Office of Science
Notice DE-FG01-04ER04-16

Integrated Assessment of Climate Change Research

Department of Energy

Office of Science Financial Assistance Program Notice DE-FG01-04ER04-16; Integrated Assessment of Climate Change Research

AGENCY: U.S. Department of Energy

ACTION: Notice inviting grant applications.

SUMMARY: The Office of Biological and Environmental Research (OBER) of the Office of Science (SC), U.S. Department of Energy (DOE), hereby announces interest in receiving applications for the Integrated Assessment of Climate Change Research Program. The program funds research that contributes to integrated assessment of climate change, and in particular, research to develop and improve methods and tools that focus on specialized topics of importance to integrated assessments. The research program supports the Administration's Climate Change Science Program goals to understand, model, and assess the effects of increasing greenhouse gas concentrations in the atmosphere. The program places special emphasis on developing methods to evaluate economic and other costs and benefits of climate change under "what if" scenarios that include policy interventions to mitigate greenhouse gas emissions.

All applications submitted in response to this Notice must explicitly state how the proposed research will support accomplishment of the BER Climate Change Research Division's Long Term Measure of Scientific Advancement to deliver improved data and models to determine acceptable levels of greenhouse gases in the atmosphere.

DATES: Applicants are encouraged (but not required) to submit a brief preapplication for programmatic review. There is no deadline for the preapplication, but early submission of preapplications is encouraged to allow time for meaningful discussions.

The deadline for receipt of formal applications is 4:30 p.m., Eastern Time, May 11, 2004, to be accepted for merit review and to permit timely consideration for award in Fiscal Year 2004 and early Fiscal Year 2005.

ADDRESSES: Preapplications, referencing Program Notice DE-FG01-04ER04-16, should be sent E-mail to john.houghton@science.doe.gov.

Formal applications referencing Program Notice DE-FG01-04ER04-16, must be sent electronically by an authorized institutional business official through DOE's Industry Interactive Procurement System (IIPS) at: http://e-center.doe.gov/. IIPS provides for the posting of solicitations and receipt of applications in a paperless environment via the Internet. In order to submit applications through IIPS, your business official will need to register at the IIPS website. **IIPS offers the option of using multiple files, please limit submissions to one volume and one file if possible, with a maximum of no more than four PDF files.** The Office of Science will include attachments as part of this notice that provide the appropriate forms in PDF fillable format that are to be submitted through IIPS. Color images should be submitted in IIPS as a separate file in PDF format and identified as such. These images should be kept to a minimum due to the limitations of reproducing them. They should be numbered and referred to in the body of the technical scientific grant application as Color image 1, Color image 2, etc. Questions regarding the operation of IIPS may be E-mailed to the IIPS Help Desk at: HelpDesk@pr.doe.gov, or you may call the help desk at: (800) 683-0751. Further information on the use of IIPS by the Office of Science is available at: http://www.sc.doe.gov/production/grants/grants.html.

If you are unable to submit an application through IIPS, please contact the Grants and Contracts Division, Office of Science at: (301) 903-5212 or (301) 903-3604, in order to gain assistance for submission through IIPS or to receive special approval and instructions on how to submit printed applications.

FOR FURTHER INFORMATION CONTACT: Dr. John Houghton, Climate Change Research Division, SC-74, Office of Biological and Environmental Research, Office of Science, U.S. Department of Energy, 1000 Independence Ave, SW, Washington, DC 20585-1290, telephone: (301) 903-8288, E-mail: john.houghton@science.doe.gov, fax: (301) 903-8519. The full text of Program Notice DE-FG01-04ER04-16, is available via the World Wide Web using the following web site address: http://www.sc.doe.gov/production/grants/grants.html.

SUPPLEMENTARY INFORMATION: An integrated assessment of climate change is defined here as the analysis of the human (including economics), physical, and biological aspects of climate change from the cause, such as greenhouse gas emissions, through impacts, such as changes in unmanaged ecosystems, sea level rise, and altered growing conditions for crops. The primary emphasis in an integrated assessment is to represent all three aspects in such a way that the costs and benefits of climate change can be evaluated. Integrated assessments are commonly based on simulated scenarios using a computer model.

A description of integrated assessment may be found in volume 3 of the report "Intergovernmental Panel on Climate Change (IPCC) Third Assessment Report: Climate Change 2001". The reference is: Ferenc Toth, Mark Mwandosya, John Christiansen, Jae Edmonds, Brian Flannery, Carlos Gay-Garcia, Hoesung Lee, Klaus Meyer-Abich, Elena Nikitina, Atiq Rahman, Richard Richels, Ye Riqui, Arturo Villavicencio, Yoko Wake, and John Weyant, "Decision-Making Frameworks," Chapter 10 in Climate Change 2001: Mitigation, Cambridge University Press, 2001, (http://www.ipcc.ch/pub/reports.htm).

Integrated assessment models are used to evaluate, for example, specific policy options. This notice solicits research to develop and improve the methods and tools used to assess the costs and benefits of climate change. The research funded as a result of this solicitation will be judged in part on its potential to develop and improve integrated assessment methods and models needed to support policy analysis and development. Policy analysis and development itself will not be funded.

The program will concentrate support on the topics described below. Applications that involve development of analytical models and computer codes will be judged partly on the basis of whether they include proposed tasks to document and make the models and model codes available to the community. The following is a list of topics that are high priority. Topics proposed by principal investigators that fall outside this list will require a preapplication and a strong justification to be considered for funding. Research projects in these elements are intended to fill critical gaps in current integrated assessments.

A. Technology Innovation and Diffusion. Research to develop and improve methods and models for assessing the benefits and costs of innovation and diffusion of technologies that affect the emission of greenhouse gases is a primary focus of the Integrated Assessment of Climate Change Research Program. Assumptions regarding technology innovation and diffusion are some of the most important contributors to overall uncertainty in predicting future emissions of greenhouse gases from technologies. A key area of interest is research to improve the ability of the integrated assessment models to represent technological changes that directly or indirectly affect greenhouse gas emissions as a function of variables that are determined by the model ("endogenizing technological change") rather than postulated as static input to the model.

One particular difficulty in modeling technological change is in representing the penetration of new technologies. Over the 21st century, the typical timeframe simulated using the integrated assessment models, technologies need to be invented, innovated upon, and diffused to the sectors in which they are used. Applications are sought that address issues such as: 1) The rate at which technological changes take place, 2) identification of factors that affect the rates, 3) the representation of the adoption of new technologies in which the model assigns a price lower for the new technology than for competing technologies, and 4) whether, and if so, how, historical precedents can be used to better understand technology innovation and diffusion processes and rates and therefore lead to better modeling of such processes and rates.

The rate and nature of technology diffusion from the more-developed nations to developing nations is not well understood. Predicting economic structural changes in developing nations that influence technology diffusion is also problematical. Much of the uncertainty in integrated assessment models comes from the difficulty in predicting the response of the energy sector and greenhouse gas emissions in developing nations to both regulation and technological innovations in more-developed nations. Applications are sought to understand how historical precedents can be used to understand and model the future movement of technologies across national borders.

Applications are also sought for research that will help provide tools to address other policy-relevant questions, such as the following, as they relate to greenhouse gas emissions:

- What effect would various policy options have on "carbon leakage", the movement of emissions of greenhouse gases away from nations with relatively regulated emissions to ones with relatively unregulated emissions?
- How can the impact of research and development on invention, innovation, and adoption of technologies that emit greenhouse gases be simulated and modeled quantitatively?

B. Improve Methods for Constructing Emission Scenarios Used to Drive Integrated Assessment Models. The Intergovernmental Panel on Climate Change has published a Special Report on Emission Scenarios (SRES) (http://www.ipcc.ch/pub/reports.htm#sprep). These scenarios describe various possible directions for future development and are used as input into the Integrated Assessment models. The scenarios include projections of economic growth, population dynamics, and technology development that vary by time and locale.

This notice solicits research to improve on the existing methodologies for developing emission scenarios and to enhance the current SRES scenarios. Enhancing the current SRES scenarios should make use of recent updates to demographic projections. Forecasts of productivity growth, particularly in lesser developed countries, should cover the range of likely outcomes. Some scenarios should represent possible policy interventions to reduce greenhouse gas emissions, such as mitigation options that would lead to various stable atmospheric concentration levels. Forecasts of technology improvements should be tied to assumptions regarding mitigation options.

Program Funding

It is anticipated that up to $2,000,000 will be available for multiple awards to be made in Fiscal Year 2004 and early Fiscal Year 2005, in the categories described above, contingent on the availability of appropriated funds. Additional funds will be made available for a similar program announcement to the DOE National Laboratories. Applications may request project support up to three years, with out-year support contingent on the availability of funds, progress of the research and programmatic needs. Annual budgets for project applications are expected to range from $50,000 to $175,000 total costs. Funds for this research will come from the Integrated Assessment Research Program. DOE is under no obligation to pay for any costs associated with preparation or submission of applications.

Preapplications

A preapplication is strongly encouraged (but not required) prior to submission of a full application. The preapplication should list the Principal Investigator's name, institution, address, telephone number, and E-mail address; title of the project; and proposed collaborators. The preapplication should consist of a one to two page narrative describing the research project objectives and methods of accomplishment. A response to each preapplication, discussing the potential program relevance of a formal application, generally will be communicated within 15 days of receipt. There is no deadline for the submission of preapplications, but applicants should allow sufficient time to meet the application deadline. Please note that notification of a successful preapplication is not an indication that an award will be made in response to the formal application.

Merit Review

Applications will be subjected to formal merit review (peer review) and will be evaluated against the following evaluation criteria which are listed in descending order of importance codified at 10 CFR 605.10(d):

1. Scientific and/or Technical Merit of the Project;
2. Appropriateness of the Proposed Method or Approach;
3. Competency of Applicant's Personnel and Adequacy of Proposed Resources;
4. Reasonableness and Appropriateness of the Proposed Budget.

The evaluation process will include program policy factors such as the relevance of the proposed research to the terms of the announcement and the agency's programmatic needs. Note, external peer reviewers are selected with regard to both their scientific expertise and the absence of conflict-of-interest issues. Both federal and non-federal reviewers will often be used, and submission of an application constitutes agreement that this is acceptable to the investigator(s) and the submitting institution.

Submission Information

Information about the development and submission of applications, eligibility, limitations, evaluation, selection process, and other policies and procedures may be found in the Application Guide for the Office of Science Financial Assistance Program and 10 CFR Part 605. Electronic access to SC's Financial Assistance Application Guide and required forms is made available via the World Wide Web: http://www.sc.doe.gov/production/grants/grants.html.

In addition, for this Notice, the research description must be 15 pages or less (10-point or larger font), including figures and tables but excluding attachments, and must include a one-page summary of the proposed project. The summary should appear on a separate page (page 1) and must include the proposed-project title; name of the applicant and the applicant's address, phone number, and e-mail address; names of any co-investigators; and the proposed-project summary. Attachments should include literature references cited in the research description, curriculum vitae for each investigator (2-page maximum per investigator), a listing of all current and pending federal support for each investigator, and letters of intent when collaborations are part of the proposed research.

For researchers who do not have access to the World Wide Web (WWW), please contact Karen Carlson, Office of Biological and Environmental Research, Climate Change Research Division, SC-74/Germantown Building, U.S. Department of Energy, 1000 Independence Ave., SW, Washington, DC 20585-1290, phone: (301) 903-3338, fax: (301) 903- 8519, e-mail: karen.carlson@science.doe.gov; for hard copies of background material mentioned in this solicitation.

The Catalog of Federal Domestic Assistance number for this program is 81.049, and the solicitation control number is ERFAP 10 CFR Part 605.

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Office of Science

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