Office of Energy Research
Notice 98-15

Integrated Assessment of Global Climate Change Research Program

Department of Energy
Office of Energy Research

Energy Research Financial Assistance Program Notice 98-15; Integrated Assessment of Global Climate Change Research Program

Agency: U.S. Department of Energy

Action: Notice inviting research grant applications.

SUMMARY: The Office of Biological and Environmental Research (OBER) of the Office of Energy Research (ER), U.S. Department of Energy (DOE), hereby announces its interest in receiving applications for the Integrated Assessment of Global Climate Change Program. This notice is a follow on to four previous notices published in the Federal Register (Notice 93-4 published December 9, 1992, entitled Economics of Global Change Research Program; Notice 95-12 published December 29, 1994, entitled Global Change Assessment Research Program; Notice 96-06 published January 30, 1996, entitled Global Change Integrated Assessment Research, and Notice 97-06 published February 11, 1997, entitled Integrated Assessment of Global Climate Change Research Program). The research program supports the Department's Global Change Research Program, the U.S. Global Change Research Program and the Administration's goals to understand and mitigate the rise in greenhouse gases.

DATES: Applicants are encouraged (but not required) to submit a brief preapplication for programmatic review. All preapplications, referencing Program Notice 98-15, should be received by DOE by 4:30 P.M., E.D.T. April 20, 1998, but early submission of preapplications is encouraged to allow time for meaningful dialogue.

The deadline for receipt of formal applications is 4:30 p.m., E.D.T., May 21, 1998, to be accepted for merit review and to permit timely consideration for award in fiscal year 1998 and early fiscal year 1999.

ADDRESSES: Preapplications, referencing Program Notice 98-15, should be sent E-mail to john.houghton@oer.doe.gov.

Formal applications, referencing Program Notice 98-15, should be sent to: U.S. Department of Energy, Office of Energy Research, Grants and Contracts Division, ER-64, 19901 Germantown Road, Germantown, MD 20874-1290, ATTN: Program Notice 98-15. This address must also be used when submitting applications by U.S. Postal Service Express Mail or any other commercial overnight delivery service, or when hand-carried by the applicant.

FOR FURTHER INFORMATION CONTACT: Dr. John Houghton, Environmental Sciences Division, ER-74, Office of Biological and Environmental Research, Office of Energy Research, U.S. Department of Energy, 19901 Germantown Road, Germantown, MD 20874-1290, telephone: (301) 903-8288, E-mail: john.houghton@oer.doe.gov, fax: (301) 903-8519. The full text of Program Notice 98-15 is available via the Internet using the following web site address: ***http://www.er.doe.gov/production/grants/fr98_15.html***.

SUPPLEMENTARY INFORMATION: The determination of energy policy, such as the administration's analysis of international protocols for global climate change, is tied to understanding the benefits and costs of potential actions with respect to the control of greenhouse gases and possible climate change. The research described in this notice supports the analysis of those benefits and costs.

A theme common to the research topics supported by this program is the support of integrated assessment of global climate change. Integrated assessment of climate change is defined here as the analysis of climate change from the cause, such as greenhouse gas emissions, through impacts, such as changed energy requirements for space conditioning due to temperature changes. Integrated assessment is sometimes, but not always, implemented as a computer model. It evaluates the benefits and costs, not necessarily measured monetarily, for various actions to mitigate global climate change. A description of integrated assessment may be found in Chapter 10: "Integrated Assessment of Climate Change: An Overview and Comparison of Approaches and Results," in Climate Change 1995: Economic and Social Dimensions of Climate Change, edited by Bruce, James P.; Lee, Hoesung; and Haites, Erik F., Cambridge University Press, 1996.

This research will be judged in part on its potential to improve and/or support the analytical basis for policy development. The program is narrowly focused and will primarily 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 proposed tasks to prepare documentation and make the models and codes available to other groups.

The following is a list of topics that are high priority. Topics proposed by principal investigators that fall outside this list will need strong justification.

A. Technology Innovation and Diffusion. This category has been a primary focus of the Integrated Assessment of Global Climate Change Program since its initiation five years ago. Potential research projects include such issues as:

- Decomposing the effect of technology innovation and diffusion on carbon emissions into such components as changes in GDP, sectoral mix, innovation, and diffusion. Historical records might be used to estimate trends and make projections that vary as a function of price effects and policy options.
- Technology innovation and diffusion is an important part of several aspects of integrated assessment models, such as backstop technologies, adaptation, resource depletion, labor productivity, and substitution parameters for shifting factor shares. Investigations might include studies to help predict changes in these parameters both for a base case and for various policy options, as well as studies to analyze the internal consistency among these aspects.
- The rate and nature of technology diffusion from the OECD to developing countries is not well understood. Relevant factors include the prediction of the energy-use path for developing countries, the effects of changes in international trade policies and patterns, and carbon leakage.
- The translation of existing literature on the economics of technology innovation into a representation that could be adapted for IA models.
- Investment or other policies to encourage research and development are options for increasing abatement and improving adaptation. Research in this topic would investigate such subjects as evaluating the effectiveness of alternative modes of implementation, such as direct grants or cooperative research projects. How does technology innovation and diffusion happen, and how can we improve it?

B. Emissions Trading. The recent Kyoto protocol has heightened the need to understand the issues involved in implementing emission trading procedures. An underlying question is to design trading procedures so that actions are encouraged that are as coincidental with the goals of the agreement as possible. Research in this area would include theoretical work on emissions trading as well as applied. Such practical factors include:

- What institutional factors need to be considered? What role should be played by national governments? Which set of institutions should be regulated (for example, utilities, distributors, etc.)
- In what way should emission trading be phased in?
- What differences are there between CO2 and the five other greenhouse gases?

- How flexibly can the emissions trading practices be designed? How well will the practices accommodate changes in targets, country participation, institutional design, or relative weights among the gases?

C. Supply Curves for Non-CO2 Greenhouse Gases. The Kyoto protocol has included five greenhouse gases other than CO2: CH4, N2O, CFC 11, HCFC 22, and CF4. The "supply curves" (emission scenarios) for the other five gases are much more poorly understood than the supply curve for CO2. This research topic would provide information on global emissions of the other five gases under business-as-usual scenarios as well as under plausible alternative scenarios that would result from policy actions.

D. Supply Curves for Land Use. The Kyoto protocol highlighted land use mitigation as an important policy option. Carbon dioxide emissions as a function land use practices are more poorly approximated than emissions from combustion of fossil fuels. Research funded under this topic would develop new information on global carbon dioxide emissions from various land use scenarios, including forests and agricultural lands. The emphasis is on global scale estimates, perhaps regionally disaggregated. What potential is there for enhancing CO2 uptake? What changes in the global carbon balance could be expected from policy options?

E. Representation of Carbon Management Technologies. Current integrated assessment models include representations of well-known technologies and forecast changes in those technologies into the distant future. However, in general, the models do not represent with as much reliability forecasts of innovative technology changes that might be due to new research and technologies that reduce atmospheric concentrations of carbon dioxide. Research is ongoing that will improve our understanding and ability to develop innovative clean energy sources that will emit less carbon dioxide to the atmosphere. Such developments may rely on the use of fossil fuels and carbon sequestration in the oceans or deep subsurface. New modes of supplying and using substantial amounts of energy, such as hydrogen and fuel cells, may alter future energy, emission, and economy parameters substantially. Research in this topic would identify reasonable technology scenarios that will guide the integrated assessment predictions of energy, fossil fuel use, costs, emissions, and so forth, in response to various policy options.

Program Funding

It is anticipated that up to $1 million will be available for multiple awards to be made in FY 1998 and early FY 1999 in the categories described above, contingent on the availability of appropriated funds. 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 are expected to range from $30,000 to $150,000 total costs.

Collaboration

Applicants are encouraged to collaborate with researchers in other institutions, such as: universities, industry, non-profit organizations, federal laboratories and FFRDCs, including the DOE National Laboratories, where appropriate, and to incorporate cost sharing and/or consortia wherever feasible.

Collaborative research applications may be submitted in several ways:

(1) When multiple private sector or academic organizations intend to propose collaborative or joint research projects, the lead organization may submit a single application which includes another organization as a lower-tier participant (subaward) who will be responsible for a smaller portion of the overall project. If approved for funding, DOE may provide the total project funds to the lead organization who will provide funding to the other participant via a subcontract arrangement. The application should clearly describe the role to be played by each organization, specify the managerial arrangements and explain the advantages of the multi-organizational effort.

(2) Alternatively, multiple private sector or academic organizations who intend to propose collaborative or joint research projects may each prepare a portion of the application, then combine each portion into a single integrated scientific application. A separate Face Page and Budget Pages must be included for each organization participating in the collaborative project. The joint application must be submitted to DOE as one package. If approved for funding, DOE will award a separate grant to each collaborating organization.

(3) Private sector or academic organizations who wish to form a collaborative project with a DOE FFRDC may not include the DOE FFRDC in their application as a lower-tier participant (subaward). Rather, each collaborator may prepare a portion of the proposal, then combine each portion into a single, integrated scientific proposal. The private sector or academic organization must include a Face Page and Budget Pages for its portion of the project. The FFRDC must include separate Budget Pages for its portion of the project. The joint proposal must be submitted to DOE as one package. If approved for funding, DOE will award a grant to the private sector or academic organization. The FFRDC will be funded, through existing DOE contracts, from funds specifically designated for new FFRDC projects. DOE FFRDCs will not compete for funding already designated for private sector or academic organizations. Other

Federal laboratories who wish to form collaborative projects may also follow guidelines outlined in this section.

Preapplications

A brief preapplication may be submitted. The preapplication should identify on the cover sheet the institution, Principal Investigator name, address, telephone, fax and E-mail address, title of the project, and the field of scientific research. The preapplication should consist of a two to three page narrative describing the research project objectives and methods of accomplishment. These will be reviewed relative to the scope and research needs of the Integrated Assessment of Global Climate Change Research Program.

Preapplications are strongly encouraged but not required prior to submission of a full application. Please note that notification of a successful preapplication is not an indication that an award will be made in response to the formal application.

Applications will be subjected to scientific merit review (peer review) and will be evaluated against the following evaluation criteria listed in descending order of importance as 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 will include program policy factors such as the relevance of the proposed research to the terms of the announcement and an 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. Non-federal reviewers may be used, and submission of an application constitutes agreement that this is acceptable to the investigator(s) and the submitting institution.

Information about the development and submission of applications, eligibility, limitations, evaluation, selection process, and other policies and procedures may be found in 10 CFR Part 605, and in the Application Guide for the Office of Energy Research Financial Assistance Program. Electronic access to the Guide and required forms is made available via the World Wide Web at: http://www.er.doe.gov/production/grants/grants.html. The research project description must be 15 pages or less, exclusive of attachments and must contain an abstract or summary of the proposed research. On the ER grant face page, form DOE F 4650.2, in block 15, also provide the PI's phone number, fax number and E-mail address.

Attachments include curriculum vitae, a listing of all current and pending federal support, and letters of intent when collaborations are part of the proposed research.

Although the required original and seven copies of the application must be submitted, researchers are asked to submit an electronic version of their abstract of the proposed research in ASCII format and their E-mail address to Karen Carlson by E-mail at karen.carlson@oer.doe.gov. Curriculum vitae should be submitted in a form similar to that of NIH or NSF (two to three pages), see for example: http://www.nsf.gov:80/bfa/cpo/gpg/fkit.htm#forms-9.

RELATED FUNDING OPPORTUNITIES: Investigators may wish to obtain information about the following related funding opportunities:

National Oceanic and Atmospheric Administration: Within the context of its Economics and Human Dimensions of Climate Fluctuations Program, the Office of Global Programs of the National Oceanic and Atmospheric Administration will support research that identifies and analyzes social and economic impacts associated with seasonal, year-to-year, and intradecadal climate variability; improves our understanding of factors that determine human vulnerability to such fluctuations; and identifies options for reducing vulnerability. The program is particularly interested in learning how advanced climate information (e.g., ENSO-based probabilistic climate forecasts), as well as an improved understanding of current coping mechanisms, could be used for reducing vulnerability and providing for more efficient adjustment to these variations. Notice of this program is included in the Program Announcement for NOAA's Climate and Global Change Program, which is published each spring in the Federal Register. The deadline for proposals to be considered in Fiscal Year 1999 is expected to be in late summer 1998. For further information, contact: Caitlin Simpson; Office of Global Programs; National Oceanic and Atmospheric Administration; 1100 Wayne Ave., Suite 1225; Silver Spring, MD 20910; telephone: (301) 427-2089, ext. 47; Internet: simpson@ogp.noaa.gov.

Environmental Protection Agency: In 1998 the Environmental Protection Agency will support research on "Indicators of Global Climate Change." Related requests for assistance that are currently advertised on the EPA home page include "Ecological Indicators," "Regional Scale Analysis and Assessment," "Water and Watersheds" and "Research and Monitoring Program on Ecological Effects of Environmental Stressors Using Coastal Intensive Sites." Information is available through the web site: http://www.epa.gov/ncerqa or hotline 1-800-490-9194. For further information contact Barbara Levinson at Levinson.Barbara@EPAMail.EPA.Gov.

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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for Resource Management
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