

Geothermal Play Fairway Analysis

FOA Webinar
DE-FOA-0000841
02/06/2014

Agenda

- 1) Registration Requirements
- 2) Award Information
- 3) FOA Information
- 4) Concept Paper
- 5) Full Application
- 6) Review Process
- 7) Technical Background on Play Fairway Analysis
- 8) Q&A

Disclaimer

- All Applicants are strongly encouraged to carefully read the Funding Opportunity Announcement **DE-FOA-0000841 (“FOA”)** and adhere to the stated submission requirements. The content included in this presentation is intended to summarize the contents of FOA. If there are any inconsistencies between the content of this presentation and the information presented in the FOA please contact playfairway@go.doe.gov. In the event there is an inconsistency, the Funding Opportunity Announcement is the controlling document and applicants should rely on the FOA language.

DE-FOA0000841

Geothermal Play Fairway Analysis

Anticipated Schedule:

| | |
|--|---|
| FOA Issue Date: | Friday 01/24/2014 |
| FOA Informational Webinar: | Thursday 02/06/2014 |
| Submission Deadline for Concept Papers: | Friday 02/21/2014 11:59PM EST |
| Submission Deadline for Full Applications: | Friday 04/11/2014 11:59PM EST |
| Submission Deadline for Replies to Reviewer Comments: | Wednesday 05/14/2014 11:59PM EST |
| Expected Date for EERE Selection Notifications: | Thursday 07/31/2014 |
| Expected Timeframe for Award Negotiations: | Tuesday 09/30/2014 |

Registration Requirements

- To apply to this FOA, Applicants must register with and submit full 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 in order 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 |

Means of Submission

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

Award Information

| | Phase 1 | Phase 2 | Phase 3 |
|--|---|-------------------------|-------------------------|
| Anticipated Total Amount to be Awarded* | \$3,000,000-\$4,000,000 | \$3,000,000-\$5,000,000 | \$3,000,000-\$5,000,000 |
| Anticipated Average Award Amount | \$100,000 to \$500,000 | \$1,000,000 | \$1,000,000 |
| Types of Funding Agreements | Cooperative Agreements, Grants, Technology Investment Agreements, Work Authorizations, and Interagency Agreements | | |
| Period of Performance | 12 months | 12-24 months | 12-24 months |

*Any future funding is contingent upon the availability of funds appropriated by Congress for the purpose of this program

Statement of Substantial Involvement

Substantial involvement includes, but is not limited to the following:

- 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. To this end, the technology office will utilize a Technical Monitoring Team (TMT) composed of geothermal experts to provide periodic support in evaluating, reviewing, and guiding the project.

Statement of Substantial Involvement - Continued

- EERE may intervene in the conduct or performance of work in this project 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 the Go/No Go decision points or the competitive downselect reviews.
- EERE participates in major project decision-making processes.

Multiple Applications

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

Eligibility Requirements

Eligible applicants for this FOA include:

1. Individuals
2. Domestic Entities
3. Foreign Entities
 - If a foreign entity applies for funding as a Prime Recipient, it must designate in the Full Application a subsidiary or affiliate incorporated (or otherwise formed) under the laws of a State or territory of the United States to be the Prime Recipient.
4. Incorporated Consortia
5. Unincorporated Consortia

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

Prime Recipient Cost Sharing Requirements

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

Applicants who believe their project qualifies for the reduced recipient cost share must be able to provide verification that the above requirements are satisfied.

Allowable Cost Share

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

| Entity | Cost Principles |
|---|-----------------|
| Educational Institutions | 2 CFR Part 220 |
| State, Local, and Indian Tribal Governments | 2 CFR Part 225 |
| Non-profit Organizations | 2 CFR Part 230 |
| For-profit Organizations | FAR Part 31 |

Allowable Cost Share

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

Unallowable Cost Share

- The Prime Recipient may not use the following sources to meet its cost share obligations including, but not limited to:
 - Revenues or royalties from the prospective operation of an activity beyond the project period
 - Proceeds from the prospective sale of an asset of an activity
 - Federal funding or property
 - Expenditures reimbursed under a separate Federal Technology Office
 - Independent research and development (IR&D) funds
 - The same cash or in-kind contributions for more than one project or program

Cost Share Contributions

- Contributions must be:
 - Specified in the project budget
 - Verifiable from the Prime Recipient's records
 - Necessary and reasonable for proper and efficient accomplishment of the project
- Every cost share contribution must be reviewed and approved in advance by the Contracting Officer and incorporated into the project budget before the expenditures are incurred

Cost Share Payment

- Prime Recipients must provide documentation of the cost share contribution, incrementally over the life of the award
- The cumulative cost share percentage provided on each invoice must reflect, at a minimum, the cost sharing percentage negotiated

Cost Share Payment

- In limited circumstances, the Prime Recipient may submit a waiver request to meet its cost share requirements on a less frequent basis, such as monthly or quarterly
- Such waiver requests must be sent by email to the Contracting Officer during award negotiations and include:
 - (1) A detailed justification for the request;
 - (2) A proposed schedule of payments, including amounts and dates;
 - (3) A written commitment to meet that schedule; and
 - (4) Such evidence as necessary to demonstrate that the Prime Recipient has complied with its cost share obligations to date.
- The Contracting Officer must approve all such requests before they may go into effect

Concept Papers

- Applicants must submit a compliant Concept Paper by **02/21/2014** to be eligible to submit a Full Application
 - Concept Papers are deemed compliant if the Applicant successfully uploaded all required documents and clicked the “Submit” button in EERE Exchange by the deadline stated in the FOA
- See [Section IV.C](#) of the FOA for information on the content requirements for Concept Papers

Concept Paper Review

- Each eligible Concept Paper will be reviewed based on the criteria in [Section V.A.1.](#) of the FOA
- Applicants will be notified of an Encourage/Discourage decision, and review comments on their Concept Paper will be available in EERE Exchange
 - Applicants will be provided approximately 30 days to prepare a Full Application
 - An Applicant who receives a “discouraged” notification may still submit a Full Application
 - By **discouraging** the submission of a Full Application, EERE intends to convey its lack of programmatic interest in the proposed project

Full Applications

- Applicants must submit a Full Application by [04/11/2014](#)
- Full Applications are deemed eligible if:
 - The Applicant is an eligible entity [FOA, Section III.A](#);
 - The Applicant submitted an eligible Concept Paper;
 - The Cost Share requirement is satisfied [FOA, Section III.B](#);
 - The Full Application is compliant [FOA, Section III.C](#); and
 - The proposed project is responsive to the FOA [FOA, Section III.D](#).

Merit Review and Selection Process - Overview

- The evaluation and selection 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
- The Selection Official considers the recommendations of the Federal Consensus Board, along with other considerations such as program policy factors and available funding, to determine selections
- See [Section V.A.2](#) of the FOA for information on the technical review criteria for Full Applications

Merit Review and Selection Process - Overview

- Pre-Selection Clarifications
 - Used solely for the purposes of clarifying the application, and will be limited to information already provided in the application
 - May occur before, during, or after the merit review evaluation process

Replies to Reviewer Comments

- Applicants will have an opportunity to review the comments from Independent Reviewers and provide a Reply to Reviewer Comments.
 - Reply limited to 3 pages
 - Applicants will have approximately 2 business days to submit the Reply
 - Applicants are not required to submit a Reply
- Please see [FOA Sections IV.F. and V.A.3](#) for additional information regarding Replies to Reviewer Comments

Selection Factors

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

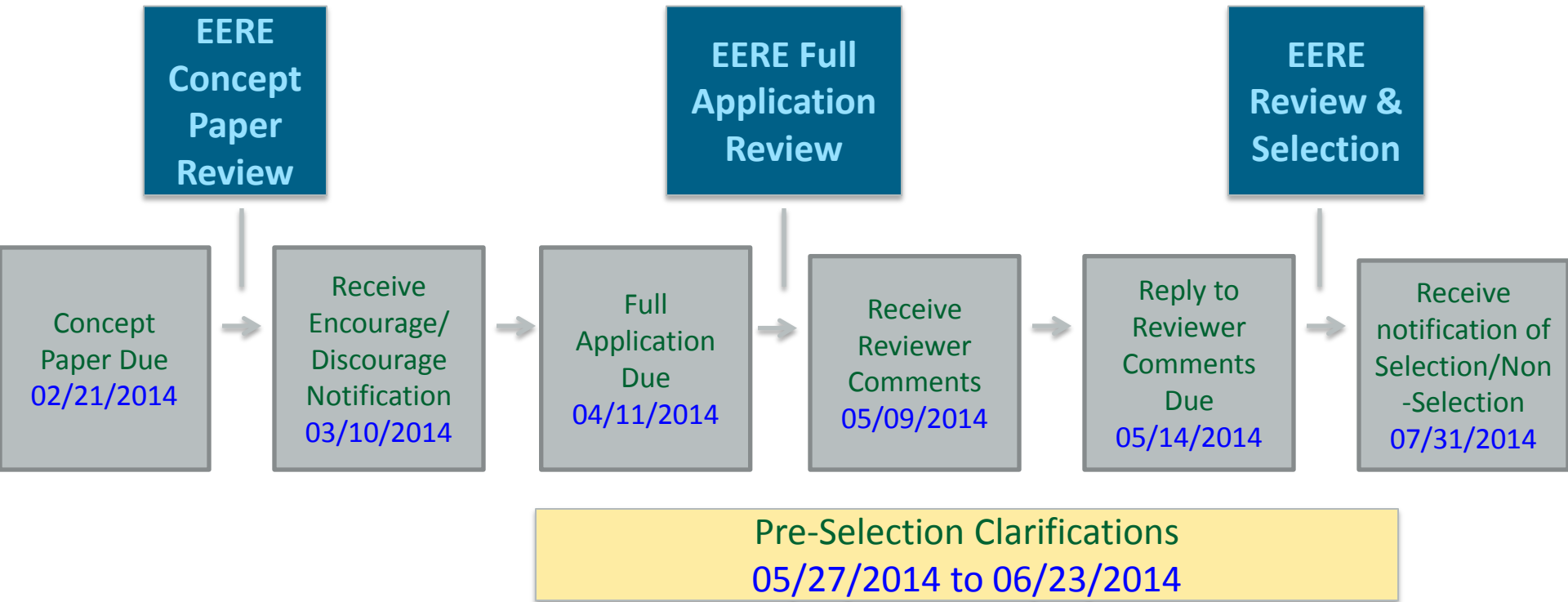
Merit Review Criteria

- **Criterion 1: Technical Merit, Innovation, and Impact (50%)**
- **Criterion 2: Project Research and Commercialization Plan (30%)**
- **Criterion 3: Team and Resources (20%)**

Program Policy Factors

- The Selection Official may consider the following program policy factors in determining which Full Applications to select for award negotiations:
 - The degree to which the proposed project, including proposed cost share, optimizes the use of available EERE funding to achieve programmatic objectives
 - The level of industry involvement and demonstrated ability to commercialize energy or related technologies
 - Technical, market, organizational, and environmental risks associated with the project
 - Whether the proposed project is likely to lead to increased employment and manufacturing in the United States
 - Whether the proposed project will accelerate transformational technological advances in areas that industry by itself is not likely to undertake because of technical and financial uncertainty
 - The degree to which the proposed project directly addresses EERE's statutory mission and strategic goals
 - The degree to which the proposed project will accelerate the development of geothermal exploration in under-explored regions

FOA Review Timeline



EERE anticipates making awards by 9/30/2014

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

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 cancelation of further award negotiations and rescission of the Selection

Play Fairway Analysis

The concept of play fairway analysis was developed in the petroleum industry in response to a need to:

- Rapidly and accurately identify new areas that have the greatest potential for adding significant new reserves to a company's portfolio
- 'Sell' the need to invest in further exploration of those areas to company management and/or investors

Play Fairway Analysis

- A 'play fairway' is the area in a basin or region where examples of an individual type of resource concentration actually occur and/or are projected to exist based on the geologic characteristics of the basin and of the characteristics of the concentration.
- Play fairway analysis is generally conducted during the early phases of resource exploration in order to highlight areas where more detailed exploration would be productive.

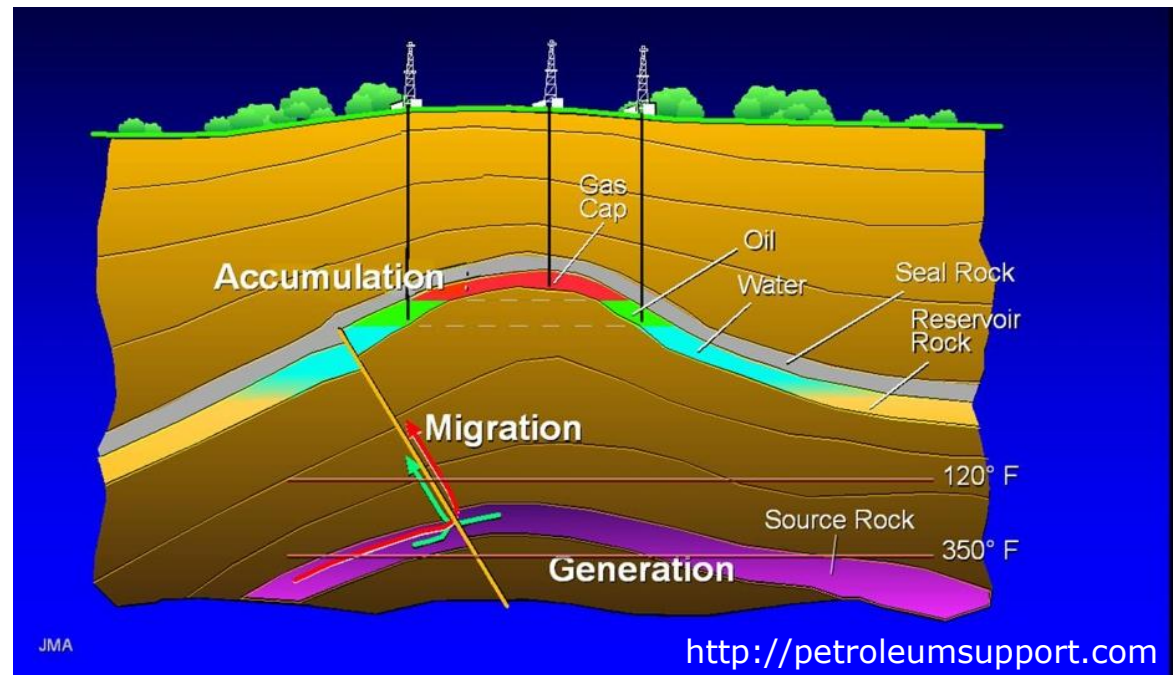
Focus is on the geologic conditions

For a resource concentration to exist, it has to have the coincidence of geologic factors.

A petroleum concentration, for example, has the following geologic elements:

1. source
2. reservoir
3. seal
4. trap
5. generation and migration

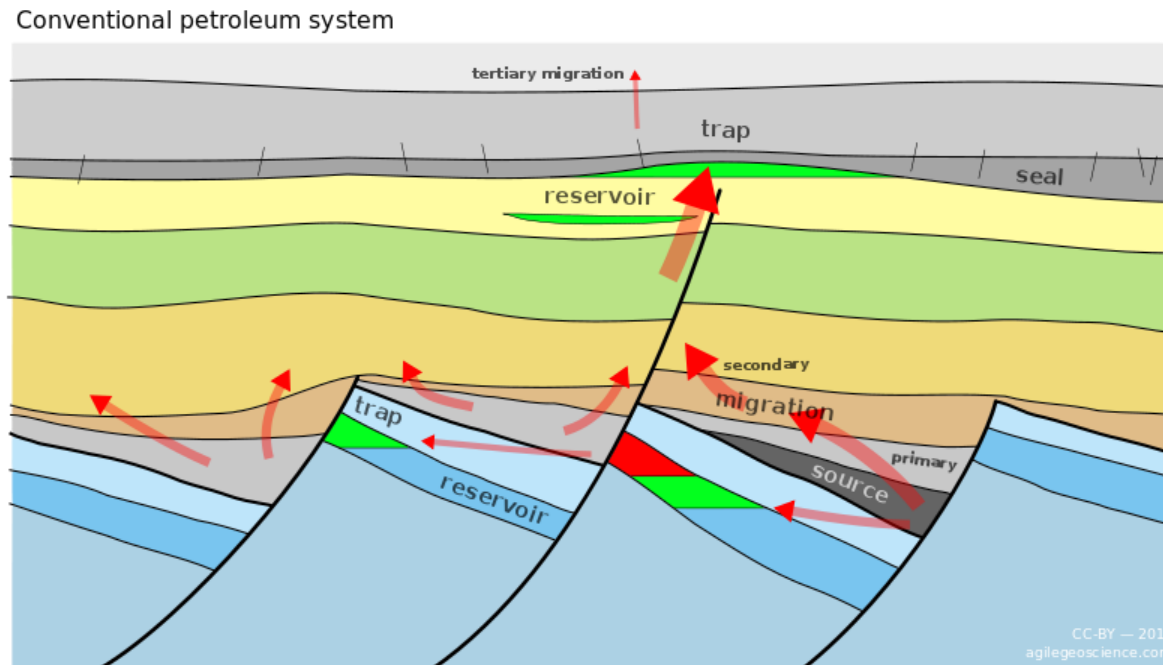
Note that in this context, there is no consideration of recoverability or engineering feasibility, just whether or not there is a concentration of the resource.



What is a 'play?'

A combination of geologic factors that leads to the concentration of a desired resource

Can be based on the characteristics of a known accumulation or on a conceptual model or on a combination of the two.



http://subsurfwiki.org/wiki/Petroleum_system

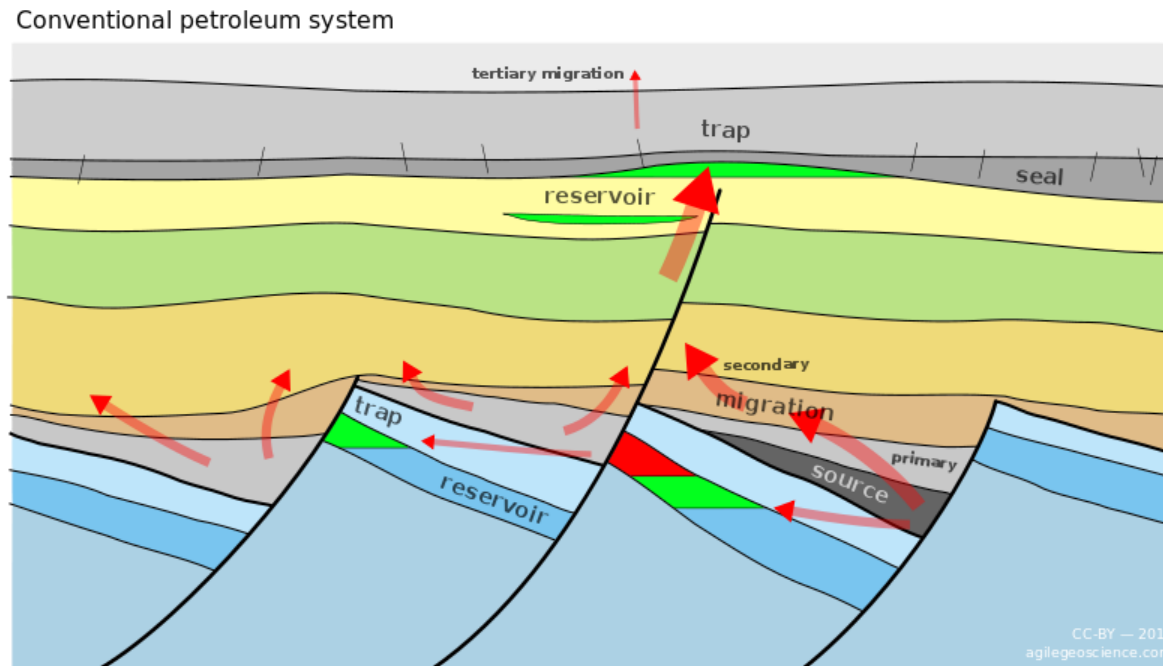
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Play 'Risk'

Note that each play may have different several sources of geologic geologic 'risks' associated with it.

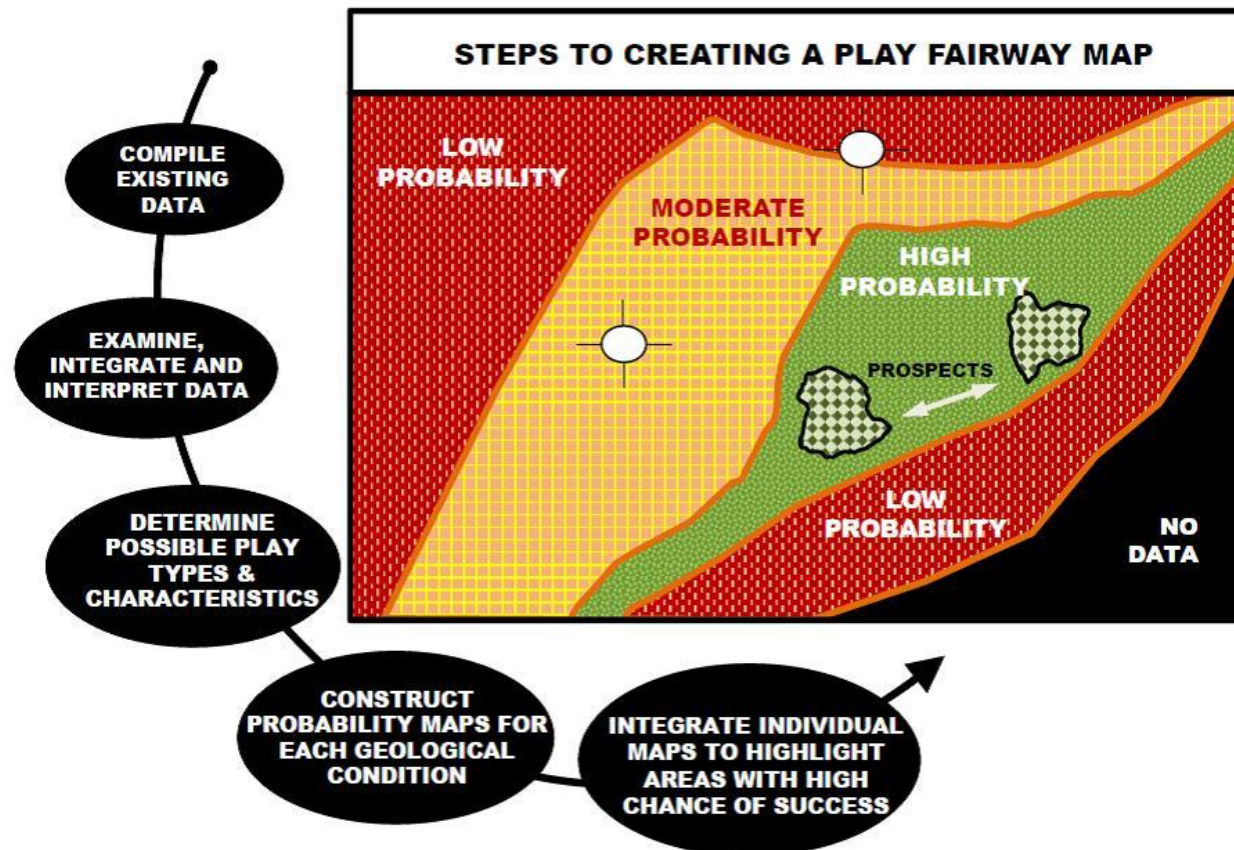
- What is needed to make each play 'work'?
- What is the natural geologic variability in each contributory factor?
- How confident are you that those conditions exist in the area of interest?



http://subsurfwiki.org/wiki/Petroleum_system

Identifying the play fairway

The Goal: To identify the locations in the area of study that have the highest probability of containing the geologic factors needed for this particular play



Identifying the play fairway

The Process:

1. Compilation of existing relevant geologic and geophysical data, including but not limited to:

- Surface and subsurface geologic
- Geophysical data
- Remote sensing data
- Geochemical data

2. Integration and interpretation of the data. This step may include modeling to project the data and interpretation into parts of the basin that is poorly sampled/explored.

Identifying the play fairway

3. Determination of the possible play types within the particular region and the necessary conditions required for each play type to occur.
4. Based on the data and on the play type, a probability map is constructed for each geologic factor that needs to exist for that play type. This step can include stochastic modeling of the natural variability of each geologic factor
5. These individual probability maps are then used to generate a composite probability map. This map should summarize the probability that a play exists given a specific set of causative factors as well as a quantitative measure of the likelihood of potential failure vs. size of the potential reward.

GTO is interested in projects that:

- Focus on under or unexplored regions
- Are at a basin or regional scale
- Consider a wide range of possible geothermal resources, including traditional hydrothermal, blind hydrothermal, EGS, and low-temperature geothermal resources
- Apply innovative analysis methods to extract new value from existing public and/or private data.
- Develop methodologies that quantitatively couple multiple data types and incorporate a wide range of geologic and geophysical data in order to evaluate the risk of potential failure vs. size of the potential reward.
- If an area looks prospective, will develop a clear plan to further characterize the geothermal resource.

Applications Specifically Not of Interest:

EERE performs a preliminary eligibility review of Full Applications. Applications that fall outside the parameters specified in Section I.B of the FOA are deemed non-responsive. This includes but is not limited to:

- Applications for projects that begin with field collection of new data, instead of analysis of existing datasets. Proposals for Phase 1 should not include new field work.
- Applications that propose work inside, or are extensions of, already-developed geothermal fields.
- Applications for proposed technologies that are not based on sound scientific principles (e.g., violates the law of thermodynamics).

Questions

- Questions about this FOA? Email playfairway@go.doe.gov
 - All Q&As related to this FOA will be posted on EERE Exchange
 - You must first select this specific FOA Number in order to view the Q&As (DE-FOA-000841)
 - EERE will attempt to respond to a question within 3 business days, unless a similar Q&A has already been posted on the website
- Problems logging into EERE Exchange or uploading and submitting application documents with EERE Exchange? Email EERE-ExchangeSupport@hq.doe.gov.
 - Include FOA name and number in subject line
- All questions asked during this presentation will be posted on EERE Exchange