NEI NUCLEAR ENERGY INSTITUTE

The Future of Nuclear Power

2024 Update Survey

Executive Summary

Nuclear carbon-free energy – both existing and new power plants - is essential to a clean, reliable and affordable energy system and to decarbonizing not only the electric sector but the entire economy. Through federal policy and state action, demand for and advancements in nuclear technology in the U.S. have grown exponentially in the last five years. The passage of the Infrastructure Investment and Jobs Act in 2021 and the Inflation Reduction Act in 2022 has put in place policies that create an inflection point for the future of nuclear power in the U.S. With the significant increase in electrical demand over the past year and the desire of many customers to utilize carbon-free energy, the potential for nuclear energy has grown.

In early 2023, the Nuclear Energy Institute (NEI) conducted a member survey to obtain a better sense of the impact these federal and state actions were having on industry activities related to extending the life and enhancing operational performance of the current fleet of reactors and to provide insights into plans to expand the U.S. fleet of reactors (2023 Baseline Survey). A new survey was conducted in mid-2024 to reflect how these plans have changed.

2024 Survey Results

The 2024 survey includes the 20 NEI member companies that currently operate 94 of the nuclear reactor facilities in the U.S and one company that is recommissioning a shutdown reactor at one site, for a total of 95 units. Although some of the specific survey questions were modified, the 2024 survey included the same scope as the 2023 survey: utility interest/activity in initial and subsequent license renewal, power uprates, extending refueling cycles, using clean, firm nuclear energy for non-grid applications, and new nuclear. The following key insights were gleaned for the operating fleet:

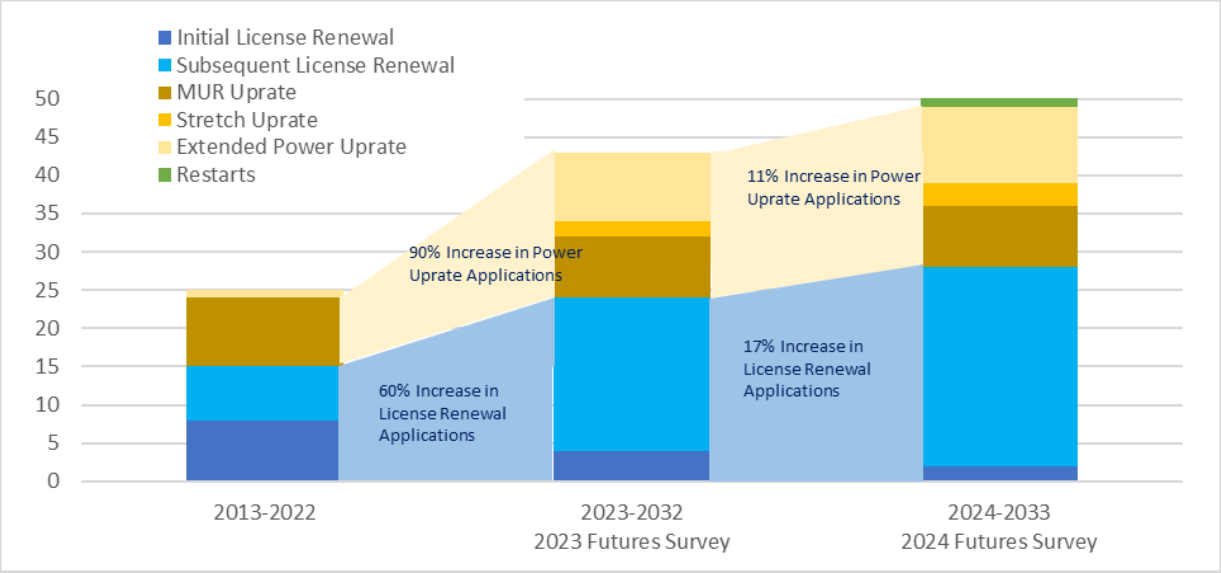
- Greater than 93% of the 95 units surveyed anticipate receiving approval to operate for at least 80 years. This is an increase over the 2023 result and confirms that the vast majority of the current fleet plan to operate to 2050 or beyond.
- Greater than 73% of sites surveyed have a level of interest in power uprates for their units. This is significantly higher than the 50% seen in the 2023 survey. The cumulative total of these uprates could provide over 3 GWe of carbon-free nuclear energy in the coming decade and is greater than a 50% increase over the amount identified in the 2023 survey.
- Nearly half of sites in the survey have varying levels of interest/planning for one or more of the enabling changes identified in the survey (risk-informed loss-of-coolant accident (LOCA), extended fuel cycle using accident tolerant fuel (ATF), extended fuel cycle without ATF). This result is consistent with the prior survey. As many of these activities will involve regulatory approvals by the Nuclear Regulatory Commission (NRC), the timing of planned activities is provided, where available.
- Consistent with the prior survey, 48% of sites have interest in new load applications of nuclear power. Interest in data centers remains high with 45% considering this market. Interest in hydrogen generation dropped with only 12% of sites considering this market. This reduction may be due to the exclusion of existing nuclear in the draft Department of Treasury guidance on the hydrogen production tax credit (PTC).
- The survey identified plans for well over eight billion dollars of voluntary enhancements to support the planned new capital investments in the current operating fleet described above, the vast

majority of which will be spent this decade. However, with only 45% of the sites responding with plans, the actual total investment is expected to be considerably higher.

- Since the last survey, the restart of previously shutdown units has emerged as a new opportunity. The Palisades Nuclear Plant and Three Mile Island Nuclear Station Unit 1, now named the Crane Clean Energy Center, have both announced plans to restart since the last survey and one other plant is currently under evaluation.

Many of these activities will require review and approval by the NRC. Based on the data received, and understanding that these are not firm commitments, it represents an increase in the number of new applications being submitted to the NRC over the results from the 2023 survey. Some of this increase is a result of the expansion of the survey to include companies not included in the 2023 survey.

New License Applications to NRC



The 2024 survey also updated information on plans and interest in new nuclear. The following key insights were gleaned:

- Nearly half of the companies surveyed indicated that interest in and planning for new nuclear have increased. No companies indicated a reduced level of interest.
- While the 2023 survey had primarily focused on small modular reactors, the 2024 survey indicated interest in constructing large reactors. This interest is consistent with the significant increase in load projections in some regions.
- The members surveyed continue to see the need for 100 GWe of new nuclear by the 2050s to support their reliability and decarbonization needs. It is worth noting that the NEI member companies included in the survey are responsible for less than half of the total power generation in the U.S., so the total U.S. need for new nuclear is likely far greater than 100 GWe.
- The 2024 survey also showed a significant increase in the number of early site permits (ESP) and construction permits (CP) anticipated to be prepared by the end of this decade. Over a dozen ESPs and a roughly equivalent number of CPs were reported. This planning also extended into the first half of the 2030s with a similar level of interest.

Policy and Regulatory Developments

There has been unprecedented federal and state support of nuclear energy over the past several years. As described above, this support has led to significant new investments in existing and new nuclear energy projects. In addition, the NRC has taken steps to improve efficiency while maintaining the high safety standards they are known for. These developments are encouraging but to handle this large increase in workload, the NRC should continue to increase the use of risk insights so that time and attention are focused on what matters most to safety, enhance the efficiency of its decision-making processes and improve project management controls. Significant developments in federal and regulatory policy are described below.

Policy Progress

- Congress appropriated an additional $2.72B for expansion of domestic fuel supply. It is paramount this turn into procurements to trigger needed investments in new capacity.
- Congress passed the ADVANCE Act in an overwhelming bipartisan manner to stimulate NRC modernization and drive for efficiency.
- The Department of Treasury has drafted much of the implementing guidance for the Inflation Reduction Act (IRA), but final guidance is still not available for some of the key provisions. Lack of final guidance has delayed decision-making, thereby delaying initiation of projects such as power uprates, and draft guidance on the hydrogen PTC appears to have reduced interest in using existing nuclear for hydrogen.
- While interest in new nuclear is high from both utilities and customers, there is still a need for federal support to enable first movers to take on the additional costs and risks associated with first-of-a-kind projects.

Regulatory Progress

- Led by the Commission, the NRC staff revised their approach to the review of license renewal applications in a manner that will save thousands of unnecessary review hours and months of calendar time.
- The NRC staff has responded to the interest in power uprates with plans that could enable much more efficient reviews and speed deployment, while still ensuring safety.
- The NRC staff completed reviews of the Kairos Hermes and Hermes 2 CP applications in record time. While only a single reactor type is involved, this should set the stage for more efficient review of other designs. Efficiency is essential in order to enable the quantity of new reactor applications forecasted by this survey, much less the number required to reach 100 GWe of deployed generation.

Demand for clean, reliable energy in the U.S. is skyrocketing. The survey demonstrates the industry's response to this demand through extensive planning and investment in extending the life of the current fleet through license renewal and investing in expansions of plant output, either via power uprates or by increasing plant availability. Interest in new nuclear is sharply up with nearly a dozen projects moving toward permitting by the end of this decade. This forecasted progress is predicated on the continuation of the policies that level the playing field for nuclear power and creating regulatory processes that will ensure safety in a timely and efficient manner.

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Introduction

Demand for nuclear energy has surged over the past several years. Federal policies have leveled the playing field with other forms of low-carbon generation and the high reliability of nuclear power has gained interest from customers seeking reliable power 24/7/365.

For the first time in over a decade, load projections are suggesting significant growth in electricity demand due to a number of factors including expansion of data centers and artificial intelligence (AI) centers, growth of re-shoring of manufacturing, decarbonization efforts in non-electricity sectors, and electrification activities. To meet this demand, utilities need more clean, reliable power and nuclear is a preferred option. This demand has manifested itself in interest in extending and increasing production from the current fleet and in deploying new nuclear.

In early 2023, NEI conducted a survey of its utility members to better understand the impact of recent changes in federal policy that have the potential to significantly increase the level of planning and activity for both operating reactors and new advanced reactors. The 2023 survey was conducted among nineteen NEI member companies with operating reactors and focused on significant plant enhancements being considered or actively planned over the next ten years. The goal is to gain an aggregate sense of industry activities underway or under development to extend the life and enhance the operational performance of the current fleet of reactors and plans to grow the U.S. fleet of reactors. This aggregate information will be helpful with the NRC and with policymakers to provide a more robust forecast of the industry's future.

The results of the survey showed strong interest and increasing activity in license renewal, power uprates, extending refueling cycles, and using clean firm nuclear energy for non-grid applications. In 2024, NEI repeated the survey to provide an enhanced perspective on trending with time. The 2024 survey was conducted among twenty NEI member companies with 94 operating reactors plus the Palisades plant that is progressing to restart and again, focused on significant plant enhancements being considered or actively planned.

All plant specific information collected as part of the survey is being maintained confidentially by NEI. Only aggregate industry level results are being shared.

Survey Content

The survey comprised two parts: Part A – Significant Plant Enhancements and Part B – Advanced Nuclear Activities.

Part A – Significant Plant Enhancements

Part A covered and requested levels of interest and planning for plant activities that extend plant operation (License Renewal and Subsequent License Renewal). Part A also covered activities that increase licensed power through uprates (e.g., Measurement Uncertainty Recapture, Stretch Power Uprates, Extended Power Uprates) as well as changes to increase capacity such as fuel cycle extensions.

The survey requested information on interest/planning associated with plant changes that support increases in power or increases in capacity. These changes include transitions to Accident Tolerant Fuel and utilization of risk-informed methodologies to revise design/accident parameters (risk-informed LOCA).

One area of interest, spurred by recent federal legislation, is new load applications of nuclear generated electricity, such as data centers and hydrogen production.

Finally, acknowledging that many of the changes being considered will require long-term capital investment, the survey requested information on major capital projects being considered or actively planned over the next 5 to 10 years.

Part B – Advanced Nuclear Activities

This survey asked how each company's plans/expectations have changed over the previous 12 months. To assess how views have changed, the survey requested information on the level of activity associated with the following activities:

- Estimated GWe of new nuclear per half-decade being considered in resource planning.
- A breakdown of how this new nuclear capacity will be generated (e.g. Large Reactor (>400 MWe), SMRs (50-400 MWe), or Micro Reactors (<50 MWe)
- Interest in and timing for ESPs
- Interest in and timing for CPs
- Interest in and timing for Combined Operating License(s) (COL)

Survey Demographics

The survey was distributed to 21 NEI utility member companies. These companies operate 94 units at 55 sites and one company that is recommissioning a shutdown reactor at one site. Of the 95 units, 64 are PWRs and 31 are BWRs. Of the 56 sites, 23 operate in merchant markets and 33 operate in "cost of service" regulated markets.

Survey Takeaway

The survey results confirm that all 95 units included in the survey have either received approval of their original license renewal, submitted their license renewal application or are planning for license renewal as appropriate.

Survey Results – Existing Fleet

Initial License Renewal

The NRC regulations limit commercial power reactor licenses to an initial 40 years but also permit such licenses to be renewed for an additional 20 years. The NRC has renewed licenses for 86 of the 94 currently operating reactor units.

Currently only 8 reactor units (5 sites) are operating under their original 40-year license.

- Perry
- Clinton
- Diablo Canyon Units 1 & 2
- Watts Bar Units 1 & 2
- Vogtle Units 3 & 4

Three applications are currently under review. Perry submitted their application on July 3, 2023. Diablo Canyon Units 1 & 2 submitted their application on November 7, 2023, and Clinton submitted their application on February 14, 2024. By letters of intent, TVA notified NRC of their plans to submit a license renewal application for Watts Bar Unit 1 in 2026. The original licenses for Watts Bar Unit 2, Vogtle Unit 3 and Vogtle Unit 4 will not expire until 2055, 2062 and 2063 respectively. As such there is no immediate need for TVA and Southern Nuclear to declare plans for these units.

Submittal Schedule	**2023**	**2024**	**2025**	**2026**	**TBD**
Initial License Renewal	2	1		1	1

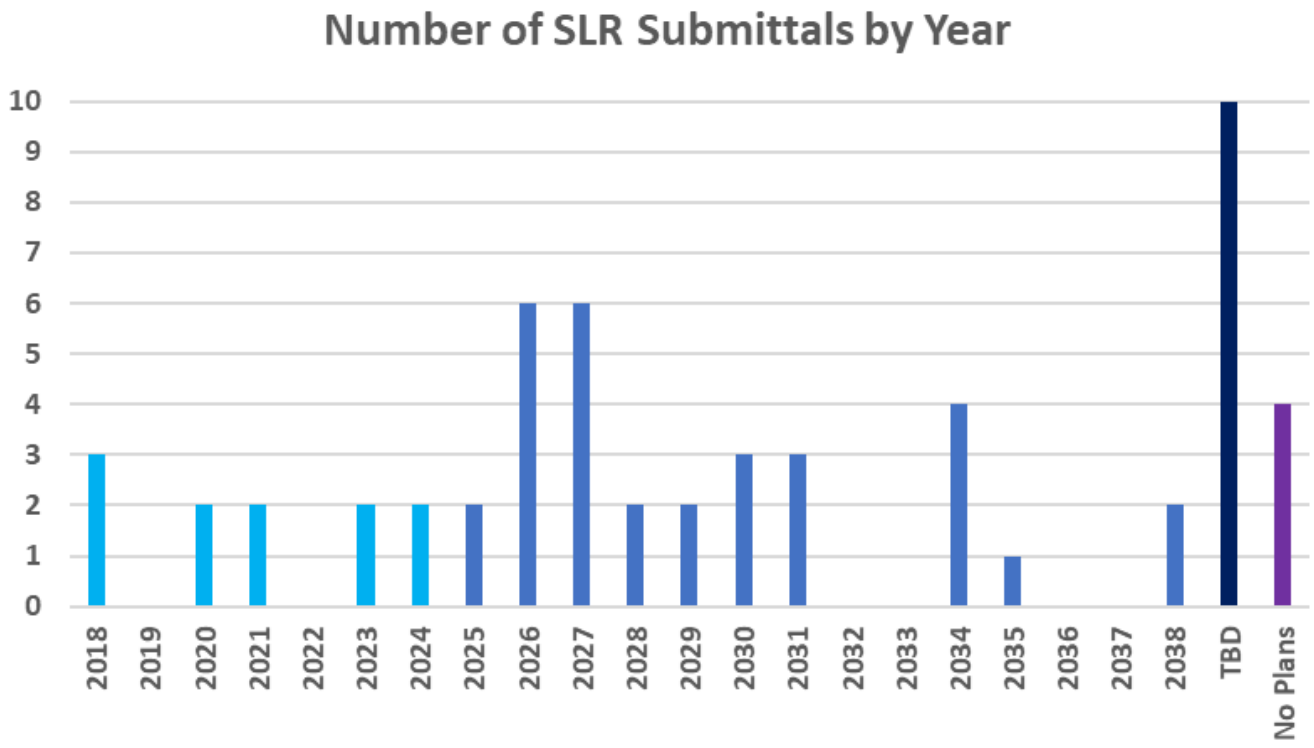
Subsequent License Renewal

Subsequent license renewal (SLR) is defined as an extension of the license to operate from 60 years to 80 years. As of the end of August 2024, SLR licenses have been issued for 3 sites (6 units) – Turkey Point 3 & 4, Peach Bottom 2 & 3 and Surry 1 & 2. Applications have been received and are currently under review for 8 sites (16 units) – North Anna 1 & 2, Point Beach 1 & 2, Oconee 1, 2 &3, St. Lucie 1 & 2, Monticello, Summer, Browns Ferry 1, 2 & 3, and Dresden 2 & 3.

Ten companies have already publicly announced, through letters of intent to NRC, their plans and schedules for submitting SLR applications.

- Duke – Robinson (2025)
- Southern Nuclear – Hatch Units 1 & 2 (2025)
- Holtec – Palisades (2026)
- Constellation – Ginna (2026)
- Constellation – Nine Mile Point (2026)
- NPPD – Cooper (2026)
- TVA – Watts Bar Unit 1 (2026)
- Southern Nuclear – Farley Units 1 & 2 (2026)
- Xcel – Prairie Island 1 & 2 (2026)
- Constellation – (Unnamed) (2027)
- PSEG – Hope Creek (2027)
- PSEG – Salem (2027)
- AEP – Cook 1 & 2 (2027)
- Dominion Energy – Millstone 2 & 3 (2027)
- Constellation – (Unnamed) (2030)
- Constellation – (Unnamed) (2030)
- Constellation – (Unnamed) (2034)
- Constellation – (Unnamed) (2034

The results from the survey are consistent with the above and show significant plans beyond formal announcements. In total, 54 of 56 sites responding to the survey expressed a level of planning for SLR. It should be noted that submittal years were provided for most sites. When a date was not known, these are tallied in a category labeled “TBD.”



Survey Takeaway

Greater than 93% of the 95 units surveyed anticipate receiving approval to operate to at least 80 years.

Power Uprates

Power uprates are generally classified in three categories:

- Measurement Uncertainty Recapture (MUR) power uprates are less than two percent and are achieved through the implementation of improved techniques for calculating reactor power. This involves the use of measurement devices to measure feedwater flow more precisely, which is then used to calculate reactor power. More precise measurements reduce the degree of uncertainty in the power level.
- Stretch Power Uprates (SPU) are typically up to seven percent. Stretch power uprates usually involve changes to instrumentation set-points but can also include plant modifications as well as changes to plant tests and procedures.
- Extended Power Uprates (EPU) are significant increases in power and have been approved for increases as high as 20 percent for Boiling Water Reactors (BWRs). These uprates require significant modifications to major balance-of-plant equipment such as the high-pressure turbines, condensate pumps and motors, main generators, and/or transformers.

Measurement Uncertainty Recapture

Nuclear power plants are licensed to operate at a specified maximum core thermal power, often called rated thermal power (RTP). Regulations formerly required licensees to assume that the reactor has been operating continuously at a power level at least 1.02 times the licensed power level when conducting design basis analyses. This requirement was included to ensure that instrumentation uncertainties were adequately accounted for in the safety analyses. In 2000, the regulations were changed to allow licensees to use a power level less than 1.02 times the RTP for safety analyses based on the use of state-of-the art feedwater flow measurement devices that provide a more accurate calculation of power. Licensees can use a lower uncertainty in the safety analyses, provided that the licensee has demonstrated that the proposed value adequately accounts for instrumentation uncertainties.

Since this regulation change became effective in 2000, the NRC has issued 50 safety evaluations reports approving plants to implement MUR power uprates for a total increase in power across the fleet of 3400 MWth. Improvements in methods and equipment have allowed some plants to receive approval for multiple MUR power uprates.

Nineteen sites identified varying levels of interest or planning to implement an MUR power uprate in the future. Of these 19 sites, nine are merchant sites and ten are regulated. Several of the 19 sites have already received an initial MUR uprate and are considering a second by taking advantage of improvements in methods (e.g., Data Validation and Reconciliation).

Topic	Completed or No Current Interest	Varying Levels of Interest/Planning
MUR	37 sites	19 sites

Stretch Power Uprate

Since 1977 stretch power uprate approvals have been issued to 65 units (39 sites). With some of these plants receiving multiple SPU approvals and several sites having stopped operation and transitioned to decommissioning.

Stretch power uprates are typically up to seven percent and are within the design capacity of the plant. The actual value for percentage increase in power a plant can achieve and stay within the stretch power uprate category is plant-specific and depends on the operating margins included in the design of a particular plant. Stretch power uprates usually involve changes to instrumentation setpoints but do not involve major plant modifications. The survey identified nine sites that are planning or considering stretch power uprates. This is a significant increase over the 2023 survey where only two sites identified interest or planning for a stretch power uprate.

Topic	Completed or No Current Interest	Varying Levels of Interest/Planning
SPU	47 sites	9 sites

Extended Power Uprate

Extended Power Uprates range from 6% to 20% increase in power and generally involve major modifications to plant equipment. These changes include modification or replacement of the main turbine, condensate pumps, feedwater pumps and main generator. Since 1998, 21 sites (34 units) have received approval for an Extended Power Uprate.

In response to the survey, 17 sites indicated a level of interest/planning for an extended power uprate. This is a significant increase over the 11 sites identified in the 2023 survey.

Topic	Completed or No Current Interest	Varying Levels of Interest/Planning
EPU	39 sites	17 sites

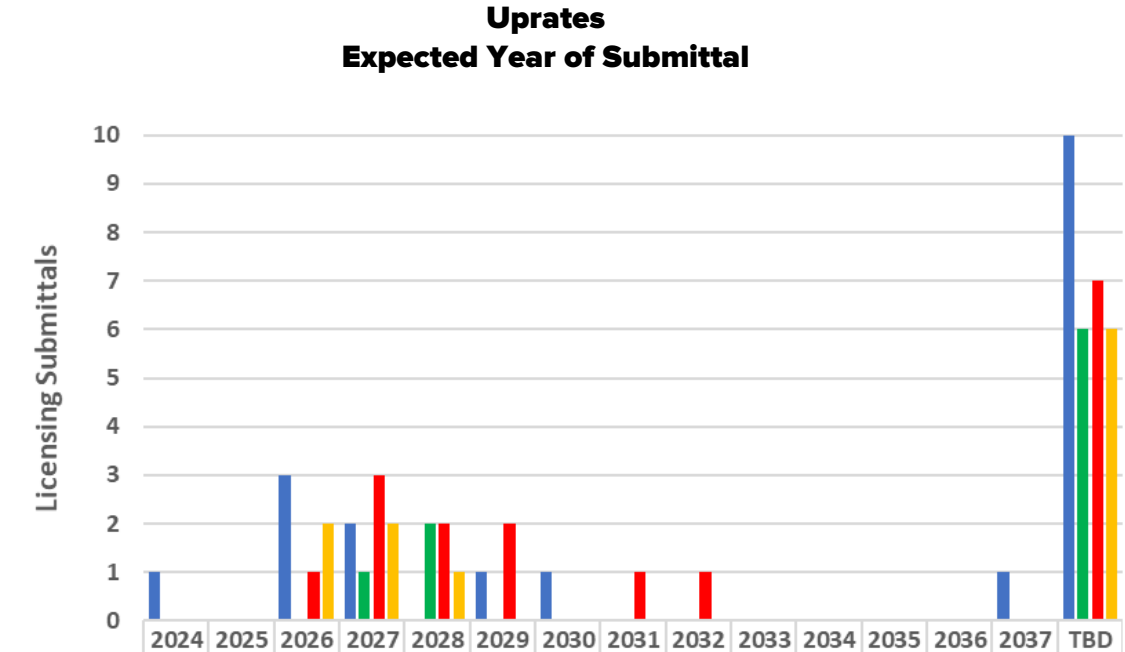
Other Power Uprates

The survey provided an opportunity for companies to identify other power uprate plans. These uprates generally involve component replacements/upgrades such as feedwater heaters, moisture separators, steam dryer and high pressure turbine that increase the amount of electricity produced without changing the reactor output. Since the reactor is not impacted, NRC review is generally not required. In response to the survey, 14 sites identified plans for unspecified power uprates in the 1 to 3% range. This is an increase over the nine sites identified in the 2023 survey.

Topic	Completed or No Current Interest	Varying Levels of Interest/Planning
Other Power Uprates	42 sites	14 sites

Timeline for Power Uprates

The table and figure below identify the expected year of submittal to the NRC for uprates identified in the survey[1]. While additional capacity was not identified for all planned uprates, the estimated combined capacity from uprates identified in the survey is over 3 GWe, which is equivalent to the building of three large reactors.



	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	TBD
MUR	1		3	2		1	1							1	10
Stretch				1	2										6
Extended			1	3	2	2		1	1						7
Other			2	2	1										6

[1] In the 2023 survey, responses identified expected deployment date. In this survey, the responses related to submittal to the NRC. Thus, care must be taken in comparing the results.

Survey Takeaway

Greater than 70% of sites surveyed have a level of interest/planning for one or more power uprates for their site units with a combined capacity greater than 3 GWe, which is equivalent to building three large reactors

Enabling Changes

The survey requested information on several types of changes that have the potential to support increases in plant power or capacity. These changes are:

- Risk-Informed LOCA enabled
- Extended Fuel Cycle (w/o ATF)
- Extended Fuel Cycle (with ATF)

The first changes do not directly result in an increase in power production or capacity, but instead enables power uprates and longer fuel cycles by allowing changes to operational and accident analysis design limits.

Risk-Informed LOCA Enabled

ATF has the potential to enhance safety at U.S. nuclear power plants by offering better performance during normal operation, transient conditions, and accident scenarios. Use of these advanced fuel designs in combination with increased fuel enrichments up to 10% (LEU+) has the potential to increase operational flexibility, achieve longer fuel cycles, and support power uprates.

The survey results demonstrate interest in implementing risk-informed LOCA changes, with seven of the 56 sites expressing a level of interest.

Topic	Completed or No Current Interest	Varying Levels of Interest/Planning
RI-LOCA	49 sites	7 sites

It should be noted that the rulemaking on risk-informed LOCA has just been reinitiated, so these responses may not reflect the ultimate level of interest.

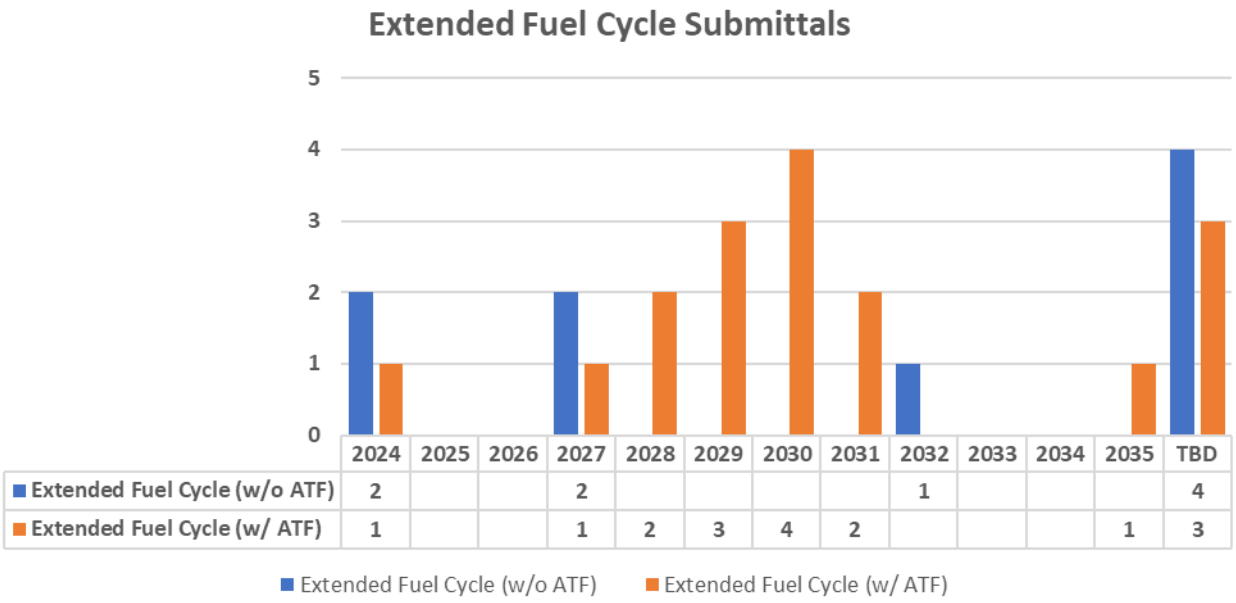
Extended Fuel Cycle

An interest in extended fuel cycles (generally extending from 18-month to 24-month) was expressed by 26 of the 56 sites. Extended fuel cycles are enabled through redesigning the reactor core and its operation, enabling an increase in time interval between plant shutdowns for refueling. In some cases, this can be accomplished with available fuel designs. In other cases, deployment of ATF is required. In either case, extensive NRC review is required to ensure continued safe operations. This interest was expressed

primarily by PWR sites, the majority of which are currently operating on 18-month fuel cycles.

Topic	Completed or No Current Interest	Varying Levels of Interest/Planning
EFC w/o ATF	30 sites	9 sites
EFC with ATF		17 sites

Timeline for Extended Fuel Cycles



Survey Takeaway

Approximately 48% of sites in the survey have varying levels of interest/planning for one or more of the enabling changes identified in the survey. Deployment of these changes is generally targeted in the 2028 – 2030 timeframe.

New Load Applications

The survey requested information on interest in new load applications, including hydrogen production and data centers. There is increasing interest in new load applications of nuclear generated electricity. Nuclear power is recognized as a clean and highly reliable source of electricity, prized as a power source for data centers. Hydrogen generation has also received interest, due in part to the Inflation Reduction Act, which provides support for clean hydrogen production via tax credits that will award up to $3/kg for

low carbon hydrogen. However, this interest has declined, in part, due to the exclusion of existing nuclear in the draft Department of Treasury guidance on the hydrogen PTC.

Data Centers

Modern data centers involve a building or facility that houses IT infrastructure for building, running, and delivering applications and services, and for storing and managing the data associated with those applications and services. Data centers require a highly reliable power source. Nuclear power meets this need by providing a clean, reliable source of power for data centers.

Initial efforts are well underway. Cumulus Susquehanna, a subsidiary of Talen Energy, is commencing commercial operation of its first 48 MW data center stage at the Susquehanna plant this year. Two additional 48 MW stages are in advanced development, with an eventual aggregate capacity for the campus of 475 MW.

In response to the survey, 25 sites expressed interest/planning in data centers. This is a slight increase over the 22 sites identified in the 2023 survey. Power requirements ranged from 400 to 1920 MW.

Topic	No Current Interest	Varying Levels of Interest/Planning
Data Center	31 sites	25 sites

Hydrogen

Nuclear power plants can supply the required heat and electricity to produce hydrogen without generating any carbon emissions. The Department of Energy funded three hydrogen demonstration projects at nuclear power plants in 2022. Those projects are already in operation or expected to begin producing hydrogen soon. The projects are:

- Nine Mile Point Nuclear Power Station, which began producing hydrogen using a low-temperature electrolysis system in March 2023.
- Prairie Island Nuclear Generating Plant is working on a first-of-a-kind project to demonstrate high-temperature electrolysis in 2024.
- Davis-Besse Nuclear Power Station is working to demonstrate a low-temperature electrolysis system in 2025.

In response to the survey, twelve sites expressed interest/planning in hydrogen generation. This is a significant reduction from the twenty-six sites identified in the 2023 survey.

Topic	No Current Interest	Varying Levels of Interest/Planning
Hydrogen	44 sites	12 sites

Other

Two sites identified interest in new load applications other than data centers and hydrogen generation.

Survey Takeaway

The survey demonstrated significant continued interest/planning for new load applications of nuclear power with 45% of sites considering data centers and 21% considering Hydrogen.

Major Capital Projects

Major capital projects involving the refurbishment or replacement of equipment are critical to plans for life extensions and large power uprates. A review of industry investment data shows a 30% increase in capital projects in 2023, as compared to 2021 and 2022. These projects were focused on improving reliability and increasing generation, with spending totaling nearly $2B per year, industry-wide. This trend is expected to continue through this decade, at least. In this survey, 14 companies provided details on upcoming major capital projects identifying over 146 capital projects totaling over $8 billion. The major capital projects over $100 million included multiple instances of:

- Digital I&C
- Reactor Protection System
- Steam Generator Replacement
- High and Low Pressure Turbine
- Main Electrical Generator
- Main Condenser
- Feedwater Heater

Survey Results - New Nuclear

In the Spring of 2022, NEI conducted its first survey of our member utilities that operate nuclear plants, and they identified that they believe they could use up to 90 gigawatts of new nuclear to support their companies' decarbonization goals. This survey was conducted before the Inflation Reduction Act was passed. Because of the nuclear incentives included in the Inflation Reduction Act, we believe that utility plans will be accelerated in response to the incentives in the Inflation Reduction Act that support not just the current fleet but the future fleet.

Change in Attitude toward New Nuclear

Response to 2023 Survey

In the 2023 survey, we assessed how utility attitudes toward new nuclear have changed since passage of the Inflation Reduction Act, by asking simply, "How has your company's view changed since February 2022?" on four areas of interest:

- Overall attitude toward advanced nuclear
- Light water SMRs
- Non-light water SMRs
- Advanced nuclear for non-electricity applications

For each area, the survey asked companies to identify if they had more interest, less interest or if their interest was unchanged. Of the 19 companies addressed in the survey, 11 (58%) responded that they had more interest in advanced nuclear energy since February 2022. Regarding SMRs, of the 19 companies addressed in the survey, 11 (58%) responded that they had more interest in light water SMRs since February 2022. For non-light water SMRs, of the 19 companies addressed in the survey, six (32%) expressed more interest in non-light water SMRs since February 2022. For non-electricity applications, of the nineteen companies addressed in the survey, two (11%) expressed more interest in non-electricity applications for advanced nuclear since February 2022.

Response to 2024 Survey

In the 2024 survey, we asked two questions:

- Have Company plans/expectations for Advanced Nuclear expanded over the previous 12 months? (Y/N)
- Have Company plans/expectations for Advanced Nuclear decreased over the previous 12 months? (Y/N)

Of the 21 companies, five companies responded that their plans/expectations have expanded over the previous 12 months. No companies identified that their plans/expectations have decreased over the previous 12 months.

	Y	N	No Response
Plans/expectations Expanded	5	9	7
Plans/expectations Decreased	0	14	7

New Generation Licensing

To obtain a better sense of company activity associated with new nuclear, companies were asked for their estimated submittal schedule for a series of new nuclear licensing topics. These were:

- New Early Site Permit(s)
- Update of Previously Approved Early Site Permit
- Construction Permit(s)
- New Combined Operating License(s) (COLs)
- Update of Previously Approved Combined Operating License

The survey results show significant interest in Early Site Permits, Construction Permits and Combined Operating Licenses over the next ten years; with approximately 23 ESPs, 18-19 Construction Permits and 8 Combined Operating Licenses.

Number of NRC Submittals

New Nuclear Activities	2025-2029	2030-2034
New ESP	10-11	10-11
Update ESP	3	
Construction Permit	9	9-10
New COL	2	6

While most of the responses identified SMRs as the focus of their planning, there were multiple responses that identified large reactors in their planning horizon. Micro-reactors plans were identified by two companies.

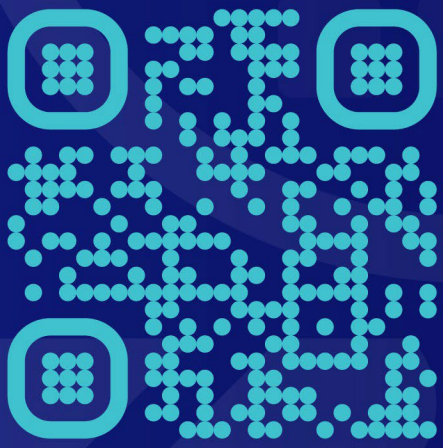
Survey Takeaway

There is an increased level of interest in new nuclear at ~60% of utilities expressing interest or action on one or more regulatory pathways (e.g., ESP, CP, COL). Members surveyed continue to see the need for 100 GWe of new nuclear by the 2050s to support their reliability and decarbonization needs.

Conclusions

Keeping in mind that any survey only presents a snapshot in time, the 2024 survey, when compared to the 2023 survey, shows a steady and growing demand for nuclear power in the U.S. and illustrates the planning, actions and investments by U.S. nuclear power companies to meet this demand.

- Demand for clean, reliable energy in the U.S. is rising. Nuclear power is the most scalable, proven form of clean 24/7 energy available today. Extending the life of the current fleet and investing in expansions of plant output, either via power uprates or by increasing plant availability, is the most direct path to addressing this need.
- Over the past year, NEI member companies have identified the opportunities for the current fleet and increased their investment in those opportunities.
- Interest in new nuclear is sharply up with nearly a dozen projects planned for permitting by the end of this decade.
- All of this progress is predicated on the sustaining policies that level the playing field for nuclear power and creating regulatory processes that will ensure safety in a timely and efficient manner. Both Congress and the NRC have made progress on these fronts, but sustained focus is required to achieve this end.



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