Geothermal Technologies Program Recovery Act Funding Opportunities

June 2009

Enhanced Geothermal Systems Demonstrations

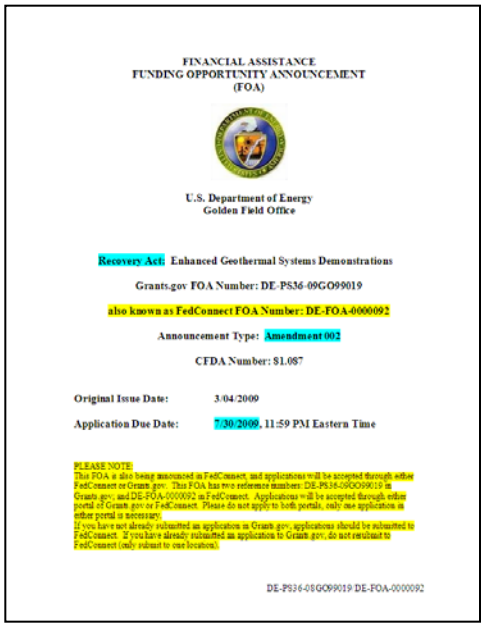
Objective:

- Investigate advanced reservoir stimulation techniques for EGS in various geological and geographic settings throughout the United States

Deployment Strategy:

- Select up to ten new EGS demo projects in various geologic formations and geographic regions
- Demonstrate stimulation techniques that
    - Sustain fluid flow and heat extraction rates for 5-7 years
    - Produce up to 50 MWe per year per project site

Funding and Critical Dates



FINANCIAL ASSISTANCE
FUNDING OPPORTUNITY ANNOUNCEMENT
(FOA)

U.S. Department of Energy
Golden Field Office

Recovery Act: Enhanced Geothermal Systems Demonstrations

Grants.gov FOA Number: DE-PS36-09GO99019

also known as FedConnect FOA Number: DE-FOA-0000092

Announcement Type: Amendment 002

CFDA Number: 81.087

Original Issue Date: 3/04/2009

Application Due Date: 7/30/2009, 11:59 PM Eastern Time

PLEASE NOTE:
This FOA is also being announced in FedConnect, and applications will be accepted through either FedConnect or Grants.gov. This FOA has two reference numbers: DE-PS36-09GO99019 in Grants.gov; and DE-FOA-0000092 in FedConnect. Applications will be accepted through either portal of Grants.gov or FedConnect. Please do not apply to both portals, only one application in either portal is necessary.
If you have not already submitted an application in Grants.gov, applications should be submitted to FedConnect. If you have already submitted an application to Grants.gov, do not resubmit to FedConnect (only submit to one location).

DE-PS36-09GO99019 DE-FOA-0000092

Funding:

- $90M in Recovery Act funds
- See FOA for max funding level for each project

FedConnect Funding Opportunity Announcement Number:

- DE-FOA-0000092

Closing Date:

- 7/30/2009

Start registration process on FedConnect.net by:

- ASAP and allow for at least 21 days

What is DOE looking for?

- A multi-disciplinary team that has the demonstrated technical and financial viability to complete energy related projects (including design, engineering, installation, and operation) with minimum variance from the originally planned project scope, schedule, and budget

- A team that meets or exceeds the objective and technical requirements as identified in the merit review criteria

Critical Requirements

- The Applicant (not partners) must provide sufficient legal documentation to demonstrate that they have the legal surface and subsurface rights necessary for stimulation and heat mining. Letters of support from partners or subcontractors do not take the place of the legal documentation

- The Applicant must state, in writing with concurrence from an authorized representative, that non-proprietary data collected during the project period will be made available to the public through the National Geothermal Data System

- The Applicant must provide Financial Viability attachment as detailed in “Content and Form of Application“ found in Part IV.D of this announcement.

Project Description and Phases

Phase I – Pre-Stimulation

- Site/Wellbore Readiness
- Development of Stimulation Plan
- Planning and Permitting
- Reporting and Publications

Phase II – Reservoir Creation and Characterization

- Stimulation
- Post Stimulation Data Collection
- Reporting and Publications

Phase III – Validation and Power Generation

- Long Term Data Collection and Monitoring
- Reporting and Publications

Merit Review Criteria

Adequacy of Target/Well Site and Stimulation Plan **Weight: 50%**

- Adequacy and completeness of the Statement of Project Objectives (SOPO) including a descriptions of how all objectives listed in the Project Phase Descriptions in Part I will be met
- Level of technical quality, clarity, and completeness of application
- Technical merit and feasibility of the proposed work (i.e., is it based on sound scientific/engineering principles and on an understanding of current state of the art technology/methods in the geothermal industry)
- Extent that proposed site characterization/well stimulation methods will advance technologies necessary for EGS development demonstration
- Adequacy of existing site characterization data including geologic map, demonstration of right of access, geophysical/geological logs, seismic surveys, etc.
- Adequacy of existing geologic/geothermal model including rock mass properties, stress regime, and petrologic/mineralogic evaluations of cuttings/core, etc.
- If there is an existing target well: adequacy of data on target well including stratigraphy,/lithologic column, temperature profile, baseline flow rate, results of injection/flow tests, well completion history, etc.

Merit Review Criteria

Stimulation and Data Collection/Analysis Approach Weight: 25%

- Soundness of the project management concept with respect to proposed tasks and organizational structure to achieve project/phase objectives
- Clarity and completeness of a plan to address potential risks and liabilities (e.g., technical, financial, and environmental) that are associated with the field stimulation project including a discussion of the proposed stimulation plan
- Likelihood of achieving project objectives through realistic milestones, timely schedule, and task structure
- Adequacy, appropriateness, and reasonableness of the budget to complete the proposed project
- Appropriateness of proposed go/no-go decision points

Merit Review Criteria

Project Team and Resources **Weight: 25%**

- Demonstrated ability (through previous efforts) of the Principle Investigator (PI) and other investigators to successfully complete energy related projects (including design, engineering, installation, and operation) with minimum variance from the originally planned project schedule, scope, and budget
- Level of participation by project participants as evidenced by letter(s) of commitment
- Demonstrated availability of equipment, facilities, project site, analytic support and other necessary resources for performing the proposed project and adequacy of resources to accommodate the proposed project
- Extent of the characterization, planning and regulatory and environmental permitting of the target site
- Extent of proposed substitution of fossil fuel usage or demonstrated adequacy of transmission availability to support the proposed project in a timely manner

Other Selection Factors

- Financial viability of applicant to complete the proposed project
- Degree of student involvement from academic institutions
- Projects conducted in areas that do not have high temperature, conventional hydrothermal systems
- Proposed recipient cost share above the minimum level required
- Selection of Applications which promote and enhance the objectives of the American Recovery and Reinvestment Act of 2009, P.L. 111-5, especially job creation, and/or preservation and economic recovery in an expeditious manner
- Selection of applications to enhance technology diversity of the program portfolio

Geothermal Energy Production from (A) Low Temperature Resources, (B) Coproduced Fluids from Oil & Gas Wells, and (C) Geopressured Resources

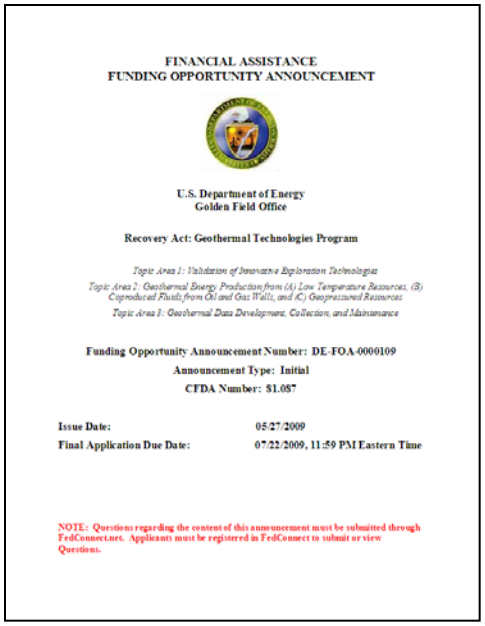
Objective:

- Demonstrate geothermal energy production from oil & gas fields, geopressured fields, and low temperature resources throughout the U.S.

Deployment Strategy:

- Select up to 20 projects
- 20 MW online from low temp, co-produced and/or geopressured sources

Funding and Critical Dates



FINANCIAL ASSISTANCE
FUNDING OPPORTUNITY ANNOUNCEMENT

U.S. Department of Energy
Golden Field Office

Recovery Act: Geothermal Technologies Program

Topic Area 1: Validation of Innovative Exploration Technologies
Topic Area 2: Geothermal Energy Production from (A) Low Temperature Resources, (B) Coproduced Fluids from Oil and Gas Wells, and (C) Geopressured Resources
Topic Area 3: Geothermal Data Development, Collection, and Maintenance

Funding Opportunity Announcement Number: DE-FOA-0000109
Announcement Type: Initial
CFDA Number: 81.087

Issue Date: 05/27/2009
Final Application Due Date: 07/22/2009, 11:59 PM Eastern Time

NOTE: Questions regarding the content of this announcement must be submitted through FedConnect.net. Applicants must be registered in FedConnect to submit or view Questions.

Funding:

- $50M in Recovery Act funds
- Max funding
  - Co-production and low temp. - $2 million
  - Geopressured - $5 million

FedConnect Funding Opportunity Announcement Number:

- DE-FOA-0000109

Closing Date:

- 7/22/2009

Start registration process on FedConnect by:

- ASAP and allow for at least 21 days

Project Description

Technically and economically demonstrate

- Electricity generation and/or
- Direct use

From one of the following:

- Low-temperature geothermal fluids (150-300°F)(See Subtopic A)
- Geothermal fluids coproduced from oil and/or gas wells (See Subtopic B)
- Geopressured gas resources (See Subtopic C)

Projects may also include plans for

- Cogeneration
- Cascading geothermal systems
- Combined use with other renewable energy technologies.

The project requirements for each subtopic will vary. Please refer to the FOA for the specific requirements for the applicable subtopic.

Project Phases – Subtopic A – Low-temperature geothermal fluids

Phase A1 – Feasibility Study and Engineering Design

- Ensure energy can be produced economically at the site
- Fully design/engineer energy production equipment
- Characterize target geothermal resource
- Reporting and publications

Phase A2 – Procurement, Installation and Commissioning of Equipment

- Procure and install equipment to harness geothermal energy
- Data collection on capital costs and job creation
- Reporting and publications

Phase A3 – Operation and Maintenance (O&M)

- Operate for a minimum of two years
- Reporting and publications and document lessons learned

Project Phases – Subtopic B – Geothermal fluids coproduced from oil and/or gas wells

Phase B1 – Feasibility Study and Engineering Design

- Ensure energy can be produced economically at the site
- Fully design/engineer energy production equipment
- Characterize target geothermal resource
- Reporting and publications

Phase B2 – Procurement, Installation and Commissioning of Equipment

- Procure and install equipment to harness geothermal energy
- Data collection on capital costs and job creation
- Reporting and publications

Phase B3 – Operation and Maintenance (O&M)

- Operate for a minimum of two years
- Reporting and publications and document lessons learned

Project Phases – Subtopic C – Geopressured gas resources

Applications for Subtopic 3 should include preliminary engineering designs and feasibility studies for geopressured resources production and recovery facilities

- **Phase C1 – Detailed Design and Construction Plans**
  - Detailed engineering, architectural, and technical plans
  - Regulatory and environmental permitting
  - Reporting and publications

  *** Go/No-Go Review based on final design plans**

- **Phase C2 – Construction and Demonstration**
  - Construct and operate
  - Data collection on performance, economics, operating characteristics, and job creation
  - Reporting and publications

Other Information

- New wells will not be funded
- Rework activities on existing wells are allowed

Merit Review Criteria

Non-Technical Considerations **Weight: 40%**

- Adequacy of demonstration of right of access to project site via sufficient legal documentation
- Extent of the characterization, planning and regulatory and environmental permitting of the target site including status/evidence of permits
- Adequacy of site infrastructure and applicant/partner resources
  - **For Co-Produced fluids only:** inclusion of not less than five well sites, proposed plant capacities up to 1 MWe, and identification of optimum power conversion technologies
- Likelihood of achieving project objectives in an expeditious manner through logical task structure and reasonableness of the schedule (completion of Phases A1, B1, or C1 within 6-12 months) and milestones including Gantt Chart and risk mitigation plan
- Adequacy of feasibility study including an assessment of potential jobs, cost/benefit analysis, avoided cost of electricity, and project budget

Merit Review Criteria

Technical Considerations **Weight: 30%**

- Adequacy and completeness of the Statement of Project Objectives (SOPO) including a descriptions of how all objectives will be met
- Technical feasibility of utilizing energy contained in low temperature, coproduced, or geopressured geothermal fluids
- Level of innovation of the proposed project above current state-of-the-art

- **For Co-produced fluids only:** Ability to replicate results of the project at a wide range of geographic sites, including assumptions and quantitative data, and inclusion of business commercialization plans that have the potential for production of equipment at high volumes and operation and support at a large number of sites

Merit Review Criteria

Project Team and Technology Transfer **Weight: 30%**

- Qualifications, capabilities, credentials, and experience of the principal investigator and other members of the project team
- Degree of commitment from project partners as evidenced by letters of commitment
- Adequacy of plan to provide non-proprietary data to the National Geothermal Data System
- Adequacy of information dissemination and technology transfer plan

Other Selection Factors

- Technological diversity of projects
- Proposed cost share above the minimum level required
- Degree of student involvement from academic institutions
- Projects in high electricity cost regions and rural or remote areas, or projects proposed by Indian Tribes/Tribal Energy Resource Development Organizations or Groups
- Selection of applications which promote and enhance the objectives of the American Recovery and Reinvestment Act of 2009, P.L. 111-5, especially job creation, and/or preservation and economic recovery in an expeditious manner

Other Selection Factors for Coproduction Only

Preference will be given to projects that address multiple elements:

1. include not less than 5 oil or gas well sites per project award
2. use a range of oil or gas well hot water source temperatures from 150° F to 300° F
3. cover a range of sizes up to one megawatt
4. cover a range of sites
5. be able to be replicated at a wide range of sites
6. facilitate identification of optimum technologies among competing alternatives
7. include business commercialization plans that have the potential for production of equipment at high volumes and operation and support at a large number of sites and
8. satisfy other criteria that the Secretary determines are necessary to carry out the program and collect necessary data and information

Validation of Innovative Exploration Technologies

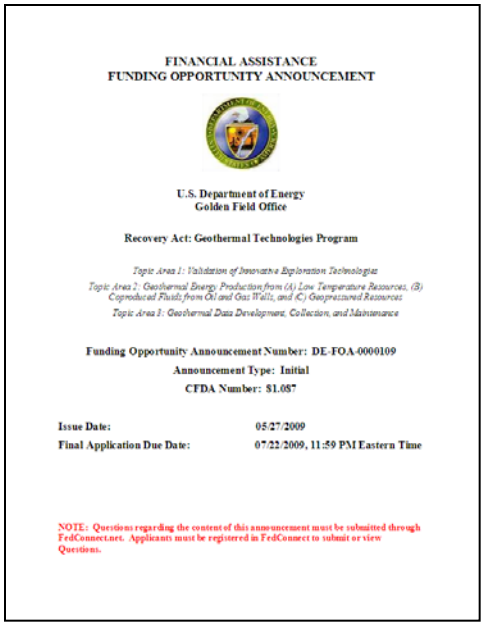
Objective:

- Reduce the high level of upfront risk during the early stages of geothermal project development by funding innovative exploration technologies

Deployment Strategy:

- Select up to 40 projects to confirm up to 400 MW of new geothermal energy capacity
- Individual projects will consist of exploration, siting, drilling, and characterization of a portfolio of exploration wells

Funding and Critical Dates



FINANCIAL ASSISTANCE
FUNDING OPPORTUNITY ANNOUNCEMENT

U.S. Department of Energy
Golden Field Office

Recovery Act: Geothermal Technologies Program

Topic Area 1: Validation of Innovative Exploration Technologies
Topic Area 2: Geothermal Energy Production from (A) Low Temperature Resources, (B) Coproduced Fluids from Oil and Gas Wells, and (C) Geopressured Resources
Topic Area 3: Geothermal Data Development, Collection, and Maintenance

Funding Opportunity Announcement Number: DE-FOA-0000109
Announcement Type: Initial
CFDA Number: 81.087

Issue Date: 05/27/2009
Final Application Due Date: 07/22/2009, 11:59 PM Eastern Time

NOTE: Questions regarding the content of this announcement must be submitted through FedConnect.net. Applicants must be registered in FedConnect to submit or view Questions.

Funding:

- $100M in Recovery Act funds
- Max funding level for each project is $5 million

FedConnect Funding Opportunity Announcement Number:

- DE-FOA-0000109

Closing Date:

- 7/22/2009

Start registration process on FedConnect by:

- ASAP and allow for at least 21 days

Project Description and Phases

Phase I – Resource Evaluation

- Utilization of innovative exploration techniques to identify a potential geothermal resource
- Funding ceiling for Phase I is $250-$500 K depending on level of innovation

Phase II – Drilling

- Drilling two wells and complete appropriate evaluations, sampling, and studies to characterize the geologic environment contacted by the wells

Phase III – Well Testing

- Extended flow test, interpretation and integration of test data, validation of innovative exploration method, assessment of well and reservoir capacity

Elements of Project Description

- Exploration, siting, drilling, and characterization of at least two (2) wells
- Innovative exploration techniques
- Collection of core
- Must state that non-proprietary data collected during the project period will be made available to the public through the National Geothermal Database System
- Final well and reservoir capacity assessment

Merit Review Criteria

Technology Innovation and Validation **Weight: 30%**

- Degree and documentation of innovation of proposed exploration techniques
- Extent that proposed exploration techniques will advance technologies necessary to lower geothermal exploration risk
- Quality, clarity and completeness of technology validation and technology transfer plan

Project Description and Implementation Plan **Weight: 30%**

- Level of technical quality, clarity, and completeness of application including operations description, project budget, timeline, drilling plan with cost estimate, well completions, and data acquisition
- Clarity and completeness of a plan to address potential risks and liabilities (e.g., technical, financial, and environmental) that are associated with the exploration project and drilling plan
- Likelihood of achieving project objectives through realistic milestones, timely schedule, and task structure

Merit Review Criteria

Geothermal Resource Potential — Weight: 20%

- Likelihood that resultant data will reveal an undiscovered geothermal resource as evidenced by the description of proposed location(s) and the target depth(s)
- Adequacy of the geologic model, including existing data and rationale for selecting this site and target depth
- Adequacy of discussion/map of the exploration site showing the land ownership of the proposed site and adjacent property
- Soundness of the discussion regarding permitting and site access considerations including clear ownership, in-place permits, or clear permitting path

Project Team and Resources — Weight: 20%

- Capabilities of key project personnel to comprehensively address all aspects of the proposed project
- Level of participation by project participants as evidenced by letter(s) of commitment
- Demonstrated availability of equipment, facilities, project site, analytic support and other necessary resources for performing the proposed project and adequacy of resources to accommodate the proposed project
- Adequacy of plan to provide non-proprietary data to the National Geothermal Data System

Other Selection Factors

- Technological diversity of projects
- Geographic diversity of projects
- Proposed cost share above the minimum level required
- Degree of student involvement from academic institutions
- Projects in high electricity cost regions and rural or remote areas, or projects proposed by Indian Tribes/Tribal Energy Resource Development Organizations or Groups
- Selection of applications which promote and enhance the objectives of the American Recovery and Reinvestment Act of 2009, P.L. 111-5, especially job creation, and/or preservation and economic recovery in an expeditious manner

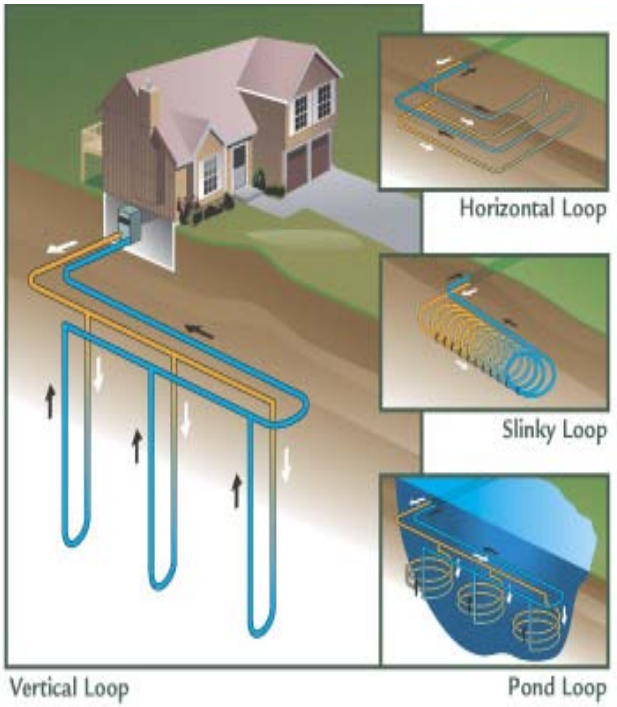
Geothermal Heat Pump Deployment

Objective:

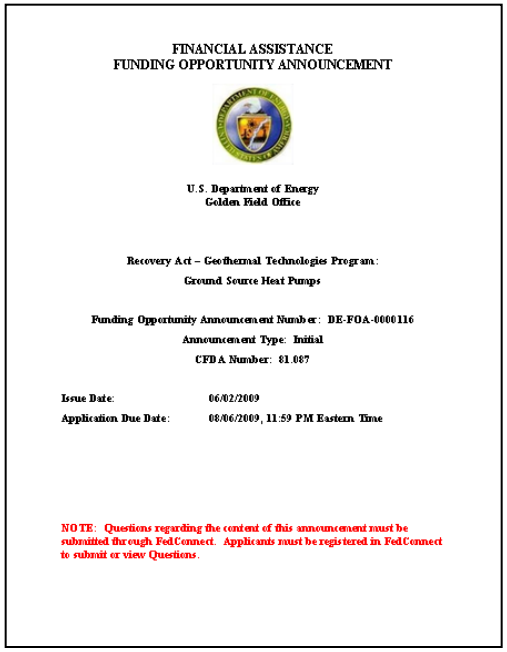
- Increase national GHP Deployment
- Address current market barriers and opportunities

Deployment Strategy:

- Technology demonstration projects
- Data gathering and analysis
- National Certification Standard



Funding and Critical Dates



FINANCIAL ASSISTANCE
FUNDING OPPORTUNITY ANNOUNCEMENT

U.S. Department of Energy
Golden Field Office

Recovery Act – Geothermal Technologies Program:
Ground Source Heat Pumps

Funding Opportunity Announcement Number: DE-FOA-0000116
Announcement Type: Initial
CFDA Number: 81.087

Issue Date: 06/02/2009
Application Due Date: 08/06/2009, 11:59 PM Eastern Time

NOTE: Questions regarding the content of this announcement must be submitted through FedConnect. Applicants must be registered in FedConnect to submit or view Questions.

Funding:

- $50M in Recovery Act funds
- Max funding
  - Demonstrations - $5 million
  - Data gathering & analysis - $250 thousand
  - Certification standard - $3 million

FedConnect Funding Opportunity Announcement Number:

- DE-FOA-0000116

Closing Date:

- 8/6/2009

Start registration process on FedConnect by:

- ASAP and allow for at least 21 days

GHP Deployment – Program Elements

GHP Demonstration Projects

- Innovative business/ financing approaches, enhance technology & applications
- Address market barriers

Data Gathering & Analysis

- Hard industry data to validate system performance & operation/maintenance costs
- Assist consumers in selecting GHPs in new applications

National GHP certification for GHP designers & installers

- Increase consumer confidence in GHPs
- Ensure product quality & system performance

DOE GHP Project Partners

- DOE seeks to work with a broad group of project partners and industry stakeholders
- Overcome GHP market barriers, stimulate demand, enhance delivery, consumer awareness and confidence in the technology, and generate new information requires a variety of expertise
- Project teams are encouraged

Innovative Demo Projects

- Not smaller than 50 tons of heating and/or cooling
- Must incorporate “innovative” methods to overcome GHP market barriers
- “Innovative” defined here as:
  - New financing approaches to overcome first cost barrier
  - New technology enhancements, system applications and designs that increase performance and reduce costs
  - A business/marketing strategy that achieves replicability

Project should include one or more types of innovation

National Certification Standard

- Develop GHP certification standard for all primary personnel involved in GHP design & installation
  - Promote industry best practices, ensure GHP performance, reliability, quality & safety
  - Increase consumer confidence in and awareness of GHPs
  - Recognized by entire GHP industry, with backing of major industry and professional organizations and the US DOE
- DOE anticipates that certification standards would remain in place, available to the public beyond the project period
- Proposals to be rated on clarity, completeness and approach for developing broad stakeholder recognition within project budget and timetables

Data Gathering & Analysis

- Increase consumer GHP knowledge and confidence
- Share best practices and seek new approaches to move the GHP industry forward, from niche to mainstream
  - Gather hard, comparable data related to GHP installation, operations and maintenance costs, performance, and installation techniques
  - Develop commercial quality models/modeling tools for loop design/installation and design simulation
  - Develop selection tools that assist consumers to determine system costs, paybacks and feasibility
  - Evaluate innovative business and financing approaches, utility programs and incentives

Merit Review Criteria for Demos

Innovativeness, Feasibility and Cost Effectiveness Weight: 40%

- Adequacy and completeness of the project description including the engineering design and financing approach
- Level of technical innovation in terms of the utilization of new system designs or component technologies that enhance system performance and/or life-cycle cost effectiveness
- Level of innovation of the business or financial model to: 1) address existing market barriers including high GHP installation costs; 2) deploy GHP systems on a large scale; 3) create an impact on GHP market demand; and 4) provide the ability for industry to deliver systems competitively and/or cost effectively
- Completeness of project economic analysis including an assessment of potential jobs created, cost/benefit analysis, life cycle cost, and payback through avoided environmental emissions and electricity consumption
- Likelihood of transferring and replicating project approach and results

Merit Review Criteria for Demos

Project Management Approach — Weight: 40%

- Soundness of the project management concept with respect to proposed tasks and organizational structure to achieve project objectives
- Likelihood of achieving project objectives through realistic milestones and logical task structure and reasonableness of the schedule and milestones including Gantt Chart
- Adequacy, appropriateness, and reasonableness of the proposed budget to complete the project
- Extent of the characterization, planning, and regulatory/environmental permitting of the target site including status/evidence of permits

Roles, Responsibilities and Capabilities — Weight: 20%

- Qualifications, capabilities, credentials, and experience of the project team to complete the hardware demonstration project
- Level of commitment as evidenced by letter(s) of commitment from all project stakeholders, including financial partners and/or sources of project capital; engineering and architectural firms; GHP designers and installers; and HVAC, plumbing, electrical, and construction contractors
- Adequacy of plan to provide non-proprietary data to the National Geothermal Data System

Merit Review Criteria Data Gathering and Certification

Project Description — Weight: 40%

- Clarity and completeness of the description of each activity necessary to complete the research paper or develop a national GHP certification standard
- Level of technical quality, clarity, and completeness of the application
- Feasibility of the proposed work

Project Management Plan — Weight: 35%

- Soundness of the project management concept with respect to proposed tasks and organizational structure to achieve project objectives
- Likelihood of achieving project objectives through realistic milestones and logical task structure and reasonableness of the schedule and milestones including Gantt Chart
- Adequacy, appropriateness, and reasonableness of the proposed budget to complete the project

Merit Review Criteria Data Gathering and Certification

Roles, Responsibilities, and Capabilities — Weight: 25%

- Qualifications, capabilities, credentials, and experience of the principal investigator(s) and other members of the project team
- Level of Commitment as evidenced by letter(s) of commitment from all project partners
- Adequacy of facilities and resources to accommodate the proposed project
- Adequacy of plan to provide non-proprietary data to the National Geothermal Data System

Other Selection Factors for all GHP areas

- Technological diversity of projects
- Proposed cost share above the minimum level required
- Projects in high electricity cost regions and rural or remote areas, or projects proposed by Indian Tribes/Tribal Energy Resource Development Organizations or Groups
- The extent the applications promote and enhance the objectives of the American Recovery and Reinvestment Act of 2009, P.L. 111-5, especially job creation, and/or preservation and economic recovery in an expeditious manner

Enhanced Geothermal Systems Component Research and Development/Analysis

Objective:

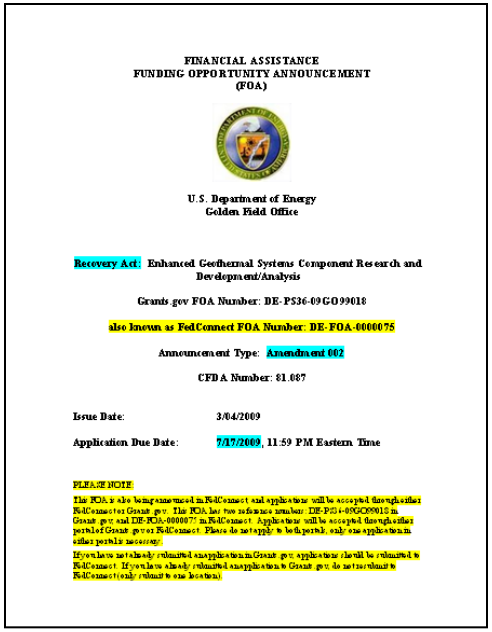
- Develop innovative technology for cost-effective creation, management, and utilization of EGS

Deployment Strategy:

- Select up to thirty R&D or Analysis projects

Borehole televiewer for geothermal

Funding and Critical Dates



FINANCIAL ASSISTANCE
FUNDING OPPORTUNITY ANNOUNCEMENT
(FOA)

U.S. Department of Energy
Golden Field Office

Recovery Act: Enhanced Geothermal Systems Component Research and Development/Analysis

Grants.gov FOA Number: DE-PS36-09GO99018

also known as FedConnect FOA Number: DE-FOA-0000075

Announcement Type: Amendment 002

CFDA Number: 81.087

Issue Date: 3/04/2009

Application Due Date: 7/17/2009, 11:59 PM Eastern Time

PLEASE NOTE:

This FOA is also being announced in FedConnect and applications will be accepted through either FedConnect or Grants.gov. The FOA has two reference numbers: DE-PS36-09GO99018 in Grants.gov and DE-FOA-0000075 in FedConnect. Applications will be accepted through either portal of Grants.gov or FedConnect. Please do not apply to both portals, only one application in either portals is necessary.

If you have not already submitted an application in Grants.gov, applications should be submitted to FedConnect. If you have already submitted an application to Grants.gov do not resubmit to FedConnect (only submit to one location).

Funding:

- $56M in Recovery Act funds
- Max funding
  - $5,000,000 for Topics 1-6, and 20-22
  - $1,500,000 for Topics 7-12, and 23
  - $3,000,000 for Topics 13-19

FedConnect Funding Opportunity Announcement Number:

- DE-FOA-0000075

Closing Date:

- 7/17/2009

Start registration process on FedConnect by:

- ASAP and allow for at least 21 days

Project Description

DOE's intent is to develop advanced technology in 22 technical topics and one analysis topic (23 total topics)

1. Air Cooling
2. Drilling Systems
3. High Temperature Downhole Tools
4. High-Temperature-High-Volume Lifting
5. High-Pressure-High-Volume Pumping
6. Zonal Isolation
7. Integrated Chemical, Thermal, Mechanical and Hydrological Modeling
8. Image Fluid Flow
9. Induced Seismicity
10. Geophysical Exploration Technologies
11. Stimulation Prediction Models
12. Geothermal Analysis
13. Smart Tracers
14. Supercritical Carbon Dioxide/Reservoir Rock Chemical Interactions
15. Temporary Sealing of Fractures
16. Tracers and Tracer Interpretation
17. Working Fluids for Binary Power Plants
18. Mineral Recovery from Geothermal Fluids
19. High Temperature Cements
20. Directional Drilling Systems
21. High Temperature Downhole MWD Tools for Directional Drilling
22. Well Stimulation Technologies for Highly Deviated Wells
23. Fracture Characterization Technologies

Initial Review Criteria

- Prior to a comprehensive merit evaluation, DOE will perform an initial review to determine that:
  - The applicant is eligible for an award
  - The information required by the announcement has been submitted
  - All mandatory requirements are satisfied; and
  - The proposed project is responsive to the objectives of the Funding Opportunity Announcement

If an application fails to meet these requirements, it may be deemed non-responsive and eliminated from full Merit Review

Merit Review Criteria

Technical Merit and Innovation **Weight: 30%**

- Applicability of the project to the GTP Multi-Year Research, Development, and Demonstration (MYRDD) plan
- Clearly states how the project supports the topic area target specifications (where applicable)
- Level of technical innovation of the proposed technology over the current state of the art
- Credibility as supported by engineering calculations and existing quantitative data
- **For Topic Area 12 (Geothermal Analysis) only**: Likelihood of identifying the possible economic, environmental, and employment impacts, barriers, and opportunities for geothermal systems with an emphasis on enhanced geothermal systems

Merit Review Criteria

Project Research Plan — Weight: 30%

- Adequacy and clarity of statement of project objectives (SOPO) including proposed go/no-go decision points at the end of each phase, tasks, responsibilities and goals
- Likelihood of achieving tasks within the SOPO through realistic milestones and logical task structure
- Adequacy and reasonableness of budget, spend plan, and schedule (Gantt Chart) for the proposed project

Project Team, Equipment, and Facilities — Weight: 20%

- Capabilities of applicant and participants to comprehensively address all aspects of the proposed project
- Adequacy of equipment, laboratory and demonstration facilities, analytic support, and other necessary resources (i.e., field testing, if applicable.) for performing the proposed project
- Level of participation by project participants as evidenced by letter(s) of commitment
- Adequacy of plan to validate/test the proposed technology

Merit Review Criteria

Technology Transfer/Commercialization **Weight: 20%**

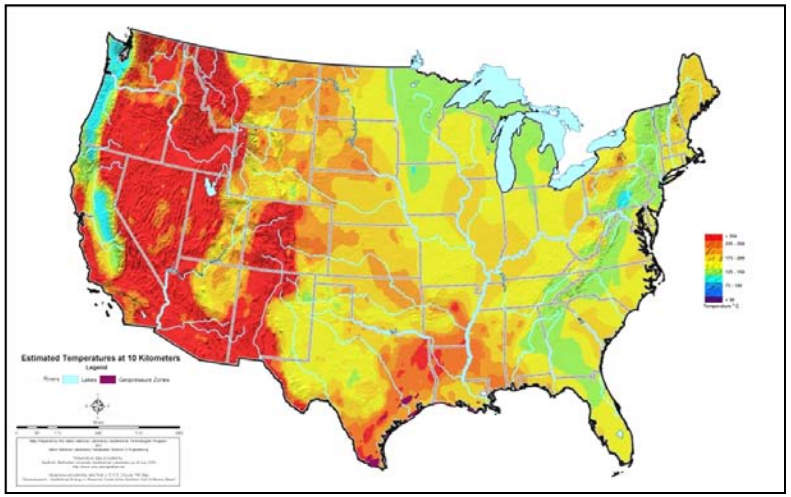
- Adequacy of plan to successfully introduce technology into the geothermal industry/marketplace, where appropriate (i.e., patenting, licensing, and business plan that will lead to commercialization success)
- Comprehensiveness and timeliness of information sharing (i.e., peer-reviewed publications; web-based information sharing, attendance/submission of papers at annual geothermal conferences/workshops; and technical presentations)
- **For Topic Area 12 (Geothermal Analysis) only**: Degree to which the final deliverable/analysis results will be communicated to geothermal stakeholders, policy makers, and other interested parties to aid in decision-making

Other Selection Factors

- Technological diversity of projects
- Proposed cost share above the minimum level required
- Degree of student (undergraduate through post-doctoral) involvement from academic institutions, and integration of research into course curriculum
- Selection of applications which promote and enhance the objectives of the American Recovery and Reinvestment Act of 2009, P.L. 111-5, especially job creation, and/or preservation and economic recovery in an expeditious manner

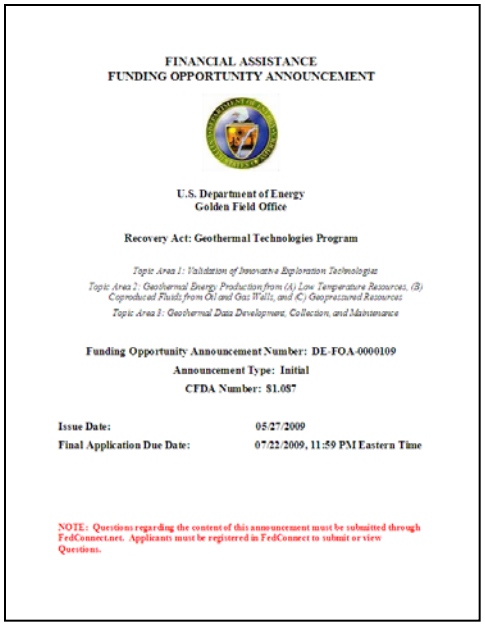
Geothermal Data Development, Collection and Maintenance

Objective: To develop, collect, and maintain geothermal data for all 50 states for the NGDS in order to make geothermal data available to the public and reduce the risk associated with the initial stages of geothermal project development



The Geothermal Data Consortium, led by Boise State, has been selected to design and implement the NGDS

Funding and Critical Dates



FINANCIAL ASSISTANCE
FUNDING OPPORTUNITY ANNOUNCEMENT

U.S. Department of Energy
Golden Field Office

Recovery Act: Geothermal Technologies Program

Topic Area 1: Validation of Innovative Exploration Technologies
Topic Area 2: Geothermal Energy Production from (A) Low Temperature Resources, (B) Coproduced Fluids from Oil and Gas Wells, and (C) Geopressured Resources
Topic Area 3: Geothermal Data Development, Collection, and Maintenance

Funding Opportunity Announcement Number: DE-FOA-0000109
Announcement Type: Initial
CFDA Number: 81.087

Issue Date:	05/27/2009
Final Application Due Date:	07/22/2009, 11:59 PM Eastern Time

NOTE: Questions regarding the content of this announcement must be submitted through FedConnect.net. Applicants must be registered in FedConnect to submit or view Questions.

Funding:

- $20M in Recovery Act funds
- Max funding $20 million

FedConnect Funding Opportunity Announcement Number:

- DE-FOA-0000109

Closing Date:

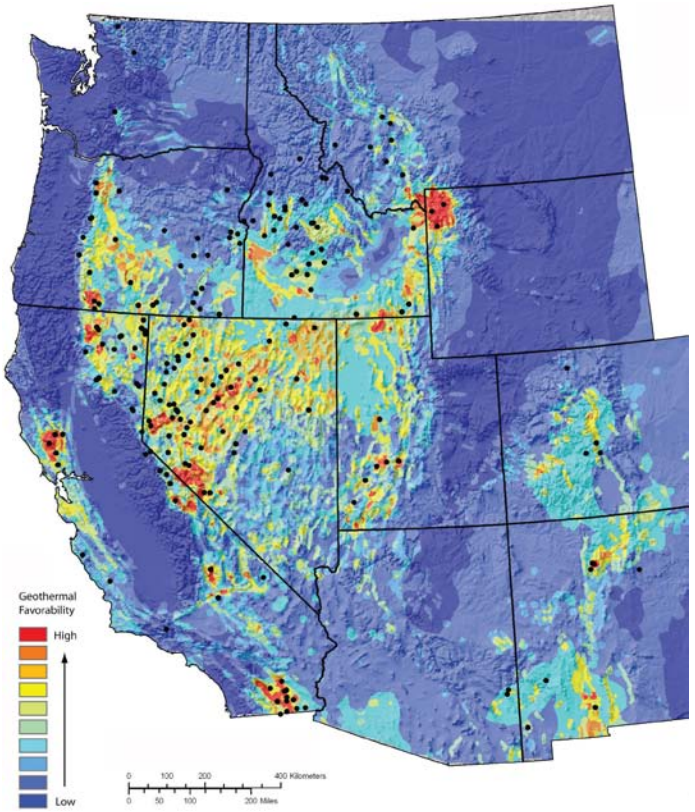
- 7/22/2009

Start registration process on FedConnect by:

- ASAP and allow for at least 21 days

Geothermal Data Development, Collection and Maintenance

- This funding will populate critical geothermal site attribute information
- Data can pertain to all types of geothermal resources such as hydrothermal, geopressured, Enhanced Geothermal Systems, geothermal fluids coproduced with oil and/or gas, etc.



Project Requirements

Teaming is **strongly encouraged:**

- Applications for this Topic Area may come from either one nation-wide team or distributed regional teams
- The team(s) will assemble data from state geologists, university professors and graduate students, as well as National Laboratories to update and maintain the NGDS
- Selected applicants will be expected to collaborate with the United States Geological Survey (USGS) on geothermal resource assessment and resource classification system activities

Project Requirements

- Where possible, Applicants should provide links and/or virtual portals to the additional data rather than providing hard data
- Applicants should preferentially preserve data that is **deteriorating rapidly**
- Collected/developed data must fit the prescribed **metadata format of the NGDS**

Project Descriptions and Phases

Phase I – Data Retrieval, Collection, Development, and Quality Analysis

- Data collected and provided to the NGDS
- Efforts made to preferentially preserve data that is deteriorating rapidly, and to collect/develop data from the small scale to the larger scale
- Quality and integrity analysis

Phase II - Transfer and Validation of Information to Data System

- Data uploaded to the NGDS
- System testing

Phase III – Execution of Data Maintenance Sustainability Plan

- Data maintained and updated as necessary
- Applicants should also include a process to publicize the addition of the new data

Merit Review Criteria

Project Description **Weight: 35%**

- Clarity and completeness of the description of each activity necessary to complete the project
- Adequacy of data collection and quality verification plan including description of the condition/state of existing non-digitized data that may be deteriorating (cores, film, paper, non-digitized files, etc.)
- Level of technical quality, clarity, and completeness of the application including the amount of additional data that will be made available online
- Feasibility of the proposed work

Merit Review Criteria

Project Management Plan — Weight: 35%

- Soundness of the data collection and maintenance plans with respect to proposed tasks and organizational structure to achieve project objectives (including plan to collaborate with the NGDS team and USGS)
- Likelihood of achieving project objectives through realistic milestones and/or deliverables and logical task structure and reasonableness of the schedule and milestones including Gantt Chart
- Adequacy, appropriateness, and reasonableness of the proposed budget to complete the proposed project

Roles, Responsibilities, and Capabilities — Weight: 30%

- Qualifications, capabilities, credentials, and experience of the principal investigator and other members of the project team
- Level of Commitment as evidenced by letter(s) of commitment from all project partners
- Adequacy of facilities and resources to accommodate the proposed project

Other Selection Factors

- Geographic diversity of source data (by state or region)
- Degree of student involvement from academic institutions
- Diversity of the applicant's teaming arrangement
- Proposed cost share
- Selection of applications which promote and enhance the objectives of the American Recovery and Reinvestment Act of 2009, P.L. 111-5, especially job creation, and/or preservation and economic recovery in an expeditious manner

The DOE Geothermal Technologies Program thanks you for your interest

The remainder of the webcast is devoted to Q&A. We invite you to submit questions now or through FedConnect.net

This presentation, in its entirety, will be available on the GTP website:

www.eere.energy.gov/geothermal