

### Slide 1:

Good afternoon, everyone and welcome to our webinar. Thank you for your interest in the U.S. Department of Energy's efforts on renewable energy and energy efficiency. You are joining us for the Informational Webinar for Applicants and other interested parties for the Efficient Drilling for Geothermal Energy Funding Opportunity Announcement, or FOA, which was issued on April 23rd. My name is Josh Mengers and I am a Technology Manager in the Geothermal Technologies Office within the DOE's Office of Energy Efficiency and Renewable Energy. We hope to cover the basic aspects of the Funding Opportunity Announcement during this webinar.

Before we begin, I'd like to draw your attention to the email address on the left hand side of this cover page. This is the official mailbox to direct all of your questions during the entire FOA process. Please do not contact EERE individuals directly with questions, including myself. All questions received at this mailbox are posted publicly at the Q&A section of the FOA page on EERE Exchange in an anonymous way. The official answers to your questions will typically be posted within 3 business days. Please be careful not to submit any language that might be business sensitive, proprietary or confidential.

We will not be answering any questions during this webinar. Any questions that you type into the chat function will be answered in the Q&A section for this FOA on EERE Exchange after the webinar. Again, please be careful not to submit any language that might be business sensitive, proprietary, or confidential.

Also, just to be clear, there are no particular advantages or disadvantages to the application evaluation process with respect to participating on the webinar today. Your participation is completely voluntary.

Let's get started!

### Slide 2:

This slide shows the anticipated schedule for the FOA. The FOA has already been posted, and we are conducting the FOA Informational Webinar now. Please note that there are a few requirements that we will go over in the presentation that are different than in past FOAs – we will cover all requirements for this FOA later in the presentation.

### Slide 3:

Notice:

- All applicants are strongly encouraged to carefully read the Funding Opportunity Announcement DE-FOA-0001880 ("**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 from EERE.
- If you believe there is an inconsistency, please contact [EDGE@ee.doe.gov](mailto:EDGE@ee.doe.gov).

### Slide 4:

- 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 voluntary.

#### Slide 5:

The agenda for this presentation is as follows:

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

We encourage you to have a copy of the FOA in front of you for reference as we go through the presentation.

#### Slide 6:

FOA Description

OBJECTIVE: Through this Funding Opportunity Announcement (FOA) The U.S. Department of Energy (DOE) Geothermal Technologies Office (GTO) solicits projects that will enable the geothermal industry to double the average penetration rate for a geothermal well and improve the industry standard to 250 feet per day by 2025. Drilling operations can be up to 50% of the cost of geothermal development. Given that much of the drilling occurs in the early stages of a project, complications from drilling failures can lead to cascading consequences resulting in overall project failure. While, the rate at which a well is drilled is only one of several performance parameters that influence drilling efficiency, GTO opts to measure efficient drilling in this FOA using the average penetration rate of a geothermal drilling operation in depth vs. days. For consistency, this FOA considers drilling operations to include pre-spud engineering and wellhead equipment activities.

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Overview: GTO seeks to fund early-stage R&D in drilling technologies that seek to 1) Reduce Non-Drilling Time, 2) Develop Advanced Drilling Technologies, and 3) Develop Innovative Partnership Models. Early-stage R&D in drilling technologies presents an opportunity for innovation that can have a big impact in making new geothermal development more economical.

One of the indicators of a successful project will be strong collaboration. In addition to encouraging collaboration in project teams, all recipients of awards under this FOA are required to participate in a new GTO quarterly geothermal drilling community of practice and the program's biennial peer review for the duration of their award.

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Topic Areas/Technical Areas of Interest

This FOA consist of three topic areas. Topic Area 1 "Reducing Non-Drilling Time" and Topic Area 2 "Advanced Drilling Technologies" focus on early stage research and development. Topic Area 3

“Innovative Partnership Models” solicits projects that incentivize the risk-averse geothermal industry to adopt innovations earlier in the technology R&D cycle.

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Topic Area 1 will focus on early stage R&D projects that show the ability to reduce Non-Drilling Time (NDT). For this FOA, the general definition of NDT is adopted from Lowry et al. as “time spent over the drill rig without deepening the hole and encompasses ‘flat time’, ‘non-productive time’, and ‘trouble time’”. Flat time is defined as activities that do not advance or deepen the wellbore such as: planned trips, running casing, cementing, and wireline logging operations. Trouble time is defined as addressing issues in the wellbore such as lost circulation, stuck pipe, cementing difficulties, or an unstable wellbore. Non-productive time is defined as unplanned activities and drilling related inefficiencies such as: equipment malfunctions, unscheduled trips, or labor issues. EERE anticipates making 2-5 awards under Topic Area 1. Individual awards in Topic Area 1 may vary between \$1,000,000 - \$2,000,000, and have up to 24 month project duration. This Topic Area has a cost share requirement of 20%. The Recipient must provide 20% of total project costs. (Total Federal share plus Recipient cost share equals total project costs.)

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Topic Area 2 will focus on early stage R&D projects in innovative drilling technologies that improve the rates of penetration for drilling geothermal wells. As described by Lowry et al., the process of drilling a geothermal well includes downhole energy transfer, rock reduction, rock removal, borehole stabilization, formation fluid control, logging, and borehole preservation. Topic Area 2 seeks applications that will develop new technologies that increase performance qualifiers during geothermal well drilling, and/or applications that develop methodologies that will allow geothermal wells to be drilled more efficiently with existing technologies. EERE anticipates 1-4 awards under Topic Area 2. Individual awards in Topic Area 2 may vary between \$1,000,000 - \$2,000,000, and have up to 24 month project durations. This Topic Area has a cost share requirement of 20%. The Recipient must provide 20% of total project costs. (Total Federal share plus Recipient cost share equals total project costs.)

#### Slide 11:

Topic Area 3 will explore innovative approaches and models to accelerate the transfer of geothermal drilling and related technologies from the laboratory into the real world by focusing on building partnerships that will increase adoption of nascent technology and improve tacit knowledge transfer in the geothermal industry. Rather than funding research on individual technology solutions directly, applicants will research and develop new methods to advance research portfolios of geothermal drilling (and related) technologies and overcome challenges endemic to the geothermal technology transfer space, including knowledge gaps between the research/industrial communities. Applicants must demonstrate a realistic pathway to test, scale, and sustain the model after the period of performance. EERE anticipates up to 3 awards under Topic Area 3. Individual awards in Topic Area 3 may vary between \$500,000 - \$1,000,000, and have up to 24 month project durations. This Topic Area has a cost share requirement of 20%. The Recipient must provide 20% of total project costs. (Total Federal share plus Recipient cost share equals total project costs.)

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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 for proposed technologies that are not based on sound scientific principles (e.g., violates the law of thermodynamics).
  - Applications that do not address drilling in geothermal conditions, where a geothermal condition is defined as the geology with elevated temperature and lithology typical of domestic geothermal resources of interest to one or more of GTO's subprograms (Hydrothermal, EGS, and Low-Temperature) and also includes conditions typical for ground source heat pumps.
  - Applications that only propose innovations in cementing technology.
  - Applications that propose technologies that might be able to achieve the FOA goals but are only able to do so at the expense of achieving adequate borehole quality are not of interest for this FOA.

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- Incremental improvements to existing solutions, entities, or programs are not of interest for this FOA. 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 currently existing activities. It is the responsibility of the applicant to show the value of the proposed work that would be funded with this opportunity.
- **TOPIC AREA 3 ONLY:**
  - Direct technology research or company funding—Topic Area 3 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 company seeking direct funding to advance from a proof of concept to a prototype are not of interest for this FOA.

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EERE expects to make approximately \$14.5 million of Federal funding available for new awards under this FOA subject to the availability of appropriated funds. The average award amount is anticipated to range from \$500 thousand to \$2 million.

EERE intends to fund mostly cooperative agreements under this FOA, but may also fund Grants, TIAs, Work Authorizations, and Interagency Agreements. Cooperative Agreements include Substantial Involvement, which we will discuss next.

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Under cooperative agreements, there will be what is known as “substantial involvement” between EERE and the Recipient during the performance of the project.

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(s).
- EERE participates in major project decision-making processes.

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##### Cost Sharing Requirements

Applicants must contribute a minimum of 20% of the total project costs for R&D projects.

The total budget presented in the application must include both Federal (DOE), and Non-Federal (cost share) portions, thereby reflecting TOTAL PROJECT COSTS proposed. All costs must be verifiable from the Recipient's records and be necessary and reasonable for the accomplishment of the project.

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Cost Share must be allowable and must be verifiable upon submission of the Full Application. Please refer to this chart for your entity's applicable cost principles. It is imperative that you follow the applicable cost principles when creating your budget for the full application.

#### Slide 18:

Cost share can be provided in cash and/or in-kind. It can be provided by the Prime Recipient, subs, or a third party.

The basic definition of in-kind cost share is the donation of personnel time, equipment, facilities, or other items that an organization will contribute to the project. It can take many forms, each of which must be assigned a dollar value to be included in the budget. Some examples of in-kind cost share are the donation of work hours, facility use, and equipment use.

#### Slide 19:

Be aware that there are items that are considered unallowable cost share. If a cost is considered unallowable, it cannot be counted as cost share. This slide provides some examples of cost share that is unallowable.

#### Slide 20:

Cost Share must be provided on an invoice basis, unless a waiver is requested and approved by the DOE Contracting Officer.

### Slide 21:

EERE's Evaluation and Selection Process is shown in blue here. EERE will review Concept Papers and Full Applications. The gray boxes represent the actions that apply to applicants throughout the FOA process.

### Slide 22:

Concept Papers are required for this FOA. Concept Papers are brief descriptions of the proposed project. It allows applicants to submit their ideas with minimal time and expense. EERE will provide feedback on the proposed project so the Applicant can make an informed decision whether to expend additional resources to prepare a full application.

If an applicant fails to submit an eligible Concept Paper, the applicant is not eligible to submit a Full Application.

Concept Papers must be submitted by May 31, 2018, 5:00pm Eastern Daylight Time, through EERE Exchange.

EERE will provide applicants with either an encouraged or discouraged notification. A "discouraged" notification conveys EERE's lack of programmatic interest in the proposed project. An applicant who receives a "discouraged" notification may still submit a Full Application.

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Concept Papers are evaluated based on consideration the following factors. All sub-criteria are of equal weight.

Criterion 1: Overall FOA Responsiveness and Viability of the Project (Weight: 100%)

- 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.

EERE will provide applicants with (1) either an "encouraged" or "discouraged" notification, and (2) the reviewer comments.

Please note that regardless of the date applicants receive the Encourage/Discourage notifications, the submission deadline for the Full Application remains the date stated on the FOA cover page

### Slide 24:

The Full Application includes:

- **Technical Volume:** The key technical submission. Applicants submit info pertaining 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. Includes cost share amounts and Federal certifications and assurances.
- **SF-424A Budget & Budget Justification:** Budget documents that asks applicants to submit a detailed budget and spend plan for the project.
- **Summary for Public Release:** Applicants must provide a 1 page summary of their technology appropriate for public release.
- **Summary Slide:** Powerpoint slide that provides quick facts about the technology. Slide content requirements are provided in the FOA.
- **Administrative Documents:** E.g., U.S. Manufacturing Plan, FFRDC Authorization (if applicable), Disclosure of Lobbying Activities, etc.

#### Slide 25:

The key technical component of the full application is the Technical Volume, which helps applicants frame the technical information that the application will be evaluated on. The Technical Volume provides information regarding what the project is, how the project tasks will be accomplished, and the project timetable.

The Technical Volume is comprised of a cover page; project overview; technical description, innovation, and impact; workplan and market transformation plan; and technical qualifications and resources. Please note that the percentages listed here are suggested and are not mandatory.

- The Cover Page will be a one page document and provides basic information on their project, such as title, topic area, points of contact, etc.
- The Project Overview constitutes approximately 10% of the Technical Volume and provides information on project background, goals, impact of EERE funding
- The Technical Description, Innovation, and Impact section is approximately 30% of the Technical Volume. It provides information on project relevance and outcomes, feasibility, and innovation/impacts. This ultimately provides the justification as to why EERE should fund the project.
- The Workplan is the key element to the Technical Volume, and constitutes approximately 40% of the Technical Volume. It details the proposed milestones and project schedule. If selected for award negotiations, the Workplan serves as the starting point when negotiating the Statement of Project Objectives.
- The Technical Qualifications and Resources section is approximately 20% of the Technical Volume. It allows applicants an opportunity to provide information about the proposed project team and demonstrate how the applicant will facilitate the successful completion of the proposed project.

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As we previously pointed out, applicants must submit full applications by July 16, 2018. EERE will conduct an eligibility review, and full application will be deemed eligible 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.

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##### 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.

This FOA has restricted eligibility requirements to the following entities under **Topic Area 3**: DOE/NNSA Federally Funded Research and Development Centers (FFRDCs) are eligible to apply for funding as a Subrecipient, but are NOT eligible to apply as a Prime Recipient.

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

#### Slide 29:

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

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Applications will be evaluated against the following 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.

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#### **Criterion 2: Project Research and Commercialization 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.

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#### **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.

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#### **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.

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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

#### Slide 35:

After the Merit Review process, the Selection Official may consider the following program policy factors to come to a final selection decision:

- 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 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
- The degree to which the proposed project, or group of projects, represent a desired geographic distribution when compared to the existing DOE project portfolio and other projects selected from the subject FOA
- The degree to which the proposed project collectively represents diverse types and sizes of applicant organizations.

#### Slide 36:

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.

#### **DUNS Number**

Obtain a Dun and Bradstreet Data Universal Numbering System (DUNS) number.

#### **System for Award Management**

Register with the System for Award Management (SAM). 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.

## **Fedconnect**

Register in FedConnect. 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 the FedConnect site.

## **Grants.gov**

Register in Grants.gov to receive automatic updates when Amendments to this FOA are posted. However, please note that Concept Papers, and Full Applications will not be accepted through Grants.gov.

### Slide 37:

All required submissions must come through EERE Exchange. EERE will not review or consider applications submitted through any other means.

### Slide 38:

#### 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 Confirmation page at each step, which contains the application's Control Number

### Slide 39:

#### 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

### Slide 40:

- Questions about this FOA? Email [EDGE@ee.doe.gov](mailto:EDGE@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](mailto: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

This concludes the informational webinar.