

**FINANCIAL ASSISTANCE  
FUNDING OPPORTUNITY ANNOUNCEMENT**



**U. S. Department of Energy  
National Energy Technology Laboratory  
*Engineering Design of Advanced H<sub>2</sub> – CO<sub>2</sub> Membrane  
Separations***

**Funding Opportunity Number: DE-FOA-0000215**

**Announcement Type: Initial**

**CFDA Number: 81.089 Fossil Energy Research and Development**

<b>Issue Date:</b>	<b>3/30/2010</b>
<b>Letter of Intent Due Date:</b>	<b>Not Applicable</b>
<b>Pre-Application Due Date:</b>	<b>Not Applicable</b>
<b>Application Due Date:</b>	<b>05/17/2010 at 11:59:59 PM Eastern Time</b>

## 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 Grants.gov). Applicants who are not registered with CCR and Grants.gov, 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 Grants.gov. Grants.gov website:** <http://grants.gov/>

**Applicants must register with FedConnect to submit questions. 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. DOE/NNSA will try to respond to a question within 3 business days, unless a similar question and answer have already been posted on the website.

### **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 Section IV A of this FOA.)

### **Where to Submit**

Applications must be submitted through Grants.gov to be considered for award. You cannot submit an application through Grants.gov unless you are registered. Please read the registration requirements carefully and start the process immediately. Remember you have to update your CCR registration annually. If you have any questions about your registration, you should contact the Grants.gov Helpdesk at 1-800-518-4726 to verify that you are still registered in Grants.gov.

**IMPORTANT NOTICE TO POTENTIAL APPLICANTS:** When you have completed the process, you should call the Grants.gov Helpdesk at 1-800-518-4726 to verify that you have completed the final step (i.e. Grants.gov registration).

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## **Section I - FUNDING OPPORTUNITY DESCRIPTION**

Statutory authority for this Funding Opportunity Announcement (FOA) is PL95-91DOE Organization Act, as amended by PL109-58 Energy Policy Act of 2005.

### **TECHNICAL TOPIC: PRE-ENGINEERING/PILOT SCALE HYDROGEN SEPARATION AND PRODUCTION RD&D**

Worldwide demand for energy is growing at an alarming rate. Energy demand is expected to grow at an average rate of 1.8% per year worldwide through 2030. The increased demand is being met largely by petroleum reserves, which are located outside of the United States. The United States imports more than 60% of its petroleum, two-thirds of which is used to fuel vehicles in the form of gasoline and diesel. This dependency makes the U.S. vulnerable to supply disruptions. Alternative sources of fuel are necessary to maintain economic prosperity, quality of life, cost-competitiveness, and energy security.

A primary goal of the Hydrogen and Clean Fuels program is to develop advanced energy technologies which will facilitate the use of our nation's abundant coal (coal-biomass) resources to produce, deliver, store, and utilize affordable hydrogen in an environmentally clean manner. Hydrogen can be utilized in combustion turbines and stationary and mobile fuel cell applications with the only emission being water. Hydrogen can be coproduced in integrated gasification combined cycle (IGCC) systems for fuel and chemical synthesis and for use in combustion turbines and fuel cells to increase efficiency and achieve a lower carbon footprint – thereby contributing to the goal of near zero emissions.

In this funding opportunity announcement (FOA), research will focus on hydrogen separations technology, including advanced separation membranes (inorganic, metallic and both materials), that provide high purity hydrogen and/or offer a combination of hydrogen separation with low-cost removal of (Carbon Dioxide) CO<sub>2</sub> and other trace impurities from hydrogen-CO<sub>2</sub> mixtures. The latter may involve improved membrane or adsorption systems that build upon and improve current separation efficiencies or development of new separation strategies.

The primary purpose of this effort is to demonstrate the separation of hydrogen from coal (or coal-biomass) derived syngas via membranes at the pre-engineering/pilot scale. Department of Energy, National Energy Technology Laboratory, (DOE/NETL) has sponsored a number of laboratory and bench scale membrane development efforts over the past years and scale-up and testing at the pre-engineering/pilot scale is a logical extension of this prior work at the present time.

**Applications are sought for** research, development and demonstration (RD&D) at the pre-engineering/pilot scale for innovative membrane materials, concepts and strategies which separate hydrogen from a coal (coal-biomass)-based syngas with performance that is sufficient to meet the DOE 2015 targets of flux, selectivity, cost and chemical and mechanical robustness. Technologies of interest MUST show potential to meet all DOE targets specified in Table 9 referenced in the “*Hydrogen from Coal Multi-Year RD&D Plan*“, located on the Hydrogen and Clean Fuels Reference Shelf section of the NETL website; [http://www.netl.doe.gov/technologies/hydrogen\\_clean\\_fuels/refshelf/refshelf.html](http://www.netl.doe.gov/technologies/hydrogen_clean_fuels/refshelf/refshelf.html). While not explicitly required, membrane designs that utilize process intensification are encouraged, including combined water-gas shift and membrane separation/purification to produce hydrogen with fewer steps and lower cost.

Application(s) selected under this Funding Opportunity Announcement will result in multiple Phase I award(s) initially, with Phase II to be down-selected based on merit and availability of funds. Upon successful completion of Phase II objectives, recipients will seek approval of DOE for advancement to Phase III. Accordingly, the Applicant shall propose three project phases. For funding purposes, projects will also be broken down into two budget periods coinciding with these three phases. The cost-share by the Applicant must be at least 20% of the total allowable project cost for each budget period under the Cooperative Agreement.

The project will consist of three (3) phases with go/no-go decision points between Phases I/II and Phases

II/III.

- In Phase I, Recipients will construct, test and demonstrate a membrane separation unit capable of producing a minimum of two (2) lbs per day of (Hydrogen) H<sub>2</sub>. The hydrogen separation membrane shall have the capability to remove at least 95% of the hydrogen introduced and generated. At a minimum, Recipients shall conduct testing under the following conditions:
  - 1) Simulated gas streams following the “NETL Test Protocol: Testing of Hydrogen Separation Membranes”, located on the Hydrogen and Clean Fuels Reference Shelf section of the NETL website; ([http://www.netl.doe.gov/technologies/hydrogen\\_clean\\_fuels/refshelf/refshelf.html](http://www.netl.doe.gov/technologies/hydrogen_clean_fuels/refshelf/refshelf.html)) with the gas compositions and conditions listed in Table 1:

**Table 1: Required Phase I Testing Conditions**

	Test Phase		
	Test 1	Test 2A	Test 3*
<b>Feed Gas Composition (Before correction for addition of He)</b>			
H <sub>2</sub> (%)	50.0	50.0	20.0
CO (%)	1.0	1.0	21.0
CO <sub>2</sub> (%)	30.0	30.0	12.0
H <sub>2</sub> O (%)	19.0	19.0	47.0
H <sub>2</sub> S (%)	0.000	0.002	0.002
<b>Sweep Gas Inlet Composition</b>			
Ar (%)	100	100	100
<b>Total Feed Pressure (psia)</b>	200	200	400
<b>H<sub>2</sub> Feed Partial Pressure (psia)</b>	100	100	80
<b>Total Sweep Pressure (psia)</b>	<30	<30	<30
<b>(P<sub>H2S</sub>/P<sub>H2</sub>)<sub>Feed</sub></b>	0.00E+00	4.00E-05	1.00E-04
<b>Temperature (°C)</b>	300-600	300-600	300-600

\*Note: Test 3 was developed specifically for this FOA and is not found in the “NETL Test Protocol Testing of Hydrogen Separation Membranes”.

- 2) Coal or coal-biomass derived syngas from an operating gasifier. Applications shall identify a potential source of the syngas stream and describe any negotiations or agreements that may be necessary to secure access to the test facility. Test conditions shall be representative of gasifier derived syngas downstream of quench, particulate removal and bulk desulfurization, and upstream of water gas shift. In addition, the application shall further define gas compositions and test parameters that are anticipated at the specified test facility. The tests shall be appropriate to demonstrate readiness for design of a larger scale unit and testing at the pre-engineering/pilot scale.

Recipients shall also conduct an engineering analysis of their separation design and production methods using NETL guidelines to assess their projected performance and compatibility with gasification systems producing syngas for co-production of electric power and clean fuels. The Recipients will be subject to a down-selection after Phase I based upon merit and availability of funds.

- In Phase II, Recipients will design and construct a membrane separation module with the capability of producing a minimum of 100 lbs per day of H<sub>2</sub> to validate the design, membrane production methods and separation performance. The hydrogen separation membrane module(s) will be installed at an appropriate gasification facility and long term parametric testing of the module(s) will be conducted. In order to advance to Phase III, recipients must complete the objectives of Phase II and submit a Phase II topical report to DOE. Upon acceptance of the Phase II topical report, written approval by the Contracting Officer must be given for Recipients to proceed to Phase III.
- In Phase III, Recipients will further evaluate scale-up for demonstration at commercial sized facilities resulting in a Full Engineering Design of a unit capable of producing a minimum of four (4) tons per day of H<sub>2</sub>.

At the conclusion of Phase III, DOE/NETL seeks a hydrogen separation membrane unit that has been demonstrated to perform to DOE 2015 targets under actual syngas conditions and a membrane and module design capable of producing a minimum of four tons per day of H<sub>2</sub>. Accordingly, the Applicant shall provide a comprehensive plan to achieve the above goals with an emphasis on Phase I scope of work.

## **Section II - AWARD INFORMATION**

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

#### **Cooperative Agreements**

DOE anticipates awarding cooperative agreements under this funding opportunity announcement (See Section VI.B.2 Statement of Substantial Involvement).

### **B. ESTIMATED FUNDING**

#### **Amount New Awards**

Approximately \$20,000,000 of DOE funding is expected to be available for new awards under this announcement.

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

#### Phase I

- Ceiling (i.e., the maximum amount for an individual award made under this announcement): DOE Share: \$2,000,000
- Floor (i.e., the minimum amount for an individual award made under this announcement): None

#### Phases II & III

- Ceiling (i.e., the maximum amount for an individual award made under this announcement): DOE Share: \$10,000,000
- Floor (i.e., the minimum amount for an individual award made under this announcement): None

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

#### **Number of Awards**

DOE anticipates making approximately four (4) awards under this announcement with the Recipients subject to a down-selection to approximately two (2) awards based upon merit and availability of funds

after the completion of Phase I.

**E. ANTICIPATED AWARD SIZE**

Phase I

It is anticipated four (4) awards will be made. Each award is estimated at \$1,875,000 with a DOE share of \$1,500,000 (80%), and a minimum cost share of \$375,000 (20%).

DOE will award Phase I of the projects initially. Phase I awardees interested in continuing their project into Phase II will have the opportunity to submit a Renewal Application no later than 12 months after award. Renewal Applications are requests for additional funding for a period subsequent to that provided by a current award. Renewal Applications for Phases II & III will be limited to Phase I awardees. Detailed information on the Renewal Application requirements and submission procedure will be provided in the Cooperative Agreement of Phase I awards. DOE will evaluate the Renewal Application against established criteria as part of a competitive Renewal Application process.

Phases II & III

It is envisioned that the Phase I awards will be down-selected to approximately two (2) awards for Phases II & III. Each continued award is estimated at \$8,750,000 with a DOE share of \$7,000,000 (80%), and a cost share of \$1,750,000 (20%). In order to advance to Phase III, recipients must complete the objectives of Phase II and submit a Phase II topical report to DOE. Upon acceptance of the Phase II topical report, written approval by the Contracting Officer must be given for Recipients to proceed to Phase III.

The Government reserves the right to fund the proposed Government share, in whole or in part, on any, all, or none of the applications submitted in response to this Announcement and will award that number of financial assistance instruments which serves the public purpose and is in the best interest of the Government.

**F. PERIOD OF PERFORMANCE**

DOE anticipates making approximately four (4) awards under this announcement with the Recipients subject to a down-selection to approximately two (2) awards after the completion of Phase I. It is envisioned that awards under this action are to be structured as 15 month Phase I awards with Renewal Applications due by the end of the twelfth (12th) month. Approval of a Renewal Application will be required before a Recipient is authorized to proceed to Phase II. Projects that are selected for advancement to Phases II & III will receive no more than a four (4) month extension to Phase I to allow DOE and the Phase II & III Recipient(s) sufficient time to negotiate the full scope and budget for Phases II & III. DOE reserves the right to award Phases II & III anytime during this 4 month period. Projects that are not selected for Phases II & III will end at 15 months, but will be eligible for a no-cost extension. Phase II will have a performance period of 24 months and Phase III will cover a period of 12 months. There will be a Decision Point embedded between Phases II and III and details will be negotiated into a Phase II Statement of Project Objectives at the time of any Renewal Award. Criteria for proceeding from Phase II to Phase III will be established with the Phase II award. There will be two (2) Budget Periods. Budget Period 1 will coincide with Phase I of the project. Budget Period 2 will cover the remaining three (3) years of the project (Phases II and III).

The period of performance for awards resulting from this Announcement will vary by phase as follows:

<b>Project Period (EST):</b>	Phase I:	09/01/2010 – 11/30/2011 (Renewal Application)
	Phase II:	12/01/2011 – 11/30/2013 (Decision Point)
	Phase III:	12/01/2013 – 11/30/2014
<b>Budget Period (EST):</b>	BP1:	09/01/2010 – 11/30/2011 (Renewal Application)

The period of performance for Phases II & III should not exceed 36 months. The overall period of performance (including Phase I, Phase II and Phase III) should not exceed 51 months.

**G. TYPE OF APPLICATION**

**New Applications Only**

DOE will accept only new applications under this announcement.

**Section III - ELIGIBILITY INFORMATION**

**A. ELIGIBLE APPLICANTS**

**All Entities excluding Federal Agencies, FFRDC and Non Profit**

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**

**Cost Share 20%**

The cost share must be at least 20% of the total allowable costs for research and development projects (i.e., 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 600 for the applicable cost sharing requirements.)

**C. OTHER ELIGIBILITY REQUIREMENTS**

**FFRDC/National Laboratories**

Federally Funded Research and Development Center (FFRDC) Contractors. FFRDC contractors may be proposed as a team member on another entity's application subject to the following guidelines:

Authorization for non-DOE 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 FFRDCs. The cognizant contracting officer for the FFRDC must authorize in writing the use of a DOE 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 [*Name*] 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 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 will fund a DOE 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 scope of work to be performed by the FFRDC contractor may not be more significant than the scope of work to be performed by the applicant.

The FFRDC contractor effort, in aggregate, shall not exceed 20% 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.

### **Performance of Work in the United States**

As a condition of award under this funding opportunity announcement, applicants must agree that at least 75% of the direct labor cost for the project (including subcontractor labor) will be incurred in the United States unless the applicant can demonstrate to the satisfaction of the DOE that the United States economic interest will be better served through a greater percentage of work performed outside the United States. For example, an Applicant may provide evidence that expertise to develop a technology exists only outside the United States, but that ultimate commercialization of the technology will result in substantial benefits to the United States such as improved electricity reliability, increased employment, increased exports of U.S.-manufactured products, etc.

## **Section IV - APPLICATION AND SUBMISSION INFORMATION**

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

#### **Apply at Grants.gov**

Application forms and instructions are available at 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 download the application package.

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

#### **Letters of Intent Not Required**

Letters of Intent are not required.

#### **Pre-applications Not Required**

Pre-applications are not required.

### **C. CONTENT AND APPLICATION FORMS**

You must complete the mandatory forms and any applicable optional forms (e.g., Disclosure of Lobbying Activities (SF-LLL)) 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 (R&R)**

Complete this form first to populate data in other forms. Complete all the required fields in accordance with the pop-up instructions on the form. The list of certifications and assurances referenced in Field 17 can be found on the DOE Financial Assistance Forms Page at [http://management.energy.gov/business\\_doe/business\\_forms.htm](http://management.energy.gov/business_doe/business_forms.htm) under Certification and Assurances.

## 2. RESEARCH AND RELATED Other Project Information

Complete questions 1 through 6 and attach files. The files must comply with the following instructions:

### Project Summary/Abstract (Field 7 on the Form)

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 after awards are made. The project summary must not exceed 2 pages when printed using standard 8.5" by 11" paper with 1" margins (top, bottom, left and right) {single spaced} with font not smaller than 11 point. To attach a Project Summary/Abstract, click "Add Attachment."

### Project Narrative (Field 8 on the Form)

The project narrative must not exceed 25 pages, including cover page, table of contents, charts, graphs, maps, photographs, tables, and other pictorial presentations, when printed using standard 8.5" by 11" paper with 1 inch margins (top, bottom, left, and right) {double spaced} with font not smaller than Arial 11 point. EVALUATORS WILL ONLY REVIEW THE NUMBER OF PAGES SPECIFIED IN THE PRECEDING SENTENCE. Do not include any Internet addresses (URLs) that provide information necessary to review the application, because the information contained in these sites will not be reviewed. See Part VIII.D for instructions on how to mark proprietary application information. To attach a Project Narrative, click "Add Attachment."

**The project narrative must address all three Phase activities. Detailed information must be provided for Phase I, summary information (at a minimum) is required for effort in Phases II & III:**

The project narrative must include the following information that **WILL** count in the Project Narrative Limitation:

Project Objectives. This section should provide a clear, concise statement of the specific objectives/aims of the proposed project.

Merit Review Criterion Discussion. The section should be formatted to address each of the merit review criterion and sub-criterion listed in Part V.A. Provide sufficient information so that reviewers will be able to evaluate the application in accordance with these merit review criteria. **DOE WILL EVALUATE AND CONSIDER ONLY THOSE APPLICATIONS THAT ADDRESS SEPARATELY EACH OF THE MERIT REVIEW CRITERION AND SUB-CRITERION.**

Relevance and Outcomes/Impacts. This section should explain the relevance of the effort to the objectives in the program announcement and the expected outcomes and/or impacts.

Roles of Participants. For multi-organizational or multi-investigator projects, describe the roles and the work to be performed by each participant/investigator, business agreements between the applicant and participants, and how the various efforts will be integrated and managed.

Statement of Project Objectives (SOPO). The project narrative must contain a single, detailed Statement of

Project Objectives that addresses how the project objectives will be met. The Statement of Project Objectives must contain a clear, concise description of all activities to be completed during project performance and follow the structure discussed below. The Statement of Project Objectives may be released to the public by DOE in whole or in part at any time. It is therefore required that it shall not contain proprietary or confidential business information. The Statement of Project Objectives is generally less than ten (10) pages in total for the proposed work. Applicants shall prepare the Statement of Project Objectives in the following format:

TITLE OF WORK TO BE PERFORMED (Insert the title of work to be performed. Be concise and descriptive.)

**A. OBJECTIVES**

Include one paragraph on the overall objective(s) of the work. Also, include objective(s) for each phase of the work.

**B. SCOPE OF WORK**

This section should not exceed one-half page and should summarize the effort and approach to achieve the objective(s) of the work for each Phase.

**C. TASKS TO BE PERFORMED**

Tasks, concisely written, should be provided in a logical sequence and should be divided into the phases of the project, as appropriate. This section provides a brief summary of the planned approach to this project. An outline of the Project Management Plan (referenced in Task 1.0 below and required to be submitted with your application) is provided later in this Section.

**PHASE I**

**Task 1.0 - Project Management and Planning**

(Description includes work elements required to revise and maintain the Project Management Plan and to manage and report on activities in accordance with the plan)

Subtask 1.1

(Description)

Task 2.0 - (Title)

**PHASE II**

Task 3.0 - (Title)

**PHASE III**

Task 4.0 – (Title)

**D. DELIVERABLES**

The periodic, topical, and final reports shall be submitted in accordance with the attached "Federal Assistance Reporting Checklist" and the instructions accompanying the checklist.

[Note: The Recipient shall provide a list of deliverables other than those identified on the "Federal Assistance Reporting Checklist" that will be delivered. These reports shall also be identified within the text of the Statement of Project Objectives. See the following examples:

1. Task 1.1 - (Report Description)
2. Task 2.2 - (Report Description)

**(End of Statement of Project Objectives (SOPO))**

Identification of Potential Conflicts of Interest or Bias in Selection of Reviewers Appendix. Provide the following information in this section. This appendix **WILL NOT** count in the project narrative page limitation:

Collaborators and Co-editors: List in alphabetical order all persons, including their current organizational affiliation, who are, or who have been, collaborators or co-authors with you on a research project, book or book article, report, abstract, or paper during the 48 months preceding the submission of this application. Also, list any individuals who are currently, or have been, co-editors with you on a special issue of a journal, compendium, or conference proceedings during the 24 months preceding the submission of this application. If there are no collaborators or co-editors to report, state "None."

Graduate and Postdoctoral Advisors and Advisees: List the names and current organizational affiliations of your graduate advisor(s) and principal postdoctoral sponsor(s) during the last 5 years. Also, list the names and current organizational affiliations of your graduate students and postdoctoral associates

Bibliography & References Cited Appendix. This appendix **WILL NOT** count in the project narrative page limitation. Provide a bibliography of any references cited in the Project Narrative. Each reference must include the names of all authors (in the same sequence in which they appear in the publication), the article and journal title, book title, volume number, page numbers, and year of publication. Include only bibliographic citations. Applicants should be especially careful to follow scholarly practices in providing citations for source materials relied upon when preparing any section of the application. In order to reduce the number of files attached to your application, please provide the Bibliography and References Cited information as an appendix to your project narrative. Do not attach a file in Field 9.

Facilities & Other Resources Appendix. This appendix **WILL NOT** count in the project narrative page limitation. This information is used to assess the capability of the organizational resources, including subawardee resources, available to perform the effort proposed. Identify the facilities to be used (Laboratory, Animal, Computer, Office, Clinical, and Other). If appropriate, indicate their capacities, pertinent capabilities, relative proximity, and extent of availability to the project. Describe only those resources that are directly applicable to the proposed work. Describe other resources available to the project (e.g., machine shop, electronic shop) and the extent to which they would be available to the project. In order to reduce the number of files attached to your application, please provide the Facility and Other Resource information as an appendix to your project narrative. Do not attach a file in Field 10.

Equipment Appendix. This appendix **WILL NOT** count in the project narrative page limitation. List major items of equipment already available for this project and, if appropriate identify location and pertinent capabilities. In order to reduce the number of files attached to your application, please provide the Equipment information as an appendix to your project narrative. Do not attach a file in Field 11.

**(End of Project Narrative)**

Other Attachments (Field 12 on the form)

If you need to elaborate on your responses to questions 1-6 on the "Other Project Information" document, attach a file in field 12.

Also, attach the following files:

**Project Management Plan**

This plan should be formatted to include the following sections with each section to include the information as described below:

- A. Executive Summary. Provide a description of the project that includes the objective, project goals, and expected results. For purposes of the application, this information is included in the Project Narrative

(Field 8) and should be simply copied to this document for completeness, so that the Project Management Plan is a stand-alone document.

- B. Risk Management. Provide 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.
- C. Milestone Log. Provide milestones for each budget period (or phase) of the project. Each milestone should include a title and planned completion date. Milestones should be quantitative and show progress toward budget period and/or project goals.

[Note: During project performance, the Recipient will report the Milestone Status as part of the required quarterly Progress Report as prescribed under Attachment 3, Reporting Requirements Checklist. The Milestone Status will present actual performance in comparison with Milestone Log, and include:

- (1) the actual status and progress of the project,
- (2) specific progress made toward achieving the project's milestones, and,
- (3) any proposed changes in the project's schedule required to complete milestones. ]

- D. Funding and Costing Profile. Provide a table (the Project Funding Profile) that shows, by budget period, the amount of government funding going to each project team member. Also provide a table (the Project Costing Profile) that projects, by month, the expenditure of government funds for the first budget period (Phase I), at a minimum.
- E. Project Timeline. Provide a timeline of the project (similar to a Gantt chart) broken down by each task and subtask, as described in the Statement of Project Objectives. The timeline should include for each task, a start date, and end date. The timeline should show interdependencies between tasks and include the milestones that are identified in the Milestone Log (Section C).
- F. Success Criteria at Decision Points. Provide success criteria for each decision point in the project, including go/no-go decision points and the conclusions of budget periods and the entire project. The success criteria should be objective and stated in terms of specific, measurable, and repeatable data. Usually, the success criteria pertain to desirable outcomes, results, and observations from the project.

[Note: As the first task in the Statement of Project Objectives, successful applicants will revise the version of the Project Management Plan that is submitted with their applications by including details from the negotiation process. This Project Management Plan will be updated by the Recipient as the project progresses, and the Recipient must use this plan to report schedule and budget variances.]

Save this plan in a single file named "pmp.pdf" and click on "Add Attachments" in Field 12 to attach.

### **Commitment Letters from Third Parties Contributing to Cost Sharing**

If a third party, (i.e., a party other than the organization 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 letter should also identify the proposed cost sharing (e.g., cash, services, and/or property) to be contributed. Letters must be signed by the person authorized to commit the expenditure of funds by the entity and be provided in a PDF format. Save this information in a single file named "CLTP.pdf" and click on "Add Attachments" in Field 12 to attach.

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

If a DOE FFRDC contractor or DOE National Laboratory 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 the FFRDC name as the file name (up to 10 letters) and attach to the R&R Other Project Information form in Field 12 - Add Attachments.

### **SF 424 C Excel, Budget Information - Construction Programs**

If you plan to have a subrecipient provide construction services on your proposed RD&D project, submit a SF 424 C Excel Budget Information - Construction Programs form (available at [http://management.energy.gov/business\\_doe/business\\_forms.htm](http://management.energy.gov/business_doe/business_forms.htm)) for the subrecipient's construction effort, instead of a R&R Subaward Budget Attachment. Complete a SF 424 C budget for each year of support requested and a cumulative budget for the total project period. You must also identify the subrecipients construction costs on your RESEARCH AND RELATED BUDGET form on the Subaward/Consortium/Contractual Costs line (Line F.5). Justify the construction costs in your budget justification file and identify who will be performing the work. Save the SF 424 C budgets in a single file named "SF424C.xls," and attach to the RESEARCH AND RELATED Other Project Information form. Click on "Add Attachments" in Field 12 to attach.

### **3. RESEARCH AND RELATED SENIOR/KEY PERSON**

Complete this form before the Budget form to populate data on the Budget form. Beginning with the PD/PI, provide a profile for each senior/key person proposed. A senior/key person is any individual who contributes in a substantive, measurable way to the scientific/technical development or execution of the project, whether or not a salary is proposed for this individual. Subrecipients and consultants must be included if they meet this definition. For each senior/key person provide:

**Biographical Sketch.** Complete a biographical sketch for each senior/key person and attach to the "Attach Biographical Sketch" field in each profile. The biographical information for each person 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 11 point and must include:

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

**Research and 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.

#### **Current and Pending Support**

Provide a list of all current and pending support (both Federal and non-Federal) for the Project Director/Principal Investigator(s) (PD/PI) and senior/key persons, including subrecipients, for ongoing projects and pending applications. For each organization providing support, show the total award amount for the entire award period (including indirect costs) and the number of person-months per year to be devoted to the project by the senior/key person. Concurrent submission of an application to other organizations for simultaneous consideration will not prejudice its review. Save the information in a

separate file and attach to the "Attach Current and Pending Support" field in each profile.

**4. RESEARCH AND RELATED BUDGET (TOTAL FED + NON-FED)**

Complete the Research and Related Budget (Total Fed & Non-Fed) form in accordance with the instructions on the form and the following instructions. You must complete a separate budget for each year of support requested. The form will generate a cumulative budget for the total project period. You must complete all the mandatory information on the form before the NEXT PERIOD button is activated. You may request funds under any of the categories listed 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 Section IV.G).

Budget Justification (Field K on the form).

Provide the required supporting information for the following costs (See R&R instructions): equipment; domestic and foreign travel; participant/trainees; material and supplies; publication; consultant services; ADP/computer services; subaward/consortium/contractual; equipment or facility rental/user fees; alterations and renovations; and indirect cost type. Provide any other information you wish to submit to justify your budget request. If cost sharing is required, provide an explanation of the source, nature, amount, and availability of any proposed cost sharing. Attach a single budget justification file for the entire project period in Field K. The file automatically carries over to each budget year.

**5. R&R SUBAWARD (TOTAL FED + NON-FED) FORM**

Budgets for Subrecipients, other than DOE FFRDC Contractors. You must provide a separate cumulative R&R budget for each subrecipient that is expected to perform work estimated to be more than \$100,000 or 50 percent of the total work effort (whichever is less). Download the R&R Budget Attachment from the R&R SUBAWARD BUDGET (Total Fed + Non-Fed) FORM and e-mail it to each subrecipient that is required to submit a separate budget. After the Subrecipient has e-mailed its completed budget back to you, attach it to one of the blocks provided on the form. Use up to 10 letters of the subrecipient's name as the file name.

**6. 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.

**7. DISCLOSURE OF LOBBYING ACTIVITIES (SF-LLL)**

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."

**8. SUMMARY OF REQUIRED FORMS AND FILES**

Your application must include the following documents:

Name of Document	Format	Attach to
SF 424 (R&R)	Form	N/A

<b>RESEARCH AND RELATED Other Project Information</b>	Form	N/A
Project Summary/Abstract	PDF	Field 7
Project Narrative, including required appendices	PDF	Field 8
Budget for DOE FFRDC, if applicable	PDF	Field 12
Project Management Plan	PDF	Field 12
Commitment Letters from Third Parties	PDF	Field 12
SF 424C Excel – Budget Information for Construction Programs File	PDF	Field 12
<b>RESEARCH &amp; RELATED SENIOR/KEY PERSON (Expanded)</b>	Form	N/A
Biographical Sketch	PDF	Attach to appropriate block
Current and Pending Support	PDF	Attach to appropriate block
<b>RESEARCH AND RELATED BUDGET (Total Fed + Non-Fed)</b>	Form	N/A
Budget Justification	PDF	Field K
<b>R&amp;R SUBAWARD BUDGET (Total Fed + Non-Fed) ATTACHMENT(S) FORM, if applicable</b>	Form	N/A
<b>PROJECT/PERFORMANCE SITE</b>	Form	N/A
<b>LOCATION(S)</b>		
<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:

- Indirect cost information
- Other budget information
- Name and phone number of the Designated Responsible Employee for complying with national policies prohibiting discrimination (See 10 CFR 1040.5)
- Representation of Limited Rights Data and Restricted Software, if applicable
- Commitment Letter from Third Parties Contributing to Cost Sharing, if applicable

#### E. SUBMISSION DATES AND TIMES

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

Pre-applications are not required.

##### 2. Application Due Date

Applications should be received by 5/17/2010 not later than 11:59:59 PM Eastern Time. You are encouraged to transmit your application well before the deadline. The Grants.gov Helpdesk is available for extended periods, please check their website for the Helpdesk hours of operation. **APPLICATIONS**



**RECEIVED AFTER THE DEADLINE WILL NOT BE REVIEWED OR CONSIDERED FOR AWARD.**

**F. INTERGOVERNMENTAL REVIEW**

**Program Not Subject to Executive Order 12372**

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

**G. FUNDING RESTRICTIONS**

**Cost Principles.** Costs must be allowable, allocable and reasonable in accordance with the applicable Federal cost principles referenced in 10 CFR 600. The cost principles for commercial organization 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 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 GRANTS.GOV TO BE CONSIDERED FOR AWARD.**

Submit electronic applications through the "Apply for Grants" function at [www.Grants.gov](http://www.Grants.gov). If you have problems completing the registration process or submitting your application, call Grants.gov at 1-800-518-4726 or send an email to [support@grants.gov](mailto:support@grants.gov).

**2. Registration Process**

**One Time Registration Process**

You must COMPLETE the one-time registration process (all steps) before you can submit your first application through Grants.gov (See [www.grants.gov/GetStarted](http://www.grants.gov/GetStarted)). We recommend that you start this process at least three weeks before the application due date. It may take 21 days or more to complete the entire process. Use the Grants.gov Organizational Registration Checklists at <http://www.grants.gov/assets/OrganizationRegCheck.pdf> to guide you through the process. **IMPORTANT:** During the CCR registration process, you will be asked to designate an E-Business Point of Contact (EBIZ POC). The EBIZ POC must obtain a special password called "Marketing Partner Identification Number" (MPIN). When you have completed the process, you should call the Grants.gov Helpdesk at 1-800-518-4726 to verify that you have completed the final step (i.e., Grants.gov registration).

**3. Application Receipt Notices**

After an application is submitted, the Authorized Organization Representative (AOR) will receive a series of four e-mails. It is extremely important that the AOR watch for and save each of the emails. It may take up to two (2) business days from application submission to receipt of email Number 2. The titles of the four e-mails are:

- Number 1 - Grants.gov Submission Receipt Number
- Number 2 - Grants.gov Submission Validation Receipt for Application Number
- Number 3 - Grants.gov Grantor Agency Retrieval Receipt for Application Number
- Number 4 - Grants.gov Agency Tracking Number Assignment for Application Number

## **Section V - APPLICATION REVIEW INFORMATION**

### **A. CRITERIA**

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

##### **Application Award Eligibility**

Prior to a comprehensive merit evaluation, DOE will perform an initial review to determine that (1) the applicant is eligible for an award; (2) the information required by the funding opportunity announcement has been submitted; and (3) the proposed project is responsive to the objectives of the funding opportunity announcement. Applications that fail to pass the initial review will not be forwarded for merit review and will be eliminated from further consideration.

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

##### **Criterion 1 (40%) - Scientific and Technical Merit**

The application will be evaluated to determine the overall technical merit of the proposed concept and the ability of the project to achieve the objectives of the FOA and the DOE H<sub>2</sub> Program production targets listed in Table 9 of the *Hydrogen from Coal Multi-Year RD&D Plan* (located on the NETL website). The application will be evaluated on the overall quality, soundness, and reasonableness of the applicant's proposed work, including the following:

- (1) The purpose and objectives of the proposed work and its relationship to the goals and objectives of this funding opportunity announcement and the DOE H<sub>2</sub> Program production targets;
- (2) The thoroughness and relevance of the discussion of the applicant's knowledge of H<sub>2</sub> production techniques, the technology used in the proposed area of work and the effects of coal derived contaminants on the technology under development;
- (3) The adequacy and appropriateness of the discussion as to how the proposed work advances the current knowledge or technology;
- (4) The potential for the proposed work to contribute to a scientific or technical breakthrough;
- (5) The degree to which the proposed work is based on sound scientific and engineering principles; and
- (6) The significance of the scientific, engineering, and technical information and data provided to support readiness of the proposed technology for operation at the scale(s) proposed.

##### **Criterion 2 (35%) - Technical Approach/Statement of Project Objectives and Project Management Plan**

The application will be evaluated to determine the overall quality, soundness, and reasonableness of the applicant's technical approach to fulfill the requirements of the FOA and the DOE H<sub>2</sub> Program production targets, including the following:

- (1) The adequacy and feasibility of the applicant's approach to achieving the funding opportunity announcement's stated objectives;
- (2) The appropriateness, rationale, and completeness of the proposed Statement of Project Objectives;
- (3) The appropriateness and completeness of the draft Project Management Plan including the identification of technical, organizational and other risks or factors affecting that potential for success, and the mitigation strategies for each of these risks;

- (4) The quality and adequacy of the approach to managing or mitigating adverse impacts of contaminants from coal (coal-biomass) derived syngas;
- (5) The adequacy of the proposed labor categories and staffing plan;
- (6) The adequacy of the proposed schedule and the degree to which both appropriate technical and schedule milestones are clearly identified and defined in the proposal, and the likelihood that these milestones will be successfully met based on the proposed technical approach; and
- (7) The adequacy and appropriateness of proposed travel.

*Criterion 3 (25%) – Project Organization, Technical Capabilities, Facilities and Equipment*

The application will be evaluated in terms of the qualifications and relative experience of key personnel assigned to the project (including subcontractors and consultants, if considered key personnel), the qualifications of the participating organizations, the proposed management of the effort, and the facilities and equipment, as outlined according to the following factors:

- (1) The technical credentials, capabilities, and demonstrated experience of the key personnel relevant to the proposed work;
- (2) The prior experience in managing projects of similar type, size and complexity;
- (3) The project organization and structure, responsibilities and lines of authority, both technical and administrative, of the participating organizations and key personnel are appropriately outlined;
- (4) The type, quality, availability and appropriateness of facilities, equipment, and materials to be utilized in executing the proposed work and the topics defined in the FOA, including the proposed site for gasification separation testing; and
- (5) The capabilities and experience of the proposed team to successfully conduct the Phase II & III effort and move the technology to commercial readiness.

**Phases II & III**

Applicants for Phases II & III will be restricted to Phase I recipients. The determination to select one or more Recipient(s) for Phase II & III projects will be based upon a competitive selection process occurring prior to the completion of Phase I. DOE NETL reserves the right to alter the Phase II & III selection criteria until 5/31/2011. Recipients will be notified of the changes (if applicable) in writing on or before 5/31/2011.

*Initial Review Criteria:* Prior to a comprehensive merit evaluation, DOE will perform an initial review to determine that (1) the applicant is eligible for an award; (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 funding opportunity announcement.

*Merit Review Criteria:* All applications that pass the initial review process will receive a detailed and consistent technical evaluation utilizing the evaluation criteria described below.

*Criterion 1 (30%) - Scientific and Technical Merit*

The application will be evaluated to determine the overall technical merit of the proposed concept and the ability of the project to achieve the objectives of the FOA and the DOE H<sub>2</sub> Program production targets listed in Table 9 of the *Hydrogen from Coal Multi-Year RD&D Plan* (located on the NETL website). The application will be evaluated on the overall quality, soundness, and reasonableness of the applicant's proposed work, including the following:

- (1) The purpose and objectives of the proposed work and its relationship to the goals and objectives of this funding opportunity announcement and the DOE H<sub>2</sub> Program production targets;
- (2) The thoroughness and relevance of the discussion of the applicant's knowledge of H<sub>2</sub> production techniques, the technology used in the proposed area of work and the effects of coal derived contaminants on the technology under development;
- (3) The adequacy and appropriateness of the discussion as to how the proposed work

- advances the current knowledge or technology;
- (4) The potential for the proposed work to contribute to a scientific or technical breakthrough;
- (5) The degree to which the proposed work is based on sound scientific and engineering principles;
- (6) The significance of the scientific, engineering, and technical information and data provided to support readiness of the proposed technology for operation at the scale(s) proposed; and
- (7) The status and readiness of the proposed technology for development and testing at the pre-engineering/pilot scales.

*Criterion 2 (40%) - Technical Approach/Statement of Project Objectives and Project Management Plan*

The application will be evaluated to determine the overall quality, soundness, and reasonableness of the applicant's technical approach to fulfill the requirements of the FOA and the DOE H2 Program production targets, including the following:

- 1) The adequacy and feasibility of the applicant's approach to achieving the funding opportunity announcement's stated objectives;
- (2) The appropriateness, rationale, and completeness of the proposed Statement of Project Objectives;
- (3) The appropriateness and completeness of the draft Project Management Plan including the identification of technical, organizational and other risks or factors affecting that potential for success, and the mitigation strategies for each of these risks;
- (4) The adequacy of the proposed labor categories and staffing plan;
- (5) The adequacy of the proposed schedule and the degree to which both appropriate technical and schedule milestones are clearly identified and defined in the proposal, and the likelihood that these milestones will be successfully met based on the proposed technical approach;
- (6) The adequacy and appropriateness of proposed travel;
- (7) The quality and adequacy of the approach to managing or mitigating adverse impacts of contaminants from coal-derived syngas; and
- (8) The adequacy and feasibility of the applicant's technological approach to develop and fabricate membrane module units at the scale proposed, and translate the technologies to commercial scale production.

*Criterion 3 (30%) – Project Organization, Technical Capabilities, Facilities and Equipment*

The application will be evaluated in terms of the qualifications and relative experience of key personnel assigned to the project (including subcontractors and consultants, if considered key personnel), the qualifications of the participating organizations, the proposed management of the effort, and the facilities and equipment, as outlined according to the following factors:

- (1) The technical credentials, capabilities, and demonstrated experience of the key personnel relevant to the proposed work;
- (2) The prior experience in managing projects of similar type, size and complexity;
- (3) The project organization and structure, responsibilities and lines of authority, both technical and administrative, of the participating organizations and key personnel are appropriately outlined; and
- (4) The type, quality, availability and appropriateness of facilities, equipment, and materials to be utilized in executing the proposed work and the topics defined in the FOA;
- (5) The capabilities and experience of the proposed team to successfully conduct the Phase II & III effort and move the technology to commercial readiness;
- (6) The availability and appropriateness of the gasification site to test the membrane module, including a firm commitment from the site to conduct testing; and
- (7) The firm financial commitment from key members of the project team to provide the minimum 20% cost share for the remaining phases of the project.

**3. Other Selection Factors**

## **Program Policy Factors**

The selection official will consider the following program policy factors in the selection process:

1. It is desirable to select for award a group of projects which represents a diversity of technical approaches and methods;
2. It may be desirable to support complementary and/or duplicative efforts or projects, which, when taken together, will best achieve the research goals and objectives;
3. It is desirable that different kinds and sizes of organizations be selected for award in order to provide a balanced programmatic effort and a variety of different technical perspectives;
4. It is desirable, because of the nature of the energy source, the type of projects envisioned, or limitations of past efforts, to select

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

### **1. Merit Review**

#### **Applications Subject to Merit Review**

Applications that pass the initial review will be subjected to a merit review in accordance with the guidance provided in the "Department of Energy Merit Review Guide for Financial Assistance." This guide is available under Financial Assistance, Regulations and Guidance at <http://www.management.energy.gov/documents/meritrev.pdf>.

### **2. Selection**

#### **Selection Official Consideration**

The Selection Official will consider the merit review recommendation, program policy factors, and the amount of funds available.

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

#### **Government Discussions with Applicant**

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 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.

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

### **Selection and Award Date**

DOE anticipates notifying applicants selected for award by end of July 2010, and making awards by end of August 2010.

## **Section VI - AWARD ADMINISTRATION INFORMATION**

### **A. AWARD NOTICES**

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

## **Selected Applicants Notification**

DOE will notify applicants selected for award. This notice of selection is not an authorization to begin performance. (See Section IV.G with respect to the allowability of pre-award costs.)

## **Non-selected Notification**

Organizations whose applications have not been selected will be advised as promptly as possible. This notice will explain why the application was not selected.

## **2. Notice of Award**

### **Notice of Award**

An Assistance Agreement 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 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.

For grants and cooperative agreements made to universities, non-profits and other entities subject to OMB Circular A-110 the Award also includes the Research Terms and Conditions located at <http://www.nsf.gov/bfa/dias/policy/rtc/index.jsp>.

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

### **1. Administrative Requirements**

The administrative requirements for DOE grants and cooperative agreements are contained in 10 CFR 600 (See: <http://ecfr.gpoaccess.gov>). Grants and cooperative agreements made to universities, non-profits and other entities subject to Title 2 CFR 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>.

### **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://www.nsf.gov/bfa/dias/policy/rtc/appc.pdf>.

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**

DOE will have substantial involvement to include the following:

All Phases

- Involvement in the technical and business management aspects of the project.
- Reviewing and approving project plans, test plans and Statement of Project Objectives to ensure adequate detail and inclusion of technical and project milestones. This includes review and approval of prior stage work before work can begin on a subsequent stage if the project has multiple budget and performance periods.

- Conducting project review meetings to ensure adequate progress and that the work accomplishes the program and project objectives. Redirecting work or shifting work emphasis, if needed.
- Promoting and facilitating technology transfer activities, including disseminating program results through presentations and publications.
- Serving as scientific/technical liaison between awardees and other program or industry staff.

Phases II & III Only

- Validating membrane performance through collaboration with DOE/NETL Office of Research and Development.
- Leveraging DOE/NETL interests to assist recipients in accessing gasifier test facilities.
- Performing cost/benefit analyses on Phase III membrane module designs through collaboration with the DOE/NETL Office of Systems, Analysis and Planning

**C. REPORTING**

Reporting requirements are identified on the Federal Assistance Reporting Checklist, DOE F 4600.2, attached to the award agreement. For a sample Checklist, see <http://www.management.energy.gov/documents/DOEF4600pt292009.pdf>.

**Section 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.

**B. AGENCY CONTACT**

Name: Janet Spaulding  
E-mail: [janet.spaulding@netl.doe.gov](mailto:janet.spaulding@netl.doe.gov)

**Section 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.

**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 [*Insert 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.

#### **Program Covered Under Special Protected Data**

**Special Protected Data Statutes.** This program is covered by a special protected data statute. The provisions of the statute provide for the protection from public disclosure, for a period of up to 5 years from the development of the information, of data that would be trade secret, or commercial or financial information that is privileged or confidential, if the information had been obtained from a non-Federal party. Generally, the provision entitled, Rights in Data Programs Covered Under Special Protected Data



Statutes (10 CFR 600 Appendix A to Subpart D), would apply to an award made under this announcement. This provision will identify data or categories of data first produced in the performance of the award that will be made available to the public, notwithstanding the statutory authority to withhold data from public dissemination, and will also identify data that will be recognized by the parties as protected data.

#### **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 <http://www.gc.doe.gov/documents/patwaivclau.pdf>.

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.