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DEPARTMENT OF ENERGY

Advanced Research Projects Agency-Energy Could Benefit from Information on Applicants' Prior Funding

Why GAO Did This Study

The Department of Energy's (DOE) Advanced Research Projects Agency-Energy's (ARPA-E) purpose is to overcome long-term and high-risk technological barriers in the development of energy technologies. Since 2009, ARPA-E has awarded $521.7 million to universities, public and private companies, and national laboratories to fund energy research projects.

GAO was asked to examine (1) ARPA-E's use of criteria and other considerations for making awards and the extent to which applicants identify and explain other private funding information, (2) the extent to which ARPA-E-type projects could have been funded through the private sector, and (3) the extent to which ARPA-E coordinates with other DOE program offices to avoid duplicating efforts. GAO interviewed ARPA-E program directors, award winners, and nonwinners with characteristics similar to those of award winners. GAO also analyzed private venture capital funding data and spoke with venture capital firms.

What GAO Recommends

GAO recommends that ARPA-E consider providing applicants guidance with a sample response explaining prior sources of funding, requiring applicants to provide letters from investors explaining why they are not willing to fund proposed projects, and using third-party venture capital data to identify applicants' prior funding. ARPA-E commented on a draft of this report and concurred with key findings and recommendations.

View GAO-12-112 or key components. For more information, contact Frank Rusco at (202) 512-3841 or ruscof@gao.gov.

What GAO Found

ARPA-E uses four selection criteria, such as the potential impact of the proposed technology relative to the state of the art, and other considerations in awarding funds. Other considerations include balancing a variety of technology approaches and the likelihood the technology would be brought to market. GAO identified 18 out of 121 award winners through ARPA-E's first three funding rounds that had received some prior private sector investment, and ARPA-E took steps to identify and understand how this funding was related to proposed projects. Beginning with the third funding round, ARPA-E began requiring that applicants explain why private investors were not willing to fund proposed projects. However, ARPA-E did not provide applicants with guidance, such as a sample response, to assist them in completing this requirement, and responses were generally limited. Some applicants provided general information about prior research but did not specifically explain why private investors would not support their projects. When applicants provided little prior funding information, ARPA-E's program directors spent time and resources to determine the extent of such funding for proposed ARPA-E projects. One applicant included a letter from its venture capital investor to explain why the investor was not willing to fund the work proposed to ARPA-E, an approach the National Institute of Standards and Technology uses as a check in its funding applications for advanced research but that ARPA-E currently does not use. Also, ARPA-E officials said that they have considered but have not used venture capital data to identify applicants with prior private investors. Examining such data allowed GAO to quickly cross-check applicants' prior private funding.

GAO's review suggests that most ARPA-E projects could not have been funded solely by private investors. Private venture capital firms told GAO that, among other considerations, they generally do not fund projects that rely on unproven technologies and tend to invest in projects that can be commercialized in less than 3 years. Data from ARPA-E on award winners show that 91 out of 121 ARPA-E projects from the first three funding rounds had technological concepts that had not yet been proven in a laboratory setting. Also, nearly all of the ARPA-E award winners and applicants GAO spoke with estimated that their projects were at least 3 years away from potential commercialization. In addition, GAO found that few eligible applicants that were not selected for an award later secured private funding.

ARPA-E officials have taken steps to coordinate with other DOE offices to avoid duplication. For example, ARPA-E program directors told GAO they engage in outreach with officials from related DOE offices in advance of funding announcements to identify funding gaps in research. In addition, program directors have recruited officials from other DOE offices and the Department of Defense (DOD) to review ARPA-E applications. This cross-agency interaction may also reduce the potential for overlap in funding.

_____ **United States Government Accountability Office**