, local, tribal, and territorial governments to ensure that adequate capabilities are in place for responding to radiological emergencies at nuclear power plants. The radiological emergency preparedness programs around commercial nuclear power plants, like Millstone, have served the nation well for decades and provide a framework to build upon for community preparedness. The future of nuclear power in our nation is going to look different from the large light water reactor technologies of the past. Advanced safety technologies are being incorporated into the designs for small modular reactors, microreactors, and other new technologies that will be deployed to help meet our need for clean energy and nuclear medicine.
- b. NRC emergency planning (EP) requirements are risk informed vice risk based. Risk based would be quantitative. Using a risk informed approach, EP provides

an additional level of defense-in-depth to ensure health and safety of public in even if other safety systems and protocols fail.

- c. In addition, analysis of the response to Fukushima demonstrated that unwarranted public protective actions can result in more harm than good. As a result, the EP requirements for advanced reactors provide a method for vendors to use risk-informed, consequence-oriented approach. The rule is written to be technology inclusive and less prescriptive focusing on “what’ needs to be done vice “how” to do it. The rules are also performance based and focus on demonstrated performance of capabilities. Licensees will use performance metrics to identify areas that need improvement so they can focus their resources in these areas and achieve sustained performance.
- d. Dr. Smith noted that the Emergency Planning Zone (EPZ) should not be confused with EP. The EPZ is an area where pre-determined, prompt protective actions can be taken. EP represents all of the capabilities required in the event of an emergency. A large EPZ is required for existing large Light Water Reactors (LWRs) because initial studies showed action may be required in as little as 30 minutes. An EPZ has two criteria, - a form identifying at what level action is required and a function specifying what prompt actions (such as evacuation) should be taken. The EPZ bounds an area, not the capabilities. NRC has licensed other reactors with less than a 10-mile EPZ such as Humboldt Bay which has a 5-mile EPZ. If the zone where prompt protective actions might be required goes beyond the site boundary, the FEMA is involved since there are more requirements involving offsite response organizations (OROs). The new EP rules still require coordination with OROs and training of responders as part of whole community approach.
- e. CAPT McCarroll noted that FEMA is capabilities focused within the all hazards framework.

3. Questions from the Council

- a. Mr. Sherard asked to define advanced nuclear and whether it included fusion. Dr. Smith stated small modular reactors are defined as less than 1000 MWe. He also stated that the NRC commissioners recently approved a rule to regulate fusion energy under material licensing rules vice as utilization facilities.
- b. Mr. Semancik asked to define the relationship between NRC and FEMA with respect to EP. Dr. Smith NRC has authority over licensees and FEMA provides assistance through a Memorandum of Understanding (MOU) for oversight and evaluation of state and local OROs. The NRC must make a determination of reasonable assurance in EP including determination that adequate protective measures can and will be taken. The NRC relies on FEMA’s input as part of their determination. He also noted that the recent rulemaking does not change the relationships of NRC, FEMA and OROs. CAPT McCarroll added that FEMA does not regulate the OROs but rather supports state and local OROs as well as industry partners.

- c. Mr. McGunnigle asked what will it look like to build preparedness standards across all hazards for communities that do not have an existing EP for LWRs. Dr. Smith answered that these communities will be able to build off of what we've learned to fundamentally determine what they need to be safe. CAPT McCarroll noted that every three years by law states must evaluate the threats and hazards in their area to determine how they will allocate their EP funding. She noted that advanced reactors, rather than having a dedicated funding source like large LWRs, will likely have to be evaluated within this framework.
 - d. Mr. Semancik asked if advanced reactors might require "reverse EP" where they rely on ORO's to provide capabilities that licensees of existing reactors provide themselves (for example, microreactors with minimal or no operators). Dr. Smith state in those instances licensees will have to have MOUs with OROs and provide necessary training and familiarity with site and required actions.
 - e. Mr. Woolrich asked if the NRC expects and SMRs to come online soon and if each vendor type as a standard EP package. Dr. Smith noted that the Carbon Free Power Project at Idaho National Laboratories is supposed to come on line by 2030 with SMRs. He also noted projects in Wyoming (Terrapower) and with the Air Force in Alaska (Project Pele) are working. He said each vendor has a standard design and produces a topical report discussing the EP.
 - f. Mr. McGunnigle asked if NRC had authority to regulate advanced reactors on tribal lands and if this would be a way for vendors to work around NRC regulations. Dr. Smith stated NRC did not have authority to regulate tribal nations. He will follow up on what the regulatory path would be for a proposed reactor on tribal lands.
 - g. Mr. Woolrich asked if FEMA is involved in exercises. FEMA stated they evaluate OROs for LWR exercises but also participate in these exercises at the state emergency operations center as well as some national level exercises, the next full national exercise will be Cobalt Magnet in Michigan in 2025.
4. **Public Comment.**
- a. There were 5 members of the public present.
 - b. There were no comments from the public.
5. **Adjournment**
Meeting adjourned at 8:41 PM.

Emergency Preparedness for Advanced Reactors

CAPT Janis McCarroll, P.E., USPHS
Senior Public Health Advisor

Todd Smith, PhD
Senior Level Advisor for Emergency Preparedness



FEMA



U.S.NRC

United States Nuclear Regulatory Commission

Protecting People and the Environment

NRC

Who We Are,
What We Do,
and How it
Affects You





National Policies Impact All of Us

AN ACT

To enable civilian research and development of advanced energy technologies by private and public institutions, to disseminate theoretical and practical knowledge of nuclear physics, chemistry, and materials science, and for other purposes.

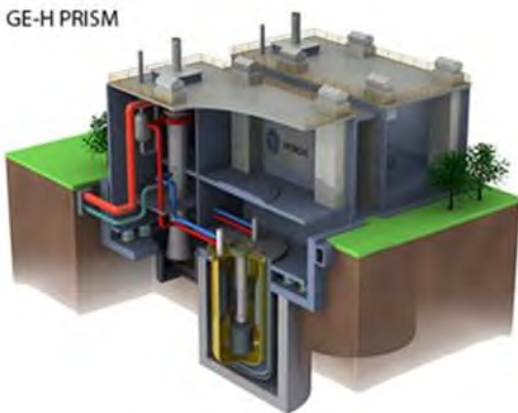
Section 1. Short title

This Act may be cited as the “Nuclear Energy Innovation Capabilities Act of 2017”.



Advanced Reactor Preparedness Starts Now

GE-H PRISM



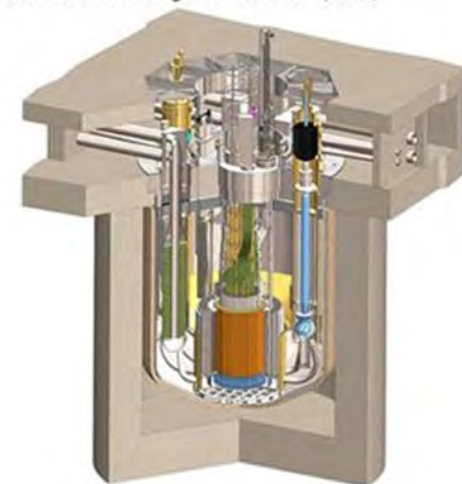
Terrestrial Energy's Integral Molten Salt Reactor (IMSR)



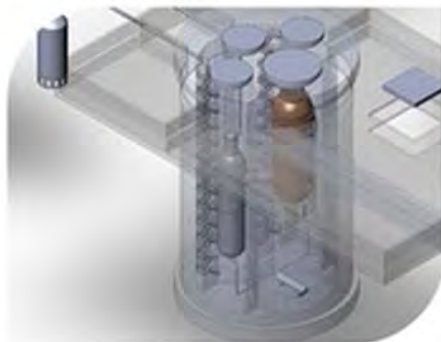
X-energy



TerraPower Traveling Wave Reactor (TWR)



Framatome HTGR





NRC Employs a Graded Approach to Emergency Preparedness

Preparedness starts with a proven planning basis

The consequences from a spectrum of accidents, tempered by probability considerations, should be considered to scope the planning efforts for—

- *the **distance** to which planning for predetermined protective actions is warranted [the emergency planning zone (EPZ)]*
- *the **time**-dependent characteristics of a potential release*
- *the type of radioactive **materials***

Small Modular and Advanced Reactors will maintain an EP program

The NRC's alternative framework for small modular reactors and other new technologies:

- sets capabilities proportional to facility hazards
- technology inclusive, performance based
- hazard analysis for contiguous facilities
- requires demonstration of sustained performance
- scalable EPZ informed by analyses



Coordination
Between Licensee
and Offsite Response
Organizations
is Vital

Capabilities

Information

Control

Communication

Analysis



The top section features a collage of technology-related images. On the left, a vertical stack of icons represents 'Capabilities', with 'Information' and 'Control' on the left and 'Communication' and 'Analysis' on the right. The central collage includes a map of the United States with various colored regions, mathematical formulas such as $x^2 - 4x + 5 \leq 5$, $x^2 - 4x \leq 0$, $n(B \cap C) = 22$, $n(B) = 68$, $n(C) = 84$, $n(B \cup C) = n(B) + n(C) - n(B \cap C)$, $\log y$, $-\log y$, $a/b/c = a/b \cdot c$, $a+b = b+a$, $a(b+c) = ab+ac$, $126 = 6xy$, $2x + 2y = 20$, $a_n = \frac{1}{2^{n-1}}$, $\frac{1}{2^n}$, $y = ax + b$, and a robot head with a glowing eye.



The IPAWS logo consists of three red curved lines above the text 'IPAWS' in a bold, blue, sans-serif font.



Technology enables
the future of EP

National Preparedness

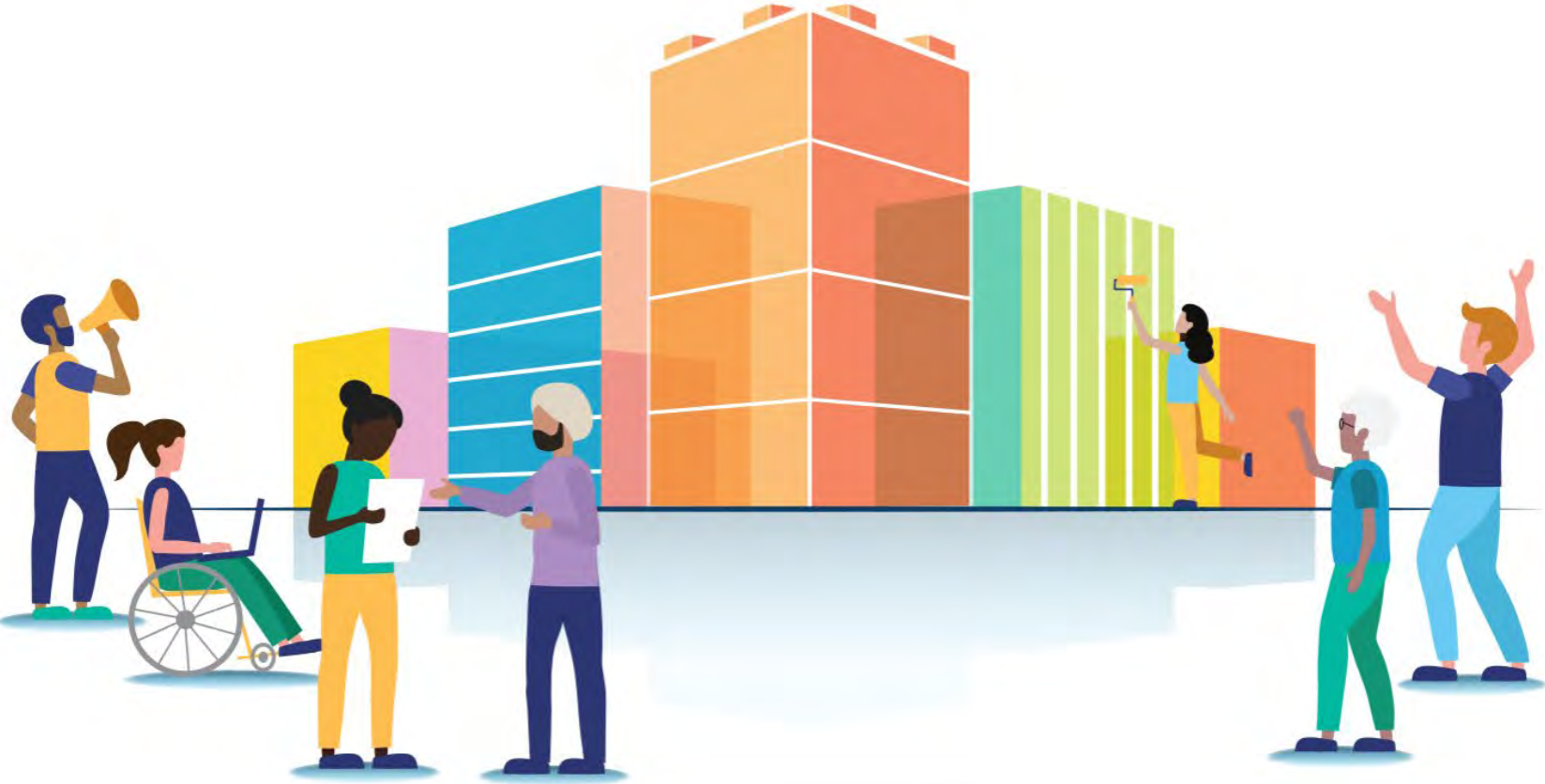


FEMA



FEMA

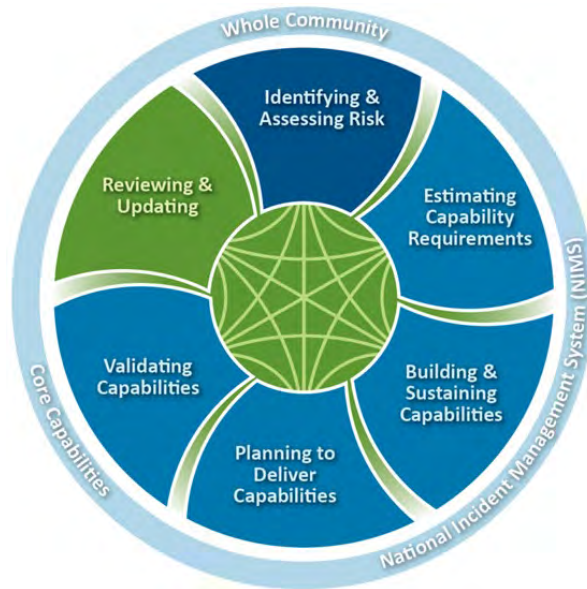
Preparedness is Whole Community



FEMA

National Preparedness System

An integrated set of guidance, programs, and processes that enables the Whole Community to meet the Goal.



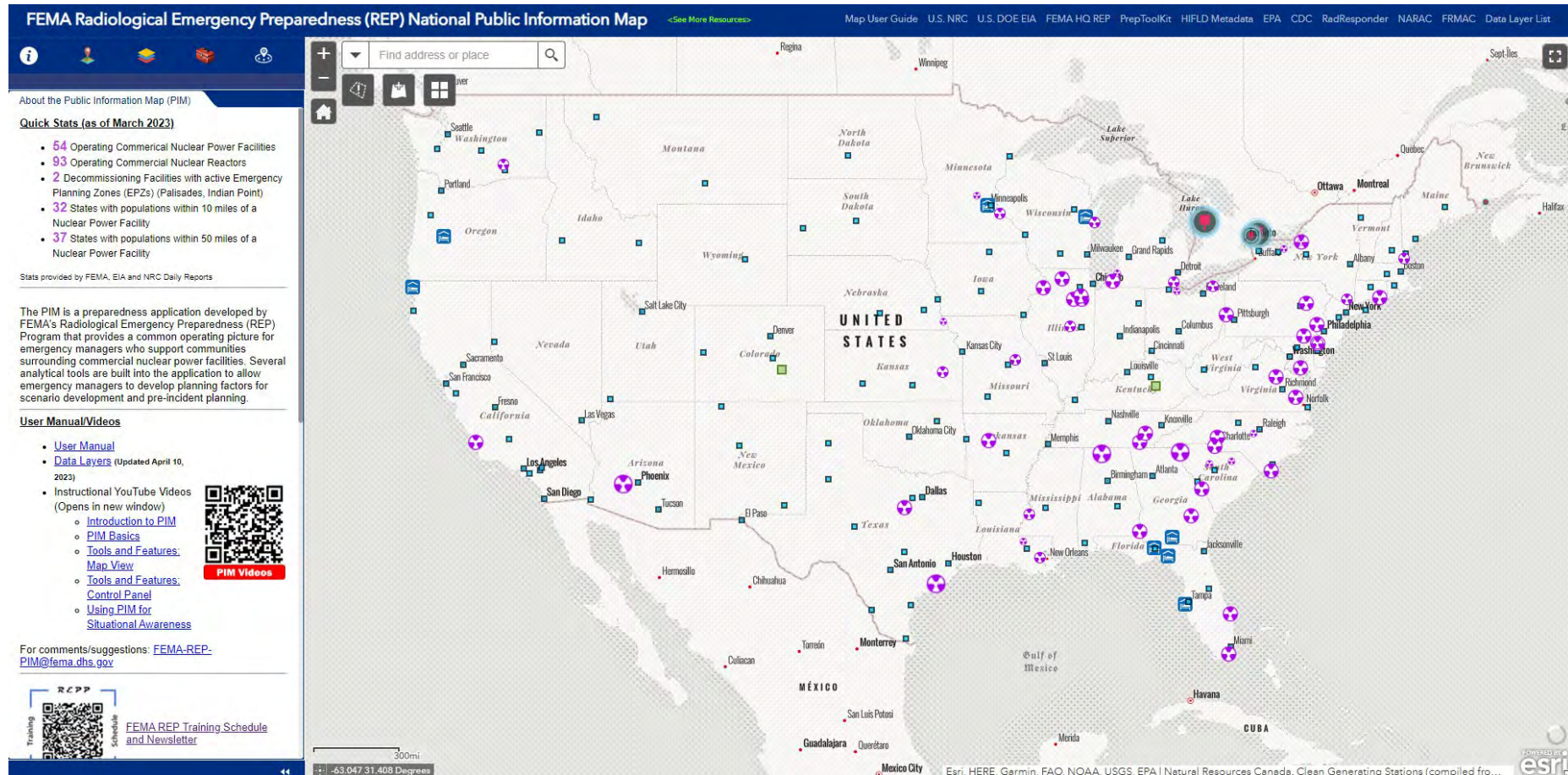
A **secure and resilient nation** with the **capabilities** required across the **whole community** to **prevent, protect against, mitigate, respond to, and recover** from the **threats and hazards** that pose the **greatest risk**.



FEMA

<https://www.fema.gov/emergency-managers/national-preparedness>

Radiological Emergency Preparedness (REP) Program



FEMA

<https://www.fema.gov/emergency-managers/practitioners/hazardous-response-capabilities/radiological>

Contact Information

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Resilience | National Preparedness

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Office of Nuclear Security and Incident Response

NRC | U.S. Nuclear Regulatory Commission

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FEMA



NUCLEAR ENERGY ADVISORY COUNCIL
October 5, 2023 at 7:00 PM
Waterford Town Hall

MINUTES

Members Present

Rep Kevin Ryan, Chair

Alternate Chair Mr. Jeffrey Semancik representing DEEP Commissioner Dykes

Mr. Craig Salonia

Mr. R. Woolrich

Mr. Bill Sheehan

Dr. James Sherrard

Mr. J. McGunnigle

Members not present:

Mr. A. Jordan

Sen Cathy Osten

1. Call to Order of Meeting

Council Chair Rep. Ryan called the meeting to order at 7:00 PM.

2. Approval of Minutes of previous Council meetings.

- a. A motion was made to approve the minutes of the March 16, 2023 Council meeting by Mr. Sheehan and seconded by Mr. Sherrard. The minutes were approved without objection.
- b. A motion was made to approve the minutes of the September 16, 2023 Council meeting by Mr. Salonia and seconded by Mr. Woolrich. The minutes were approved without objection. Mr. Sheehan abstained.

3. Program - Presentation by Dominion Nuclear Energy Inc. Ms. Lori Armstrong, Director of Nuclear Safety and Licensing (DNSL) and Mr. Guy Blackburn, Plant Manager, and Ms. Susan Adams, State Policy Director for New England (presentation attached).

- a. Safety - Mr. Blackburn highlighted industrial safety performance at Millstone. He noted that there have been two Occupational Safety and Health Administration (OSHA) recordable accidents at the station year to date. Both were "line-of fire" type accidents resulting in fractured fingers. He also noted the commitment of Dominion to safety including Millstone's recertification as Voluntary Protection Program (VPP) Star site by OSHA. Mr. Woolrich asked to explain what VPP is. Mr. Blackburn noted it is a voluntary non-nuclear safety program based on employee participation and leadership in industrial safety. Ms. Armstrong added that OSHA sends a team to evaluate program performance. This evaluation involved five people on site for five days. The team has safety experts from other non-nuclear facilities and provides an opportunity to learn from other industries.
- b. Millstone Unit status - Mr. Blackburn discussed the two-year power history curves for both Millstone Units 2 and 3.:
 - i. Currently both Units 2 and 3 are at 100% power.
 - ii. Millstone Unit 2's conducted a planned outage in 2023. It was expected to be approximately 30 days for refueling and maintenance but lasted 86 days. The major reason for unplanned outage extension was related to two safety related service water piping issues. First was degradation of sections of piping in the

turbine building identified during the outage. The second was a through wall leak in a section of 24-inch service water pipes that was identified while addressing the degradation. This pipe is ductile iron with cement casting and additional polymer lining. Dominion determined that the leak resulted because the polymer lining in the vicinity of leak was six times thinner than other locations. All sections of piping affected were re-coated or replaced. Repairs to piping took a long time due to difficulty of access and the need to make repairs compliant with American Society of Mechanical Engineers (ASME) codes. During the outage, Dominion also implemented a design change to check valve 2-MS-4B, Steam Supply Check Valve to the Turbine Driven Auxiliary Feedwater (TDAFW) Pump in order to resolve a historical issue of chatter. Upon startup, Dominion determined the design change did not solve the issue. Unit 2 operated at reduced power until they changed the valve to a different type of check valve which resolved the issue.

1. Mr. Sheehan asked if it was a swing check valve. Mr. Blackburn said the old design was a swing check valve that is normally closed and opened by steam flow. Dominion changed the design to a check valve that is normally open and closes if steam flows the wrong direction.
2. Mr. Woolrich noted that there are two check valves to the TDAFW pump and asked if Dominion replaced both valves. Mr. Blackburn stated they only replaced one check valve and that the piping configuration around the other check valve did not cause the same problems with chattering.
3. Mr. Woolrich asked if the chattering was audible in the plant. Mr. Blackburn stated it is in an accessible portion of the plant at power and is clearly audible when the check valve is chattering. However, Dominion also plans to open and inspect the new valves after several months to ensure it is working.
4. Mr. Salonia asked if Dominion investigated anything else besides the valve. Mr. Blackburn stated that their investigation determined the piping arrangement and orientation including multiple bends made the style of check valve installed susceptible to chatter and ultimately failure.
5. Mr. Salonia asked if they understood why the service water pipe coating was thinner in one area. Ms. Armstrong noted that they found the thinner area. One hypothesis is that the crawler they use to send personnel into pipes for inspection may be rolling over that area causing it to thin.
6. Mr. Semancik asked if Dominion evaluated the Quality Control (QC) requirements in their safety related pipe lining installation procedures. Ms. Armstrong noted the liner is inserted and then expanded by flowing hot water through the pipe. The procedures measure the thickness at the ends where it can be measured without disturbing the coating. Mr. Blackburn added that rather than re-lining the pipes, Dominion is exploring replacing the piping with an improved piping made from a corrosion resistant alloy (AL6XN).
7. Mr. Woolrich noted that it seems the number of reports of leaks from low pressure piping and it seems to be getting old. Since Millstone 2 seems to be about the mid-range of units in the Dominion fleet, he asked if Dominion searched the fleet to see if they are having similar issues. Mr. Blackburn said that they did look at fleet operating experience. He also noted that a

good example was flow accelerated corrosion (FAC) that has contributed to low pressure feedwater heater leaks at both units. Millstone is using fleet experience to help resolve these issues.

8. Mr. Semancik noted that the Licensee Event Report (LER) on the service water leak noted that Nuclear Regulatory Commission (NRC) inspectors identified the service water issues before plant engineers and staff. He asked if they have any insights on this. Mr. Blackburn noted that NRC inspectors are in the plant on a regular basis and could be expected to find some issues. He noted there are a lot of leaks the plant staff identifies and fixes. This was in an area Millstone had considered inaccessible and are addressing such areas in their program going forward. Ms. Armstrong stated Dominion is improving its Aging Management assessment process for sea water leaks. They have a group dedicated to improving preservation of components.
 9. Mr. Sheehan noted part of the life extension approval was establishing a program that slowly rebuilt much of the plant over the years which is being done.
- iii. Unit 3 experienced an automatic reactor trip in May 2023 that resulted in a 30 day forced outage. The trip was caused by moisture in the B phase of the main generator output breaker (MGOB) that caused an electrical ground fault.
1. Mr. Woolrich asked how that occurred. Mr. Blackburn stated that one of the air compressors (air is used to quench electrical arc when breaker is opened under load) was determined to be cycling more than it should be. This resulted in moisture not clearing due to extended run time.
 2. Mr. McGunnigle asked if the air system had a dryer. Mr. Blackburn stated it did not and that the system was not manually drained enough to clear the moisture. Operators had noted the compressor was running more often and they had planned maintenance to replace the compressor.
- c. Nuclear Regulatory Commission (NRC) Findings – Ms. Armstrong briefed the Council that Millstone remains in the licensee response column of the NRC oversight matrix (best performance column). IN 2023 YTD, the NRC has identified thirteen Green (very low safety significance) Non-cited Violations (NCVs). All findings are in the Dominion corrective action system.
- i. Ms. Armstrong noted one violation noted that one violation was related to a calculation for a maximum probable hurricane. Specifically, the NRC inspector noted that one calculation did not allow for time to water to drain down after flooding in order to allow access to an area.
 - ii. Mr. Semancik asked how many of the violations were identified by the NRC. Ms. Armstrong stated nine of the thirteen violations were NRC identified and that represents a number higher than they would like. The same is true for other Dominion units and the fleet is working together to improve.
 - iii. Mr. Woolrich noted that two or three years ago Dominion presented on downsizing and the Council asked about losing talent. Was Dominion past that now? Ms. Armstrong noted it was hard to normalize to NRC inspection and they try to review items ahead of time. However, some inspections only occur every 3 years. She noted they recently had a huge cyber security inspection with no

findings and that was better than most in industry. Mr. Balckburn stated staffing remains high with an emphasis on operator staffing. They are not seeing a high level of departure and get a good pool of applicants including from Navy, maritime industry and engineering schools.

- iv. Mr. Semancik asked if Dominion might be seeing engineering challenges due to the age of technology at Millstone which may not be taught in engineering programs anymore. Mr. Blackburn noted this was a challenge in instrumentation and controls and many new designs are now digital. Ms. Armstrong noted they have engineering work group specific training to address gaps. She also noted in some cases they have trained personnel and built programs to support equipment not supported by vendors. For example, Millstone has its own circuit card repair facility and circuit breaker overhaul shops.
- d. Ms. Armstrong reviewed recent license amendments. All NRC correspondence related to license amendments is reviewed by the Council as noted in section 4 of the minutes.
 - i. The most significant license amendment was approval of a power uprate of Millstone Unit 3 based upon margin uncertainty recovery (MUR). The license change allowed Millstone Unit 3 to increase output power approximately 1.6% (18 Mwe).
 - ii. Additional License changes were approved to align some license conditions with industry initiatives and to allow Dominion to make some technical changes within licensee controlled programs with appropriate analyses.
- e. All NRC performance indicators (PIs) for Millstone are Green.
- f. Emergency Preparedness and Response update was provided by Ms. Armstrong. Millstone made no emergency declarations since presentation to the Council in 2022. Ms. Armstrong discussed two minor items related to the offsite emergency plan:
 - i. New Emergency Action Level tables were implemented a few years ago to ensure event classification was more consistent with industry standards.
 - 1. Mr. Woolrich asked if Dominion had stopped testing offsite sirens every Saturday. Mr. Sheehan responded that each town is responsible for the testing frequency of their sirens not Dominion.
 - ii. Dominion recently completed its required 10-year evacuation time estimates (ETE) study.
 - 1. Mr. Sheehan noted that, in his opinion, sheltering in place would be preferred to evacuation of the 10-mile Emergency Planning Zone due to the roadway infrastructure in the area. Ms. Armstrong noted that the next step is for the state and Dominion to use the ETE to ensure that procedures use the right method for public protective actions.
- g. Ms. Armstrong stated there were no Environmental Impact events. Ms. Armstrong presented the status of airborne radioactive releases from the station. All releases were below planned quantities and well below any federal limits.
- h. Mr. Blackburn discussed performance of reactor Coolant Pump (RCP) seals as requested by the Council.

- i. Dominion has experienced issues with RCP seal performance at Unit 3. The seal packages are a newer design from FlowServe and were supposed to last for 14 to 15 years. Millstone 3 seals have only been lasting 18 to 34 months. Turkey Point Nuclear Plant (FL) is also experiencing similar issues. Dominion continues to work with the vendor to improve the design of the RCP seals. Dominion will replace two of the four RCP seals in unit 3 during this fall's refueling and maintenance outage.
 - ii. Mr. Semancik noted that Dominion also had to replace several RCP seals at Unit 2 during the extended outage this spring and asked if they were having seal issues at Unit 2. Mr. Blackburn indicated that these resulted from a different issue related to operation of the seals during startup not a design issue.
 - iii. Mr. Salonia asked how Dominion monitors performance of the seals. Specifically, if they don't fail do they do anything else? Mr. Blackburn answered that they are also bringing the vendor on site to periodically disassemble and inspect the RCP seals to look for any indications.
 - iv. Mr. Sheehan asked what the average radiation dose is for replacing an RCP seal. Mr. Balckburn stated it was typically 0.350 person-rem. He noted that these are large (250 to 350 lbs) seals that take about four shifts to replace.
 - v. Mr. Salonia noted that Dominion seems to moving in the right direction and asked if they are changing the RCP seals every outage. Mr. Blackburn stated they are seeing improved performance and longer run times. He noted that in addition to replacing some seals, they have several on line monitoring points and setpoints to identify degradation including vibration monitoring.
 - vi. Mr. Woolrich asked if they have a long term strategy for older equipment. Mr. Balckburn stated that they have plans to replace some older equipment and are moving in that direction. He noted they have to train to the newer equipment. He replacement of the Radiation Monitors as an example where they are systematically replacing all of the radiation monitors
 - vii. Mr. Woolrich asked how many people are employed at the station and what the turnover rate is. Mr. Blackburn stated 685 full time Dominion employees report the station Vice President, but here are also other Dominion staff that report to corporate leadership and long term contractors. He estimated about 100 personnel including these others. He stated turnover is about 20 to 40 personnel per year.
 - viii. Mr. McGunnigle asked if Millstone was experiencing vendor quality and parts issues. Mr. Blackburn stated it was a challenge as it is for others. They have seen a loss of manufacturing talent. As a result, they have pivoted and are now considering this in their strategy. For example, they have been seeing 72 month lead times for parts and, as a result, now are buying extra spare parts with long lead times. They have also gone to other retired units such as Pilgrim and the unfinished unit at Seabrook to scavenge parts.
- i. Ms. Adams provided an update on nuclear policy issues.
 - i. Ms. Adams noted increased bipartisan support for nuclear energy in the state. Both Gov Lamont and DEEP Commissioner Dykes have visited the site and discussed new nuclear and Small Modular Reactors (SMRs)
 - ii. Senate Bill 7 (Public 23-102) created a Connecticut Council for Advancing Nuclear Energy Development, different from the Nuclear Energy Advisory Council, to bring

- together nuclear people in the state to discuss the future of nuclear. In section 35, the act directs a DEEP study to evaluate deploying new nuclear in the state and directs DEEP to work with the Council on this. The Act also makes nuclear a class 1 renewable (only second state to do this).
- iii. The current Power Purchase Agreement (PPA) for Millstone power runs through 2029. It is a priority for Dominion in 2024 to manage PPA going forward.
 1. Mr. Woolrich asked what the PPA is for. Ms. Adams stated it is an agreement to buy an amount of power at a given price. Dominion is looking for an accelerator vice a fixed price to account for inflation. The legislature is reluctant due to fluctuating costs.
 - iv. Dominion is also negotiating with a data center operator to lease property on Millstone and buy energy directly (behind the meter) from Dominion. There is no lease or PPA yet. It expected the data center with use 300 to 400 MWe.
 1. Mr. Sheehan noted the town of Waterford has a Memorandum of Understanding with the data center developer. He also noted there is a concern for low frequency noise.
 - v. Mr. Semancik asked if Dominion had any vulnerability to Russian uranium for its fuel. Mr. Balckburn answered that Dominion has secured most of its fuel supply and has it in accessible countries. They do not see any threats.
 - vi. Mr. Blackburn discussed Dominion interest in new nuclear and SMRs. He noted that Dominion is looking at deploying SMRs in the 2030 to 2035 including a consortium with utilities in Romania, Poland, and Czech Republic. Right now they are just looking and monitoring with no specific deployment plans.
 1. Mr. Woolrich asked if they are looking to replace units 1, 2 or 3. Mr. Blackburn stated it was still too far off to determine that. Right now, Dominion is exploring viable options in VA, SC, or CT. Most likely Dominion will identify one location and then move forward.
 - vii. Mr. Blackburn also discussed supplemental license renewal efforts for Millstone. He stated Dominion was exploring license extension at all their sites. North Ann Power Station (VA), Surry Power Station (VA), and VC Summer Site (SC) are all going through the process. Dominion is reviewing economic viability of Millstone and will look at license extension based on that.
 1. Mr. Salonia noted that at some future meeting he would like to hear about what we have learned in the last 50 years about such things as earthquake effects on buildings and how that is applied to license renewal reviews.

4. NRC Correspondence Reviewed since past meeting.

The following list of NRC Correspondence was reviewed.

- a. Millstone Power Station, Unit No. 3 – Review of The Spring 2022 Steam Generator Tube Inspection Report (EPID L-2022-LRO-0142) dated June 12, 2023.
 - i. Dominion Energy Nuclear Connecticut, Inc. Millstone Power Station Unit 3, End of Cycle 21 Steam Generator Tube Inspection Report dated October 27, 2022.
 - ii. Dominion Energy Nuclear Connecticut, Inc. Millstone Power Station Unit 3 End of Cycle 21 Steam Genera Tor Tube Supplement dated March 8, 2023.

- iii. Dominion Energy Nuclear Connecticut, Inc. Millstone Power Station Unit 3 Response to Request For Additional Information For Spring 2022 Steam Generator Tube Inspection Report (EPID L-2022-LRO-0142) dated April 20, 2023.
- b. NRC email from Mr. Joseph Nick (NRC) to Mr. Jeffrey Semancik (CT DEEP) re: NEAC Question on Steam Generator Plugging Limit dated July 5, 2023.
- c. Millstone Power Station, Unit No. 3 – Authorization and Safety Evaluation for Alternative Request No. IR-4-11 (EPID L-2022-LLR-0067) dated July 21, 2023.
- d. Millstone Power Station, Units 2 And 3 - Closeout of Generic Letter 2004-02, “Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors” (EPID L-2017-LRC-0000) dated July 26, 2023.
- e. Millstone Power Station, Units 2 and 3 – Integrated Inspection Report 05000336/2023002 AND 05000423/2023002 dated August 9, 2023.
- f. Request for Withholding Information from Public Disclosure – Millstone Power Station Unit 3 License Amendment Request to Revise Technical Specifications for Reactor Core Safety Limits, Fuel Assemblies, and Core Operating Limits Report Related to Framatome GAIA Fuel (EPID L-2023-LLA-0074) dated August 18, 2023.
- g. Request for Withholding Information from Public Disclosure – Millstone Power Station Unit 3 License Amendment Request to Use Framatome Small Break and Realistic Large Break Loss of Coolant Accident Evaluation Methodologies for Establishing Core Operating Limits and Exemption Request for Use of M5 Cladding (EPIDS L-2023-LLA-0065 AND L-2023-LLE-0013) dated August 18, 2023.

5. Other material reviewed

NEAC reviewed the following information:

- a. “The changing face of nuclear power: New tech could lead to an energy renaissance,” CTInsider, dated February 22, 2023.
- b. Connecticut Public Act No. 23-102, An Act Strengthening Protections for Connecticut's Consumers of Energy.
- c. Dominion Energy Nuclear Connecticut, Inc. Millstone Power Station Unit 2 Licensee Event Report 2023-002-00, “Failed Check Valve Resulted in an Unanalyzed Condition,” dated April 21, 2023.
- d. Dominion Energy Nuclear Connecticut, Inc. Millstone Power Station Unit 2 Licensee Event Report 2023-001-00, “Structural Integrity Of "A" Train Service Water Header Piping Could Not be Demonstrated Causing the Unit to Operate in a Condition Prohibited by Technical Specifications,” dated July 7, 2023.
- e. Dominion Energy Nuclear Connecticut, Inc. Millstone Power Station Unit 3 Licensee Event Report 2023-001-00, “Automatic Reactor Trip Due to Main Generator Output Breaker Ground Fault,” dated July 27, 2023.

6. Public Comment

- a. Four members of the public were in attendance.

b. There were no questions from the public.

7. **Council Business**

a. Next Council meeting will be December 14, 2023 at Waterford Town Hall for discussion and drafting of the annual report.

8. **Adjournment**

Motion was made by Mr. Sheehan and seconded by Mr. McGunnigle to adjourn; no objections; unanimous vote in favor; meeting adjourned at 8:27 PM.

Nuclear Energy Advisory Council Meeting

Millstone Presentation | October 5, 2023



Millstone Power Station – Dominion Energy
Waterford, CT

Safety

- Safety is our first priority
- Commitment to protect the health and safety of the public
- MPS is an OSHA VPP Star site

Millstone Current Status

Millstone Unit 2

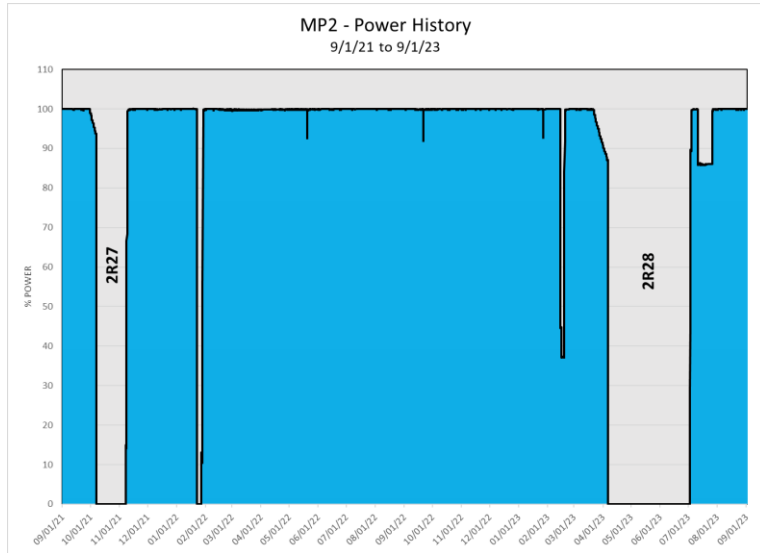
- 80 days online
- 61.11% capacity factor YTD

Millstone Unit 3

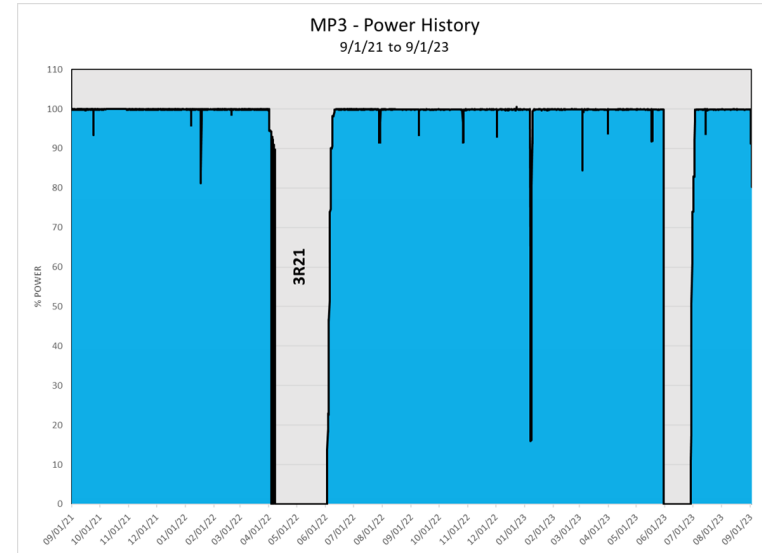
- 83 days online
- 86.37% capacity factor YTD

Operations Power History

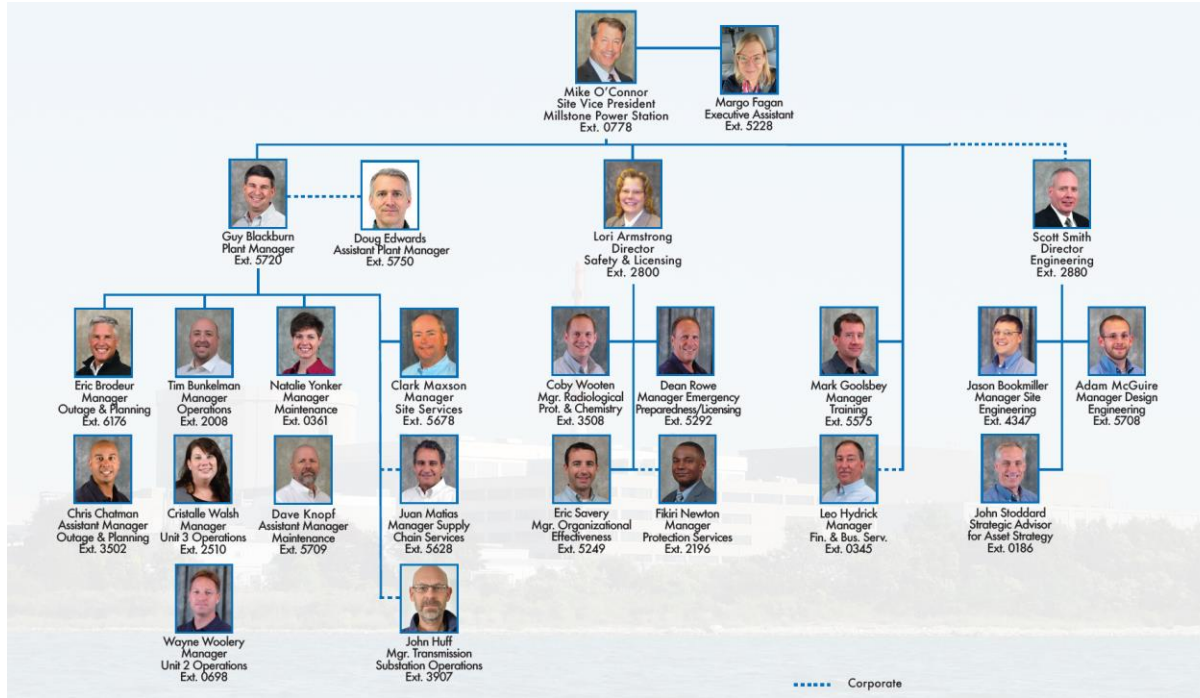
Unit 2



Unit 3



MPS Leadership Team



- Staffing levels
- Operations Pipeline

NRC Findings

- **Station is in the licensee response column**
- **13 GREEN non-cited violations/findings identified since last meeting**
 - All are very low risk significance
 - All are in our corrective action system

License Amendment Requests

Significant License Amendment Requests Approved by the NRC

- No significant license Amendments approved in 2023
- Two generic industry LARs were approved

Millstone NRC Performance Indicators

Performance Indicators



Unit 2 Second Quarter 2023 NRC Performance Indicators

Performance Indicators



Unit 3 Second Quarter 2023 NRC Performance Indicators

Millstone Nuclear Oversight Summary

- Performance

Environmental Impacts

- No Reportable Events

Emergency Plan Event Declarations

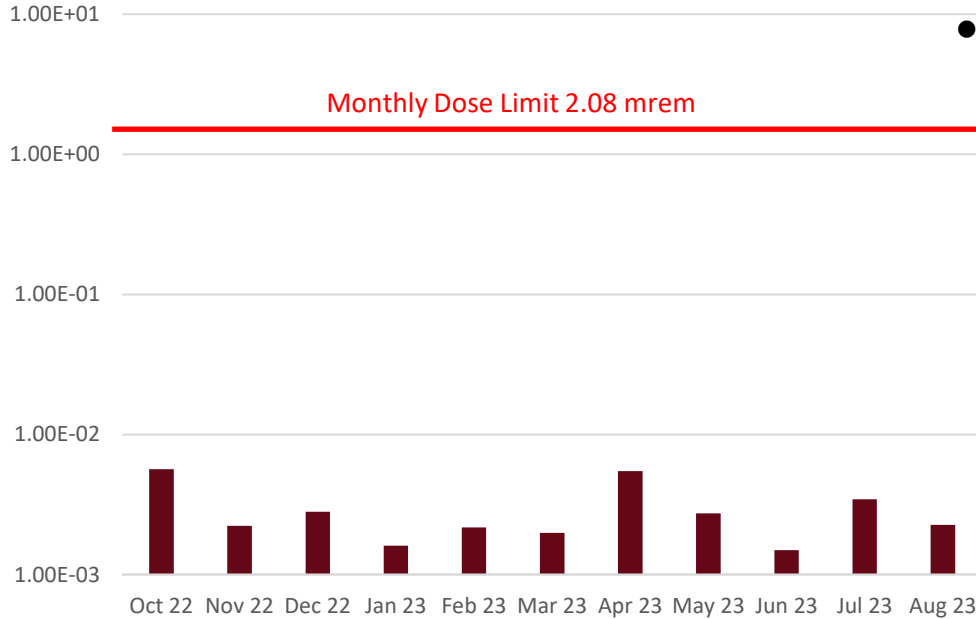
- No Emergency Plan Event Declarations in 2023

Millstone Evacuation Time Estimate (ETE)

- 10 Year Census ETE for Millstone completed by KLD Associates
- KLD Associates also completed a review for Millstone against NEI Guidance for Rapidly Progressing Severe Events
- Millstone is Currently Working with CT DEMS/DEEP to review ETE and KLD Review results to determine if changes to PARs/PADs are needed
 - Target is to have any needed changes identified and implemented by end of February 2024
- Identified PAR/PAD changes need to be implemented by next NRC/FEMA Exercise for evaluation (June 2024)

Airborne Effluent Releases

Site Monthly Airborne Radioactive Doses (mrem)



- Releases continue to be below projections
- Data publicly available on our website

Millstone Gaseous Radioactive Doses –August

Dose category ¹	Unit ²	Limit ³	Actual	% of limit
Noble gas gamma	mrads	0.833	0.0000099	less than 0.0012
Noble gas beta	mrads	1.67	0.000024	less than 0.0015
Iodine, particulates, tritium	mrem	1.25	0.0029	less than 0.230
Total, whole body	mrem	2.08	0.0023	less than 0.109

Improvements & Increased Safety and Reliability

Unit 2 Improvements

2R28 Completed Scope:

- RPS Upgrades
- Switchyard Panel Replacement
- Replaced Condensate PM/Heater
Drain PM/B-RCP Motor
- LP Turbine Major Inspection

Improvements & Increased Safety and Reliability

Unit 3 Improvements

3R22 Planned Scope:

- 4C FWH Replacement
- Fire Detection Upgrades
- SG Inspections
- RCP Seal Replacements
- RCP Motor replacement
- C LP Turbine Major Overhaul

Impact of Recent Legislation

Public Act 23-102 (Senate Bill 7) - AN ACT STRENGTHENING PROTECTIONS FOR CONNECTICUT'S CONSUMERS OF ENERGY

- **Section 33** creates the CT Council for Advancing Nuclear Development
 - This was proposed by Sen. Osten and supported by Dominion Energy. The council's purpose is to plan for the advancement of nuclear energy in the State. Mike O'Connor has been appointed to serve.
- **Section 35** requires DEEP to conduct a study to:
 - *(1) evaluate the feasibility of deploying small modular reactors, advanced nuclear reactors, fusion energy facilities and other zero carbon resources that can improve affordability, fuel security, renewable integration, and winter reliability within the New England regional electric grid;*
 - *(2) review the process for power purchase agreements procured pursuant to a state solicitation or pursuant to the state's renewable energy programs and identify best practices to ensure reliability in associated energy markets, reasonably reduce costs to ratepayers and promote conservation*
 - As part of the study, DEEP shall consult with the Nuclear Energy Advisory Council.
 - Not later than January 15, 2024, DEEP shall submit a progress report and the full report is due March 15, 2024, to the Energy and Technology Committee.
- **Section 36** expands Class 1 renewables to include new nuclear facilities (after 10/1/2023)
 - Dominion worked against an amendment that would have removed this section from the bill.

Impact of Recent Legislation, *continued*

House Bill 6851 – Public Act 23-156

- This bill requires DEEP to develop and approve a hydrogen strategic plan to grow the state's hydrogen economy. It requires DEEP to seek federal funding opportunities for projects that advance hydrogen in the state

Senate Bill 1170

- This bill was created as a placeholder for a power purchase agreement extension. Talks were suspended during the session and the bill failed to move forward. This will be a priority for the upcoming session.

Other Requested Topics

- **New Nuclear**
- **Life Extension**

Contact Information

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NUCLEAR ENERGY ADVISORY COUNCIL
December 14, 2023 7:00 PM
Waterford Town Hall

MINUTES

Members Present

Rep Kevin Ryan, Chair

Alternate Chair Mr. Jeffrey Semancik representing DEEP Commissioner Dykes

Mr. Craig Salonia

Mr. J. McGunnigle

Dr. James Sherrard

Mr. Bill Sheehan

Members Not Present

Mr. A. Jordan

Sen. C. Osten

Mr. R. Woolrich

1. Call to Order of Meeting

NEAC Chair Rep. Ryan called the meeting to order at 7:00 PM.

2. Council Business

Approval of Minutes of the October 5, 2023 NEAC meeting.

A motion was made to approve the minutes by Mr. Sheehan and seconded by Mr. Sherrard. Minutes were approved without any corrections or objections.

3. Public Comment

There were no members of the public present.

4. NRC Correspondence Reviewed since past meeting.

The list of U. S. Nuclear Regulatory Commission (NRC) Correspondence was reviewed.

- a. Millstone Power Station, Unit No. 3 Issuance of Amendment No. 287 Re: Supplement to Spent Fuel Pool Criticality Safety Analysis (EPID L-2022-LLA-0196) dated September 26, 2023.
- b. Dominion Energy Revision 35 of the Quality Assurance Topical Report DOM-QA-1 – Review of Program Changes (EPID L-2023-LLQ-0003) dated October 2, 2023.
- c. Millstone Power Station – Security Baseline Inspection Report 05000336/2023420 and 05000423/2023420 dated October 4, 2023.
- d. Millstone Power Station, Units 2 and 3 – Integrated Inspection Report 05000336/2023003 and 05000423/2023003 dated November 6, 2023.

5. Other material reviewed

NEAC reviewed the following information:

- a. Dominion Serial No. 23-281, Millstone Unit 3 LER 2022-03-00, "Gas Void in the Emergency Core Cooling System Resulted in a Condition Prohibited By Technical Specifications" dated October 28, 2023.
- b. Dominion Serial No. 23-296, Millstone Unit 3 LER 2023-002-00, "Auxiliary Feedwater Control Valve Failure Resulting in a Condition Prohibited by Technical Specifications" dated November 30, 2023.

6. CY 2023 Annual Report Discussion

The Council discussed their observations of trends in safety and performance of Millstone Station during 2023. Agreed to highlight these in the annual report.

- a. There were a significant number of operational events (forced outages, extended outages, and unplanned power changes).
- b. There was an increased number of required Licensee event reports.
- c. There was a high number of violations that were identified by the NRC vice being self-identified by Dominion.
- d. With respect to trends previously identified by the Council, there was concern of further issues in 2023 associated with station staffing changes including loss of organizational knowledge or resulting from vendor performance and quality of vendor products.
- e. The safety and security infrastructure at Millstone is sufficient to support deployment of new reactors with the new emergency planning rule approved by the NRC.

7. Discussion on Advanced Nuclear Development

- a. Mr. Sheehan noted that Public Act 23-102 requires DEEP to consult with the Council on the report it is required to write on potential for new and advanced nuclear in section 35 of the Public Act
- b. Mr. Semancik agreed to provide the draft of the DEEP study to the Council in 1Q24 for review and comment.

8. Approval of Regular Meeting Schedule for CY 2024

The Council agreed to the following dates and topics for Council's regular 2023 public meetings.

- a. February 15, 2024 – Millstone Annual Performance Meeting (US NRC Presentation)
- b. May 16, 2024 – Millstone Annual Performance Meeting (US NRC Presentation).
- c. September 19, 2024 – Millstone Operations Update (Dominion Presentation)
- d. December 12, 2024 – Annual Report Writing Meeting

9. Adjournment

Motion was made to adjourn by Dr. Sherrard and seconded by Mr. Sheehan; no objections; unanimous vote in favor; meeting adjourned at 8:04 PM.