GAO Highlights

Highlights of GAO-22-105394, a report to congressional requesters

September 2022

NUCLEAR ENERGY PROJECTS

DOE Should Institutionalize Oversight Plans for Demonstrations of New Reactor Types

Why GAO Did This Study

In 2021, nuclear energy accounted for almost 20 percent of the nation's electricity generation and provided about 50 percent of the carbon-free electricity. However, economic challenges have led to the closure or planned shutdown of multiple nuclear power plants. To address these challenges, DOE has made awards to projects that demonstrate first-of-a-kind small modular and advanced reactors. These are either smaller than existing reactors or use technologies expected to offer improvements over the most recent generation of nuclear reactors. According to DOE, the federal government has a unique role to play in reducing the financial and technical risks faced by companies seeking to develop these technologies.

GAO was asked to review DOE's management of nuclear energy demonstration awards. This report (1) describes awards DOE has made to support the demonstration of small modular and advanced reactors; and (2) examines actions DOE is taking to manage risks associated with awards.

To do this work, GAO assessed DOE's management of the awards against laws, regulations, guidance, and leading project management practices. GAO also interviewed DOE program and project management officials, awardees, and industry stakeholders.

What GAO Recommends

GAO is recommending that DOE institutionalize via documentation its processes for providing oversight for large nuclear energy demonstration projects, including the use of external independent reviews. DOE agreed with GAO's recommendation.

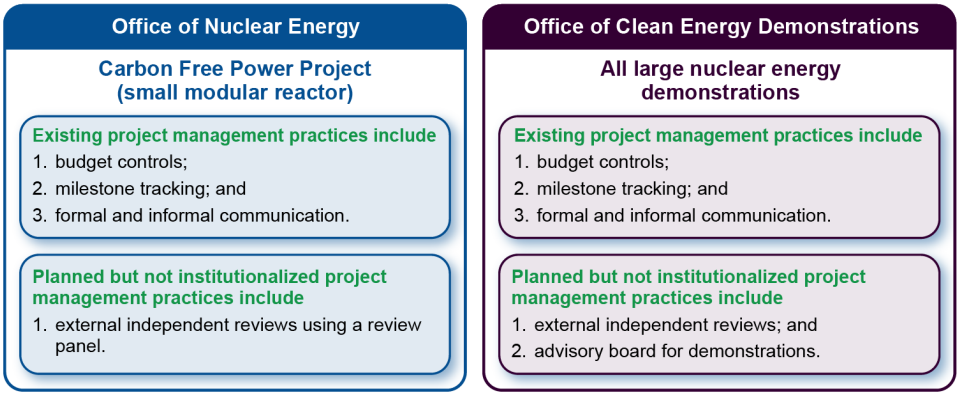
View GAO-22-105394. For more information, contact Frank Rusco at (202) 512-3841 or ruscof@gao.gov.

What GAO Found

The Department of Energy (DOE) supports the research, development, and demonstration of new types of nuclear reactors. In line with that role, in fiscal year 2021, the department made three multi-year awards totaling $4.6 billion to support the demonstration of one small modular reactor and two advanced reactors. DOE awarded the Carbon Free Power Project about $1.4 billion for a small modular reactor plant near Idaho Falls, Idaho. Under the Advanced Reactor Demonstration Program, DOE awarded TerraPower almost $2 billion for the Natrium™ Demonstration in Wyoming and awarded X-energy about $1.2 billion for the Xe-100 Demonstration in Washington State.

DOE has taken several actions to manage risks associated with the three demonstration awards, including using project management practices such as budget controls and milestone tracking. The two DOE offices managing the awards—the Offices of Nuclear Energy and Clean Energy Demonstrations—also plan to use additional project management practices, such as external independent reviews, to oversee the awards (see fig.). Office of Clean Energy Demonstrations officials said these additional project management practices will apply to all large DOE energy demonstration awards, regardless of which DOE offices are managing those awards. However, neither office has institutionalized its plans by documenting these additional project management practices. Documenting these processes, including the use of external independent reviews, would allow DOE to share best practices across offices during the course of these multi-year awards, potentially resulting in stronger federal oversight of the projects and improved project performance.

Existing and Planned Project Oversight Processes for Nuclear Energy Demonstration Awards, as of June 2022



Sources: Department of Energy documents, and interviews with agency officials. | GAO-22-105394