



Bipartisan Policy Center Response to Request for Information on Opportunities for Pilot-Scale Operational Validation

TO: Office of Clean Energy Demonstrations, U.S. Department of Energy

DATE: July 31, 2023

RE: DE-FOA-0003123: Request for Information on Opportunities for Pilot-Scale Operational Validation

FROM: Bipartisan Policy Center

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Thank you for the opportunity to respond to a Request for Information on this important topic. The Bipartisan Policy Center, through its work with BPC's [American Energy Innovators Network](#), released a [white paper](#) with recommendations for DOE to support pilot-scale demonstration projects at OCED. The Network also released a [report](#) with recommendations for improving DOE's SBIR program. Recommendations included in both reports were developed in partnership with startup founders & CEOs, clean energy incubators and accelerators, venture capital firms and other funders, and policy organizations. We are pleased to see the content of this RFI and are grateful for the opportunity to respond to this important topic.

Category 1: Type of work and funding amount

1. What are the specific gaps and challenges, if any, that a pilot-scale clean energy technology validation program could address?

Potential applicants seeking funding for pilot-scale projects will be at a later stage than existing R&D program applicants (including DOE SBIR/STTR), and therefore their needs will be different and more focused on de-risking commercial adoption barriers than the typical DOE R&D awardee. In addition to the need to reliably demonstrate technology, major challenges to commercial deployment include establishing consumer adoption, overcoming regulatory hurdles, and addressing supply chain challenges. Because of these factors, awardees will be best supported if they have flexibility in how they spend their awards. Some options include navigating permitting processes, submitting patent applications, purchasing equipment, working with engineering and design partners, supporting manufacturing at scale, finding corporate partners, and identifying customers. OCED could also consider a model with matching funds to incentivize corporate partners to participate, which could spur more private sector investment

and potentially lead to future offtake agreements, expand public-private partnerships, and generally increase the likelihood of successful commercialization. Awards should also be allowed to supplement other awards a company has received.

2. What is the ideal funding amount that an entity would need to execute a pilot scale validation project?

There is a funding gap in the innovation pipeline for promising technologies to secure investment for pilot-scale demonstration projects that follow lab prototypes, especially for projects requiring less than \$20 million. These technologies have been deemed technically feasible in an R&D setting and must now demonstrate success at incrementally larger scales. They have likely identified potential commercial applications and need additional support for further market development. Venture capital investments generally occupy a high-risk profile and have a large number of relatively small investments. Existing public funding from applied R&D programs at DOE and other agencies are similarly structured in terms of making a large number of small investments and most of these programs focus solely on technical merit. In contrast, project finance providers focus on low-risk projects with a smaller number of large investments (around \$50-100 million or more) and typically require an idea to have been demonstrated multiple times on a large-scale and have a repeatable business model. Some options for funding this program include a cap of \$8-10 million, offering \$5 million over five years, or incremental grant amounts over a period of time (for example, \$250,000, \$1 million, \$5 million) with reporting and milestone requirements along the way. This increased cap could be coupled with smaller exploratory grants to be used to find partners and validate that the technology is ready for a Phase I award.

3. What would be the ideal length of a project solving both technology and adoption issues (see Figure 2)?

No response.

4. What is the ideal structure of such project?

No response.

Category 2: Funding mechanism, application process, reporting requirements

1. Which mechanism (financial assistance or procurement / acquisition) would be more effective at achieving the program goals – execute a pilot-scale, sub-scale, and/or full-scale pilot project? Why?

No response.

- 2. The typical application for funding consists of a technical volume in a narrative format, a budget justification, a community benefits plan, and additional documents specific to each solicitation (e.g., commercialization plan, project management plan, techno-economic analysis). However, other Government agencies and, more often, the private sector adopt different application formats (e.g., a slide deck; a pitch competition; or a mix of narrative documents and interview with reviewers). What is the most effective application to convey the technical details and potential impact of a proposed project without creating additional burden to potential applicants, especially if from small or minority owned businesses? What resources, tools, or templates would help your organization, or organizations in your industry, better respond to federal programs? Please provide specific examples that can help DOE better understand the suggested approach.**

In recent years, the NSF reformed its SBIR/STTR application process, in part by establishing a pre-application phase where applicants make a short project pitch, which mirrors how entrepreneurs communicate in the business world. DOE could consider adopting a similar approach to screen potential applicants, in addition to simplifying the process for applying for program funds.

- 3. In many funding announcements, DOE requires submission of a short concept paper or a pre-application (typically 5-10 pages of technical content) before the submission of the application package, with the opportunity of receiving preliminary feedback and an encourage/discourage recommendation or decision from DOE. The intent of the concept paper or pre-application process is to lessen the burden on potential applicants, as well as provide early feedback to applicants. On the other hand, this step makes the application process longer. Does the concept paper stage add significant value to potential applicants? Should DOE include this step in a potential procurement or financial assistance solicitation focused on small businesses?**

While the letter-of-intent (LOI) approach DOE currently uses is intended to reduce barriers to applying, the LOI remains too focused on technical merit. Allowing entrepreneurs to make a shorter project pitch could be especially impactful in terms of encouraging applicants from underrepresented backgrounds.

- 4. What should an ideal application review process focus on? How should an application be reviewed?**

Current DOE R&D programs focus on technical merit during the review process. For a program focused on advancing pilot-scale demonstrations, a more appropriate review process would incorporate elements of DOE's recent adoption readiness levels appropriate for a company at the pilot stage, in particular the categories related to value proposition and potential for market acceptance.

5. What is your ideal timeline between submission of an application and receiving an award?

The innovation arm of the Department of the Air Force, AFWERX, has a short period of performance from phase one. Submissions receive feedback in a few months. Reducing the time between submission and feedback greatly lowers perceived and actual barriers and gets more applicants in the door.

6. What is your ideal technical and financial reporting frequency and format that would allow OCED to provide proper oversight while avoiding an excessive burden on small businesses?

Improving flexibility in contracting could improve overall program delivery. If such a program is administered through an SBIR model, a flexible structure could take the form of a milestone-based approach to unlock SBIR Phase II funding instead of submitting an additional application. This would allow eligible companies to access SBIR Phase II financial resources with lower administrative burden, once milestones or requirements are met, and would eliminate the need for separate applications for companies who are further along commercially. This is possible under the current SBIR/STTR program authorization, and the ARPA-E SBIR program is currently structured this way.

Additionally, AFWERX awards firm fixed price contracts to small businesses through its SBIR/STTR program, significantly decreasing the administrative burden which can be overwhelming to companies at the SBIR Phase I stage. Under a firm fixed price contract, awardees are paid for specific milestones and deliverables, rather than reimbursed for incurred costs. ARPA-E SBIR/STTR program also uses a firm fixed price contract model for Phase I awards, even if the awards are coupled as Phase I/Phase II/Phase IIS combined awards. Additionally, OCED could consider providing funds to awardees up front instead of using a reimbursement model, which would prevent companies from needing additional funds on hand to receive an award. This can lead to companies taking on more venture or debt than they would otherwise, which can be especially harmful for startups and small businesses.

7. Describe major administrative burden(s) during the application phase or during the execution or close-out of a Federally funded project?

No response.

Category 3

No response.

Category 4: Technical, Business, and Commercialization Assistance

1. How can OCED support potential applicants and make sure they can meet the minimum readiness level required to apply to a potential program?

OCED should provide clarity to potential applicants on the needs and expectations of the program, specifically with respect to the level of technology for which the program is soliciting applicants. This is a common challenge for startups and small companies when navigating funding opportunities, both federal and private sector. It can be challenging to determine if your particular technology is at the stage intended by the funding opportunity.

2. How can OCED support awardees during the execution of their project to tackle all technical and adoption barriers to commercialization?

No response.

3. How can OCED facilitate, as part of these projects, the use of existing test bed facilities and other capabilities offered by National Laboratories and other third-party entities to validate technical performances of new technologies?

As stated in a previous question response, lack of access to laboratory and prototyping space, even in states with National Labs, makes it challenging to translate a technology from the lab to the marketplace and causes many companies and technologies to migrate towards bigger cities with lab-share programs. The DOE National Labs are an incredible resource for innovation, and efforts should be made to lower barriers to access lab resources for startups and innovative small businesses. While the DOE National Labs have many useful facilities, startups still find it very difficult to gain access to such facilities due to administrative and bureaucratic barriers at the National Labs. Even National Labs which engage heavily in tech transfer activities such as NREL still have a very high barrier to entry for startups and small businesses looking to partner with them. National Lab policies and practices should be revised and standardized to make it easier for startups to access their facilities.

4. A successful outcome for a project out of this program would be securing a purchase order from a clean energy or industrial plant developer or securing debt financing to expand manufacturing capabilities of the components, subsystems, or systems for the technology. How can OCED support awardees for a successful off-ramp at the end of the project?

A major challenge that startups often face in interacting with DOE is not knowing where they can seek support after receiving a standalone award. Providing an offramp for successful awardees would be of great value in helping startups move faster through the innovation process. Some potential options for OCED support could include: a venture day after providing grants to facilitate more funding; the ability to use program funds to help companies catalyze

additional private capital, including assistance securing customers; and clarity for awardees on objectives required for them to access LPO or private capital funding.

Category 5: Diversity, Equity, Inclusion, and Accessibility

1. How can OCED effectively reach out to minority-owned small businesses, make them aware of the program, and ensure they are prepared to submit a successful application?

To address participation issues in DOE loan programs, the Energy Act of 2020 directed DOE's Loan Programs Office (LPO) to establish an Office of Outreach and Business Development that would be tasked with assisting the completion of loan applications, conducting conferences and hosting online programs, and generally encouraging participation from a broader set of applicants. OCED should consider establishing an office with similar goals and structure to better support applicants who wish to apply for SBIR/STTR funding, especially applicants who do not have prior experience applying for federal grants and who come from underrepresented backgrounds. Such an office should be staffed by employees who have direct expertise and credentials related to these goals.

The activities of such an office at OCED could include:

- Conducting strategic outreach, holding informational webinars, and providing examples of winning applications.
- Building out Phase 0 to focus more directly on funding applicants who come from underrepresented backgrounds.
- Developing a mentorship program or network of awardees where new or prospective applicants or Phase 0 applicants can meet with past DOE SBIR/STTR recipients to help in navigating application and award management processes.

OCED could also consider developing [free video tutorials](#), similar to the tutorials that have been developed for Energy I-Corps, to guide potential applicants through the application and award management process as a form of asynchronous training.

OCED should also adopt best practices from responses to EERE's request for information on improving equity in climate innovation, in addition to findings in DOE's Equity Action Plan, to make meaningful progress on encouraging participation by women and underrepresented individuals in entrepreneurship and small business ownership.

To make progress on these issues most quickly, OCED should also consider partnering with existing, trusted organizations focused on supporting minority-owned businesses to further the reach and impact of outreach efforts. This could include organizations like the American Association for Blacks in Energy or the Dream.org Business Council.

2. What forums, associations, and communications channels does your organization and industry use to access information on programs like this effort? How can OCED increase awareness of this potential program, and the diversity of organizations aware of this opportunity?

In rural areas, we have heard that USDA extension offices are trusted resources for citizens to learn about federal funding opportunities. OCED could consider partnering with such entities to broaden the geographic reach of outreach efforts.

3. What changes should OCED make to the application and review process to be easily accessible by all potential applicants?

The inclusion of a Phase 0 program to provide application assistance to first-time and unsuccessful applicants (similar to the existing DOE SBIR/STTR Phase 0 program) can help make the application process easier for those unfamiliar with working with government. For example, many small businesses have difficulty securing the services of a FAR compliant accountant, either for financial reasons or lack of such accountants in their region.

Additionally, OCED can develop materials and provide dedicated support to help successful applicants navigate award management processes. Support is often needed beyond the application phase and through the award management phase.

As has been mentioned previously, access to feedback and individualized support during the proposal drafting process can be an important asset for new applicants and is current gap at DOE. In providing such services, OCED should coordinate with established DOE outreach in other program offices or within DOE's Office of Economic Impact and Diversity, as well as with local universities, Cooperative Extension Service offices, community colleges, or national labs. NSF and DOD were raised as examples of accessible programs – applicants can access NSF fairly easily, and DOD has pitch days where applicants can speak to program officials. Other ideas raised were a page limit for an initial pitch with quick feedback before invitations for a full proposal submission.

4. How can OCED leverage a program focused on small businesses to train the clean energy workforce of the future reflecting the diversity of the country?

No response.

5. How can OCED better connect minority-owned small businesses receiving an award with potential customer and off-takers to ensure sustainable and profitable long-term business operations?

No response.