



H.R. 4084, the Nuclear Energy Innovation Capabilities Act

Section-by-Section Analysis

- Section 1 provides a short title: “Nuclear Energy Innovation Capabilities Act.”
- Section 2 provides technical definitions.
- Section 3 amends DOE’s civilian nuclear energy R&D mission to ensure that the DOE enables the private sector to partner with national labs for the purpose of developing novel reactor concepts.
- Section 4 provides a sense of congress that nuclear fission and fusion represent an opportunity for high energy density, zero air-emissions technology development of national importance to scientific progress, national security, energy R&D, and space exploration.
- Section 5 provides programmatic authority for DOE to leverage its supercomputing infrastructure to accelerate nuclear energy R&D capabilities for advanced fission and fusion reactor technologies.
- Section 6 provides the DOE with statutory direction for a reactor-based fast neutron source that will operate as an open-access user facility to enable academic and proprietary research in the United States.
- Section 7 authorizes DOE to enable the private sector to construct and operate privately-funded reactor prototypes at DOE sites.
- Section 8 requires DOE to produce a transparent, strategic, 10-year plan for prioritizing nuclear R&D programs while considering budget constraints.

Background and Need

- The Department of Energy’s (DOE’s) national laboratory complex originated from the Manhattan project and since then has provided the facilities and expertise necessary to conduct research and development (R&D) for military and civilian applications of nuclear energy. DOE carries out civilian nuclear energy R&D through the DOE labs and universities which provide research infrastructure and employ highly trained scientists to maintain the nation’s critical R&D capabilities.
- The U.S. regulatory system, managed by the Nuclear Regulatory Commission (NRC), creates a barrier to investment for advanced reactor technologies because it is ill-equipped to process licenses in a timely and predictable manner, which further suppresses private investment and technology development. This legislation directs DOE to prioritize R&D infrastructure that will enable the private sector to invest in advanced reactor technologies and provide a clear path forward to attract private investment for prototype development at DOE labs.