

## Clean Coal Power Initiative Round 3



*Funding Opportunity  
Announcement Summary*

*Public Workshop*

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## Outline

- Part I – Funding Opportunity Announcement (FOA) Description
- Part II – Award Information
- Part III – Eligibility Information
- Part IV – Application and Submission
- Part V – Application Review Information
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- Summary



## Part I – FOA Description

### *Introduction*

- Cost shared collaboration between industry and government
- CCPI Program Goal: Accelerate readiness of advanced coal-based technologies for commercial deployment
- Specific Objective: Demonstrate advanced coal-based technologies that capture and sequester, or put to beneficial reuse, carbon dioxide emissions



CCPI 3 FOA Summary - TJM/02/1/date.tbd

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## Part I – FOA Description

### *Introduction (cont.)*

- DOE is interested in allowing CCPI Demonstration Projects to integrate with Regional Partnership Phase III Testing
- Governed by Energy Policy Act of 2005
- Emissions and Efficiency targets and milestones established by DOE Report to Congress



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## Part I – FOA Description

### *Objectives*

- Seeking advanced coal-based technologies that have progressed beyond R&D. Once demonstrated, can be easily replicated into commercial practice
- Targeting advanced coal-based systems that capture and sequester, or put to beneficial reuse, carbon dioxide emissions – with potential to achieve EPACT 2005 performance levels



## Part I – FOA Description

### *Objectives (cont.)*

- DOE's goals are to demonstrate technologies
  - At commercial scale in a commercial setting – at least 50% plant carbon emissions must be captured and sequestered or put to beneficial use
  - Make progress toward achieving 90% capture at COE increase less than 10%
- Projects must be integrated with commercial plant operation, achieving 50% carbon capture measured as a 30 day running average by 2014



## Part I – FOA Description

### *Objectives (cont.)*

- Projects may produce heat, fuels, chemicals, hydrogen, etc, in combination with electricity
- U.S. coal or coal refuse must be 75% of plant input; electricity must be 50% of output; projects must be in U.S.
- DOE is interested in demonstrating leading edge technologies, as opposed to new applications of commercial technology, or marginal improvements of existing technology



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## Part I – FOA Description

### *Technology Areas*

- Applications sought that focus on capture and storage of CO<sub>2</sub> emissions
- Priority is to capture CO<sub>2</sub> stream from a large, stationary source and sequester it in an underground geologic formation
- Carbon Capture
  - Pre-Combustion, systems for removal of CO<sub>2</sub> from synthesis gas streams
    - Applications sought for technologies to significantly reduce cost and energy requirements compared to state-of-the-art pre-combustion CO<sub>2</sub> capture systems



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## Part I – FOA Description

### *Technology Areas (cont.)*

- **Carbon Capture (cont.)**
  - Oxycombustion, combustion of coal with nearly pure oxygen with recycled flue gas, producing a stream of nearly pure CO<sub>2</sub>
    - Applications are sought for both greenfield and retrofit oxycombustion systems that significantly reduce the costs and parasitic power losses associated with oxycombustion
  - Post Combustion, removal of CO<sub>2</sub> from flue gas produced by the combustion of coal. Commercial systems based on amines
    - Applications sought for advanced technologies that significantly reduce the cost and parasitic power load of CO<sub>2</sub> capture when compared to amine systems



## Part I – FOA Description

### *Technology Areas (cont.)*

- **Carbon Sequestration, or Beneficial Reuse**
  - Enhanced Oil Recovery (EOR), injection of CO<sub>2</sub> in porous rock containing oil, currently a commercial practice
    - Applicants intending to use EOR must identify how the approach is different from conventional EOR in terms of long term retention CO<sub>2</sub> retention, and advance EOR as a commercial method for sequestration
    - Because EOR has limited applicability and is commercial in nature, this Announcement will favor saline formations, which have broad applicability



## Part I – FOA Description

### *Technology Areas (cont.)*

- **Carbon Sequestration, or Beneficial Reuse (cont.)**
  - Saline Formations, injection into saline formations which exist at depth beneath much of the U.S.
    - Applicants must address how the proposed demonstration will advance viability of saline injections as a commercial carbon sequestration method
  - Coal Seams, injection into deep underground coal seams, where CO<sub>2</sub> adsorbs onto coal
    - Applicants must address how the proposed demonstration will advance viability of coal seam injections as a commercial carbon sequestration method



## Part I – FOA Description

### *Technology Areas (cont.)*

- **Carbon Sequestration, or Beneficial Reuse (cont.)**
  - Basalt Formations, solidified lava, that can in theory convert injected CO<sub>2</sub> into mineral matter
    - Applicants must present data showing a way to overcome kinetic barriers, and must address how they plan to inject large volumes of CO<sub>2</sub>



## Part II – Award Information

- **Type of Award**
  - Cooperative Agreement
  - Model Cooperative Agreement attached to FOA
- **Estimated Funding**
  - Up to \$250 million may be available
  - No maximum or minimum award size
  - Multiple awards anticipated
- **Allocation of Funds (Energy Policy Act of 2005)**
  - At least 70% of funds for gasification and other technologies capable of producing and sequestering a concentrated stream of carbon dioxide
  - Up to 30% of funds for capture sequestration projects other than those described above



## Part II – Award Information (cont.)

- **Period of Performance**
  - Commensurate with scope and complexity of project
  - Applicants may propose a Project Definition Phase
    - Completion of Technology, Cost, and Schedule Baseline; Financing; and NEPA
  - DOE shall establish a reasonable period to complete construction or demonstration
  - Recipient shall agree not to request an extension for such period
  - The Secretary of Energy may grant an extension at his/her discretion, which shall not be longer than 4 years
    - Reference EPACT Title IV, Subtitle A, Section 402(f)



## Part III – Eligibility Information

- **Eligible Applicants**

- All types of entities are eligible to apply, except other Federal Agencies, FFRDC Contractors and certain non-profits (engaged in lobbying)

- **Recipient Cost Sharing**

- Must be at least 50% of total project costs, 50% of each budget period, on a dollar-for-dollar, as expended, basis



## Part III – Eligibility Information (cont.)

- **Commitment of Funds**

- For projects without a Project Definition Phase
  - Funds for entire project must be committed at award
- For projects with a Project Definition Phase (PDP)
  - Funds for PDP must be committed at award
  - Funds for the remainder of project must be committed at end of PDP



## Part III – Eligibility Information (cont.)

- **Project Specific Development Activities**

- Development tasks undertaken at existing facilities
- Maximum value is 10% of DOE funding
  - If DOE share of total project cost is \$10 million, then \$ 1 million of PSDA costs are allowed, DOE would share the \$1 million at the established cost share ratio

- **Cost Overruns**

- DOE is not obligated to share in overruns, but may do so if funds are available
- No funds set aside for overruns
- Limited to 25% of original government contribution



## Part III – Eligibility Information (cont.)

- **Recovery of Government's Interest (Repayment)**

- Applicants must submit a plan for repayment of DOE's contribution to the project
- Plans must be realistic and reasonable for achieving repayment of 100% of DOE's contribution
- Repayment may come from
  - Project revenues
  - Sales and licensing of the demonstration technology
  - Other sources of funds – certainty is the key
- 20 year repayment period
- Model Repayment Plan attached to FOA
- The IRS now considers the DOE funds to be taxable based on a recent review of their policy



## **Part III – Eligibility Information**

### *Mandatory Eligibility Requirements*

- 50% of energy output must be electricity
- Facility must be in the U.S.
- Must use 75% coal (or waste coal) mined in U.S.
- 50% of CO<sub>2</sub> emissions must be captured and sequestered (or reused)
- Applicant must cost share 50% of total project and each budget period
- Applicant must identify proposed site and any alternative sites
- Applicant must identify all project team members and their roles
- Applicant must submit appropriate repayment plan
- Application must be submitted by a responsible official
- Application must be consistent with the objectives of the Announcement
- Application must contain sufficient technical, cost, management, financial, budget, commercialization, and repayment information to allow a comprehensive evaluation
- Application must contain a proposed schedule for completion of the construction and demonstration phases of the project



## **Part IV – Application and Submission Information**

- **Content and Form of Application**
  - SF424
  - Project Narrative File, Sections 1-8
  - Appendices A-G
  - Project Summary/Abstract File
  - Resume File
  - SF424A – Budget Information
  - Budget Justification and Sub-award Budget Files
  - NNSA and FFRDC Contractor Files, if necessary
  - Environmental Questionnaire (s)
  - Financial Management System
  - SF-LLL Disclosure of Lobbying Activities, if applicable



## Part IV – Application and Submission

### *Project Narrative File*

- 1. Contents and Definitions
- 2. Summary and Introduction
- 3. Technology Merit, Technical Plan, and Site Suitability
  - Description of proposed concept and technology, technical plan for achieve project goals
  - Assessment of project risk, approach to managing risk



## Part IV – Application and Submission

### *Project Narrative File (cont.)*

- 3. Technology Merit, Technical Plan, and Site Suitability (cont.)
  - Information demonstrating ability to achieve Objectives
    - Data supporting carbon capture efficiency, ability to achieve 90% capture now or following development
    - Data supporting impact on COE, ability to achieve COE increase less than 10% now or following development
    - Information supporting ability of project to achieve 50% carbon capture or reuse, as a 30 day running average by 2014



## **Part IV – Application and Submission**

### *Project Narrative File (cont.)*

- **3. Technology Merit, Technical Plan, and Site Suitability (cont.)**
  - Approach to sequestration, identifying purchaser of CO<sub>2</sub>, or other method demonstrating sequestration or reuse
  - Advances of proposed technology over commercial
  - Readiness of technology for demonstration at the proposed scale
  - Description of baseline testing, project testing, and performance monitoring
  - Merit of the proposed project for demonstrating the commercial viability of the proposed technology



## **Part IV – Application and Submission**

### *Project Narrative File (cont.)*

- **3. Technology Merit, Technical Plan, and Site Suitability (cont.)**
  - Evidence site is available to the applicant
  - Information on integration of key physical or logistical elements
  - Project schedule
  - Description of proposed site and any alternatives
    - Infrastructure, environmental setting
    - Maps, documentation, etc in Appendix A



## Part IV – Application and Submission

### *Project Narrative File (cont.)*

- **4. Project Organization and Project Management Plan**
  - Project team information, identifying all skills and resources necessary to complete project
  - Signed agreements or letters committing team members in Appendix B
  - Prior corporate experience, corporate history of successful completion of similar projects
  - Knowledge, experience of Key Personnel, in Resume File “bio.pdf”
  - Organizational structure, responsibilities and authorities



## Part IV – Application and Submission

### *Project Narrative File (cont.)*

- **4. Project Organization and Project Management Plan (cont.)**
  - Project Management Plan
    - WBS to three levels
    - Statement of Project Objectives, description of work to be performed
    - Project schedule
    - Baseline Cost Plan
    - Project management system for monitoring and control of cost, scope, and schedule
    - Project Communication Protocol
    - Risk Management Plan
    - Environmental Management Plan



## Part IV – Application and Submission

### *Project Narrative File (cont.)*

- **5. Commercialization Potential**
  - Commercialization plan – approach to achieving full commercialization
  - Evidence that a demonstration would provide for commercial replication
- **6. Funding Plan**
  - Applicant must have a plan for obtaining funding for the non-DOE Share of project cost, including all sources of project funds



## Part IV – Application and Submission

### *Project Narrative File (cont.)*

- **7. Financial Business Plan**
  - Project parties, Assumptions, Financial Projections, Limited Recourse Project Financing, Contracts & Agreements, Repayment Information, Financial Commitments, Contract Bonding Practices
- **8. Repayment Plan**
  - Plan for repayment of DOE's contribution over a 20 year period
  - Revenue may come from demonstration project itself, sales and licensing of demonstration technology, or any other source of funds



## **Part IV – Application and Submission**

### *Appendices to Project Narrative*

- **A. Site Documentation**
- **B. Team Letters of Commitment and Agreements**
- **C. Project Management Plan**
- **D. Statements from Potential Buyers**
- **E. Financial Statements**
- **F. Financial Model of Project**
- **G. Financial Commitment Letters**



## **Part IV – Application and Submission**

### *Other Attachments*

- **Project Summary / Abstract File – “summary.pdf”**
- **Resume File – “bio.pdf”**
- **SF 424 A Excel Budget Information – “sf424a.xls”**
- **Budget Justification File – “budget.pdf”**
  - Examples given in “Budget Justification Guidelines.xls”
- **Subaward Budget Files – “subname.xls”**



## **Part IV – Application and Submission** *Other Attachments (cont.)*

- **FFRDC and M&O Contractors**
- **NNSA FFRDC Contractor**
- **Environmental Questionnaire – “envques.pdf”**
- **Financial Management System – “fin mgmt.pdf”**
  - Financial management system must meet 7 criteria found in 10CFR600.121(b) and .311(a)
- **SF-LLL Disclosure of Lobbying Activities**



## **Part IV – Application and Submission** *Submissions from Successful Applicants*

- **DOE will request information and enter into negotiations regarding the final content and format of information**
  - Environmental Information Volume
  - Fully detailed and properly formatted cost estimate
  - Audit data from Defense Contract Audit Agency (DCAA)
  - Updated financial information
  - Intellectual property information: limited, unlimited rights data; restricted computer software; protected data



## **Part IV – Application and Submission** *Submissions from Successful Applicants (cont.)*

- **DOE will request information and enter into negotiations regarding the final content and format of information (cont.)**
  - Fully executed host site agreement and site information
  - Repayment Agreement
  - Updated Commercialization Plan
  - Updated Risk Management Plan
  - Major subcontracts for DOE review to ensure consistency with regulations and policy



## **Anticipated CCPI 3 Schedule**

<b>October 3, 2007</b>	<b>Draft FOA Issued</b>
<b>November 1, 2007</b>	<b>Public Workshop</b>
<b>November 9, 2007</b>	<b>Public Comment Period Closes</b>
<b>November 16, 2007</b>	<b>Comments and Responses Posted</b>
<b>November 29, 2007</b>	<b>Final FOA Issued</b>
<b>April 29, 2008</b>	<b>Applications due</b>
<b>November 2008</b>	<b>Selections Announced</b>
<b>November 2009</b>	<b>Target Award Date</b>



## Part V – Application Review Information

### *Initial Review*

- Applicant meets all Eligibility Requirements in Part III
- All information required by the Announcement has been submitted
- All mandatory requirements have been satisfied
- The proposed project is responsive to the objectives of the FOA



## Part V – Application Review Information

### *Merit Review*

- Correspond to requirements defined in Project Narrative Format
- **Technical Evaluation Criteria**
  - Technical Merit, Technical Plan, and Site Suitability
  - Project Organization and Project Management Plan
  - Commercialization Potential
- **Repayment and Financial Evaluation Criteria**
  - Funding Plan
  - Financial Business Plan
  - Repayment Potential
- **Criteria are weighted**
- **Technical is more important than Repayment and Financial**



## **Part V – Application Review Information**

### *Budget Evaluation*

- Reasonableness, allowability, and allocation of the proposed cost and cost share
- Completeness and adequacy of supporting documentation for the cost estimate
- Statement of Project Objectives and proposed budget are provided in the same format by phase, task, etc
- Adequacy of the Applicant's Financial Management System
- Correspondence between the SOPO and the budget and the adequacy of the associated documentation
- Correspondence between the budget estimate and magnitude to work proposed



## **Part V – Application Review Information**

### *Environmental Evaluation*

- **Environmental Questionnaire will be evaluated to:**
  - Determine the adequacy and completeness of the information submitted
  - Assess the Applicant's awareness of requirements, including requirements for mitigating any project-related environmental risks and impacts
  - Applicant's ability to meet compliance requirements and approach to identification and resolution of issues
  - Assess potential impacts of the proposed work and their potential liabilities



## Part V – Application Review Information

### *Other Selection Factors*

- In addition to the Merit Review, other factors may be considered when making selections
- Budget Evaluation
- Environmental Evaluation
- Program Policy Factors
  - Diverse portfolio of projects in DOE's program
  - Diversity of coals
  - Applicability of technologies to a wide variety of coals
  - Geographic distribution of potential markets
  - Unique environmental, economic, or efficiency benefits
  - Mix of project that best achieves CCPI 3 objectives
  - Best value to the Government, Federal cost shares commensurate with technological risk.



## Part V – Application Review Information

### *Review and Selection Process*

- Selection
  - Projects in the best interest of DOE for achieving the objectives of this Announcement
  - Process of Merit Review followed by applying Other Selection Factors
  - May select all, none, any, or any number, or parts of applications
  - Selection is based on what is submitted, do not rely on assumed background knowledge of reviewers
- Discussions
  - DOE will enter into negotiations with selected Applicants, expected to last one year
  - Failure to sign a Cooperative Agreement within two years, negotiations will be terminated



## Part VI – Award Administration

- **Substantial Involvement**

- DOE has a substantial involvement in the decision making process under the award. See the Model Cooperative Agreement for list of DOE and Recipient Responsibilities

- **Reporting**

- Reporting is governed by the Federal Assistance Reporting Checklist and Statement of Project Objectives, which are shown in the Model Cooperative Agreement



## Part VIII – Other Information

- **Intellectual Property**

- Patent Rights, Government has certain rights to inventions conceived or first put to practice under a DOE award. Title to such inventions vest in the United States, except for nonprofits or small businesses.
- Recipient may request a waiver of rights of the United States in inventions
- DOE will negotiate limited rights data and restricted computer software
- Protected data, EPACT 2005 allows for certain data to be protected from public disclosure for a period of five years



## Part VIII – Other Information (cont.)

- **Property Management**
  - Title to all property, equipment, and supplies shall vest with the Recipient
- **National Environmental Policy Act (NEPA)**
  - DOE must comply with NEPA, project specific reviews are required
  - NEPA ensures that consideration is given to environmental factors during planning and decision making



## Summary

- DOE is currently seeking to demonstrate technologies that capture and sequester, or put to beneficial reuse, carbon emissions from coal-fired power generation facilities
- Specific objectives and requirements are provided in the Draft Funding Opportunity Announcement – Clean Coal Power Initiative Round 3
- DOE welcomes comments and questions regarding the Draft Announcement, Model Cooperative Agreement, and Model Repayment Agreement

