

Summary of Testimony
Nuclear Energy Institute
Maria Korsnick, President and Chief Executive Officer
Subcommittee on Energy, Climate, and Grid Security
House Committee on Energy and Commerce
July 18, 2023

Nuclear power is the largest, most reliable form of clean energy. Demand for nuclear energy in the U.S. and globally is projected to surge. Nuclear is poised to play a pivotal role in meeting U.S. energy security and carbon reduction goals via the long-term operation of our existing large light-water reactors and deployment of new, advanced plants.

China and Russia are aggressively broadening their geopolitical leverage with nuclear technology export sales. For U.S. companies to succeed abroad, international customers expect U.S. technologies to be deployed here at home. It is thus a national security imperative to accelerate domestic and international deployments of innovative U.S. technologies.

To achieve our energy security, national security, and decarbonization goals, NEI urges the following critical actions:

- 1. Modernize the NRC regulatory process.** The NRC should update its mission to drive greater efficiency in its regulatory processes. Reducing review schedules, eliminating mandatory uncontested hearings, leveraging the National Environmental Policy Act innovations enacted in the Fiscal Responsibility Act, and other actions to improve efficiency will enhance—not detract from—safety by allowing the agency to focus on the most safety significant issues.
- 2. Establish a secure, reliable, domestic fuel supply.** Having a strong domestic nuclear fuel cycle is a national security imperative. The U.S. commercial industry is committed to phasing out Russian fuel imports, but federal support is essential to the industry establishing a secure, competitive supply of conversion and enrichment in the U.S.
- 3. Surmount financing obstacles facing domestic plant development.** Federal tax incentives are a game-changer for existing plants and new plant deployment. Additional federal support is necessary to meaningfully accelerate domestic deployments.
- 4. Support U.S. competitiveness in global nuclear market.** The U.S. should assign strategic value to nuclear exports and streamline the cumbersome Part 810 process.
- 5. Reauthorize the Price-Anderson Act.** Congress should maintain the Price-Anderson Act’s well-established liability framework by acting on renewal in the near term. The Act has been successfully implemented for over six decades and preserving its indemnification authority is critical for the industry’s continued growth.
- 6. Establish an integrated approach to used fuel management.** Ongoing consolidated interim storage efforts and recycling research should be complemented by making progress on a disposal facility.

Testimony for the Record
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I am Maria Korsnick, President and Chief Executive Officer of the Nuclear Energy Institute (NEI).¹ I appreciate the opportunity to testify before the Subcommittee and would like to thank Chair Rodgers, Ranking Member Pallone, Subcommittee Chair Duncan, Subcommittee Ranking Member DeGette, and the rest of the Committee for inviting me to discuss the critical role of nuclear energy in the United States.

During my testimony, I will highlight the importance of nuclear energy to our energy security and carbon reduction goals, and discuss actions necessary to commercialize this clean and reliable technology in the near term and ensure U.S. global leadership in nuclear energy. These actions include increasing the efficiency of the Nuclear Regulatory Commission (NRC) regulatory processes, as would be advanced by several bills that have been or we expect to be introduced. My testimony will also stress the importance of developing and maintaining a strong domestic nuclear fuel cycle, overcoming domestic deployment financing challenges, supporting U.S. competitiveness in the global nuclear market, renewing the Price-Anderson Act, and implementing an integrated approach to managing used fuel.

This is a unique and opportune time to focus on nuclear energy. Demand for nuclear energy in the U.S. and globally is projected to surge, and the industry is poised to play a pivotal

¹ NEI's mission is to promote the use and growth of clean nuclear energy through efficient operations and effective policy. NEI has more than 300 members, including companies that own or operate nuclear power plants, reactor designers and advanced technology companies, architect and engineering firms, fuel suppliers and service companies, consulting services and manufacturing companies, companies involved in nuclear medicine and nuclear industrial applications, radionuclide and radiopharmaceutical companies, universities and research laboratories, labor unions, and international electric utilities.

role in meeting the nation’s energy security and carbon reduction goals via the long-term operation of its existing fleet of large light-water reactors and deployment of new, advanced plants. We appreciate that Congress recognizes nuclear energy’s importance. More than a dozen bills are under discussion that would support current and future nuclear plants by enhancing licensing efficiency, streamlining application review schedules, reducing regulatory costs, providing support for a domestic fuel supply, and bolstering export opportunities.

As the Department of Energy (DOE) recently reported,² advanced nuclear energy’s value proposition lies in its generation of carbon-free electricity, ability to provide dispatchable power that complements other sources, low land-use requirements, and low transmission requirements relative to distributed sources. It also offers appreciable regional economic benefits, can aid in an equitable transition to a net-zero grid, and has a wide variety of applications that enable grid flexibility and decarbonization beyond the grid. By DOE’s estimates, the U.S. could triple the amount of nuclear power utilized by 2050 and be the world leader in nuclear energy, supporting our national security goals and the energy security goals of countries around the world. U.S. nuclear leadership is more important today than ever as China and Russia are aggressively broadening and increasing their geopolitical leverage with nuclear technology export sales by their state-owned nuclear companies. Thus, accelerating the domestic deployments of innovative advanced nuclear technologies will not only pay dividends at home but also will bolster U.S. international competitiveness at this crucial junction.

² DOE, “Pathways to Commercial Liftoff: Advanced Nuclear” (Mar. 2023).

The Importance of Nuclear Energy to the United States

Nuclear power is the most reliable form of safe and clean electricity.³ The U.S. nuclear fleet is performing at unprecedented levels of safety and reliability.⁴ Currently, 92 commercial nuclear power reactors in 28 states supply nearly 20 percent of America’s electricity. Nuclear is the largest source of carbon-free generation, providing nearly half of U.S. emissions-free electricity. In addition to its substantial clean energy benefits, nuclear generation is critical to grid reliability, annually providing nearly 800 billion megawatt-hours of 24/7 electricity. Nuclear plants are hardened facilities that are protected from physical and cyber threats, helping to ensure we have a resilient electricity system in the face of potential disruptions.

Nuclear power plants also are valuable contributors to the nation’s economy, adding \$60 billion annually to the GDP. Nuclear power plants also serve as the economic backbone for communities in which they operate, producing more than \$12 billion annually in federal and state tax revenue. Tax revenue from plants often provides rural small towns with essential funding for schools, roads, emergency personnel, and other needs.

Nuclear power plants serve as engines for job creation. Construction of a new nuclear plant can provide thousands of well-paying jobs. For example, at its peak the Vogtle 3 and 4 project provided more than 9,000 construction jobs and is anticipated to provide more than 800 permanent jobs once the units begin operation. Today, the U.S. nuclear energy sector

³ DOE, “Nuclear Power Most Reliable Energy Source and It’s Not Even Close” (Mar. 24, 2021), available at <https://www.energy.gov/ne/articles/nuclear-power-most-reliable-energy-source-and-its-not-even-close>; World Nuclear Association, “Safety of Nuclear Power Reactors” (Mar. 2022), available at <https://www.world-nuclear.org/information-library/safety-and-security/safety-of-plants/safety-of-nuclear-power-reactors.aspx#:~:text=The%20risk%20of%20accidents%20in,radioactive%20releases%20can%20be%20avoided>; Our World In Data, “What are the safest and cleanest sources of energy?” (Feb. 10, 2020), available at <https://ourworldindata.org/safest-sources-of-energy>.

⁴ NEI, “The Nexus Between Safety and Operational Performance in the U.S. Nuclear Industry,” NEI 20-04, March 2020; NEI, “Nuclear by the Numbers” (Aug. 2020).

directly employs nearly 100,000 people in long-term jobs with salaries that are 50 percent higher on average than those created by other electricity generation sources. Maintenance work at existing plants accounts for 20 million union person-hours annually. Recruiting from universities, community colleges, the military and the trades, nuclear power plants provide high-quality jobs to the whole community. All told, these facilities are responsible for 475,000 direct and secondary jobs.

Federal and state programs and tax credits are playing a major role in saving jobs and communities, securing our grid, and sustaining clean energy progress by preventing unnecessary plant closures. New federal programs and tax credits for clean hydrogen production are also helping to ensure nuclear energy enables other sectors to reduce their carbon emissions.

Actions Necessary to Ensure U.S. Leadership in Nuclear Energy

To advance our civil nuclear technology and American competitiveness, NEI recommends actions to modernize NRC regulatory processes, establish a secure domestic fuel supply, overcome domestic deployment financing challenges, support U.S. nuclear exports, renew the Price-Anderson Act, and implement an integrated approach to managing used fuel. Many of these actions are outlined in our recent responses to requests from this Committee⁵ and the Senate Select Committee on Intelligence.⁶

1. Modernize NRC regulatory processes

Ensuring U.S. leadership in nuclear energy places the NRC in a central and decisive role. Despite the well understood technology of light water reactors used by the commercial nuclear industry during the last 50 years, NRC's processes have become more cumbersome, rather than

⁵ Letter from M. Korsnick, NEI, to Chair Rodgers, Chair Duncan, Ranking Member Pallone, and Ranking Member DeGette, House Energy and Commerce (May 4, 2023).

⁶ Letter from M. Korsnick, NEI, to Chair Warner, Senate Select Committee on Intelligence (June 2, 2023).

more efficient. And, too often, the agency diverts its focus to activities that have a negligible effect on safety.

With the pending expansion of nuclear in the U.S. and worldwide, it is critical that NRC's regulatory and licensing processes not only provide adequate protection of public health and safety, but also facilitate achievement of the policy goal announced in the Atomic Energy Act of 1954 that nuclear energy make the "maximum contribution to the general welfare."⁷ We believe the NRC can achieve both objectives. We encourage Congress to direct the Commission to update its mission statement to drive more timely and efficient licensing reviews of U.S. advanced nuclear technologies. Doing so would not detract from NRC's focus on safety. It is a false narrative to suggest that efficient regulation undermines safety as the two are not in tension. Rather, efficient NRC regulation can enhance safety by allowing the NRC to focus on the most safety significant issues.

Although the NRC has taken some positive steps to increase efficiency, additional actions are necessary because the NRC's persistent drive toward zero risk—rather than adequate protection of public health and safety—too often stands in the way of nuclear energy making the "maximum contribution to the general welfare." For example, NRC's reviews have become unnecessarily onerous, lengthy, and costly. Actions that previously have taken a reasonable amount of effort and time have doubled, tripled, and even quadrupled in cost and length,⁸ not decreased as one would expect. Indeed, the NRC's own data shows that the agency is applying

⁷ The Atomic Energy Act of 1954, as amended, and the Energy Reorganization Act of 1974 grant the NRC the authority to regulate civilian use of commercial nuclear power. The Act establishes "adequate protection" of public health and safety as the measure that underpins NRC's regulatory requirements. 42 U.S.C. § 2232(a). The Act also states that it is the policy of the United States that, "the development, use, and control of atomic energy shall be directed so as to make the maximum contribution to the general welfare." 42 U.S.C. § 2011(a).

⁸ NEI, "Recommendations for Enhancing the Safety Focus of New Reactor Regulatory Reviews" (April 2018).

50 percent more resources for subsequent license renewals than it applied to initial license renewals, despite the fact that the scope of subsequent license renewal is only a fraction of the initial license renewal review.⁹ And according to the NRC’s generic review schedule,¹⁰ even the simplest licensing actions are given a review schedule of one to two years.

The NRC’s extensive hearing process poses further risk of delays, insofar as it includes the opportunity for *both* a trial-type *contested* hearing on safety and environmental issues, and a mandatory *uncontested* hearing. Notably, the public can participate in the contested hearing. The mandatory uncontested hearing, which does not include public participation, was added as a requirement of the Atomic Energy Act in 1957 to address concerns over a lack of transparency in early licensing decisions. The mandatory hearing has outlived its useful purpose and adds 4-7 months¹¹ and millions of dollars to the licensing process.

The NRC’s licensing process and the surrounding legal landscape have changed dramatically since the mandatory hearing requirement was enacted in 1957. Subsequent legislation such as the Freedom of Information Act of 1966, the Federal Advisory Committee Act of 1972, the Government in Sunshine Act of 1976, and the opportunities for public participation provided through the National Environmental Policy Act of 1969 (NEPA) address the concerns that prompted addition of the mandatory hearing requirement in the first instance. Today, the NRC’s licensing process is transparent—with the public having ready access to both the information provided by the applicant, as well as the NRC staff’s evaluation of that

⁹ NEI, “Examination of NRC Review Performance” (June 2023), available at <https://www.nei.org/resources/reports-briefs/examples-of-nrc-performance>.

¹⁰ NRC, “Generic Milestone Schedules of Requested Activities of the Commission” (Sept. 10, 2021), available at <https://www.nrc.gov/about-nrc/generic-schedules.html>.

¹¹ Idaho National Laboratory, Recommendations to Improve the Nuclear Regulatory Commission Reactor Licensing and Approval Process (Apr. 2023), available at https://inldigitallibrary.inl.gov/sites/sti/sti/Sort_65730.pdf (concluding that mandatory hearings conducted over the last 15 years have caused 4-7 months in delays).

information, and members of the public can request hearings on contested issues. Eliminating the requirement to hold mandatory uncontested hearings would not impact the public's ability to request contested hearings or otherwise alter the NRC's transparency obligations established by all these other federal statutes but would significantly increase the efficiency of the licensing process.

Additionally, the NRC's implementation of NEPA requirements can be considerably more streamlined, efficient, and better resourced. Although the NRC has made some progress in this area, further action is needed to achieve prompt change on the scale necessary to support new plant deployment. To this end, we support the discussion draft of the Modernize Nuclear Reactor Environmental Reviews Act, which requires the NRC to report on actions to implement the amendments to NEPA made by the Fiscal Responsibility Act of 2023 and other measures to streamline environmental reviews, including the expanded use of categorical exclusions, environmental assessments, and environmental impact statements prepared by other federal agencies. The discussion draft also would further environmental modernization efforts by directing the consideration of authorizing the use of an applicant's environmental report as the Commission's draft environmental impact statement, consistent with newly enacted section 107(f) of NEPA. Using an applicant's environmental report as the draft environmental impact statement could reduce NRC's NEPA review schedule by 6-12 months as it would accelerate the public's involvement in the process and eliminate the need for the NRC staff to re-write the detailed information already in the environmental report. The NRC would continue to be responsible for providing detailed guidance on the contents of environmental reports, considering public input, conducting its analysis of the proposed action, and producing the final

environmental impact statement. Thus, extensive NRC involvement in and ultimate responsibility for NEPA process would be ensured.

It is now time for the NRC to update its mission statement, management philosophy, and operations, and emphasize agency efficiency. Otherwise, we risk that NRC's processes will create roadblocks preventing newer, safe nuclear technologies from being deployed, impeding nuclear power from playing a key role in meeting our clean energy and energy security goals.

2. Establish a secure, reliable, domestic fuel supply

Russia dominates the global enrichment services market for low-enriched uranium, is the only supplier in the world for the high-assay low-enriched uranium required by most advanced reactor designs, and has a significant share of the uranium conversion market. Expanding domestic capabilities is critical to ensure the continued operation of U.S. existing reactors and the buildout of new reactors using innovative U.S. technology. Developing secure, reliable, competitive domestic nuclear fuel cycle capabilities is a national security imperative.

The U.S. commercial nuclear industry is committed to eliminating the import of uranium and related conversion and enrichment services from the Russian Federation. However, reestablishing the necessary infrastructure will require billions of dollars and at least five years to sufficiently fill the gap currently served by Russia given years of atrophy. As it is imperative to act quickly, we will continue to work with the U.S. government to reestablish a secure and diverse supply of conversion and enrichment services so the industry can phase out Russian imports.

3. Surmount financing obstacles facing domestic plant deployment

Commercializing the multiple innovative nuclear plant designs now in various stages of development will allow this country and our allies to take advantage of nuclear energy's non-

emitting electricity as well as its ability to be used for many additional applications. Federal tax incentives, including the technology neutral clean electricity production and investment tax credits, will play a game-changing role in preserving our existing nuclear fleet and deploying innovative nuclear technologies. These incentives are vital to our success and must be preserved.

In addition, to meet the growing demand for advanced technology, first-of-a-kind projects must overcome concerns regarding cost and estimated schedule accuracy. Additional government support would meaningfully accelerate domestic deployments by addressing the unique costs these projects face and offsetting risks that commonly come with new construction. Government cost-overrun support for the first commercial operation of multiple innovative advanced reactor designs would help make these plants cost competitive. That would provide certainty for project developers and investors, incentivizing purchase orders for these new technologies to speed deployments and help build supply chain capacity.

Time is of the essence, as the governments of Russia and China have already heavily invested in new deployment, challenging American leadership and potentially destabilizing international security. To compete with Russia and China, the U.S. will need to rapidly bring multiple reactor designs to the market. Providing a range of reactor designs and sizes will enable advanced U.S. nuclear technologies to match the markets in which they will be deployed, both in terms of the energy demand and the financial investment. Global demand for advanced nuclear technologies is rapidly building, with cumulative capital expenditures estimated to reach \$8.6 trillion for new nuclear.¹²

¹² UxC, “Global Nuclear Market Assessment Based on IPCC Global Warming of 1.5° C Report” (July 2020), available at <https://www.nei.org/resources/reports-briefs/uxc-global-nuclear-market-assessment-report>.

For U.S. technologies to be seen as viable commercial options abroad, international customers will expect multiple units of the designs to be deployed at home. American power companies are making plans to deploy this next generation of nuclear power to meet their energy and decarbonization goals by 2050. Although the long-term expectations for U.S. advanced reactor deployments could exceed 200 GWe by mid-century,¹³ without a government accelerant the timing of these deployments may not be soon enough for those countries urgently seeking to avoid reliance on Russia or China.

4. Support U.S. competitiveness in global nuclear market

Reactor exports allow the U.S. to form 100-year strategic relationships around the world that span the construction, operation and decommissioning of a plant. In the current global market, U.S. companies must compete against companies that have vast state-backed financial and political resources. Russia and China use nuclear exports as an instrument of foreign policy. The U.S. similarly should assign strategic value to nuclear energy exports and direct DOE and the State Department to streamline the cumbersome Part 810 authorization process for technologies of low proliferation risk.

5. Reauthorize the Price-Anderson Act

The dual purposes of the Price-Anderson Act are to protect the public by ensuring adequate funds are available to satisfy liability claims in the event of a nuclear incident, and encourage development of the commercial nuclear energy industry by providing limits on liability and a predictable, efficient system for claims management and administration of funds. Since its passage in 1957, the Act has met these two objectives and been successfully implemented with minimal costs to the federal government or the U.S. taxpayer. Congress

¹³ DOE, “Pathways to Commercial Liftoff: Advanced Nuclear” (Mar. 2023).

should maintain the Price-Anderson Act's well-established liability framework by acting on renewal in the near term.

Both NRC and DOE¹⁴ implement portions of the Act by requiring financial protection to ensure that funds are available to pay public liability claims flowing from a nuclear incident. Under the NRC's program, all commercial reactor licensees enter into indemnity agreements with the agency; the value of that indemnity (if any) and the amount of privately funded protection (*e.g.*, insurance) required of the licensee is determined by the reactor's rated capacity. The Act is therefore well-suited to accommodate reactors in a wide range of sizes, from a few megawatts to more than 1,000.

For large reactors (≥ 100 MWe), the Act's financial protection requirements are met through two layers of insurance.¹⁵ With respect to the first layer, licensees must maintain the maximum amount of financial protection available from private sources; reactor licensees meet this requirement with commercial insurance. The second layer is funded by mandatory industry contributions (from all covered reactor licensees through a retrospective premium plan). Currently, the combined total amount of coverage for large operating reactors is ~\$13.5 billion per incident. For smaller reactors (< 100 MWe), financial protection is provided through a combination of private sources and NRC indemnification, providing a total of more than a half a billion dollars in coverage consistent with the limited risk associated with smaller reactors.

¹⁴ Under its program, DOE uses its indemnification authority to provide \$13.7 billion in coverage for liability resulting from a nuclear incident or precautionary evacuation in the U.S. that arises from activity under a DOE contract. DOE's indemnification also provides \$500 million in coverage for nuclear incidents occurring outside of the U.S. that involve nuclear material owned and used by or under contract with the U.S. In its January 2023 report to Congress, DOE concluded that continuation of the Act is "in the best interests of DOE, its contractors, its subcontractors and suppliers, and the public." We agree with DOE's conclusions and support the Department's proposal to increase the amount of indemnification authorized to cover nuclear incidents occurring outside of the U.S. (increasing that amount to \$2 billion) and removing the condition that a nuclear incident arising from DOE contractual activity abroad must involve nuclear material owned by the U.S.

¹⁵ The value of NRC's indemnification agreements for large reactors falls to zero once a licensee is authorized to operate.

The NRC's authority to enter into indemnification agreements under the Price-Anderson Act will expire at the end of 2025. That authority is vital to advanced reactor licensing. A long-term extension (*i.e.*, 40-50 years) or permanent reauthorization would send a strong signal to investors and developers that the foundational liability provisions of the Act will remain intact. Because the Act's purposes are no less important today than they were in 1957, it is essential that Congress continue the established liability framework that has served the public and industry well for more than six decades.

6. Establish an integrated approach to used fuel management

To date, the safe management of used nuclear fuel at reactor sites has been an impressive but often untold success story. In 60 years of commercial nuclear electricity generation, there has never been a harmful radioactive release from used nuclear fuel. Significantly, the nation's entire used fuel inventory would fit inside a single big box store distribution warehouse and an individual's lifetime supply of nuclear energy would produce an amount of waste smaller than a soda can.

The nuclear industry continues to do its part to maintain public health and safety, but the federal government has a continuing statutory and contractual obligation to remove used nuclear fuel from the 76 commercial sites at which it is currently stored. Accordingly, we support DOE's recent effort to develop a consent-based process to site consolidated interim storage facilities. Because a permanent disposal repository is a necessary component of any credible used fuel management program, DOE's efforts to partner with communities on storage are more likely to succeed if they are part of a fully integrated used fuel management program that includes progress on a disposal facility (as well as continued research and support for recycling).

Around the globe, other nations are moving forward with integrated used nuclear fuel management programs. Finland is constructing a repository, France has a long and successful history of recycling used nuclear fuel and is developing a repository in partnership with community leaders, and Canada, Sweden, Switzerland, and the United Kingdom are in various stages of repository siting and development.

Much must be done to establish a program that will succeed in the U.S. NEI stands ready to work with the Congress and the public to develop durable solutions.

Conclusion

I want to thank the Committee for its continued support for nuclear energy and allowing me to testify on policies needed to establish an efficient, predictable licensing process and to advance new nuclear deployments. Enactment of supportive legislation is vitally important to achieving U.S. energy independence, ensuring national security, and meeting carbon reduction goals. The industry looks forward to working with the Committee on its legislative proposals.