DOE.

availability. must be performed. In order to Industrial Gas Turbine Systems used in of one or more advanced material is to advance the state of development assistance. The purpose of this research ADDRESSES: 

DATES: 

ACTION: 

AGENCY: 

The solicitation document will be issued in Washington, DC, January 14, 2000.

Mark W. Frei, Dear Assistant Secretary for Project Completion, Environmental Management. 

The ultimate maturation of 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 compatibility 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 under Task 5.

**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 state operation over the advanced industrial gas turbine’s useful 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 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 attainment 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.

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

III. Request for Comments

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