How Proposals Are Reviewed By NSF, NIH, DoED, DOE
Summary Overviews & Key Links
By **Mike Cronan**, co-publisher

Agency review criteria are as important to those writing a proposal as they are to proposal reviewers. The authors of a successful proposal must clearly understand the review criteria before starting to write the proposal in much the same way that the proposal reviewers must clearly understand the review criteria--to ensure the research narrative fully addresses the goals and objectives of the funding agency. Review criteria are the critical touchstones that must be fully integrated into the project description if it is to succeed. Beginning to write a proposal without the review criteria clearly in mind will significantly decrease the chances of a proposal being funded. The review criteria must guide every aspect of selecting, ordering, and elaborating on the arguments made in the research narrative to make a compelling and convincing case that your proposal is among those few deserving funding.

While many review criteria are program specific, that is, defined in the solicitation and applying only to a particular grant program, most agencies also have overarching review criteria that apply to all program solicitations. While these overarching review criteria may go for some period of time without change or modification, they often do change, e.g., the recent modifications to the NSF review criteria in January of 2013. Therefore, it is important to keep informed of the overarching review criteria and keep them in mind when considering various funding opportunities, or when advising others how proposals will be reviewed by specific agencies. It has been two years since this newsletter published an overview of the review criteria at all federal research agencies of particular interest to university researchers. This is the first of three articles that will address the current overarching review criteria of specific federal agencies, starting herein with the National Science Foundation, National Institutes of Health, U.S. Department of Education, and the U.S. Department of Energy, Office of Science.

NATIONAL SCIENCE FOUNDATION

Important facts about the NSF merit review process (listed here):
1. All proposals submitted to NSF are reviewed according to the two merit review criteria: **Intellectual Merit and Broader Impacts**
2. NSF implemented **revised merit review criteria** in January 2013
3. NSF Program Officers make recommendations to fund or decline a proposal. **Reviewers do not make funding decisions.**
4. Most proposals that are awarded do not receive all "Excellents"
5. NSF Program Officers are encouraged to recommend high-risk science and engineering projects for funding.
6. Principal Investigators submit on average about 2.3 proposals for every award they receive.
7. NSF promotes broadening participation in science and engineering.

Research Development & Grant Writing News

Key Links: **GPG Chapter III - NSF Proposal Processing and Review**; **Revised Merit Review Criteria Resource**;
Merit Review;

Upon receipt of a proposal, Program Officers conduct a preliminary review to ensure completeness and conformance with NSF requirements, which are outlined in **GPG Chapter II.A. Conformance with Instructions for Proposal Preparation** and in **GPG Chapter II.B. Format of the Proposal**. Adherence to these requirements is strictly enforced (unless the proposal has an approved deviation). If the proposal does not adhere to the instructions in the GPG (or the program solicitation, if applicable), NSF may return the proposal without review. See **GPG Chapter IV.B. Proposal Not Accepted or Returned without Review** for a complete list of reasons for which a proposal may not be accepted or may be returned without review .

If the proposal is complete and conforms to NSF requirements, NSF Program Officers identify at least three external reviewers to review the proposal. **The review may be conducted by *ad hoc* reviewers, a panel of experts, or a combination of both.** For some programs, site visits are also conducted. Some categories of proposals may not be externally reviewed. For example, proposals submitted to Rapid Response Research Grants (RAPID) and EArly-concept Grants for Exploratory Research (EAGER) are internally reviewed only. For some other categories of proposals (for example, proposals for international travel), NSF staff have the option of conducting an internal review only. In addition, Program Officers are also responsible for identifying potentially disqualifying conflicts of interest among reviewers. (See **GPG Chapter II, Exhibit II-2**.)

GPG Chapter III.B. Selection of Reviewers provides the NSF guidelines for reviewer selection. These guidelines are designed to ensure that the reviewers selected are experts in their field and will provide program officers with the proper information needed to make a recommendation in accordance with the **National Science Board** approved merit review criteria for projects

NATIONAL INSTITUTES OF HEALTH
New Scoring Guidance. The NIH posted new scoring guidance for reviewers to use in evaluating grant applications. The **scoring guidance for research** applications is intended to focus reviewers on the positive aspects of an application as well as the weaknesses, and to encourage use of the entire scoring range. The **generic guidance** has been revised as well, and is intended for reviewers to use in deriving criterion scores and overall impact scores for activity codes that use review criteria other than those used for research applications.

Key Links: **NIH Peer Review Process**; **NIH Peer Review Process Revealed**; **Center for Scientific Review Applicant Resources**.

NIH Core Review Criteria
Overall Impact. Reviewers will provide an overall impact/priority score to reflect their assessment of the likelihood for the project to exert a sustained, powerful influence on the research field(s) involved, in consideration of the following review criteria and additional review criteria (as applicable for the project proposed).

Research Development & Grant Writing News

Scored Review Criteria. Reviewers will consider each of the review criteria below in the determination of scientific and technical merit, and give a separate score for each. An application does not need to be strong in all categories to be judged likely to have major scientific impact. For example, a project that by its nature is not innovative may be essential to advance a field.

Significance. Does the project address an important problem or a critical barrier to progress in the field? If the aims of the project are achieved, how will scientific knowledge, technical capability, and/or clinical practice be improved? How will successful completion of the aims change the concepts, methods, technologies, treatments, services, or preventative interventions that drive this field?

Investigator(s). Are the PD/PIs, collaborators, and other researchers well suited to the project? If Early Stage Investigators or New Investigators, or in the early stages of independent careers, do they have appropriate experience and training? If established, have they demonstrated an ongoing record of accomplishments that have advanced their field(s)? If the project is collaborative or multi-PD/PI, do the investigators have complementary and integrated expertise; are their leadership approach, governance and organizational structure appropriate for the project?

Innovation. Does the application challenge and seek to shift current research or clinical practice paradigms by utilizing novel theoretical concepts, approaches or methodologies, instrumentation, or interventions? Are the concepts, approaches or methodologies, instrumentation, or interventions novel to one field of research or novel in a broad sense? Is a refinement, improvement, or new application of theoretical concepts, approaches or methodologies, instrumentation, or interventions proposed?

Approach. Are the overall strategy, methodology, and analyses well-reasoned and appropriate to accomplish the specific aims of the project? Are potential problems, alternative strategies, and benchmarks for success presented? If the project is in the early stages of development, will the strategy establish feasibility and will particularly risky aspects be managed? If the project involves clinical research, are the plans for (1) protection of human subjects from research risks, and (2) inclusion of minorities and members of both sexes/genders, as well as the inclusion of children, justified in terms of the scientific goals and research strategy proposed?

Environment. Will the scientific environment in which the work will be done contribute to the probability of success? Are the institutional support, equipment and other physical resources available to the investigators adequate for the project proposed? Will the project benefit from unique features of the scientific environment, subject populations, or collaborative arrangements?

US Department of Education

A discretionary grant is an award made by the ED for which the ED has discretion, or choice, in which applicants get funded. Virtually all of the Department's **discretionary grants are made based on a competitive review process**. ED reviews applications based on the legislative and regulatory requirements, and on the application requirements and criteria

established for a discretionary grant program. This review process gives ED the discretion to determine which applications best address the program requirements and are, therefore, most worthy of receiving funding. Successful applicants become the ED's grantees.

Key Links: Grantmaking at ED, Answers to Your Questions About the Discretionary Grants Process; ED Program's Overview; Discretionary Grant Applications lists the application packages that are currently available; Forecast of Funding Opportunities for ED Discretionary Grant Programs forecasts when grant competitions are expected to open. These are the dates to begin watching for the application materials. Contact information for each grant is also provided; More.

The Application Review Process at the Department

For the majority of the Department's grant competitions, program offices recruit application reviewers (reviewers) from outside the federal government who have expertise in the subject area of the grant program for which the applications were submitted. For some competitions, program offices may use employees or contractors of the Department of Education, or employees of other federal agencies, to serve as reviewers. The Department staff screens applications to ensure that they meet all the requirements of the program and assign applications to reviewers. Reviewers read and independently score each application assigned to them. After the reviewers score the applications, the program staff carries out an internal review to ensure that the reviewers' scoring sheets are correctly completed.

How are application reviewers chosen?

ED recruits reviewers who have expertise in areas pertinent to a grant program. Individuals interested in becoming a reviewer complete an application or submit a resume or a curriculum vita that provides information the program staff uses to determine whether they have the necessary qualifications. The program staff maintains a reviewer registry and contacts individuals when they are needed for an upcoming competition. The Department reviews potential reviewers' information to determine whether they have the necessary expertise and whether they have any potential conflicts of interest in the outcome of a specific upcoming competition. A reviewer is considered to have a conflict of interest when he or she, or certain individuals and entities with which the reviewer has a relationship, has a financial interest in the outcome of the competition. The Department staff works with potential reviewers and assigns them to competitions that raise no conflicts of interest or other reasons for which the public would question the reviewers' objectivity in rating proposals for a specific competition.

What criteria do reviewers use to score my application?

Reviewers score each application against the selection criteria stated in the notice or application package. In reviewing applications, reviewers are not permitted to use other criteria or consider any information that is not in the application.

How does the Department determine the rank order of applications?

Generally, the Department averages the scores given by all the reviewers that read an application. The average score for each application is used to determine its rank order among

all the eligible applications that were reviewed. Under certain circumstances, the program staff uses a statistical method to standardize reviewers' scores. Standardization helps compensate for the tendencies of some reviewers to score applications higher or lower than other reviewers for the same quality applications.

How does the Department decide which applicants get funded?

After the applications, reviews, and related documents are checked for completeness, the program staff conducts a series of steps to determine which applicants will be funded. The steps are to:

- Develop a rank order list from the panel scores for each application.
- Determine how many applications can be funded with the available appropriations.
- Perform a cost analysis on those applications that can be considered for funding. The cost analysis is done to determine whether the proposed costs of an applicant's budget are allowable. In addition, program staff members review the narratives and budgets to ensure that costs relate to the activities and objectives of the project. All unallowable costs are deleted from the budget. During this stage, program staff may contact applicants for clarifying information, usually by telephone. If the program staff requests a written response from an applicant, the applicant's response should address only the specific items needing clarification.
- Create a formal list, called a "slate," of the applications recommended for funding and the recommended funding level for each application.
- Forward the slate to the principal officer of the program office (or his or her designee) for approval. In making the final funding decisions, the principal officer may consider information in addition to the information in the application, such as an applicant's past performance on a U.S. Department of Education grant.
- Issue award notices to the successful applicants.

Does a high score guarantee funding?

There is no particular score that guarantees that an application will be funded. Even if an application ranks high it may not be funded. The Department may be unable to fund all high-scoring applications because of the large number of high-quality applications submitted and the set level of funds that Congress appropriates for a program. In addition, high-scoring applications may not be funded because a program may establish a geographic distribution requirement that limits the number of grants awarded to specific regions of the country. **Some applications may not be funded because of an applicant's poor performance in the past on other federal projects.**

U.S. Department of Energy, Office of Science

Administrative Review.   Upon receipt of an application, the Office of Science receiving office determines whether the document contains the prescribed information, has been approved by an official authorized to sign for the applicant organization and falls under the scientific scope of the Office of Science Financial Assistance Program.

After this preliminary review, copies of the application are forwarded to the appropriate program office for further review to determine if the application contains sufficient technical/scientific information to conduct an evaluation; meets program policies and priorities, and does not duplicate or overlap currently funded research projects. Applications shall be acknowledged to the applicant in writing by the SC program office generally within one week of receipt. This acknowledgement usually advises the applicant of the SC staff member responsible for conducting the merit review of the application.

Program staff may return an application which does not include all information and documentation required by statute, 10 CFR Part 605, 10 CFR Part 600, and the Funding Opportunity Announcement when the nature of the omission precludes review of the application. ***However, if an application contains most of the information required, the missing information may be requested from the applicant so that it can be processed.*** During the review of a complete application, the Office of Science may request the submission of additional information only if the information is essential to evaluate the application.

Evaluation Criteria

New and renewal applications meeting the above standards will be subjected to formal merit review and will be evaluated against **the following criteria which are listed in descending order of importance** as set forth in 10 CFR Part 605:

1. Scientific and/or technical merit or the educational benefits 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; and<

5. Other appropriate factors, established and set forth in a notice of availability or in a specific solicitation.

For renewal applications, the Office of Science also shall consider the recipient's performance under the existing award.

Also, the Office of Science shall consider, as part of the evaluation, other available advice or information as well as program policy factors such as ensuring an appropriate balance among the program areas.

Merit Review Process

Project managers will review applications for technical/scientific merit and program policy factors. In addition, the project manager will submit applications generally to at least three qualified reviewers for evaluation, in addition to anyone having direct line authority over the project manager, including the selection official. Instructions to reviewers will include a reasonable length of time for responding to the request for a merit review. In those instances where three or more reviews are not obtained, the project manager must provide a written explanation to be retained in the official file. In the event that the project manager is a reviewer and is also the selection official, the decision shall be approved by the Director, Office of Science, or a designee. If no reviews are provided to the Office of Science by the selected qualified reviewers, any award must be justified on a non-competitive basis.

Such additional reviewers may be Federal employees (including those from the Office of Science that are neither the selecting official nor those in a direct line of supervision above the project manager) or non-Federal employees. Also, such additional reviewers will not include former employees of the project manager's immediate office, or anyone having had line authority over that immediate office, within the past one year.