

*Washington*

U.S. Department of Energy, Richland Operations Office, Washington State University, WSU Tri-Cities Branch Campus, 100 Sprout Road, Richlands, WA 99352, Telephone: (509) 376-8583

*Wyoming*

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DOE Forrestal Building, Freedom of Information Reading Room, 1000 Independence Ave., SW, Washington, DC 20585, Telephone: (202) 586-6020

Issued in Washington, DC, January 14, 2000.

**Mark W. Frei,**

*Deputy Assistant Secretary for Project Completion, Environmental Management.*

[FR Doc. 00-1494 Filed 1-20-00; 8:45 am]

BILLING CODE 6450-01-M

**DEPARTMENT OF ENERGY****Chicago Operations Office; Office of Industrial Technologies****Notice of Solicitation for Financial Assistance Applications for Cooperative Research and Development for Advanced Materials in Advanced Industrial Gas Turbines**

**AGENCY:** Chicago Operations Office, DOE.

**ACTION:** Notice of solicitation availability.

**SUMMARY:** The Department of Energy (DOE) announces its interest in receiving applications for federal assistance. The purpose of this research is to advance the state of development of one or more advanced material system(s) for integration into Advanced Industrial Gas Turbine Systems used in power generation service. In order to reach this goal, development, subsystem testing, and demonstration of optimized and fully integrated components comprising advanced material system(s) must be performed.

**DATES:** The solicitation document will be available on or about December 17, 1999. Applications are due on or about February 4, 2000. Awards are anticipated by June 1, 2000.

**ADDRESSES:** The solicitation will be available on the internet by accessing the DOE Chicago Operations Office

Acquisition and Assistance Group home page at <http://www.ch.doe.gov/business/acq.htm> under the heading "Current Solicitations", Solicitation No. DE-SC02-00CH11005. Completed applications referencing Solicitation No. DE-SC02-00CH11005 must be submitted to the U.S. Department of Energy, Chicago Operations Office, Communications Center, Building 201, Room 168, 9800 South Cass Avenue, Argonne, IL 60439-4899, ATTN: Roberta D. Schroeder, Acquisition and Assistance Group.

**FOR FURTHER INFORMATION CONTACT:**

Roberta D. Schroeder at 630/252-2708, U.S. Department of Energy, 9800 South Cass Avenue, Argonne, IL 60439-4899, by facsimile at 630/252-5045, or by electronic mail at [roberta.schroeder@ch.doe.gov](mailto:roberta.schroeder@ch.doe.gov).

**SUPPLEMENTARY INFORMATION:** The Scope of Work covers applied research and pre-commercial demonstration in five work areas as described below as Tasks 1, 2, 3, 4 and 5. In addition to these tasks the Scope of Work includes Subtasks A and B. Subtask A will require the participant to provide a report covering the potential technical market and technical/economic barriers. Subtask B will require the participant to provide a commercialization plan for advanced industrial turbines utilizing advanced material system(s).

The Tasks represent an increasing progression of maturation stages for technology development. Tasks 1 and 2 involve research, design, and development of advanced materials systems, Tasks 3 and 4 involve technology systems development including gas-turbine modifications, and Task 5 involves pre-commercial demonstration. Depending on the current maturation of proposed technologies, the work may start at any task if prior work has been performed that would satisfy completion or sufficient progress of the previous task(s). For example, an applicant with an innovative concept but limited development experience for that concept may decide to apply only under Task 1—whereas applicants with more developed concepts may elect to bypass the initial tasks. Applications may address any combination or portions of the tasks. While it is not mandatory for applications to address only sequentially numbered tasks (*e.g.*, applying under Tasks 1, 3 and 4 is allowable), there must be a logical sequence of the tasks to be performed based on the nature of the work to be performed.

The ultimate maturation of technologies will be reached upon the

attainment of the solicitation objectives in a pre-commercial demonstration of 8,000 hours (Task 5). Although it is the intention of this solicitation to support development of advanced material systems that will so culminate, there also is relevancy in gaining a better understanding of the advanced materials systems and their impact on gas turbines. In such a case, development of a completed commercial system may not be feasible. For example, development may end prior to the maturation state of Task 5, or Task 5 may be scheduled to complete less than the 8,000 hours (but more than 4,000 hours as discussed below) identified in the solicitation as a goal for commercialization. Regardless of the tasks proposed, applications will raise the maturation level of the concept relative to the solicitation objectives.

Insofar as Subtask A and B are concerned, all participants will complete the program and planning report required by Subtask A, which will become a subtask of the lowest numbered Task proposed. Additionally, participants performing work under Tasks 3, 4 and/or 5 will complete the commercialization plan required by Subtask B as a part of the lowest numbered Task proposed that is equal to or greater than 3.

All work proposed to be performed under an application must be scheduled for completion within the three-year life expectancy of this program.

Under Tasks 1 and 2 that follow, the work may be performed with respect to test devices or turbines that could serve as a logical and cost effective intermediate basis for developing technologies for advanced material systems. However, any such technology developed under Tasks 1 and 2 must have applicability to advanced industrial gas turbines.

Under Tasks 3, 4 and 5 that follow, all work must be performed with respect to advanced industrial gas turbines (including test devices suitable to characterize aspects of advanced industrial gas turbines), and the demonstration required under Task 5 must be performed on an advanced industrial gas turbine(s). In performing this work, one or more such turbines may be used.

Work under all tasks requires the participation of material processors at any level (applicant or sub-applicant) with sufficient responsibility to accomplish the work proposed. Work under all tasks also will be enhanced by the participation of an end user. For these tasks, this solicitation encourages the coordination of technical and administrative activities with an end

user. Long-term demonstration under Task 5 must be conducted at a host site that is committed by the end user. We encourage the demonstration to be conducted at an Industry of the Future Company.

*Task 1*—The starting point of this task shall be, as a minimum, a technological concept(s) of an advanced material system(s) with prior experimental evidence of its potential for meeting the solicitation objectives. The participant will identify the form, function, and fit of all components necessary to execute the proposed technology. The participant also will develop preliminary component designs compatible with the properties of the advanced material system(s). The preliminary component designs will consider ease of manufacture and insertion and function of the component in the turbine. Testing on preliminary articles may be done at a scale suitable to confirm the design parameters that were used and to give qualitative and quantitative indications that the components will perform as planned.

*Task 2*—The participant will complete detailed designs of the selected system components. The design process will include the optimization and cost reduction of the processing, fabrication, and integration of the selected components into a viable turbine system. The components will be manufactured and the sub-system will be assembled. Development and testing will be done to verify and optimize the overall approach, to provide operating and control parameters during manufacture and use, and to provide full-scale definition such as allowable turbine operating ranges, sensitivity to fuel variability, and other factors affecting the performance and competitiveness of the turbine system.

*Task 3*—The design of an advanced industrial gas turbine will be adapted in parallel to component development to assure compatibility, optimum fit, and functionality. The work under this task will integrate hardware, controls, and operating procedures for startup, steady operation over the advanced industrial gas turbine's usual power range (for example 50% to 100% of rated output), planned changes (such as anticipated shutdown or transitions of operating load), and unexpected changes in power output (such as lost load) and determining energy efficiency and emissions.

*Task 4*—The applicant shall design and fabricate a complete advanced industrial gas turbine system that utilizes the components developed under Task 2 or elsewhere. The components shall exhibit the form,

function, and fit compatible with the modified advanced industrial gas turbine developed either under Task 3 or elsewhere. The applicant shall prove, either by subsystem rig testing or by demonstrating on an advanced industrial gas turbine, the ability of the subsystem components to perform as planned. Such testing shall include those sensors and controllers needed to maintain testing over the design operating range of the turbine. Test results shall include relationships among performance, efficiency, emissions, temperatures, and all other relevant parameters that quantify and qualify the system for commercial delivery. The proof testing shall be based on natural gas fuel or any other fuel with a viable market presence in the Industries of the Future such as waste fuels and biomass. Also, the market may require dual fuel capabilities. Such dual fuel capabilities may be considered in the design.

The completion of Task 4 would result in the assembly of an advanced industrial gas turbine that incorporates components completed under this task or elsewhere. The advanced industrial gas turbine shall be ready for insertion into a commercial package that is suitable for shipment, installation, and demonstration in the field under Task 5.

*Task 5*—A host site(s) will be selected for demonstration of the advanced industrial gas turbine qualified either by the completion of Task 4 or elsewhere. The participant will integrate the advanced industrial gas turbine with the balance of plant equipment such as a generator that is compatible with the needs of a specific host site(s). The completion of Task 5 would result in an 8000-hour demonstration of an advanced industrial gas turbine that can be reasonably expected to meet project objectives. At a minimum, the demonstration shall comprise 4000 hours of operation with natural gas fuel at a host site that is compatible with an operating rate of at least 4000 hours per annum.

The applicant shall complete a coordinated plan for the demonstration that incorporates the perspectives of all relevant parties, including the host site. The plan will also assign responsibilities on all matters necessary to execute the demonstration plan, such as business arrangements, balance of plant equipment, site construction, site integration, periodic inspections of hardware, visitations of third parties, data acquisition at the host site to verify expected benefits, and obtainment of environmental, construction, operating, and other permits.

In support of the Office of Industrial Technologies and the nation's industries, it is preferred that the demonstration be conducted at an Industry of the Future company. If it is not feasible to conduct the demonstration at an Industry of the Future company or if there are valid reasons to do the demonstration elsewhere, a host site other than Industry of the Future company may be considered. Host sites comprising buildings or natural gas and electric utility sites may be relevant to programs of the Office of Energy Efficiency and Renewable Energy, Office of Building and Community Systems and the Office of Power Technologies respectively. In such cases, every possible effort will be made to coordinate such demonstrations with these offices.

The demonstration shall be representative of significant market segments of the distributed power generation industry. As a result, the successful demonstration at the host site will be expected to exemplify the resolution of the typical barriers (such as technical, environmental, industry acceptance, and control issues related to the use of advanced material systems) that impede the widespread adoption of distributed generation. In this regard, all hours of operation accumulated under the demonstration shall be gained while generating electric power. Additionally, all such hours of operation shall be accumulated while the host site is interconnected to the existing local utility transmission and distribution grid that exists for the routine transmission and distribution of electric power. Accordingly, the balance of plant equipment shall be sufficient to generate and condition such electric power, and all hardware shall be provided for interconnection, transmission, and distribution on the local utility grid. (The sole use of isolation switches shall not be sufficient to meet this requirement.)

*Subtask A*—Subtask A is required for any applicant selected for award and is to be performed in conjunction with the lowest numbered task proposed. The completed report must be received within 90 days of award of the cooperative agreement and will be submitted in accordance with topical report requirements.

With emphasis on the Industries of the Future but not excluding other applications, the report will further define completed distributed generation and combined heat and power systems likely to be available at the successful completion of this project. The participant will identify and quantify the potential technical markets for such

systems. In areas such as energy efficiency, performance, cost, and emissions, the participant will provide detailed rationale that supports these projections. All barriers such as the lack of uniform code standards that will impact on the technical market will be identified. However, any such barriers that are out of the control of the participant shall be deemed not to impact on the projected technical market.

**Subtask B**—Subtask B is required for any applicant selected for award who proposed on Tasks 3, 4, and/or 5 and is to be performed in conjunction with the lowest numbered task proposed. The completed report must be received within 180 days of initiation of the lowest numbered Task (3–5) proposed. This report will be submitted in accordance with topical report requirements.

The main impetus for this work is the commercial implementation of efficient, clean, and cost effective advanced industrial gas turbines with advanced material systems that are deployed in distributed generation and combined heat and power system(s). It is essential that a commercialization plan support the proposed advanced material systems and achieve the goals of this solicitation. Participants doing work under Tasks 3, 4, or 5 shall complete commercialization plans and strategies for all relevant functions in the commercialization process such as cost-effective manufacturing, marketing, production volumes, and support for the participant's advanced industrial gas turbine system. The commercialization plan will emphasize market applications in the Industries of the Future.

As applicants may apply under one or more of the five tasks within the solicitation Scope of Work, there is a wide range in the number of potential awards and award values. DOE expects to award one (1) to five (5) cooperative agreements under this solicitation. It is estimated that individual awards will range in value between approximately \$300,000.00 and \$1,500,000.00 of DOE funding and will require awardee cost sharing. A minimum non-federal cost sharing commitment of 30% of the cost for Tasks 1 and 2, 45% of the costs for Tasks 3 and 4, and 60% of the costs for Task 5 is required.

Estimated DOE funding is \$6 million over the three-year period. DOE reserves the right to fund in whole or in part, any, all, or none of the applications submitted in response to this solicitation. All awards are subject to the availability of funds.

Any non-profit or for-profit organization or other institution of higher education, or non-federal agency or entity is eligible to apply, unless otherwise restricted by the Simpson-Craig Amendment. In addition, applicants must satisfy the requirements of the Energy Policy Act in order to be eligible for award. DOE National Laboratory participation as a subcontractor is limited to no more than 30% of the cost of any individual task to be performed.

Issued in Argonne, Illinois on January 4, 2000.

**John D. Greenwood,**

*Acquisition and Assistance Group, Group Manager.*

[FR Doc. 00-1495 Filed 1-20-00; 8:45 am]

**BILLING CODE 6450-01-P**

## DEPARTMENT OF ENERGY

### Energy Information Administration

#### Agency Information Collection Activities: Proposed Collection; Comment Request

**AGENCY:** Energy Information Administration, DOE.

**ACTION:** Agency information collection activities: Proposed collection; comment request.

**SUMMARY:** The Energy Information Administration (EIA) is soliciting comments on the proposed changes and extension to Form NWPA-830G, "Standard Remittance Advice for Payment of Fees."

**DATES:** Written comments must be submitted on or before March 21, 2000. If you anticipate difficulty in submitting comments within that period, contact the person listed below as soon as possible.

**ADDRESSES:** Send comments to Jim Finucane, Office of Coal, Nuclear, Electric and Alternate Fuels, EI-52, Forrestal Building, U.S. Department of Energy, Washington, D.C. 20585-0650. Alternatively, Mr. Finucane may be reached by phone at 202-426-1960, by e-mail [jim.finucane@eia.doe.gov](mailto:jim.finucane@eia.doe.gov), or by FAX 202-426-1280.

**FOR FURTHER INFORMATION CONTACT:** Requests for additional information or copies of the forms and instructions should be directed to Mr. Finucane at the address listed above.

#### SUPPLEMENTARY INFORMATION:

- I. Background
- II. Current Actions
- III. Request for Comments

## I. Background

The Federal Energy Administration Act of 1974 (Pub. L. No. 93-275, 15 U.S.C. 761 *et seq.*) and the Department of Energy Organization Act (Pub. L. No. 95-91), 42 U.S.C. 7101 *et seq.*) require the Energy Information Administration (EIA) to carry out a centralized, comprehensive, and unified energy information program. This program collects, evaluates, assembles, analyzes, and disseminates information on energy resource reserves, production, demand, technology, and related economic and statistical information. This information is used to assess the adequacy of energy resources to meet near and longer term domestic demands.

The EIA, as part of its effort to comply with the Paperwork Reduction Act of 1995 (Pub. L. 104-13, 44 U.S.C. Chapter 35), provides the general public and other Federal agencies with opportunities to comment on collections of energy information conducted by or in conjunction with the EIA. Any comments received help the EIA to prepare data requests that maximize the utility of the information collected, and to assess the impact of collection requirements on the public. Also, the EIA will later seek approval by the Office of Management and Budget (OMB) of the collections under Section 3507(h) of the Paperwork Reduction Act of 1995.

The Form NWPA-830G is designed to be the service document for entries into the Department of Energy's accounting records. Electric utilities transmit data concerning payment of their contribution to the Nuclear Waste Fund, and specific data on disposal of nuclear waste.

## II. Current Actions

This action is an extension with a minor change proposed to the existing collection. In keeping with its mandated responsibilities, EIA proposes to extend the information collection aspects of NWPA-830G, "Standard Remittance Advice for Payment of Fees" for three years from the current approved OMB expiration date (07/31/00).

Proposed change:

Where to Submit: The address is unchanged for the signed copy of the data form; however, the data in electronic form may now be submitted as an attachment to an E-mail addressed to:

[RAPS@EIA.DOE.GOV](mailto:RAPS@EIA.DOE.GOV)

## III. Request for Comments

Prospective respondents and other interested parties should comment on the actions discussed in item II. The