



Note to readers: When the United Coalition for Advanced Nuclear Power was created, we set out to be singularly focused on advanced nuclear technology, including SMRs. We work with all aspects of the nuclear ecosystem but wanted to differentiate ourselves by focusing on this specific subsector and the deployment of this technology.

The increasing awareness of the important role of nuclear energy is seen in the enactment and implementation of recent laws and a growing interest from users with high power demands and the investment community. Some in Congress speak of spending fatigue, so we're especially interested in alternative financing opportunities and backstops that help seize the moment for nuclear's future.

To that end, we've always seen nuclear energy as benefiting energy security, national security, and the environment and, as former government officials, have crafted a broader message for policy makers of any political party. More than just messaging themes, we have put the actual needs down in a government style policy document as direction to the various agencies but also for the private sector and other stakeholders who are going to be the engine of deployment.

We welcome you to provide us with your thoughts and impacts.



# *U.S Advanced Nuclear Energy Deployment Strategy*

## **Introduction**

A robust nuclear energy sector is vital to achieving America’s energy, climate, environmental, economic, and national security goals. Both current and advanced nuclear power technologies dramatically reduce carbon emissions, offer the benefits of safe and reliable power, and can be employed to decarbonize a wide array of thermally-intense industrial processes. Simply put, nuclear energy represents the best opportunity for America to lead the world in the transition to clean energy while dramatically increasing American energy and national security.

## **Vision**

The overarching goal of the UCAN Power strategy is to deploy no less than 200 Gigawatts (electric) of new advanced nuclear capacity by 2050, accompanied by the establishment of a secure, reliable North American fuel supply chain for both conventional and advanced nuclear fuels, in particular the high assay, low-enriched uranium (HALEU) fuel needed by many advanced reactor designs. This expansion of America’s nuclear energy sector will further accelerate the decarbonization of the electricity grid and provide nuclear-generated thermal heat for hydrogen production and numerous industrial applications.

This strategy requires five lines of effort for a “whole of government” approach to supporting, promoting, deploying, and expanding U.S. nuclear capacity. For too long, nuclear energy deployment has lagged due in part to too many federal agencies pursuing competing priorities and as a result not sending a clear market signal of U.S. commitment in this sector. This strategy consolidates decision-making within the Executive Office of the President to facilitate coordinated leadership and actions across all federal agencies.

This strategy is intended to drive engagement between government, industry, states, and individual communities to unlock new opportunities and ensure America is the global leader in the next generation of clean energy technologies.

### ***(1) Accelerate Deployment of Advanced Nuclear Reactors***

Advanced nuclear includes a broad range of technologies, from transportable and stationary micro-reactors and radioisotope systems that can provide localized energy production for civil and national defense needs, to larger reactors with intrinsically safe designs that can provide electricity, benefit the decarbonization of many energy-intensive industrial processes, or produce life-saving medical isotopes.

History shows that in the early years of the nuclear era, the federal government funded dozens of advanced reactor demonstrations, with over 50 reactors built at the Idaho National Laboratory alone. Today's few demonstrations, while essential, should be buttressed by additional demonstration projects across the broad range of nuclear technologies and applications. This includes:

- No less than five additional Department of Energy reactor demonstrations, for both civil electrical and process heat production;
- Additional Department of Defense demonstration programs for providing mobile and fixed site electricity to DOD bases and other facilities, to power ten or more facilities by micro-reactors by 2033;
- The Department of Homeland Security, in coordination with DOD and DOE, should demonstrate a mobile micro-reactor technology for disaster response by the end of this decade; and
- The Departments of Energy and Defense and the National Aeronautics and Space Administration should conduct no less than six demonstration projects by 2030 to employ advanced Radioisotope Power System technologies for a wide array of critical missions.

Nuclear technologies require three overlapping stages to realize the industry's potential to support the energy transition: (1) committed order book generation (2) project delivery, and (3) industrialization. As such, it is essential for reactor developers to retain government support as they deploy "fast followers" for their initial demonstrations, and the Department of Energy should establish programs to support fast-follower deployment, up to the fifth unit of each new commercial or military technology.

## ***(2) Secure a Domestic Nuclear Fuel Supply Chain and Manufacturing Capability***

To obviate the need for Russian nuclear fuel imports, the U.S. and its trusted allies require a significant increase in uranium mining, milling, conversion, enrichment, and fuel fabrication capacity. We must take steps to immediately facilitate the expansion of all segments of the domestic nuclear fuel industry, consistent with the highest standards of safety and environmental protection.

For decades, the United States led the world in uranium mining, processing, conversion, enrichment, and fuel fabrication, and was the premier supplier of nuclear fuel to the free world. Over time this supply chain atrophied as other nations entered the market, in particular Russia, which possesses the largest uranium enrichment capacity in the world.

The specific objective is to have a fully-functioning North American nuclear fuel supply chain in place by 2028, responsive to the needs of industry and government for providing both traditional low enriched uranium as well as HALEU. The Department of Energy should accelerate its HALEU Availability program to meet these urgent needs.



### *(3) Facilitate The Export of U.S. Technology*

Exporting American nuclear technologies to countries ready and able to operate them creates 100-year relationships that not only provide clean, reliable electricity and industrial heat to cut carbon emissions, but also help safeguard our security and the security of our partners. Nuclear energy developers in the United States need unfettered access to international markets to enhance a return on the significant investment needed to engineer, build, and operate the next generation of reactors.

As a first step, the administration should establish the position of Senior Director of Civil Nuclear Energy on the National Security Council, to oversee interagency coordination, assure adequate budget support, and promote civil nuclear energy domestically and abroad. This vital position should be created immediately. The Senior Director should be tasked with overseeing a Nuclear Energy Working Group, comprised of representatives from key Departments and independent agencies, to maintain strong momentum for carrying out this strategy.

### *(4) Increase and Improve Regulatory Capacity*

To meet the call to action in this strategy, the Nuclear Regulatory Commission (NRC) will need to scale its license-application capacity significantly -- and quickly. We cannot achieve our national goals for clean energy at the current pace and costs of NRC processes. The administration and Congress should provide additional resources and personnel to support a vastly expanded licensing regime, while the NRC must continue to streamline and modernize its licensing processes for advanced nuclear technologies.

In achieving these goals, the United States must maintain world leadership in nuclear safety, security, regulation, and nonproliferation, including the continued safe storage of spent fuel. In addition, we will incentivize investments in technologies which will reduce the current radioactive rod inventory, which, if harnessed through reprocessing and use in advanced reactors, has enough energy to power the entire United States for over 100 years.

### *(5) Develop a 21<sup>st</sup> Century Nuclear Workforce*

To meet the goals of this strategy, the U.S. will need a new generation of nuclear technicians, scientists, and operators, which will require a combined effort between government agencies, academia, and the private sector. The Departments of Energy and Education should partner to advance nuclear-focused education at the undergraduate, graduate, and postgraduate levels, and to implement creative programs to catalyze this expansion of nuclear education. Further, the Department of Labor should work closely with American trade unions and the private sector to expand training programs related to building and operating critical nuclear infrastructure and facilities.



## Conclusion

The administration and Congress have, in recent years, provided significant support for the U.S. nuclear industry; however, far more needs to be done. Foreign powers continue to dominate the international nuclear marketplace, and advanced reactor development here at home has been slow and episodic, while nuclear fuel and manufacturing supply chains remain uncertain.

An innovative and forward-thinking strategy to develop and deploy clean-energy nuclear technologies is needed – indeed, is essential for promoting economic growth, prosperity, environmental stewardship, and American national and energy security. The time to act is now, and boldly so.

