

The NSF Merit Review Process

DOE/EERE Workshop on Peer Review
Washington, DC

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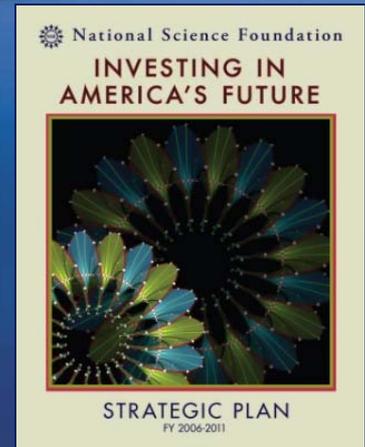
NSF MISSION

- To promote the progress of science; advance the national health, prosperity, and welfare; to secure the national defense; and for other purposes.

NSF VISION

- Advancing discovery, innovation and education beyond the frontiers of current knowledge, and empowering future generations in science and engineering workforce





NSF STRATEGIC GOALS:

- **Discovery** – Advancing frontiers of knowledge
- **Learning** – S&E workforce and scientific literacy
- **Research Infrastructure** – Advanced instrumentation and facilities
- **Stewardship** – Supporting excellence in S&E research and education



BACKGROUND

- More than 40,000 proposals annually for *research and education* in math, science, and engineering
- Approximately 10,000 new awards annually
- Primarily merit-based grants and cooperative agreements
- Partnership with over 2800 colleges, universities and other institutions throughout the United States



NSF PROGRAM AREAS

- **Directorates**
 - Biological Sciences
 - Computer and Information Sciences and Engineering
 - Education and Human Resources
 - Engineering
 - Geosciences
 - Mathematical and Physical Sciences
 - Social, Behavioral and Economic Sciences
- **Office of the Director**
 - Cyberinfrastructure
 - Integrative Activities
 - International Science and Engineering
 - Polar Programs
- **Crosscutting themes & areas of emphasis**



NSF MERIT REVIEW PROCESS

<http://www.nsf.gov/bfa/dias/policy/meritreview/>

- **Director's Statement on Merit Review**
- Phase I: Proposal Preparation and Submission
- **Phase II: Proposal Review and Processing**
- Phase III: Award Processing
- Non-Award Decisions and Transactions
- **Merit Review Facts**



Program Officers develop the award portfolio

- **Emphasis “at the frontier”**
- **Quality and transparency**
 - High quality advice from reviewers
 - Program Officer’s expertise & experience
 - Feedback includes verbatim reviews - PI should understand why award was made or proposal was declined
- **Oversight**
 - Division Director / Sr Management / Budget Office



NSF
Announces
Opportunity

Research &
Educational
Communities

Submit
FastLane
www.fastlane.nsf.gov



NSF Program
Officer

- Ad Hoc
- Panel
- Combination
- Internal

Program Officer
Analysis and
Recommendations

DD Concur

Via DGA

Organization

Can be returned without review/withdrawn

Award

Decline

Award

Proposal
Receipt
at NSF

DD Concur

NSF Proposal & Award Process & Timeline

90 Days

6 Months

30 Days

Proposal Preparation Time

Proposal Receipt to Division Director Concurrence
of Program Officer Recommendation

DGA Review &
Processing of Award

PROPOSAL REVIEW

- Proposals received by NSF are assigned to the appropriate NSF program
- NSF Program Officers identify experts to review the proposal *****
- **Usually**, a proposal is reviewed by *at least three* external reviewers
- May include panel review(s) and site visit(s), as well as *ad hoc* reviews



NSF MERIT REVIEW CRITERIA

- What is the intellectual merit of the proposed activity?
- What are the broader impacts of the proposed activity?
- There may be additional program-specific criteria



1. INTELLECTUAL MERIT

- Advancing knowledge and understanding within its own field or across different fields
- Qualifications of the proposer (individual or team) - quality of prior work
- *Suggests and explores creative, original, or potentially transformative concepts*
- Well conceived and organized
- Access to resources



POTENTIALLY TRANSFORMATIVE RESEARCH

- May revolutionize a discipline or disciplines
- May create a new field of research
- May disrupt accepted theories or perspectives
- NSB Report 07-32: *Enhancing Support of Transformative Research at the National Science Foundation*
<http://www.nsf.gov/pubs/2007/nsb0732/nsb0732.pdf>



2. BROADER IMPACTS

- Advance discovery and understanding while promoting teaching, training and learning
- Broaden the participation of underrepresented groups
- Enhance the infrastructure for research and education
- Disseminate the results broadly
- Potential benefits to society



IN ADDITION

- Any Program-Specific Review Criteria
and

“NSF staff will give careful consideration to the following in making funding decisions”:

- Integration of Research and Education
- Integrating Diversity into NSF Projects, Programs, and Activities



REVIEW RATINGS

- **Excellent** Outstanding proposal in all respects; deserves highest priority for support.
- **Very Good** High quality proposal in nearly all respects; should be supported if at all possible.
- **Good** A quality proposal, worthy of support.
- **Fair** Proposal lacking in one or more critical aspects; key issues need to be addressed.
- **Poor** Proposal has serious deficiencies.



PROPOSAL REVIEW

- NSF Program Officer reviews the proposal and analyzes input received from external reviewers
- ***In addition to the external reviews***, POs consider several factors in developing a portfolio of funded projects. For example:
 - different approaches to significant research and education questions
 - *potential (with perhaps high risk) for transformational advances in a field*
 - capacity building in a new and promising research area
 - achievement of special program objectives



PROPOSAL REVIEW

- Decisions on a given proposal are made considering both other current proposals and previously funded projects
- After scientific, technical and programmatic review, the Program Officer makes an award/decline recommendation to the Division Director



PROPOSAL REVIEW

- Final programmatic approval is generally completed at the Division level
- If the Program Officer makes an award recommendation and the Division Director concurs, the recommendation is submitted to the Division of Grants and Agreements for award processing



INFORMATION to the PI

When a decision has been made, the following information is released electronically to the Principal Investigator

- context in which the proposal was reviewed
- all reviews used in the decision (but *no information that might identify the reviewer*)
- panel summary
- site-visit report



MERIT REVIEW FACTS

- All proposals are reviewed according to the two merit review criteria
- NSF program officers make the recommendation to decline or award
- Most proposals awarded do **not** receive “straight excellents”!
- NSF POs are encouraged to recommend ‘risky’ science and engineering for funding
 - Considered for all proposals
 - RAPID and EAGER mechanisms - no external review
 - Potentially transformative research (Criterion 1)



Thank You!

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