

H.R. 8674, the Milestones for Advanced Nuclear Fuel Act, establishes milestone-based development and demonstration projects relating to nuclear fuels at the Department of Energy (DOE).

Background

Since the start of the war in Ukraine, the United States' dependence on Russian nuclear fuel has become an unavoidable challenge for advanced nuclear reactor development. In 2022, Russia supplied 20% of the U.S. reactor fleet's nuclear fuel. Globally, Russia controls 40% of the world's uranium conversion infrastructure and 46% of the total uranium enrichment capacity. In comparison, the U.S. has a miniscule share of the nuclear supply chain with one milling facility, one conversion facility, two enrichment facilities, three main fuel fabrication facilities, and no recycling facilities.

For next generation advanced nuclear reactors, the challenge is further exasperated due to the fact that Russia's state cooperation, Rosatom, is the only commercial producer of High-Assay Low Enriched Uranium (HALEU). Both awardees in the Advanced Reactor Demonstration Program have indicated that their projects would be delayed as a result of having to seek other sources for HALEU.

Although Section 9005 of the Energy Act of 2020 granted authority for the Secretary of Energy to use a milestone-based structure for all demonstration projects, the Department has been slow to take advantage of this mechanism. In the past, milestone-based projects have achieved success while limiting the government's exposure to risk of overbudget and underperforming projects. NASA's Commercial Orbital Transportation Services (COTS) program was highly successful in stimulating a competitive market for launch providing services, decreasing costs, and reducing dependence on Russia for International Space Station transportation.

A milestone-based program requires that particular technical and financial goals or benchmarks, including those related to timelines and costs, be met before a participant is awarded the full amount of an award. A milestone-based approach to development and demonstration projects is instrumental in accelerating innovative technologies from lab to market. It also decreases barriers to entry for new participants, reduces dependence on potential monopolies, and protects taxpayers from waste, fraud, and abuse.

Bill Summary

H.R. 8674 would direct the use of a milestone-based structure for the development and demonstration of nuclear fuel projects in the Nuclear Fuel Security Act of 2023 and DOE's Fuel Cycle Research and Development program.

Specially, H.R. 8674 directs DOE to award milestone-based projects across the domestic nuclear supply chain, including uranium production, conversion, fabrication, enrichment, deconversion, and recycling. Through a competitive process, the program will prioritize novel technologies and processes while consulting with experts from the private sector, utilities, the investment community, and the nuclear fuel supply chain to evaluate proposals and assist in establishing milestones.

In addition, it requires the Secretary to submit annual reports to the Committee as part of the annual budget request and a report on the practicability, potential benefits, and estimated lifecycle costs of recycling spent nuclear fuel into usable fuel for nuclear reactors.