

New NSF Grant Proposal Requirements – Broader Impacts

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1). Significant Changes to the *Grant Proposal Guide*, effective January 2011 (taken from NSF website http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpq).

** specifically pertains to Broader Impacts requirement.

****Chapter II.C.2.j, Special Information and Supplementary Documentation**, contains a clarification of NSF's long standing data policy. All proposals must describe plans for data management and sharing of the products of research, or assert the absence of the need for such plans. Fastlane will not permit submission of a proposal that is missing a Data Management Plan. Cross-references are included in the Project Description section (II.C.2.d), the Results from Prior NSF Support (II.C.2.d(iii)), Proposals for Conferences, Symposia and Workshops (II.D.8), and the Proposal Preparation Checklist (Exhibit II-1). **The Data Management Plan** will be reviewed as part of **the intellectual merit or broader impacts of the proposal or both** (See complete chapter below).

Chapter II.C.2.a, Cover Sheet, has been revised for consistency with the requirements of the Federal Funding & Accountability Act, to replace the Performing/Research Organization information with Project/Performance Site Primary Location information. This change already has been made on a government-wide basis in the SF 424 family of forms. If the project will be performed at a location other than the awardee, additional geographic information must be provided.

Chapter II.C.2.g(xi), Cost Sharing, has been revised to implement the National Science Board's recommendations regarding cost sharing. Inclusion of voluntary committed cost sharing is prohibited, Awardees are informed, however, that they remain subject to the OMB A-21 Clarification memo regarding committing and tracking faculty effort (see footnote 22). In order to assess the scope of the project, all organizational resources necessary for the project must be described in the Facilities, Equipment and Other Resources section (II.C.2.i). The description should be narrative in nature and must not include any quantifiable financial information. Mandatory cost sharing will only be required when explicitly authorized by the NSF Director.

****Chapter II.C.2.j – complete chapter**

Special Information and Supplementary Documentation

Except as specified below, special information and supplementary documentation must be included as part of the Project Description (or part of the budget justification), if it is relevant to determining the quality of the proposed work. Information submitted in the following areas is not considered part of the 15-page Project Description limitation. This Special Information and Supplementary Documentation section also is not considered an appendix. Specific guidance on the need for additional documentation may be obtained from the organization's sponsored projects office or in the references cited below.

- Postdoctoral Researcher Mentoring Plan. Each proposal that requests funding to support postdoctoral researchers must include, as a supplementary document, a description of the mentoring activities that will be provided for such individuals. In no more than one page, the mentoring plan must describe the mentoring that will be provided to all postdoctoral researchers supported by the project, irrespective of whether they reside at the submitting organization, any subawardee organization, or at any organization participating in a simultaneously submitted collaborative project. Proposers are advised that the mentoring plan may not be used to circumvent the 15-page project description limitation. See GPG Chapter II.D.4 for additional information on collaborative proposals.

Examples of mentoring activities include, but are not limited to: career counseling; training in preparation of grant proposals, publications and presentations; guidance on ways to improve teaching and mentoring skills; guidance on how to effectively collaborate with researchers from diverse backgrounds and disciplinary areas; and training in responsible professional practices. The proposed mentoring activities will be evaluated as part of the merit review process under the Foundation's broader impacts merit review criterion.

- Plans for data management and sharing of the products of research. Proposals must include a supplementary document of no more than two pages labeled "Data Management Plan". This supplement should describe how the proposal will conform to NSF policy on the dissemination and sharing of research results (see [AAG Chapter VI.D.4](#)), and may include:

1. the types of data, samples, physical collections, software, curriculum materials, and other materials to be produced in the course of the project;
2. the standards to be used for data and metadata format and content (where existing standards are absent or deemed inadequate, this should be documented along with any proposed solutions or remedies);
3. policies for access and sharing including provisions for appropriate protection of privacy, confidentiality, security, intellectual property, or other rights or requirements;
4. policies and provisions for re-use, re-distribution, and the production of derivatives; and
5. plans for archiving data, samples, and other research products, and for preservation of access to them.

Data management requirements and plans specific to the Directorate, Office, Division, Program, or other NSF unit, relevant to a proposal are available at: <http://www.nsf.gov/bfa/dias/policy/dmp.jsp>. If guidance specific to the program is not available, then the requirements established in this section apply.

Simultaneously submitted collaborative proposals and proposals that include subawards are a single unified project and should include only one supplemental combined Data Management Plan, regardless of the number of non-lead collaborative proposals or subawards included. Fastlane will not permit submission of a proposal that is missing a Data Management Plan. Proposals for supplementary support to an existing award are not required to include a Data Management Plan.

A valid Data Management Plan may include only the statement that no detailed plan is needed, as long as the statement is accompanied by a clear justification. Proposers who feel that the plan cannot fit within the supplement limit of two pages may use part of the 15-page Project Description for additional data management information. Proposers are advised that the Data Management Plan may not be used to circumvent the 15-page Project Description limitation. **The Data Management Plan will be reviewed as an integral part of the proposal, coming under Intellectual Merit or Broader Impacts or both**, as appropriate for the scientific community of relevance.

- Rationale for performance of all or part of the project off-campus or away from organizational headquarters. (See AAG Chapter V.D.1)
- Documentation of collaborative arrangements of significance to the proposal through letters of commitment. (See GPG Chapter II.C.2.d.(iv))
- The National Environmental Policy Act of 1969 (NEPA) (42 USC §4332). NEPA requires that Federal agencies consider the environmental impacts of major Federal actions significantly affecting the quality of the human environment. If a proposed project might have an environmental impact, the proposal should

furnish sufficient information to assist Foundation officials in assessing the environmental consequences of supporting the project. NSF will determine:

1. the adequacy of the information submitted;
2. whether or not additional information is needed; and
3. whether or not an environmental assessment or environmental impact statement will be necessary.

- Work in foreign countries. Some governments require nonresidents to obtain official approval to carry out investigations within their borders and coastal waters under their jurisdiction. PIs are responsible for obtaining the required authorizations and for advising NSF that they have been obtained or requested. Advance coordination should minimize disruption of the research. (See AAG Chapter VI.B.4 and VI.G.3 and the Research Terms and Conditions, NSF Agency Specific Requirements Article 29, and NSF Grant General Conditions Article 42.)
- Research in Greenland. (See AAG Chapter VI.G.3)
- Antarctic proposals to *any* NSF program require operational worksheets by the first Wednesday of June in the year before any proposed fieldwork. See “proposals with fieldwork” in Chapter V.A, of the Antarctic Research solicitation. Special budget considerations also apply. See also Chapter V.B, of the Antarctic Research solicitation.
- Research in a location designated, or eligible to be designated, a registered historic place. (See AAG Chapter VI.K). Where applicable, the box for “Historic Places” must be checked on the Cover Sheet.
- Research involving field experiments with genetically engineered organisms. (See AAG Chapter VI.B.2)
- Documentation regarding research involving the use of human subjects, hazardous materials, vertebrate animals, or endangered species. (See AAG Chapter VI.B and GPG Chapter II.D.5 and II.D.6).
- Projects that involve technology utilization/transfer activities, that require a management plan, or that involve special reports or final products. Please note that some program solicitations provide specific guidance on preparation and inclusion of management plans in proposals submitted to NSF.
- Special components in new proposals or in requests for supplements, such as *Facilitation Awards for Scientists and Engineers with Disabilities (FASSED)*, *Research Opportunity Awards (ROAs)* or *Research Experiences for Undergraduates (REUs)*. (See GPG Chapter II.D.3 for information on FASSED, and for the other programs identified, consult the relevant program solicitation.)
- *Research in Undergraduate Institutions*. (See RUI program solicitation for information.)
- *Research Experiences for Undergraduates*. (See the REU program solicitation for information.)

In addition, the supplementary documentation section should alert NSF officials to unusual circumstances that require special handling, including, for example, proprietary or other privileged information in the proposal, matters affecting individual privacy, required intergovernmental review under E.O. 12372 (*Intergovernmental Review of Federal Programs*) for activities that directly affect State or local governments, or possible national security implications.

Proposers are reminded that, unless required by a specific program solicitation, letters of support should not be submitted as they are not a standard component of an NSF proposal, and, if included, a reviewer is under no obligation to review these materials. Letters of support submitted in response to a program solicitation requirement must be unique to the specific proposal submitted and cannot be altered without the author’s explicit prior approval. NSF may return without review proposals that are not consistent with these instructions.

2). Merit Review Broader Impacts Criterion: Representative Activities

Proposals submitted to the National Science Foundation are evaluated through the use of two merit review criteria, which all proposals must address explicitly. Experience shows that while most proposers have little difficulty responding to the criterion relating to intellectual merit, many proposers have difficulty understanding how to frame the broader impacts of the activities they propose to undertake.

The *Broader Impacts* of a proposed activity are important considerations in advancing the

NSF Mission: *“To promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense; and for other purposes”* (NSF Act of 1950). The *NSF Strategic Plan* provides further background information for *Broader Impacts* through the NSF Vision, Core Values, Strategic Outcome Goals, and Investment Priorities (NSF Strategic Plan for FY 2006-2011: Investing in America’s Future (NSF 06-48).

The examples provided below are organized by the set of potential considerations used in assessing the broader impacts of the proposed activity. They illustrate activities that, when successfully incorporated in a project description, will help reviewers and NSF program staff address the broader impacts criterion in the review and decision process.

The components of the broader impacts criterion as defined by the National Science Board are listed below. The list is followed by short sections on each component that provide representative activities.

Broader Impacts Criterion: What are the broader impacts of the proposed activity?

- How well does the activity advance discovery and understanding while promoting teaching, training and learning?
- How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)?
- To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks and partnerships?
- Will the results be disseminated broadly to enhance scientific and technological understanding?
- What may be the benefits of the proposed activity to society?

Advance Discovery and Understanding While Promoting Teaching, Training and Learning

Examples of Activities:

- Integrate research activities into the teaching of science, math and engineering at all educational levels (e.g., K-12, undergraduate science majors, non-science majors, and graduate students).
- Include students (e.g., K-12, undergraduate science majors, non-science majors, and /or graduate students) as participants in the proposed activities as appropriate.
- Participate in the recruitment, training, and/or professional development of K-12 science and math teachers.
- Develop research-based educational materials or contribute to databases useful in teaching (e.g., K-16 digital library).
- Partner with researchers and educators to develop effective means of incorporating research into learning and education.
- Encourage student participation at meetings and activities of professional societies.
- Establish special mentoring programs for high school students, undergraduates, graduate students, and technicians conducting research.
- Involve graduate and post-doctoral researchers in undergraduate teaching activities.
- Develop, adopt, adapt or disseminate effective models and pedagogic approaches to science, mathematics and engineering teaching.

Broaden Participation of Underrepresented Groups

Examples of Activities:

- Establish research and education collaborations with students and/or faculty who are members of underrepresented groups.
- Include students from underrepresented groups as participants in the proposed research and education activities.
- Establish research and education collaborations with students and faculty from non-Ph.D.-granting institutions and those serving underrepresented groups.
- Make campus visits and presentations at institutions that serve underrepresented groups.
- Establish research and education collaborations with faculty and students at community colleges, colleges for women, undergraduate institutions, and EPSCoR institutions.

- Mentor early-career scientists and engineers from underrepresented groups who are submitting NSF proposals.
- Participate in developing new approaches (e.g., use of information technology and connectivity) to engage underserved individuals, groups, and communities in science and engineering.
- Participate in conferences, workshops and field activities where diversity is a priority.

Enhance Infrastructure for Research and Education

Examples of Activities:

- Identify and establish collaborations between disciplines and institutions, among the U.S. academic institutions, industry and government and with international partners.
- Stimulate and support the development and dissemination of next-generation instrumentation, multi-user facilities, and other shared research and education platforms.
- Maintain, operate and modernize shared research and education infrastructure, including facilities and science and technology centers and engineering research centers.
- Upgrade the computation and computing infrastructure, including advanced computing resources and new types of information tools (e.g., large databases, networks and associated systems, and digital libraries).
- Develop activities that ensure that multi-user facilities are sites of research and mentoring for large numbers of science and engineering students.

Broad Dissemination to Enhance Scientific and Technological Understanding

Examples of Activities:

- Partner with museums, nature centers, science centers, and similar institutions to develop exhibits in science, math, and engineering.
- Involve the public or industry, where possible, in research and education activities.
- Give science and engineering presentations to the broader community (e.g., at museums and libraries, on radio shows, and in other such venues).
- Make data available in a timely manner by means of databases, digital libraries, or other venues such as CD-ROMs.
- Publish in diverse media (e.g., non-technical literature, and websites, CD-ROMs, press kits) to reach broad audiences.
- Present research and education results in formats useful to policy-makers, members of Congress, industry, and broad audiences.
- Participate in multi- and interdisciplinary conferences, workshops, and research activities.
- Integrate research with education activities in order to communicate in a broader context.

Benefits to Society

Examples of Activities:

- Demonstrate the linkage between discovery and societal benefit by providing specific examples and explanations regarding the potential application of research and education results.
- Partner with academic scientists, staff at federal agencies and with the private sector on both technological and scientific projects to integrate research into broader programs and activities of national interest.
- Analyze, interpret, and synthesize research and education results in formats understandable and useful for non-scientists.
- Provide information for policy formulation by Federal, State or local agencies.

3). Advice to PIs on Data Management Plans:

[from the NSF website – Directorate of Mathematical and Physical Sciences / Division of Chemistry (CHE)]

The following five items are listed in the same order as those in the guidelines of the revised PAPPG, and have been paraphrased to guide the Chemistry community. They are not intended to supplant the guidance given in the PAPPG.

1. Products of the Research

Describe the types of data and products that will be generated in the research, for example numerical data on chemical systems such as spectra, diffraction patterns, physical properties, time-dependent information on chemical and physical processes, theoretical formalisms, computational strategies, final or intermediate numerical results from theoretical calculations, software, and curriculum materials.

2. Data Format

Describe the format in which the data or products are stored (e.g., hardcopy notebook and/or instrument outputs, ASCII, html, jpeg or other formats). Where data are stored in unusual or not generally accessible formats, explain how the data may be converted to a more accessible format or otherwise made available to interested parties. You may also comment on the current or anticipated need for interested parties outside of your laboratory to access your primary data.

3. Access to Data and Data Sharing Practices and Policies

“Access to data” refers to data made accessible without explicit request from the interested party, for example those posted on a website or made available to a public database. Describe your plans, if any, for providing such general access to data, including websites maintained by your research group, and direct contributions to public databases (e.g., the Protein Data Bank, Cambridge Crystallographic Data Centre, Inorganic Crystal Structure Database in Karlsruhe, Zeolite Structure Database). Also note if you submit your data in the form of tables, graphs, computer code or other format to the supplementary materials sections of peer-reviewed journals. Describe your practice or policies regarding the release of data for access, for example whether data are posted before or after formal publication. Finally, note as well any anticipated inclusion of your data into databases that mine the published literature (e.g., PubChem, NIST Chemistry WebBook). “Data sharing” refers to the release of data in response to a specific request from an interested party. Describe your policies for data sharing, including where applicable provisions for protection of privacy, confidentiality, intellectual property, national security, or other rights or requirements.

4. Policies for Re-Use, Re-Distribution, and Production of Derivatives

Describe your policies regarding the use of data provided via general access or sharing. For example, if you plan to provide data and images on your website, will the website contain disclaimers, or conditions regarding the use of the data in other publications or products? Describe these disclaimers and/or terms of use.

5. Archiving of Data

Describe how data will be archived and how preservation of access will be handled. For example, will hardcopy notebooks, instrument outputs, and physical samples be stored in a location where there are safeguards against fire or water damage? Is there a plan to transfer digitized information to new storage media or devices as technological standards or practices change? Will there be an easily accessible index that documents where all archived data are stored and how they can be accessed?

We reiterate that the Data Management Plan requirement will apply to proposals submitted on or after January 18, 2011. Proposals submitted during the November 2010 CHE submission window are not subject to this requirement. However, those investigators who elect to include a Data Management Plan in November submissions will not be asked to remove them prior to the commencement of the review process.

4). Clarifications and Other Changes to the *Grant Proposal Guide*, effective January 2011

Chapter I.E.2, Who May Submit Proposals, has been clarified to state that non-profit, non-academic organizations must be located in the U.S., which is consistent with the eligibility guidance for universities and colleges.

Chapter I.G.3, Requirements Relating to Data Universal Numbering System (DUNS) Numbers and Registration in the Central Contractor Registration (CCR), has been updated to reflect the requirements specified in the recent Office of Management and Budget (OMB) policy directive

(September 14, 2010, 75 FR 22706) on these topics. Each proposer must have a DUNS number and be registered in the CCR database prior to submission of a proposal to NSF. The CCR registration must be kept active and current at all times when an organization has an active award or a proposal under consideration by NSF.

Chapter II.C.2, Sections of the Proposal, has been supplemented to make it clear that failure to submit all required sections of the proposal may result in the proposal being returned without review.

Chapter II.C.2.b, Project Summary, has been updated to encourage use of separate headings for the merit review criteria in the one page Project Summary.

Chapter II.C.2.j, Special Information and Supplementary Documentation, has been clarified via a footnote to show that a mentoring plan is not required for postdoctoral researchers who are listed as Senior Personnel on the NSF Budget.

Chapter II.D.4.b, Collaborative Proposals, has been supplemented to reinforce that all components of a collaborative proposal must meet any established deadline or risk being returned without review.

Chapter III.C, Proposal File Updates, has been revised to explain that the Proposal File Update Module can no longer be used to submit revised budgets. They must now be submitted via the FastLane Revised Proposal Budget Module.

Chapter III.F, Review Information Provided to PI, has been supplemented to state that PIs are provided copies of their reviews to improve research methods and future submissions and are not intended for any other purpose.

Chapter V, Renewal Proposals, has been supplemented with a reminder that renewal proposals must be developed as if the applicant is applying for the first time. Also that the National Science Board (NSB) endorses the principle that all expiring awards should be recompeted; a link is included to the related NSB Resolution.