

**Department of Energy (DOE)
 Office of Energy Efficiency and Renewable Energy (EERE)**

Innovative Pathways FOA

Funding Opportunity Announcement (FOA) Number: DE-FOA-0001703

FOA Type: Initial

CFDA Number: 81.117

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| FOA Issue Date: | December 20, 2016 |
| Informational Webinars: | January 4, 2017 and February 7, 2017 at 2:00pm ET |
| Submission Deadline for Letters of Intent: | January 18, 2017 at 3:00pm ET |
| Submission Deadline for Full Applications: | February 15, 2017 at 3:00pm ET |
| Expected Submission Deadline for Replies to Reviewer Comments: | March 17, 2017 at 3:00pm ET |
| Expected Date for EERE Selection Notifications: | May 2017 |
| Expected Timeframe for Award Negotiations | June to August 2017 |

- Letters of Intent are due on the date listed above to be eligible to submit a Full Application.
- To apply to this FOA, applicants must register with and submit application materials through EERE Exchange at <https://eere-Exchange.energy.gov>, EERE’s online application portal.
- Applicants must designate primary and backup points-of-contact in EERE Exchange with whom EERE will communicate to conduct award negotiations. If an application is selected for award negotiations, it is not a commitment to issue an award. It is imperative that the applicant/selectee be responsive during award negotiations and meet negotiation deadlines. Failure to do so may result in cancelation of further award negotiations and rescission of the Selection.
- EERE will compile an optional Teaming Partner List to facilitate the formation of new project teams for this FOA. See Description/Background of the FOA for more information.

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I. Funding Opportunity Description

To continue its work bolstering U.S. innovation and competitiveness in an evolving energy sector, the Technology-to-Market Program (Tech-to-Market) within the U.S. Department of Energy's (DOE's) Office of Energy Efficiency and Renewable Energy (EERE) is releasing its Innovative Pathways Funding Opportunity Announcement (FOA).

Tech-to-Market pilots and evaluates innovative, crosscutting programs that eliminate common barriers preventing market exploration of clean energy technologies. Tech-to-Market works across two interrelated topic areas to achieve this mission: (1) Technical Community and Industry Collaboration, and (2) Lowering Barriers to Resource Access.

The Innovative Pathways FOA seeks to surface new testable and scalable ways (mechanisms, approaches, models, and/or platforms) to address both areas above (Topics 1 and 2, respectively). This FOA will fund the implementation of innovative mechanisms that could alleviate some of the common structural challenges that promising new energy technologies face on the pathway to market. Within the two Topics: (1) Technical Community and Industry Collaboration and (2) Lowering Barriers to Resource Access, Tech-to-Market highlighted Areas of Interest. The Areas of Interest for this FOA are (1) Models for industry-startup partnerships under Topic 1 and (2) New investment models under Topic 2. However, Tech-to-Market will consider any proposals that address one or both Topics for funding.

EERE's intent is to pilot and evaluate new mechanisms, and to position those that are successful for adoption by the private sector. These mechanisms are intended to augment existing Tech-to-Market efforts that are currently being supported. This funding opportunity is not intended to fund individual technology solutions directly. Rather, it will fund approaches that address common barriers across the larger energy ecosystem to help create more efficient pathways to market for clean energy technologies. Tech-to-Market plans to select approaches that are extremely high-leverage, with the potential to effect significant improvements within the innovation ecosystem with limited capital. Overcoming these common barriers will help bolster U.S. leadership in energy innovation, capturing the associated economic benefits and ensuring affordable and reliable American energy.

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Subject to the availability of funds, up to \$4,200,000 in federal assistance will be provided over two years through this funding opportunity. A 20% recipient cost-share is required. EERE will utilize a down-select process for awards:

Year 1: Up to seven pilot projects will be selected and provided with up to \$300,000 in federal funding each for a one-year activity.

Year 2: After one year, the pilot projects will undergo a continuation review. DOE anticipates that up to three of the projects will be granted continuation for a second year at up to an additional \$700,000 in federal funding, for total federal funding per down-selected project of up to \$1,000,000 over two years.

Applicants should clearly demonstrate the ability to create scalable solutions that can be adopted by the broader clean energy industry. Lead applicants may include, but are not limited to, educational institutions, incubators/accelerators, research labs, nonprofit entities, industry associations, corporations, and investment/financial/insurance firms. Partnership with other entities is strongly encouraged. EERE funding opportunities can be found on the EERE Funding Opportunities Exchange website at <https://eere-exchange.energy.gov/>.

A. Description/Background

The Role of Energy Innovation in U.S. Competitiveness

The world's energy needs are growing rapidly, and sustainably meeting these needs will require deployment of existing solutions, as well as further innovation in how energy is produced, delivered, and used.¹ The increasing energy demand over the coming decades represents a wealth of commercial opportunities for the United States in serving a growing global market. Further, low- and zero-emission products are likely to provide many of these commercial opportunities in the years ahead.²

¹ Sandia National Laboratories, 2004, "Solar FAQ," working document, pp. 2. Accessible at http://www.sandia.gov/~jytsao/Solar_FAQs.pdf; Nakicenovic, N. and Swart, R., eds., 2000, "Special Report on Emissions Scenarios," Intergovernmental Panel on Climate Change. Accessible at http://www.grida.no/publications/other/ipcc_sr/?src=/climate/ipcc/emission/index.htm; Energy Information Administration, "International Energy Statistics," Accessible at <http://www.eia.gov/beta/international/data/browser/#/>; International Energy Agency, 2016, "World Energy Outlook 2016." Paris, France: International Energy Agency, Organization for Economic Cooperation and Development.; Gates, B., 2015, "Energy Innovation: Why We Need It and How to Get It," blog. Accessible at <http://www.breakthroughenergycoalition.com/assets/resources/Energy-Innovation-by-Bill-Gates-Nov-30-2015.pdf>; United States Mid-Century Strategy for Deep Decarbonization, 2016. Available at https://www.whitehouse.gov/sites/default/files/docs/mid_century_strategy_report-final.pdf; Lester, R.K., 2014, "Energy Innovation." Locke, R.M. and Wellhausen, R.L. eds., *Production in the Innovation Economy*, Cambridge, MA: the MIT Press.

² "What About Climate?" Energy Innovation Reform Project, website accessed Dec 5, 2016. Accessible at <http://innovationreform.org/issues/climate/>; Bloomberg New Energy Finance, 2016, "New Energy Outlook 2016." Accessible at <https://www.bloomberg.com/company/new-energy-outlook/>; Kooroshy, J. et al., 2015, "The Low Carbon Economy." Goldman Sachs. Accessible at <http://www.goldmansachs.com/our-thinking/pages/new-energy-landscape-folder/report-the-low-carbon-economy/report.pdf>; Muro, M., Rothwell, J., and Saha, D., 2011, "Sizing the Clean Energy Economy: A National and Regional Green Jobs Estimate." Washington, DC: Brookings Institute Metropolitan Policy Program.

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If the United States is to lead in this evolving market, we must look to past successes as a guide. Both innovation and public-private collaboration have historically been critical in securing U.S. leadership in energy development—from nuclear energy and shale gas extraction, to solar and wind power generation.³ Just as was true for prior evolutions of the energy sector, DOE recognizes that sustained public sector investments in research and development (R&D), innovation, and public-private collaboration will be critical to ensuring America’s role in developing and deploying transformative energy technologies in the decades ahead.

Prolonged economic growth depends on a steady stream of innovation being adopted by the market⁴ (where innovation is defined as the combination of invention and commercialization leading to the creation of social and economic value).⁵ Recent analysis has shown that it is necessary to co-locate invention, commercialization, and manufacturing processes in order to maximize economic gains because research, design, and production are tightly linked for hardware-based technologies.⁶ Further, following the reduction of large vertically integrated firms in the 1980s, small businesses have primarily driven radical innovation (as opposed to incremental innovation) in the United States,⁷ making it increasingly important to link small companies producing high-value innovation with existing value chains to successfully bring technologies to market.⁸ But linking innovation with design and production is especially challenging in “legacy” sectors such as energy, which resist disruptive innovation.⁹

American leadership in energy innovation and manufacturing is key to growing the domestic economy, creating jobs, and ensuring energy security. And a thriving, U.S. clean energy innovation ecosystem will play an increasingly important role by enabling critical feedback loops across the processes of invention, commercialization, and manufacturing, as well as by connecting key market and industry players and institutions.

³ World Nuclear Association, “US Nuclear Power Policy,” website accessed Dec 5, 2016. Accessible at <http://www.world-nuclear.org/information-library/country-profiles/countries-t-z/usa-nuclear-power-policy.aspx>; U.S. Department of Energy, Office of Nuclear Energy, Science, and Technology, “The History of Nuclear Energy.” Accessible at http://www.energy.gov/sites/prod/files/The%20History%20of%20Nuclear%20Energy_0.pdf; Pfund, N. and Healey, B., 2011, “What Would Jefferson Do? The Historical Role of Federal Subsidies in Shaping America’s Energy Future.” DBL Investors; Shellenberger, M., Nordhaus, T., Trembath, A., and Jenkins, J., 2012, “Where the Shale Gas Revolution Came From.” Sacramento, CA: The Breakthrough Institute.; Institute for Energy Research, 2016, “History of Solar Power,” website accessed Dec. 5, 2016. Accessible at <http://instituteforenergyresearch.org/analysis/history-of-solar-power/>; Anadon, L.D., et al., 2011, “Transforming U.S. Energy Innovation.” Cambridge, MA: Harvard Kennedy School Belfer Center, Energy Technology Innovation Policy Research Group, pp. 189 – 190.; Donahoo-Vallett, P., et al., 2016, “Revolution...Now: The Future Arrives for Five Clean Energy Technologies – 2016 Update,” U.S. Department of Energy, Office Energy Efficiency and Renewable Energy. Accessible at [http://energy.gov/sites/prod/files/2016/09/f33/Revolutiona%CC%82%E2%82%ACNow 2016 Report_2.pdf](http://energy.gov/sites/prod/files/2016/09/f33/Revolutiona%CC%82%E2%82%ACNow%2016%20Report_2.pdf);

⁴ Solow, R. M., 1957, *Technical change and the aggregate production function*. Review of Economics and Statistics, vol. 39, no. 3, pp. 312-320.; Schumpeter, J. A., 1934, *The theory of economic development*. Cambridge, MA: Harvard University Press.

⁵ National Innovation Initiative Summit and Report, 2005, “Innovate America.” Council on Competitiveness.; Lester, R.K., “Energy Innovation.” *Production in the Innovation Economy*.

⁶ Helper, S., Krueger, T. and Wial, H., 2012, “Why Does Manufacturing Matter? Which Manufacturing Matters? A Policy Framework.” Washington, DC: Brookings Institute Metropolitan Policy Program.; Pisano, G. and Shih, W., 2009, “Restoring American Competitiveness,” Cambridge, MA: Harvard Business Review. Accessible at <https://hbr.org/2009/07/restoring-american-competitiveness>; Bonvillian, W.B., 2012, “Reinventing American Manufacturing.” *Innovations*, vol. 7, no. 3, pp. 97 – 125.; Berger, S., 2013, *Making in America: From Innovation to Market*, Cambridge, MA: the MIT Press.; Bonvillian, W. B., and Weiss, C., 2015, *Technological Innovation in Legacy Sectors*. New York: Oxford University Press., pp. 40.

⁷ Lerner, J., 2009, *Boulevard of Broken Dreams. Why Public Efforts to Boost Entrepreneurship and Venture Capital Have Failed – and What to Do About It*, Princeton N.J.: Princeton University Press.; Reynolds, E.B., Samel, H.M., and Lawrence, J., “Learning by Building: Complementary Assets and the Migration of Capabilities in U.S. Innovative Firms.” *Production in the Innovation Economy*; Nanda, R., Younge, K., and Fleming, L., 2013, “Innovation and Entrepreneurship in Renewable Energy.” Jaffe, E. and Jones, B. eds., *The Changing Frontier: Rethinking Science and Innovation Policy*, NBER conference volume.

⁸ Powell, W.W. and Grodal, S., 2005, “Networks of Innovators.” *The Oxford Handbook of Innovation*, Ch. 3., New York, Oxford: Oxford University Press, pp. 56 – 85.; Krieger, S., Faulker, A., and Haji, S., 2013, “Partnering with Corporates: An Important but Complicated Aspect of Growing Cleantech Companies.” Cleantech Group.; Nahm, J. and Steinfeld, E.S., “The Role of Innovative Manufacturing in High-Tech Product Development: Evidence from China’s Renewable Energy Sector.” *Production in the Innovation Economy*.

⁹ Bonvillian, W. B., and Weiss, C., *Technological Innovation in Legacy Sectors*.; Bonvillian, W.B., 2012, “Reinventing American Manufacturing.”

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Challenges in Clean Energy Technologies Transitioning to Market

The conventional pathway from invention to market entry has proven to be challenging for disruptive non-software clean energy technologies. Multiple market failures and obstacles to innovation prevent disruptive innovation from taking hold in the U.S. energy sector.¹⁰ For physical, non-software technologies (sometimes referred to as hardware or hard-tech), barriers to market entry include high capital requirements, long development times, and the need to integrate into complex systems and supply chains. These underlying structural challenges weaken the U.S. innovation ecosystem—limiting potential market adoption of individual clean energy technologies and the subsequent economic return on initial R&D investments.

Declining Private Sector Investment

The underlying structural challenges facing even the most promising early-stage clean energy ventures have led to a decrease in U.S. venture capital investment in clean energy hardware-based companies.¹¹ In the past several years, investment has declined by over 50% and shifted toward later-stage, software-oriented business models.¹² Energy firms reinvest only 0.23% of revenues into research, development, and deployment as opposed to 20% for pharmaceutical and 15% for information technology and semiconductor companies.¹³ This declining investment pool in energy investments has meant limited market adoption of transformative clean energy technologies.

In addition, individual private sector partners are not incentivized to invest in solutions that address the structural challenges impacting the broader clean energy innovation ecosystem in the United States. For example, an individual venture capital firm may assist a portfolio company with securing a strategic partner. But the same firm is unlikely to support the development of a service to match strategic partners with early-stage companies, unless the value has been proven and can be priced accordingly.

With diminished capital flowing into clean energy innovation, it is increasingly essential to both ensure that existing investments have maximum economic impact and return on investment, and transform the clean energy ecosystem to encourage additional private sector investment.

¹⁰ Bonvillian, W. B., and Weiss, C., *Technological Innovation in Legacy Sectors*; Gaddy, B., Sivaram, V., and O'Sullivan, F., 2016, "Venture Capital and Cleantech: The Wrong Model for Clean Energy Innovation." Cambridge, MA: MIT Energy Initiative.; Bachher, J.S., Clark, G.L., Monk, A.H.B., & Sridhar, K.S., 2014, "The Valley of Opportunity: Rethinking Venture Capital for Long-Term Institutional Investors." *The Journal of Alternative Investments*. vol. 3, no. 1, pp. 63 - 75.; Auerswald, P.E., and Branscomb, L.M., 2003, "Valleys Of Death and Darwinian Seas: Financing the Invention to Innovation Transition in the United States." *Journal of Technology Transfer*, vol. 28, pp. 227-239.

¹¹ Gaddy, B., Sivaram, V., and O'Sullivan, F., "Venture Capital and Cleantech: The Wrong Model for Clean Energy Innovation."

¹² Krieger, S., Faulker, A., and Haji, S., 2013, "Partnering with Corporates: An Important but Complicated Aspect of Growing Cleantech Companies." Cleantech Group.; Hargadon, A.B. and Kenney, M., 2012, "Misguided Policy? Following Venture Capital into Clean Technology." *California Management Review*, Vol. 54, No. 2, pp. 118-139.; Ghosh, S. and Nanda, R., 2010, "Venture Capital Investment in the Clean Energy Sector." Cambridge, MA: Harvard Business School working paper.; Marcus, A., Malen, J., and Ellis, S., 2012, "The Promise and Pitfalls of Venture Capital as an Asset Class for Clean Energy." Cambridge, MA: Harvard University Initiative for Responsible Investment Conference working paper.

¹³ Gates, B., "Energy Innovation: Why We Need It and How to Get It.;" International Energy Agency, 2010, "Global Gaps in Clean Energy R&D."

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EERE's Tech-to-Market Program

The Tech-to-Market program pilots and evaluates solutions to common barriers facing innovations en route to market. Tech-to-Market's efforts are designed to be catalytic and high-leverage. Rather than funding individual technologies, Tech-to-Market focuses on eliminating the barriers that otherwise prevent market exploration of new technologies. Tech-to-Market is one of the only entities within EERE with the mission and ability to address these crosscutting challenges.

As discussed in more detail below, Tech-to-Market focuses on two interrelated areas:

- Technical Community and Industry Collaboration
- Lowering Barriers to Resource Access

Two examples of recent Tech-to-Market efforts that address these areas are DOE's Lab-Corps and the Small Business Vouchers (SBV) pilot.

DOE's Lab-Corps: DOE's Lab-Corps program is a specialized training for national lab scientists that pairs principal investigators with an entrepreneurial lead and industry mentor. The two-month program, modeled after the National Science Foundation (NSF) i-Corps program, provides a platform for researchers to apply market knowledge to their work through guided market discovery. Tech-to-Market funds enabled the development of the training program and platform for national labs to nominate their teams. Other entities fund the progression of teams through the program.

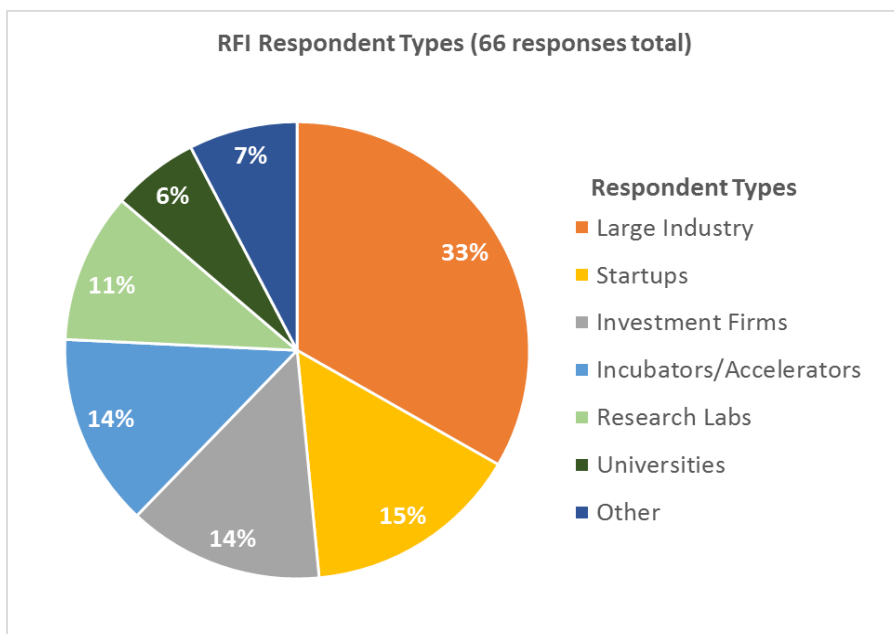
Small Business Vouchers (SBV) Pilot: Small businesses often lack the necessary resources to engage with and gain access to the national labs. Tech-to-Market developed the SBV pilot to help overcome this challenge. SBV provides a listing of national lab capabilities and a streamlined application process that requires no insider knowledge of the labs, and it simplifies the contracting process between small businesses and national labs. Tech-to-Market designed the infrastructure for the program; other entities fund the progression of individual small businesses through the program.

Tech-to-Market designed DOE Lab-Corps and SBV as platforms that, when broadly applied, address common challenges preventing individual innovations from reaching the market. Descriptions of these and other Tech-to-Market activities can be found at <https://www.energy.gov/eere/technology-to-market>.

Summary of Responses to Request for Information (RFI)

To understand unaddressed challenges and potential solutions, EERE’s Tech-to-Market released an RFI, *Supporting Clean Energy Start-ups: Industry and Investment Partnerships for Scaling Innovation* (DE-FOA-0001669). EERE received 66 responses across different sectors, as displayed in Figure 1. The “Other” category included foundations, individuals, nonprofits, and state government. Over 60% of responses were from the private sector, including comments from 13 Fortune 500 or Global 500 companies. The respondents reported that while challenges faced by early-stage clean energy start-ups exist, there are mechanisms that could be created or enhanced to overcome these barriers and both increase the commercial potential of emerging technologies and enable industry to adopt competitive U.S. technologies.

Figure 1: Respondents to EERE Tech-to-Market Request for Information



On average, industry and investment firms indicated that the quantity of clean energy deal flow is sufficiently high and that efforts should focus on bringing resources to existing companies rather than seeking to widen the pipeline of new companies. Top challenges cited for existing companies include testing, validation, and demonstration; securing first customer sales and/or strategic partner commitments; accessing capital; and accessing manufacturing expertise and capabilities. Figure 2 displays the frequency at which various challenges were cited, broken down by different respondent types.

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While the RFI requested that respondents rank challenges, most respondents did not do so. Therefore, the relative importance of each challenge to each respondent type was estimated by the frequency at which that challenge was emphasized in the responses. This enabled comparison across groups about the relative perceived importance of challenges.

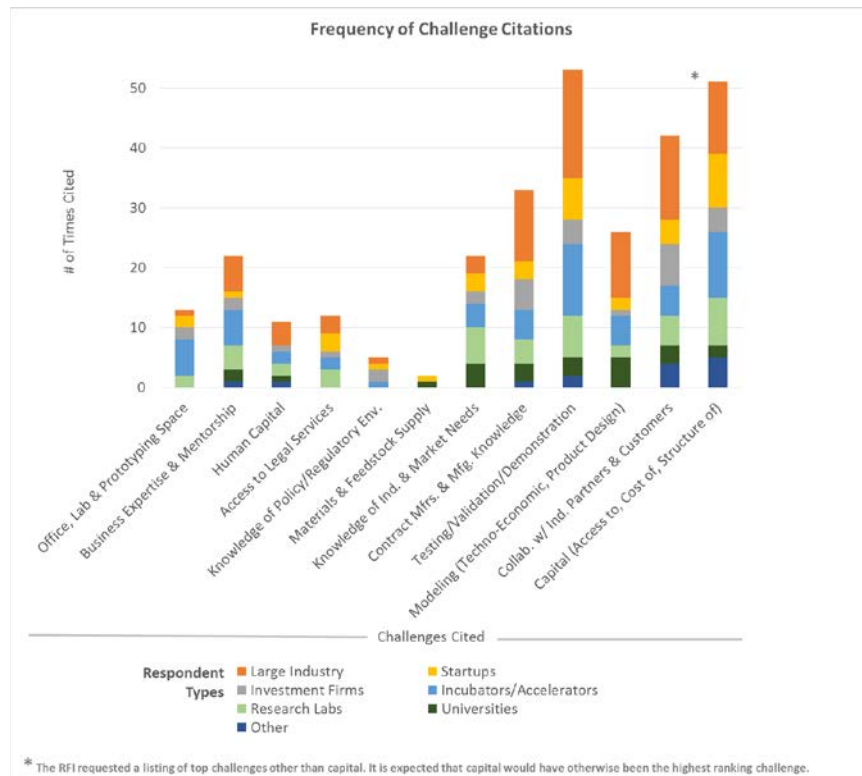
The need for technology testing, validation, and demonstration is the most uniformly emphasized challenge, ranking within the top 3 for every respondent type. As noted in Figure 2, the RFI requested that respondents list top challenges besides capital, in order to identify underlying issues. It is expected that without this request, issues related to capital would have featured even more prominently.

The three private sector respondent types (large industry, investment firms, and startups) all listed the same 4 top challenges (in varying orders): *Testing, Validation, and Demonstration*; *Collaboration with Industry Partners & Customers*; *Capital*; and *Contract Manufacturing / Manufacturing Knowledge*. Research labs highlighted 3 of these same Top 4 challenges, but highlighted *Knowledge of Industry Needs* rather than *Manufacturing*. Universities highlighted 2 of the Top 4 challenges, but highlighted *Modeling* and *Knowledge of Industry Needs* rather than *Capital* and *Manufacturing*. Incubators and accelerators likewise highlighted 2 of the Top 4, but emphasized challenges of *Business Expertise* and *Office/Lab Space* rather than *Industry Collaboration* and *Manufacturing*.

In evaluating the challenges specific to industry and investment partnerships, respondents noted misalignments of value propositions, time horizons, information, and operating procedures among industry, investors, and startups and small businesses, limiting efficient engagement and partnership formation.

Feedback from the RFI also indicated that deployment of new mechanisms could address the stated misalignments. Several responses emphasized that lack of capital is not a root cause, and that addressing some of the other challenges in clean energy technology development could address the capital issue. Many responses also emphasized the need to link disparate elements along the pathway to market. For instance, responses proposed mechanisms that included linking the flow of capital with technology validation or customer contracts; facilitating information-sharing of industry benchmarks; stage-gating funding based on meeting those benchmarks; coordinating contracts based on demonstration results; developing incentives for partners to become early adopters; and constructing low-cost financing packages for early scale-up and manufacturing efforts.

Figure 2: Frequencies at which various challenges were cited, by respondent type



Objectives of this Funding Opportunity

Industry feedback (as evidenced by EERE workshops and RFI responses) and potential new capital sources (as indicated by recent trends)¹⁴ demonstrate an appetite in the private sector for a revised pathway for clean energy innovations to reach the market. Additionally, responses to the recent Tech-to-Market RFI indicated several potential solutions. However, it is generally difficult for individual companies to address systemic challenges that, if solved, could benefit the entire industry. Therefore, this Funding Opportunity seeks to identify, fund, and pilot new approaches to helping competitive clean energy technologies reach the market. Funded projects are intended to augment existing Tech-to-Market efforts currently supported. Piloted efforts that demonstrate success could potentially be adopted by the private sector, benefiting the industry as a whole.

¹⁴ Global Trends in Renewable Energy Investment 2016, Frankfurt School-UNEP Centre/BNEF. 2016. USSIF Foundation, 2016, *Family Offices and Investing for Impact*. World Economic Forum, 2014, *Impact Investing: A Primer*.

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This FOA is unlike typical funding opportunities within DOE, which typically seek impactful technology innovations and provide funding to help develop and refine those individual technologies. While this funding strategy is critical for EERE to achieve its mission in specific technology areas, the Innovative Pathways FOA is meant to complement those efforts across EERE technology sectors. This FOA seeks impactful mechanisms for improving the ways in which competitive clean energy technologies can reach the market, and it provides funding to help develop and test those mechanisms for potential broad adoption by the private sector. This funding is intended to support the required work to evaluate the viability of new models (e.g., personnel time, legal services, financial modeling), the real-time testing of these models (e.g., partner involvement, personnel time, leverage for additional funds), and analysis of the outcomes.

Applicants should clearly demonstrate the ability to create scalable solutions that can be adopted by the broader clean energy industry. Lead applicants may include, but are not limited to, educational institutions, incubators/accelerators, research labs, nonprofit entities, industry associations, corporations, and investment/financial/insurance firms. Partnership with entities directly involved in industry and investment, including private-sector subject matter experts and practitioners, is strongly encouraged.

EERE envisions funded projects to be extremely high-leverage, with the potential to effect significant improvements within the innovation ecosystem with limited capital. Proposed approaches, if successful and adopted at scale, should have the potential to induce a step change in how clean energy technologies achieve market entry. Proposals must present a plan to test the viability of the proposed approach by the end of Year 1, and to quantify the value of the approach to private sector partners. Relevant partners (e.g., capital providers; industry and supply chain partners; and validation, testing, and manufacturing facilities) should be integrated into the proposed approach in a manner that guarantees their direct involvement. New mechanisms or models should be tested with technology developers and startups of greatest interest to the market, rather than with pre-selected developers/startups (e.g., those associated with a specific organization). Proposals should articulate how solutions of greatest interest to the market will be selected.

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Subject to the availability of funds, up to \$4,200,000 in federal financial assistance will be provided over two years through this funding opportunity. EERE will utilize a down-select process for awards:

Year 1: Up to seven pilot projects will be selected and provided with up to \$300,000 in federal funding each for a one-year activity.

Year 2: After one year, the pilot projects will undergo a continuation review. DOE anticipates that up to three of the projects will be granted continuation for a second year at up to an additional \$700,000 in federal funding, for total federal funding per down-selected project of up to \$1,000,000 over two years.

Continuation will in large part be based on the viability of the proposed model to achieve the outlined objectives, as determined by initial testing performed within the first year. EERE foresees possible opportunities for collaboration, especially in Year 2. For instance, an awardee developing a new investment model (under Topic 2) may deploy investor capital from varied sources during Year 2 to startups being partnered with industry by an awardee developing a model under Topic 1.

All projects granted continuation will be expected to illustrate a pathway toward sustainability beyond the period of federal funding.

Teaming Partner List

To facilitate the widest possible national participation, EERE is inviting interested parties to submit the information below to populate a Teaming Partner List to facilitate the formation of new project teams for the Innovative Pathways FOA. The Teaming Partner List will be available on the EERE Funding Opportunity Exchange at <https://eere-Exchange.energy.gov> under DE-FOA-0001703 in the “Documents” section. The Teaming Partner List will be updated periodically until the close of the Full Application period, to reflect new Teaming Partners who have voluntarily provided their information. Any organization that would like to be included on this list should submit the following information to T2M@ee.doe.gov with the subject line “Teaming Partner Information”:

- Organization Name
- Contact Name
- Contact Address
- Contact Email
- Contact Phone

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- Organization Type (e.g., For-Profit Corporation, Nonprofit Corporation, Educational Institution, State/Local Government, Research Lab, Utility)
- Area(s) of Expertise (e.g., Corporate/strategic partner in energy supply chain; Capital provider; Financial or insurance services; Testing, validation, or demonstration services; Manufacturing or product design services; Intermediary/connector organization)
- Brief Description of Capabilities

By submitting the above Teaming Partner Information, you consent to the publication of the above-referenced information as part of the Teaming Partner List. By facilitating this Teaming Partner List, EERE does not endorse or otherwise evaluate the qualifications of the entities that self-identify themselves for placement on the Teaming Partner List. EERE will not pay for the provision of any information, nor will it compensate any respondents for the development of such information. Any submission that contains a complete set of the information requested above will be published.

B. Topic Areas/Technical Areas of Interest

EERE seeks proposals to pilot new mechanisms that would reduce barriers to clean energy technologies transitioning to market. Proposed mechanisms should relate to one or both topics, described in more detail below:

Topic 1: Technical Community and Industry Collaboration

Area of Interest under Topic 1: Models for Industry-Startup Partnerships

Topic 2: Lowering Barriers to Resource Access

Area of Interest under Topic 2: New Investment Models

Specific areas of interest to EERE are highlighted within the Topic descriptions. However, applicants may apply with concepts outside of the areas of interest if they are still within the scope of the overall topic.

Topic 1: Technical Community and Industry Collaboration

Tech-to-Market seeks to support new models for collaboration in the innovation ecosystem that would smooth the pathway to market for new energy technologies to achieve scale.

Input gathered by EERE has emphasized disconnects between the technical community, which is focused on invention, and the market, which is focused on marketability and returns. New models for collaboration among technology developers, private industry, and other entities within the ecosystem could address these gaps.

For example, respondents might propose new models or platforms that:

- Educate scientific researchers about the needs of industry and customers
- Encourage the pursuit of entrepreneurial activities
- Link technology developers with business expertise to identify market assumptions and opportunities, refine or reinvent customer value propositions, and design and test appropriate business models
- Address legal barriers such as intellectual property ownership and identifying equitable exit strategies
- Facilitate partnerships between industry and startups or small businesses that can yield competitive scale-ready products suitable for industry integration (Where scale-ready means pre-commercial, customer-validated, manufacturable products with validated performance.) Note: This area of interest is described in more detail below.

Area of Interest for Topic 1: Models for Industry-Startup Partnerships

While many programs assist technology developers with business plan and early prototype development, far fewer help technology developers obtain the knowledge needed to develop commercially relevant, industry-ready prototypes. Proposals to create programs that specifically address this problem via better industry-startup collaboration are specifically of interest.

Applicants must have a method by which to “stress-test” their proposed collaboration model (e.g., within existing industry business development cycles) to evaluate its viability. Applicants must also articulate a pathway to private sector adoption of the model, in the case that it is shown to be successful.

Proposals should present feasible ways to overcome the barriers that currently prevent effective collaboration, including the following:

- a. Challenges facing the technology developer, including lack of insight into industry needs and specifications, the need for technology validation prior to partnership, lack of understanding of the full supply chain and the full range of relevant industry stakeholders; lack of access to specific business unit(s) within the relevant industry stakeholder entities; lack of time-efficient contracting mechanisms; and lack of contracting mechanisms that adequately protect intellectual property and freedom to operate.
- b. Challenges facing potential industry partners, including multiple internal stakeholders and complex internal decision-making processes; the need to guarantee performance and reliability of new technology solutions; resistance to sharing internal innovation needs; the need to avoid exposure to external confidential information; challenges in evaluating technologies outside of core business; and high transaction costs for small partnership agreements with individual technology developers.

While not an exhaustive list, the examples below derive from feedback EERE has received about mechanisms that would be most impactful:

- a. Streamlined analysis of relevant supply chain partners and industry stakeholders for disruptive new energy technologies (e.g., manufacturing partners, suppliers, distributors, system integrators, installers, regulators, customers, end-users, etc.)
- b. Streamlined analysis of requirements and validation metrics needed across relevant supply chain and industry stakeholders (e.g., IP rights, contract size, product quantities, tooling and equipment needs, timing, performance under appropriate conditions, cost, durability, reliability, lifetime, maintenance/replacement needs, interoperability, etc.).
- c. Efficient access to and collaboration with reliable supply chain, production, and strategic partners (e.g. product design consulting firms, contract manufacturers, vendors, pilot customers, etc.)
- d. Incorporation of extensive market feedback in determining which technology developers offer enhanced probability of market-viable products

- e. Assistance developing novel business models and/or value propositions to enhance the partnership viability of existing technologies and products (e.g., specialty chemicals from a biofuel process, data associated with electricity delivery, etc.)
- f. Mechanisms that integrate industry involvement into the validation and demonstration process, rather than treating industry involvement as a follow-on to validation (e.g., mechanisms that identify would-be end customers before testing, stage-gate funding based on benchmarks obtained from industry partners, and/or develop end user agreements hinging on demonstration results).

For the purposes of this FOA, “startup” is meant to refer to any small for-profit entity developing solutions that could yield high growth businesses. “Industry” is meant to refer to any established market player along the supply chain, from suppliers and production partners to end customers working within technology areas supported by EERE.

Topic 2— Lowering Barriers to Resource Access

Tech-to-Market seeks to support new models that optimize access to the capital and physical resources needed to develop technologies into products.

The U.S. innovation system is a cornerstone of American competitiveness—from its top universities and robust national lab system, to an entrepreneurial culture and thriving capital markets. Yet, barriers prevent the optimal alignment of these resources—stifling innovation and economic impact. New models to lower barriers and align incentives could enable capital and physical resources to be used more effectively.

For example, respondents might propose new models or platforms that:

- Provide a resource framework to access lab and prototyping spaces
- Provide a scalable framework to provide testing, validation, and demonstration services to yield faster iteration on products
- Streamline assistance with technoeconomic analysis, systems modeling, product design, and/or manufacturing services
- Incentivize the development of novel, low-volume manufacturing methods for use by startups and small businesses
- Enable better access to existing capital, or unlock new capital, via innovative financing mechanisms for early-stage energy technologies. Note: This area of interest is described in more detail below.

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Area of Interest for Topic 2: New Investment Models

As documented above, conventional venture capital support for early-stage energy innovation has declined precipitously, while new capital sources have emerged that have the potential to be unlocked. Proposals to develop and test new investment models are specifically of interest. Applicants are encouraged to examine successes from different sectors (e.g., biotechnology, defense) that might be adaptable to clean energy, propose mechanisms appropriate for either conventional (e.g., venture capital) or non-conventional funding sources, and recognize alternate definitions of investment success (e.g., outside IPOs).

The models, if tested successfully and adopted by the private sector, should have the potential to unlock significant additional capital to enable the market adoption of disruptive clean energy solutions that are in the pipeline. EERE is not providing funds for investment into clean energy companies as part of this funding opportunity. This funding opportunity would support the required work to evaluate the viability of new investment models, the real-time testing of these models, and analysis of the outcomes.

Applicants must outline a method by which to “stress-test” and validate their proposed investment model by the end of Year 1. For instance, this may include simulating the results of a theoretical investment portfolio, mirroring the best practice standards of venture investing (e.g., quantitative evidence of risk-return characteristics), or developing a structured instrument used to mitigate risk with proven models. Applicants must also articulate a pathway to private sector adoption of the model, in the case that the model is shown to be validated in Year 1. For instance, this may include adoption of the model by sample pioneering investors in Year 2, with limited contributions of risk capital to deploy the model in real time.

Proposals should present feasible ways to overcome the barriers that currently prevent investment. While not an exhaustive list, the examples below derive from feedback EERE has received about mechanisms that would be most impactful:

- a. Incorporation of industry signals
 - Unlocking investment stages triggered by industry signals (e.g., with commitments by interested customers, testing and demonstration results, achievement of benchmarks set by strategic partners, etc.)
 - Models to provide incentives or matching funds to early industry adopters by pricing the value of each adopter’s interest
 - Syndication of complementary strategic partners around technology solutions to reduce supply chain risk and build more viable deals
 - Streamlining investment strategies in response to demonstrated stage-gates, with funds targeted to leverage existing infrastructure (e.g. funding test site costs)

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- Leveraging previously invested capital, both public and private, as an industry-driven risk mitigation strategy and/or technology vetting mechanism
- b. Innovative business models
- Generalizable business model frameworks that are valid specifically for physical, non-software technologies in industries that are structurally driven by legacy interests, are long-term oriented, and are capital intensive
 - Innovative frameworks that guide technology developers to leverage unconventional value proposition drivers within their business models (e.g., maximizing the technology product value chain)
- c. Structured financing mechanisms
- Financing mechanisms that enable new capital to enter, tolerant of the existing risk profile
 - Bridging the prevailing profile of high-risk/low-return and long gestation periods with structured finance mechanisms that leverage policy incentives
 - Mechanisms to combine different pools of capital that are willing to invest but have different risk-return profiles
 - Quantification and/or pricing of investment risk for physical, non-software energy technologies
 - Systematic application of risk mitigation techniques (e.g., via sharing across multiple parties, credit enhancement tools, insurance wraps)
 - Mechanisms to improve or compensate for bankability (e.g., affordable working capital for innovative companies, to support early demonstration and scale-up efforts)
 - Mechanisms that enable private loan guarantees for small-scale projects

C. Applications Specifically Not of Interest

The following types of applications will be deemed nonresponsive and will not be reviewed or considered (See Responsiveness Criteria of the FOA).

- **Applications that fall outside the technical parameters specified in Topic Areas/Technical Areas of Interest of the FOA, including but not limited to:**
 - Direct technology research or company funding—this FOA is not seeking proposals directly from entities that are seeking to progress their single technology solution from one stage of commercialization to the next. For example, a solar company seeking direct funding to advance from a proof of concept to a prototype will be considered non-compliant and not be reviewed or selected in the FOA. This FOA is seeking to fund groups that might help this solar company, as well as many other clean energy companies, more easily prepare their technology for market by addressing a common challenge.

- **Technology demonstration or deployment:**

DOE understands that demonstration and deployment are essential to the market-readiness of clean energy technologies; however, this FOA is not meant to fund the demonstration or deployment of individual technologies or products. Such an application would only be eligible for award under this FOA if the proposed activities facilitate more efficient, productive, or cost-effective mechanisms for the demonstration or deployment of many clean energy technologies.

- **Policy:**

DOE recognizes that policies can have a far-reaching impact on the market-readiness of clean energy technologies. Since DOE does not typically set policies, proposals with an emphasis on policy changes will be deemed nonresponsive. Example Topics include, but are not limited to:

 - Tax incentives
 - Performance standards
 - Regulations
 - Mandates
 - Renewable portfolio standards

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- **Incremental improvements to existing solutions, entities, or programs:**
A primary objective of the Tech-to-Market program is to pilot new, innovative, crosscutting solutions that remove barriers facing clean energy technologies. DOE understands that incremental improvements to existing solutions can be compelling and offer significant advantages; however, this program is not meant to fund business-as-usual activities. Consequently, if an entity is already addressing a specific barrier with a specific solution, then the entity could not apply with a proposal to continue those activities. The entity would only be eligible for award under this FOA if the proposed activities substantially expand upon or differ from existing activities. It is the responsibility of the applicant to show the value of the proposed work that would be funded with this opportunity.
- **Entities or programs which require continued support:**
This funding opportunity seeks to eliminate common barriers in service of building a more viable pathway to market for clean energy technologies. Therefore, this opportunity is not intended to create a product, organization, service, or other entity or item which requires continued government support. The intent is for successful activities awarded under this FOA to demonstrate viability and be supported through other means after the project period.

D. Authorizing Statutes

The programmatic authorizing statute is the Energy Policy Act of 2005 (EPAcT 2005) §931 and 988. This FOA is intended to fund development activities that will support technologies described in EPAcT 2005 §931.

Awards made under this announcement will fall under the purview of 2 CFR Part 200 as amended by 2 CFR Part 910.

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II. Award Information

A. Award Overview

i. Estimated Funding

EERE expects to make up to \$4,200,000 of federal funding available for new awards under this FOA, subject to the availability of appropriated funds. EERE anticipates making approximately seven Phase 1 awards under this FOA, with the expectation that up to three of the original Phase 1 awards will continue into a second-year Phase 2 project. EERE may issue one, multiple, or no awards. The size of individual Phase 1 awards may range between \$100,000 and \$300,000 each. The size of individual Phase 2 awards may vary between \$300,000 and \$700,000 each, for total federal funding of up to \$1,000,000 for each award that is selected to continue through Phase 2. EERE reserves the right to make changes to the intended structure, number, and size of the awards before making selections.

EERE may issue awards in one, multiple, or none of the following Topic areas:

Topic 1 – Technical Community and Industry Collaboration: Tech-to-Market welcomes proposals that include new models for collaboration among technology developers, private industry, and other entities within the ecosystem that could address the disconnects between the technical community, which is focused on invention, and the market, which is focused on marketability and returns. An Area of Interest under Topic 1 is *“Models for industry-startup partnerships.”*

Topic 2 – Lowering Barriers to Resource Access: Tech-to-Market welcomes proposals that include new models to lower barriers and align incentives that could enable capital and physical resources to be used more effectively. An Area of Interest under Topic 2 is *“New investment models.”*

EERE may establish more than one budget period for each award and fund only the initial budget period(s). Funding for all budget periods, including the initial budget period, is not guaranteed. Before the expiration of the initial budget period(s), EERE may perform a down-select among different recipients and provide additional funding only to a subset of recipients.

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ii. Period of Performance

EERE anticipates making awards that will run up to 24 months in length, 12 months for Phase 1 and 12 months for Phase 2. Project continuation from Phase 1 to Phase 2 will be contingent upon satisfactory performance, decision review, and down-select. At the decision points, EERE will evaluate project performance, project schedule adherence, meeting of milestone objectives, compliance with reporting requirements, and overall contribution to the program goals and objectives. Because of this evaluation, EERE will make a determination to continue the project, re-direct the project, or discontinue funding the project.

iii. New Applications Only

EERE will accept only new applications under this FOA. EERE will not consider applications for renewals of existing EERE-funded awards through this FOA.

B. EERE Funding Agreements

Through Cooperative Agreements and other similar agreements, EERE provides financial and other support to projects that have the potential to realize the FOA objectives. EERE does not use such agreements to acquire property or services for the direct benefit or use of the United States Government.

i. Cooperative Agreements

EERE generally uses Cooperative Agreements to provide financial and other support to Prime Recipients.

Through Cooperative Agreements, EERE provides financial or other support to accomplish a public purpose of support or stimulation authorized by Federal statute. Under Cooperative Agreements, the government and Prime Recipients share responsibility for the direction of projects.

EERE has substantial involvement in all projects funded via Cooperative Agreement. See Section VI.B.ix of the FOA for more information on what substantial involvement may involve.

ii. Funding Agreements with FFRDCs

In most cases, Federally Funded Research and Development Centers (FFRDC) are funded independently of the remainder of the Project Team. The FFRDC then executes an agreement with any non-FFRDC Project Team members to arrange work structure, project execution, and any other matters. Regardless of these arrangements, the entity that applied as the Prime Recipient for the project will remain the Prime Recipient for the project.

iii. Grants

Although EERE has the authority to provide financial support to Prime Recipients through grants, EERE generally does not fund projects through grants. EERE may fund a limited number of projects through grants, as appropriate.

iv. Technology Investment Agreements

In rare cases and if determined appropriate, EERE will consider awarding a Technology Investment Agreement (TIA) to a non-FFRDC applicant. TIAs, governed by 10 CFR Part 603, are assistance instruments used to increase the involvement of commercial entities in the DOE's research, development, and demonstration (RD&D) programs. A TIA may be either a type of cooperative agreement or an assistance transaction other than a cooperative agreement, depending on the intellectual property provisions. In both cases, TIAs are not necessarily subject to all of the requirements of 2 CFR Part 200 as amended by 2 CFR Part 910.

In a TIA, EERE may modify the standard government terms and conditions, including but not limited to:

- Intellectual Property Provisions—EERE may negotiate special arrangements with recipients to avoid the encumbrance of existing intellectual property rights or to facilitate the commercial deployment of inventions conceived or first actually reduced to practice under the EERE funding agreement.
- Accounting Provisions—EERE may authorize the use of generally accepted accounting principles, (GAAP) where recipients do not have accounting systems that comply with government recordkeeping and reporting requirements.

EERE will be more amenable to awarding a TIA in support of an application from a consortium or a team arrangement that includes cost sharing with the private sector, as opposed to an application from a single organization. Such a consortium or teaming arrangement could include a FFRDC. If a DOE/National Nuclear Security Administration (NNSA) FFRDC is a part of the consortium or teaming arrangement, the value of, and funding for the DOE/NNSA FFRDC portion of the work will be authorized and funded under the DOE field work authorization system and performed under the laboratory's Management and Operating contract. Funding for a non-DOE/NNSA FFRDC would be through an interagency agreement under the Economy Act or other statutory authority. Other appropriate contractual accommodations, such as those involving intellectual property, may be made through a "funds in" agreement to facilitate the FFRDCs participation in the consortium or teaming arrangement. If a TIA is awarded, certain types of information described in 10 CFR 603.420(b) are exempt from disclosure under the Freedom of Information Act for five years after DOE receives the information.

An applicant may request a TIA if it believes that using a TIA could benefit the RD&D objectives of the program and can document these benefits. If an applicant is seeking to negotiate a TIA, the applicant must include an explicit request in its Full Application. After an applicant is selected for award negotiation, the Contracting Officer will determine if awarding a TIA would benefit the RD&D objectives of the program in ways that likely would not happen if another type of assistance agreement (e.g., cooperative agreement subject to the requirements of 2 CFR Part 200 as amended by 2 CFR Part 910). The Contracting Officer will use the criteria in 10 CFR 603, Subpart B, to make this determination.

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III. Eligibility Information

To be considered for substantive evaluation, an applicant's submission must meet the criteria set forth below. If the application does not meet these initial requirements, it will be considered non-responsive, removed from further evaluation, and ineligible for any award.

A. Eligible Applicants

i. Individuals

U.S. citizens and lawful permanent residents are eligible to apply for funding as a Prime Recipient or Sub-recipient.

ii. Domestic Entities

For-profit entities, educational institutions, and nonprofits that are incorporated (or otherwise formed) under the laws of a particular state or territory of the United States are eligible to apply for funding as a Prime Recipient or Sub-recipient. Nonprofit organizations described in section 501(c)(4) of the Internal Revenue Code of 1986 that engaged in lobbying activities after December 31, 1995, are not eligible to apply for funding.

State, local, and tribal government entities are eligible to apply for funding as a Prime Recipient or Sub-recipient.

DOE/NNSA Federally Funded Research and Development Centers (FFRDC_s) are eligible to apply for funding as a Prime Recipient or Sub-recipient.

Non-DOE/NNSA FFRDC_s are eligible to apply for funding as a Sub-recipient, but are not eligible to apply as a Prime Recipient.

Federal agencies and instrumentalities (other than DOE) are eligible to apply for funding as a Sub-recipient, but are not eligible to apply as a Prime Recipient.

iii. Foreign Entities

Foreign entities, whether for-profit or otherwise, are eligible to apply for funding under this FOA. Other than as provided in the “Individuals” or “Domestic Entities” sections above, all Prime Recipients receiving funding under this FOA must be incorporated (or otherwise formed) under the laws of a state or territory of the United States. If a foreign entity applies for funding as a Prime Recipient, it must designate in the Full Application a subsidiary or affiliate incorporated (or otherwise formed) under the laws of a State or territory of the United States to be the Prime Recipient. The Full Application must state the nature of the corporate relationship between the foreign entity and domestic subsidiary or affiliate.

Foreign entities may request a waiver of the requirement to designate a subsidiary in the United States as the Prime Recipient in the Full Application (i.e., a foreign entity may request that it remains the Prime Recipient on an award). To do so, the Applicant must submit an explicit written waiver request in the Full Application. Appendix C lists the necessary information that must be included in a request to waive this requirement. The applicant does not have the right to appeal EERE’s decision concerning a waiver request.

In the waiver request, the applicant must demonstrate to the satisfaction of EERE that it would further the purposes of this FOA and that it is otherwise in the economic interests of the United States to have a foreign entity serve as the Prime Recipient. EERE may require additional information before considering the waiver request.

A foreign entity may receive funding as a Sub-recipient.

iv. Incorporated Consortia

Incorporated consortia, which may include domestic and/or foreign entities, are eligible to apply for funding as a Prime Recipient or Sub-recipient. For consortia incorporated (or otherwise formed) under the laws of a State or territory of the United States, please refer to “Domestic Entities” above. For consortia incorporated in foreign countries, please refer to the requirements in “Foreign Entities” above.

Each incorporated consortium must have an internal governance structure and a written set of internal rules. Upon request, the consortium must provide a written description of its internal governance structure and its internal rules to the EERE Contracting Officer.

v. Unincorporated Consortia

Unincorporated consortia, which may include domestic and foreign entities, must designate one member of the consortium to serve as the Prime Recipient/consortium representative. The Prime Recipient/consortium representative must be incorporated (or otherwise formed) under the laws of a State or territory of the United States. The eligibility of the consortium will be determined by the eligibility of the Prime Recipient/consortium representative under Eligible Applicants section of the FOA.

Upon request, unincorporated consortia must provide the EERE Contracting Officer with a collaboration agreement, commonly referred to as the articles of collaboration, which sets out the rights and responsibilities of each consortium member. This agreement binds the individual consortium members together and should discuss, among other things, the consortium's:

- Management structure
- Method of making payments to consortium members
- Means of ensuring and overseeing members' efforts on the project
- Provisions for members' cost sharing contributions
- Provisions for ownership and rights in intellectual property developed previously or under the agreement.

B. Cost Sharing

Cost Share 20% per Phase, Cost Share Waiver Not Utilized

The cost share must be at least 20% of the total allowable project costs for projects funded by this FOA (i.e., the sum of the government share, including FFRDC costs if applicable, and the recipient share of allowable costs equals the total allowable cost of the project) and must come from non-federal sources unless otherwise allowed by law. (See 2 CFR 200.306 and 2 CFR 910.130 for the applicable cost sharing requirements.)

To assist applicants in calculating proper cost share amounts, EERE has included a cost share information sheet and sample cost share calculation as Appendix B to this FOA.

i. Legal Responsibility

Although the cost share requirement applies to the project as a whole, including work performed by members of the project team other than the Prime Recipient, **the Prime Recipient is legally responsible for paying the entire cost share.** The Prime Recipient's cost share obligation is expressed in the Assistance Agreement as a static amount in U.S. dollars (cost share amount) and as a percentage of the Total Project Cost (cost share percentage). If the funding agreement is terminated prior to the end of the project period, the Prime Recipient is required to contribute at least the cost share percentage of total expenditures incurred through the date of termination.

The Prime Recipient is solely responsible for managing cost share contributions by the Project Team and enforcing cost share obligation assumed by Project Team members in sub-awards or related agreements.

ii. Cost Share Allocation

Each Project Team is free to determine how best to allocate the cost share requirement among the team members. The amount contributed by individual Project Team members may vary, as long as the cost share requirement for the project as a whole is met.

iii. Cost Share Types and Allowability

Every cost share contribution must be allowable under the applicable federal cost principles, as described in the Cost Share Types and Allowability section of the FOA. In addition, cost share must be verifiable upon submission of the Full Application.

Project Teams may provide cost share in the form of cash or in-kind contributions. Cash contributions may be provided by the Prime Recipient or Sub-recipients. Allowable in-kind contributions include, but are not limited to: rental value of buildings or equipment, the value of a donated service or resource, or third party in-kind contribution.

Project teams may use funding or property received from state or local governments to meet the cost share requirement, so long as the funding was not provided to the state or local government by the federal government.

The Prime Recipient may not use the following sources to meet its cost share obligations, including, but not limited to:

- Revenues or royalties from the prospective operation of an activity beyond the project period
- Proceeds from the prospective sale of an asset of an activity
- Federal funding or property (e.g., federal grants, equipment owned by the federal government)
- Expenditures that were reimbursed under a separate federal program

Project Teams may not use the same cash or in-kind contributions to meet cost share requirements for more than one project or program.

Cost share contributions must be specified in the project budget, verifiable from the Prime Recipient's records, and necessary and reasonable for proper and efficient accomplishment of the project. As all sources of cost share are considered part of total project cost, the cost share dollars will be scrutinized under the same federal regulations as federal dollars to the project. Every cost share contribution must be reviewed and approved in advance by the Contracting Officer and incorporated into the project budget before the expenditures are incurred.

Applicants are encouraged to refer to 2 CFR 200.306 as amended by 2 CFR 910.130 & 10 CFR 603.525-555 for additional guidance on cost sharing.

iv. Cost Share Contributions by FFRDCs

Because FFRDCs are funded by the Federal Government, costs incurred by FFRDCs generally may not be used to meet the cost share requirement. FFRDCs may contribute cost share only if the contributions are paid directly from the contractor's Management Fee or another non-Federal source.

v. Cost Share Verification

Applicants are required to provide written assurance of their proposed cost share contributions prior to the start of their project if awarded.

Upon selection for award negotiations, applicants are required to provide additional information and documentation regarding their cost share contributions. Please refer to Appendix A of the FOA.

vi. Cost Share Payment

EERE requires Prime Recipients to contribute the cost share amount incrementally over the life of the award. Specifically, the Prime Recipient's cost share for each billing period must always reflect the overall cost share ratio negotiated by the parties (i.e., the total amount of cost sharing on each invoice when considered cumulatively with previous invoices must reflect, at a minimum, the cost sharing percentage negotiated).

In limited circumstances, and where it is in the Government's interest, the EERE Contracting Officer may approve a request by the Prime Recipient to meet its cost share requirements on a less frequent basis, such as monthly or quarterly. Regardless of the interval requested, the Prime Recipient must be up-to-date on cost share at each interval. Such requests must be sent to the Contracting Officer during award negotiations and include the following information: (1) a detailed justification for the request; (2) a proposed schedule of payments, including amounts and dates; (3) a written commitment to meet that schedule; and (4) such evidence as necessary to demonstrate that the Prime Recipient has complied with its cost share obligations to date. The Contracting Officer must approve all such requests before they go into effect.

C. Compliance Criteria

Letters of Intent, Full Applications and Replies to Reviewer Comments must meet all Compliance Criteria listed below or they will be considered noncompliant. EERE will not review or consider noncompliant submissions, including Letters of Intent, Full Applications, and Replies to Reviewer Comments that were: submitted through means other than EERE Exchange; submitted after the applicable deadline; and/or submitted incompletely. EERE will not extend the submission deadline for applicants that fail to submit required information due to server/connection congestion.

Letters of Intent, Full Applications, and Replies to Reviewer Comments that are deemed non-compliant will not be reviewed. In order to submit a compliant Letter of Intent, Full Application, and Reply to Reviewer Comments, applicants must ensure that all of the requirements listed in the FOA have been met. Checklists are provided to help ensure your Full Application is compliant. Every mandatory check box should be “checked off” for the Full Application to be deemed compliant and subsequently be reviewed.

If the applicant makes an error, they may be eliminated from further consideration without the opportunity to correct the error. Therefore, applicants are urged to address all mandatory compliance requirements. However, the Contracting Officer may, at their discretion, request clarification on clerical submission errors. The Contracting Officer may also, at their discretion, deem an application non-compliant without contacting the applicant for clarification on submission errors.

i. Compliance Criteria

i. Mandatory Letters of Intent

Letters of Intent are mandatory and deemed compliant if:

- The applicant entered all required information and clicked the “Create Submission” button in EERE Exchange by the deadline stated in the FOA.

ii. Full Applications

Full Applications are deemed compliant if:

- The applicant submitted a compliant Letter of Intent;
- The Full Application complies with the content and form requirements of the FOA; and
- The applicant successfully uploaded all required documents and clicked the “Submit” button in EERE Exchange by the deadline stated in the FOA.

*Questions about this FOA? Email T2M@ee.doe.gov
Problems with EERE Exchange? Email EERE-ExchangeSupport@hq.doe.gov
Include FOA name and number in subject line.*

Required Documents Checklist for Full Applications

Please check this page when submitting the application to help ensure the application is complete and compliant.

| | Date Due | Item | Document Type | Mandatory/Optional | Section Reference |
|--------------------------|-------------------|--|---------------|--------------------|---|
| <input type="checkbox"/> | January 18, 2017 | EERE Exchange Registration | None | Mandatory | https://eere-Exchange.energy.gov . |
| <input type="checkbox"/> | January 18, 2017 | Obtain DUNS Number (Registration can take up to 2 weeks) | Number | Mandatory | https://fedgov.dnb.com/webform |
| <input type="checkbox"/> | January 18, 2017 | System for Award Management (SAM) Registration | None | Mandatory | https://www.sam.gov |
| <input type="checkbox"/> | January 18, 2017 | FedConnect Registration | SAM MPIN | Mandatory | https://www.fedconnect.net |
| <input type="checkbox"/> | January 18, 2017 | Grants.gov Registration | None | Mandatory | https://www.grants.gov |
| <input type="checkbox"/> | January 18, 2017 | Letter of Intent | None | Mandatory | https://eere-Exchange.energy.gov |
| <input type="checkbox"/> | February 15, 2017 | Technical Volume | .doc or .docx | Mandatory | https://eere-Exchange.energy.gov |
| <input type="checkbox"/> | February 15, 2017 | SF-424 | .doc or .docx | Mandatory | https://eere-Exchange.energy.gov |
| <input type="checkbox"/> | February 15, 2017 | Summary Slide | .ppt or .pptx | Mandatory | https://eere-Exchange.energy.gov |
| <input type="checkbox"/> | February 15, 2017 | Authorization from cognizant Contracting Officer for FFRDC, if applicable | .doc or .docx | Mandatory | https://eere-Exchange.energy.gov |
| <input type="checkbox"/> | February 15, 2017 | Foreign Entity and Performance of Work in the United States waiver requests, if applicable | .doc or .docx | Mandatory | https://eere-Exchange.energy.gov |
| <input type="checkbox"/> | March 17, 2017 | Reply to Reviewer Comments | .ppt or .pptx | Optional | https://eere-Exchange.energy.gov |
| | | | | | |

Questions about this FOA? Email T2M@ee.doe.gov
 Problems with EERE Exchange? Email EERE-ExchangeSupport@hq.doe.gov
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| Other mandatory Full Application Compliance Criteria | |
|--|--|
| <input type="checkbox"/> | Cost share met? |
| <input type="checkbox"/> | Application submitted by due date? |
| <input type="checkbox"/> | Page limit guidelines met? If "no", DOE will delete anything over the page limit from the .doc or .docx application file prior to review to prevent unfair advantage |
| <input type="checkbox"/> | Cover page included? |
| <input type="checkbox"/> | Project Overview included? |
| <input type="checkbox"/> | Project Description, Innovation, and Impact included? |
| <input type="checkbox"/> | Work plan included? |
| <input type="checkbox"/> | Technical Qualifications and Resources included? |
| <input type="checkbox"/> | Resumes included in Appendix? |
| <input type="checkbox"/> | Waiver Requests completed? |
| <input type="checkbox"/> | Control Number included on final name of the Full Application? |

iii. Replies to Reviewer Comments

Replies to Reviewer Comments are deemed compliant if:

- The Reply to Reviewer Comments complies with the content and form requirements in Content and Form of Replies to Reviewer Comments of the FOA; and
- The applicant successfully uploaded all required documents to EERE Exchange by the deadline stated in the FOA.

D. Responsiveness Criteria

All “Applications Specifically Not of Interest,” as described in Applications Specifically Not of Interest of the FOA, are deemed nonresponsive and will not be reviewed or considered.

Questions about this FOA? Email T2M@ee.doe.gov
 Problems with EERE Exchange? Email EERE-ExchangeSupport@hq.doe.gov
 Include FOA name and number in subject line.

E. Other Eligibility Requirements

i. Requirements for DOE/NNSA Federally Funded Research and Development Centers (FFRDC Listed as the Applicant)

A DOE/NNSA FFRDC is eligible to apply for funding under this FOA if its cognizant Contracting Officer provides written authorization and this authorization is submitted with the application. If a DOE/NNSA FFRDC is selected for award negotiation, the proposed work will be authorized under the DOE work authorization process and performed under the laboratory's Management and Operating (M&O) contract.

The following wording is acceptable for the authorization:

Authorization is granted for the [Enter Laboratory Name] Laboratory to participate in the proposed project. The work proposed for the laboratory is consistent with or complementary to the missions of the laboratory, and will not adversely impact execution of the DOE assigned programs at the laboratory.

ii. Requirements for DOE/NNSA and non-DOE/NNSA Federally Funded Research and Development Centers Included as a Sub-recipient

DOE/NNSA and non-DOE/NNSA FFRDC may be proposed as a Sub-recipient on another entity's application subject to the following guidelines:

i. Authorization for non-DOE/NNSA FFRDC

The Federal agency sponsoring the FFRDC must authorize in writing the use of the FFRDC on the proposed project and this authorization must be submitted with the application. The use of a FFRDC must be consistent with its authority under its award.

ii. Authorization for DOE/NNSA FFRDC

The cognizant Contracting Officer for the FFRDC must authorize in writing the use of the FFRDC on the proposed project and this authorization must be submitted with the application. The following wording is acceptable for this authorization:

Authorization is granted for the [Enter Laboratory Name] Laboratory to participate in the proposed project. The work proposed for the laboratory is consistent with or complementary to the missions of the laboratory, and will not adversely impact execution of the DOE assigned programs at the laboratory.

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iii. Value/Funding

The funding for the FFRDC portion of the work will not normally be paid directly to a successful applicant. Usually, DOE will fund a DOE/NNSA FFRDC contractor through the DOE field work proposal system and non-DOE/NNSA FFRDC through an interagency agreement with the sponsoring agency. The costs of FFRDC related work should be included in the overall project budget request listed in the SF-424A.

iv. Cost Share

Although the FFRDC portion of the work is usually excluded from the award to a successful applicant, the applicant's cost share requirement will be based on the total cost of the project, including the applicant's and the FFRDC's portions of the project.

v. Responsibility

The Prime Recipient will be the responsible authority regarding the settlement and satisfaction of all contractual and administrative issues including, but not limited to, disputes and claims arising out of any agreement between the Prime Recipient and the FFRDC contractor.

vi. Limit on FFRDC Effort

The FFRDC effort, in aggregate, shall not exceed 30% of the total estimated cost of the project

F. Limitation on Number of Letters of Intent and Full Applications Eligible for Review

Applicants may only submit one Full Application for each Topic of this FOA. If an applicant submits more than one Full Application to the same Topic, EERE will only consider the last timely submission for evaluation. Any other submissions received listing the same applicant for the same Topic will be considered noncompliant and not eligible for further consideration. This limitation does not prohibit an applicant from collaborating on other applications (e.g., as a potential Sub-recipient or partner) so long as the entity is only listed as the prime applicant on one Full Application per Topic.

G. Questions Regarding Eligibility

EERE will not make eligibility determinations for potential applicants prior to the date by which applications to this FOA must be submitted. The decision of whether to submit an application in response to this FOA lies solely with the potential applicant.

IV. Application and Submission Information

A. Application Process

The application process will include two steps: (1) a Letter of Intent and (2) a Full Application. **Only applicants who have submitted a Letter of Intent will be eligible to submit a Full Application.** At each step, EERE performs an initial eligibility review of the applicant submissions to determine whether they meet the eligibility requirements of Eligibility Information of the FOA. EERE will not review or consider submissions that do not meet the eligibility requirements of Eligibility Information. All submissions must conform to the form and content requirements, including maximum page lengths (described below) and must be submitted via EERE Exchange at <https://eere-exchange.energy.gov/>. **EERE will not review or consider submissions submitted through means other than EERE Exchange, submissions submitted after the applicable deadline, and incomplete submissions.** EERE will not extend deadlines for applicants who fail to submit required information and documents due to server/connection congestion. A control number will be issued when an applicant begins the Exchange Letter of Intent application process. This control number must be included with all Full Application documents, as described below.

The Letter of Intent must conform to the requirements stated in EERE Funding Opportunity Exchange:

- Applicant must enter all required information and in the required fields as noted in the Letters of Intent section in EERE Funding Opportunity Exchange.

The Full Application and Reply to Reviewer Comments must conform to the following requirements:

- Each must be submitted in PDF format unless stated otherwise.
- Each must be written in English.
- All pages must be formatted to fit on 8.5 x 11-inch paper with margins not less than one inch on every side. Use Times New Roman typeface, a black font color, and a font size of 11 point or larger (except in figures or tables, which may be 9-point font). A symbol font may be used to insert Greek letters or special characters, but the font size requirement still applies. References must be included as footnotes or endnotes in a font size of 9 or larger. Footnotes and endnotes are counted toward the maximum page requirement.
- The Control Number must be prominently displayed on the upper right corner of the header of every page. Page numbers must be included in the footer of every page. The Letter of Intent is submitted through EERE Funding Opportunity Exchange and so will not require this step.
- Each submission must not exceed the specified maximum page limit, including cover page, charts, graphs, maps, and photographs when printed using the formatting requirements set forth above and single spaced. If applicants exceed the maximum page lengths indicated below, EERE will review only the authorized number of pages and disregard any additional pages.

Applicants are responsible for meeting each submission deadline. **Applicants are strongly encouraged to submit their Letters of Intent and Full Applications at least 48 hours in advance of the submission deadline.** Under normal conditions (i.e., at least 48 hours in advance of the submission deadline), applicants should allow at least 1 hour to submit a Letter of Intent, Full Application, or Reply to Reviewer Comments. Once the Letter of Intent, Full Application, or Reply to Reviewer Comments is submitted in EERE Funding Opportunity Exchange, applicants may revise or update that submission until the expiration of the applicable deadline. If changes are made, the applicant must resubmit (by hitting the submit button again) the Letter of Intent, Full Application, or Reply to Reviewer Comments before the applicable deadline.

EERE urges applicants to carefully review their Letters of Intent and Full Applications and to allow sufficient time for the submission of required information and documents. All Full Applications that pass the initial eligibility review will undergo comprehensive merit review according to the criteria identified in Criteria for Replies to Reviewer Comments of the FOA.

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Problems with EERE Exchange? Email EERE-ExchangeSupport@hq.doe.gov
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i. **Additional Information on EERE Exchange:**

EERE Exchange is designed to enforce the deadlines specified in this FOA. The “Apply” and “Submit” buttons will be automatically disabled at the defined submission deadlines. Applications that are in process may not be able to submit once the deadline has passed. Should applicants experience problems with exchange, the following information may be helpful.

Applicants that experience issues with submission PRIOR to the FOA deadline:

In the event that an applicant experiences technical difficulties with a submission, the Application should contact the Exchange helpdesk for assistance (EERE-ExchangeSupport@hq.doe.gov). The Exchange helpdesk and/or the EERE Exchange system administrators will assist Applicants in resolving issues.

Applicants that experience issues with submissions, resulting in late submissions:

In the event that an applicant experiences technical difficulties so severe that they are unable to submit their application by the deadline, the applicant should take screen-shots to document the error(s) that occurred and contact the exchange helpdesk for assistance (EERE-ExchangeSupport@hq.doe.gov). The Exchange helpdesk and/or the EERE Funding Opportunity Exchange system administrators will assist the applicant in resolving all issues (including finalizing submission on behalf of and with the applicant’s concurrence). PLEASE NOTE, however, applicants who are unable to submit applications on time due to heavy network traffic immediately before the deadline, will not be able to use this process.

B. Application Forms

The application forms and instructions are available on EERE Funding Opportunity Exchange. To access these materials, go to <https://eere-Exchange.energy.gov> and select the appropriate funding opportunity number.

i. Letter of Intent Requirements

To be eligible to submit a Full Application, applicants must create and submit a Letter of Intent in EERE Exchange by the specified due date and time. Letters of Intent will be used by EERE to plan for the merit review process. The letters should not contain any proprietary or sensitive business information. The letters will not be used for down-selection purposes, and do not commit an applicant to submit a Full Application.

EERE will not review or consider ineligible Letters of Intent that fall under Applications Specifically Not of Interest (Applications Specifically Not of Interest) or those deemed ineligible under Eligibility Information (Eligibility).

Each applicant must provide the following information as part of the Letter of Intent:

- Project Title
- Lead Organization
- Organization Type (Business < 500 Employees; Business > 1000 Employees; Business 500–1000 Employees; FFRDC; Government-Owned, Government Operated; Nonprofit; University)
- Percent of effort contributed by the Lead Organization
- The Project Team, including:
 - The Principal Investigator for the Prime Recipient
 - Teaming Partners (i.e., Sub-recipients)
 - Key Participants (i.e., individuals who contribute in a substantive, measurable way to the execution of the proposed project)
- Technical Topic or Area
- Abstract – The abstract provided should be not more than 200 words in length, and should provide a truncated explanation of the proposed project.

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C. Content and Form of the Full Application

Applicants must submit a Full Application by the specified due date and time to be considered for funding under this FOA. Applicants must complete the following application forms found on the EERE Exchange website at <https://eere-Exchange.energy.gov/>, in accordance with the instructions.

Applicants will have approximately 58 days from the opening of the FOA notification to prepare and submit a Full Application. Regardless of the date the applicant becomes aware of the opportunity, the submission deadline for the Full Application remains the date and time stated on the FOA cover page.

Applicants will receive a control number upon submission of their Letter of Intent and must include that control number in the file name of their Full Application submission (i.e., *Control number_Applicant Name_Full Application*).

i. Full Application Content Requirements

EERE will not review or consider ineligible Full Applications (see Application Review Criteria Full Applications section of the FOA).

Each Full Application shall be limited to a single project concept. Unrelated concepts shall not be consolidated in a single Full Application.

Full Applications must conform to the following requirements:

| Submission | Components | File Name |
|---|--|--|
| Full Application (PDF, unless stated otherwise) | Technical Volume | ControlNumber_LeadOrganization_TechnicalVolume |
| | SF-424 Application | ControlNumber_LeadOrganization_App424 |
| | Summary Slide (1 slide limit, Microsoft PowerPoint format) | ControlNumber_LeadOrganization_Slide |
| | Authorization from cognizant Contracting Officer for FFRDC, if applicable | ControlNumber_LeadOrganization_FFRDCAuth |
| | Foreign Entity and Performance of Work in the United States waiver requests, if applicable | ControlNumber_LeadOrganization_Waiver |

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Note: The maximum file size that can be uploaded to the EERE Exchange website is 10MB. Files more than 10MB cannot be uploaded and cannot be submitted for review. If a file exceeds 10MB but is still within the maximum page limit specified in the FOA, it must be broken into parts and denoted to that effect. For example:

ControlNumber_LeadOrganization_TechnicalVolume_Part_1
ControlNumber_LeadOrganization_TechnicalVolume_Part_2, etc.

EERE will not accept late submissions that result from technical difficulties due to uploading files that exceed 10MB.

EERE provides detailed guidance on the content and form of each component below.

ii. Technical Volume

The Technical Volume must be submitted in PDF format. The Technical Volume must conform to the content and form requirements listed below, including maximum page lengths. If applicants exceed the maximum page lengths indicated below, EERE will review only the authorized number of pages and disregard any additional pages. This volume must address the Application Review Criteria as discussed in Criteria for Replies to Reviewer Comments of the FOA. Save the Technical Volume in a single PDF file using the following naming convention for the title:
“ControlNumber_LeadOrganization_TechnicalVolume.”

Applicants should provide sufficient citations and references to the primary literature to justify the claims and approaches made in the Technical Volume. However, EERE and reviewers are under no obligation to review cited sources.

The Technical Volume to the Full Application may not be more than 7 pages, including the cover page, table of contents, and all citations, charts, graphs, maps, photos, or other graphics, and must include all of the information in the table below. The content of the Technical Volume should provide the proposed approach for Year 1 of the project. The applicant should consider the weighting of each of the Application Review Criteria (see Criteria for Replies to Reviewer Comments of the FOA) when preparing the Technical Volume.

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| SECTION/PAGE LIMIT | DESCRIPTION |
|--|---|
| <p>Cover page (1 page)</p> | <p>The cover page should include the following:</p> <ul style="list-style-type: none"> Project Title, the specific FOA Topic/Area of Interest being addressed, both the primary and secondary points of contact, names of all team member organizations, and any statements regarding confidentiality. Brief high-level project summary (100 words max). |
| <p>Project Overview (This section should constitute approx. 1 page of the Technical Volume)</p> | <p>The Project Overview should contain the following information:</p> <ul style="list-style-type: none"> Background: The applicant should discuss the background of their organization, including the history, successes, and current activities relevant to the core Topic and Area of Interest being addressed in the Full Application. First year and final Project Goal: The applicant should explicitly identify the targeted improvements to the existing baseline and the critical success factors in achieving that goal. DOE Impact: The applicant should discuss the impact that DOE funding would have on the proposed project. Applicants should specifically explain how DOE funding, relative to prior, current, or anticipated funding from other public and private sources, is necessary to achieve the project objectives. |
| <p>Project Description, Innovation, and Impact (This section should constitute approx. 2 pages of the Technical Volume)</p> | <p>The Project Description should contain the following information:</p> <ul style="list-style-type: none"> Relevance and Outcomes: The applicant should provide a detailed description of the project for the first and final years, including the activities, objectives, and outcomes that will be pursued during the project. This section should describe the relevance of the proposed project to the goals and objectives of the FOA, including the potential to meet specific DOE mission targets or other relevant performance targets. Feasibility: The applicant should demonstrate the feasibility of the proposed project and capability of achieving the anticipated performance targets for the first and final years, including a description of previous work done and prior results. Innovation and Impact: The applicant should describe the current state of the applicable field, the specific innovation of the proposed solution, the advantages of the proposed solution over current and emerging areas, and the overall impact on advancing the current state/ baseline if the project is successful. |
| <p>Workplan (This section should constitute approx. 2 pages of the Technical Volume)</p> | <p>The Workplan should contain the following information:</p> <ul style="list-style-type: none"> Scope Summary: The applicant should provide a summary description of the overall work scope and approach to achieving the objective(s) first and final years. The overall work scope is to be divided by quarterly performance periods (including quarterly |

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| | |
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| | <p>milestones as noted below) that are separated by a discrete decision point one year after the project starts (see below for more information on continuation decision points). The applicant should also describe the specific expected end result after two years.</p> <ul style="list-style-type: none"> • The ‘Scope Summary’ should describe the work to be accomplished and how the applicant will achieve the milestones and achieve the final project goal(s). This structure will provide for a concise description of the goals of the project and the work needed to accomplish the goals. This section will form the basis of the Project Objectives that will be refined and negotiated if a project is selected for award negotiation. • Quarterly milestones, i.e.: <ul style="list-style-type: none"> ○ Q1 milestone: [measurable milestone(s), brief summary of work required in that quarter to accomplish the milestone] ○ Q2 milestone: [measurable milestone(s), brief summary of work required in that quarter to accomplish the milestone] ○ Q3 milestone: [measurable milestone(s), brief summary of work required in that quarter to accomplish the milestone] ○ 1-year continuation decision point goal [measurable milestone(s), brief summary of work required in that quarter to accomplish the milestone] ○ Q5 milestone: [measurable milestone(s), brief summary of work required in that quarter to accomplish the milestone] ○ Q6 milestone: [measurable milestone(s), brief summary of work required in that quarter to accomplish the milestone] ○ Q7 milestone: [measurable milestone(s), brief summary of work required in that quarter to accomplish the milestone] ○ End project goal: [measurable milestone(s), brief summary of work required to accomplish the milestone] <p>The applicant should provide a summary of appropriate project-wide milestones needed to achieve success. Milestones should not be activity-based (i.e., provide a report, talk to customers, perform experiments); they should instead be SMART milestones (Specific, Measurable, Achievable, Relevant, and Timely) and must demonstrate a definitive achievement of progress rather than simply completing a task. Although reports are required as part of the cooperative agreement, they cannot be used as milestones. Reports summarize observations, and milestones validate functionality. These milestones will be carefully reviewed, and their quality is tied to the scoring criteria of this FOA. Weak milestones will therefore likely result in low scores and non-selection. The minimum requirement is that each project must have at least one SMART milestone per quarter. (Depending on the project, more milestones may be necessary to</p> |
|--|---|

*Questions about this FOA? Email T2M@ee.doe.gov
 Problems with EERE Exchange? Email EERE-ExchangeSupport@hq.doe.gov
 Include FOA name and number in subject line.*

| | |
|--|--|
| | <p>comprehensively demonstrate progress). The applicant should also articulate how each milestone will be verified.</p> <ul style="list-style-type: none"> • One-year Project Continuation Goal: EERE will perform a continuation review of the selected projects after one year. Only a subset of the projects will be selected for continuation after this review (view section VI. C for more information on the Down-select process). The one-year goals will therefore play a pivotal role in which awards are initially selected, as well as which projects are selected to continue into the second year. The applicant should also provide the specific criteria to be used to assess the achievement of the stated goal and present a clear answer to the question: “How will I know if this model is working after one year?” • End-of-Project Goal: The applicant should provide a summary of the end of project goal(s). This goal assumes the project moves into a second year after the continuation review. The minimum requirement is that each project must have at least one SMART end-of-project goal. End-of-project goals should be designed to provide potential adopters of the model with sufficient data and proof of the model’s viability to enable adoption. • Project Schedule (Gantt Chart or similar): The applicant should provide a schedule for the entire two-year period. • High-level overview of estimated project budget: listing the first and second year estimates, separated by teaming partners and high level activities (i.e., travel, vendors, staff time, etc.). |
| <p>Technical Qualifications and Resources (This section should constitute approx. 1 page of the Technical Volume)</p> | <p>The Technical Qualifications and Resources should:</p> <ul style="list-style-type: none"> • Describe the Project Team’s unique qualifications and expertise, including those of key Sub-recipients. • Describe the overall approach to and organization for managing the work. • Describe the time commitment of the key team members to support the project. • Include relevant, previous work efforts, demonstrated innovations, and how these enable the applicant to achieve the project objectives. • Include one-page resumes for key participating team members as an appendix. Resumes do not count towards the page limit. Multi-page resumes are not allowed. • Describe the services to be provided by DOE/NNSA FFRDC, if applicable. • Include letters of commitment from all Sub-recipient/third party cost share providers as an appendix. Letters of commitment do not count toward the page limit. |

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| | |
|--|---|
| | <ul style="list-style-type: none">• Include any letters of support from partners/end users as an appendix (1-page maximum per letter). Letters of support do not count toward the page limit.• For multi-organizational or multi-investigator projects, describe succinctly:<ul style="list-style-type: none">○ The roles and the work to be performed by each Principal Investigator (PI) and Key Participant○ Business agreements between the applicant and each PI and Key Participant○ How the various efforts will be integrated and managed○ Process for making decisions on project direction○ Publication arrangements○ Intellectual Property issue○ Communication plans |
|--|---|

iii. SF-424: Application for Federal Assistance

Complete all required fields of the SF-424 (which can be downloaded on EERE Exchange) in accordance with the instructions on the form. The list of certifications and assurances in Field 21 can be found at <https://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms>, under Certifications and Assurances. Note: The dates and dollar amounts on the SF-424 are for the complete project period and not just the first project year, first phase, or other subset of the project period. Save the SF-424 in a single PDF file using the following convention for the title "ControlNumber_LeadOrganization_App424."

iv. Summary Slide

Applicants are required to provide a single PowerPoint slide summarizing the proposed project. The slide must be submitted in Microsoft PowerPoint format. This slide is used during the evaluation process. Save the Summary Slide in a single file using the following convention for the title "ControlNumber_LeadOrganization_Slide."

The Summary Slide requires the following information:

- The project's key idea/takeaway
- A description of the project's impact
- Proposed project goals
- Any key graphics (illustrations, charts, and/or tables)
- Project title, Prime Recipient, Principal Investigator, and Sub-recipients
- Requested EERE funds and proposed applicant cost share.

v. Authorization for non-DOE/NNSA or DOE/NNSA FFRDC (if applicable)

The federal agency sponsoring the FFRDC must authorize in writing the use of the FFRDC on the proposed project and this authorization must be submitted with the application. The use of a FFRDC must be consistent with the contractor's authority under its award. Save the Authorization in a single PDF file using the following convention for the title "ControlNumber_LeadOrganization_FFRDCAuth."

vi. Waiver Requests: Foreign Entities and Performance of Work in the United States (if applicable)

1. Foreign Entity Participation:

As set forth in Incorporated Consortia, all Prime Recipients receiving funding under this FOA must be incorporated (or otherwise formed) under the laws of a state or territory of the United States. To request a waiver of this requirement, the applicant must submit an explicit waiver request in the Full Application. Appendix C lists the necessary information that must be included in a request to waive this requirement.

2. Performance of Work in the United States:

As set forth in Foreign Entities, all work under EERE funding agreements must be performed in the United States. This requirement does not apply to the purchase of supplies and equipment, so a waiver is not required for foreign purchases of these items. However, the Prime Recipient should make every effort to purchase supplies and equipment within the United States. Appendix C lists the necessary information that must be included in a request to waive the Performance of Work in the United States requirement.

D. Content and Form of Replies to Reviewer Comments

EERE will provide applicants with reviewer comments following evaluation of all eligible Full Applications. Applicants will have a brief opportunity to review the comments and to prepare a short reply responding to comments. The “Reply to Reviewer Comments” is an optional submission; applicants are not required to submit this. EERE will notify applicants via email when the Reviewer Comments are available for review. The expected submission deadline is on the cover page of the FOA; however, it is the applicant’s responsibility to monitor email if the expected date changes. The deadline will not be extended for applicants who are unable to submit their reply by the deadline due to relying on the expected date. Applicants should anticipate having approximately three business days to submit Replies to Reviewer Comments.

Replies to Reviewer Comments must conform to the following content and format requirements, including maximum page lengths. If a Reply to Reviewer Comments is more than three pages in length, EERE will review only the first three pages and disregard any additional pages. Additionally, replies should be clear and preface responses with a short note providing context regarding the items being addressed. Also, note that reviewers will not have a list of comments in front of them to match with short rebuttals.

An example of what TO DO includes (provide a short note with the context and the response):

Concerns regarding our assumption around cost reduction – We used the following methodology to calculate the reduction in cost.

An example of what NOT TO DO includes (DO NOT provide a reference to the reviewer number and comment number):

Reviewer 5 comment 3 – We used the following methodology to calculate the reduction in cost.

It is usually best to use the allotted space to address a few of the most critical comments well, rather than try to respond to all of them.

DOE will perform a preliminary review of Replies to Reviewer Comments to determine whether they are compliant. Noncompliant Replies to Reviewer Comments will be rejected by the Contracting Officer and are not considered for award determination. Compliant and responsive Full Applications are reviewed on its merits even if a Reply to Reviewer Comments is rejected as noncompliant.

| SECTION | PAGE LIMIT | DESCRIPTION |
|-----------------|------------|--|
| Text | 2 pages | Applicants may respond to one or more reviewer comments and/or provide additional information that supplements their Full Application. |
| Optional | 1 page | Applicants may use this page however they wish. Text, graphs, charts, or other data to respond to reviewer comments or to supplement their Full Application are acceptable inclusions. |

E. Post-Award Information Requests

If selected for negotiations for an award, EERE reserves the right to request of selectees additional or clarifying information for any reason deemed necessary, including, but not limited to:

- Indirect cost information
- Other budget information
- Commitment Letters from Third Parties Contributing to Cost Share, if applicable
- Name and phone number of the Designated Responsible Employee for complying with national policies prohibiting discrimination (See 10 CFR 1040.5)
- Representation of Limited Rights Data and Restricted Software, if applicable
- Environmental Questionnaire

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F. Dun and Bradstreet Universal Numbering System Number and System for Award Management

Each applicant (unless the applicant is an individual or Federal awarding agency that is excepted from those requirements under 2 CFR §25.110(b) or (c), or has an exception approved by the Federal awarding agency under 2 CFR §25.110(d)) is required to: (1) Be registered in the System for Award Management (SAM) at <https://www.sam.gov> before submitting its application; (2) provide a valid Dun and Bradstreet Universal Numbering System (DUNS) number in its application; and (3) continue to maintain an active SAM registration with current information at all times during which it has an active federal award or an application or plan under consideration by a federal awarding agency. DOE may not make a federal award to an applicant until the applicant has complied with all applicable DUNS and SAM requirements and, if an applicant has not fully complied with the requirements by the time DOE is ready to make a federal award, it may determine that the applicant is not qualified to receive a federal award and use that determination as a basis for making a federal award to another applicant.

G. Submission Dates and Times

Letters of Intent, Full Applications, and Replies to Reviewer Comments must be submitted in EERE Funding Opportunity Exchange no later than 3:00 p.m. Eastern on the dates provided on the cover page of this FOA.

H. Intergovernmental Review

Technology Office not subject to Executive Order 12372

This FOA is not subject to Executive Order 12372 – Intergovernmental Review of Federal Programs.

I. Funding Restrictions

i. Allowable Costs

All expenditures must be allowable, allocable, and reasonable in accordance with the applicable federal cost principles.

Refer to the following applicable Federal cost principles for more information:

- FAR Part 31 for For-Profit entities
- 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.

ii. Pre-Award Costs

Selectees must request prior written approval if they wish to charge pre-award costs. Pre-award costs are those incurred prior to the effective date of the federal award directly pursuant to the negotiation and in anticipation of the federal award where such costs are necessary for efficient and timely performance of the scope of work. Such costs are allowable only to the extent that they would have been allowable if incurred after the date of the federal award and **only** with the written approval of the federal awarding agency, through the Contracting Officer assigned to the award.

Pre-award costs cannot be incurred prior to the Selection Official signing the Selection Statement and Analysis. Pre-award costs can only be incurred if such costs would be reimbursable under the agreement if incurred after award.

Pre-Award expenditures are made at the Selectee's risk; EERE is not obligated to reimburse costs: (1) in the absence of appropriations; (2) if an award is not made; or (3) if an award is made for a lesser amount than the Selectee anticipated.

iii. Performance of Work in the United States**1. Requirement**

All work performed under EERE Awards must be performed in the United States. This requirement does not apply to the purchase of supplies and equipment; however, the Prime Recipient should make every effort to purchase supplies and equipment within the United States. The Prime Recipient must flow down this requirement to its Sub-recipients.

2. Failure to Comply

If the Prime Recipient fails to comply with the Performance of Work in the United States requirement, EERE may deny reimbursement for the work conducted outside the United States and such costs may not be recognized as allowable recipient cost share. The Prime Recipient is responsible should any work under this Award be performed outside the United States, absent a waiver, regardless of if the work is performed by the Prime Recipient, Sub-recipients, contractors or other project partners.

3. Waiver

There may be limited circumstances where it is in the interest of the project to perform a portion of the work outside the United States. To seek a waiver of the Performance of Work in the United States requirement, the applicant must submit a written waiver request to EERE. Appendix C lists the necessary information that must be included in a request to waive the Performance of Work in the United States requirement.

The applicant must demonstrate to the satisfaction of EERE that a waiver would further the purposes of the FOA and is in the economic interests of the United States. EERE may require additional information before considering a waiver request. Save the waiver request(s) in a single PDF file titled "ControlNumber_PerformanceofWork_Waiver." The applicant does not have the right to appeal EERE's decision concerning a waiver request.

iv. Construction

Recipients are required to obtain written authorization from the Contracting Officer before incurring any major construction costs.

v. Foreign Travel

Foreign travel costs are not allowable under this FOA.

vi. Equipment and Supplies

To the greatest extent practicable, all equipment and products purchased with funds made available under this FOA should be American-made. This requirement does not apply to used or leased equipment.

Property disposition will be required at the end of a project if the current fair market value of property exceeds \$5,000. The rules for property disposition are set forth in 2 CFR 200.310 – 200.316 as amended by 2 CFR 910.360.

vii. Lobbying

Recipients and Sub-recipients may not use any federal funds to influence or attempt to influence, directly or indirectly, congressional action on any legislative or appropriation matters.

Recipients and Sub-recipients are required to complete and submit SF-LLL, “Disclosure of Lobbying Activities”

(<https://www.whitehouse.gov/sites/default/files/omb/grants/sfillin.pdf>) if any non-federal funds have been paid or will be paid to any person for influencing or attempting to influence any of the following in connection with your application:

- An officer or employee of any federal agency
- A Member of Congress
- An officer or employee of Congress
- An employee of a Member of Congress.

viii. Risk Assessment

Prior to making a federal award, DOE is required by 31 U.S.C. 3321 and 41 U.S.C. 2313 to review information available through any OMB-designated repositories of government-wide eligibility qualification or financial integrity information, such as SAM Exclusions and “Do Not Pay.”

In addition, DOE evaluates the risk(s) posed by applicants before they receive federal awards. This evaluation may consider results of the evaluation of the applicant's eligibility; the quality of the application; financial stability; quality of management systems and ability to meet the management standards prescribed in this part; history of performance; reports and findings from audits; and the applicant's ability to effectively implement statutory, regulatory, or other requirements imposed on non-federal entities.

In addition to this review, DOE must comply with the guidelines on government-wide suspension and debarment in 2 CFR 180, and must require non-federal entities to comply with these provisions. These provisions restrict federal awards, sub-awards and contracts with certain parties that are debarred, suspended, or otherwise excluded from or ineligible for participation in federal programs or activities.

ix. Invoice Review and Approval

DOE employs a risk-based approach to determine the level of supporting documentation required for approving invoice payments. Recipients may be required to provide some or all of the following items with their requests for reimbursement:

- Summary of costs by cost categories
- Timesheets or personnel hours report
- Invoices/receipts for all travel, equipment, supplies, contractual, and other costs
- UCC filing proof for equipment acquired with project funds by for-profit recipients and Sub-recipients
- Explanation of cost share for invoicing period
- Analogous information for some Sub-recipients
- Other items as required by DOE.

V. Application Review Information

A. Application Review Criteria

i. Full Applications

Applications will be evaluated against the merit review criteria shown below. All sub-criteria are of equal weight. To avoid double- or triple-penalizing for a weak element, EERE and reviewers will first review the overall application and evaluate the innovation and best-case impact, assuming everything outlined in the application will come to fruition (Criterion 1). EERE and reviewers will then critically evaluate the stated goals and milestones of the project—assessing how measurable and realistic these goals are as they relate to the proposed work (Criterion 2). Finally, EERE and reviewers will assess the quality of the team in relation to their ability to carry out the project (Criterion 3).

Criterion 1: Innovation and Impact (33%) – How innovative and impactful is the project, assuming the stated outcomes can be achieved as written?

- Innovative – Extent to which the proposed project or solution is innovative.
- Impactful – Extent to which the proposed project or solution, if successful, impacts the core goals outlined in the FOA in Topics and Areas of Interest.
- Differentiated – Extent of differentiation with respect to existing commercial products or solutions.
- Scalable – Likelihood the proposed solution, if successful, could be scaled to have a broader impact.
- Sustainable – Likelihood the proposed solution, if successful, will be able to continue without additional support from DOE beyond the project period.

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Criterion 2: Quality and likelihood of completion of stated goals (33%) – Are the stated goals of the project SMART (Specific, Measurable, Achievable, Relevant, and Timely), and are they likely to be accomplished within the scope of this project?

- Measurable – Extent to which the applicant shows a clear understanding of the importance of SMART verifiable milestones and proposes milestones that demonstrate clear progress, are aggressive but achievable, and are quantitative.
- Risks mitigated – Extent to which the applicant understands and discusses the project risks and challenges the proposed work will face, and the soundness of the strategies and methods that will be used to mitigate risks.
- Validated – Level of validation (letters of support/interest, partners, customer trials, data from prior work, report references, etc.).
- Reasonable assumptions – Reasonableness of the assumptions used to form the execution strategy, (e.g., market size, customer participation, costs, throughput at full scale, speed of proposed scale-up or adoption, and mode of funding).
- Reasonable budget – The reasonableness of the overall funding requested to achieve the proposed project and objectives.

Criterion 3: Capability and Resources of the Applicant/Project Team (34%) – Is the team well qualified and positioned to successfully complete this project?

- Capable – Extent to which the training, capabilities, and experience of the assembled team will result in the successful completion of the proposed project. Extent to which this team (including proposed Sub-recipients) will be able to achieve the final results on time and to specification.
- Participation – The level of participation by project participants as evidenced by letter(s) of commitment and how well they are integrated into the Workplan.
- Commitment – Extent to which the final team required to complete this project is fully assembled and committed to the project (e.g., Are there any key members that are “to be hired at a later date?”).

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- Past Performance – Extent to which the assembled team has shown success in the past. (Note: new performers will not be penalized.) DOE encourages new entrants and new ideas, but past successes and/or failures will be noted.
- Access – Extent to which the team has access to facilities, equipment, people, expertise, data, knowledge, and any other resources required to complete the proposed project.

ii. Criteria for Replies to Reviewer Comments

EERE has not established separate non-criteria to evaluate Replies to Reviewer Comments. Instead, Replies to Reviewer Comments are attached to the original applications and evaluated as an extension of the Full Application.

B. Standards for Application Evaluation

Applications that are determined to be eligible will be evaluated in accordance with this FOA, by the standards set forth in EERE’s Notice of Objective Merit Review Procedure (76 Fed. Reg. 17846, March 31, 2011) and the guidance provided in the “Department of Energy Merit Review Guide for Financial Assistance,” which is available at: <https://energy.gov/management/downloads/merit-review-guide-financial-assistance>.

C. Other Selection Factors

i. Program Policy Factors

In addition to the above criteria, the Selection Official may consider the following program policy factors in determining which Full Applications to select for award negotiations:

1. The degree to which the proposed project exhibits project diversity and addresses Areas of Interest when compared to the existing DOE project portfolio and other projects selected from this FOA.
2. The degree to which the proposed project, including proposed cost share, optimizes the use of available EERE funding to achieve programmatic objectives.
3. The level of industry involvement and demonstrated ability to accelerate the pathway to market and overcome key market barriers.

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4. The degree to which the proposed project will accelerate transformational advances in areas that industry, by itself, is not likely to undertake because of uncertainty or market failures.
5. The degree to which the proposed project avoids duplication/overlap with other publicly or privately funded work.
6. The degree to which the proposed project supports complementary efforts or projects, which, when taken together, will best achieve the goals and objectives.

D. Evaluation and Selection Process

i. Overview

The evaluation process consists of multiple phases; each includes an initial eligibility review and a thorough technical review. Rigorous technical reviews of eligible submissions are conducted by reviewers that are experts in the subject matter of the FOA. Ultimately, the Selection Official considers the recommendations of the reviewers, along with other considerations such as program policy factors, in determining which applications to select.

ii. Pre-Selection Interviews

As part of the evaluation and selection process, EERE may invite one or more applicants to participate in pre-selection interviews. Pre-Selection Interviews are distinct from and more formal than Pre-Selection Clarifications (See section V.D.iii of the FOA). The invited applicant(s) will meet with EERE representatives to provide clarification on the contents of the Full Applications and to provide EERE an opportunity to ask questions regarding the proposed project. The information provided by applicants to EERE through Pre-Selection Interviews contributes to EERE's selection decisions.

EERE will arrange to meet with the invited applicants in person at EERE's offices or a mutually agreed upon location. EERE may also arrange site visits at certain applicants' facilities. As an alternative, EERE may invite certain applicants to participate in a one-on-one conference with EERE via webinar, videoconference, or conference call.

EERE will not reimburse applicants for travel and other expenses relating to the Pre-Selection Interviews, nor will these costs be eligible for reimbursement as pre-award costs.

EERE may obtain additional information through pre-selection interviews that will be used to make a final selection determination. EERE may select applications for funding and make awards without pre-selection interviews.

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Participation in pre-selection interviews with EERE does not signify that applicants have been selected for award negotiations.

iii. Pre-Selection Clarification

EERE may determine that pre-selection clarifications are necessary from one or more applicants. Pre-selection clarifications are distinct from and less formal than pre-selection interviews. These pre-selection clarifications will solely be for the purposes of clarifying the application and will be limited to information already provided in the application documentation. The pre-selection clarifications may occur before, during, or after the merit review evaluation process. Information provided by an applicant that is not necessary to address the pre-selection clarification question will not be reviewed or considered. Typically, a pre-selection clarification will be carried out through either written responses to EERE's written clarification questions or video or conference calls with EERE representatives.

The information provided by applicants to EERE through pre-selection clarifications is incorporated in their applications and contributes to the merit review evaluation and EERE's selection decisions. If EERE contacts an applicant for pre-selection clarification purposes, it does not signify that the applicant has been selected for negotiation of award or that the applicant is among the top ranked applications.

EERE will not reimburse applicants for expenses relating to the pre-selection clarifications, nor will these costs be eligible for reimbursement as pre-award costs.

iv. Recipient Integrity and Performance Matters

DOE, prior to making a federal award with a total amount of federal share greater than the simplified acquisition threshold, is required to review and consider any information about the applicant that is in the designated integrity and performance system accessible through SAM (currently FAPIIS) (see 41 U.S.C. 2313).

The applicant, at its option, may review information in the designated integrity and performance systems accessible through SAM and comment on any information about itself that a federal awarding agency previously entered and is currently in the designated integrity and performance system accessible through SAM.

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DOE will consider any written comments by the applicant, in addition to the other information in the designated integrity and performance system, in making a judgment about the applicant's integrity, business ethics, and record of performance under federal awards when completing the review of risk posed by applicants as described in 2 C.F.R. § 200.205.

v. Selection

The Selection Official may consider the technical merit, the federal Consensus Board's recommendations, program policy factors, and the amount of funds available in arriving at selections for this FOA.

E. Anticipated Notice of Selection and Award Dates

EERE anticipates notifying applicants selected for negotiation of award by May 2017 and making awards by August 2017.

VI. Award Administration Information

A. Award Notices

i. Ineligible Submissions

Ineligible Full Applications will not be further reviewed or considered for award. The Contracting Officer will send a notification letter by email to the technical and administrative points of contact designated by the applicant in EERE Exchange. The notification letter will state the basis upon which the Full Application is ineligible and not considered for further review.

ii. Full Application Notifications

EERE will notify applicants of its determination via a notification letter by email to the technical and administrative points of contact designated by the applicant in EERE Exchange. The notification letter will inform the applicant whether or not its Full Application was selected for award negotiations. Alternatively, EERE may notify one or more applicants that a final selection determination on particular Full Applications will be made at a later date, subject to the availability of funds or other factors.

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iii. Successful Applicants

Receipt of a notification letter selecting a Full Application for award negotiations does not authorize the applicant to commence performance of the project. If an application is selected for award negotiations, it is not a commitment by EERE to issue an award. Applicants do not receive an award until award negotiations are complete and the Contracting Officer executes the funding agreement, accessible by the Prime Recipient in FedConnect.

The award negotiation process will take approximately 60 days. Applicants must designate a primary and a backup point of contact in EERE Funding Opportunity Exchange with whom EERE will communicate to conduct award negotiations. The applicant must be responsive during award negotiations (i.e., provide requested documentation) and meet the negotiation deadlines. If the applicant fails to do so or if award negotiations are otherwise unsuccessful, EERE will cancel the award negotiations and rescind the selection. EERE reserves the right to terminate award negotiations at any time for any reason.

Please refer to Section IV.I.ii of the FOA for guidance on pre-award costs.

iv. Alternate Selection Determinations

In some instances, an applicant may receive a notification that its application was not selected for award, and EERE designated the application to be an alternate. As an alternate, EERE may consider the Full Application for federal funding in the future. A notification letter stating the Full Application is designated as an alternate does not authorize the applicant to commence performance of the project. EERE may ultimately determine to select or not select the Full Application for award negotiations.

v. Unsuccessful Applicants

EERE shall promptly notify in writing each applicant whose application has not been selected for award or whose application cannot be funded because of the unavailability of appropriated funds.

B. Administrative and National Policy Requirements

i. Registration Requirements

There are several one-time actions before submitting an application in response to this FOA, and it is vital that applicants address these items as soon as possible. Some may take several weeks, and failure to complete them could interfere with an applicant's ability to apply to this FOA or to meet the negotiation deadlines and receive an award if the application is selected. These requirements are as follows:

i. EERE Funding Opportunity Exchange

Register and create an account on EERE Funding Opportunity Exchange at <https://eere.Exchange.energy.gov>.

This account will then allow the user to register for any open EERE FOAs that are currently in EERE_Funding Opportunity Exchange. It is recommended that each organization or business unit, whether acting as a team or a single entity, use only one account as the contact point for each submission. Applicants should also designate backup points of contact so they may be easily contacted if deemed necessary. **This step is required to apply to this FOA.**

The EERE Exchange registration does not have a delay; however, **the remaining registration requirements below could take several weeks to process and are necessary for a potential applicant to receive an award under this FOA.**

ii. DUNS Number

Obtain a Dun and Bradstreet Data Universal Numbering System (DUNS) number (including the plus 4 extension, if applicable) at <https://fedgov.dnb.com/webform>. A DUNS number is a required field in the SF-424 document, which is a required submission document to apply to this funding program. Applicants should allow enough time to receive their DUNS number before submitting the SF-424.

iii. System for Award Management

Register with the System for Award Management (SAM) at <https://www.sam.gov>. Designating an Electronic Business Point of Contact (EBiz POC) and obtaining a special password called an MPIN are important steps in SAM registration. Please update your SAM registration annually.

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iv. FedConnect

Register in FedConnect at <https://www.fedconnect.net>. To create an organization account, your organization's SAM MPIN is required. For more information about the SAM MPIN or other registration requirements, review the FedConnect Ready, Set, Go! Guide at https://www.fedconnect.net/FedConnect/Marketing/Documents/FedConnect_Ready_Set_Go.pdf

v. Grants.gov

Register in Grants.gov (<https://www.grants.gov>) to receive automatic updates when Amendments to this FOA are posted. However, please note that Letters of Intent, Full Applications, and Replies to Reviewer Comments will not be accepted through Grants.gov.

vi. Electronic Authorization of Applications and Award Documents

Submission of an application and supplemental information under this FOA through electronic systems used by DOE, including EERE Funding Opportunity Exchange and FedConnect.net, constitutes the authorized representative's approval and electronic signature.

ii. Award Administrative Requirements

The administrative requirements for DOE grants and cooperative agreements are contained in 2 CFR Part 200 as amended by 2 CFR Part 910.

iii. Foreign National Access to DOE Sites

All applicants that ultimately enter into an award resulting from this FOA will be subject to the following requirement concerning foreign national involvement. Upon DOE's request, Prime Recipients must provide information to facilitate DOE's responsibilities associated with foreign national access to DOE sites, information, technologies, and equipment. A foreign national is defined as any person who was born outside the jurisdiction of the United States, is a citizen of a foreign government, and has not been naturalized under U.S. law. If the Prime Recipient or Sub-recipients, contractors, or vendors under the award, anticipate utilizing a foreign national person in the performance of an award, the Prime Recipient is responsible for providing to the Contracting Officer specific information of the foreign national(s) to satisfy compliance with all requirements for access approval.

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iv. Sub-award and Executive Reporting

Additional administrative requirements necessary for DOE grants and cooperative agreements to comply with the Federal Funding and Transparency Act of 2006 (FFATA) are contained in 2 CFR Part 170. Prime Recipients must register with the new FFATA Sub-award Reporting System database and report the required data on their first tier Sub-recipients. Prime Recipients must report the executive compensation for their own executives as part of their registration profile in SAM.

v. National Policy Requirements

The National Policy Assurances that are incorporated as a term and condition of award are located at <https://www.nsf.gov/awards/managing/rtc.jsp>.

vi. Environmental Review in Accordance with National Environmental Policy Act (NEPA)

EERE's decision whether and how to distribute federal funds under this FOA is subject to the National Environmental Policy Act (NEPA) (42 USC 4321, *et seq.*). NEPA requires federal agencies to integrate environmental values into their decision-making processes by considering the potential environmental impacts of their proposed actions. For additional background on NEPA, please see DOE's NEPA website at <https://nepa.energy.gov/>.

While NEPA compliance is a federal agency responsibility and the ultimate decisions remain with the federal agency, all recipients selected for awards will be required to assist in the timely and effective completion of the NEPA process in the manner most pertinent to their proposed project. If DOE determines certain records must be prepared to complete the NEPA review process (e.g., biological evaluations or environmental assessments), the costs to prepare the necessary records may be included as part of the project costs.

vii. Applicant Representations and Certifications**i. Lobbying Restrictions**

By accepting funds under this award, the Prime Recipient agrees that none of the funds obligated on the award shall be expended, directly or indirectly, to influence congressional action on any legislation or appropriation matters pending before Congress, other than to communicate to Members of Congress as described in 18 U.S.C. §1913. This restriction is in addition to those prescribed elsewhere in statute and regulation.

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ii. Corporate Felony Conviction and Federal Tax Liability Representations

In submitting an application in response to this FOA, the applicant represents that:

- a. It is **not** a corporation that has been convicted of a felony criminal violation under any federal law within the preceding 24 months
- b. It is **not** a corporation that has any unpaid federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed and that are not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

For purposes of these representations the following definitions apply:

A corporation includes any entity that has filed articles of incorporation in any of the 50 states, the District of Columbia, or the various territories of the United States [but not foreign corporations]. It includes both for-profit and nonprofit organizations.

iii. Nondisclosure and Confidentiality Agreements Representations

In submitting an application in response to this FOA the applicant represents that:

- a. It **does not and will not** require its employees or contractors to sign internal nondisclosure or confidentiality agreements or statements prohibiting or otherwise restricting its employees or contractors from lawfully reporting waste, fraud, or abuse to a designated investigative or law enforcement representative of a federal department or agency authorized to receive such information.

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Include FOA name and number in subject line.

- b. It **does not and will not** use any federal funds to implement or enforce any nondisclosure and/or confidentiality policy, form, or agreement it uses unless it contains the following provisions:
- (1) *“These provisions are consistent with and do not supersede, conflict with, or otherwise alter the employee obligations, rights, or liabilities created by existing statute or Executive order relating to (1) classified information, (2) communications to Congress, (3) the reporting to an Inspector General of a violation of any law, rule, or regulation, or mismanagement, a gross waste of funds, an abuse of authority, or a substantial and specific danger to public health or safety, or (4) any other whistleblower protection. The definitions, requirements, obligations, rights, sanctions, and liabilities created by controlling Executive orders and statutory provisions are incorporated into this agreement and are controlling.”*
 - (2) The limitation above shall not contravene requirements applicable to Standard Form 312, Form 4414, or any other form issued by a federal department or agency governing the nondisclosure of classified information.
 - (3) Notwithstanding the provision listed in paragraph (a), a nondisclosure or confidentiality policy form or agreement that is to be executed by a person connected with the conduct of an intelligence or intelligence-related activity, other than an employee or officer of the U.S. government, may contain provisions appropriate to the activity for which such document is to be used.
 - (4) Such nondisclosure or confidentiality forms shall also make it clear that they do not bar disclosures to Congress, or to an authorized official of an executive agency or the Department of Justice, that are essential to reporting a substantial violation of law.

viii. Statement of Federal Stewardship

EERE will exercise normal federal stewardship in overseeing the project activities performed under EERE awards. Stewardship activities include, but are not limited to, conducting site visits, reviewing performance and financial reports, providing assistance and/or temporary intervention in usual circumstances to correct deficiencies that develop during the project, assuring compliance with terms and conditions, and reviewing technical performance after project completion to ensure that the project objectives have been accomplished.

ix. Statement of Substantial Involvement

EERE has substantial involvement in work performed under awards made as a result of this FOA. EERE does not limit its involvement to the administrative requirements of the award. Instead, EERE has substantial involvement in the direction and redirection of the aspects of the project as a whole. Substantial involvement includes, but is not limited to, the following:

1. EERE shares responsibility with the recipient for the management, control, direction, and performance of the project.
2. EERE may intervene in the conduct or performance of work under this award for programmatic reasons. Intervention includes the interruption or modification of the conduct or performance of project activities.
3. EERE may redirect or discontinue funding the project based on the outcome of EERE's evaluation of the project at the down-select decision point(s).
4. EERE participates in major project decision-making processes.

x. Subject Invention Utilization Reporting

To ensure that Prime Recipients and Sub-recipients holding title to subject inventions are taking the appropriate steps to commercialize subject inventions, EERE may require that each Prime Recipient holding title to a subject invention submit annual reports for 10 years from the date the subject invention was disclosed to EERE on the utilization of the subject invention and efforts made by Prime Recipient or their licensees or assignees to stimulate such utilization. The reports must include information regarding the status of development, date of first commercial sale or use, gross royalties received by the Prime Recipient, and other data and information as EERE may specify.

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- xi. **Intellectual Property Provisions**
The standard DOE financial assistance intellectual property provisions applicable to the various types of recipients are located at https://energy.gov/sites/prod/files/2016/07/f33/eere_110_model_cooperative_agreement.pdf.

- xii. **Reporting**
Reporting requirements are identified on the Federal Assistance Reporting checklist, attached to the award agreement. The checklist can be accessed at <https://energy.gov/eere/funding/eere-funding-application-and-management-forms>.

- xiii. **Conference Spending**
The recipient shall not expend **any** funds on a conference not directly and programmatically related to the purpose for which the grant or cooperative agreement was awarded that would defray the cost to the U.S. government of a conference held by any executive branch department, agency, board, commission, or office for which the cost to the U.S. government would otherwise exceed \$20,000, thereby circumventing the required notification by the head of any such executive branch department, agency, board, commission, or office to the Inspector General (or senior ethics official for any entity without an Inspector General), of the date, location, and number of employees attending such conference.

- xiv. **UCC Financing Statements**
Per 2 CFR 910.360 (Real Property and Equipment) when a piece of equipment is purchased by a for-profit recipient or Sub-recipient with federal funds, and when the federal share of the financial assistance agreement is more than \$1,000,000, the recipient or Sub-recipient must:

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Properly record, and consent to the Department's ability to properly record if the recipient fails to do so, UCC financing statement(s) for all equipment more than \$5,000 purchased with project funds. These financing statement(s) must be approved in writing by the Contracting Officer prior to the recording, and they shall provide notice that the Recipient's title to all equipment (not real property) purchased with federal funds under the financial assistance agreement is conditional pursuant to the terms of this section, and that the government retains an undivided reversionary interest in the equipment. The UCC financing statement(s) must be filed before the Contracting Officer may reimburse the recipient for the federal share of the equipment unless otherwise provided for in the relevant financial assistance agreement. The recipient shall further make any amendments to the financing statements or additional recordings, including appropriate continuation statements, as necessary or as the Contracting Officer may direct.

c. Program Down-Select

EERE intends to conduct a competitive project review (down-selection process) upon the completion of the first year of the selected projects for awards made under this FOA. Recipients will present their projects to EERE individually (not to other recipients). This process will allow a higher number of awards to be made at a lower funding level, followed by a subset of those projects to receive continued funding at higher levels.

This FOA will utilize a down-select process with the following components:

1. Approximately seven pilot projects will be selected and provided with up to \$300,000 each for a one-year activity. Projects will be selected based on the adherence to the one-year measurable milestones proposed in the application. These milestones must demonstrate a measurable impact on the core challenges outlined in the FOA.
2. After one year, each of the seven projects will undergo a continuation review. This review will evaluate the progress made to date, potential future activities, and impact, if the project were to continue for a second year at a budget level of up to an additional \$700,000 in federal funds for total federal funding of up to \$1,000,000 per project.
3. Up to three of the seven pilot projects will be granted a project continuation. Continuation will be determined based on the level to which the goals of the project were met or exceeded, and the plan for expanding on the demonstrated success of the model.

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4. Subject matter experts from the public and private sectors may be used as reviewers, subject to conflict of interest and non-disclosure considerations. These reviewers will utilize the scoring criteria as a basis for their reviews.

Upon completion of the competitive project review (down-selection process), EERE will select which projects will receive federal funding beyond the first year. Due to the availability of funding and program considerations, only a portion of the recipients will be selected to receive funding for project continuation.

VII. Questions/Agency Contacts

Upon the issuance of a FOA, EERE personnel are prohibited from communicating (in writing or otherwise) with applicants regarding the FOA except through the established question and answer process as described below. Specifically, questions regarding the content of this FOA must be submitted to: T2M@ee.doe.gov. Questions must be submitted not later than 3 business days prior to the application due date and time.

All questions and answers related to this FOA will be posted on EERE Funding Opportunities Exchange at: <https://eere-exchange.energy.gov>. **Please note that you must first select this specific FOA Number DE-FOA-0001703 to view the questions and answers specific to this FOA.** EERE will attempt to respond to a question within 3 business days, unless a similar question and answer has already been posted on the website.

Questions related to the registration process and use of the EERE Funding Opportunities Exchange website should be submitted to: EERE-ExchangeSupport@hq.doe.gov.

VIII. Other Information

A. FOA Modifications

Amendments to this FOA, if made, will be posted on the EERE Funding Opportunities Exchange website and the Grants.gov system. However, you will only receive an email when an amendment or a FOA is posted on these sites if you register for email notifications for this FOA in Grants.gov. EERE recommends that you register as soon after the release of the FOA as possible to ensure you receive timely notice of any amendments or other FOAs.

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B. Informational Webinar

EERE will conduct two informational webinars during the time the FOA is open for applications. The below is information regarding the two informational webinars:

1. January 4, 2017 at 2:00 pm Eastern Webinar web address for applicants
<https://usdoe.webex.com/usdoe/onstage/g.php?MTID=efe51c6a7a8435707ddea34d2df17d538>
2. February 7, 2017 at 2:00 pm Eastern Webinar web address for applicants
<https://usdoe.webex.com/usdoe/onstage/g.php?MTID=e2f9fc7ad3228361899c665b3763e38be>

Attendance is not mandatory and will not positively or negatively impact the overall review of any applicant submissions. As the webinar will be open to all applicants who wish to participate, applicants should refrain from asking questions or communicating information that would reveal confidential and/or proprietary information specific to their project. Specific dates for the webinar can be found on the cover page of the FOA.

C. Government Right to Reject or Negotiate

EERE reserves the right, without qualification, to reject any or all applications received in response to this FOA and to select any application, in whole or in part, as a basis for negotiation and/or award.

D. Commitment of Public Funds

The Contracting Officer is the only individual who can make awards or commit the government to the expenditure of public funds. A commitment by anyone other than the Contracting Officer, either express or implied, is invalid.

E. Treatment of Application Information

In general, EERE will only use data and other information contained in applications for evaluation purposes, unless such information is generally available to the public or is already the property of the government.

Applicants should not include trade secrets or commercial or financial information that is privileged or confidential in their application unless such information is necessary to convey an understanding of the proposed project or to comply with a requirement in the FOA.

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The use of protective markings such as “Do Not Publicly Release – Trade Secret” or “Do Not Publicly Release – Confidential Business Information” is encouraged. However, applicants should be aware that the use of protective markings is not dispositive as to whether information will be publicly released pursuant to the Freedom of Information Act, 5 U.S.C. §552, et. seq., as amended by the OPEN Government Act of 2007, Pub. L. No. 110-175. See the Funding Opportunity Description section of this document, “Notice of Potential Disclosure Under the Freedom of Information Act (FOIA)” for additional information regarding the public release of information under the Freedom of Information Act.

Applicants are encouraged to employ protective markings in the following manner:

The cover sheet of the application must be marked as follows and identify the specific pages containing trade secrets or commercial or financial information that is privileged or confidential:

Notice of Restriction on Disclosure and Use of Data:

Pages [list applicable pages] of this document may contain trade secrets or commercial or financial information that is privileged or confidential and are exempt from public disclosure. Such information shall be used or disclosed only for evaluation purposes or in accordance with a financial assistance or loan agreement between the submitter and the government. The government may use or disclose any information that is not appropriately marked or otherwise restricted, regardless of source. [End of Notice]

The header and footer of every page that contains trade secrets or commercial or financial information that is privileged must be marked as follows: “May contain trade secrets or commercial or financial information that is privileged or confidential and exempt from public disclosure.”

In addition, each line or paragraph containing trade secrets or commercial or financial information that is privileged or confidential must be enclosed in brackets ex. [this is proprietary]. Only mark the information on each page that contains the proprietary information. **DO NOT** use highlighting, or colored background to mark proprietary information; it is very difficult to read many applications marked using highlighting.

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F. Evaluation and Administration by Non-Federal Personnel

In conducting the merit review evaluation, the down-select review, and peer review, the government may seek the advice of qualified non-federal personnel as reviewers. The government may also use non-federal personnel to conduct routine, nondiscretionary administrative activities. The applicant, by submitting an application, consents to the use of non-federal reviewers/administrators. Non-federal reviewers must sign conflict of interest and non-disclosure agreements prior to reviewing an application. Non-federal personnel conducting administrative activities must sign a non-disclosure agreement.

G. Notice Regarding Eligible/Ineligible Activities

Eligible activities under this FOA include those which describe and promote the understanding of scientific and technical aspects of specific energy technologies, but not those that encourage or support political activities such as the collection and dissemination of information related to potential, planned, or pending legislation.

H. Notice of Right to Conduct a Review of Financial Capability

EERE reserves the right to conduct an independent third party review of financial capability for applicants that are selected for negotiation of award, including personal credit information of principal(s) of a small business if there is insufficient information to determine financial capability of the organization.

I. Notice of Potential Disclosure Under Freedom of Information Act (FOIA)

Under the Freedom of Information Act, (FOIA), 5 U.S.C. §552, et. seq., as amended by the OPEN Government Act of 2007, Pub. L. No. 110-175, any information received from the Applicant is considered an agency record, and as such, subject to public release under FOIA. The purpose of the FOIA is to afford the public the right to request and receive agency records unless those agency records are protected from disclosure under one or more of the nine FOIA exemptions. Decisions to disclose or withhold information received from the Applicant are based upon the applicability of one or more of the nine FOIA exemptions, not on the existence or nonexistence of protective markings or designations. Only the agency's designated FOIA Officer may determine if information received from the Applicant may be withheld pursuant to one of the nine FOIA exemptions. All FOIA requests received by DOE are processed in accordance with 10 C.F.R. Part 1004.

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J. Requirement for Full and Complete Disclosure

Applicants are required to make a full and complete disclosure of all information requested. Any failure to make a full and complete disclosure of the requested information may result in:

- The termination of award negotiations
- The modification, suspension, and/or termination of a funding agreement
- The initiation of debarment proceedings, debarment, and/or a declaration of ineligibility for receipt of federal contracts, subcontracts, and financial assistance and benefits
- Civil and/or criminal penalties.

K. Retention of Submissions

EERE expects to retain copies of all Letters of Intent, Full Applications, Replies to Reviewer Comments, and other submissions. No submissions will be returned. By applying to EERE for funding, applicants consent to EERE's retention of their submissions.

L. Title to Subject Inventions

Ownership of subject inventions is governed pursuant to the authorities listed below.

- Domestic Small Businesses, Educational Institutions, and Nonprofits: Under the Bayh-Dole Act (35 U.S.C. § 200 et seq.), domestic small businesses, educational institutions, and nonprofits may elect to retain title to their subject inventions.
- All other parties: The Federal Non-Nuclear Energy Act of 1974, 42 U.S.C. 5908, provides that the government obtains title to new inventions unless a waiver is granted (see below).
- Class Patent Waiver: Under 42 U.S.C. § 5908, title to subject inventions vests in the U.S. government and large businesses and foreign entities do not have the automatic right to elect to retain title to subject inventions. However, EERE may issue "class patent waivers" under which large businesses and foreign entities that meet certain stated requirements may elect to retain title to their subject inventions.

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- **Advance and Identified Waivers:** Applicants may request a patent waiver that will cover subject inventions that may be invented under the award, in advance of or within 30 days after the effective date of the award. Even if an advance waiver is not requested or the request is denied, the recipient will have a continuing right under the award to request a waiver for identified inventions (i.e., individual subject inventions that are disclosed to EERE within the timeframes set forth in the award’s intellectual property terms and conditions). Any patent waiver that may be granted is subject to certain terms and conditions in 10 CFR 784.

M. Government Rights in Subject Inventions

Where Prime Recipients and Sub-recipients retain title to subject inventions, the U.S. government retains certain rights.

i. Government Use License

The U.S. government retains a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States for any subject invention throughout the world. This license extends to contractors doing work on behalf of the government.

ii. March-in Rights

The U.S. government retains march-in rights with respect to all subject inventions. Through “march-in rights,” the government may require a Prime Recipient or Sub-recipient who has elected to retain title to a subject invention (or their assignees or exclusive licensees) to grant a license for use of the invention to a third party. In addition, the government may grant licenses for use of the subject invention when a Prime Recipient, Sub-recipient, or their assignees and exclusive licensees refuse to do so.

DOE may exercise its march-in rights only if it determines that such action is necessary under any of the four following conditions:

- The owner or licensee has not taken or is not expected to take effective steps to achieve practical application of the invention within a reasonable time
- The owner or licensee has not acted to alleviate health or safety needs in a reasonably satisfied manner
- The owner has not met public use requirements specified by federal statutes in a reasonably satisfied manner
- The U.S. manufacturing requirement has not been met.

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Any determination that march-in rights are warranted must follow a fact-finding process in which the recipient has certain rights to present evidence and witnesses, confront witnesses and appear with counsel and appeal any adverse decision. Since the creation of march-in rights in 1980, DOE has never exercised its march-in rights to any subject inventions.

N. Rights in Technical Data

Data rights differ based on whether data is first produced under an award or instead was developed at private expense outside the award.

Limited Rights Data: The U.S. government will not normally require delivery of confidential or trade secret-type technical data developed solely at private expense prior to issuance of an award, except as necessary to monitor technical progress and evaluate the potential of proposed technologies to reach specific technical and cost metrics.

Government Rights in Technical Data Produced Under Awards: The U.S. government normally retains unlimited rights in technical data produced under government financial assistance awards, including the right to distribute to the public. However, pursuant to special statutory authority, certain categories of data generated under EERE awards may be protected from public disclosure for up to five years after the data is generated (“Protected Data”). For awards permitting protected data, the protected data must be marked as set forth in the awards intellectual property terms and conditions and a listing of unlimited rights data (i.e., non-protected data) must be inserted into the data clause in the award. In addition, invention disclosures may be protected from public disclosure for a reasonable time to allow for filing a patent application.

O. Copyright

The Prime Recipient and Sub-recipients may assert copyright in copyrightable works, such as software, first produced under the award without EERE approval. When copyright is asserted, the government retains a paid-up, nonexclusive, irrevocable worldwide license to reproduce, prepare derivative works, distribute copies to the public, and to perform publicly and display publicly the copyrighted work. This license extends to contractors and others doing work on behalf of the government. For software, the license includes only the version of software developed under the award; future versions are not included. While the U.S. government retains this right, EERE seeks to help its awardees be successful and therefore does not intend to release proprietary software to the public.

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P. Personally Identifiable Information (PII)

All information provided by the Applicant must to the greatest extent possible exclude Personally Identifiable Information (PII). The term “personally identifiable information” refers to information which can be used to distinguish or trace an individual's identity, such as their name, social security number, biometric records, etc. alone or combined with other personal or identifying information which is linked or linkable to a specific individual, such as date and place of birth, mother's maiden name, etc. (See OMB Memorandum M-07-16 dated May 22, 2007, found at <https://www.whitehouse.gov/sites/default/files/omb/memoranda/fy2007/m07-16.pdf>.)

By way of example, Applicants must screen resumes to ensure that they do not contain PII such as personal addresses, personal emails and/or social security numbers. In short, if the PII is not essential to the application, it should not be in the application.

Q. Annual Compliance Audits

If a for-profit entity is a Prime Recipient and has expended \$750,000 or more of DOE funds during the entity's fiscal year, an annual compliance audit performed by an independent auditor is required. For additional information, please refer to 2 C.F.R. § 910.501 and Subpart F.

If an educational institution, nonprofit organization, or state/local government is a Prime Recipient or Sub-recipient and has expended \$750,000 or more of federal funds during the non-federal entity's fiscal year, then a single or program-specific audit is required. For additional information, please refer to 2 C.F.R. § 200.501 and Subpart F.

Applicants and Sub-recipients (if applicable) should propose sufficient costs in the project budget to cover the costs associated with the audit. EERE will share in the cost of the audit at its applicable cost share ratio.

Appendix A – Cost Share Information

Cost Sharing or Cost Matching

The terms “cost sharing” and “cost matching” are often used synonymously. Even the DOE Financial Assistance Regulations, 2 CFR 200.306, use both terms in the titles specific to regulations applicable to cost sharing. EERE almost always uses the term “cost sharing,” as it conveys the concept that non-federal share is calculated as a percentage of the total project cost. An exception is the State Energy Program Regulation, 10 CFR 420.12, State Matching Contribution. Here, “cost matching” for the non-federal share is calculated as a percentage of the federal funds only, rather than the total project cost.

How Cost Sharing Is Calculated

As stated above, cost sharing is calculated as a percentage of the total project cost. FFRDC costs must be included in total project costs. Following is an example of how to calculate cost sharing amounts for a project with \$1,000,000 in federal funds with a minimum 20% non-federal cost sharing requirement:

- Formula: Federal Share (\$) divided by Federal Share (%) = Total Project Cost
Example: \$1,000,000 divided by 80% = \$1,250,000
- Formula: Total Project Cost (\$) minus Federal Share (\$) = Non-federal share (\$)
Example: \$1,250,000 minus \$1,000,000 = \$250,000
- Formula: Non-federal Share (\$) divided by Total Project Cost (\$) = Non-federal share (%)
Example: \$250,000 divided by \$1,250,000 = 20%

What Qualifies for Cost Sharing?

While it is not possible to explain what specifically qualifies for cost sharing in one or even a couple of sentences, in general, if a cost is allowable under the cost principles applicable to the organization incurring the cost and is eligible for reimbursement under an EERE grant or cooperative agreement, then it is allowable as cost share. Conversely, if the cost is not allowable under the cost principles and not eligible for reimbursement, then it is not allowable as cost share. In addition, costs may not be counted as cost share if they are paid by the federal government under another award unless authorized by federal statute to be used for cost sharing.

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The rules associated with what is allowable as cost share are specific to the type of organization that is receiving funds under the grant or cooperative agreement, though are generally the same for all types of entities. The specific rules applicable to:

- FAR Part 31 for for-profit entities, (48 CFR Part 31)
- 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.

In addition to the regulations referenced above, other factors may also come into play such as timing of donations and length of the project period. For example, the value of 10 years of donated maintenance on a project that has a project period of 5 years would not be fully allowable as cost share. Only the value for the 5 years of donated maintenance that corresponds to the project period is allowable and may be counted as cost share.

Additionally, EERE generally does not allow pre-award costs for either cost share or reimbursement when these costs precede the signing of the appropriation bill that funds the award. In the case of a competitive award, EERE generally does not allow pre-award costs prior to the signing of the Selection Statement by the EERE Selection Official.

DOE Financial Assistance Rules 2 CFR Part 200 as amended by 2 CFR Part 910

As stated above, the rules associated with what is allowable cost share are generally the same for all types of organizations. Following are the rules found to be common, but again, the specifics are contained in the regulations and cost principles specific to the type of entity:

- (A) Acceptable contributions. All contributions, including cash contributions and third party in-kind contributions, must be accepted as part of the Prime Recipient's cost sharing if such contributions meet all the following criteria:
- (1) They are verifiable from the recipient's records.
 - (2) They are not included as contributions for any other federally assisted project or program.
 - (3) They are necessary and reasonable for the proper and efficient accomplishment of project or program objectives.

- (4) They are allowable under the cost principles applicable to the type of entity incurring the cost as follows:
 - a. For-profit organizations. Allowability of costs incurred by for-profit organizations and those nonprofit organizations listed in Attachment C to OMB Circular A-122 is determined in accordance with the for-profit cost principles in 48 CFR Part 31 in the Federal Acquisition Regulation (FAR), except that patent prosecution costs are not allowable unless specifically authorized in the award document. (v) Commercial Organizations. FAR Subpart 31.2—Contracts with Commercial Organizations.
 - b. Other types of organizations. For all other non-federal entities, allowability of costs is determined in accordance with 2 CFR Part 200 Subpart E.
- (5) They are not paid by the federal government under another award unless authorized by federal statute to be used for cost sharing or matching.
- (6) They are provided for in the approved budget.

(B) Valuing and documenting contributions

- (1) Valuing recipient's property or services of recipient's employees. Values are established in accordance with the applicable cost principles, which mean that amounts chargeable to the project are determined based on costs incurred. For real property or equipment used on the project, the cost principles authorize depreciation or use charges. The full value of the item may be applied when the item will be consumed in the performance of the award or fully depreciated by the end of the award. In cases where the full value of a donated capital asset is to be applied as cost sharing or matching, that full value must be the lesser or the following:
 - a. The certified value of the remaining life of the property recorded in the recipient's accounting records at the time of donation.
 - b. The current fair market value. If there is sufficient justification, the Contracting Officer may approve the use of the current fair market value of the donated property, even if it exceeds the certified value at the time of donation to the project. The Contracting Officer may accept the use of any reasonable basis for determining the fair market value of the property.

- (2) Valuing services of others' employees. If an employer other than the recipient furnishes the services of an employee, those services are valued at the employee's regular rate of pay, provided these services are for the same skill level for which the employee is normally paid.
- (3) Valuing volunteer services. Volunteer services furnished by professional and technical personnel, consultants, and other skilled and unskilled labor may be counted as cost sharing or matching if the service is an integral and necessary part of an approved project or program. Rates for volunteer services must be consistent with those paid for similar work in the recipient's organization. In those markets in which the required skills are not found in the recipient organization, rates must be consistent with those paid for similar work in the labor market in which the recipient competes for the kind of services involved. In either case, paid fringe benefits that are reasonable, allowable, and allocable may be included in the valuation.
- (4) Valuing property donated by third parties.
 - a. Donated supplies may include such items as office supplies or laboratory supplies. Value assessed to donated supplies included in the cost sharing or matching share must be reasonable and must not exceed the fair market value of the property at the time of the donation.
 - b. Normally, only depreciation or use charges for equipment and buildings may be applied. However, the fair rental charges for land and the full value of equipment or other capital assets may be allowed, when they will be consumed in the performance of the award or fully depreciated by the end of the award, provided that the Contracting Officer has approved the charges. When use charges are applied, values must be determined in accordance with the usual accounting policies of the recipient, with the following qualifications:
 - i. The value of donated space must not exceed the fair rental value of comparable space as established by an independent appraisal of comparable space and facilities in a privately owned building in the same locality.
 - ii. The value of loaned equipment must not exceed its fair rental value.

- (5) Documentation. The following requirements pertain to the recipient's supporting records for in-kind contributions from third parties.
- a. Volunteer services must be documented and, to the extent feasible, supported by the same methods used by the recipient for its own employees.
 - b. The basis for determining the valuation for personal services and property must be documented.

Appendix B – Sample Cost Share Calculation for Blended Cost Share Percentage

The following example shows the math for calculating required cost share for a project with \$2,000,000 in federal funds with four tasks requiring different non-federal cost share percentages.

| Task | Proposed Federal Share | Federal Share % | Recipient Share % |
|------------------------|------------------------|-----------------|-------------------|
| Task 1 (R&D) | \$1,000,000 | 80% | 20% |
| Task 2 (R&D) | \$500,000 | 80% | 20% |
| Task 3 (Demonstration) | \$400,000 | 50% | 50% |
| Task 4 (Outreach) | \$100,000 | 100% | 0% |

Federal share (\$) divided by Federal share (%) = Task Cost

Each task must be calculated individually as follows:

Task 1

\$1,000,000 divided by 80% = \$1,250,000 (Task 1 Cost)

Task 1 Cost minus Federal share = Non-federal share

\$1,250,000 - \$1,000,000 = \$250,000 (Non-federal share)

Task 2

\$500,000 divided 80% = \$625,000 (Task 2 Cost)

Task 2 Cost minus Federal share = Non-federal share

\$625,000 - \$500,000 = \$125,000 (Non-federal share)

Task 3

\$400,000 / 50% = \$800,000 (Task 3 Cost)

Task 3 Cost minus Federal share = Non-federal share

\$800,000 - \$400,000 = \$400,000 (Non-federal share)

Task 4

Federal share = \$100,000

Non-federal cost share is not mandated for outreach = \$0 (Non-federal share)

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The calculation may then be completed as follows:

| Tasks | \$ Federal Share | % Federal Share | \$ Non-Federal Share | % Non-Federal Share | Total Project Cost |
|--------|------------------|-----------------|----------------------|---------------------|--------------------|
| Task 1 | \$1,000,000 | 80% | \$250,000 | 20% | \$1,250,000 |
| Task 2 | \$500,000 | 80% | \$125,000 | 20% | \$625,000 |
| Task 3 | \$400,000 | 50% | \$400,000 | 50% | \$800,000 |
| Task 4 | \$100,000 | 100% | \$0 | 0% | \$100,000 |
| Totals | \$2,000,000 | | \$775,000 | | \$2,775,000 |

Blended Cost Share %

Non-federal share (\$775,000) divided by Total Project Cost (\$2,775,000) = 27.9% (non-federal)

Federal share (\$2,000,000) divided by Total Project Cost (\$2,775,000) = 72.1% (federal)

Appendix C – Waiver Requests: Foreign Entity Participation as the Prime Recipient and Performance of Work in the United States

1. Waiver for Foreign Entity Participation as the Prime Recipient

As set forth in incorporated consortia, all Prime Recipients receiving funding under this FOA must be incorporated (or otherwise formed) under the laws of a state or territory of the United States. To request a waiver of this requirement, an applicant must submit an explicit waiver request in the Full Application.

Overall, the applicant must demonstrate to the satisfaction of EERE that it would further the purposes of this FOA and is otherwise in the economic interests of the United States to have a foreign entity serve as the Prime Recipient. A request to waive the *Foreign Entity Participation as the Prime Recipient* requirement must include the following:

- Entity name
- The rationale for proposing a foreign entity to serve as the Prime Recipient
- Country of incorporation
- A description of the project’s anticipated contributions to the US economy;
 - How the project will benefit U.S. research, development, and manufacturing, including contributions to employment in the United States and growth in new markets and jobs in the United States
 - How the project will promote domestic American manufacturing of products and/or services
- A description of how the foreign entity’s participation as the Prime Recipient is essential to the project
- A description of the likelihood of intellectual property being created from the work and the treatment of any such intellectual property
- Countries where the work will be performed (Note: if any work is proposed to be conducted outside the United States, the applicant must also complete a separate request for waiver of the Performance of Work in the United States requirement).

EERE may require additional information before considering the waiver request.

The applicant does not have the right to appeal EERE’s decision concerning a waiver request.

2. Waiver for Performance of Work in the United States

All work under EERE funding agreements must be performed in the United States. This requirement does not apply to the purchase of supplies and equipment, so a waiver is not required for foreign purchases of these items. However, the Prime Recipient should make every effort to purchase supplies and equipment within the United States. There may be limited circumstances where it is in the interest of the project to perform a portion of the work outside the United States. To seek a waiver of the Performance of Work in the United States requirement, the applicant must submit an explicit waiver request in the Full Application. A separate waiver request must be submitted for each entity proposing performance of work outside of the United States.

Overall, a waiver request must demonstrate to the satisfaction of EERE that it would further the purposes of this FOA and is otherwise in the economic interests of the United States to perform work outside of the United States. A request to waive the Performance of Work in the United States requirement must include the following:

- The rationale for performing the work outside the United States (“foreign work”)
- A description of the work proposed to be performed outside the United States
- An explanation as to how the foreign work is essential to the project
- A description of the anticipated benefits to be realized by the proposed foreign work and the anticipated contributions to the U.S. economy
 - The associated benefits to be realized and the contribution to the project from the foreign work
 - How the foreign work will benefit U.S. research, development, and manufacturing, including contributions to employment in the United States and growth in new markets and jobs in the United States
 - How the foreign work will promote domestic American manufacturing of products and/or services
- A description of the likelihood of intellectual property (IP) being created from the foreign work and the treatment of any such intellectual property
- The total estimated cost (DOE and Recipient cost share) of the proposed foreign work
- The countries in which the foreign work is proposed to be performed
- The name of the entity that would perform the foreign work.

EERE may require additional information before considering the waiver request.

The applicant does not have the right to appeal EERE’s decision concerning a waiver request.