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SOLAR ENERGY TECHNOLOGIES OFFICE











RACER Funding Opportunity Announcement Webinar

DE-FOA-0002597

SI.FOA.SETO@ee.doe.gov

April 27, 2022

Notice

- NO NEW INFORMATION OTHER THAN THAT PROVIDED IN THE FOA WILL BE DISCUSSED IN THE WEBINAR.
- There are no particular advantages or disadvantages to the application evaluation process with respect to participating on the webinar today.
- Your participation is completely <u>voluntary</u>.

Notice

- All applicants are strongly encouraged to carefully read the Funding Opportunity Announcement DE-FOA-0002597 ("FOA") and adhere to the stated submission requirements.
- This presentation summarizes the contents of FOA. If there are any inconsistencies between the FOA and this presentation or statements from DOE personnel, the FOA is the controlling document and applicants should rely on the FOA language and seek clarification by submitting a question to SI.FOA.SETO@ee.doe.gov

DE-FOA-0002597 Renewables Advancing Community Energy Resilience (RACER)

Anticipated Schedule:

FOA Issue Date:	4/12/2022
Submission Deadline for Concept Papers:	5/26/2022 5:00pm ET
Submission Deadline for Full Applications:	7/25/2022 5:00pm ET
Submission Deadline for Replies to Reviewer Comments:	8/23/2022 5:00pm ET
Expected Date for EERE Selection Notifications:	October 2022
Expected Timeframe for Award Negotiations:	October 2022-January 2023

Agenda

- 1) FOA Description
- 2) Topic Areas/Technical Areas of Interest
- 3) Award Information
- 4) Statement of Substantial Involvement
- 5) Cost Sharing
- 6) FOA Timeline
- 7) Concept Papers
- 8) Full Applications
- 9) Merit Review and Selection Process
- 10) Registration Requirements

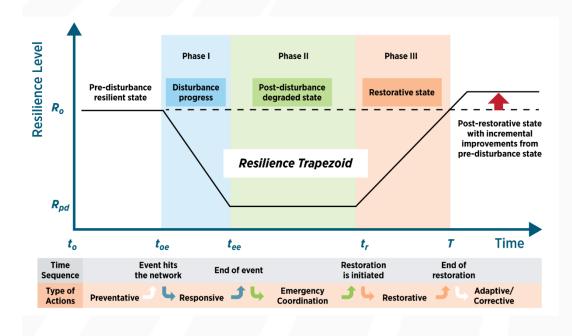


Topic 1: Innovative Community-Based Energy Resilience Planning

Development of energy resilience planning at the community level, including the development and integration of new or existing metrics and preparedness and response plans, via robust multi-stakeholder participation and collaboration. Where appropriate, opportunities must be identified for solar PV plus storage deployment in locations that can best support increased resilience.

This topic area will investigate the energy resilience requirements for specific communities,

- Through engagement and teaming with stakeholders in the community required to be part of the research team.
- Development of metrics that must enable communities to measure their current energy resilience baseline, quantify specific negative impacts of prior extreme events in the area, and
- Identify where DERs, such as solar PV and energy storage, can increase the community's energy resilience



The resilience trapezoid curve shows the different disturbance phases and resilience levels before, during and after an energy disruptive event. (Source IEEE)

Topic 1 Areas of Interest

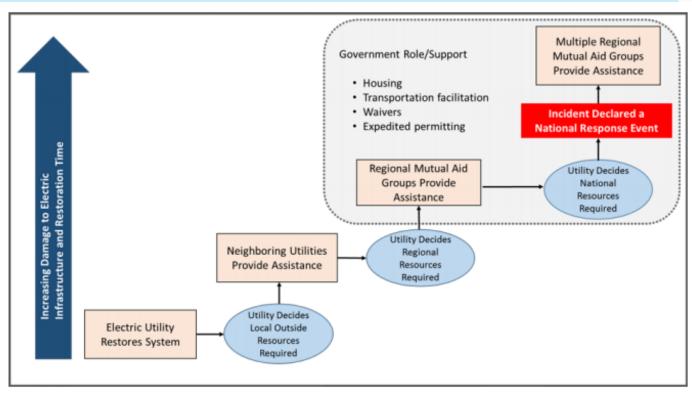
- Projects that develop strategies, procedures, and methods to engage with stakeholders and collect relevant data that will help measure resilience improvement and technology options from the perspective of multiple stakeholder groups.
- Projects that collect data to develop and test the proposed framework and the integration of the relevant resilience metrics into stakeholder planning.
- Projects that comprehensively identify relevant stakeholder groups to engage throughout the project and include a clear strategy to deliver effective joint action among stakeholder groups.
- Projects that describe and propose to quantify the negative impacts to the community (health, economic, social, or otherwise) accrued in the past and projected to accrue in the future during sustained outages due to extreme events.
- Projects that include a clear strategy to test, demonstrate, and validate the efficacy of the framework developed, ideally in diverse geographies.
- Projects that provide for the replication or scaling of solutions or outcomes to neighboring areas, or those with similar vulnerabilities.
- Projects that include a 'bidirectional' (top-down and bottom-up) approach to identifying a community's priority needs during recovery and restoration periods.
- Projects that include communities from the beginning of the planning phase as the proposed framework is developed.

Topic 2: Automation Strategies for Rapid Energy Restoration

Development of technologies and tools to integrate automation into restoration of power systems utilizing distributed solar plus storage following extreme events. Projects funded by this effort will have two phases. During phase one teams shall develop or refine community energy resilience plan, as described under Topic 1, and commence development of restoration technologies. During phase two, teams will utilize the energy resilience plan developed during phase one to iterate on the development of the automation technologies for energy restoration and inform the approach to demonstration. In addition, teams will describe how the resilience plan and automation strategies help improve the community energy resilience baseline.

This topic area will investigate the integration and demonstration of the following technologies;

- Deployment of low cost and robust sensing and communications technologies;
- Data analytics processes to provide actionable information and;
- Demonstrations of how solar-plus-storage technologies will provide essential services



Topic 2 Areas of Interest

- Projects that comprehensively identify relevant stakeholder groups to engage throughout the project and include a clear strategy to deliver effective joint action among stakeholder groups.
- Identification of energy interdependencies with other infrastructures (e.g., communications, water, fuel, other) for a given community to guide demonstration.
- Utilization of clean renewable technologies like solar plus storage systems to replace fuel-based generators.
- Sensing platforms with robust and weatherized packaging.
- Robust communication technologies and architectures that will include a combination of wire and wireless to enable field data collection and information sharing.
- Utilization of hardened PV system designs that can survive extreme weather.
- Visualization tools that can provide timely and accurate information to community groups and consumers about grid status and restoration progress. These will assist decision processes on needed supplies (e.g., gas, food, water, ice, medication), transportation, health and safety.
- Local or centralized sensor data processing strategies, including last gasps messages on status notification (e.g., outage, sensors, communications, and assets condition). In addition, applications of interest can include local data storage approaches that will enable forensic analysis after the system is restored.
- Utilization of data fusion strategies for existing data sources, including utility operational data, SCADA, AMI, outage management systems, other and correlation with new data sources.
- Test scenarios that demonstrate how a proposed technology will increase energy infrastructure resilience under partial or widespread damage.

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Topic 3: Innovative Solutions to Increase the Resilience and Hardening of PV Power Plants

This topic area seeks innovative approaches to PV system hardening, utilizing novel sensors, communications strategies, and data analytics to increase generation-side hardware resilience to minimize damage during these events. Together, improving resilience and hardness of the power plant increases energy availability after random component failures, adverse weather conditions, or extreme weather events

Research Priority Areas

- Extreme weather hardening
- Characterization and sensors
- Modular components
- Hardened mechanical interfaces and electrical connections

To increase project impact, applicants will need to justify their approach using data analysis, financial analysis, fielded deployment studies, published or original accelerated life studies, or fielded concept demonstrations. Applicants must also consider the path to commercial viability and justify that the proposed solution can provide a cost-competitive PV generation system technology. Solution demonstrations that use simulated weather or purposeful defects and fault events are encouraged when the probability of a natural event occurring within the project period is low.

Topic 3 Areas of Interest

- Extreme Weather Hardening
 - Cost-effective solutions to prevent damage to fixed-tilt structures under extreme wind conditions (100 to 200 kilometers per hour).
 - Solutions for hail damage reduction (other than tracker orientation solutions).
 - System designs that enable local fault isolation and automatic power transmission by-passing of damaged modules and strings.
- Characterization and Sensors
 - Cost-effective in-line sensors in the electrical interconnection network to monitor voltage and electrical leakage currents that are relatable to specific degradation mechanisms.
 - Mechanical sensor networks to monitor mechanical loading and vibration on modules, trackers, racking and other mechanical structures.
- Modular Components
 - Enabling rapid and robust system component replacement (including PV modules and inverter "hot-swap" power modules) for proactive, periodic maintenance schedules and weather damage recovery
 - Modular arrays which highly integrate racking, PV modules, power conversion components and system health sensors
- Hardened Mechanical Interfaces and Electrical Connections
 - Developing hardened mechanical connection solutions that integrate electrical connection functionality
 - Developing solutions to address mechanical fatigue in cable connections

Non-Responsive Applications

The following types of applications will be deemed nonresponsive and will not be reviewed or considered for an award:

- Applications that fall outside the technical parameters specified in Section I.A or I.B of the FOA
- Applications for proposed technologies that are not based on sound scientific principles (e.g., violates the law of thermodynamics).

Teaming Partner List

- To facilitate the formation of new project teams for this FOA, a Teaming Partner List is available at https://www.energy.gov/eere/solar/articles/funding-notice-renewables-advancing-community-energy-resilience-racer
- Any organization that would like to be included on this list should submit the following information to SI.FOA.SETO@ee.doe.gov:
 - Organization Name, Contact Name, Contact Address, Contact Email, Contact Phone, Organization
 Type, Area of Technical Expertise, and Brief Description of Capabilities
- By submitting this information, you consent to the publication of the above-referenced information
- 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

Award Information

Topic Area Number	Topic Area Title	Anticipated Number of Awards	Anticipated Minimum Award Size for Any One Individual Award (Fed Share)	Anticipated Maximum Award Size for Any One Individual Award (Fed Share)	Approximate Total Federal Funding Available for All Awards*	Anticipated Period of Performance (months)	Cost Share Percentage
1	Innovative Community- Based Energy Resilience Planning	6-8	\$500,000	\$1,000,000	\$5,000,000	24	0% Domestic Institutions of Higher Education, Domestic Nonprofit Entities, FFRDCs, or U.S. state, local, or tribal government entity 20% All Others
2	Automation Strategies for Rapid Energy Restoration	5-6	\$2,000,000	\$3,000,000	\$15,000,000	36	20% R&D 50% Demonstration
3	Innovative Solutions for Photovoltaics Hardening	2-3	\$1,500,000	\$3,000,000	\$5,000,000	36	20% R&D 50% Demonstration

All awards will be Cooperative Agreements
*Subject to the availability of appropriated funds



Statement of Substantial Involvement

EERE has substantial involvement in work performed under awards made following 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 technical aspects of the project as a whole. Substantial involvement includes, but is not limited to, the following:

- EERE shares responsibility with the Recipient for the management, control, direction, and performance of the Project.
- 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.
- EERE may redirect or discontinue funding the Project based on the outcome of EERE's evaluation of the Project at that the Go/No Go decision point.
- EERE participates in major project decision-making processes.



Topic 1: Cost Sharing Requirements

- Cost Sharing Generally
- The cost share must be at least 20% of the total allowable costs for research and development projects (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.)
- Special Cost Share Waiver for Domestic Institutions of Higher Education, Domestic Nonprofit Entities, FFRDCs, or U.S. state, local, or tribal government entity The Assistant Secretary for EERE has issued a Cost Share Reduction determination pursuant to Section 988(b)(3) of the Energy Policy Act of 2005 that is applicable to certain entities applying under this FOA. Specifically, recipient cost share requirement for applied research and development activities projects is reduced from 20% to 0% where:
 - 1. The prime recipient is a domestic institution of higher education; domestic nonprofit entity; FFRDC; or U.S. state, local, or tribal government entity; and
 - 2. The prime recipient performs more than 50% of the project work, as measured by the Total Project Cost.
- Applicants who believe their project qualifies for the reduced recipient cost share must be able to provide verification that the above requirements are satisfied.

Topic 2 & 3: Cost Sharing Requirements

Cost Share 20% and 50%

The cost share must be at least 20% of the total allowable costs (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) for research and development projects and 50% of the total allowable costs for demonstration and commercial application projects 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.)

Cost Share Contributions

- Contributions must be:
 - Specified in the project budget
 - Verifiable from the Prime Recipient's records
 - Necessary and reasonable for proper and efficient accomplishment of the project
- If you are selected for award negotiations, 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
- Please note, vendors/contractors may NOT provide cost share. Any partial donation of goods or services is considered a discount and is not allowable.

Allowable Cost Share

- Cost Share must be allowable and must be verifiable upon submission of the Full Application
- Refer to the following applicable Federal cost principles:

Entity	Cost Principles	
For-profit entities	FAR Part 31 http://farsite.hill.af.mil/reghtml/regs/far2afmcfars/fardfars/far/31.htm	
All other non- federal entities	2 CFR Part 200 Subpart E - Cost Principles https://www.ecfr.gov/cgi-bin/text-idx?node=2:1.1.2.2.1.5&rgn=div6	

Allowable Cost Share

Cash Contributions

 May be provided by the Prime Recipient, Subrecipients, or a Third Party (may not be provided by vendors/contractors)

In-Kind Contributions

 Can include, but are not limited to: the donation of volunteer time or the donation of space or use of equipment.

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Unallowable Cost Share

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
- Expenditures reimbursed under a separate Federal Technology Office
- The same cash or in-kind contributions for more than one project or program
- Vendor/contractor contributions

Cost Share Payment

- Recipients must provide documentation of the cost share contribution, incrementally over the life of the award
- The cumulative cost share percentage provided on <u>each</u> <u>invoice</u> 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. See Section III.B.7 of the FOA.

FOA Timeline



EERE anticipates making awards by February 2023

Concept Papers

- Applicants must submit a Concept Paper
 - Each Concept Paper must be limited to a single concept or technology
- Section IV.D of the FOA states what information a Concept Paper should include and the page limits.
 - Failure to include the required content could result in the Concept Paper receiving a "discouraged" determination or the Concept Paper could be found to be ineligible
- Concept Papers must be submitted by 5/26/2022, 5:00 PM ET, through EERE Exchange
- EERE provides applicants with: (1) an "encouraged" or "discouraged" notification, and (2) the reviewer comments

Concept Paper Review

Overall FOA Responsiveness and Viability of the Project (Weight: 100%)

This criterion involves consideration of the following factors:

- The applicant clearly describes the proposed technology, describes how the technology is unique and innovative, and how the technology will advance the current state-of-the-art;
- The applicant has identified risks and challenges, including possible mitigation strategies, and has shown the impact that EERE funding and the proposed project would have on the relevant field and application;
- The applicant has the qualifications, experience, capabilities and other resources necessary to complete the proposed project; and
- The proposed work, if successfully accomplished, would clearly meet the objectives as stated in the FOA.

Full Applications

The Full Application includes:

- Technical Volume: The key technical submission info relating to the technical content, project team members, etc.
- **SF-424 Application for Federal Assistance:** The formal application signed by the authorized representative of the applicant.
- SF-424A Budget & Budget Justification: a detailed budget and spend plan for the project.
- Summary for Public Release
- Summary Slide
- Tailor to include documents specific to the FOA: Administrative Documents: E.g., U.S. Manufacturing Plan, FFRDC Authorization (if applicable), Disclosure of Lobbying Activities, etc.

Full Applications: Technical Volume Content

Technical Volume: the key technical component of the Full Application

Content of Technical Volume	Suggested % of Technical Volume
Cover Page	
Project Overview	10%
Technical Description, Innovation and Impact	30%
Workplan and Market Transformation Plan	40%
Technical Qualifications and Resources	20%

Full Application Eligibility Requirements

- Applicants must submit a Full Application by 7/25/2022 5:00 pm ET
- Full Applications are eligible for review if:
 - The Applicant is an eligible entity Section III.A of FOA;
 - The Applicant submitted an eligible Concept Paper;
 - The Cost Share requirement is satisfied Section III.B of FOA;
 - The Full Application is compliant Section III.C of FOA; and
 - The proposed project is responsive to the FOA Section III.D of FOA
 - The Full Application meets any other eligibility requirements listed in Section III of the FOA.

Who is Eligible to Apply?

Eligible applicants for this FOA include:

- 1. U.S. citizens and lawful U.S. permanent residents
- 2. For-profit entities
- 3. Educational institutions
- 4. Nonprofits
- 5. State, local, and tribal government entities
- 6. DOE/NNSA FFRDCs

For more detail about eligible applicants, please see Section III.A of the FOA

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 <u>not eligible</u> to apply for funding.

Prime Recipients must be in must be incorporated (or otherwise formed) under the laws of a State or territory of the United States and have a physical location for business operations in the United States. See Section III.A.iii for requirements applicable to foreign entities applying under this FOA.

Multiple Applications

An entity may submit more than one Concept Paper and Full Application to this FOA, provided that each application describes a unique, scientifically distinct project and provided that an eligible Concept Paper was submitted for each Full Application.

Merit Review and Selection Process (Full Applications)

- The Merit Review process consists of multiple phases that each include an eligibility review and a thorough technical review
- Rigorous technical reviews 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, to make the selection decisions



Criterion 1: Technical Merit, Innovation, and Impact (50%)

This criterion involves consideration of the following factors:

Technical Merit and Innovation

- Extent to which the proposed technology or process is innovative;
- Degree to which the current state of the technology and the proposed advancement are clearly described;
- Extent to which the application specifically and convincingly demonstrates how the applicant will move the state-of-the-art to the proposed advancement; and
- Sufficiency of technical detail in the application to assess whether the proposed work is scientifically meritorious and revolutionary, including relevant data, calculations and discussion of prior work in the literature with analyses that support the viability of the proposed work.

Impact of Technology Advancement

- How the project supports the topic area objectives and target specifications and metrics; and
- The potential impact of the project on advancing the state-of-the-art.



Criterion 2: Project Research and Market Transformation Plan (25%)

This criterion involves consideration of the following factors:

Research Approach, Workplan and SOPO

- Degree to which the approach and critical path have been clearly described and thoughtfully considered; and
- Degree to which the task descriptions are clear, detailed, timely, and reasonable, resulting in a high likelihood that the proposed Workplan and SOPO will succeed in meeting the project goals.

Identification of Technical Risks

• Discussion and demonstrated understanding of the key technical risk areas involved in the proposed work and the quality of the mitigation strategies to address them.

Criterion 2: Project Research and Market Transformation Plan (25%) (Con't)

This criterion involves consideration of the following factors:

Baseline, Metrics, and Deliverables

- The level of clarity in the definition of the baseline, metrics, and milestones; and
- Relative to a clearly defined experimental baseline, the strength of the quantifiable metrics, milestones, and a midpoint deliverables defined in the application, such that meaningful interim progress will be made.

Market Transformation Plan

- Identification of target market, competitors, and distribution channels for proposed technology along with known or perceived barriers to market penetration, including mitigation plan; and
- Comprehensiveness of market transformation plan including but not limited to product development and/or service plan, commercialization

Criterion 3: Team and Resources (15%)

This criterion involves consideration of the following factors:

- The capability of the Principal Investigator(s) and the proposed team to address all aspects of the proposed work with a high probability of success. The qualifications, relevant expertise, and time commitment of the individuals on the team;
- The sufficiency of the facilities to support the work;
- The degree to which the proposed consortia/team demonstrates the ability to facilitate and expedite further development and commercial deployment of the proposed technologies;
- The level of participation by project participants as evidenced by letter(s) of commitment and how well they are integrated into the Workplan; and
- The reasonableness of the budget and spend plan for the proposed project and objectives.



Criterion 4: Diversity, Equity, and Inclusion (10%)

This criterion involves consideration of the following factors:

- The quality and manner in which the measures incorporate diversity, equity and inclusion goals in the project; and
- Extent to which the project benefits underserved communities.

Replies to Reviewer Comments

- EERE provides applicants with reviewer comments
- Applicants are <u>not</u> required to submit a Reply it is optional
- To be considered by EERE, a Reply must be submitted by
 8/23/2022 5:00 pm ET and submitted through EERE Exchange
- Content and form requirements:

Section	Page Limit	Description
Text	2 pages max	Applicants may respond to one or more reviewer comments or supplement their Full Application.
Optional	1 page max	Applicants may use this page however they wish; text, graphs, charts, or other data to respond to reviewer comments or supplement their Full Application are acceptable.

Pre-Selection Interviews

- EERE may invite one or more applicants to participate in Pre-Selection Interviews
- All interviews will be conducted in the same format
- 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
- Participation in Pre-Selection Interviews with EERE does not signify that applicants have been selected for award negotiations

Selection Factors

The Selection Official may consider the merit review recommendation, program policy factors, and the amount of funds available in arriving at selections for this FOA



Program Policy Factors

The Selection Official may consider the following program policy factors in making his/her selection decisions:

- The degree to which the proposed project exhibits technological diversity when compared to the existing DOE project portfolio and other projects selected from the subject FOA;
- The degree to which the proposed project, including proposed cost share, optimizes the use of available EERE funding to achieve programmatic objectives;
- The level of industry involvement and demonstrated ability to accelerate commercialization and overcome key market barriers;
- The degree to which the proposed project is likely to lead to increased employment and manufacturing in the United States;
- The degree to which the proposed project will accelerate transformational technological advances in areas that industry by itself is not likely to undertake because of technical and financial uncertainty; and
- The degree to which the proposed project, or group of projects, represent a desired geographic distribution (considering past awards and current applications).
- Whether the proposed project will occur in a Qualified Opportunity Zone or otherwise advance the goals of Qualified Opportunity Zones. The goals include spurring economic development and job creation in distressed communities throughout the United States.



Registration Requirements

- To apply to this FOA, Applicants must register with and submit application materials through EERE Exchange: https://eere-Exchange.energy.gov/
- Obtain a "control number" at least 24 hours before the first submission deadline
- Although not required to submit an Application, the following registrations must be complete to received an award under this FOA:

Registration Requirement	Website
SAM	https://www.sam.gov
FedConnect	https://www.fedconnect.net
Grants.gov	http://www.grants.gov

Means of Submission

- Concept Papers, Full Applications, and Replies to Reviewer Comments must be submitted through EERE Exchange at https://eere-Exchange.energy.gov
 - EERE will not review or consider applications submitted through other means
- The Users' Guide for Applying to the Department of Energy EERE Funding Opportunity Announcements can be found at https://eere-Exchange.energy.gov/Manuals.aspx

Key Submission Points

- Check entries in EERE Exchange
 - Submissions could be deemed ineligible due to an incorrect entry
- EERE strongly encourages Applicants to submit 1-2 days prior to the deadline to allow for full upload of application documents and to avoid any potential technical glitches with EERE Exchange
- Make sure you hit the submit button
 - Any changes made after you hit submit will un-submit your application and you will need to hit the submit button again
- For your records, print out the EERE Exchange page at each step,
 which contains the application's Control Number

Applicant Points-of-Contact

- Applicants must designate primary and backup points-of-contact in EERE Exchange with whom EERE will communicate to conduct award negotiations
- It is imperative that the Applicant/Selectee be responsive during award negotiations and meet negotiation deadlines
 - Failure to do so may result in cancellation of further award negotiations and rescission of the Selection

Questions

- Questions about this FOA? Email SI.FOA.SETO@ee.doe.gov
 - All Q&As related to this FOA will be posted on EERE Exchange
 - You must select this specific FOA Number in order to view the Q&As
 - EERE will attempt to respond to a question within 3 business days, unless a similar Q&A has already been posted on the website
- Problems logging into EERE Exchange or uploading and submitting application documents with EERE Exchange? Email EERE-ExchangeSupport@hq.doe.gov.
 - Include FOA name and number in subject line
- All questions asked during this presentation will be posted on EERE Exchange