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

Frontier Observatory for Research in Geothermal Energy (FORGE)

DE-FOA-0000890-FORGE@netl.doe.gov

FOA Webinar

DE-FOA-0000890

August 5, 2014

Notice

- All applicants are strongly encouraged to carefully read the Funding Opportunity Announcement **DE-FOA-0000890 ("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. Neither the U.S. Department of Energy (DOE) nor the Federal employees associated with DOE working on this presentation shall be held liable for errors committed by Applicants based on potentially incorrect or inaccurate information presented herein.

- If you believe there is an inconsistency, please contact:

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QUESTIONS – QUESTIONS – QUESTIONS – QUESTIONS

- We will accept written questions on the FORGE FOA at any time during this presentation!
  - **If you are in Reno, at the GEA meeting submit questions via**:
    - Your smartphone
      - email **DE-FOA-0000890-FORGE@netl.doe.gov**
      - Please provide your name and affiliation, if not included in a signature
    - Note cards that were distributed upon entry
      - Pass completed cards to the GTO representatives at any time.
      - Please provide your name and affiliation along with your question
  - **If you are participating via webinar**:
    - Please submit your question via the "Ask a Question" box on the GoToWebinar menu bar.
- Relevant questions will read (anonymously) and responded to after a short break following the presentation.

Questions and Access to Slides

- All questions submitted during this webinar will be listed with responses on the Exchange FAQ page:
  - https://eere-exchange.energy.gov/FAQ.aspx?FoaId=41b94a67-da2e-422d-8b51-08d8a5fddeae
- The recording of this webinar (will include slides and audio) will be posed on Exchange and the FORGE website by the end of the week:
  - https://eere-exchange.energy.gov/default.aspx#FoaId41b94a67-da2e-422d-8b51-08d8a5fddeae
  - http://energy.gov/eere/forge/forge-events

DE-FOA-0000890
Frontier Observatory for Research in Geothermal Energy (FORGE)

Anticipated Schedule:

FOA Issue Date:	**7/17/2014**
FOA Informational Webinar:	8/05/2014
Submission Deadline for Applications:	10/01/2014
Submission Deadline for Replies to Reviewer Comments:	11/25/2014
Expected Date for EERE Selection Notifications:	1/30/2015
Expected Timeframe for Award Negotiations:	2/1/2015- 3/30/2015

Submit questions to:
DE-FOA-0000890-FORGE@netl.doe.gov

Agenda

1) FOA Requirements
2) Teaming
3) FOA Structure
4) Award Information
5) Applications
6) Eligibility
7) Review and Selection Process
8) Business

FOA Requirements

FOA Requirements

- The Geothermal Technologies Office (GTO) is seeking applications for establishing and managing a **dedicated EGS field laboratory** called the **Frontier Observatory for Research in Geothermal Energy (FORGE)**.

- **FOA Objectives**:

  To design and test a rigorous & reproducible approach for developing large-scale, economically sustainable heat exchange systems that will reduce industry development risk & enable development of 100+ GWe of EGS power.

  - Establish and manage FORGE as a dedicated site where scientific and engineering community will be eligible to develop, test and improve new technologies and techniques in an ideal EGS environment.
  - Gain a fundamental understanding of the key mechanisms controlling EGS success
  - Comprehensive instrumentation and data collection effort that will capture a higher-fidelity picture of EGS creation and evolution processes than any prior demonstration in the world.
  - Integrated comparison of technologies and tools in a controlled and well-characterized environment
  - Rapid dissemination of technical data to the research community, developers, and other interested parties.

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FOA Requirements

The ideal FORGE site is:

- Well characterized, with high temperatures in the target formation in the range of **175-225 °C**
- Moderate permeability of order **10^{-16} m^2**, below the limit that typically supports natural hydrothermal systems
- Target formation between **1.5-4 km depth**, to avoid excessive costs associated with the drilling of new wells while attaining stress and temperature characteristics that are suitable to EGS and advancement of new technologies
- Must **not be within an operational hydrothermal field**
- Does **not stimulate** or **circulate fluids through overlying sedimentary units**, if applicable.

Other site selection considerations include:

- **Owner/lease holder commitment** to the project
- **Environmental review** and **regulatory permitting**
- Existing **nearby infrastructure** necessary for carrying out the operation of FORGE.

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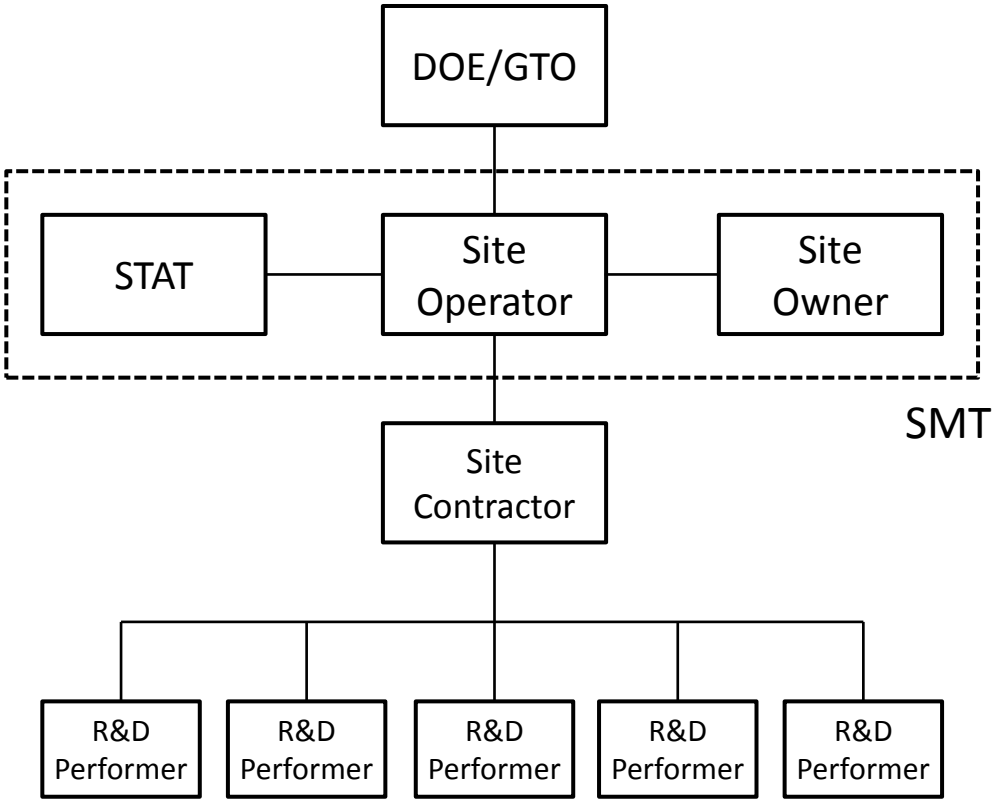
Teaming

Teaming

- DOE envisions that operation of FORGE will be conducted by an integrated Site Management Team (SMT)



The SMT as envisioned by DOE would include:

- Site Operator - responsible for all the day-to-day operations and management (administrative and financial) of FORGE.
- Site Lease Holder/Owner
- Technical monitoring group (referred to in FOA as the **Science Technology Analysis Team-STAT**) consisting of best-in-class technical experts, to provide overall technical guidance and to ensure that GTO objectives are fully considered and incorporated into the execution of FORGE and associated R&D field projects.
  - GTO will appoint at least 30% of the members on the STAT or other equivalent bodies.
- The SMT may consist of industry, National Laboratory, academic, government agency, and other partners as appropriate.

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Teaming: SMT

At a minimum, the SMT's responsibilities will include the following:

- Technical, financial and administrative activities including the scheduling and contracting of sub-contractors, the safe and cost-effective execution of FORGE, and associated testing and evaluation of EGS technologies.
- Developing and implementing **formal procedures** in accordance with GTO goals and objectives for FORGE, **review and award of EGS technologies for testing and evaluation**, in collaboration with a STAT.
- Ensuring all applicable state and federal **permits have been acquired** and that all activities are **compliant** with the National Environmental Policy Act and other environmental, health and safety requirements, regulations or laws including the current version of the "Protocol for Induced Seismicity Associated with Enhanced Geothermal Systems".
- Maintaining **prompt and effective communication** to DOE and with all interested stakeholders of:
  - ongoing activities at FORGE and;
  - technical results stemming from individual R&D projects.
- Making all FORGE **project and site data available to the public** through a FORGE Data System/Node compatible with the National Geothermal Data System (NGDS).

Teaming: STAT

The STAT, as envisioned by DOE, consists of a **group of best-in-class technical experts** who will provide **overall technical guidance** and to ensure that **GTO objectives are incorporated** into the execution of FORGE.

- Critical STAT functions include the following:
  - Assess R&D needs in accordance with GTO roadmaps and goals
  - Establish technical baseline information and performance specifications
  - Guide ongoing site characterization and monitoring efforts
  - Develop topics for recurring FORGE R&D solicitations
  - Provide guidance for review and selection of R&D projects
  - Develop out-year R&D strategies
  - Assess progress and results of all R&D technology and techniques implemented at FORGE
  - Provide input to the Site Operator for the development of annual Topical Reports.

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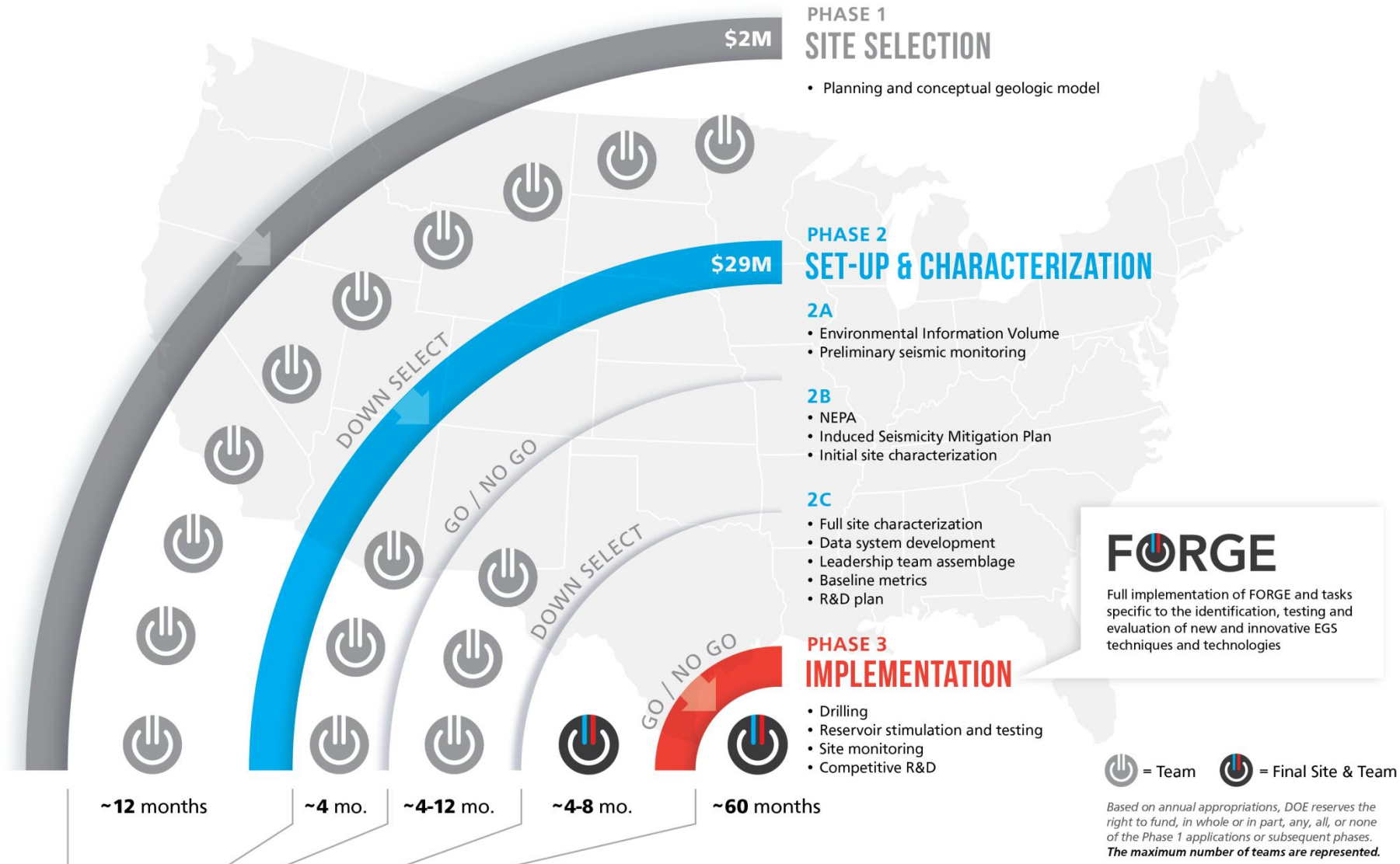
FOA Structure

FOA Structure



PHASE 1
SITE SELECTION

- Planning and conceptual geologic model

PHASE 2
SET-UP & CHARACTERIZATION

2A
- Environmental Information Volume
- Preliminary seismic monitoring

2B
- NEPA
- Induced Seismicity Mitigation Plan
- Initial site characterization

2C
- Full site characterization
- Data system development
- Leadership team assemblage
- Baseline metrics
- R&D plan

PHASE 3
IMPLEMENTATION

- Drilling
- Reservoir stimulation and testing
- Site monitoring
- Competitive R&D

FORGE

Full implementation of FORGE and tasks specific to the identification, testing and evaluation of new and innovative EGS techniques and technologies

= Team = Final Site & Team

Based on annual appropriations, DOE reserves the right to fund, in whole or in part, any, all, or none of the Phase 1 applications or subsequent phases.
The maximum number of teams are represented.

FOA Structure – Phase 1: Planning

Duration: 1 year
Up to 10 projects
Total Federal Funds available $2M

The Phase 1 objective is to complete mission-critical technical and logistical tasks that demonstrate site viability and the Applicant's full commitment and capability to meet envisioned FORGE objectives through Phases 2 and 3. Minimum requirements for Phase 1 include:

- Assess all available site characterization data;
- Compile site data into a conceptual geologic model of the proposed site;
- Archive site data used to support the conceptual geologic model to GTO's Existing NGDS Node, the Geothermal Data Repository (GDR)
- Finalize all teaming and cost-sharing arrangements; and
- Develop the key operational plans
- Develop Environmental Information Synopsis

End Phase 1: down select to **1-3** sites via Renewal Application

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FOA Structure – Phase 2: Site Prep & Characterization

Duration: 1-2 years
1- 3 projects
Total Federal Funds available $29M

- *The objective of Phase 2 is to fully instrument the site and bring FORGE to full readiness for the testing of new technologies and techniques in Phase 3.*

- Phase 2 is split into the following three subphases:
  - Phase 2A – Environmental Information Volume (EIV) and Preliminary Seismic Monitoring
  - Phase 2B – NEPA Compliance, Final Induced Seismicity Mitigation Plan, and Initial Site Characterization
  - Phase 2C – Subsurface Characterization and Site Readiness

Submit questions to:
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FORGE Structure: Phase 2 Breakdown

Phase 2A — 4 months – 1-3 Teams – *$2M*

- **Environmental Information Volume :** skeleton of NEPA document
- **Surface MEQ monitoring array:** At least 5 surface stations operational, with telemetry and collecting data

GO/NO-GO at conclusion of PHASE 2A

Phase 2B — 4-12 months – 1-3 Teams – *$17M*

- Implementation & completion of **National Environmental Policy Act**
- Comprehensive **site characterization & monitoring**:
  - Seismic, Geological analysis, Conceptual Modeling
  - Development of **Induced Seismicity Mitigation Plan**

DOWNSELECT at the end of Phase 2B

Phase 2C — 4-8 months – 1 Team – *$10M*

- **Full site characterization** (subsurface and invasive characterization)
- Develop and **deploy data-system** to serve live site data for project life
  - Real-time data sharing via data system
- **STAT Charter** and governance document
- First round of **R&D solicitation**
- **Baseline metrics**
- Updated **geologic model**

FORGE Structure – Phase 3: Technology Testing & Evaluation

Duration: 5 years
1 project
Total Federal Funds available subject to appropriations

- *Phase 3 involves full implementation of FORGE and tasks specific to the solicitation, selection, testing and evaluation of new and innovative EGS tools, techniques, and supporting science.*
- Requires drilling of two or more full-sized wells, reservoir stimulation, connectivity and flow testing, dynamic reservoir modeling, and continuous monitoring
- It is anticipated that annual R&D solicitations will be issued with 10-20 subcontracts awarded for research and technology testing per competition (subject to annual appropriations) in the following categories:
  - Reservoir characterization (coupled imaging, drilling for interrogation and monitoring, high-temperature tools and sensors)
  - Reservoir creation (formation access, fracture characterization, zonal isolation, stimulation technologies)
  - Reservoir sustainability (long-term testing, monitoring, and operational feedback)
  - All entities (including industry, universities, Federally Funded Research and Development Centers, non-profit organizations, government agencies, etc.) will be eligible to submit proposals for testing and evaluating innovative tools and techniques at FORGE.
- **At least 50% of annual Phase 3 FORGE funding** must be directed towards competitive R&D solicitations, exclusive of funds dedicated to innovative drilling and flow testing.

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FORGE Milestones (potential)

- At the start of Phase 3 demonstrate full functionality of an NGDS-compatible, data-sharing mechanism (FORGE Data System/Node) for real-time sharing of all site characterization and monitoring data.
- At the conclusion of year 1, design of first FORGE well based on in-situ stresses and informed by continuously updated reservoir models. Initiate drilling of first well in year 2.
- Issue R&D solicitations annually and ensure all awards are made and work initiated within the fiscal year of solicitation release.
- Demonstrate sustained functionality of transient reservoir interrogation tools at 200 °C for at least 6 months or in-situ monitoring tools for at least one year.
- Demonstrate at least three innovative stimulation techniques for initiating or re-opening fractures.
- Demonstrate the ability to enhance multiple reservoir volumes from a single wellbore and correlate to progressively-increased well performance as a function of number of stimulated zones.
- Demonstrate innovative precision geophysical methods that increase spatial resolution of subsurface features over state-of-the-art and validate methods with actual subsurface data or mineback.
- Demonstrate the functionality of innovative drilling tools and components capable of operating at 200+ °C in crystalline rock, uninterrupted for 30 hours.
- Demonstrate validation of reservoir and site models based on ability to predict post-stimulation fracture initiation directions, total reservoir volume, and connectivity.
- Validate the capability of new tracers to improve flow path, volume, and fracture surface area estimates.
- Develop sufficient flow paths between wellbores over a reservoir volume greater than 1 km3 and quantitatively constrain their capacity to sustain production with less than 2°C temperature decline over one year.
- Demonstrate a methodology for reproducible EGS reservoir creation and sustainability.
- Demonstrate completion of facility decommissioning/disposition and/or ownership transfer eliminating all DOE future liability within budgeted costs.

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Award Information

Award Information (Continued)

	Anticipated No. Awards	Length (mo.)	($M) 2014	2015	2016	2017	2018	2019	2020	Federal Funding ($M)	Required Cost Share, For-Profits ($M)	Required Cost Share, Applicable Entities† ($M)
Phase 1	10	12	$2							$2	$0	$0
Phase 2A	Up to 3	4		$2						$2	$0.50	$0
Phase 2B	Up to 3	4-12		$17						$17	$4.25	$0
Phase 2C	1	4-8		$10						$10	$2.50	$0
Phase 3	1	60			**subject to annual appropriations**						20%	0%

*The Government reserves the right to fund, in whole or in part, any, all, or none of the applications submitted in response to this FOA and will award the number of financial assistance instruments that serve the public purpose and are in the best interest of the Government. All DOE funding is subject to annual Congressional appropriations.

†Applicable entities, as noted above, are Recipients and/or Subrecipients who are a domestic institution of higher education, national laboratory, FFRDC, or domestic non-profit.

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Award Information (continued)

- **Statement of Substantial Involvement**

  DOE responsibilities will include the ability to appoint the members of review teams (in an amount of at least 30% representation) associated with the project (e.g., Site Management Team, Science and Technology Analysis Team, or other equivalent bodies) and participation in the formation of the consensus which will determine the direction and scope of the key development activities. In the event a consensus cannot be reached, the matter will be referred to the Office Director of GTO.

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Cost Sharing Requirements

- 0% cost share requirement for Phase 1
- 20% cost share requirement for Phases 2A, 2B, 2C, and 3
- *All project costs must be reasonable, allowable, and allocable to the project and within the scope of the proposed project*

WAIVER:

- The cost share requirement has been **waived** by EERE for any Prime Recipient and/or Subrecipient who is a domestic institution of higher education, national laboratory, FFRDC, or domestic non-profit organization.
- A for-profit organization must provide cost share in an amount that is **not less than 20%** of the for-profit organization's portion of the project costs
- A determination on the applicability of this cost share waiver to R&D performers (regardless of the type of entity) selected from Operator-run solicitations in Phase 3 will be determined at the end of Phase 2C.

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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
- Project Teams may use funding or property **received from state or local governments** to meet the cost share requirement, so long as the funding or property was not provided to the state or local government by the Federal Government.
- Allowability of costs is **governed by 10 CFR 600** and are supported by cost principles identified within OMB Circulars:
  - OMB Circular A-21, Educational Institutions
  - OMB Circular A-122, Non-Profits
  - 48 CFR Part 31, For-Profit Organizations

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Unallowable Cost Share

- The following sources **MAY NOT BE** used to meet its cost share obligations, including, but not limited to:

  - Data collected by previous Federal awards (grants, cooperative agreements, etc.);
  - 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; or
  - Bank loans from financial institutions (loan meaning funds borrowed from a financial institution which will later be paid back in full).
  - Independent research and development (IR&D) funds

Intellectual Property

- The clause at DEAR 952.227-78 – RIGHTS IN TECHNICAL DATA - FACILITY shall be incorporated into all cooperative agreements **upon the authorization to proceed into Phase 2.**

- This data clause does not provide for the protection of data first generated under the cooperative agreement. For each project that continues into Phase 2 and beyond, a listing of generated data that will not be required to be delivered to the Government shall be negotiated.
  - Data to be included on this list will be of the type that would be trade secret or confidential if developed at private expense. Along with this data list, a listing of the minimum data to be delivered with unlimited rights shall be negotiated.

- It is desired that Applicants will commit to sharing data through the GDR, and ultimately, the FORGE Data System/Node.

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Applications

Applications

- The 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 (EERE 159/PMC 123.1): a detailed budget and spend plan for the project.
  - **Subaward Budget** Information
  - **Summary** for Public Release (slide and 1 page summary)
  - **Resumes**
  - **Environmental Impact Questionnaire**
  - Administrative Documents as applicable: e.g., Waiver Requests, FFRDC Authorization, Disclosure of Lobbying Activities, etc.

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Applications: Technical Volume Content

- **Technical Volume:** the key technical component of the Application

TECHNICAL VOLUME FORMAT	
Required Content	**Page Limit / Format Guidelines**
Summary and Introduction	2 pages
Site Suitability	15 pages
Technical Approach (Statement of Project Objectives)	10 page limit using format contained in Attachment 5
Project Organization and Project Management Plan (PMP)	20 page limit using format contained in Attachment 6
Appendix A - Initial Compliance Review	
Appendix B - Site Characterization Data Inventory	Use format contained in Attachment 3
Appendix C - Permitting Inventory	Use format contained in Attachment 4
Appendix D - Team Letters of Commitment and Agreements	

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Technical Volume: SUMMARY & INTRODUCTION - 2 pg

- Introduction to the project, including:
  - Description of the proposed FORGE site
  - Current site status including ownership.

- Introduction to main teaming partners, their roles, and a brief overview of the proposed management structure of the project.

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Technical Volume: SITE SUITABILITY – 15 pg

- Area of operations where well drilling, stimulation and monitoring operations will occur
- Anticipated areal and volumetric extent of potential subsurface impacts from increased formation pressure during the project operations.
- Availability of existing facilities, wells, equipment and infrastructure (e.g., roads, electric power/transmission lines) required to perform project tasks
- State of access and current physical impediments that may impact project.

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Technical Volume - TECHNICAL APPROACH – 10 pg

STATEMENT OF PROJECT OBJECTIVES should provide:

- A clear and concise description of project objective(s)
- The specific tasks/subtasks that will be conducted to meet objectives.
  - All phases of the project should be addressed with special attention to tasks/subtasks associated with Phase 1 objectives and deliverables
  - A short overview (3-5 paragraphs) of the Applicant's proposed strategies for implementation in Phases 2 and 3 of each required Plan:
    - Preliminary Induced Seismicity Mitigation
    - Data Dissemination and Intellectual Property
    - Core Curation
    - Communications and Outreach
    - Environmental, Safety and Health
    - R&D Implementation Plan

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Technical Volume: PROJECT ORGANIZATION & PMP- 20 pgs

- This section must include a detailed discussion on the following:
  - Overall organizational structure planned for the project including key partnerships and teaming arrangements among participating organizations.
  - Key capabilities of each organization, their roles and responsibilities, and their level of participation demonstrating each organization's value added towards achieving the overall objective(s) of the proposed project.
  - Project structure and management strategy among project team members as it pertains to procedures for resolving conflict of interest and intellectual property issues, and communication between team members, DOE, and any other involved Federal Agencies.
  - Project structure and management strategy for integrating DOE participation in the decision making of scientific/technical responsibilities and direction.
  - Relevant prior or current corporate background and experience that supports the capabilities of the Applicant and its team members to permit, manage and operate FORGE and administer solicitations and awards for technology testing and evaluation in later phases of the project.
  - Knowledge, experience, adequacy, and degree of involvement of proposed key personnel.

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Technical Volume: PROJECT ORGANIZATION & PMP con't

- This section must include a detailed discussion on the following (con't):
  - Identification of potential real or perceived financial, schedule, technical, and management risks & discussion of how these risks will be addressed. Must consider and discuss mitigation options for:
    - Potential long-term risks related to changes in policy (e.g. hydraulic fracturing guidance and endangered species management)
    - Well integrity issues prior to and during FORGE operations.
  - Estimated labor hours and labor categories table and justification required for each task and subtask under Phase 1 as outlined in the Statement of Project Objectives.
  - Draft Project Management Plan (PMP).
    - The purpose of the PMP is to provide for clear management and reporting, and to establish baseline budget and schedule for the project activities as outlined in the Statement of Project Objectives (SOPO).

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Technical Volume – APPENDIX A

INITIAL COMPLIANCE REVIEW:

- Specifically and clearly address how the Applicant fulfills the technical elements that comprise the Initial Compliance Review Criteria of this FOA.

- Should include a discussion and supporting evidence of the following:
  - Discussion regarding the availability of the proposed site.
  - Discussion regarding the availability of rights to subsurface access.
  - Discussion regarding the availability of access to water in quantities sufficient for day-to-day operations of FORGE and for anticipated well stimulation activities.
  - Proposed site has temperature of 175-225^{o}C at target depths.
  - The Applicant shall provide documentation that a well or wells exist at the proposed site that provides confirmation of in-situ conditions at the target depth(s).
  - The Applicant shall provide documentation showing that the proposed site is not located within an existing hydrothermal field or sedimentary basin. It may be located near an existing hydrothermal field.

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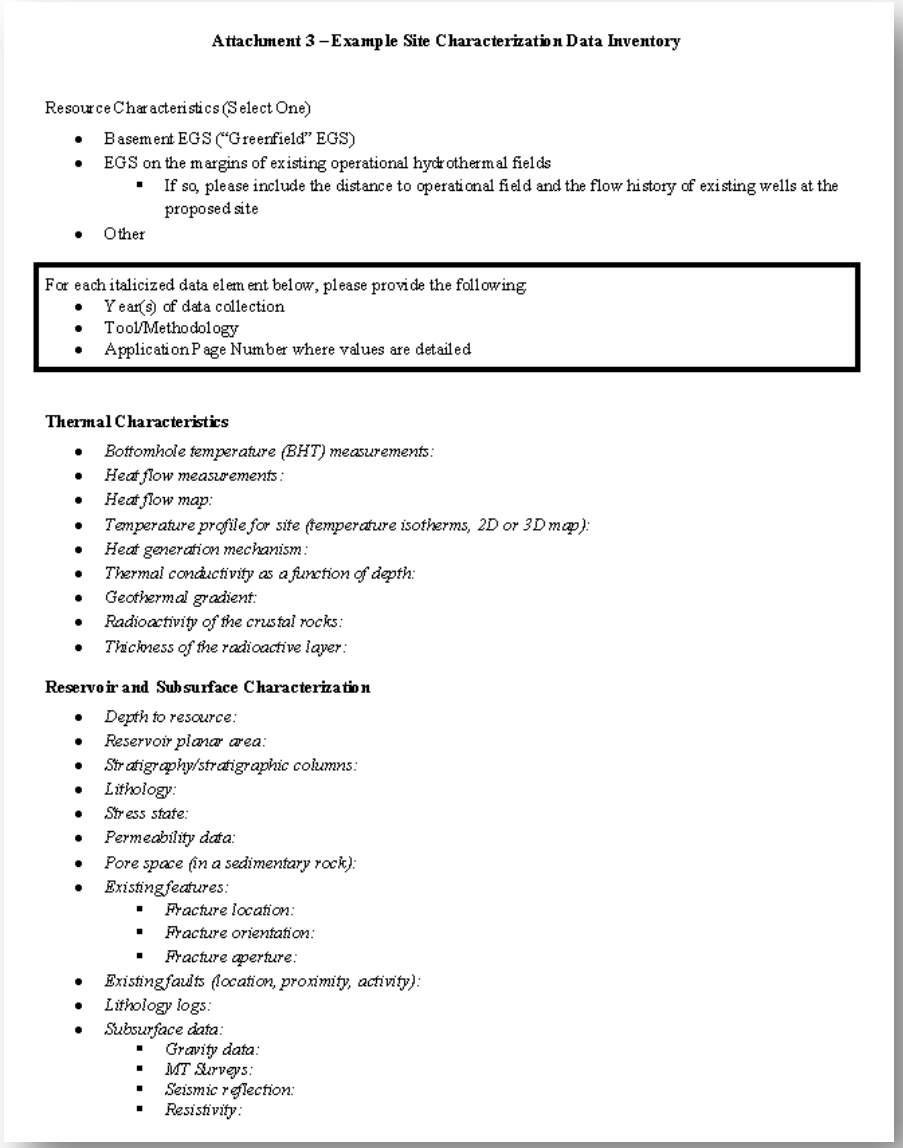
Technical Volume – APPENDIX B

SITE CHARACTERIZATION DATA INVENTORY:

- Site characterization data and auxiliary information
- Geologic site maps, site photographs, etc. necessary to support site characterization claims.



Attachment 3 – Example Site Characterization Data Inventory

Resource Characteristics (Select One)

- Basement EGS ("Greenfield" EGS)
- EGS on the margins of existing operational hydrothermal fields
  - If so, please include the distance to operational field and the flow history of existing wells at the proposed site
- Other

For each italicized data element below, please provide the following:

- Year(s) of data collection
- Tool/Methodology
- Application Page Number where values are detailed

Thermal Characteristics

- *Bottomhole temperature (BHT) measurements:*
- *Heat flow measurements:*
- *Heat flow map:*
- *Temperature profile for site (temperature isotherms, 2D or 3D map):*
- *Heat generation mechanism:*
- *Thermal conductivity as a function of depth:*
- *Geothermal gradient:*
- *Radioactivity of the crustal rocks:*
- *Thickness of the radioactive layer:*

Reservoir and Subsurface Characterization

- *Depth to resource:*
- *Reservoir planar area:*
- *Stratigraphy/stratigraphic columns:*
- *Lithology:*
- *Stress state:*
- *Permeability data:*
- *Pore space (in a sedimentary rock):*
- *Existing features:*
  - *Fracture location:*
  - *Fracture orientation:*
  - *Fracture aperture:*
- *Existing faults (location, proximity, activity):*
- *Lithology logs:*
- *Subsurface data:*
  - *Gravity data:*
  - *MT Surveys:*
  - *Seismic reflection:*
  - *Resistivity:*

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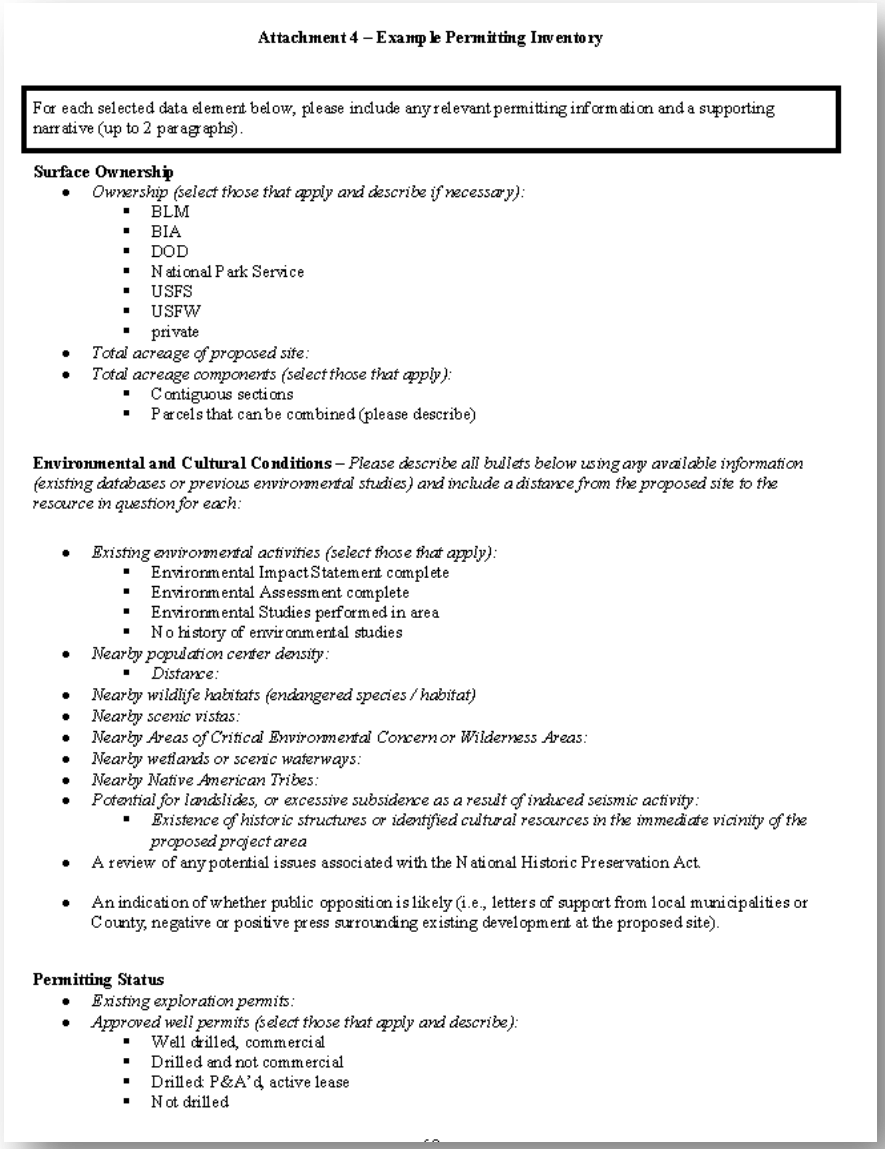
Technical Volume – APPENDIX C

PERMITTING INVENTORY:

- Provide permitting data and potential NEPA issues
- Provide map(s) indicating:
  - surface and subsurface rights
  - lease boundaries
  - location of any national, state, tribal, or otherwise protected lands,
  - lands considered to have historical or archeological significance



Attachment 4 – Example Permitting Inventory

For each selected data element below, please include any relevant permitting information and a supporting narrative (up to 2 paragraphs).

Surface Ownership

- *Ownership (select those that apply and describe if necessary):*
  - BLM
  - BIA
  - DOD
  - National Park Service
  - USFS
  - USFW
  - private
- *Total acreage of proposed site:*
- *Total acreage components (select those that apply):*
  - Contiguous sections
  - Parcels that can be combined (please describe)

Environmental and Cultural Conditions – *Please describe all bullets below using any available information (existing databases or previous environmental studies) and include a distance from the proposed site to the resource in question for each:*

- *Existing environmental activities (select those that apply):*
  - Environmental Impact Statement complete
  - Environmental Assessment complete
  - Environmental Studies performed in area
  - No history of environmental studies
- *Nearby population center density:*
  - *Distance:*
- *Nearby wildlife habitats (endangered species / habitat)*
- *Nearby scenic vistas:*
- *Nearby Areas of Critical Environmental Concern or Wilderness Areas:*
- *Nearby wetlands or scenic waterways:*
- *Nearby Native American Tribes:*
- *Potential for landslides, or excessive subsidence as a result of induced seismic activity:*
  - *Existence of historic structures or identified cultural resources in the immediate vicinity of the proposed project area*
- A review of any potential issues associated with the National Historic Preservation Act.
- An indication of whether public opposition is likely (i.e., letters of support from local municipalities or County, negative or positive press surrounding existing development at the proposed site).

Permitting Status

- *Existing exploration permits:*
- *Approved well permits (select those that apply and describe):*
  - Well drilled, commercial
  - Drilled and not commercial
  - Drilled: P&A'd, active lease
  - Not drilled

Submit questions to:
DE-FOA-0000890-FORGE@netl.doe.gov

Technical Volume – APPENDIX D

TEAM LETTERS OF COMMITMENT AND AGREEMENTS

- Signed agreements or letters from team members
- Demonstrating that the proposed team members are committed to the project.

Submit questions to:
DE-FOA-0000890-FORGE@netl.doe.gov

Eligibility

Who is Eligible to Apply?

- All entities may submit to the FORGE FOA including:
  - Individuals
  - State, local, tribal government entities
  - Industry: domestic and foreign (waiver required if no U.S. subsidiary)
  - Educational Institutions
  - Non-profit organizations
  - DOE/NNSA Federally Funded Research and Development Centers
  - Incorporated Consortia
  - Unincorporated Consortia
  - Non-DOE/NNSA FFRDC and GOGOs (Subrecipient only)
  - Federal agencies and instrumentalities (Subrecipient only)

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</u> eligible to apply for funding.

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Performance of Work in the U.S.

- Applicants must propose that 100% of the direct labor cost for the project (including contractor/subrecipient labor) will be incurred in the United States (including U.S. territories) unless the Applicant can demonstrate to the satisfaction of the EERE that the United States economic interest will be better served through some percentage of work performed outside the United States.

Submit questions to:
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Review and Selection Process

Outline of Review Process

1. Pre-Selection Interviews - Optional
2. Initial Administration Compliance Review
3. Initial Technical Compliance Review
4. Comprehensive Merit Review
5. Reply to Reviewer Comments
6. Program Policy Factors
7. Selection
8. Negotiations Leading to Award

Submit questions to:
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Non-Responsive Applications – Admin Compliance

Applications will be deemed nonresponsive and will not be reviewed or considered for an award if they do not meet the following ***administrative*** review criteria:

Initial Administrative Compliance Review:

- The Applicant meets the eligibility requirements in Section III;
- The Application complies with the content and form requirements in Section IV.C.; and
- The Applicant entered all required information necessary for a meaningful review, successfully uploaded all required documents, and clicked the "Submit" button in EERE Exchange by the deadline stated in the FOA.

Applications that pass the Initial Administrative Compliance Review will then be forwarded for the Initial Technical Compliance Review.

Non-Responsive Applications – Technical Compliance

In addition to the Initial Administrative Compliance Review, applications MUST meet the following **technical requirements** to fully satisfy the Initial Review and be considered complete and responsive to the FOA:

- Sufficient legal documentation demonstrating that the proposed site is located within an area of an existing geothermal lease.
- Sufficient legal documentation to demonstrate possession of the legal surface and subsurface rights necessary for FORGE field operations, including, but not limited to, well drilling and stimulation, environmental monitoring, and installation of required site infrastructure from the time of application through the duration of all anticipated phases of the project.
- Sufficient legal documentation to demonstrate water availability/rights for FORGE field operations from the time of application through the duration of all anticipated phases of the project.
- Evidence (e.g., bottomhole temperature measurements) that the proposed site has temperature of 175-225^{o}C at target depths.
- Documentation of an existing well or wells at the proposed site that provides confirmation of in-situ conditions at the target depth(s) and evidence (from existing well flow data) that target formation is not a hydrothermal reservoir.
- Documentation showing that the proposed site is not located within an existing hydrothermal field or sedimentary basin. It may be located near an existing hydrothermal field.

Applications that pass the Initial Technical Compliance Review will then be forwarded for comprehensive Technical Merit Review.

Submit questions to:
DE-FOA-0000890-FORGE@netl.doe.gov

Technical Merit Review Criteria

1. **Site Suitability (Weight 40%)**

2. **Technical Approach (Weight 35%)**

3. **Project Organization and Management (Weight: 25%)**

Submit questions to:
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Replies to Reviewer Comments

- EERE provides applicants with reviewer comments
- Applicants are not required to submit a Reply - it is optional
- Content and form requirements:

Section	Page Limit	Description
Text	2 pages max	Applicants may respond to one or more reviewer comments or supplement their Application.
Images	10 page max	Applicants may provide graphs, charts, or other data to respond to reviewer comments or supplement their Application.

Submit questions to:
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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 shares, optimizes the use of available DOE funding to achieve programmatic objectives;
  - The level of industry involvement and demonstrated ability to advance EGS technology;
  - Degree of environmental risks associated with the project;
  - The degree to which the proposed project directly addresses DOE's statutory mission and strategic goals;
  - The quantity and availability of project and site data that the Applicant commits to sharing with the broader community through the GDR, and ultimately the FORGE Data System/Node, regardless of its proprietary status, date collected, or funding source;
  - Proximity of the site to an existing hydrothermal field; and
  - Diversity of site geology with respect to GTO's existing EGS portfolio, and broader applicability of the site's geologic setting for reproducibility.

Submit questions to:
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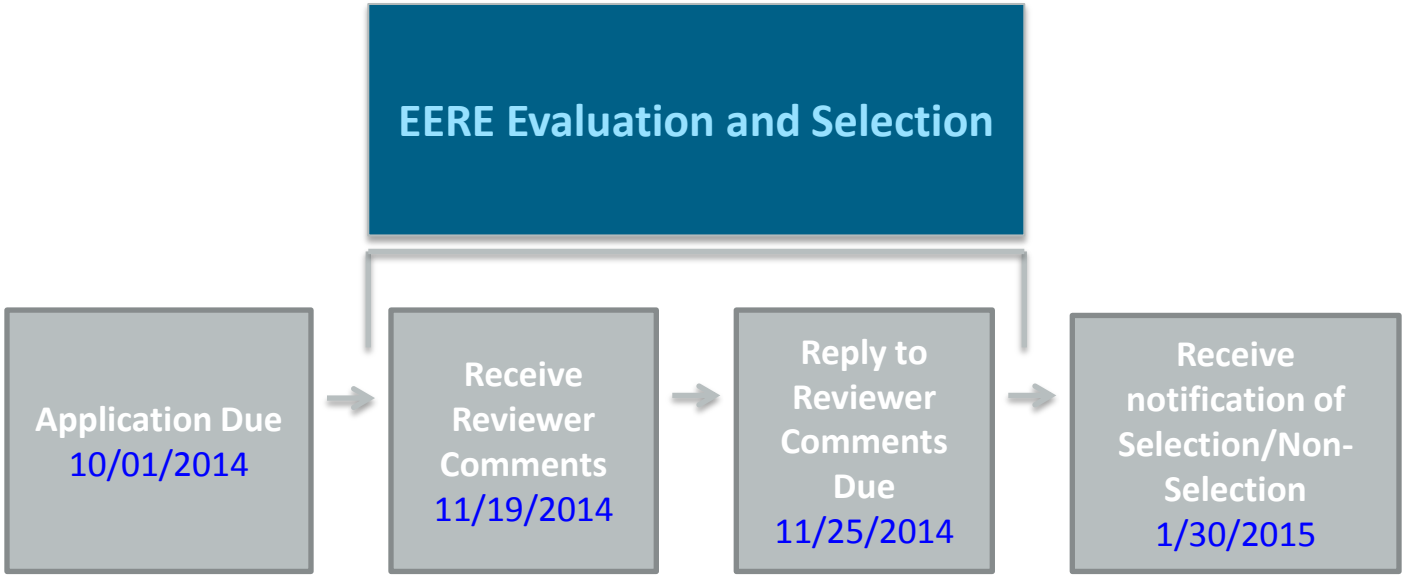
Business

FOA Timeline



EERE anticipates making awards by 3/30/2015

Submit questions to:
DE-FOA-0000890-FORGE@netl.doe.gov

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	http://fedgov.dnb.com/webform
SAM	https://www.sam.gov
FedConnect	https://www.fedconnect.net
Grants.gov	http://www.grants.gov

Submit questions to:
DE-FOA-0000890-FORGE@netl.doe.gov

Means of Submission

- 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**

- 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

Submit questions to:
DE-FOA-0000890-FORGE@netl.doe.gov

Key Submission Points

- **Triple Check** entries in EERE Exchange
  - Submissions could be deemed ineligible due to an incorrect entry
  - Check cost share for accuracy, if applicable
  - Verify that total project costs in the SF424 and Budget Justification (EERE 159/PMC 123.1) match
  - 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

- 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

- For your records, **print out the EERE Exchange Confirmation page** at each step, which contains the application's Control Number

Submit questions to:
DE-FOA-0000890-FORGE@netl.doe.gov

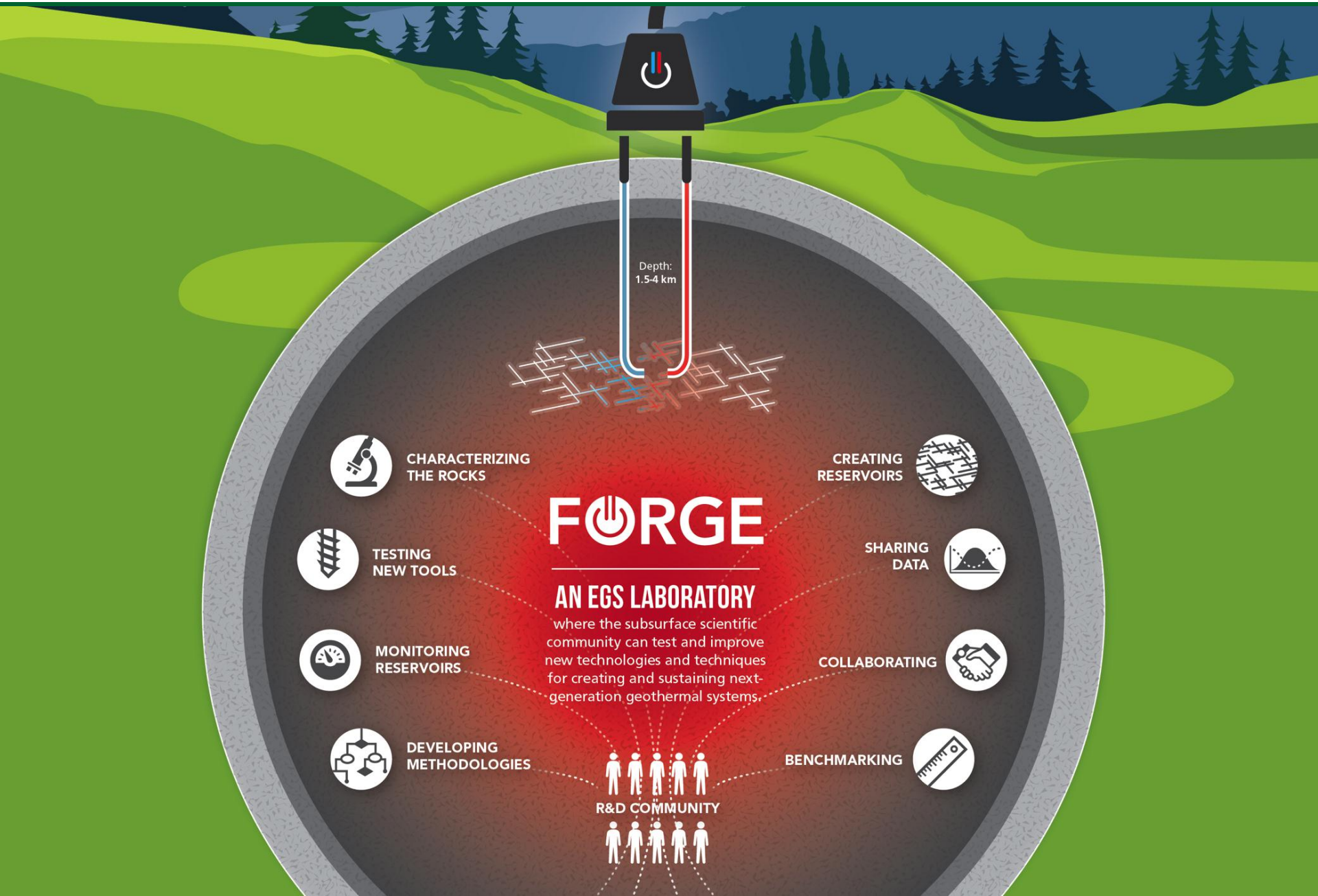
Questions

- Questions about this FOA?
  - Email **DE-FOA-0000890-FORGE@netl.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

- All questions asked/written during this presentation will be posted on EERE Exchange

Thank you


Depth:
1.5-4 km
CHARACTERIZING THE ROCKS
TESTING NEW TOOLS
MONITORING RESERVOIRS
DEVELOPING METHODOLOGIES
FORGE
AN EGS LABORATORY
where the subsurface scientific community can test and improve new technologies and techniques for creating and sustaining next-generation geothermal systems.
R&D COMMUNITY
CREATING RESERVOIRS
SHARING DATA
COLLABORATING
BENCHMARKING