

# FINANCIAL ASSISTANCE FUNDING OPPORTUNITY ANNOUNCEMENT



**U.S. Department of Energy**

**National Energy Technology Laboratory**

## **Recovery Act: Clean Coal Power Initiative - Round 3**

**Funding Opportunity Number: DE-FOA-0000042\***

**\*NOTE: This Funding Opportunity Announcement (FOA) is an amendment of FOA No. DE-PS26-08NT43181. Both numbers, DE-PS26-08NT43181 and DE-FOA-0000042, are associated with the Clean Coal Power Initiative - Round 3.**

**Announcement Type: Amendment 005\*\* to the Final FOA (DE-PS26-08NT43181)**

\*\*All amendments that were issued on DE-PS26-08NT43181 prior to this amendment have been accepted and incorporated into this resulting document. Only changes associated with this current amendment, 005, are included in purple colored font.

**CFDA Number: 81.089**

**Original Issue Date: August 11, 2008**

**Amendment 005 Issue Date: June 9, 2009**

**Letter of Intent Due Date: July 24, 2009, 5:00:00 PM Eastern Time**

**Application Due Date: August 24, 2009, 8:00:00 PM Eastern Time**

**See next page for the purpose of this amendment.**

**LETTERS OF INTENT ARE REQUESTED NO LATER THAN July 24, 2009. PLEASE SEE PAGE 18 FOR DETAILS.**

Amendment 005 – The purpose of this amendment is to 1) re-open the FOA originally issued on August 11, 2008, 2) provide a second Application Due Date (closing date) of August 24, 2009 at 8:00 PM Eastern Time, and 3) make associated programmatic and administrative changes. Associated substantive changes have been made in purple colored font on pages 1-3, 6-8, 10, 13-19, 21-22, 24, 29-31, 33-37, 40-42, 44-45, and 48-49. Additionally, this amendment makes certain changes to the Model Cooperative Agreement.

Please carefully read the information contained below.

Applicants who accept selections from the previous closing date of January 20, 2009 will not be considered for selection under this re-opened Announcement.

Applicants who want to modify their submission from the January 20, 2009 closing date and submit under the August 24, 2009 closing date must submit a new application through FedConnect.

**IMPORTANT NOTICE: All Applicants, including new submissions and modified submissions, must download a new Application Package associated with FOA number DE-FOA-000042 from Grants.gov and submit through FedConnect. Applications are NOT being accepted through Grants.gov.**

## **NOTE: REGISTRATION/SUBMISSION REQUIREMENTS**

### Registration Requirements

There are several one-time actions you must complete in order to submit an application in response to this Announcement (e.g., obtain a Dun and Bradstreet Data Universal Numbering System (DUNS) number, register with the Central Contractor Registration (CCR), and register with FedConnect). Applicants who are not registered with CCR and FedConnect, should allow at least 21 days to complete these requirements. It is suggested that the process be started as soon as possible.

Applicants must obtain a DUNS number. DUNS website: <http://fedgov.dnb.com/webform>

Applicants must register with the CCR. CCR website: <http://www.ccr.gov/>

Applicants must register with FedConnect to submit their application. FedConnect website: [www.fedconnect.net](http://www.fedconnect.net)

### Questions

Questions relating to the system requirements or how an application form works must be directed to Grants.gov at 1-800-518-4726 or [support@grants.gov](mailto:support@grants.gov).

Questions regarding the content of the announcement must be submitted through the FedConnect portal. You must register with FedConnect to respond as an interested party to submit questions, and to view responses to questions. It is recommended that you register as soon after release of the FOA as possible to have the benefit of all responses. More information is available at <http://www.compusearch.com/products/fedconnect/fedconnect.asp>. DOE will try to respond to a question within 3 business days, unless a similar question and answer have already been posted on the website.

Questions pertaining to the submission of applications through FedConnect should be directed by e-mail to [support@FedConnect.net](mailto:support@FedConnect.net) or by phone to FedConnect Support at 800-899-6665.

### Application Preparation and Submission

Applicants must download the application package, application forms, and instructions from Grants.gov. Grants.gov website: <http://www.grants.gov/>  
(Additional instructions are provided in Part IV.A of this FOA.)

Applicants must submit their application through the FedConnect portal. FedConnect website: [www.fedconnect.net](http://www.fedconnect.net)  
(Additional instructions are provided in Part IV.H of this FOA.)

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    Model Cooperative Agreement      [*Model Cooperative Agreement.pdf*]

    Budget Justification Guideline    [*Budget Justification Guideline.xls*]

    Environmental Questionnaire       [*Environmental Questionnaire.doc*]

## PART I – FUNDING OPPORTUNITY DESCRIPTION

### American Recovery and Reinvestment Act of 2009 (ARRA 2009)

Projects under this FOA will be funded, in whole or in part, with funds appropriated by the American Recovery and Reinvestment Act of 2009, Pub. L. 111-5, (Recovery Act or Act). The Recovery Act's purposes are to stimulate the economy and to create and retain jobs. The Act gives preference to activities that can be started and completed expeditiously. Accordingly, special consideration will be given to projects that promote and enhance the objectives of the Act, especially job creation, preservation and economic recovery, in an expeditious manner.

Be advised that special terms and conditions may apply to projects funded by the Act relating to:

Reporting, tracking and segregation of incurred costs;

Reporting on job creation and preservation;

Publication of information on the Internet;

Access to records by Inspectors General and the Government Accountability Office;

Prohibition on use of funds for gambling establishments, aquariums, zoos, golf courses or swimming pools;

Ensuring that iron, steel and manufactured goods are produced in the United States;

Ensuring wage rates are comparable to those prevailing on projects of a similar character;

Protecting whistleblowers and requiring prompt referral of evidence of a false claim to an appropriate inspector general; and

Certification and Registration.

These special terms and conditions will be based on provisions included in Titles XV and XVI of the Act. The special terms and conditions can be found at

[http://management.energy.gov/policy\\_guidance/1672.htm](http://management.energy.gov/policy_guidance/1672.htm).

The Office of Management and Budget (OMB) has issued Initial Implementing Guidance for the Recovery Act. See M-09-10, Initial Implementing Guidance for the American Recovery and Reinvestment Act of 2009 and M-09-15, Updated Implementing Guidance for the American Recovery and Reinvestment Act of 2009. OMB will be issuing additional guidance concerning the Act in the near future. Applicants should consult the DOE website, [www.energy.gov](http://www.energy.gov), the OMB website <http://www.whitehouse.gov/omb/>, and the Recovery website, [www.recovery.gov](http://www.recovery.gov) regularly to keep abreast of guidance and information as it evolves.

Recipients of funding appropriated by the Act shall comply with requirements of applicable Federal, State, and local laws, regulations, DOE policy and guidance, and instructions in this FOA, unless relief has been granted by DOE. Recipients shall flow down the requirements of applicable Federal, State and local laws, regulations, DOE policy and guidance, and instructions in this FOA to subrecipients at any tier to the extent necessary to ensure the recipient's compliance with the requirements.

Be advised that Recovery Act funds can be used in conjunction with other funding as necessary to complete projects, but tracking and reporting must be separate to meet the reporting requirements of the Recovery Act and related OMB Guidance. Applicants for projects funded by sources other than the Recovery Act should plan to keep separate records for Recovery Act funds and ensure those records comply with the requirements of the Act. Funding provided through the Recovery Act that is supplemental to an existing grant is one-time funding.

Applicants should require their first tier subawardees to obtain a DUNS number (or update the existing DUNS record) and registering with the CCR.

## **A. SUMMARY**

The United States Department of Energy, National Energy Technology Laboratory (DOE/NETL, or DOE) is competitively soliciting applications for a requirement titled “Clean Coal Power Initiative.”

The Clean Coal Power Initiative (CCPI) is a cost-shared collaboration between the Government and industry to increase investment in low-emission coal technology by demonstrating advanced coal-based, power generation technologies, consistent with the Energy Policy Act of 2005, Public Law 109-58 (EPACT 2005), available at: [http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109\\_cong\\_public\\_laws&docid=f:publ058.109.pdf](http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=109_cong_public_laws&docid=f:publ058.109.pdf). The CCPI goal is to accelerate the readiness of advanced coal technologies for commercial deployment, thus ensuring that the United States has clean, reliable, and affordable electricity and power.

By overcoming technical risks associated with bringing advanced technology to the point of commercial readiness, the CCPI accelerates the development of new coal technologies for power and hydrogen production, contributes to proving the feasibility of integrating carbon dioxide (CO<sub>2</sub>) management and power production and facilitates the movement of technologies into the marketplace that are emerging from the core research and development activities. CCPI directly supports the Climate Change Technology Program to reduce emissions of CO<sub>2</sub>, a greenhouse gas.

For this Announcement, DOE's specific objective is to demonstrate advanced coal-based technologies that capture and sequester, or put to beneficial use, CO<sub>2</sub> emissions. DOE's goals are to demonstrate at commercial scale in a commercial setting, technologies that (1) can achieve a minimum of 50% CO<sub>2</sub> capture efficiency and make progress toward a target CO<sub>2</sub> capture efficiency of 90% in a gas stream containing at least 10% CO<sub>2</sub> by volume, (2) make progress toward capture and sequestration goal of less than 10% increase in the cost of electricity (COE) for gasification systems and less than 35% for combustion and oxycombustion systems all as compared to current (2008) practice, and (3) capture and sequester or put to beneficial use a minimum of 300,000 tons per year of CO<sub>2</sub> emissions using a thirty day running average to determine if the project successfully meets the CO<sub>2</sub> capture efficiency and the capture and sequestration or beneficial use rate requirements of this Announcement.

DOE is currently developing large scale field tests of geologic CO<sub>2</sub> sequestration in the U.S., on the order of 1 million tons of CO<sub>2</sub> per year under a separate program. DOE is interested in allowing demonstration projects under CCPI to integrate with the sequestration field tests, which may already be fully operational by the time the CCPI projects come on-line. A project performer could, for example, attempt to integrate a CCPI project with a sequestration field test to supply lower-cost CO<sub>2</sub>, and reduce the cost of either or both projects. This would require careful cooperation or integration of the management of both projects.

The evaluation process will give priority to applications for projects that capture and sequester or put to beneficial use greater than the minimum of 300,000 tons per year of CO<sub>2</sub> as an integral component of commercial operation. Having identified purchaser(s) of captured CO<sub>2</sub> would strengthen an application. Coordination with a large scale sequestration test is one way to demonstrate participation by a long term purchaser, although other approaches to demonstrating sequestration or beneficial use will be given equal consideration in the merit review process.

DOE anticipates award of multiple Cooperative Agreements. The cost-share by the recipient must be at least 50% for each Phase under the Cooperative Agreement, and DOE expects the recipient's share to be proportionately greater than 50% for projects with reduced technological risk or reduced uncertainty. Each project shall be broken down into Phases aligned with (I) Project Definition, Front End Engineering Design (FEED) Completion and Record of Decision (ROD) Approval (optional), (II) Design, (III) Construction, and (IV) Demonstration/Operations. Additionally, Decision Point(s), corresponding with these Phases, will be negotiated into the Statement of Project Objectives at the time of Award.

## **B. BACKGROUND INFORMATION**

The commitment to low- CO<sub>2</sub> –emission coal power will effectively respond to the national challenge of meeting the dynamic national electricity supply requirements while simultaneously decreasing the contribution of coal-based electrical power to atmospheric CO<sub>2</sub>. More specifically, the CCPI addresses this challenge through a focus on demonstration at commercial scale in a commercial setting of advanced and innovative low- CO<sub>2</sub> –emission coal technologies and on opportunities for timely deployment of those technologies by the power industry.

DOE has developed technical milestones in a Report to Congress titled “Technical Milestones for 2020 Goals and Project Status for the Clean Coal Power Initiative”. Table 1 summarizes the performance goals and technical milestones through 2020 that meet the requirements specified in subsections 402 (b)(1)(B) and 402 (b)(2) of EPACT 2005. These milestones are based on the status of current technology development, feedback from coal producers, technology providers and users, and the goal of producing near-zero atmospheric emission energy (power and fuels). DOE recognizes that the performance goals and technical milestones are aggressive and may require technologies that do not yet exist.

These technical milestones are focused on improving environmental performance and maintaining a competitive COE from existing plants and achieving a target of a competitive, low-CO<sub>2</sub> -emissions plant by 2020. These milestones address current and emerging environmental regulations and national environmental initiatives.



**TABLE 1. TECHNICAL MILESTONE SUMMARY – SECTION 403 REPORT TO CONGRESS**

Goals		Technical Milestones (1)			EPACT Requirements
Projects	Performance	2014	2017	2020	2020
Gasification (402 –b-1-B)	SO <sub>x</sub>	.026			≥ 99% removal or 0.06 kg/MW-hr (0.04 lbs/MMbtu) (3)
	NO <sub>x</sub>	.06	<0.05		< 0.08 kg/MW-hr (< 0.05 lb/10 <sup>6</sup> Btu)
	Hg	90%		> 95%	≥ 95% reduction
	CO <sub>2</sub>		90% capture		Concentrated CO <sub>2</sub> stream
	Efficiency: > 5.8 kW·hr/kg coal (5) >(9000 Btu/lb coal)	(2)	(2)	50%	50%
	Efficiency: 4.5 to 5.8 kW·hr/kg coal (5) (7000 to 9000 Btu/lb coal)	(2)	45%	48%	48%
	Efficiency: < 4.5 kW·hr/kg coal (5) (< 7000 Btu/lb coal)	38%	(2)	46%	46%
Other (402-b-2)	SO <sub>x</sub>	(2)	>97%		≥ 97% removal
	NO <sub>x</sub>	0.15 (4)	0.08		< 0.12 kg/MW-hr (< 0.08 lb/10 <sup>6</sup> Btu)
	Hg	90%	>90%		≥ 90% reduction
	Efficiency: > 5.8 kW·hr/kg coal (5) (> 9000 Btu/lb coal)	40%	43%		43%
	Efficiency: 4.5 to 5.8 kW·hr/kg coal (5) (7000 to 9000 Btu/lb coal)	37%	41%		41%
	Efficiency: < 4.5 kW·hr/kg coal (5) (< 7000 Btu/lb coal)	35%	39%		39%
<p>(1) Dates reflect when projects achieve performance goals in an integrated system.                      (2) For the technical milestones noted, 2020 goals can be met without intermediate full-scale demonstration in the relevant timeframe. Nevertheless, sources will be required to meet existing applicable permit requirements.                      (3) Remove at least 99 percent of sulfur dioxide; or to emit not more than 0.04 pound SO<sub>2</sub> per million btu, based on a 30-day average, as amended by p.l. 110-140, 12/19/2007 sec. 653. TECHNICAL CRITERIA FOR CLEAN COAL POWER INITIATIVE                      (4) Emission target met using combustion or other innovative, more cost effective technology.                      (5) Efficiency milestones are for plants without carbon capture and sequestration.</p>					

There are many paths to achieving the Table 1 milestones, including a variety of approaches to demonstrations when technology development is successful at a sub-commercial scale. The CCPI is one mechanism for demonstrating technologies.

**C. ANNOUNCEMENT OBJECTIVES**

This CCPI Round 3 Announcement is seeking advanced coal-based projects that have progressed beyond the research and development stage to a point of readiness for operation at a scale that, once demonstrated, can be readily replicated and deployed into commercial practice within the electric power industry.

This CCPI announcement is specifically targeting advanced coal-based systems and subsystems that capture and sequester, or put to beneficial use, CO<sub>2</sub> emissions. The announcement is also open to any coal-based, advanced carbon capture technologies that result in co-benefits with respect to efficiency, environmental, or economic improvements potentially capable of achieving CCPI coal technology performance levels specified in the EPACT 2005, Title IV, Subtitle A, Section 402 (Table 1). DOE's goals in this Announcement are to demonstrate at commercial scale in a commercial setting technologies that (1) can achieve a minimum of 50% CO<sub>2</sub> capture efficiency and make progress toward a target CO<sub>2</sub> capture efficiency of 90% in a gas stream containing at least 10% by volume, 2) make progress toward capture and sequestration goal of less than 10% increase in the COE for gasification systems and less than 35% for combustion and oxycombustion systems, and (3) capture and sequester or put to beneficial use a minimum of 300,000 tons per year of CO<sub>2</sub> emissions using a thirty day running average will be used to determine if the project successfully meets the CO<sub>2</sub> capture efficiency and the capture and sequestration or beneficial use rate requirements of this Announcement.

Coal-based power technologies may produce heat, fuels, chemicals, hydrogen or other useful byproducts in combination with production of electricity. Proposed CO<sub>2</sub> capture technologies must be integrated within existing or new power plant facilities that use U.S mined coal or coal refuse for at least 55% of the energy input, use other solid feed stocks such as petroleum coke or biomass for up to 45% of the energy input, and produce electricity as at least 50% of the energy output. Carbon dioxide capture, transport, sequestration or beneficial use, and monitoring, must be conducted in the United States. Projects must be at a sufficiently large scale to show the potential for market penetration upon successful demonstration of the technology or concept. Prospective projects must also be integrated with commercial plant operation. DOE is interested in demonstrating leading edge technologies not currently deployed by the electric power industry, as opposed to new applications of commercial technologies or marginal improvements of commercial technologies or previously demonstrated technologies.

## **D. TECHNOLOGY AREAS**

### **Carbon Capture and Sequestration**

Fossil fuels provide over 80% of world energy today and are expected to continue their dominance throughout this century. For the near future, coal will continue to be a significant fuel in the electric power sector, especially for base load power plants. Processes to convert energy into useful forms entail various types of emissions and potential impacts on the environment. Likely increases in fossil fuel use in the coming decades will result in significant increases in CO<sub>2</sub> emissions, with the potential for changes in the global climate. To address this issue, applications are sought that focus on the capture and storage of CO<sub>2</sub> that would otherwise be emitted to the atmosphere. The priority for this announcement is to capture a stream of CO<sub>2</sub> from a large, stationary emission point source and sequester it in an underground geologic formation or use it in a beneficial manner. Additional net reductions in lifecycle emissions of CO<sub>2</sub> are available by co-feeding biomass with coal in energy production systems. Applications that include co-feeding of biomass with coal are considered under this solicitation.

**1. Carbon Capture.** The purpose of CO<sub>2</sub> capture is to produce a concentrated stream that can be readily transported to a CO<sub>2</sub> storage site. CO<sub>2</sub> capture and storage is most applicable to large, centralized sources including coal-fueled power plants. The energy required to operate CO<sub>2</sub> capture systems reduces the overall efficiency of power generation processes, leading to increased fuel requirements and solid wastes and reduced output relative to the same type of base plant without capture. Minimization of energy requirements for capture, together with improvements in the efficiency of energy conversion processes, will continue to be high priorities for future technology development to minimize overall environmental impacts and cost. The three approaches to capturing CO<sub>2</sub> from coal-fueled power plant are pre-combustion capture, oxycombustion, and post-combustion capture.

1.1. Pre-combustion. In pre-combustion CO<sub>2</sub> capture, the CO<sub>2</sub> is recovered from some process stream before the fuel is burned or otherwise converted to CO<sub>2</sub>. The concentration and pressure of the CO<sub>2</sub> containing stream can be increased, and then the size and cost of the capture facilities can be significantly reduced. This has led to efforts to develop technologies that inherently produce concentrated CO<sub>2</sub> streams or CO<sub>2</sub> containing streams at high pressure for which there are existing capture processes. In the case of coal gasification, coal is gasified and converted to form a synthesis gas mixture of hydrogen and carbon monoxide, and CO<sub>2</sub> is captured from the synthesis gas before combustion in the gas turbine. Applications are sought for technologies that aim to significantly reduce the cost and energy requirements compared to state-of-the-art pre-combustion CO<sub>2</sub> capture systems. Technologies that integrate hydrogen production are also encouraged.

1.2. Oxycombustion. Oxycombustion is the combustion of hydrocarbon fuel with nearly pure oxygen (greater than 95%) mixed with recycled flue gas. In the most frequently proposed version of this concept, a cryogenic air separation unit (ASU) is used to supply high purity oxygen to a pulverized or circulating fluidized bed coal fired boiler. This high purity oxygen is mixed with recycled flue gas prior to combustion or in the boiler to maintain similar combustion conditions as under air-fired configurations. This is due to the fact that currently available materials of construction cannot withstand the high temperatures resulting from coal combustion in pure oxygen. For a new unit, it should be possible to use smaller boiler equipment due to increased efficiency. The process produces a flue gas with a very high CO<sub>2</sub> content, which can be purified relatively inexpensively. Applications are sought for both greenfield oxycombustion systems and oxycombustion processes that can be retrofit to existing power plants that significantly reduce the costs and parasitic power losses associated with oxycombustion.

1.3. Post-combustion. Post-combustion capture involves the removal of CO<sub>2</sub> from flue gas produced by the combustion or conversion of coal. Existing power plants use air, which is almost four-fifths nitrogen, for combustion and generate a flue gas that is at atmospheric pressure and typically has a CO<sub>2</sub> concentration of less than 15%. Thus, the thermodynamic driving force for CO<sub>2</sub> capture from flue gas is low (CO<sub>2</sub> partial pressure is typically less than 0.15 atm), creating a technical challenge for the development of cost-effective advanced capture processes. In spite of this challenge, cost-effective, post-combustion CO<sub>2</sub> capture has the greatest near-term potential for reducing CO<sub>2</sub> emissions. Post combustion technology can be retrofitted to existing power plants that generate two-thirds of the CO<sub>2</sub> emissions from the power sector. Commercially available post-combustion CO<sub>2</sub> capture systems have been based on the use of amines for natural gas sweetening. Applications are sought for advanced technologies that significantly reduce the cost and parasitic power load of CO<sub>2</sub> capture as compared to amine systems.

**2. Carbon Sequestration and Beneficial Use.** Simply capturing the CO<sub>2</sub> is obviously not enough; once it is captured, it must be stored or sequestered in such a way that it will not end up in the atmosphere, or it must be put to beneficial use.

Regional and site characterization is necessary to determine which geologic formations are potentially suitable for long term storage. Reservoir simulations are used to predict injectivity and storage capacity (based on available data concerning porosity and permeability, etc.).

Careful long-term monitoring is necessary to establish the permanency of CO<sub>2</sub> sequestration for the chosen sequestration option. The injection process includes operational, verification, environmental, and mitigation components. The operational component provides information on the injected CO<sub>2</sub>, the injection formation, its response to CO<sub>2</sub> injection and migration of the CO<sub>2</sub> plume within the injection formation. The verification component provides information to evaluate if CO<sub>2</sub> is leaking through the cap rock seal. The environmental component determines whether CO<sub>2</sub> is seeping into the biosphere. The mitigation component includes trigger levels to initiate additional monitoring techniques and/or increased monitoring frequency to verify that CO<sub>2</sub> leakage is occurring, the extent of leakage, and actions that will be taken to reduce or curtail CO<sub>2</sub> leakage if it occurs.

Various sequestration options are being researched, but for CCPI Round 3, we encourage responders to focus on one or more of several geological sequestration options: saline formation, enhanced oil recovery (EOR), coal seams, basalt formations, or stacked storage.

Beneficial use means the production of a useful product as the result of sequestering CO<sub>2</sub>. This includes, but is not limited to, enhanced oil recovery and enhanced coal-bed methane recovery. Beneficial use also means the production of useful energy products from captured CO<sub>2</sub>, which includes, but is not limited to, production of biodiesel fuel via algae produced using CO<sub>2</sub>.

2.1. EOR. EOR involves the placement of the CO<sub>2</sub> into formations of porous rock that hold crude oil. The oil industry has demonstrated that injecting CO<sub>2</sub> can enable one to economically pump additional oil left behind by primary recovery and water flooding; thus, part of the costs of sequestering the CO<sub>2</sub> can be offset by the amount of oil produced. Because such strata retained the oil over geological time, it is known to have an impermeable cap rock that will prevent the CO<sub>2</sub> from migrating upwards. Some of the CO<sub>2</sub> ends up being pumped to the surface along with the oil and must be separated and reinjected. Challenges that are being researched include the fact that established oil and gas fields have been extensively drilled. These old wells are potential leakage pathways, since they were not likely sealed to today's high standards when they were abandoned. In addition, depending on the age of the oil field, there may be unmapped or poorly mapped abandoned wells; NETL has recently developed remote sensing and geophysical techniques to locate such abandoned wells. Applicants who intend to use EOR as the storage technique should identify how their approach will be different from conventional EOR in terms of increased long-term retention of the CO<sub>2</sub> and advance EOR as a commercial method for CO<sub>2</sub> sequestration.

2.2. Saline Formations. Placing CO<sub>2</sub> in saline formations (or brine fields) is similar to the process used in enhanced oil recovery but without the expectation of recovering another material. Saline ground water exists at depth beneath much of the United States. The permeability and porosity of the reservoir formation must be sufficiently high to allow injection but the cap rock strata must be almost impermeable to prevent the CO<sub>2</sub> from escaping. Research conducted at NETL has so far not indicated any problems involving chemical reactions between the brine and the CO<sub>2</sub> but that does not mean that problems might not develop with unusual brine chemistry. Of perhaps greater concern are possible interactions between the cap rock and carbonic acid that forms when the CO<sub>2</sub> dissolves in the ground water. For example, if a fault exists that contains carbonaceous cement, rendering it impermeable, cement dissolution would create a leakage pathway. Applicants selecting this sequestration option should address how potential problems with a selected site will be investigated and addressed.

Applicants should address how the proposed demonstration will advance the viability of injection into saline formations as a commercial method for carbon sequestration.

2.3. Coal Seams. Another major option for geological sequestration of CO<sub>2</sub> is injection into deep underground coal seams. CO<sub>2</sub> adsorbs onto coal as does methane (to varying amounts). It is important that the coal seam be one that cannot be economically mined, even in the future, which generally limits injection to deeper coal beds; the enhanced pressures should also help limit CO<sub>2</sub> desorption. Coal preferentially adsorbs CO<sub>2</sub> rather than methane so injection of CO<sub>2</sub> can actually release methane, thereby increasing production of coal bed methane, potentially offsetting some of the costs of the injection. However, methane, as a greenhouse gas, is more than ten times as effective as CO<sub>2</sub> and must be captured or its release prevented or mitigated. In addition, coal swells as it adsorbs CO<sub>2</sub>, which decreases the permeability of the coal to CO<sub>2</sub>. Depending on the nature of the coal and its permeability, CO<sub>2</sub> injectivity may be limited by such swelling. As the permeability decreases, the CO<sub>2</sub> may move out of the coal seam into other strata that will not adsorb it; if this happens, the likelihood that it will remain isolated from the biosphere is not known. Applicants selecting this sequestration option should address how potential problems with a selected site will be investigated and addressed and whether the strata above the coal seam can prevent leakage to the atmosphere if the CO<sub>2</sub> escapes the coal seam. Applicants should also address how the proposed demonstration will advance the viability of injection into coal seams as a commercial method for CO<sub>2</sub> sequestration.

2.4. Basalt Formations. Basalt formations are solidified lava and have a unique chemical makeup that, in theory, could potentially convert injected CO<sub>2</sub> into mineral matter, thus isolating it from the atmosphere permanently. Research is being conducted on possible ways to facilitate such a reaction, but applicants selecting this option would have to present data demonstrating that they have found a way to overcome the kinetic barriers, in addition to addressing how they plan to inject large volumes of CO<sub>2</sub> into a basalt formation.

2.5. Stacked Storage. Stacked storage involves placement of CO<sub>2</sub> in multiple strata at various depths at a single site, using one or more of the options discussed in 2.1 to 2.4 above. Applicants proposing such an approach should address the relevant issues already discussed in those paragraphs, and should, in addition, address how the injection will be handled and what will be done to differentiate potential leakage from the various strata.

3. Carbon Sequestration and Existing Plants Program Goals. DOE's Carbon Sequestration Program encompasses two main elements: core R&D, and demonstration and deployment. The core R&D element converts technology needs into technology solutions that can be demonstrated and deployed in the field under programs including the Regional Carbon Sequestration Partnerships. The overall goal of the Carbon Sequestration Program is to develop, by 2012, fossil fuel conversion systems that achieve 90% CO<sub>2</sub> capture with 99% storage permanence at less than 10% increase in the cost of energy services for gasification systems without CO<sub>2</sub> capture and sequestration. For a power generation facility, the cost of energy services is essentially the cost of electricity. Specifically, by 2012, the Sequestration Program seeks to have pilot scale unit operation results from a combination of CO<sub>2</sub> capture; monitoring, mitigation, and verification; and storage system components such that, when integrated into a systems analysis framework, would collectively meet the above goals. Accounting for the time required for pilot-scale validation and large scale system design and construction, large scale units that meet the Carbon Sequestration Program goal will come on-line around 2020. The goal for the Existing Plants Program is to have available for commercial deployment technologies and best practices for achieving 90% CO<sub>2</sub> [capture in a gas stream containing at least 10% by volume](#) at a cost of electricity increase of less than 35% for combustion and oxycombustion systems by 2020. Applications are sought for technologies that make significant

progress toward the accomplishment of these goals. DOE is targeting pre-combustion, post-combustion, and oxycombustion technologies that operate at a minimum of 50% CO<sub>2</sub> capture efficiency and make progress toward 90% CO<sub>2</sub> capture efficiency.

Long term solutions for CO<sub>2</sub> capture and sequestration require significant advancements over current power generation systems. Demonstrations of cost effective and efficient advanced power plant technologies (e.g., chemical looping or oxygen-blown combustion and gasification systems) that enable CO<sub>2</sub> emissions management by producing enriched CO<sub>2</sub> streams are needed. This opportunity is not intended to support projects that replicate ongoing or completed carbon separation or sequestration demonstrations.

## **PART II – AWARD INFORMATION**

### **A. TYPE OF AWARD INSTRUMENT.**

DOE anticipates awarding cooperative agreements under this program announcement. A special award condition describing the Government's substantial involvement in the cooperative agreement is located in PART VI.B. A model cooperative agreement is a separate attachment to this announcement. Clauses may be added or deleted while negotiating terms for the specific projects.

### **B. ESTIMATED FUNDING.**

DOE anticipates that \$1.4 Billion will be available for awards under the Clean Coal Power Initiative Round 3 which includes projects selected under both closing dates; January 20, 2009 and August 24, 2009. Funds for projects selected under the January 20, 2009 closing date will not be available to projects submitted in response to the August 24, 2009 closing date. Of the total amount, approximately \$800,000,000 in DOE funding is being made available under the American Recovery and Reinvestment Act. The total value of DOE's share of the selected projects shall not exceed the amount of funds DOE has available at the time of selection.

### **C. MAXIMUM AND MINIMUM AWARD SIZE**

Ceiling (i.e., the maximum amount for an individual award made under this announcement) \$ None

Floor (i.e., the minimum amount for an individual award made under this announcement) \$ None

### **D. EXPECTED NUMBER OF AWARDS.**

DOE anticipates making multiple awards under this announcement depending on the size of the awards.

### **E. ANTICIPATED AWARD SIZE.**

While the maximum award size (i.e., ceiling), which includes both the DOE Share and Recipient cost share, is NONE, DOE may be able to provide \$1.4 Billion, to be distributed among all selected Recipients.

### **F. PERIOD OF PERFORMANCE.**

DOE anticipates the project performance period will be commensurate with the complexity of technology, scale of demonstration and extent of modifications at the project site. Awards will have

Phases that are specific to the project and funding. The Applicant may propose Phase 1 as Project Definition, FEED Completion and ROD Approval, as defined in the Appendices/Reference Material at the end of this document.

Upon selecting a project for award under this announcement, DOE shall establish a reasonable period of time during which the Recipient shall complete the construction or demonstration Phase of the project. In accordance with EPCACT 2005, Title IV, Subtitle A, Section 402(f), as a condition of award, the Recipient shall agree not to request an extension of the time period established for completion of the construction or demonstration Phase of the project. Such agreement will be incorporated into the final cooperative agreement. The time period established by DOE for the completion of the construction or demonstration Phase of a selected project may be extended only if the Secretary of Energy determines, at the Secretary's sole discretion, that the Recipient cannot complete the construction or demonstration Phase of the project within the estimated time period due to circumstances beyond the Recipient's control. The Secretary shall in no case extend the established time period by more than 4 years.

#### **G. TYPE OF APPLICATION.**

DOE will accept new and revised applications under this announcement. You may submit more than one application. Each application must have its own unique title on the subject line (i.e., project title and principal investigator/project director, if any). For each application, you must download a separate application package in Grants.gov and submit each package separately through FedConnect.

### **PART III – ELIGIBILITY INFORMATION**

#### **A. ELIGIBLE APPLICANTS.**

All types of entities are eligible to apply, except other Federal agencies, Federally Funded Research and Development Center (FFRDC) Contractors, and nonprofit organizations described in section 501(c)(4) of the Internal Revenue Code of 1986 that engaged in lobbying activities after December 31, 1995.

#### **B. COST SHARING.**

a. Cost Share: The cost share must be at least 50% of the total allowable costs for demonstration and commercial application projects (the sum of the Government share, including FFRDC contractor costs if applicable, and the recipient share of allowable costs equals the total allowable cost of the project) and must come from non-Federal sources unless otherwise allowed by law. (See 10 CFR Part 600 for the applicable cost sharing requirements.)

Applicants shall share at least 50% of the total project costs and at least 50% during each Phase of the project. Cost sharing ratios may vary between Phases but not within a Phase. All costs will be shared between DOE and the recipient on an “as expended” dollar-for-dollar basis. In order to be recognized as allowable cost sharing, a cost must be otherwise allowable in accordance with the applicable Federal cost principles and DOE Regulations (10 CFR 600.123, 224, and 313) governing cost sharing. Cost sharing may be in various forms or combinations, which includes but is not limited to cash outlays and in-kind contributions. All allowable project costs, whether cash or in-kind, shall be shared by DOE when such costs are incurred by applying the share ratios set forth in the Cooperative Agreement. The value of in-kind contributions not requiring cash outlays (i.e., existing assets) shall be

prorated over the life of the project, beginning when the in-kind contribution is initially required for performance of the Cooperative Agreement.

Applicants that propose a Project Definition Phase as [Phase 1](#) must commit the total funding projected at time of award for the non-DOE share of [Phase 1](#) costs. These applicants must also commit the total funding projected for the non-DOE share of the remainder of the project by the end of [Phase 1](#). Applicants that do not propose a Project Definition Phase must commit all funding projected at time of award for the non-DOE share of the total project cost.

b. Project Specific Development Activities: In accordance with P.L. 102-154 Title II, Project Specific Development Activities, as defined in the Appendices/Reference Material section at the end of this document, may be requested and funded on a cost-shared basis. The maximum dollar value that may be authorized for Project Specific Development Activities is 10 percent of DOE's total funding contribution to the project. For example, if DOE's funding contribution to the total estimated project cost is \$10 million, the maximum value for Project Specific Development Activities is \$1 million. DOE would share in the \$1 million cost at the cost-share ratio established in the cooperative agreement. Project Specific Development Activities are appropriate only where minor technical issues unique to the proposed demonstration require solution.

c. Cost Overruns. In accordance with 42 U.S.C. Section 5903d, the Government is under no obligation to share any cost overruns (i.e., costs incurred during the Demonstration Project that are more than those estimated at the date of award). DOE does not plan to set-aside funds for overruns. If appropriated funds are available in the future for supporting overruns, the Government may share in overruns at the sole discretion of the Government. In each case, the Government's share of overruns will not exceed the Government's percentage cost share for the overall project and then only up to 25 percent of the original Government contribution as specified in the initial Cooperative Agreement.

d. Unallowable Costs. Reference 10 CFR Part 600 and applicable subparts B, C, and D for allowable cost guidance. The following are two examples that are unallowable as project costs and cost sharing under the CCPI Program:

- The day-to-day normal operating costs of the plant/host site/demonstration site will not be recognized as allowable project costs, and therefore, will not be allowed for cost sharing purposes. To expand this definition, day-to-day normal operating costs are all costs that the demonstration site would incur daily without performing the CCPI-3 project. If the plant is incurring costs prior to implementation of the CCPI project, the same costs cannot be proposed under the CCPI project. Only the incremental cost increase, relative to typical operational costs, that is directly associated with performing the CCPI-3 work may be recognized as allowable costs and must be adequately documented and explained in detail, as required in the budget justification section of the FOA

- DOE will not share in the acquisition costs of any fuel other than coal, under this Clean Coal Power Initiative, unless prior written approval is obtained from the DOE Contracting Officer or if the fuel is a [solid feed stock, such as petroleum coke or biomass, providing that this feedstock provide no more than 45% of the energy input for the plant.](#)

## C. OTHER ELIGIBILITY REQUIREMENTS.

### **Federally Funded Research and Development Center (FFRDC) Contractors.**

FFRDC contractors are not eligible for an award under this announcement, but they may be proposed as a team member on another entity's application subject to the following guidelines:



**Authorization for non-DOE/NNSA FFRDCs.** The Federal agency sponsoring the FFRDC contractor must authorize in writing the use of the FFRDC contractor on the proposed project and this authorization must be submitted with the application. The use of a FFRDC contractor must be consistent with the contractor's authority under its award and must not place the FFRDC contractor in direct competition with the private sector.

**Authorization for DOE/NNSA FFRDCs.** The cognizant contracting officer for the FFRDC must authorize in writing the use of a DOE/NNSA FFRDC contractor on the proposed project and this authorization must be submitted with the application. The following wording is acceptable for this authorization.

“Authorization is granted for the \_\_\_\_\_ Laboratory to participate in the proposed project. The work proposed for the laboratory is consistent with or complimentary to the missions of the laboratory, will not adversely impact execution of the DOE/NNSA assigned programs at the laboratory, and will not place the laboratory in direct competition with the domestic private sector.”

**Value/Funding.** The value of, and funding for, the FFRDC contractor portion of the work will not normally be included in the award to a successful applicant. Usually, DOE/NNSA will fund a DOE/NNSA FFRDC contractor through the DOE field work proposal system and other FFRDC contractors through an interagency agreement with the sponsoring agency.

**Cost Share.** The applicant's cost share requirement will be based on the total cost of the project, including the applicant's and the FFRDC contractor's portions of the effort.

**FFRDC Contractor Effort.** The FFRDC contractor effort, in aggregate, shall not exceed 25% of the total estimated cost of the project, including the applicant's and the FFRDC contractor's portions of the effort.

**Responsibility.** The applicant, if successful, will be the responsible authority regarding the settlement and satisfaction of all contractual and administrative issues, including but not limited to, disputes and claims arising out of any agreement between the applicant and the FFRDC contractor.

## **OTHER.**

### **1. MANDATORY ELIGIBILITY REQUIREMENTS**

Applications that fail to meet one or more of these mandatory requirements will be rejected at the initial review stage. In the event that an application is so rejected, a notice will be sent to the applicant stating the reason(s) that the application will not be considered for an award under this Announcement. Applications passing the initial review shall be subject to a comprehensive evaluation.

- At least 50% of the energy output from the proposed project must be in the form of electricity.
- Carbon dioxide capture, transport, sequestration or beneficial use, and monitoring, must be conducted in the United States.
- The proposed project must use at least 55% coal or refuse coal as measured on a fuel input (Btu) basis, and other solid fuels such as petroleum coke and biomass for up to 45% of the fuel input.
- The proposed project must be designed for and operated with coal mined in the United States and/or with coal refuse sources derived from U.S. coals.
- At least 300,000 tons per year of CO<sub>2</sub> emissions from the proposed project must be captured and sequestered or put to beneficial use.
- The applicant must provide an application demonstrating a cost share of at least 50% of the total

allowable project cost and with at least 50% in each **Phase** of the project.

- The applicant must identify the proposed site and any alternative sites.
- The applicant must clearly identify all members of the project team and their roles.
- The application must be submitted by a responsible official of the applying organization authorized to contractually bind the organization to performance of the Cooperative Agreement in its entirety.
- The application must be consistent with the objectives of this Announcement as stated in Part I.C.
- The application must contain sufficient technical, cost, management, financial, budget, and commercialization information to enable a comprehensive evaluation as described below.
- The application must include a proposed schedule for completion of the construction and demonstration Phases of the project.
- The applicant must agree that it will not seek to hold the U.S. Government liable, or seek contribution from the U.S. Government, for environmental liabilities and third parties liabilities arising from design, construction, or operation of the Demonstration Facility or from any activity performed as part of the Demonstration Project except to the extent that such liabilities are expressly allowable under the applicable cost principles and then, only to the extent of funds obligated by the Government to the cooperative agreement.

## **PART IV – APPLICATION AND SUBMISSION INFORMATION**

### **A. ADDRESS TO REQUEST APPLICATION PACKAGE.**

Application forms and instructions are available at [Grants.gov](http://www.grants.gov). To access these materials, go to <http://www.grants.gov>, select “Apply for Grants,” and then select “Download Application Package.” Enter the CFDA and/or the funding opportunity number located on the cover of this announcement and then follow the prompts to save the application package. Once you have SAVED the application package and completed all the required documentation, you will submit your application via the FedConnect portal.

DO NOT use the Save & Submit selection in Grants.gov.

### **B. LETTER OF INTENT AND PRE-APPLICATION.**

#### **1. Letter of Intent.**

Letters of Intent are requested.

Applicants are requested to submit a Letter of Intent no later than July 24, 2009 at 5:00 PM Eastern Time. This requirement applies whether a new or revised Application is submitted for evaluation under the second Application submission opportunity.

This Letter shall include the following: 1) Applicant name, 2) project title, 3) Project Director name, 4) key technology vendor names (capture technology, gasification technology, EPC contractor, etc), 5) project size (MW equivalent, tons CO<sub>2</sub> per year, etc), 6) total project value and amount of DOE funds requested, 7) project location (plant name, location, sequestration site, etc), 8) sequestration or use approach (saline, EOR, etc) and 9) a one-page abstract describing project goals and approach to CO<sub>2</sub> capture, sequestration or beneficial use, and project financing.

Letters of Intent will be used by DOE to organize and expedite the merit review process. The Letter of Intent shall be sent by E-mail to [Brittley.Robbins@netl.doe.gov](mailto:Brittley.Robbins@netl.doe.gov).

#### **2. Pre-application.**

Pre-applications are not required.

## C. CONTENT AND FORM OF APPLICATION – SF 424

You must complete the mandatory forms and any applicable optional forms (e.g., SF-LLL- Disclosure of Lobbying Activities) in accordance with the instructions on the forms and the additional instructions below. **Files that are attached to the forms must be in Adobe Portable Document Format (PDF) unless otherwise specified in this announcement.**

### 1. SF 424 - Application for Federal Assistance.

Complete all required fields in accordance with the pop-up instructions on the form. The list of certifications and assurances referenced in Field 21 can be found on the Applicant and Recipient Page at [http://management.energy.gov/business\\_doe/business\\_forms.htm](http://management.energy.gov/business_doe/business_forms.htm), under Certifications and Assurances.

### 2. Project/Performance Site Location(s).

Indicate the primary site where the work will be performed. If a portion of the project will be performed at any other site(s), identify the site location(s) in the blocks provided.

Note that the Project/Performance Site Congressional District is entered in the format of the 2 digit state code followed by a dash and a 3 digit Congressional district code, for example VA-001. Hover over this field for additional instructions.

Use the Next Site button to expand the form to add additional Project/Performance Site Locations.

### 3. Other Attachments Form.

Submit the following files with your application and attach them to the Other Attachments Form. Click on “Add Mandatory Other Attachment” to attach the Project Narrative. Click on “Add Optional Other Attachment,” to attach the other files.

#### **Project Narrative File - Mandatory Other Attachment**

The project narrative must not exceed 80 pages, including cover page, table of contents, charts, graphs, maps, photographs, and other pictorial presentations, when printed using standard 8.5” by 11” paper with 1 inch margins (top, bottom, left, and right). EVALUATORS WILL REVIEW ONLY THE NUMBER OF PAGES SPECIFIED IN THE PRECEDING SENTENCE. The font must not be smaller than Arial 11 point. Do not include any Internet addresses (URLs) that provide information necessary to review the application. See Part VIII.D for instructions on how to mark proprietary application information. Save the information in a single file named “Project.pdf,” and click on “Add Mandatory Other Attachment” to attach.

The project narrative must include:

#### **A) General**

The Project Narrative consists of a discussion of: Technology Merit, Technical Plan and Site Suitability; Project Organization and Project Management Plan; Commercialization Potential; Funding Plan; and Financial Business Plan. Additional information including resumes, letters of commitment, financial statements, project management plan, and additional pertinent publications shall be placed

in the Appendices. Sections 1 through 8 are submitted as the Project Narrative File, named Project.pdf. Appendices A through G are each submitted separately as separate files.

Information contained in the appendices shall not count toward the 80 page limit. No material may be incorporated in any application by reference as a means to circumvent the page limitation. Illustrations shall be legible with all text in legible font. Pages shall be sequentially numbered.

**B) Project Narrative Format.**

The applicant shall include a Project Narrative in the format specified below to facilitate the review process and to ensure the applicant addresses all the technical review criteria. This format relates to the technical evaluation criteria, Part V.A.2. Applicants shall follow the outline shown below, but additional sub-headings may be included as desired.

	Page
1. CONTENTS AND DEFINITIONS	
a. Table of Contents	i
b. List of Tables	ii
c. List of Figures	iii
d. List of Abbreviations with Definitions	iv
e. Definitions	v
2. SUMMARY AND INTRODUCTION	#
3. TECHNOLOGY MERIT, TECHNICAL PLAN AND SITE SUITABILITY	#
4. PROJECT ORGANIZATION AND PROJECT MANAGEMENT PLAN	#
5. COMMERCIALIZATION POTENTIAL	#
6. FUNDING PLAN	#
7. FINANCIAL BUSINESS PLAN	#
8. APPENDICES (each submitted as a separate file under Add Optional Other Attachment on the Other Attachments Form)	
A. SITE DOCUMENTATION	A1
B. TEAM LETTERS OF COMMITMENT AND AGREEMENTS	B1
C. PROJECT MANAGEMENT PLAN	C1
D. STATEMENTS FROM POTENTIAL BUYERS	D1
E. FINANCIAL STATEMENTS	E1
F. FINANCIAL MODEL OF PROJECT	F1
G. FINANCIAL COMMITMENT LETTERS	G1

**C) Project Narrative Content.** The Project Narrative shall consist of the following information. In order to produce a comprehensive application for this Announcement, the applicant is required to address, at a minimum, the areas listed below. The applicant shall submit the information described in each section.

1. CONTENTS AND DEFINITIONS.

Information in this section is self explanatory.

Table of Contents

List of Tables

List of Figures

List of Abbreviations with Definitions

Definitions

## 2. SUMMARY AND INTRODUCTION

Provide a brief introduction to the project, including a description of the technology and an overview of the ownership and financing structure. Briefly introduce the main parties to the project, and provide the current status of the project. Provide a summary regarding how the project meets the eligibility requirements listed in Part III.C.1, Mandatory Eligibility Requirements, including a statement to address the Mandatory Eligibility Requirement regarding liability.

## 3. TECHNOLOGY MERIT, TECHNICAL PLAN AND SITE SUITABILITY:

Provide a comprehensive description supporting the merit of the proposed technology and technical plan, and suitability of the proposed site, including the following information:

- A detailed description of the proposed concept and technology, including preliminary process flow diagrams, equipment descriptions, mass and energy balances around each major process unit and the total plant, temperatures, pressures, and compositions of major streams, and the technical plan for achieving the goals proposed for the project;
- An assessment of project risk, including identification of risk elements for the project in its current state of development that have potential to impact scope, budget, or schedule. The approach to be used for assessing and managing risk throughout the project, and approaches to mitigating risks identified for the proposed project. The approach to managing and addressing any liability issues associated with the site development, injection operations, and the long-term storage of the CO<sub>2</sub> after operations and after the project has concluded. An assessment of environmental, health, safety, and security issues associated with the appropriate geologic sequestration option: EOR, saline formation, stacked storage, coal seam, or basalt formation. A modeling effort of all relevant aspects of the sequestration effort using porosity, permeability, etc. to predict injectivity and storage capacity, and to support the risk assessment;
- Information and data that demonstrate the technical and economic merit and ability of the proposed technology to achieve the priority objectives of the Announcement and progress toward relevant performance targets of the Energy Policy Act of 2005; sufficient test and performance data to support [the technology's ability to achieve a minimum CO<sub>2</sub> capture efficiency of 50% and make progress toward a target capture efficiency of 90% in a gas stream containing at least 10% by volume;](#) sufficient test and performance data to provide evidence that the project can achieve capture and sequestration or beneficial use of a minimum of 300,000 tons per year of CO<sub>2</sub>; data and information to show that the impact of the CO<sub>2</sub> capture and sequestration processes on cost of electricity (COE) for the proposed project, demonstrating that the technology is capable of, or can be further developed (beyond the scope of this announcement) to achieve a COE increase of less than 10% for gasification systems and less than 35% for combustion and oxycombustion systems when compared with plant operation not including carbon capture and sequestration; calculations supporting COE predictions for the proposed project operation both with and without

inclusion of the CO<sub>2</sub> capture and sequestration processes; For projects incorporating beneficial use of the CO<sub>2</sub>, such as for EOR, calculations supporting COE both with and without the sale of CO<sub>2</sub>, or other revenue streams associated with beneficial use; information to show the ability of the project to meet the capture efficiency and the capture and sequestration or beneficial use rate requirements of this Announcement, measured as a 30 day running average; Applicants must submit the following information: chemical composition and flow rate (tons per hour) of the captured CO<sub>2</sub> stream; capture efficiency as a function of flue gas flow rate; plant operating efficiency with and without sequestration; and tons of CO<sub>2</sub> sequestered per dollar of CO<sub>2</sub> capture and sequestration capital cost and per dollar of CO<sub>2</sub> capture and sequestration operating cost (both on an annual basis) as a function of CO<sub>2</sub> and sequestration site underground temperature and pressure and CO<sub>2</sub> injection rate;

- A comprehensive discussion that supports the Applicant's approach to sequestration or beneficial use of CO<sub>2</sub>. Information supporting coordination with a purchaser of CO<sub>2</sub>, coordination with a large-scale sequestration test, or other method demonstrating the project's capability to sequester or use CO<sub>2</sub>; identification of technical issues with the approach that must be resolved to confirm the approach as a viable option for widespread sequestration or beneficial use, and the approach to resolving these issues. For sequestration, specific information on the geologic formations to support the ability of the approach to adequately sequester CO<sub>2</sub> including formation storage capacity, injectivity, and descriptions of overlying seal formation including faults and penetrations. Descriptions of the number, type, and characteristics of wells and equipment necessary for the sequestration effort. For information not available, the approach to obtaining necessary information;
- Information and data that illustrate the advancements and proposed advantages of the proposed technology relative to commercial technologies or previously demonstrated technology;
- Scientific, engineering, and technical information and data that support the readiness of the proposed technology for demonstration at the scale proposed;
- Planned baseline testing, project testing, and performance monitoring plans to generate information for documenting achievements of the proposed project; The approach to performance monitoring which should include, but not be limited to, monitoring of the entire sequestration effort for environmental, health, safety, and security impacts; identification of maintenance and inspection requirements; monitoring for other impacts; long-term monitoring to establish the permanency of sequestration; and assessment of the areal extent of the plume. The planned injection process must also have appropriate operational, verification, environmental, and mitigation components;
- Discussion on the merit of the proposed project for demonstrating the commercial viability of the proposed technology; evidence that the scale of the project is sufficient to fully demonstrate the impact of the carbon capture and sequestration technology on plant operations (staffing, auxiliary systems integration, space), economics (capital investment and operating costs), and performance (power and steam requirements, CO<sub>2</sub> capture efficiency);
- Descriptions of the proposed site and any alternatives. Descriptions of the infrastructure available at each site demonstrating that the proposed site(s) can meet the needs of the proposed technology demonstration, including but not limited to, availability of power and steam, coal supply, water supply, pipelines, CO<sub>2</sub> transportation, and transmission interconnect. Descriptions of the environmental setting and nearby environmental conditions, demonstrating the proposed site can fully meet all environmental health, safety, socioeconomic, security issues, and public

policy requirements. Applicant's analysis of its site selection process. If there is only one site proposed for the project, the analysis of the site selection process should demonstrate why there are no other sites available to the applicant that would constitute "reasonable alternatives" under NEPA. Attach in Appendix A any site maps, plot plans, site photographs, etc. necessary to support claims;

- Discussion including evidence regarding of the availability of the proposed site and alternatives; evidence of site availability may include ownership of the site, signed option to purchase the site from the site owner, letter of intent by the site owner to sell the site to the Applicant or provide the Applicant access to the site for the project (Include supporting documents in Appendix A); Evidence of the Applicant's right to sequester CO<sub>2</sub> at the proposed sequestration site;
- For projects with key physical or logistical elements that require close integration with another system for the project to succeed, provide information on all integrated systems regardless of where they are located. Example 1: a CO<sub>2</sub> capture system processing a flue gas stream provided by a power plant owned by a third party should provide supporting documentation for the power plant. Example 2: an oxygen-blown IGCC plant planning to purchase oxygen from a third party who will construct a plant exclusively for this project should provide documentation for the oxygen supplier;
- A proposed schedule for the completion of the construction and demonstration Phases of the project.

#### 4. PROJECT ORGANIZATION AND PROJECT MANAGEMENT PLAN:

Provide a comprehensive discussion that supports the Applicant's organizational and management capabilities to successfully implement the project plan and achieve the objectives of the Announcement, including the following information:

- Information to support that the Applicant has assembled a Project Team with the skills and resources needed to implement the project. Identify the skills and resources provided by and available to the proposed Project Team necessary for implementing the proposed project and achieving the objectives of the Announcement; Provide signed agreements or letters from Project Team members demonstrating that they are fully committed to the project (as Appendix B);
- Relevant prior or current corporate background and experience of the applicant, Engineering Procurement and Construction (EPC) contractor, and suppliers of major subsystems or equipment, and other important team members which supports the capabilities of the applicant and its team members to design, construct, permit, and operate the facility. The applicant should demonstrate that the team members have a corporate history of successful completion of similar projects;
- Descriptions of knowledge, experience, adequacy, and degree of involvement of proposed key personnel. Include resumes in the Resume File titled "bio.pdf" described in Part IV.C. Content and Form of Application – SF 424, Section C, Project Narrative Content;
- Proposed organizational structure with respect to responsibilities and authorities among elements of the project team;
- A Project Management Plan for implementing the proposed project and achieving the objectives of the Announcement. The Project Management Plan establishes the baseline for the scope,

schedule, and budget for the project and shall include the information given below. The Project Management Plan should be provided as Appendix C;

- A Work Breakdown Structure to at least three levels identifying tasks to be performed under each Phase;
- A detailed description of work to be performed under each task, known as a Statement of Project Objectives (for format see model cooperative agreement, which is a separate attachment to this announcement);
- A Project Schedule for the entire project at the task level of detail. The Project Schedule shall follow the task structure of the Work Breakdown Structure. The schedule should include technical, business, financial, permitting and other factors to substantiate that the project will achieve the objectives of the Announcement in a timely manner. The schedule should include milestones and decision points; including a Milestone Plan to serve as the baseline for tracking performance of the project and will identify critical path project milestones (no less than 2 per calendar year) for the entire project;
- A Baseline Cost Plan to establish the budget for accomplishing the planned work. The Baseline Cost Plan should identify the planned cost for each task on a monthly basis. The Baseline Cost Plan should follow the task structure of the Work Breakdown Structure;
- A description of the project management system to be used for monitoring and control of scope, schedule, and cost including the methodology and implementation of reporting earned value;
- Project Communication Protocol, to establish the frequency and type of communication between the Recipient and DOE, dependent on the complexity, value, and program significance of the project, to ensure the team has the information necessary to affect timely and effective project management;
- A Risk Management Plan that includes a summary description of the proposed approach to identify, analyze, and respond to perceived risks associated with the proposed project. Project risk events are uncertain future events that, if realized, impact the success of the project. As a minimum, include the initial identification of significant technical, resource, and management issues that have the potential to impede project progress and strategies to minimize impacts from those issues;
- An Environmental Management Plan (EMP) to establish a protocol for managing the potential environmental impacts of the project. The EMP shall monitor the potential impacts to air, land, and water resources, and waste production in terms of compliance monitoring, unregulated pollutant monitoring, and NEPA monitoring. The EMP shall establish a protocol for reporting the results of the monitoring effort.

#### 5. COMMERCIALIZATION POTENTIAL:

- A Commercialization Plan that identifies the approach to be used to achieve full commercialization of the proposed technology, including:
  - economic assessments of proposed technology and competing technologies;
  - barriers to market entry that will be overcome by the proposed demonstration;
  - barriers to broad commercialization that would remain following demonstration and the approach to addressing them;
  - applicability or retrofittability of the proposed technology, including subsystems, components, or process modules, to existing and new coal-fired power generation markets, including types, numbers, and percentages of plants, geographic areas, and types of fuels usable.
- Supporting evidence that a successful technology demonstration would provide for commercial



replication, including:

- statements of interest in writing from potential purchasers of the proposed technologies (as Appendix D);
- identification of spin-off products, sub-systems, components, and modules resulting from the proposed project that have potential for commercial replication;
- a description of the experience and capabilities of team members in achieving broad commercial deployment of similar technologies.

## 6. FUNDING PLAN

At the time of application submission, the applicant must have a plan to obtain the funding for the entire non-DOE share of the total project cost. The applicant must submit a funding plan that identifies all sources of project funds.

The Applicant shall provide sufficient evidence to demonstrate the applicant's financial capability to fund, or obtain funding, for the non-DOE share of the proposed project costs. The applicant shall include a full description of any liabilities, limitations, conditions or other factors which could affect the availability of applicant's funding. If Third Party (i.e., not from the applicant or its parent organization) financing will be a source of project funds, the applicant shall discuss the terms and conditions of such financing. If the application is based on funds from third party sources, such as banks or the capital markets, the timing and conditionality of any such funding shall be clearly described.

For projects proposing a Project Definition Phase, the funding plan must demonstrate funds necessary for the Project Definition Phase will be committed at the time of award. Further, the plan must demonstrate that the funds necessary for the remainder of the project will be committed by the end of the Project Definition Phase. For projects that do not propose a Project Definition Phase, the funding plan must demonstrate funds necessary for the entire project will be committed at the time of award.

This section must also include a schedule showing the detailed sources and uses of funds for the project, including the amount and timing for all funding to be provided by non-DOE sources. The project sources and uses of funds schedule should include sources and uses of funds by Phase (e.g., (I) Project Definition, FEED Completion, and ROD Approval, (II) Design, (III) Construction, and (IV) Demonstration) and the projected schedule for each Phase should be stated. The sources and uses of funds schedule should be in agreement with the project's total estimated costs and schedule for expenditures. It is important that applicants demonstrate that they have the capacity to fund the project development costs. Therefore, the sources and uses of funds statement should begin prior to the beginning of construction, and should identify the estimated annual budget for and source of funding to meet project development costs including amounts for legal, engineering, financial, environmental, overhead, and other development costs.

Financial Statements. The applicant must provide current financial statements for all business quarters reported on in the current fiscal year, along with audited financial statements for the most recent three fiscal years. Any non-DOE source of financing (e.g., team member, subrecipient or third party) that will commit to funding some portion of the applicant's share of the project costs must also provide audited financial statements as indicated above. If the applicant or another party does not have audited financial statements, the applicant or the party should provide equivalent financial statements prepared by the applicant or the party, in accordance with Generally Accepted Accounting Principles, and certified as to accuracy and completeness by the Chief Financial Officer of the party providing the statements. Financial Statements should be provided in Appendix E.

If in-kind contributions are to be provided to the project, then the applicant must explain their valuation.

## 7. FINANCIAL BUSINESS PLAN

The applicant must provide a financial business plan that is specific to this demonstration project. The financial business plan must be based on the economic and business assumptions developed in the application and should demonstrate that the project has adequate funding. This business plan should address all financing aspects of the project.

The Financial Business Plan should include:

Project Parties. A description of the main parties to the project, including background, ownership and experience, proposed financial contribution to project, expected financial benefit to each party of the project.

Project Assumptions. A description and explanation for each of the financial, economic, and operating assumptions for the project. The assumptions should be consistent with and supported by the information provided in the Technical Application.

Financial Projections. The financial projections should be on an annual basis, commence with the initial project Phase and extend to the final closeout of the project. Projections should include a statement of revenues and expenses (income statement), balance sheet, and cash flow statement (sources and uses of funds). The projections should be adequately supported. The statements and schedules should be prepared using Excel™ 2003 (or more recent) software and the Excel based model should be provided in electronic format including cell formulas so that review of the model assumptions and calculations may be facilitated. The financial model should be included in the application as Appendix F.

Limited Recourse Project Financing. For projects employing non-recourse or limited recourse debt financing, provide a description of the applicant's approach to, and the status of, such financing. Include copies of available funding commitments or expressions of interest from funding sources in Appendix G.

Contracts and Agreements. A description of all contracts, agreements, permits, licenses, etc., that will need to be established or obtained to finance the project, and a description of any agreements to be entered into regarding the operation of the project and the responsibilities of the project parties.

Financial Commitments. The applicant must discuss the priority placed by the team's management on financing the project. This should include a discussion of management's decision to: (1) allocate internal resources, (2) obtain recourse financing, or (3) obtain non-recourse project financing. The degree of commitment to the project will be measured in part by the level of financial commitment assumed by project team members. The project team can also demonstrate its commitment by: (1) sharing in project costs above the Government's minimum requirements and (2) agreeing to cover potential project cost increases.

The applicant should include a commitment letter(s) to provide funds in accordance with the terms of this funding opportunity announcement from each organization submitting the application, which is committed to providing the non-Federal share of project funding. Commitments to provide funds shall be submitted in a letter signed by an officer of the corporation or other entity that is qualified to commit

the applicant's funding to the proposed project. Funds must be committed in accordance with the terms of this funding opportunity announcement and consistent with the application submitted.

If a third party, (i.e., a party other than the organization(s) submitting the application) proposes to provide all or part of the required cost sharing, the applicant must include a letter from the third party stating that it is committed to providing a specific minimum dollar amount of cost sharing. The relationship of the funds supplier to the applicant, the amount of funds to be provided, and the timing of the funding shall be specified.

Commitment letters should identify the type of proposed cost sharing (e.g., cash, services, and/or property) to be contributed. If property or services are proposed, the applicant should provide support for their valuation and explain how valuation was determined. If a property appraisal is used, the applicant should provide a copy and an explanation of whether the property values used are acquisition, book, or replacement costs.

Commitment letters from the applicant and third parties should be provided in Appendix G.

Contract Bonding Practices. For proposed construction contracts or subcontracts, the Applicant must explain its contract bonding and/or surety/guarantor practices and how they will be applied if their application is accepted for Federal funding.

8. APPENDICES TO PROJECT NARRATIVE (each submitted as a separate file under Add Optional Other Attachment on the Other Attachments Form)

#### APPENDIX A: SITE DOCUMENTATION

File name: site.pdf

Provide documents supporting evidence of site availability, such as ownership of the site, signed option to purchase the site from the site owner, letter of intent by the site owner to sell the site to the Applicant or provide the Applicant access to the site for the project. Provide any site maps, plot plans, site photographs, etc. necessary to support claims. Save the information in a single file named "Site.pdf" and click on "Add Optional Other Attachment" to attach.

#### APPENDIX B: TEAM LETTERS OF COMMITMENT AND AGREEMENTS

File name: Team.pdf

Provide signed agreements or letters from team members demonstrating that the proposed team members are fully committed to the project. Save the information in a single file named "Team.pdf" and click on "Add Optional Other Attachment" to attach.

#### APPENDIX C: PROJECT MANAGEMENT PLAN

File name: pmp.pdf

Provide a Project Management Plan including the following information: a Work Breakdown Structure identifying tasks to be performed under each Phase; a Statement of Project Objectives giving detailed description of work to be performed under each task; a Project Schedule for the entire project at the task level of detail; a Baseline Cost Plan identifying the planned cost for each task on a monthly basis; a description of the project management system for monitoring and controlling scope, schedule, and cost including the methodology and implementation of reporting earned value; a Project Communication Protocol to establish the frequency and type of communication between the Recipient and DOE; and a Risk Management Plan that delineates

the methodology that will be used to identify and quantify or assess risks. Save the information in a single file named “pmp.pdf” and click on “Add Optional Other Attachment” to attach.

#### APPENDIX D: STATEMENTS FROM POTENTIAL BUYERS

File name: buyer.pdf

Provide statements of interest in writing from potential purchasers of the proposed technologies. Save the information in a single file named “buyer.pdf” and click on “Add Optional Other Attachment” to attach.

#### APPENDIX E: FINANCIAL STATEMENTS

File name: fin\_statement.pdf

Provide financial statements for the applicant and for any team member, subrecipient, third party, etc. that will commit to funding some portion of the applicant’s share of the project costs. Save the information in a single file named “fin\_statement.pdf” and click on “Add Optional Other Attachment” to attach.

#### APPENDIX F: FINANCIAL MODEL OF PROJECT

File name: fin\_model.xls

Provide a statement of revenues and expenses (income statement), balance sheet, and cash flow statement (sources and uses of funds) prepared using Excel<sup>™</sup> 2003 (or more recent) software. The Excel based model should be provided in electronic format including cell formulas so that review of the model assumptions and calculations may be facilitated. Save the information in a single file named “fin\_model.xls” and click on “Add Optional Other Attachment” to attach.

#### APPENDIX G: FINANCIAL COMMITMENT LETTERS

File name: fin\_commitment.pdf

Provide financial commitment letters from the applicant and third parties, including commitments or expressions of interest from funding sources for limited recourse project financing. Save the information in a single file named “fin\_commitment.pdf” and click on “Add Optional Other Attachment” to attach.

### **Project Summary/Abstract File**

The project summary/abstract must contain a summary of the proposed activity suitable for dissemination to the public. It should be a self-contained document that identifies the name of the applicant, the project director/principal investigator(s), the project title, the objectives of the project, a description of the project, including methods to be employed, the potential impact of the project (i.e., benefits, outcomes), and major participants (for collaborative projects). This document must not include any proprietary or sensitive business information as the Department may make it available to the public. The project summary must not exceed 1 page when printed using standard 8.5” by 11” paper with 1” margins (top, bottom, left and right) with font not smaller than Arial 11 point. Save this information in a file named “Summary.pdf,” and click on “Add Optional Other Attachment” to attach.

### **Resume File**

Provide a resume for each key person proposed, including subrecipients and consultants if they meet the definition of key person. A key person is any individual who contributes in a substantive,

measurable way to the execution of the project. The biographical information for each resume must not exceed 2 pages when printed on 8.5” by 11” paper with 1 inch margins (top, bottom, left, and right) with font not smaller than Arial 11 point and should include the following information, if applicable:

*Education and Training.* Undergraduate, graduate and postdoctoral training, provide institution, major/area, degree and year.

*Professional Experience.* Beginning with the current position list, in chronological order, professional/academic positions with a brief description.

*Publications.* Provide a list of up to 10 publications most closely related to the proposed project. For each publication, identify the names of all authors (in the same sequence in which they appear in the publication), the article title, book or journal title, volume number, page numbers, year of publication, and website address if available electronically.

Patents, copyrights and software systems developed may be provided in addition to or substituted for publications.

*Synergistic Activities.* List no more than 5 professional and scholarly activities related to the effort proposed.

Save all resumes in a single file named “bio.pdf” and click on “Add Optional Other Attachment” to attach.

#### **SF 424 A Excel, Budget Information – Non-Construction Programs File:**

You must provide a separate budget for each year of support requested and a cumulative budget for the total project period. Use the SF 424 A Excel, “Budget Information – Non Construction Programs” form on the Applicant and Recipient Page at [http://management.energy.gov/business\\_doe/business\\_forms.htm](http://management.energy.gov/business_doe/business_forms.htm). You may request funds under any of the Object Class Categories as long as the item and amount are necessary to perform the proposed work, meet all the criteria for allowability under the applicable Federal cost principles, and are not prohibited by the funding restrictions in this announcement (See PART IV. G – Funding Restrictions). Save the information in a single file named “SF424A.xls,” and click on “Add Optional Other Attachment” to attach.

#### **Budget Justification File** (Some information contained below has been revised to clarify the requested cost information. Individual changes are not identified in purple font.)

Budget justification information consists of Cost Detail information and associated Narrative Explanations. Save the budget justification information, including both Cost Detail and Narrative Explanations, in a single file named “Budget.pdf,” and click on “Add Optional Other Attachment” to attach. A sample format for providing this Cost Detail information is available as a separate attachment to this announcement. See Budget Justification Guideline.xls. Cost detail shall be submitted as indicated by the instructions on the Budget Justification Guideline form and as described below. The applicant shall provide a detailed budget, identifying costs for each Phase [defined as (I) Project Definition, FEED Completion and ROD Approval, [if applicable] (II) Design, (III) Construction, and (IV) Demonstration] as well as for the total project. The proposed budget must include all costs (both DOE funded as well as non-DOE funded costs, i.e., cost sharing). Narrative Explanations of budget items should be provided to supplement the Cost Detail Requirements described below. There is no specific format for the Narrative Explanations.

## Cost Detail Requirements

The following cost detail is required for the proposed cost elements. **Failure to provide the detailed cost information as described in the instructions will result in an incomplete application. A 50% minimum cost share is required by this Announcement, therefore, the applicant shall stipulate in the application the source and amount of cost sharing and the value of third party in-kind contributions proposed to meet the requirement.** Additionally, teaming members and subrecipients are also required to submit the information described below with their budgets using separate Budget Justification Guideline forms including Narrative Explanations.

**Personnel (Direct Labor)** -- In support of the proposed personnel costs, provide a schedule that identifies the labor hours, labor rates, and cost by labor classification for each [Phase](#). Also indicate the basis of the labor classification, number of hours, and labor rates. An example of the basis for the labor classification and number of hours could be past experience, engineering estimate, etc. An example of the basis for the labor rates could be actual rates for the individuals who will perform the work or an average labor rate for the labor classification or a departmental average rate.

**Fringe Rate** -- Provide the method used to calculate the proposed rate amount. If a fringe benefit rate has been negotiated with, or approved by, a Federal Government agency, provide a copy of the agreement. If no rate agreement exists, provide a detailed list of the fringe benefit expenses (e.g., payroll taxes, insurances, holiday and vacation pay, bonuses) and their associated costs. Identify the base for allocating these fringe benefit expenses.

**Travel** -- For each proposed trip, provide the purpose, number of travelers, travel origin and destination, number of days, and a breakdown of estimated costs for airfare, lodging, meals, car rental, and incidentals. The basis for the airfare, lodging, meals, car rental, and incidentals must be provided, such as past trips, current quotations, current version of the Federal Travel regulations, etc.

**Equipment** -- Provide an itemized list of each piece of equipment, its unit cost, and the basis for estimating the cost, for example, vendor quotes, catalog prices, prior invoices, etc.

**Supplies** -- Provide an itemized list of supplies that have an acquisition cost greater than \$5,000, identify the quantity of each item, its unit cost, and the basis for estimating the cost, for example, vendor quotes, catalog prices, prior invoices, etc.

**Subrecipients (Subawardees)** -- Identify EACH planned subrecipient and its total proposed costs. Each **subrecipient** must provide an SF424, Application for Federal Assistance, an SF 424A, Budget Information, Cost Detail including Narrative Explanations as part of the **applicant's** submittal. (See Subaward Budget Files below.) In addition, the applicant shall provide the following information for EACH planned subaward: a brief description of the work to be subcontracted; the number of quotes solicited and received; the cost or price analysis performed by the applicant; names and addresses of the subrecipients tentatively selected and the basis for their selection (i.e., competitively selected - low bidder from 2 or more comparable (apples to apples) subcontract quotes; delivery schedule, or technical competence); type of subaward and estimated cost and fee or profit; and affiliation with the applicant, if any.

Each recipient and subrecipient must comply with the standards prescribed in 10 CFR 600.144(e), 226(a) or 331(c)(3), as applicable, to provide access to their supporting cost records and financial statements when required.

ARRA 2009 Additional Budget Justification Information

Applications shall provide information which validates that all laborers and mechanics on projects funded directly by or assisted in whole or in part by and through funding appropriated by the Act are paid wages at rates not less than those prevailing on projects of a character similar in the locality as determined by subchapter IV of Chapter 31 of title 40, United States Code (Davis-Bacon Act). For guidance on how to comply with this provision, see <http://www.dol.gov/esa/whd/contracts/dbra.htm>.

**Consultants** -- Provide the hourly or daily rate along with the basis for the rate. Furnish resumes or similar information regarding qualifications or experience. Provide at least two invoices reflecting hourly or daily rates charged to customers other than the Government. A statement signed by the consultant certifying his or her availability and salary must be provided. If travel or incidental expenses are to be charged, give the basis for these costs.

**Other Direct Costs** -- Provide an itemized list with costs for any other item proposed as a direct cost and state the basis for each proposed item.

**Indirect Costs** -- Provide the name of your cognizant/oversight agency, if you have one, and the name and phone number of the individual responsible for negotiating your indirect rates. If indirect rates have been negotiated with or approved by a Federal Government agency, please provide a copy of the latest rate agreement. If you do not have a current rate agreement, submit an indirect cost rate application which includes the major base and pool expense groupings by line item and dollar amount. In either case, provide a breakdown of the proposed indirect costs for each of your accounting periods included in the application. Identify the rate and allocation base for each indirect cost, such as Overhead, General and Administrative, Facilities Capital Cost of Money, etc.

**Cost Sharing** -- Identify the percentage level and source of cost sharing for the proposed project and for individual Phases. Additionally, the impact of DOE's cost share to the viability of the project must be addressed, to include justification for the need for Federal Funds.

NOTE: The total project cost (i.e., sum of applicant and other participants plus DOE cost shares) must be reflected in each budget form.

A detailed estimate of the cash value including its basis and nature, (e.g., equipment, labor, facilities, cash, etc.), of all contributions to the project by each participant must be provided. Note that "cost-sharing" is not limited to cash investment. In-kind contributions (e.g., contribution of services or property; donated equipment, buildings, or land; donated supplies; or unrecovered indirect costs) incurred as part of the project may be considered as all or part of the cost share. The "cost-sharing" definition is contained in 10 CFR 600.30, 600.101, 600.123, 600.202, 600.224, 600.302, and 600.313.

Fee or profit will not be paid to the recipients of financial assistance awards. Fee or profit paid to any member of the proposing team having a substantial and direct interest in the commercialization of the demonstration technology is unallowable. Additionally, foregone fee or profit by the applicant shall not be considered cost sharing under any resulting award. Reimbursement of actual costs will only include those costs that are allowable and allocable to

the project as determined by DOE, with reliance on the advice of DCAA, in accordance with the applicable cost principles prescribed in 10 CFR 600.127, 600.222, 600.317 or 10 CFR 600.318.

**Royalty Information:**

- (a) **Cost or Charges for Royalties** -- When the response to this Announcement contains costs or charges for royalties totaling more than \$250, the following information shall be included in the response relating to each separate item of a royalty or license fee:
- (1) Name and address of licensor.
  - (2) Date of license agreement.
  - (3) Patent numbers, patent application serial numbers, or other basis on which the royalty is payable.
  - (4) Brief description, including any part or model numbers of each cooperative agreement item or component on which the royalty is payable.
  - (5) Percentage or dollar rate of royalty per unit.
  - (6) Unit price of cooperative agreement item.
  - (7) Number of units.
  - (8) Total dollar amount of royalties.
- (b) **Copies of Current Licenses** -- In addition, if specifically requested by the Contracting Officer before execution of the cooperative agreement, the applicant shall furnish a copy of the current license agreement and an identification of applicable claims of specific patents.

**Subaward Budget File(s)**

You must provide a separate budget (i.e., budget for each budget year and a cumulative budget) for each subrecipient that is expected to perform work estimated to be more than \$650,000 or 50 percent of the total work effort (which ever is less). Use the SF 424 A Excel for Non Construction Programs or the SF 424 C Excel for Construction Programs. These forms are found on the Applicant and Recipient Page at [http://management.energy.gov/business\\_doe/business\\_forms.htm](http://management.energy.gov/business_doe/business_forms.htm). Save each Subaward budget in a separate file. Use up to 10 letters of the subrecipient's name (plus .xls) as the file name (e.g., ucla.xls or energyres.xls), and click on "Add Optional Other Attachment" to attach.

**Federally Funded Research and Development Center (FFRDC) Contractors and M&O**

**Contractors** -- If your application includes work to be performed by a FFRDC or M&O contractor, include a brief description of the work to be performed and the dollar value associated with the work. Additionally, a Field Work Proposal must be completed and submitted in accordance with the instructions provided below:

**Budget for DOE/NNSA Federally Funded Research and Development Center (FFRDC) Contractor File, if applicable.**

If a DOE FFRDC contractor is to perform a portion of the work, you must provide a DOE Field Work Proposal in accordance with the requirements in DOE Order 412.1 Work Authorization System. This



order and the DOE Field Work Proposal form are available at [http://management.energy.gov/business\\_doe/business\\_forms.htm](http://management.energy.gov/business_doe/business_forms.htm). Use up to 10 letters of the FFRDC name (plus .pdf) as the file name (e.g., lanl.pdf or anl.pdf), and click on "Add Attachments" in Field 11 to attach.

**Other**

**Environmental Questionnaire(s)**

You must submit a separate Environmental Questionnaire for EACH location/site where work will be performed. The Environmental Questionnaire can be found at the following website: [http://www.netl.doe.gov/business/forms/451\\_1-1-3.doc](http://www.netl.doe.gov/business/forms/451_1-1-3.doc), or as a separate attachment to this announcement. Save all completed, signed questionnaires as one integrated PDF document named ENVQUES.pdf and click on "Add Optional Other Attachment" to attach.

**Financial Management System**

In order to qualify for a financial assistance award, the applicant **must demonstrate a financial management system that satisfies 10 CFR 600.121 or 10 CFR 600.311, Standards for Financial Management Systems, by describing how its system meets the seven criteria outlined in 10 CFR 600.121(b) or 10 CFR 600.311(a).**

The major attribute of an acceptable financial management system is an accounting system that can accumulate, record, and report costs by project. Please include a signed letter certifying that you have reviewed and agree to comply with 10 CFR 600.121 or 10 CFR 600.311. Save the information in a single file named "FIN MGMT.pdf," and click on "Add Optional Other Attachment" to attach.

**3. SF-LLL Disclosure of Lobbying Activities**

If applicable, complete SF- LLL. Applicability: If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the grant/cooperative agreement, you must complete and submit Standard Form - LLL, "Disclosure Form to Report Lobbying."

**Summary of Required Forms/Files**

Your application must include the forms from the application package and other documents as shown below:

<b>Name of Document</b>	<b>Format</b>	<b>File Name</b>
<b>SF 424 - Application for Federal Assistance</b> .....	Form	N/A
<a href="#">Project/Performance Site Location(s)</a> .....	Form	N/A
<b>Other Attachments Form: Attach the following files to this form:</b> .....	Form	N/A
Project Narrative File (Mandatory Other Attachment).....	PDF	Project.pdf
Other Attachments:		
Appendix A – Site Documentation.....	PDF	site.pdf
Appendix B – Team Letters of Commitment and Agreements....	PDF	Team.pdf
Appendix C – Project Management Plan .....	PDF	pmp.pdf
Appendix D – Statements from Potential Buyers.....	PDF	buyer.pdf
Appendix E – Financial Statements.....	PDF	fin_statement.pdf
Appendix F – Financial Model of Project.....	Excel	fin_model.xls

Appendix G – Financial Commitment Letters.....	PDF	fin_commitment.pdf
Project Summary/Abstract File.....	PDF	Summary.pdf
Resume File.....	PDF	Bio.pdf
SF 424A Excel - Budget Information for Non-Construction Programs File.....	Excel	SF424A.xls
Budget Justification File.....	PDF	Budget.pdf
Subaward Budget File(s).....	Excel	See Instructions
Budget for DOE/NNSA Federally Funded Research and Development Center (FFRDC) Contractor File, if applicable.....	PDF	See Instructions
Environmental Questionnaire(s).....	PDF	ENVQUES.pdf
Financial Management System .....	PDF	FIN MGMT .pdf
<b>SF-LLL Disclosure of Lobbying Activities, if applicable.</b>	Form	N/A

**D. SUBMISSIONS FROM SUCCESSFUL APPLICANTS.**

If selected for award, DOE reserves the right to request additional or clarifying information for any reason deemed necessary, including, but not limited to:

- a. Indirect cost information
- b. Other budget information
- c. Name and phone number of the Designated Responsible Employee for complying with national policies prohibiting discrimination (See 10 CFR 1040.5)
- d. Representation of Limited Rights Data and Restricted Software, if applicable
- e. Additional Post Selection Information:

Award of a Cooperative Agreement requires additional and more detailed information than that needed for selection. Any deficiencies or omissions in the information provided in the application must be addressed and information must be in the appropriate format prior to award of a Cooperative Agreement. Due to the time required for preparation and review of the application, information may not be current and may need to be updated. Following selection, Applicants should expect that DOE will request information including, but not limited to, the following list. DOE will enter into negotiations regarding the final content and format of information listed below:

- Environmental Information Volume, available at [www.netl.doe.gov/business/solicitations/2001pdf/41428/EIV\\_guide.pdf](http://www.netl.doe.gov/business/solicitations/2001pdf/41428/EIV_guide.pdf)
- A fully detailed and properly formatted cost estimate
- Audit data provided by the Defense Contract Audit Agency
- An updated Funding Plan; an updated Excel-based model containing financial projections for the income statement, balance sheet, and cash flow statement for all Phases of the project; an updated sources and application of funds statement covering all Phases of the project; and current financial statements for the applicant, funding sources, and critical vendors
- Intellectual property information including unlimited rights data, limited rights data, restricted computer software, and protected data
- A fully executed host site agreement between the applicant and site owner and detailed site information
- An updated Commercialization Plan
- Major subcontracts for review by DOE to ensure consistency with regulations and policy
- Updated Risk Management Plan
- [Updated Project Management Plan](#)

DOE shall use this information as the basis for negotiation of the fully definitized Cooperative

Agreement, based on the model Cooperative Agreement attached to this announcement. DOE anticipates the negotiation period to last approximately [seven months](#). Failure by the Applicant to provide information in a timely manner will seriously delay award of a Cooperative Agreement. In no instance may the negotiation period extend beyond one year. Failure to reach agreement on all aspects of the Cooperative Agreement within one year will result in termination of the negotiations by DOE and deselection of the application.

## **E. SUBMISSION DATES AND TIMES**

### **1. Pre-application Due Date.**

Pre-applications are not required.

### **2. Application Due Date.**

Applications must be received by [August 24, 2009, 8:00:00 PM Eastern Time](#). You are encouraged to transmit your application well before the deadline. APPLICATIONS RECEIVED AFTER THE DEADLINE WILL NOT BE REVIEWED OR CONSIDERED FOR AWARD.

## **F. INTERGOVERNMENTAL REVIEW**

This program is not subject to Executive Order 12372 – Intergovernmental Review of Federal Programs.

## **G. FUNDING RESTRICTIONS.**

Cost Principles. Costs must be allowable in accordance with the applicable Federal cost principles referenced in 10 CFR Part 600. The cost principles for commercial organizations are in FAR Part 31.

Pre-award Costs. Recipients may charge to an award resulting from this announcement pre-award costs that were incurred within the ninety (90) calendar day period immediately preceding the effective date of the award, if the costs are allowable in accordance with the applicable Federal cost principles referenced in 10 CFR Part 600. Recipients must obtain the prior approval of the contracting officer for any pre-award costs that are for periods greater than this 90 day calendar period.

Pre-award costs are incurred at the applicant's risk. DOE is under no obligation to reimburse such costs if for any reason the applicant does not receive an award or if the award is made for a lesser amount than the applicant expected.

## **H. OTHER SUBMISSION AND REGISTRATION REQUIREMENTS**

### **1. Where to Submit.**

APPLICATIONS MUST BE SUBMITTED THROUGH FEDCONNECT TO BE CONSIDERED FOR AWARD. Submit electronic applications through the FedConnect portal at [www.fedconnect.net](http://www.fedconnect.net). Information regarding how to submit applications via FedConnect can be found at [https://www.fedconnect.net/FedConnect/PublicPages/FedConnect\\_Ready\\_Set\\_Go.pdf](https://www.fedconnect.net/FedConnect/PublicPages/FedConnect_Ready_Set_Go.pdf).

Further, it is the responsibility of the applicant, prior to the offer due date and time, to verify successful transmission.

### **2. Registration Process.**

There are several one-time actions you must complete in order to submit an application in response to this Announcement (e.g., obtain a DUNS number, register with the CCR, and register with FedConnect). Applicants, who are not registered with CCR and FedConnect should allow at least 21 days to complete these requirements. It is suggested that the process be started as soon as possible.

## **PART V - APPLICATION REVIEW INFORMATION**

### **A. CRITERIA**

#### **1. Initial Review Criteria.**

Prior to a comprehensive merit evaluation, DOE will perform an initial review to determine that (1) the applicant meets all eligibility requirements stipulated in Part III; (2) the information required by the announcement has been submitted; (3) all mandatory requirements are satisfied; and (4) the proposed project is responsive to the objectives of the FOA.

#### **2. Merit Review Criteria.**

##### **2.1. Technical Evaluation Criteria**

A technical evaluation will determine the responsiveness of the application to the technical requirements of this Announcement and the merits of the application with regard to: (1) the potential for the proposed demonstration project, given the proposed technology, technical plans, and site, to achieve the objectives of the Announcement, (2) the degree to which the organizational, management, and operational plans can lead to successful demonstration of the technology, and (3) the potential for future commercial applications of the proposed technology. Applications submitted in response to this Announcement will be evaluated and numerically scored against the technical evaluation criteria listed below.

##### **Criterion 1: Technology Merit, Technical Plan, and Site Suitability (50%)**

- Soundness, adequacy, and significance of the description of the proposed technology and technical plan, overall merit of the proposed technology and technical plan, and ability of the technology and technical plan to achieve project goals.
- Completeness of the identification of potential risk elements, quality and adequacy of the approach to assessing and managing risk, conformance of risk management approach with industry standards, adequacy of the approaches to risk mitigation. Adequacy of the approach to managing and addressing liability issues associated with the site development, injection operations, and the long-term storage of the CO<sub>2</sub> after operations and after the project has concluded. Completeness of the assessment of environmental, health, safety, and security issues associated with the appropriate geologic sequestration option: EOR, saline formation, stacked storage, coal seam, or basalt formation. Adequacy of the modeling effort of all relevant aspects of the sequestration effort to predict injectivity and storage capacity, and to support the risk assessment.
- Soundness, adequacy, and significance of the information and data provided to support the ability of the proposed technology to meet the priority objectives of this Announcement and to achieve progress toward the performance targets of the Energy Policy Act of 2005. Specifically, to support the ability of the project to achieve the minimum CO<sub>2</sub> capture efficiency of 50% and make progress toward the target of 90% CO<sub>2</sub> capture efficiency. Specifically to support the ability of the project to capture and sequester, or put to beneficial use, a minimum of 300,000 tons per year of

CO<sub>2</sub>. Specifically to support the ability of the proposed project to achieve a COE increase of less than 10% for gasification systems and less than 35% for combustion and oxycombustion systems for this project, or for future projects following further development, when compared with plant operation not including carbon capture and sequestration. Specifically to support the ability of the proposed project to achieve, the capture efficiency and the capture and sequestration or beneficial use rate requirements of this Announcement, measured as a 30 day running average.

- Adequacy of performance metrics including, but not limited to : chemical composition and flow rate (tons per hour) of the captured CO<sub>2</sub> stream; capture efficiency as a function of flue gas flow rate; and plant operating efficiency with and without sequestration;
- Adequacy of economic metrics including: tons of CO<sub>2</sub> sequestered per dollar of carbon capture and sequestration capital cost and per dollar of carbon capture and sequestration operating cost (computed independently for capture and sequestration and both on an annual basis);
- Adequacy of the proposed approach to sequestration or beneficial use. Completeness and adequacy of information supporting coordination with a purchaser of CO<sub>2</sub>, coordination with a large-scale sequestration test, or other method demonstrating the project's ability to sequester or use CO<sub>2</sub>. Completeness in identifying of technical issues with the approach that must be resolved to confirm the approach as a viable option for widespread sequestration or beneficial use, and the adequacy of approach to resolving these issues. For sequestration, adequacy of specific information on the geologic formations, wells, and equipment to support the ability to sequester CO<sub>2</sub>; Adequacy of the approach to obtaining information necessary to support the sequestration effort.
- Degree of advancement relative to commercial technology or previously demonstrated technology.
- Soundness, adequacy, and significance of the scientific, engineering, and technical information and data provided to support readiness of the proposed technology for demonstration at the scale proposed.
- Quality of the baseline testing, project testing, and performance monitoring plans for generating the information needed to adequately document achievements of the proposed project. Adequacy of the monitoring plans to assess environmental, health, safety, and security impacts of the sequestration effort. Adequacy of the proposed maintenance, inspection and monitoring efforts. Adequacy of the long term monitoring to establish the permanency of sequestration and the assessment of the areal extent of the plume. Adequacy of the operational, verification, environmental, and mitigation components of the injection process.
- Adequacy of the proposed project for demonstrating the commercial viability of the proposed technology. Degree to which the project scale exceeds capture and sequestration or beneficial use of 300,000 tons per year of CO<sub>2</sub>. Adequacy of the proposed project scale for demonstrating the impact of carbon capture and sequestration on plant operations (staffing, auxiliary systems integration, space), economics (capital investment and operating costs), and performance (power and steam requirements, CO<sub>2</sub> capture efficiency).
- Quality and adequacy of the proposed site for supporting performance of the proposed project. Ability of the infrastructure at the proposed site to meet the needs of the technology to be demonstrated, including availability of necessary power and steam, accessibility to coal supply, water supply, pipelines, CO<sub>2</sub> transportation, transmission interconnect and other necessary infrastructure requirements. Compatibility of the demonstration at the proposed site with the conditions of the surrounding environment, and ability to meet any other appropriate environment, health, safety, security, and public policy requirements. Adequacy of applicant's site selection analysis to clearly identify all site alternatives.
- Strength of the commitment(s) for use and availability of the host site and any proposed alternate sites to support the proposed project. Strength of the evidence showing the Applicant's right to sequester CO<sub>2</sub> at the proposed sequestration site;
- Adequacy of the integration of key physical or logistical (external) elements with the project necessary for a successful demonstration.

- Reasonableness and appropriateness of the proposed schedule for completion of the construction and demonstration Phases of the project.

Criterion 2: Project Organization and Project Management Plan (30%)

- Completeness of the proposed Project Team and ability of the proposed team to successfully provide the skills and resources needed to implement the project as proposed. Degree of Project Team member commitment to the project as evidenced by letters of commitment or signed agreements among team members
- Adequacy of corporate background and experience to support successful performance, including design, construction, permitting and operation of the proposed project as evidenced by corporate history of successful completion of similar projects
- Knowledge, experience, adequacy, and degree of involvement of key personnel for the successful performance of the proposed project
- Clarity and logic of the proposed organizational structure with respect to responsibilities and authorities among elements of the project team
- Soundness and completeness of the Project Management Plan for successfully implementing the proposed project and achieving the objectives of the Announcement. Soundness and completeness of the Project Management Plan for establishing the baseline scope, schedule, and cost for the project. The following aspects of the Project Management Plan shall be evaluated.
  - Soundness and completeness of the work breakdown structure and statement of project objectives, identifying all work necessary to successfully complete the project
  - Soundness and completeness of the project schedule; including all tasks necessary for successful completion of the project; incorporating and showing inter-relationships among all technical, business, financial, permitting and other appropriate factors; including important milestones and decision points; allocating sufficient and appropriate time to complete the project achieve project goals
  - Adequacy of the Baseline Cost Plan for establishing the baseline cost for the project and incorporating costs for all tasks necessary for performing the proposed project
  - Adequacy of the project management system to monitor and control project scope, cost, and schedule
  - Adequacy of the Project Communication Protocol for ensuring effective communication between the Recipient and DOE
  - Adequacy of the Risk Management Plan for assessing, identifying, tracking, and managing project risk
  - Adequacy of the Environmental Management Plan for assessing, monitoring, and reporting the potential environmental impacts to air, land and water resources, and potential impacts of waste production.

Criterion 3: Commercialization Potential (20%)

- Adequacy and completeness of the proposed Commercialization Plan to achieve full commercialization of the proposed technology. Economic viability of the proposed technology compared with competing technologies. Adequacy of the approach to overcoming barriers to commercialization through the demonstration project, and following the demonstration project. Applicability of the proposed technology, including subsystems, components, and process modules, to a broad range of new and existing coal-fired power generation markets, numbers and types of plants, geographic areas, and fuel types.
- Potential for proposed technologies and sequestration approaches meeting DOE's priority objectives to achieve widespread commercial deployment and broad market impact. Evidence of potential for commercial deployment demonstrated by statements of interest in writing from

potential purchasers of the technologies. Potential for spin-off products, sub-systems, components, and modules resulting from the proposed project to achieve commercial replication. Adequacy of the experience and capabilities of the team members to achieve broad commercial deployment of the proposed technology as evidenced by appropriate experience with similar technologies.

## **2.2. Financial Evaluation Criteria**

An evaluation will determine the responsiveness of the application to the financial requirements of this Announcement and will determine the merits of the application with regard to the (1) potential for the applicant to meet the funding requirements of this Announcement, and (2) the potential for the application to successfully implement the Financial Business Plan. Applications submitted in response to this Announcement will be evaluated and numerically scored against the financial evaluation criteria listed below.

### **Criterion 1: Funding Plan (60%)**

- Adequacy, completeness and viability of the proposed Funding Plan.
- Financial condition and capacity of proposed funding sources to provide their portion of project costs, including development costs.

### **Criterion 2: Financial Business Plan (40%)**

- Reasonableness and completeness of Financial Business Plan demonstrating the potential for the applicant to successfully implement the project.
- Completeness of financial information and consistency with the funding and financial business plans.
- Viability of financial projections and financial model.
- Degree of financial commitment to the project evidenced by applicant and other project parties.

## **3. Budget Information and Financial Management System Evaluation Criteria**

The technical and financial evaluations represent the total evaluation scoring; however, the budget and financial management system evaluation, which is not point scored, will be conducted to determine the following:

- Reasonableness, allowability, and allocation of the proposed cost and the proposed cost share.
- Completeness and adequacy of the 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 adequacy of associated supporting documentation.
- Correspondence between the budget estimate and the magnitude of the work proposed.

The Source Selection Authority may consider the results of this evaluation when making selections.

## **4. Environmental Evaluation Criterion**

The technical and financial evaluations represent the total evaluation scoring; however, the environmental evaluation, which is not point scored, will be conducted as follows. The Environmental

Questionnaire(s) will be evaluated to: (1) determine the adequacy and completeness of information submitted; (2) assess the applicant's awareness of project-related requirements, including requirements for mitigating any project-related environmental risks and impacts; (3) assess the applicant's ability to meet compliance requirements and the applicant's approach to identification and resolution of issues; (4) assess the potential impacts of the proposed work and the potential liability to DOE. The Questionnaire will be used to assist DOE in partially fulfilling requirements for compliance with NEPA and for making a preliminary assessment regarding the level of analysis necessary to comply with NEPA.

The Source Selection Authority may consider the results of this evaluation when making selections.

## **5. Other Selection Factors.**

In addition to the results of the Budget and Financial Management System evaluation and Environmental evaluation, the factors listed below, while not indicators of the applicant's merit, e.g., technical excellence, cost, applicant's ability, etc., may be essential to the process of selecting the application(s) that, individually or collectively, will best achieve the objectives of the CCPI program and DOE's priority objectives for CCPI Round 3. Such factors are often beyond the control of the applicant. Applicants should recognize that some very good applications may not receive an award because they do not fit within a mix of projects and technologies that maximize the probability of achieving DOE's overall objectives. Therefore, the following Program Policy Factors may be used individually or collectively by the Source Selection Authority (SSA) following application of the evaluation criteria to determine which of the ranked applications shall receive DOE funding support.

- Allowing DOE to have a portfolio of projects that effectively represent a diversity of technology approaches and methods in the DOE Fossil Energy Program.
- Diversity of coals used in the CCPI Program.
- Applicability of technologies to a wide variety of U.S. coals.
- Geographic distribution of potential markets.
- Presentation of unique environmental, economic, or efficiency benefits.
- Achievement of a mix of projects and technologies that best demonstrates progress toward DOE's priority objectives for CCPI Round 3.
- Achievement of a portfolio of projects that represents the best value to the Government, through use of Federal funds to support projects with Federal cost shares commensurate with the level of technological risk.
- [Federal cost share per ton of CO<sub>2</sub> captured and sequestered annually.](#)
- [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 above factors, as well as the results of the budget and financial management system review and environmental review, will be independently considered by the SSA in determining the optimum mix of applications that will be selected for support. These policy factors will provide the SSA with the capability of developing, from the competitive Announcement, a broad involvement of organizations and organizational ideas, which both enhance the overall technology research effort and upgrade the program content to meet the goals of the DOE.

## **B. REVIEW AND SELECTION PROCESS.**

### **1. Merit Review.**



Applications that pass the Initial Review will be subjected to a Merit Review in accordance with the following procedure. Applications will be evaluated using pre-established weights to determine the relative merit of the applications considering the Technical Evaluation Criteria shown in Part V.A.2.1.

Applications will be evaluated using pre-established weights to determine the relative merit of the applications considering the Financial Evaluation Criteria shown in Part V.A.2.2.

The Technical Evaluation Criteria have greater importance than the Financial Evaluation Criteria.

## **2. Selection.**

DOE anticipates negotiations leading to cooperative agreements with those applicants whose applications are determined to be in the best interest of DOE for achieving the CCPI objectives set forth in this Announcement. Selection of an application by DOE will result from a process of evaluating the merits of the applicant's complete application, in accordance with all of the evaluation factors set forth in this section, and applying the Other Selection Factors noted in Part V.A.5.

The selection process reflects DOE's desire to accept an application based on its potential for best achieving CCPI objectives rather than solely on evaluated technical merit or cost. Accordingly, DOE may select for award all applications, no applications, or any number or parts of applications based on DOE's decision as to which meritorious applications best achieve the CCPI objectives set forth in this Announcement.

Applicants should note that selection for negotiation will be made entirely on the basis of applications submitted. Applications should, therefore, address specifically the factors mentioned in the evaluation criteria and not rely on the assumed background knowledge of reviewers.

## **3. Discussions and Award.**

The Government may enter into discussions with a selected applicant for any reason deemed necessary, including but not limited to: (1) the budget is not appropriate or reasonable for the requirement; (2) only a portion of the application is selected for award; (3) the Government needs additional information to determine that the recipient is capable of complying with the requirements in 10 CFR part 600; and/or (4) special terms and conditions are required. Failure to resolve satisfactorily the issues identified by the Government will preclude award to the applicant.

Furthermore, if funds become available as a result of unsuccessful negotiations on a selected project(s), or in the event a selected applicant(s) withdraws from negotiations, DOE reserves the right to select an additional project(s) after consultation with OMB because of the expedited expenditure requirement of the ARRA.

DOE anticipates the negotiation period for applications selected under DE-FOA-0000042 to last approximately seven months. Failure by the Applicant to provide information in a timely manner will seriously delay award of a Cooperative Agreement. Because of the expedited expenditure requirements of the ARRA, in no instance may the negotiation period extend beyond one year. Failure to reach agreement on all aspects of the Cooperative Agreement within one year will result in termination of the negotiations by DOE and de-selection of the application.

## **C. ANTICIPATED NOTICE OF SELECTION AND AWARD DATES.**

DOE anticipates notifying applicants selected for award [under this FOA, DE-FOA-0000042, in October 2009 and making awards by May 2010.](#) DOE is targeting [seven months](#) between time of selection and time of award. However, if applications selected for negotiation are not awarded within one year from the date the application was selected, negotiations shall be terminated.

## **PART VI - AWARD ADMINISTRATION INFORMATION**

### **A. AWARD NOTICES.**

#### **1. Notice of Selection.**

DOE will notify applicants selected for negotiation of a cooperative agreement. This notice of selection is not an authorization to begin performance (See Part IV.G with respect to the allowability of pre-award costs.) Organizations whose applications have not been selected will be advised as promptly as possible.

#### **2. Notice of Award.**

A Notice of Financial Assistance Award issued by the Contracting Officer is the authorizing award document. It normally includes, either as an attachment or by reference: 1. Special Terms and Conditions; 2. Applicable program regulations, if any; 3. Application as approved by DOE; 4. DOE assistance regulations at 10 CFR Part 600; 5. National Policy Assurances To Be Incorporated As Award Terms; 6. Budget Summary; and 7. Federal Assistance Reporting Checklist, which identifies the reporting requirements.

### **B. ADMINISTRATIVE AND NATIONAL POLICY REQUIREMENTS.**

#### **1. Administrative Requirements.**

The administrative requirements for DOE grants and cooperative agreements are contained in 10 CFR Part 600 (See: <http://ecfr.gpoaccess.gov>). Grants and cooperative agreements made to universities, non-profits and other entities subject to OMB Circular A-110 are subject to the Research Terms and Conditions located on the National Science Foundation web site at <http://www.nsf.gov/bfa/dias/policy/rtc/index.jsp>.

[ARRA 2009 Award Administration Information](#)  
[Special Provisions relating to work funded under American Recovery and Reinvestment Act of 2009, Pub. L. 111-5 shall apply. These provisions can be found at](#)  
[http://management.energy.gov/policy\\_guidance/1672.htm](http://management.energy.gov/policy_guidance/1672.htm).

#### **2. Special Terms and Conditions and National Policy Requirements.**

##### **Special Terms and Conditions and National Policy Requirements.**

The DOE Special Terms and Conditions for Use in Most Grants and Cooperative Agreements are located at [http://management.energy.gov/business\\_doe/business\\_forms.htm](http://management.energy.gov/business_doe/business_forms.htm).

The National Policy Assurances To Be Incorporated As Award Terms are located at [http://management.energy.gov/business\\_doe/business\\_forms.htm](http://management.energy.gov/business_doe/business_forms.htm).

##### **Intellectual Property Provisions.**

The standard DOE financial assistance intellectual property provisions applicable to the various types of recipients are located at [http://www.gc.doe.gov/financial\\_assistance\\_awards.htm](http://www.gc.doe.gov/financial_assistance_awards.htm).

## **Statement of Substantial Involvement.**

There will be substantial involvement between the DOE and the Recipient during performance of this Cooperative Agreement. The DOE and Recipient will collaborate and share responsibility for the management of the project as further described in this section.

### **RECIPIENT RESPONSIBILITIES:**

The Recipient shall be responsible for all aspects of project performance as set forth in this Cooperative Agreement and the Statement of Project Objectives contained herein. The Recipient Project Director shall serve as the Recipient's authorized representative for the technical elements of all work to be performed under this Cooperative Agreement. The Recipient Business Officer shall serve as the Recipient's authorized representative for administrative elements dealing with the Cooperative Agreement. Specific examples of Recipient responsibilities include:

- Performing the activities delineated in this Cooperative Agreement and associated Statement of Project Objectives in accordance with the Project Management Plan, including providing the required personnel, facilities, equipment, supplies and services.
- Managing and controlling project activities in accordance with established processes and procedures to ensure tasks and subtasks are completed within the schedule and budget constraints defined by the current Project Management Plan.
- Notifying the DOE Project Officer in a timely manner of issues that arise during the course of the project that jeopardize the technical, schedule and/or budget objectives.
- Implementing an approach to identify, analyze and respond to project risks that is commensurate with the complexity of the project.
- Defining and revising technical and managerial approaches and plans, (i.e. Test Plans) submitting the plans to DOE for review and concurrence, and incorporating DOE comments.
- Coordinating project activities with external organizations, including subrecipients, consultants and DOE M&O contractors (as applicable), to ensure effective integration of all work elements.
- Attending annual program review meetings and reporting project status.
- Submitting technical reports and incorporating DOE comments.
- Presenting the project results at appropriate technical conferences or meetings as directed by the DOE Project Officer.
- Facilitating DOE inspection and/or evaluation of project work on the premises of the Recipient or a subrecipient, at all reasonable times and in a manner that will not unduly delay the work. The Recipient shall furnish and shall require subrecipients to furnish all reasonable facilities and assistance for the safe, efficient and convenient performance of these duties.

### **DOE RESPONSIBILITIES:**

DOE shall monitor the Recipient's progress in performing the project and shall have a substantial role in project decision making. This involvement includes collaboration and management of the project. Specific examples of DOE responsibilities include:

- Collaboration with Recipient on project plans to include project management, test, and technology transfer plans and making recommendation for alternate approaches if the plans do not address critical programmatic issues.
- Collaborating with Recipient regarding technical progress and recommending alternate approaches or shifting work emphasis, if needed, to adequately address critical project and/or programmatic issues. The DOE Project Officer shall have the authority to issue written technical advice shifting the emphasis among different tasks or directing specific lines of inquiry likely to assist in accomplishing the Statement of Project Objectives. Note: The DOE Project Officer is not authorized to issue, and the Recipient is not required to follow, any technical advice that constitutes work which is not within the scope of the Statement of Project Objectives; which in any manner causes an increase or decrease in the total estimated cost or in the time required for performance of the project; which has the effect of changing any of the terms or conditions of the Cooperative Agreement; or which interferes with the Recipient's right to perform the project in accordance with the terms and conditions of the Cooperative Agreement.
- Conducting semiannual program review meetings to evaluate progress with respect to project and program objectives.
- Participating in project management planning activities, including risk analysis, to ensure DOE's program requirements or limitations are considered in performance of the work elements.
- Promoting and facilitating technology transfer activities, including disseminating project results through presentations and publications.
- Serving as scientific/technical liaison between awardees and other program or industry staff.
- At the DOE's discretion, physically inspecting and evaluating the work performed or being performed under the Cooperative Agreement, including associated documentation, and the premises where the work is being performed.
- Substantial direct operational involvement or participation is anticipated to ensure compliance with statutory requirements such as environmental protection.
- Reviewing and concurring with ongoing technical performance to ensure that adequate progress has been obtained within the current Phases authorized by DOE before work can commence on subsequent Phases as addressed within the "DECISION POINT" provision of the Cooperative Agreement.

### C. REPORTING.

Reporting requirements are identified on the Federal Assistance Reporting Checklist, DOE F 4600.2 and in the Deliverables section of the Statement of Project Objectives, attached to the award agreement. See model cooperative agreement, included as a separate attachment with this announcement, for the reporting requirements for this program.

## PART VII - QUESTIONS/AGENCY CONTACTS

### A. QUESTIONS

Questions regarding the content of the announcement must be submitted through the FedConnect portal. You must register with FedConnect to respond as an interested party to submit questions, and to view responses to questions. It is recommended that you register as soon after release of the FOA as possible to have the benefit of all responses. More information is available at <http://www.compusearch.com/products/fedconnect/fedconnect.asp>. DOE will try to respond to a question within 3 business days, unless a similar question and answer have already been posted on the website.

Questions pertaining to the submission of applications through FedConnect should be directed by e-mail to [support@FedConnect.net](mailto:support@FedConnect.net) or by phone to FedConnect Support at 800-899-6665.

### B. AGENCY CONTACT

Name: Brittley Robbins  
E-mail address: [brittley.robbins@netl.doe.gov](mailto:brittley.robbins@netl.doe.gov)  
Fax: N/A  
Telephone: (412) 386-5430

## PART VIII - OTHER INFORMATION

### A. MODIFICATIONS.

Notices of any modifications to this announcement will be posted on Grants.gov and the FedConnect portal. You can receive an email when a modification or an announcement message is posted by registering with FedConnect as an interested party for this FOA. It is recommended that you register as soon after release of the FOA as possible to ensure you receive timely notice of any modifications or other announcements. More information is available at <http://www.fedconnect.net> and <http://www.compusearch.com/products/fedconnect.asp>.

### B. GOVERNMENT RIGHT TO REJECT OR NEGOTIATE.

DOE reserves the right, without qualification, to reject any or all applications received in response to this announcement and to select any application, in whole or in part, as a basis for negotiation and/or award.

### C. COMMITMENT OF PUBLIC FUNDS.

The Contracting Officer is the only individual who can make awards or commit the Government to the expenditure of public funds. A commitment by other than the Contracting Officer, either explicit or implied, is invalid.

### D. PROPRIETARY APPLICATION INFORMATION.

Patentable ideas, trade secrets, proprietary or confidential commercial or financial information, disclosure of which may harm the applicant, should be included in an application only when such

information is necessary to convey an understanding of the proposed project. The use and disclosure of such data may be restricted, provided the applicant includes the following legend on the first page of the project narrative and specifies the pages of the application which are to be restricted:

“The data contained in pages \_\_\_\_\_ of this application have been submitted in confidence and contain trade secrets or proprietary information, and such data shall be used or disclosed only for evaluation purposes, provided that if this applicant receives an award as a result of or in connection with the submission of this application, DOE shall have the right to use or disclose the data herein to the extent provided in the award. This restriction does not limit the government’s right to use or disclose data obtained without restriction from any source, including the applicant.”

To protect such data, each line or paragraph on the pages containing such data must be specifically identified and marked with a legend similar to the following:

“The following contains proprietary information that (name of applicant) requests not be released to persons outside the Government, except for purposes of review and evaluation.”

#### **E. EVALUATION AND ADMINISTRATION BY NON-FEDERAL PERSONNEL.**

In conducting the merit review evaluation, the Government may seek the advice of qualified non-Federal personnel as reviewers. The Government may also use non-Federal personnel to conduct routine, nondiscretionary administrative activities. The applicant, by submitting its application, consents to the use of non-Federal reviewers/administrators. Non-Federal reviewers must sign conflict of interest and non-disclosure agreements prior to reviewing an application. Non-Federal personnel conducting administrative activities must sign a non-disclosure agreement.

#### **F. INTELLECTUAL PROPERTY DEVELOPED UNDER THIS PROGRAM.**

Patent Rights. The government will have certain statutory rights in an invention that is conceived or first actually reduced to practice under a DOE award. 42 U.S.C. 5908 provides that title to such inventions vests in the United States, except where 35 U.S.C. 202 provides otherwise for nonprofit organizations or small business firms. However, the Secretary of Energy may waive all or any part of the rights of the United States subject to certain conditions. (See “Notice of Right to Request Patent Waiver” in paragraph G below.)

Rights in Technical Data. Normally, the government has unlimited rights in technical data created under a DOE agreement. Delivery or third party licensing of proprietary software or data developed solely at private expense will not normally be required except as specifically negotiated in a particular agreement to satisfy DOE’s own needs or to insure the commercialization of technology developed under a DOE agreement.

Special Protected Data Statutes. The provisions of EAct 2005 that cover DOE's Clean Coal Power Initiative (CCPI) include special data protection for CCPI cooperative agreements. These provisions allow for protection from public disclosure (including exemptions from subchapter II of chapter 5 of title 5, United States Code) for a period not exceeding 5 years after completion of the operations Phase of a cooperative agreement, of information that: (1) results from demonstration activities carried out under the clean coal power initiative program; and (2) would be a trade secret or commercial or financial information that is privileged or confidential if the information had been obtained from and first produced by a non-Federal party participating in a clean coal power initiative project.

#### **G. NOTICE OF RIGHT TO REQUEST PATENT WAIVER.**

Applicants may request a waiver of all or any part of the rights of the United States in inventions conceived or first actually reduced to practice in performance of an agreement as a result of this announcement, in advance of or within 30 days after the effective date of the award. Even if such advance waiver is not requested or the request is denied, the recipient will have a continuing right under the award to request a waiver of the rights of the United States in identified inventions, i.e., individual inventions conceived or first actually reduced to practice in performance of the award. Any patent waiver that may be granted is subject to certain terms and conditions in 10 CFR 784. Domestic small businesses and domestic nonprofit organizations will receive the patent rights clause at 37 CFR 401.14, i.e., the implementation of the Bayh-Dole Act. This clause permits domestic small business and domestic nonprofit organizations to retain title to subject inventions. Therefore, small businesses and nonprofit organizations do not need to request a waiver.

#### **H. NOTICE REGARDING ELIGIBLE/INELIGIBLE ACTIVITIES.**

Eligible activities under this program include those which describe and promote the understanding of scientific and technical aspects of specific energy technologies, but not those which encourage or support political activities such as the collection and dissemination of information related to potential, planned or pending legislation.

#### **I. PROPERTY MANAGEMENT AND DISPOSITION**

Consistent with EACT 2005, Title IV, Subtitle A, Section 402(g), title to all real property, equipment and supplies (excluding Government-furnished property) acquired by or on behalf of the Recipient in connection with performance of the Project shall vest upon acquisition in the Recipient. The Recipient shall make such property available for use in the Project. During the term of the Cooperative Agreement, the Recipient may, with the DOE Contracting Officer's prior approval, encumber its title to or dispose of such property. If the property is sold or Recipient otherwise receives financial benefit from the property disposition, during the term of the Cooperative Agreement, the Recipient shall share the financial benefit with the DOE in the same share ratio as the total project cost sharing. After project completion, the Recipient has no further obligation to DOE with respect to the property. However, at the end of the project, the Recipient is required to submit a Property Certificate in accordance with the instructions provided in the Federal Assistance Reporting Checklist contained in the Model Cooperative Agreement (a separate attachment to this Announcement.)

The cost of disposal of the Demonstration Facility is an allowable cost only if proposed and included in the cost estimate for Demonstration/Operations.

The use, management, and disposition of all government-furnished property shall be governed by 10 CFR 600.130 thru 600.137 and 600.320 thru 600.325.

#### **J. NATIONAL ENVIRONMENTAL POLICY ACT COMPLIANCE**

The National Environmental Policy Act of 1969 (NEPA) establishes a national policy to ensure that consideration is given to environmental values and factors in Federal planning and decision making. DOE's policy is to comply fully with NEPA. To ensure that environmental factors are considered in the decision making process and to promote environmentally responsible decisions, DOE incorporates NEPA requirements early in the planning process for proposed actions. Consistent with Council on Environmental Quality (CEQ) NEPA regulations (40 CFR Parts 1500-1508) and DOE NEPA regulations (10 CFR Part 1021), an overall strategy for compliance with NEPA has been developed. This includes performing project-specific environmental reviews under 10 CFR 1021.216 of environmental issues pertinent to each proposed project before projects are selected, followed by site-specific environmental reviews under NEPA of each project after selection.

Prior to the completion of the site-specific analysis, no action taken by DOE with regard to any application, including project selection or award, shall be a final decision on availability of DOE funds for project activities that could adversely affect the environment or limit the choice of reasonable alternatives.

### Selection of a NEPA Contractor

Should an Environmental Assessment (EA) or Environmental Impact Statement (EIS) be necessary, DOE reserves the right to use a third party contract arrangement. The term "third party contract" refers to the preparation of an EA or EIS by a contractor paid by the applicant. The "third party" is DOE which, in accordance with Council on Environmental Quality Regulations at 40 CFR 1506.5(c), must select the consulting firm, even though the applicant pays for the cost of preparing the EA or EIS. The applicant may propose a consulting firm to DOE, but DOE will make the selection.

The applicant will hire the consulting firm once a third-party agreement or memorandum-of-understanding has been signed by DOE, the consulting firm, and the applicant. The firm must sign a conflict of interest form indicating that it has no financial or other interest in the outcome of the project. DOE will not be involved in the fee and contractual negotiations between the applicant and the consulting firm.

The consulting firm is responsible to DOE for preparing an EA or EIS that meets the requirements of the NEPA regulations and DOE's NEPA procedures. The consulting firm will work exclusively under the direction of DOE. DOE will be solely responsible for the contents of the EA or EIS.

### **K. GOVERNMENT'S RIGHT TO NEGOTIATE THIRD PARTY STATUS**

DOE reserves the right to negotiate becoming a third-party insured on project-specific policies for the project.

### **APPENDICES/REFERENCE MATERIAL**

#### **ANNOUNCEMENT DEFINITIONS:**

"Advancement" refers to technological improvements relative to commercial technology or previously demonstrated technology, which may include, but is not necessarily limited to:

- Increase in scale making progress toward utility scale
- Addressing unique issues associated with integration of capture technologies with coal-fueled systems or sequestration demonstrations
- Improvements in cost or energy requirements of capture technologies
- Improvements to EOR resulting in increased long term retention of carbon dioxide

"Beneficial Use" means the production of a useful product as the result of sequestering CO<sub>2</sub>. This includes, but is not limited to, enhanced oil recovery and enhanced coal-bed methane recovery.

"Beneficial Use" also means the production of useful energy products from captured CO<sub>2</sub>, which includes, but is not limited to, production of biodiesel fuel via algae produced using CO<sub>2</sub>.

"Capture Efficiency" or "Carbon Dioxide Capture Efficiency" means the amount of CO<sub>2</sub> removed from the process stream expressed as a percentage of the amount of CO<sub>2</sub> entering the carbon capture system.



“Commercial Technology” means technology that is commercially available to the electric power industry. To be considered commercially available to the electric power industry it must meet the following criteria:

- The technology has been fully demonstrated at the scale typical of use by the electric power industry
- The technology has demonstrated on line reliability required by the electric power industry
- The technology is widely available to the electric power industry with commercial guarantees with regard to process cost, performance, and availability
- The cost of the technology can be accurately estimated

“Demonstration Facility” means the physical plant, equipment, and all other related facilities constructed and operated during the Demonstration Project.

“Demonstration Project” or “Project” means the complete set of activities described in the Statement of Project Objectives of any resulting Cooperative Agreement for the technology demonstration, including integrated testing to determine performance characteristics of the power system used to support demonstration of a non-power generating technology.

“Electricity” means gross electricity produced by the project. Any electricity produced by the project that is also consumed by the project shall be considered to be electrical output.

“Energy Output” means 1) in the case of a boiler, the energy content of the steam produced by the boiler and 2) 1n the case of a gasification system, the total energy output consists of the energy content of the syngas stream plus the energy content of the steam.

“Host Site or Site” means the general location, either within the property boundary of an identified electric power generating or other facility or on a parcel of land with clearly identified ownership and generally defined boundaries, where the demonstration facility will be operated.

“Recipient” means the legal entity that is responsible for all aspects of Project performance under the Cooperative Agreement.

“Phase” means the set of related tasks which taken together make up a major category of work under the Demonstration Project [\[e.g., \(I\) Project Definition, FEED Completion and ROD Approval, \(II\) Design, \(III\) Construction, or \(IV\) Demonstration\]](#).

“Project Definition, [FEED Completion, and ROD Approval](#)” means the completion of the following items:

- Project Management Plan - a detailed plan that expands on the application to provide technical, cost, and schedule baselines at lower levels of the Work Breakdown Structure for the Project and that includes management controls and procedures for implementing the Project.

Technology Baseline - all decisions about flowsheets, major equipment types, equipment placement, and demonstration configuration will be made.

Schedule Baseline - the schedule will be of sufficient detail to allow cost estimating.

Cost Baseline - the estimate will be of a quality and accuracy to support the project.

- Financing - all financial commitments pertaining to the non-DOE share of total Project costs will be signed and implemented.
- NEPA - all requested information to satisfy DOE's responsibility under NEPA will have been submitted and the NEPA process will be completed or near completion.

“Project Specific Development Activities” means those development tasks, undertaken at an existing facility, that are eligible for cost sharing. Such eligible tasks are process performance definition, component design verification, materials selection, and evaluations of alternative designs, which are tasks conducted specifically to develop design and engineering data, where such data does not exist, for the unique feedstocks and other materials that are proposed for use in the Demonstration Project. Development activities eligible for cost-sharing may include limited modifications to existing facilities for project related testing but do not include construction of new facilities.

“Project Team” means those organizations or parties responsible for proposing and accomplishing all Phases of the Demonstration Project. The Project Team includes the prospective Recipient, technology owners, and other third parties identified in the application (excluding parties whose sole function is as a source of funds or as an existing commercial user of products typical of those to be produced by the Demonstration Project) who are essential to the successful completion of the proposed Demonstration Project. Where a legal entity has been or will be created to conduct the project, DOE will consider the participating organizations or parties (partners, joint venture members, etc.) as Project Team members.

“Selection” means the determination by DOE for certain proposed Demonstration Projects to proceed into negotiations that may lead to an Award.

“United States” means The United States of America and its 50 states, the District of Columbia, the Commonwealth of Puerto Rico, and any possession or trust territory of the United States.

**ATTACHMENTS** (see separate files)

Model Cooperative Agreement	[ <i>Model Cooperative Agreement.pdf</i> ]
Budget Justification Guideline	[ <i>Budget Justification Guideline.xls</i> ]
Environmental Questionnaire	[ <i>Environmental Questionnaire.doc</i> ]