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1998 DECISION-MAKING AND VALUATION FOR ENVIRONMENTAL POLICY

EPA/NSF PARTNERSHIP FOR ENVIRONMENTAL RESEARCH

OPENING DATE: September 26,1997

CLOSING DATE: January 15, 1998

Environmental Protection Agency

National Science Foundation

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EPA / NSF STAR PARTNERSHIP FOR ENVIRONMENTAL RESEARCH

Interagency Announcement of Opportunity

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1.0 INTRODUCTION

The Environmental Protection Agency (EPA) and the National Science Foundation (NSF) announce their intent to support a special awards competition in Fiscal Year (FY) 1998. This EPA/NSF competition has been developed based on a Memorandum of Understanding between the agencies which establishes a partnership emphasizing the support and merit review of fundamental, extramural environmental research. NSF and EPA's Office of Research and Development are continuing their cooperation in this extramural grants program in FY 1998. This is the fourth year of the joint special awards competition. Information on awards made through the FY 1995 through 1997 competitions may be found on the Internet through: http://www.nsf.gov or http://www.epa.gov/ncerqa

This year's EPA/NSF Partnership competitions will include the following four research areas:

A. Water and Watersheds

B. Technology for a Sustainable Environment

C. Decision-making and Valuation for Environmental Policy

D. Environmental Statistics

This announcement solicits applications for Decision-making and Valuation for Environmental Policy. Awards made through this competition are dependent upon responsiveness of the proposals to the announcement, the quality of the proposed research, and the availability of funds. Under this announcement, EPA and NSF anticipate awarding:

- Approximately $2 million for Decision-making and Valuation for Environmental Policy, with a projected award range from $60,000 to $125,000 per award per year, and an approximate duration of 2 to 3 years. Field experiments, survey research, and multi-investigator projects may be considered for a higher funding level. Depending on the quality of proposals and the recommendations from merit review, the sponsoring agencies expect more than half the resources to be allocated to the component area of benefits of environmental policies and programs.

Proposals in response to this announcement must be received by January 15, 1998. It is anticipated that awards will be made by Fall 1998. Awards resulting from this competition may be made by either EPA or NSF, at the option of the agencies, not the grantee.

Further information, if needed, may be obtained from the EPA and NSF officials indicated below. E-mail inquiries are the preferred communication method.

GENERAL INFORMATION ON THE COMPETITION:

Dr. Robert E. Menzer
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Information on Decision-making and Valuation for Environmental Policy:

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2.0 DECISION-MAKING AND VALUATION FOR ENVIRONMENTAL POLICY

The Decision-making and Valuation for Environmental Policy competition encourages research on improving decision-making and understanding diverse values in environmental policy and related public issues. Within this component, priority will be given to research leading to advances in valuing environmental quality and economic growth and in improving environmental decision making.

Theoretical and empirical research in mathematics, social and behavioral sciences, and environmental ethics provides a number of useful frameworks and tools for organizing information on the economic and social influences on, and consequences of, alternative environmental policies. Benefit-cost analysis, multi-criteria decision analysis, cost-effectiveness analysis, and consensus modeling represent well known approaches in environmental decision-making. At the federal and, to a more limited extent, state levels, major regulations as well as legislative initiatives and some other decisions require benefit-cost analyses.

One goal of this competition is to support research that advances the scientific basis of valuation and decision analysis as it contributes to the formulation and evaluation of environmental policy. The lack of generally accepted methods for identifying and/or valuing many important economic, environmental and social benefits, costs, and interactions limits the use of decision-analytic frameworks, particularly for community based environmental problems and issues dealing with ecosystem variability. This competition invites applications that address key theoretical, empirical and methodological needs associated with the development and use of these frameworks. Funding priority will be given to research that assists environmental agencies at all levels of government to address issues of practical significance to their activities, and to novel, collaborative, or interdisciplinary scientific efforts.

Description

Government agencies responsible for policy analysis, regulatory decision-making, priority setting for environmental actions, and assessment have an interest in advancing research to help develop practical, systematic and credible approaches to identifying economic, environmental and social interactions, estimating their benefits and costs, and improving decision-making about environmental issues. This competition is intended to support research projects in:

1. Valuing human health and environmental quality and economic growth; and

2. Innovations and improvements in environmental decision making.

I. Determination of the Costs and Benefits of Environmental Policies and Programs

A. Economic Benefits of Environmental Policies and Programs

Environmental policies and programs are generally intended to protect or improve the health and well being of humans and the ecosystems vital to human welfare. Policies that enhance and protect the environment provide economic value and benefits to society. At present, there are several approaches to measuring economic value, including methods that rely predominantly upon either revealed or stated preferences for health and environmental goods and services. Improvements to existing methods for determining both use and non-use value and the development of new methods are encouraged. Examples of areas where government agencies have significant research needs on this topic include:

- Methods to improve estimation of values for reductions in mortality and morbidity risks resulting from pollution and other environmental hazards.

- Identification and improvement of methods for measuring environmental quality influences on human welfare, including those that recognize distributional factors in addition to efficiency.

- Methods to apply existing benefit estimates or valuation functions to assess the benefits of a distinct but similar environmental change (i.e., benefits transfer methods).

- Improved methods for valuing changes in the environmental quality of public resources (e.g., groundwater) regulated by multiple pollution control laws.

- Methods to assess the benefits of providing environmental information to consumers, investors, and/or producers of goods and services.

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B. Ecosystem Valuation

Traditional valuation approaches have focused on changes in the individual services or functions of ecosystems to identify benefits or costs of environmental policy or regulation. Comprehensive assessments of changes in ecosystem functions are often limited by inadequate knowledge of the relationships among ecosystem inhabitants, functions, and services. Another limiting factor is the poorly understood relationship between keystone species or critical biological functions and human activities. Scientific advances in ecosystem valuation and cost analysis require better understanding of the interconnectedness among social, economic, physical, and biological systems. Proposals submitted to this component of the competition should emphasize these interdependencies in their research and focus on how comprehensive or critical ecosystem changes can be measured in terms of social welfare. Proposals should develop and integrate social science and biological approaches. Examples of the topics of interest in this component include:

- Methods for economic and societal valuation of comprehensive ecosystem functions, including research that links measures of ecosystem productivity and sustainability with economic activities and changes in human welfare.
- Methods for valuing biodiversity, populations of native species, amounts of protected areas and open space, and other critical ecosystem attributes, including research that illuminates the interactive and synergistic role of these attributes and their economic and social implications.
- Tests of stated preference methods or production process approaches to determine both use and existence values of protecting major ecosystems from environmental pollution.
- Identification, characterization and assessment of ecosystem functions of value to society , addressing issues of time, scale, and natural and political boundaries.
- Methods to refine the scope of ecosystem restoration that identify quality and service characteristics and include the costs to restore them.

C. Economic Costs of Environmental Policies and Programs

The societal costs of environmental policies and programs include compliance costs, government regulatory costs, losses to consumer and producer welfare, costs of displaced resources, and other costs to the economic system arising from changes in product quality, productivity, innovation, and market structure. Industry, however, increasingly abates pollution by changes in production processes (i.e., pollution prevention) instead of emission control and waste treatment. As a consequence, traditional financial and engineering methods must be augmented by dynamic models that incorporate resource substitutions, conservation of energy and raw materials, increased process efficiencies and yields, higher product quality, reduction in toxicity and other benefits such as reduced future liabilities that may result from technological change and innovation. This component of the competition seeks to strengthen the conceptual and empirical basis for cost estimation methods. Examples of topics of interest in this area are:

- Practical and integrated methods to determine the net economic costs (capturing life cycle or legacy factors) of pollution prevention changes in production processes.
- Methodology to estimate the cost savings from using economic incentives relative to other approaches to achieving environmental performance.
- Theoretically sophisticated empirical research that compares estimated and realized costs for pollution prevention and abatement at levels of the plant, market, industry, and economy.
- Assessment of the reliability of past efforts to measure the economic costs of achieving environmental compliance in the United States and practical suggestions for methodological improvements that would ameliorate the problems found.

D. Relationship between Economic Growth and Environmental Quality

Current public policy promotes both environmental improvement and economic growth. Some take the view that economic growth leads inevitably to increased environmental pollution while others believe that environmental improvement and economic growth coincide (sustainable development theory). Theoretically grounded empirical research can enlighten this debate and contribute to positive recommendations. Examples of topics of interest in this component include the following:

- Development of feasible methods for national income accounting that would more fully measure the environmental aspects of changes in productivity, assets, and welfare resulting from economic growth.
- Linkages between voluntary international environmental standards (e.g. ISO 14000) and expansion of (or barriers to) international trade and effects on environmental quality.
- Empirically grounded research on the historical relationship between economic growth and environmental pollution levels in the United States, including the factors that have led to decreased environmental pollution levels in recent years.
- The effects of pollution control expenditures on national income and economic growth in the United States.
- Historical relationship between environmental performance and profitability at the factory level including the impact of alternative approaches to achieving environmental compliance involving technology innovation and pollution prevention approaches.

II. Innovations and Improvements in Environmental Decision Making

A. Methodological Innovations and Improvement

Developing acceptable and efficacious environmental policy requires improvement of the assumptions, concepts, and methods in relevant research and implementation. It requires continuing refinement of accepted approaches to environmental decision-making, as well as exploration of innovative alternative methodologies for accomplishing policy goals especially in the areas of pollution prevention and sustainable development. Research on innovative approaches to environmental decision-making and on refinement of existing approaches is expected to be theoretically and methodologically sophisticated and to contain an empirical component. Potential topics for consideration here include but are not limited to:

- Developing alternative approaches to environmental decision making (including those focused on decision-making as a negotiation process, or use of decision analytic approaches) and comparative analysis and assessment of the effectiveness of different models of environmental decision making.
- Improving methods of assessment (including social impact analysis) and cost/benefit analysis considering consequences of delayed resolution of uncertainty, the public goods aspects of environmental amenities, and the conflicting objectives of groups impacted by regulation.
- Improvements in methods for accurately and consistently evaluating consequences of various regulatory and non-regulatory options, and making tradeoffs between gains occurring through different environmental policy interventions.
- Development and analysis of tools to identify and assess non-monetary values and value systems affected by and affecting environmental change.

B. Advances in Understanding Values and Perceptions Relevant in Environmental Decision-making

Public concern over environmental resources and degradation is at an all time high, but public mistrust and misunderstanding of environmental risk assessment and decision making is also very high. Many risk managers are also bewildered by the complexities and uncertainties in the assessment and decision making process.

Research has provided information about the factors that affect the development and use of environmental policy: psychological attitudes; socio-cultural, legal, and ethical norms; economic forces; and politics and the media. Better understanding of these factors and the role they play in social negotiations about environmental issues is needed. This area encourages research to identify and examine behavioral, social and institutional factors that influence the development, implementation, acceptance, and evaluation of environmental policies.

- Advances in understanding how perceptions of environmental problems and solutions and approaches to their resolution differ across individuals and groups within society.
- Examination of how framing of issues and means of communicating information influence attitudes toward environmental problems and solutions; and how differences in the way individuals and groups discount future events impact attitudes toward environmental problems and solutions.
- Identification and analysis of ethical factors relevant to environmental problem-solving, and their similarities and differences in different groups, communities, countries or geographical regions. Examination of adjudication of norms when policies must cross national boundaries; identification of mechanisms that are effective in addressing trans-jurisdictional problems.

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- Identification and analysis of cultural, inter-organizational and interpersonal values that can impede or improve the establishment, implementation and evaluation of environmental policies and regulations.

C. Procedural Innovations and Improvements in Environmental Decision-making

Government, business and industry, and citizens have an interest in expediting the consideration and enactment of environmental policies and regulations. They have an interest in understanding what factors constrain or limit effective implementation of environmental policies (both regulatory and voluntary policies and programs) and how these constraints might be eliminated or minimized through changes in the decision-making process. Besides the need for improvement in understanding of the role of values in environmental decision-making, cost-effective ways by which to foster communication, resolve issues and implement new programs are needed. This component identifies several areas where research could assist decision-makers and communities to address these needs.

- Assessment of economic and social incentives for pollution prevention by industry and government.
- Examination of the wide variety of social constraints on the environmental decision making process that may impede implementation of sound environmental policy or environmental justice especially in the areas of pollution prevention and sustainable development; development of options to overcome these impediments.
- Development and assessment of effective methods for tailoring environmental policy procedures to account for characteristics of the primary group(s) (e.g., large corporations or concentrated industries versus small business versus the public) impacted by potential regulation.
- Identification and assessment of options by which to address the implications of cognitive and non-cognitive factors in development and implementation of environmental policies.
- Analysis of factors affecting democratic processes and community or public participation in environmental decision making.

2.1 Relationship to Current EPA Activities

The EPA/NSF Decision-making and Valuation for Environmental Policy activity is related to EPA's research interests for the Common Sense Initiative (CSI), Community Based Environmental Protection (CBEP) and other environmental policy initiatives within the Agency. These new initiatives are directed toward finding "cleaner, cheaper and smarter" environmental protection approaches based on pollution prevention and multi-stakeholder, consensus based decision-making processes. EPA has launched these new programs to bring together representatives from federal, state, and local governments; industry; environmental interest, environmental justice, and community based organizations; and labor to examine key environmental management issues.

2.2 Relationship to Current NSF Activities

This EPA/NSF activity relates to several NSF programs and initiative areas. NSF social sciences programs, especially the Decision, Risk, and Management Sciences program and the Societal Dimensions of Engineering, Science, and Technology program, support research directed at:

- increasing the understanding and effectiveness of problem solving, information processing, and decision making by individuals, groups, organizations, and society,
- improving approaches and information for decision making concerning management and direction of research, science and technology, and
- developing and transmitting knowledge about ethical and value dimensions associated with the conduct and impacts of science, engineering, and technology.

The EPA/NSF activity also relates to NSF initiatives in the area of Environment and Global Change, particularly Human Dimensions of Global Change and Policy Sciences aspects of global change.

2.3 Additional Considerations

To assist in the evaluation of how the research contributes to the decision needs of environmental agencies, proposals must include a special information and supplementary documentation section titled "Policy Relevance." For the purposes of this solicitation, the Policy Relevance discussion is limited to two pages and must contain an explicit statement on the policy relevance of the proposed

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research. This does not count against the 15-page limit. In particular, the principal investigator (PI) must identify the "target group," or set of policy makers and/or policy analysts, who are likely to benefit from this research. Once identified, the PI must elaborate on the potential benefits of this research for the designated target group. The PI should also address ways that members of the research team intend to communicate the results to the relevant target group.

In addition, if the project will produce data and information of value to the broader research community, the applicant must also include a discussion of "Data and Information Availability." This discussion, not to exceed two additional pages, should describe the data and information products, the management plans for their validation, quality control, archiving, costs for these activities, and whether and under what conditions the data will be made available to interested parties.

3.0 ELIGIBILITY

Academic and not-for-profit institutions located in the U.S., and State or local governments are eligible. Profit-making firms and federal agencies are not eligible to apply to this program. However, personnel in profit-making firms may participate as non-funded co-investigators or through sub-contracts with the awardee institution.

Federal employees may cooperate or collaborate with eligible applicants within the limits imposed by applicable legislation and regulations. However, federal agencies, national laboratories funded by federal agencies (FFRDCs), and federal employees are not eligible to submit applications to this program and may not serve in a principal leadership role on a grant. Under exceptional circumstances the principal investigator's institution may subcontract to a federal agency or FFRDC to purchase unique supplies or services unavailable in the private sector. Examples are purchase of satellite data, census data tapes, chemical reference standards, unique analyses or instrumentation not available elsewhere, etc. A written justification for such federal involvement must be included in the application, along with an assurance from the federal agency which commits it to supply the specified service. Federal employees may not receive salaries or in other ways augment their agency's appropriations through grants made by this program. Potential applicants who are uncertain of their eligibility should contact Dr. Robert E. Menzer (listed in Section 1.0).

EPA and NSF welcome applications on behalf of all qualified scientists, engineers, and other professionals and strongly encourage women, minorities, and persons with disabilities to compete fully in any of the programs described in this announcement.

In accordance with Federal statutes and regulations and EPA and NSF policies, no person on grounds of race, color, age, sex, national origin, or disability shall be excluded from participation in, denied the benefits of, or be subjected to discrimination under any program or activity receiving financial assistance from the Environmental Protection Agency or the National Science Foundation.

4.0 INSTRUCTIONS FOR APPLICATION SUBMISSION

4.1 Sorting Codes

In order to facilitate proper assignment and review of applications, each applicant is asked to identify the topic area in which the application is to be considered. It is the responsibility of the applicant to correctly identify the proper sorting code. Failure to do so may result in an improper review assignment. At various places within the application, applicants will be asked to identify this topic area by using the appropriate Sorting Code. The Sorting Codes correspond to the topic areas within the solicitation and are shown below:

Decision-making and Valuation for Environmental Policy

- Economic Benefits of Environmental Policies and Programs	98-NCERQA-J1
- Ecosystem Valuation	98-NCERQA-J2
- Economic Costs of Environmental Policies and Programs	98-NCERQA-J3
- Relationship between Economic Growth and Environmental Quality	98-NCERQA-J4
- Innovations and Improvements in Environmental Decision-making	98-NCERQA-J5

The Sorting Code must be placed at the top of the abstract (as shown in the abstract format), on the title page (as shown in the title page format), and must also be included in the address on the package that is sent to EPA.

4.2 The Application

The initial application is made through the submission of the application materials described below. It is important that the application contain all the information requested and be submitted in the formats described. If it is not, the application may be eliminated from review on administrative grounds. Once an applicant is chosen for award (i.e., after external peer review and internal program-

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matic review), additional documentation and forms will be requested by the Project Officer. The application contains the following:

A. Standard Form 424: The applicant must complete Standard Form 424 (see attached form and instructions). This form will act as a cover sheet for the application and **should be its first page.** Instructions for completion of the SF424 are included with the form. The form must contain the original signature of an authorized representative of the applying institution. Please note that both the Principal Investigator and an administrative contact should be identified in Section 5 of the SF424.

B. Key Contacts: The applicant must complete the Key Contacts Form (attached) as the second page of the submitted application

C. Abstract: The abstract is a very important document. Prior to attending peer review panel meetings, some of the panelists may read only the abstract. Therefore, it is critical that the abstract accurately describe the research being proposed and convey all the essential elements of the research. Also, in the event of an award, the abstracts will form the basis for an annual report of awards made under this program. The abstract should include the following information:

1. Sorting Code: Use 98-NCERQA-XX).

2. Title: Use the exact title as it appears in the rest of the application.

3. Investigators: List the names and affiliations of each investigator who will significantly contribute to the project. Start with the Principal Investigator.

4. Project Summary: This should summarize: (a) the **objectives** of the study (including any hypotheses that will be tested), (b) the experimental **approach** to be used (which should give an accurate description of the project as described in the proposal), (c) the **expected results** of the project and how they address the research needs identified in the solicitation, and (d) the estimated **improvement in risk assessment or risk management** that will result from successful completion of the work proposed.

★ **The abstract must not exceed one 8.5x11 inch page of single spaced standard 12 point type with 1 inch margins (see attached format).**

D. Project Description: This description must not exceed fifteen (15) consecutively numbered (center bottom), 8.5x11 inch pages of single spaced standard 12 point type with 1 inch margins, exclusive of the references cited and the results of prior Federal support. The description must provide the following information:

1. Objectives: List objectives of the proposed research and/or the hypotheses being tested during the project. Include a statement on the context of the proposed research in relation to other environmental research in the particular area of work; this statement should also be synopsized in the objectives section of the abstract.

2. Approach: Outline the methods, approaches, and techniques that you intend to employ in meeting the objective stated above.

3. Expected Results or Benefits: Describe the results you expect to achieve during the project and the benefits of success as they relate to the topics in the announcement under which the proposal was submitted.

4. Results from Prior Federal Support: Provide information on the results of research conducted with prior or current Federal support. This must be limited to five pages but is in addition to the 15-page limit. This section should include information on any prior Federal awards closely related to the application (i.e., not limited to EPA or NSF awards).

5. General Project Information: Discuss other information relevant to the potential success of the project. This should include facilities, personnel, project schedules, proposed management, interactions with other institutions, etc.

6. Important Attachments: Appendices or other information may be included but must remain within the 15-page limit. References and Results of Prior Federal Support are in addition to the 15-page limit.

E. Resumes: The resumes of all principal investigators and important co-workers should be presented using NSF form 1362 (see attached). Resumes must not exceed two consecutively numbered (bottom center), 8.5x11 inch pages of single-spaced standard 12 point type with 1 inch margins.

F. Current and Pending Support: The applicant must identify any current and pending financial resources that are intended to support research. This should be done by Completing NSF Form 1239 (see attached) for each investigator and other senior personnel involved in the proposal. Failure to provide

this information may delay consideration of your proposal. Updates of this information may be requested during the evaluation process.

G. Budget: A detailed, itemized budget for each year of the proposed project must be included. This budget must utilize the format shown in the attachment (do not try to squeeze your complete budget on the "form" shown as an example).

H. Budget Justification: This section should describe the basis for calculating the personnel, fringe benefits, travel, equipment, supplies, contractual support, construction, and other costs identified in the itemized budget. This should also include an explanation of how the indirect costs and charges were calculated. This justification should not exceed two consecutively numbered (bottom center), 8.5x11 inch pages of single-spaced standard 12 point type with 1 inch margins.

I. Quality Assurance Narrative Statement: For any project involving data collection or processing, conducting surveys, environmental measurements, and/or modeling, provide a statement on how quality products will be assured. This statement should not exceed two consecutively numbered, 8.5x11 inch pages of single spaced standard 12-point type with 1 inch margins. This is in addition to the 15 pages permitted for the Project Description. The Quality Assurance Narrative Statement should, for each item listed below, either present the required information or provide a justification as to why the item does not apply to the proposed research. For awards that involve environmentally related measurements or data generation, a quality system that complies with the requirements of ANSI/ASQC E4, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs," must be in place.

1. The activities to be performed or hypothesis to be tested (reference may be made to the specific page and paragraph number in the application where this information may be found); criteria for determining the acceptability of data quality in terms of precision, accuracy, representativeness, completeness, comparability.

2. The study design including sample type and location requirements and any statistical analyses that were used to estimate the types and numbers of samples required for physical samples or similar information for studies using survey and interview techniques.

3. The procedures for the handling and custody of samples, including sample identification, preservation, transportation, and storage.

4. The methods that will be used to analyze samples collected, including a description of the sampling and/or analytical instruments required.

5. The procedures that will be used in the calibration and performance evaluation of the sampling and analytical methods used during the project.

6. The procedures for data reduction and reporting, including a description of statistical analyses to be used and of any computer models to be designed or utilized with associated verification and validation techniques.

7. The intended use of the data as they relate to the study objectives or hypotheses.

8. The quantitative and or qualitative procedures that will be used to evaluate the success of the project.

9. Any plans for peer or other reviews of the study design or analytical methods prior to data collection.

ANSI/ASQC E4, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs" is available for purchase from the American Society for Quality Control, phone 1-800-248-1946, item T55. Only in exceptional circumstances should it be necessary to consult this document.

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4.3 How to Apply

The original and fifteen (15) copies of the fully developed application and five (5) additional copies of the abstract (20 in all), must be received by NCERQA no later than 4:00 P.M. EST on the closing date, January 15,1998.

The application and abstract must be prepared in accordance with these instructions. Informal, incomplete, or unsigned proposals will not be considered. Completed applications should be sent via regular mail to:

U.S. Environmental Protection Agency
Peer Review Division (8703R)
Sorting Code: 98-NCERQA-XX
(replace the "XX" with the appropriate code)
401 M Street, SW
Washington DC 20460

For express mail applications, the following address must be used:

U. S. Environmental Protection Agency
Peer Review Division (8703R)
Sorting Code: 98-NCERQA-XX
(replace the "XX" with the appropriate code)
1300 Pennsylvania Avenue, NW
Room B-10105
Washington, DC 20004

Phone: (202) 564-6939 (for express mail applications)

Proposals must be submitted to only one topic area, using a single sorting code. Proposals submitted to more than one RFA topic will be assigned to the topic designated on the first version received or to the first sorting code designated on the application. If you wish to submit more than one application to EPA or NSF, you must ensure that the research proposed is significantly different from the research in other proposals that have been submitted to this solicitation or from other grants you are currently receiving from any Federal government agency.

The sorting code must be identified in the address (as shown above). Please do not fail to substitute the appropriate code for the "XX" in 98 NCERQA-XX. Applications sent via express mail should have the following telephone number listed on the express mail label: (202) 564-6939.

4.4 Guidelines, Limitations, and Additional Requirements

Subcontracts for research to be conducted under the grant which exceed 40% of the total direct cost of the grant for each year in which the subcontract is awarded must be especially well justified.

Researchers may be invited to participate in an annual All-Investigators Meeting with EPA and NSF scientists and other grantees to report on research activities and to discuss areas of mutual interest. Travel funds should be budgeted to accommodate that eventuality.

The application must include a blank, self-addressed, stamped post card. This will be returned to the applicant to signify that the application has been received.

5.0 REVIEW AND SELECTION

5.1 Review Procedures

All grant applications are initially screened by EPA and NSF to determine their compliance with legal and administrative requirements. Acceptable applications are then reviewed by an appropriate technical peer review group. This review is designed to evaluate each proposal according to its technical merit. Each review group is composed primarily of non-EPA scientists, engineers, and/or social scientists who are experts in their respective disciplines. The reviewers use the following criteria to guide them in their reviews:

1. The originality and creativity of the proposed research, the potential contribution the proposed research could make to advance scientific knowledge in the environmental area, the appropriateness and adequacy of the research methods proposed, and the appropriateness and adequacy of the Quality Assurance Narrative Statement.

2. The qualifications of the principal investigator(s) and other staff, including knowledge of pertinent literature, experience, and publication records as well as the likelihood that the proposed research will be successfully completed.

3. The availability and/or adequacy of the facilities and equipment proposed for the project equipment proposed for the project.

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4. The responsiveness of the proposal to the research needs set forth in this solicitation.

5. Although budget information is not used by the reviewers as the basis for their evaluation of scientific merit, the reviewers are asked to provide their input on the appropriateness and/or adequacy of the proposed budget and its implications on the potential success of the proposed research. Input on requested equipment is of particular interest.

Copies of the evaluations by the technical reviewers will be provided to each applicant. Funding decisions are the sole responsibility of EPA and NSF. Grants are selected on the basis of technical merit, relevancy to the research priorities outlined, program balance, and budget.

5.2 Proprietary Information

By submitting an application in response to this solicitation, the applicant grants EPA and NSF permission to share the application with technical reviewers both within and outside the Agencies. Applications containing proprietary or other types of confidential information will not be reviewed.

6.0 GRANT ADMINISTRATION

Upon conclusion of the review process, meritorious applications may be recommended for funding by either EPA or NSF, at the option of the agencies, not the applicant. Subsequent grant administration procedures will be in accordance with the individual policies of the awarding agency.

6.1 EPA Grant Administration

The funding mechanisms for all awards issued under this solicitation will consist of grant agreements between EPA and the recipient. In accordance with Public Law 95-224, grants are used to accomplish a public purpose of support or stimulation authorized by Federal statute rather than acquisition for the direct benefit of the Agency. In using a grant agreement, EPA anticipates that there will be no substantial involvement during the course of the grant between the recipient and the Agency.

EPA grants awarded as a result of this announcement will be administered in accordance with 40 CFR Part 30 and 40 or the most recent FDP terms and conditions, depending upon the grantee institution.

EPA provides awards for research in the sciences and engineering related to environmental protection. The awardee is solely responsible for the conduct of such activities and preparation of results for publication. EPA, therefore, does not assume responsibility for such findings or their interpretation.

6.2 NSF Grant Administration

NSF grants awarded as a result of this announcement will be administered in accordance with the terms and conditions of the most recent NSF GC-1, "Grant General Conditions," or the FDP-III, "Federal Demonstration Project General Terms and Conditions," depending on the grantee organization.

More comprehensive information on the administration of NSF grants is contained in the Grant Policy Manual (NSF 95-26, July 1995), for sale through the Superintendent of Documents, Government Printing Office (GPO), Washington, D.C. 20402. The telephone number at GPO is (202) 512-1800 for subscription information.

Organizations applying to NSF for the first time, or which have not received an NSF award within the preceding two years, should refer to the NSF Grant Policy Manual, Section 500, for instructions on specific information that may be requested by NSF. First time NSF awardees will be required to submit organizational, management, and financial information, including a certification of civil rights compliance, before a grant can be made. One copy of the Grant Policy Manual will be provided free of charge to new grantees.

Upon completion of an NSF project, a Final Project Report (NSF Form 98A) form will be sent to the grantee. Applicants should review this form prior to proposal submission so that appropriate tracking mechanisms are included in the proposal plan to ensure that complete information will be available at the conclusion of the project.

Activities described in this publication are in the following categories in the Catalog of Federal Domestic Assistance (CFDA): 47.041 Engineering; 47.049 Mathematical and Physical Sciences; 47.050 Geosciences; 47.074 Biological Sciences; 47.075 Social, Behavioral and Economic Sciences.

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6.3 NSF Applicant Information

The Foundation provides awards for research and education in the sciences and engineering. The awardee is wholly responsible for the conduct of such research and preparation of the results for publication. The Foundation, therefore, does not assume responsibility for the research findings or their interpretation.

The Foundation welcomes proposals from all qualified scientists and engineers and strongly encourages women, minorities, and persons with disabilities to compete fully in any of the research and education related programs described here. In accordance with federal statutes, regulations, and NSF policies, no person on grounds of race, color, age, sex, national origin, or disability shall be excluded from participation in, be denied the benefits of, or be subject to discrimination under any program or activity receiving financial assistance from the National Science Foundation.

Facilitation Awards for Scientists and Engineers with Disabilities (FASED) provide funding for special assistance or equipment to enable persons with disabilities (investigators and other staff, including student research assistants) to work on NSF projects. See the program announcement or contact the program coordinator at (703) 306-1636.

Privacy Act. The information requested on proposal forms is solicited under the authority of the National Science Foundation Act of 1950, as amended. It will be used in connection with the selection of qualified proposals and may be disclosed to qualified reviewers and staff assistants as part of the review process; to applicant institutions/grantees; to provide or obtain data regarding the application review process, award decisions, or the administration of awards; to government contractors, experts, volunteers, and researchers as necessary to complete assigned work; and to other government agencies in order to coordinate programs. See Systems of Records, NSF 50, Principal Investigators/Proposal File and Associated Records, and NSF-51, 60 Federal Register 4449 (January 23, 1995), Reviewer/Proposal File and Associated Records, 59 Federal Register 8031 (February 17, 1994).

Public Burden. Submission of the information is voluntary. Failure to provide full and complete information, however, may reduce the possibility of your receiving an award.

The public reporting burden for this collection of information is estimated to average 120 hours per response, including the time for reviewing instructions. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Gail A. McHenry, Reports Clearance Officer, Information Dissemination Branch, National Science Foundation, 4201 Wilson Boulevard, Suite 245, Arlington, VA 22230.

The National Science Foundation has TDD (Telephonic Device for the Deaf) capability, which enables individuals with hearing impairment to communicate with the Foundation about NSF programs, employment, or general information. To access NSF TDD, dial (703) 306-0090; for FIRS, 1-800-877-8339.

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OMB Approval No. 0348-0043

APPLICATION FOR FEDERAL ASSISTANCE

		2. DATE SUBMITTED	Applicant Identifier
1. TYPE OF SUBMISSION ***Application*** ☐ Construction ☐ Non-Construction	***Preapplication*** ☐ Construction ☐ Non-Construction	3. DATE RECEIVED BY STATE	State Applicant Identifier
		4. DATE RECEIVED BY FEDERAL AGENCY	Federal Identifier

5. APPLICANT INFORMATION IS THIS PROPOSAL BEING SUBMITTED TO ANOTHER FEDERAL AGENCY? ☐ YES ☐ NO IF YES, LIST ACRONYM(S)

Legal Name:

Organizational Unit:

Address ***(give city, county, state, and zip code)***:

Name and telephone and E-mail number of the person to be contacted on matters involving this application ***(give area code)***

PI:

ADMIN. CONTACT:

6. EMPLOYER IDENTIFICATION NUMBER (EIN):

☐☐ – ☐☐☐☐☐☐☐

7. TYPE OF APPLICANT: ***(enter appropriate letter in box)*** ☐

A. State
B. County
C. Municipal
D. Township
E. Interstate
F. Intermunicipal
G. Special District
H. Independent School Dist.
I. State Controlled Institution of Higher Learning
J. Private University
K. Indian Tribe
L. Individual
M. Profit Organization
N. Other (Specify) _____

8. TYPE OF APPLICATION:

☐ New ☐ Continuation ☐ Revision

If Revision, enter appropriate letter(s) in box(es): ☐ ☐

A. Increase Award B. Decrease Award C. Increase Duration
D. Decrease Duration Other ***(specify):***

_____

9. NAME OF FEDERAL AGENCY:

U.S. Environmental Protection Agency - ORD - NCERQA

10. CATALOG OF FEDERAL DOMESTIC ASSISTANCE NUMBER: 6 6 • 5 0 0

TITLE: **98-NCERQA -** _ _ _

11. DESCRIPTIVE TITLE OF APPLICANT'S PROJECT:

12. AREAS AFFECTED BY PROJECT ***(cities, counties, states, etc.):***

13. PROPOSED PROJECT:

Start Date	Ending Date

14. CONGRESSIONAL DISTRICTS OF:

a. Applicant	b. Project

15. ESTIMATED TOTAL PROJECT FUNDING:

a. Federal	$ .00
b. Applicant	$ .00
c. State	$ .00
d. Local	$ .00
e. Other	$ .00
f. Program Income	$ .00
g. TOTAL	$ .00

16. IS APPLICATION SUBJECT TO REVIEW BY STATE EXECUTIVE ORDER 12372 PROCESS?

a. YES. THIS PREAPPLICATION/APPLICATION WAS MADE AVAILABLE TO THE STATE EXECUTIVE ORDER 12372 PROCESS FOR REVIEW ON:

DATE _____

b. NO. ☐ PROGRAM IS NOT COVERED BY E.O. 12372

☐ OR PROGRAM HAS NOT BEEN SELECTED BY STATE FOR REVIEW

17. IS THE APPLICANT DELINQUENT ON ANY FEDERAL DEBT?

☐ Yes If "Yes," attach an explanation. ☐ No

18. TO THE BEST OF MY KNOWLEDGE AND BELIEF, ALL DATA IN THIS APPLICATION/PREAPPLICATION ARE TRUE AND CORRECT. THE DOCUMENT HAS BEEN DULY AUTHORIZED BY THE GOVERNING BODY OF THE APPLICANT AND THE APPLICANT WILL COMPLY WITH THE ATTACHED ASSURANCES IF THE ASSISTANCE IS AWARDED.

a. Typed Name of Authorized Representative	b. Title	c. Telephone number
d. Signature of Authorized Representative		e. Date Signed

Previous Editions Not Usable
Prescribed by OMB Circular A-102

Standard For 424 (REV 4-88)

Authorized for Local Reproduction

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INSTRUCTIONS FOR THE SF 424

This is a standard form used by applicants as a required facesheet for preapplications and applications submitted for Federal Assistance. It will be used by Federal agencies to obtain applicant certification that States which have established a review and comment procedure in response to Executive Order 12372 and have selected the program to be included in their process, have been given an opportunity to review the applicant's submission.

Item: Entry:

1. Self-explanatory.

2. Date application submitted to Federal agency (or State, if applicable) & applicant's control number (if applicable).

3. State use only (if applicable).

4. If this application is to continue or revise an existing award, enter present Federal identifier number. If for a new project, leave blank.

5. Legal name of applicant, name of primary organizational unit which will undertake the assistance activity, complete address of the applicant, and name and telephone number of the person to contact on matters related to this application.

6. Enter Employer Identification Number (EIN) as assigned by the Internal Revenue Service.

7. Enter the appropriate letter in the space provided.

8. Check appropriate box and enter appropriate letter(s) in the space(s) provided:

   — "New" means a new assistance award.

   — "Continuation" means an extension for an additional funding/budget period for a project with a projected completion date.

   — "Revision" means any change in the Federal Government's financial obligation or contingent liability from an existing obligation.

9. Name of Federal agency from which assistance is being requested with this application.

10. Use the Catalog of Federal Domestic Assistance number and title of the program under which assistance is required.

11. Enter a brief descriptive title of the project. If me than one program is involved, you should append an explanation on a separate sheet. If appropriate (e.g., construction or real property projects), attach a map showing project location. For preapplications, use a separate sheet to provide a summary description of this project.

Item: Entry:

12. List only the largest political entities affected (e.g., State, counties, cities.)

13. Self-explanatory.

14. List the applicant's Congressional Districts and any District(s) affected by the program or project.

15. Amount requested or to be contributed during the first funding/budget period by each contributor. Value of in-kind contributions should be included on appropriate lines as applicable. If the action will result in a dollar change to an existing award, include *only* the amount of the change. For decreases, enclose the amounts in parentheses. If both basic and supplemental amounts are included, show breakdown on an attached sheet. For multiple program funding, use totals and show breakdown using same categories as item 15.

16. Applicants should contact the State Single Point of Contact (SPOC) for Federal Executive Order 12372 to determine whether the application is subject to the State intergovernmental review process.

17. This question applies to the applicant organization, not the person who signs as the authorized representative. Categories of debt include delinquent audit allowances, loans and taxes.

18. To be signed by the authorized representative of the applicant. A copy of the governing body's authorization for you to sign this application as official representative must be on file in the applicant's office. (Certain Federal agencies may require that this authorization be submitted as part of the application.

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KEY CONTACTS FORM

Authorized Representative: *Original awards and amendments will be sent to this individual for review and acceptance, unless otherwise indicated.*

Name: _____

Title: _____

Complete Address: _____

_____

Phone Number: _____

Payee: *Individual authorized to accept payments.*

Name: _____

Title: _____

Complete Address: _____

_____

Phone Number: _____

Administrative Contact: *Individual from Sponsored Programs Office to contact concerning administrative matters (i.e., indirect cost rate computation, rebudgeting requests etc.)*

Name: _____

Title: _____

Complete Address: _____

_____

Phone Number: _____

FAX Number: _____

E-Mail Number: _____

Principal Investigator: *Individual responsible for the technical completion of the proposed work.*

Name: _____

Title: _____

Complete Address: _____

_____

Phone Number: _____

FAX Number: _____

E-Mail Number: _____

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EPA STAR Grant Abstract *(Example Format)*

Sorting Code: *98-NCERQA-XX (use the correct code that corresponds to the appropriate RFA topic)*
Title: *Use the exact title as it appears in the rest of the application.*
Investigators: *List the names and affiliations of each investigator who will significantly contribute to the project. Start with the Principal Investigator.*
Institution: *Name of university or other applicant.*
Project Period: *October 1, 1998--September 30, 2000, for example.*
Research Category: *Enter your research topic name.*

Project Summary:

Objectives/Hypothesis: *include a short statement on the context of the proposed research in relation to other environmental research in the particular area of work*

Approach: *outline the methods, approaches, and techniques you intend to employ in meeting the objectives*

Expected Results:

including a brief description of the
Improvements in Risk Assessment or Risk Management
that will be realized if the expected results are achieved

Supplemental Keywords: *see attached suggestions. Do not duplicate terms used in the text of the abstract.*

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SUGGESTED KEYWORDS

Media: (media, air, ambient air, atmosphere, ozone, water, drinking water, watersheds, groundwater, land, soil, sediments, acid deposition, global climate, indoor air, mobile sources, CASTNET, stratospheric ozone, tropospheric, marine, estuary, precipitation, leachate, adsorption, absorption, chemical transport)

Risk Assessment: (exposure, risk, risk assessment, effects, health effects, ecological effects, human health, bioavailability, metabolism, vulnerability, sensitive populations, dose-response, carcinogen, teratogen, mutagen, animal, mammalian, organism, cellular, population, enzymes, infants, children, elderly, stressor, age, race, diet, metabolism, genetic pre-disposition, genetic polymorphisms, sex, ethnic groups, susceptibility, cumulative effects)

Chemicals, toxics, toxic substances: (chemicals, toxics, particulates, ODS, VOC, CFC, PAH, PNA, PCB, dioxin, metals, heavy metals, solvents, oxidants, nitrogen oxides, sulfates, organics, DNAPL, NAPL, pathogens, viruses, bacteria, acid rain, effluent, discharge, dissolved solids, intermediates)

Ecosystem Protection: (ecosystem, indicators, restoration, regionalization, scaling, terrestrial, aquatic, habitat, integrated assessment)

Risk Management: pollution prevention (green chemistry, life-cycle analysis, alternatives, sustainable development, clean technologies, innovative technology, renewable, waste reduction, waste minimization, environmentally conscious manufacturing); treatment (remediation, bioremediation, cleanup, incineration, disinfection, oxidation, restoration)

Public Policy: (public policy, decision making, community-based, cost-benefit, conjoint analysis, observation, non-market valuation, contingent valuation, survey, psychological, preferences, public good, Bayesian, socio-economic, willingness-to-pay, compensation, conservation, environmental assets, sociological)

Scientific Disciplines: (environmental chemistry, marine science, biology, physics, engineering, social science, ecology, hydrology, geology, histology, epidemiology, genetics, pathology, mathematics, limnology, entomology, zoology)

Methods/Techniques: (EMAP, modeling, monitoring, analytical, surveys, measurement methods, general circulation models, climate models, satellite, landsat, remote sensing)

Geographic Areas: (Northeast, central, Northwest, Chesapeake Bay, Great Lakes, Midwest, Mid-Atlantic, states: {use both full name and two letter abbreviation}, EPA Regions 1 through 10)

Sectors: (agriculture, business, transportation, industry {petroleum, electronics, printing, etc}:{identify 4 digit SIC codes}, service industry, food processing, etc)

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BIOGRAPHICAL SKETCH

Provide the following information for the senior personnel on the project. Begin with the Principal Investigator/Project Director (PI/PD).

DO NOT EXCEED 2 PAGES PER PERSON

A. Vitae, listing professional and academic essentials and mailing address.

B. List up to 5 publications most closely related to the proposed project and up to 5 other significant publications, including those accepted for publication. Patents, copyrights or software systems developed may be substituted for publications. Do not include additional lists of publications, invited lectures, etc. Only the list of up to 10 will be used in merit review.

C. A list of persons (including their organizational affiliations) who have collaborated on a project or a book, article, report or paper within the last 48 months, including collaborators on this proposal. If there are no other collaborators, this should be indicated.

D. A list of the names of persons (including their organizational affiliations) over the past five years, with whom this individual has had an association as thesis advisor and postdoctoral scholar sponsor. Also include a summary of the total number of graduate students advised and postdoctoral scholars sponsored.

E. The names and institutions of this individual's own graduate and postgraduate advisors.

The information in C, D, and E is used to help identify potential conflicts or bias in the selection of reviewers.

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Current and Pending Support

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator:	Other agencies (including NSF) to which this proposal has been/will be submitted.

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

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Itemized Budget for EPA STAR Grant Applications *(Example Format)*

CATEGORIES	YEAR ONE	YEAR TWO	YEAR THREE	TOTAL PROJECT
a. Personnel Principal Investigator Co-PI Research Scientists Postdoctoral Scientists Other Personnel				
TOTAL PERSONNEL COSTS				
b. Fringe Benefits _____% of _____				
c. Travel Trip 1 Trip 1 Trip 1 ...etc.				
TOTAL TRAVEL COSTS				
d. Equipment Item 1 Item 2 Item 3 ...etc.				
TOTAL EQUIPMENT COSTS				
e. Supplies Item 1 Item 2 Item 3 ...etc.				
TOTAL SUPPLY COSTS				
f. Contracts 1 2 3 ...etc.				
TOTAL CONTRACTUAL COSTS				
g. Other Item 1 Item 2 Item 3 ...etc.				
TOTAL OTHER COSTS				
h. TOTAL DIRECT COSTS (sum of a-g)				
i. Indirect Costs/Charges _____% of _____ (base)				
j. TOTAL PROJECT COSTS (sum of h & i)				
k. TOTAL REQUESTED FROM EPA				

NCERQA Form 4 (4/97) For EPA STAR Grant Applications

DO NOT USE THIS FORM -- Example 0nly --

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