Insights: Alerts

President’s Executive Orders on Nuclear Energy—Expanded Analysis & Opportunities for the Private Sector

July 16, 2025

Written by **Benjamin W. Smith,**

On May 23, 2025, President Trump issued four executive orders regarding the development of nuclear energy. These orders encompass reforms to the Department of Energy's (DOE) nuclear reactor testing, accelerated deployment of advanced reactor technologies for national security, reinvigoration of the domestic nuclear industrial base, and significant reforms to the Nuclear Regulatory Commission (NRC). This legal alert provides a thorough summary of each executive order, with expanded details on key provisions and a focused analysis of actionable benefits for companies in the private sector.

1. Executive Order No. 14299: Deploying Advanced Nuclear Reactor Technologies for National Security

Expanded Key Points

Advanced Reactors for Defense:
The order authorizes the DOE and Department of Defense (DoD) to prioritize the rapid deployment of advanced nuclear reactors—such as microreactors and small modular reactors (SMRs)—on military bases and strategic installations to ensure reliable, resilient energy supplies.

Pilot Projects:
Federal agencies are to solicit proposals from private developers for pilot deployments. These projects will be used to demonstrate the operational feasibility, cybersecurity, and logistical advantages of advanced reactors in defense environments.

Supply Chain Security:
The order calls for an assessment and fortification of domestic supply chains for nuclear fuel (including high-assay low-enriched uranium, or HALEU) and critical reactor components, with procurement preferences for U.S.-based suppliers.

Regulatory Support:
The NRC, DOE, and DoD are instructed to coordinate on expedited review and approval processes tailored to defense-related projects, including the use of risk-based regulatory models.

Expanded Private Sector Benefits

Direct Access to Government Markets:
Private reactor developers can engage in government-backed pilot and deployment projects, which often serve as a springboard to broader commercial opportunities.

Long-Term Revenue Streams:
Successful pilot projects can lead to full-scale government procurement contracts, providing stable, multi-year revenue and enhancing a company's commercial credibility.

Supply Chain Integration and Preference:
U.S.-based component manufacturers, fuel suppliers, and engineering firms will benefit from “Buy American” preferences and initiatives to localize critical supply chains.

Regulatory Certainty and Speed:
Streamlined regulatory processes for defense applications will enable private companies to move quickly from concept to deployment, setting regulatory precedents that may be leveraged in the civilian sector.

Technology Demonstration and Validation:
Government pilots provide a unique environment for demonstrating the robustness and security of new technologies, which can be leveraged in marketing to commercial and international customers.

2. Executive Order No. 14300: Ordering the Reform of the Nuclear Regulatory Commission

Expanded Key Points

Regulatory Streamlining:
The NRC is mandated to review and overhaul its licensing processes, particularly for advanced reactors and SMRs, with a focus on eliminating unnecessary steps and redundancies while maintaining high safety standards.

Revising Permitting Deadlines:
The order directs the NRC to complete rulemakings within 18 months to comprehensively revise its regulations and guidance documents, which will include establishing fixed deadlines for evaluation and approval of licenses, which will reduce the existing timeframe of 7 years to an 18-month deadline for licenses to construct and operate new reactors and a 12-month deadline for licenses for continued operation of an existing reactor.

Performance Metrics:
The NRC must establish clear metrics and timeframes for processing license applications, including public reporting of performance against these targets to ensure transparency and accountability.

Risk-Informed, Technology-Neutral Regulation:
The order directs the NRC to complete rulemakings within 18 months to comprehensively revise its regulations and guidance documents, which will include establishing fixed deadlines for evaluation and approval of licenses, including an 18-month deadline (from the current 7 years) for construction and operation of new reactors and a 12-month deadline for continued operation of an existing reactor.

Stakeholder Engagement:
The NRC is required to create structured opportunities for industry stakeholders to provide input on regulatory

changes, including regular public workshops, advisory committees, and comment periods during rulemaking.

Expanded Private Sector Benefits

Reduced Regulatory Uncertainty:
A more predictable and transparent licensing process will allow companies to plan and finance projects with greater confidence and less risk of costly delays.

Accelerated Innovation:
Technology-neutral, risk-informed regulation will enable the approval and commercialization of novel reactor designs, including microreactors, molten salt reactors, and other advanced concepts.

Active Influence on Regulatory Policy:
Companies will have formal mechanisms to provide feedback and help shape regulatory reforms, ensuring that new rules are practical and conducive to innovation.

Lower Compliance Costs:
Streamlined and clarified requirements will reduce the burden of regulatory compliance, freeing up resources for R&D, manufacturing, and commercialization.

First-Mover Advantage:
Companies that are well-prepared to engage with the NRC's revised processes can achieve early mover status, gaining a competitive edge in the licensing and deployment of advanced reactors.

3. Executive Order No. 14301: Reforming Nuclear Reactor Testing at the Department of Energy

Expanded Key Points

Modernization of Testing Infrastructure:
The DOE is directed to launch a comprehensive modernization initiative for its nuclear reactor testing assets, including upgrades to the National Laboratories' test reactors, simulation facilities, and digital infrastructure. This includes both physical upgrades (new instrumentation, enhanced safety systems) and digital modernization (advanced modeling and simulation tools).

Public-Private Partnerships:
The order mandates that DOE create new frameworks for sustained collaboration with private sector innovators. This includes joint R&D agreements, cost-sharing arrangements, and the establishment of consortia focused on advanced reactor development.

Streamlined Access:
The DOE must review and revise procedures governing private sector access to its facilities, with a goal to minimize administrative delays. Processes for facility use agreements, safety reviews, and intellectual property management are to be made more transparent and efficient.

Funding Opportunities:
Federal grants, cooperative agreements, and other funding instruments are to be expanded, with a preference for projects that involve commercial entities developing next-generation nuclear technologies.

Expanded Private Sector Benefits

Access to State-of-the-Art Facilities:
Private companies, including startups and established reactor developers, can accelerate technology maturation by utilizing DOE's advanced testing infrastructure without bearing the full capital or operational costs.

Lower Barriers to Collaboration:
Simplified procedures and transparent IP policies will ease the formation of public-private partnerships, allowing companies to safeguard proprietary innovations while collaborating with government researchers.

De-risked R&D Investments:
Increased grant and cost-sharing opportunities mean companies can leverage federal funds to offset the high costs and risks inherent in nuclear innovation.

Faster Time-to-Market:
With reduced regulatory hurdles for accessing testbeds, companies can validate their technologies faster, improving their competitiveness for both federal procurement and commercial deployment.

4. Executive Order No. 14302: Reinvigorating the Nuclear Industrial Base

Expanded Key Points

Support for Domestic Manufacturing:
The order instructs federal agencies to implement policies that enhance U.S. manufacturing capacity for nuclear components, including incentives for new facilities and modernization of existing plants. This includes a focus on advanced manufacturing techniques such as additive manufacturing and digital quality assurance.

Export Promotion:
Agencies such as the Department of Commerce, DOE, and Export-Import Bank are to coordinate efforts to promote U.S. nuclear technology abroad. This includes trade missions, technical assistance to foreign regulators, and financial support for international projects using U.S. technologies.

Incentives for Innovation:
Expansion of federal tax credits, loan guarantees, and accelerated depreciation for investments in new nuclear capacity, supply chain modernization, and clean energy R&D.

Workforce Training:
Launch of new educational grants, apprenticeship programs, and retraining initiatives to address shortages in nuclear engineers, skilled trades, and advanced manufacturing specialists.

Expanded Private Sector Benefits

Manufacturing Expansion:
Component and reactor manufacturers can access grants, tax incentives, and technical assistance to build or upgrade facilities, adopt advanced manufacturing processes, and expand capacity to meet rising demand.

Enhanced Export Opportunities:
U.S. nuclear technology vendors can benefit from coordinated diplomatic and financial support in competing for international contracts, particularly in emerging markets seeking to deploy first-of-a-kind reactors.

Financial Support for Growth:
Broader and more accessible federal incentives will make it easier for companies to finance capital-intensive projects, attract private investment, and manage commercial risk.

Workforce Pipeline Security:
Companies will have greater access to a pool of highly trained workers, reducing the risk of labor shortages and lowering recruitment and training costs.

Supply Chain Resilience:
Incentives and federal procurement policies will help diversify and strengthen the domestic supply chain, reducing reliance on foreign suppliers and enhancing operational security.

Conclusion

These executive orders collectively signal a major policy shift intended to revitalize U.S. nuclear energy leadership through modernization, innovation, and public-private collaboration. Private sector companies across the nuclear value chain—developers, manufacturers, suppliers, and service providers—stand to benefit from new federal support, streamlined regulations, and expanded market opportunities. Companies should closely monitor agency implementation, actively engage in stakeholder processes, and position themselves to take advantage of new partnerships, funding, and policy initiatives.

Related People

Benjamin W. Smith

t 919.420.1719
bwsmith@ktslaw.com