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Chairman Latta, Ranking Member Pallone, and distinguished Members of the Subcommittee, thank you for the opportunity to testify regarding the nuclear energy legislation under consideration.

It is an honor to join you. I appear before you today in my personal capacity, and my testimony does not represent the official position of the University of Illinois System. My expertise is grounded in the modeling and simulation of the nuclear fuel cycle and advanced reactor technologies. Also, during my tenure as Assistant Secretary for Nuclear Energy at the Department of Energy, I worked directly with Congress, industry, national laboratories, and international regulators to advance reactor demonstrations, support reactor restarts, encourage reactor uprates, and strengthen domestic fuel-cycle capabilities, accelerating the availability of high-assay low-enriched uranium, or HALEU. Those collaborative efforts helped direct billions of dollars toward rebuilding critical elements of the nation's nuclear energy infrastructure and supply chain. Accordingly, my perspective today balances my technical research background with the practical realities of federal nuclear energy policy implementation.

The United States is experiencing one of the most promising periods for nuclear innovation and deployment in decades. Advanced reactor developers are moving from concept toward demonstration. Existing reactors are pursuing license renewals and power uprates. Growing electricity demand, driven in part by data centers, advanced manufacturing, electrification, and artificial intelligence computing infrastructure, is increasing interest in this reliable, carbon-free generation. Nuclear energy currently provides approximately one-fifth of total U.S. electricity generation and therefore roughly half of the nation's carbon-free electricity. New investments in fuel-cycle capabilities, domestic fuel production, manufacturing capacity, and workforce development are helping establish the foundations for future growth.

The legislation today reflects bipartisan recognition that nuclear energy is a vital component of our nation's climate future, environmental sustainability, energy security, economic prosperity, and technological leadership. The bills under discussion address a range of topics, including fuel-cycle facilities, licensing procedures, workforce development, transparency, and institutional capacity. Together, they raise a common question: how can the United States ensure our institutions are capable of supporting rapid nuclear energy deployment while preserving public confidence?

The long-term success of nuclear energy will depend on technological innovation as well as on maintaining effective, transparent, and trusted institutions. Nuclear energy relies on public confidence to a greater extent than many other energy technologies. Communities host facilities because they trust the science and engineering behind them. They continue to support those facilities because they trust the institutions responsible for oversight. Investors commit capital because they trust the stability and predictability of regulatory systems. International partners cooperate with the United States because they trust the rigor of American engineering standards. The United States remains the global benchmark for independent nuclear regulation, and that reputation is recognized in international nuclear commerce and nonproliferation leadership.

For that reason, I believe Congress can best support nuclear energy deployment by advancing policies that strengthen regulatory effectiveness, technical expertise, transparency, and public trust simultaneously.

The Nuclear REFUEL Act addresses an ambiguity in the Atomic Energy Act regarding the licensing of advanced fuel recycling technologies. The bill would clarify that certain recycling facilities may be licensed under the same framework used for uranium recovery and fuel fabrication facilities rather than under the framework historically associated with plutonium reprocessing plants. There is merit in providing regulatory clarity for developers pursuing innovative approaches to recovering usable materials from spent nuclear fuel. The United States currently stores more than 90,000 metric tons of commercial spent nuclear fuel, most of it safely managed at reactor sites. Advanced recycling technologies seek to recover additional energy value from that material while reducing the volume or longevity of certain waste streams. At the same time, fuel recycling has historically raised important questions regarding economics, nonproliferation, and waste management. Any revised licensing pathway should preserve risk-informed requirements for material accountancy, physical protection, environmental review, and independent technical oversight.

The American Enrichment Deployment Act would extend to uranium enrichment facilities the same authority for limited at-risk construction activities that Congress has previously provided for other fuel-cycle facilities. The United States urgently needs additional domestic enrichment capacity, particularly for HALEU, which is expected to support many advanced reactor designs. Today, commercial HALEU supplies remain limited, and prior to federal investments, Russia was effectively the only commercial supplier of HALEU at scale. Dependence on foreign enrichment services, particularly from geopolitical competitors, presents both economic and national security concerns. Allowing certain non-safety-significant construction activities to proceed before final licensing decisions may reduce project risk and accelerate deployment. However, Congress should ensure that at-risk construction remains genuinely at the applicant's risk and does not create practical pressure on regulators to approve facilities because substantial investments have already been made. Regulatory independence is most important when significant financial interests are at stake.

The Efficient Nuclear Licensing Hearings Act would modify hearing requirements for uncontested licensing actions before the Nuclear Regulatory Commission. The NRC currently conducts mandatory hearings even when no party contests an application and no substantive dispute exists. There is a reasonable argument that agency resources should be focused where genuine technical or legal questions remain unresolved. Streamlining uncontested proceedings

could allow NRC staff and adjudicatory resources to concentrate on more consequential matters. This issue is particularly relevant as the NRC prepares to review a growing number of advanced reactor applications while continuing oversight of the existing fleet of more than ninety operating reactors. Nevertheless, public participation and procedural transparency remain important sources of legitimacy. Any reforms should preserve meaningful opportunities for affected communities, public-interest organizations, Tribal governments, and other stakeholders to raise concerns. Efficiency must not supercede meaningful accountability.

The NRC Staff Pay Alignment Act addresses the necessity for the NRC to recruit and retain highly qualified technical personnel. Regulation of nuclear energy technologies requires expertise across engineering, physics, materials science, cybersecurity, risk assessment, emergency preparedness, environmental protection, and material security. As a professor, I've witnessed firsthand how the private sector's growing demand for nuclear expertise has increased competition for this workforce. More than one hundred companies are currently pursuing advanced nuclear reactor, fuel cycle, and related technologies in the United States, creating substantial demand for experienced engineers, analysts, and licensing professionals. Aligning NRC compensation authorities with those available elsewhere in government may help preserve the agency's technical capacity during a period of rapid industry growth. In order for the NRC to review increasingly diverse technologies efficiently, it must ensure that the agency can attract and retain the expertise necessary to do so.

Unfortunately, this workforce challenge is exacerbated by the current NRC pause on discretionary grants, which include undergraduate scholarships, graduate fellowships, trade school and community college assistance, and Distinguished Faculty Advancement grants in the NRC’s University Nuclear Leadership Program. Sustaining the workforce required to meet NRCs demands requires consistent support for the universities that underpin those pipelines. Universities perform world class research, teaching, and training enabling engineers to develop the technical competency and professional responsibility necessary for this sector. Investment in the NRC technical workforce pipeline at the outlet while starving the inlet is unsustainable.

The legislation concerning the Advisory Committee on Reactor Safeguards, or ACRS, seeks to modernize the role of one of the nation's most important sources of independent expertise in reactor safety. For nearly seventy years, the ACRS has provided external technical review of reactor safety issues and has often identified concerns that benefited from additional analysis. Established by the Atomic Energy Act and predating the creation of the NRC itself, the committee has contributed to the safety review of virtually every generation of commercial reactor technology deployed in the United States. Efforts to focus ACRS resources on the most safety-significant matters may improve efficiency and reduce duplication. However, independent review is a key mechanism through which public confidence is earned, especially as the makeup of the Commission itself has become less technical over time. As Congress considers reforms, I encourage careful attention to preserving the committee's independence, technical breadth, and ability to raise concerns that may not be apparent within ordinary regulatory processes or convenient to industry. Independent expertise is most valuable when it is empowered to disagree.

Draft legislation relating to Department of Energy transparency would increase transparency regarding certain DOE nuclear energy activities, directives, and decision-making processes. The Department of Energy plays a central role in public engagement, community relationship

management, Tribal consultations, and international coordination supporting advanced reactor demonstrations, fuel-cycle innovation, research infrastructure, and public-private partnerships. Those efforts spur much of the momentum we see today across the nuclear energy sector. Through programs such as the Advanced Reactor Demonstration Program, DOE has partnered with the communities, universities, and industry to accelerate the deployment of first-of-a-kind reactor technologies that otherwise might have struggled to secure permits and financing. In my view, public confidence is strengthened when stakeholders can understand what decisions are being made, why they are being made, and what evidence supports them. At the same time, transparency requirements should be implemented in ways that protect security-sensitive information, proprietary data, and legitimate national security interests. In the last few months, I have been disappointed by instances in which the DOE rollout of internal reforms missed the mark on public transparency. I applaud DOE officials who have publicly acknowledged these missteps and recognize the need for an informed public moving forward.

Taken together, these bills reflect a broader effort to improve the predictability, efficiency, and capacity of the institutions that support nuclear energy deployment in the United States.

Nuclear energy projects demand substantial investment and long-term planning. Uncertainty in licensing, workforce, or statutory authority creates significant obstacles, making clear regulatory frameworks beneficial. However, the strength of the U.S. nuclear enterprise rests on the credibility of its institutions, including NRC's reputation for independent, expert, technical oversight and DOE’s history of driving innovation in the public interest. Reforms should improve efficiency while preserving this credibility.

A secure domestic fuel supply is vital for both the existing fleet and advanced reactors. Building capabilities in enrichment, fabrication, and recycling requires both innovation and public confidence that safety and materials security remain priorities. Furthermore, institutional effectiveness depends on a highly specialized workforce. As advanced technologies diversify and retirements loom, recruiting and retaining technical expertise within government is critical.

The deliberate separation of nuclear promotion from regulation has provided fifty years of public confidence and regulatory durability. Regulatory independence, established by separating the NRC from the Department of Energy, ensures objective oversight and prevents regulatory capture. History shows that when safety protocols are superseded by political or commercial priorities, as seen in both the Chernobyl and Fukushima accidents, the risks are severe.

As Congress considers this legislative package, I am encouraged to see attention on the institutional transparency, and independence that make durable deployment possible. Strong technical expertise, transparent decision-making, independent oversight, meaningful public participation, and public confidence reinforce a successful nuclear future. To sustain America's current momentum, we must preserve and strengthen the institutions that underpin these tenets.

Thank you for the opportunity to testify today. I look forward to your questions.