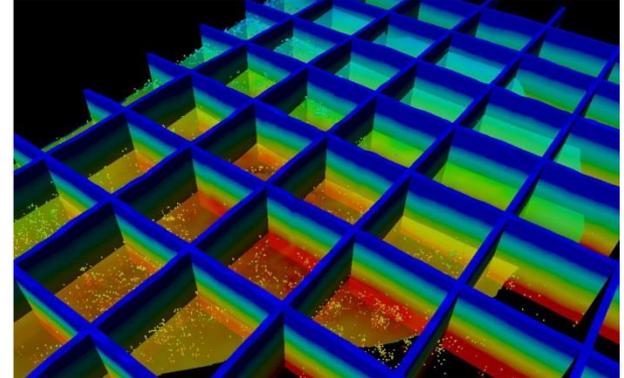


# FOA Applicant Webinar Presentation



**Mineral Recovery Phase II: Geothermal  
Concepts and Approaches to Validate  
Extraction Technologies**

**[LowTValidation@hq.doe.gov](mailto:LowTValidation@hq.doe.gov)**

**DE-FOA-0001376  
December 8, 2015**

U.S. DEPARTMENT OF  
**ENERGY** | Energy Efficiency &  
Renewable Energy

# DE-FOA-0001376

## Mineral Recovery Phase II: Geothermal Concepts and Approaches to Validate Extraction Technologies

### Anticipated Schedule:

<b>FOA Issue Date:</b>	<b>December 1<sup>st</sup>, 2015</b>
<b>FOA Informational Webinar:</b>	December 8 <sup>th</sup> , 2015
<b>Submission Deadline for Concept Papers:</b>	January 6 <sup>th</sup> , 2016 5:00 PM EST
<b>Submission Deadline for Full Applications:</b>	February 29 <sup>th</sup> , 2016 5:00 PM EST
<b>Submission Deadline for Replies to Reviewer Comments:</b>	April 7 <sup>th</sup> , 2016
<b>Expected Date for EERE Selection Notifications:</b>	May 2016
<b>Expected Timeframe for Award Negotiations:</b>	Summer 2016

# Notice

- All applicants are strongly encouraged to carefully read the Funding Opportunity Announcement **DE-FOA-0001376 (“FOA”)** and adhere to the stated submission requirements.

EXCHANGE SITE: <https://eere-exchange.energy.gov/default.aspx#Foald43b60ce7-234d-43c8-8118-79afe7007dbf>

- 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 from EERE.
- If you believe there is an inconsistency, please contact [LowTValidation@hq.doe.gov](mailto:LowTValidation@hq.doe.gov).

# Agenda

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

# FOA Description

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The intent of this FOA is to promote the advancement of geothermal energy conversion processes by validating technologies capable of providing a secondary income stream from the same geo-fluids. Methods for economically capturing, concentrating, and/or purifying valuable materials contained within geothermal brines represent an opportunity to both meet critical U.S. materials needs and broaden, as well as strengthen, the value-proposition of geothermal energy operations. Results from this work can enhance current applications, support planned development, and potentially open additional regions in the U.S. for economic utilization of geothermal energy.

*(See section I.A for additional information)*

# Topic Areas/Technical Areas of Interest

This FOA invites responses in two (2) general topic areas:

## **Topic Area 1: Engineering Validation of Existing Extraction Technologies**

*Subtopic 1A - Leveraging Methods from Other Extractive Industries for Surface Operations*

*Subtopic 1B - Leveraging Methods from Other Extractive Industries to Enhance Subsurface Materials Recovery*

## **Topic Area 2: U.S. Regional or Nationwide Assessment of High Value Materials in U.S. Geothermal Fluids and Produced Fluids**

*(See Section 1.B. for complete text)*

# Topic Areas/Technical Areas of Interest (continued)

## Topic Area 1: Engineering Validation of Existing Extraction Technologies

Responses to this Topic Area are to validate processes or procedures to recover these materials from geothermal fluids or produced waters.

Proposals may include processes currently effective in other industries that may be transferable to high value/critical material/strategic materials extraction from geothermal fluids, or processes that already experimentally demonstrate effectiveness for material recovery.

The two subtopics described below are characterized generally by operations that occur either above ground for Subtopic 1A or below ground for Subtopic 1B.

*(See Section 1.B. for complete text)*

# Topic Areas/Technical Areas of Interest (continued)

Responses to Topic 1, Subtopics 1A and 1B must:

1. Provide data supporting the effectiveness of the proposed extraction/recovery process in current applications.
2. Identify the strategic/critical materials to be recovered under the proposed effort and why they are selected.
3. Specify the geographic region(s) of interest.
4. Describe the plan to share data among planned team members, which may include data produced under this award as well as pre-existing data. The Applicant may also be asked to share this data with DOE and the public, consistent with the objectives of the FOA and identified in the data management plan.
5. Demonstrate an understanding of the economic geologic considerations either through the nature of their business, or collaboration with others such as the USGS. This is demonstrated by resumes or other supporting documents.
6. Include a plan for third-party analysis to verify the process success.

*(See Section 1.B. for complete text)*

# Topic Areas/Technical Areas of Interest (continued)

## Subtopic 1A - Leveraging Methods from Other Extractive Industries for Surface Operations:

Responses to this category should be for surface processes already in use in other industries, or for technologies that have been experimentally proven to be effective at selective material extraction. Applicants in Subtopic 1A should submit proposals to conduct extensive engineering validation testing of technologies or processes that can efficiently and cost-effectively capture, concentrate, and/or purify high-value materials from geothermal fluids.

Methods used in process stream purification or used in materials extraction from manufacturing wastes, chemical treatments, desalination or other approaches treating process streams may be amenable to recovering materials from geothermal fluids. Responses defining work to validate approaches currently under development in the GTO Low-Temperature Mineral Recovery program are also appropriate under this Subtopic.

*(See Section 1.B. for complete text)*

# Topic Areas/Technical Areas of Interest (continued)

## Subtopic 1B - Leveraging Methods from Other Extractive Industries to Enhance Subsurface Materials Recovery:

GTO seeks applications in *Subtopic B* that will leverage techniques and technologies currently utilized in other industries to effectively increase the interface and/or interaction of rock surfaces/ore bodies with fluids (engineered or otherwise) in the subsurface and thereby concentrate selected materials in the produced fluids. Responses will specifically validate the application of technologies and/or approaches for material recovery in subsurface geothermal settings. Potential industries may include:

- Enhanced geothermal operations;
- Extractive industries such as oil and gas;
- Mining; and
- Other processing industries.

Fluids that may be proposed for improvement include: geothermal reservoir fluids from current or prospective geothermal operations; produced fluids from oil and gas operations; or fluids used in current mineral recovery operations.

*(See Section 1.B. for complete text)*

# Topic Areas/Technical Areas of Interest (continued)

## **Topic Area 2: U.S. Regional or Nationwide Assessment of High Value Materials in U.S. Geothermal Fluids and Produced Fluids**

For the this Topic Area, GTO seeks approaches to economically and quickly build a public, U.S.-wide resource assessment of dissolved critical and high-value materials that may be site-specific, region-wide, or a national assessment. A successful application will demonstrate expertise in geologic regimes as well as sampling and analysis.

*(See Section 1.B. for complete text)*

# Topic Areas/Technical Areas of Interest (continued)

## Responses to Topic Area 2 must:

1. Clearly state the sampling and analytical methods.
2. Clearly define the region to be sampled and analyzed, either by local, regional, or a high-level national survey.
3. Specify the approaches to obtain the values contained in site-specific geothermal fluids or low-temperature process streams from other operations, such as those produced from oil and gas extraction.
4. Provide a list of the materials to be recovered and why.

Collaboration with the USGS is encouraged. In addition, letters of support from providers/sources of geothermal fluids are encouraged, and may be included with the Full Application. If applicable, any arrangements with USGS or third-party providers need to be described in the Technical Volume and letters of support may be included in the application, detailing any arrangements.

*(See Section 1.B. for complete text)*

# 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.B of the FOA, including but not limited to applications that propose mineral recovery not associated with geothermal or other fluids produced from the subsurface.
- Applications that propose recovery of hydrocarbon materials (e.g. oil, gas, coal).
- Applications for proposed technologies that are not based on sound scientific principles (e.g., violates the law of thermodynamics).
- Applications that propose demonstration projects.
- Applications that propose basic research.
- Applications for engineering validation that do not include sufficient amounts of materials tested to conduct a meaningful techno-economic analysis.

# Award Information

<b>Total Amount to be Awarded</b>	<b>\$3.2 Million (Topic Area 1, Subtopic Area 1A and 1B) * \$800,000 (Topic Area 2)*</b>
<b>Average Award Amount</b>	EERE anticipates making awards that range from \$300,000 to \$1.6 Million.
<b>Types of Funding Agreements</b>	Cooperative Agreements, Grants, Funding Agreements With FFRDCS
<b>Period of Performance</b>	24 to 36 months- Topic Area 1 12 to 24 months- Topic Area 2
<b>Cost Share Requirement</b>	20% of Total Project Costs

\*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.

# Cost Sharing Requirements

- Applicants must contribute a minimum of 20% of the total project costs for R&D projects. *Unless the project qualifies for the Cost Share Reduction.*
- **Cost Share Reduction:** EERE has reduced the Recipient Cost Share Requirement to **10%** for R&D activities where:
  - The Prime Recipient is a domestic institution of higher education; domestic nonprofit entity; FFRDC; or U.S. State, local, or tribal government entity; and
  - The Prime Recipient performs more than 50% of the project work, as measured by the Total Project Cost

# 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
- 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

# 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	Federal Acquisition Regulation Part 31, found at 48 C.F.R. 31.2, "Contracts with Commercial Organizations"
All other non-federal entities	2 CFR Part 200 Subpart E - Cost Principles

# Allowable Cost Share

- Cash Contributions
  - May be provided by the Prime Recipient, Subrecipients, or a Third Party
- In-Kind Contributions
  - Can include, but are not limited to: personnel costs, indirect costs, facilities and administrative costs, rental value of buildings or equipment, and the value of a service, other resource, or third party in-kind contribution

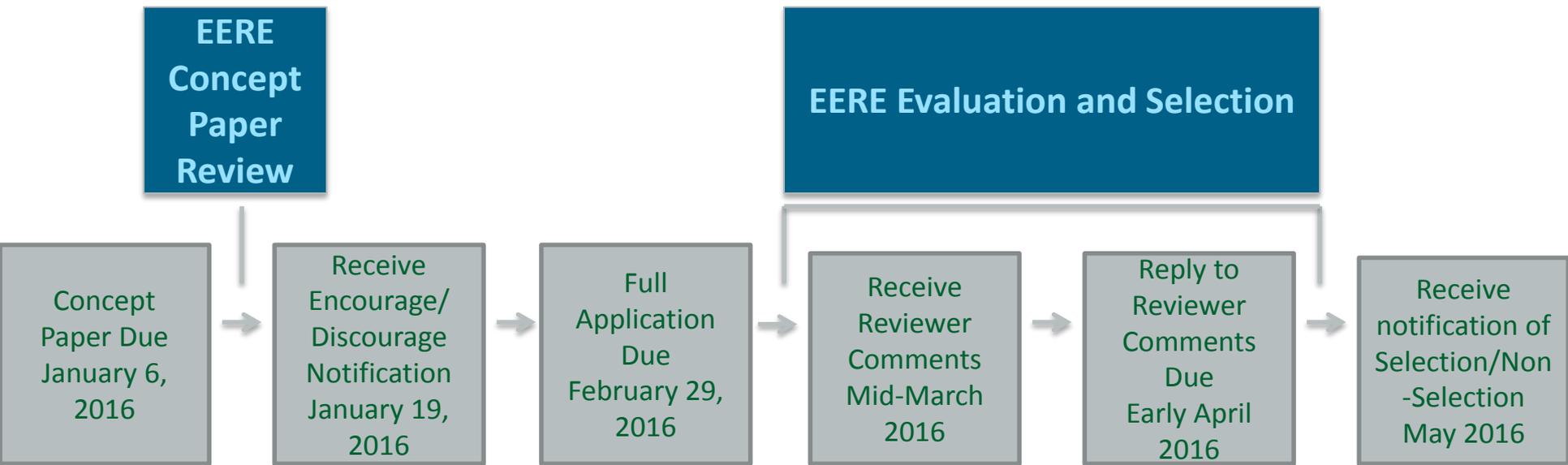
# Unallowable Cost Share

- 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
  - Independent research and development (IR&D) funds
  - The same cash or in-kind contributions for more than one project or program

# 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 each invoice 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.6 of the FOA.

# FOA Planned Timeline



EERE anticipates making awards by Summer 2016

# Concept Papers

- Applicants must submit a Concept Paper
  - Each Concept Paper must be limited to a single concept or technology
- The Concept Paper must include a technology description (See Section IV.C of the FOA)
  - The technology description is limited to 2 pages
  - The Concept Paper can also include graphs, charts, or other data (limited to 3 pages)
- Concept Papers must be submitted by January 6<sup>th</sup>, 2016 at 5:00pm ET, through EERE Exchange, and must comply with the content and form requirements in Section IV.C of the FOA
- EERE provides applicants with: (1) an “encouraged” or “discouraged” notification, and (2) the reviewer comments

# Concept Paper Review

EERE evaluates the Concept Papers based on the following technical review criteria:

- **Criterion 1: Impact of the Proposed Technology Relative to State of the Art (50%)** This criterion involves consideration of the following factors:
  - Method used to identify current state of the art technology
  - If technical success is achieved, the proposed idea would significantly improve technical and economic performance relative to the state of the art.
- **Criterion 2: Overall Scientific and Technical Merit (50%)**  
This criterion involves consideration of the following factors:
  - The proposed technology is unique and innovative; and
  - The proposed approach is without major technical flaws.

# Full Applications

- The Full Application includes:
  - **Technical Volume:** The key technical submission - info relating to the technical content, project team members, etc.
  - **Statement of Project Objectives** (MS Word format- 20 page limit)
  - **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**
  - **Subaward Budget Justification**
  - **Budget for FFRDC, if applicable**
  - **Foreign Entity and Performance of Work in the United States waiver requests, if applicable**
  - **Administrative Documents:** E.g., U.S. Manufacturing Plan, FFRDC Authorization (if applicable), Disclosure of Lobbying Activities, Data Management Plan, 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 February 29th, 2016.
- 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's Eligible to Apply?

Eligible applicants for this FOA include:

1. Individuals
2. Domestic Entities
3. Foreign Entities
4. Incorporated Consortia
5. Unincorporated Consortia

For more detail about each eligible applicant, please see Section III.A of the FOA for eligibility requirements

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.

# Multiple Applications

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Applicants may submit more than one application to this FOA, provided that each application describes a unique, scientifically distinct project

# Merit Review and Selection Process (Full Applications)

- The Merit Review process consists of multiple phases that each include an initial 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

# Technical Merit Review Criteria

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

### 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.

# Technical Merit Review Criteria - Continued

## Criterion 2: Project Research and Market Transformation Plan (30%)

### 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.

# Technical Merit Review Criteria - Continued

## Criterion 2, Continued

### 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 mid-point 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 timeline, financing, product marketing, legal/regulatory considerations including intellectual property, infrastructure requirements, Data Management Plan, , U.S. manufacturing plan etc., and product distribution.

# Technical Merit Review Criteria - Continued

## Criterion 3: Team and Resources (20%)

- 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.

# Replies to Reviewer Comments

- EERE provides applicants with reviewer comments
- Applicants are not required to submit a Reply - it is optional
- To be considered by EERE, a Reply must be submitted by [Thursday, April 7, 2016 , 5:00 PM EST](#) 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.

# Selection Factors

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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, including proposed cost share, optimizes the use of available EERE funding to achieve programmatic objectives;
  - The level of industry involvement and demonstrated ability to commercialize energy or related technologies;
  - Technical, market, organizational, and environmental risks associated with the project;
  - Whether the proposed project is likely to lead to increased employment and manufacturing in the United States;
  - Whether 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
  - Whether the proposed project will advance the goals of the Climate Action Champion initiative, as committed to by the designated Champion pursuant to its designation agreement. The Climate Action Champion initiative goals include improving climate resilience and reducing greenhouse gas emissions.

# 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
DUNS Number	<a href="http://fedgov.dnb.com/webform">http://fedgov.dnb.com/webform</a>
SAM	<a href="https://www.sam.gov">https://www.sam.gov</a>
FedConnect	<a href="https://www.fedconnect.net">https://www.fedconnect.net</a>
Grants.gov	<a href="http://www.grants.gov">http://www.grants.gov</a>

# 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 network issues 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 Confirmation 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 [LowTValidation@hq.doe.gov](mailto:LowTValidation@hq.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](mailto:ExchangeSupport@hq.doe.gov).
  - Include FOA name and number in subject line
- All questions asked during this presentation will be posted on EERE Exchange