US-Ireland R&D Partnership
Visit to the National Science Foundation

Introduction to the National Science Foundation

November 6, 2008

Ask Early, Ask Often!

Name	Title	Contact
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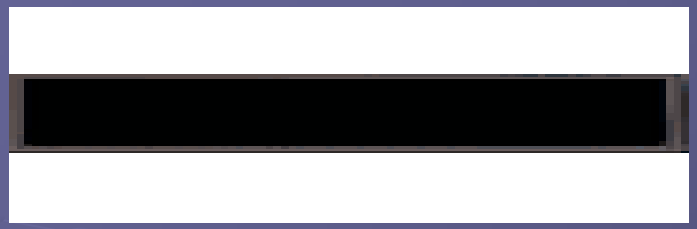


- NSF Intro & Overview
- NSF Budget Details
- Challenges & Opportunities
- Proposal, Award & Funding Trends

Origins of NSF

- “The Government should accept new responsibilities for promoting the flow of scientific knowledge and the development of scientific talent in our youth.”
  - Science, The Endless Frontier, 1945
- 1947: Congress Approves, Truman Vetoes: Agencies created in the meantime
- 1950: Compromise Bill Approved & Signed by Truman

NSF Act of 1950

- “To promote the progress of science…”
- NSB (24) and 1 Director, appointed by the President
- Encourage & develop a national policy for the promotion of basic research and education in the math, physical, medical,biological, engineering and other sciences
- Initiate & support basic scientific research in the sciences
- Evaluate the science research programs undertaken by agencies of the Federal government
- Provide information for S&E policy formation

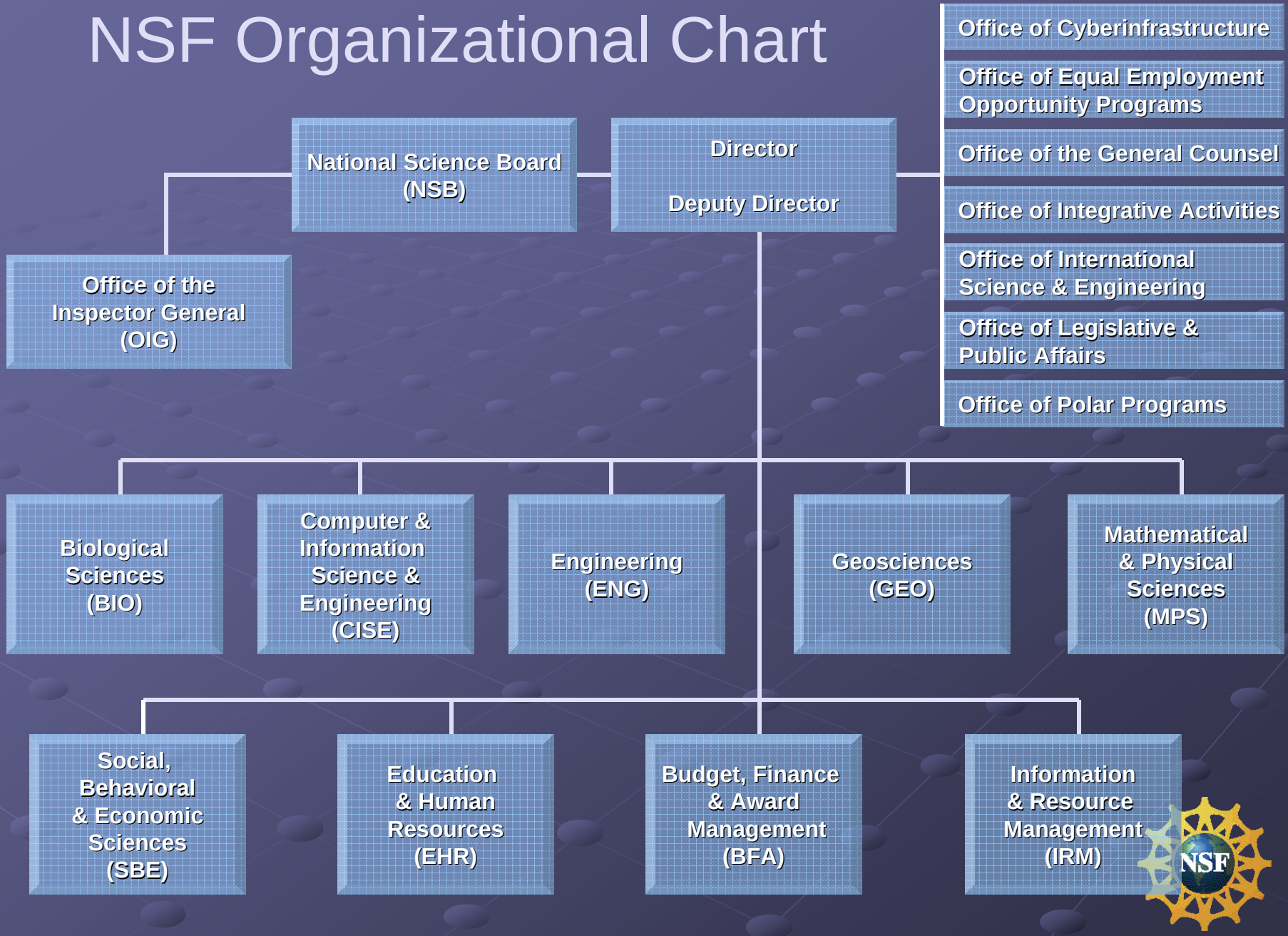
NSF Vision

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

NSF in a Nutshell

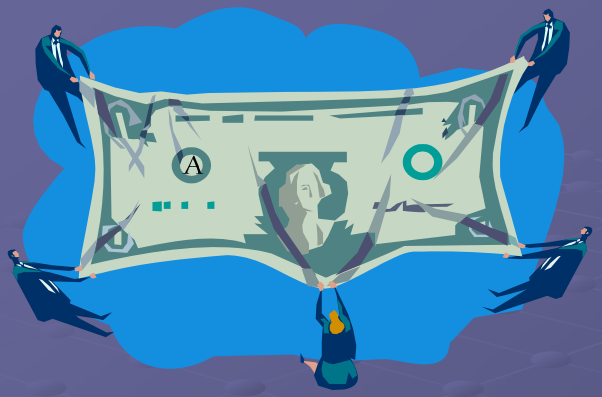
- Independent Agency
- Supports basic research & education
- Uses grant mechanism
- Low overhead; highly automated
- Discipline-based structure
- Cross-disciplinary mechanisms
- Use of Rotators/IPAs
- National Science Board

NSF Organizational Chart



NSF: Recent Personnel Changes

- Thomas W. Peterson selected as Assistant Director for Engineering
- Dr. Edward Seidel named as Director of the Office of Cyberinfrastructure (OCI)
- Dr. Tim Killeen named Assistant Director for Geosciences (GEO)
- Dr. W. Lance Haworth appointed Director of the NSF Office of Integrative Activities
- Dr. Henry Blount named Head, EPSCoR Office (EPSCoR moved to the Office of the Director)



NSF Budget Details

FY 2008 Outcome

- Was not encouraging for NSF's doubling
- Small increases, but major fix in support of our infrastructure (people, building, IT systems such as FastLane and Research.gov)
- Supplemental, a little extra, but pointed to Congressional support for the Noyce Program by and large

2009 BUDGET REQUEST

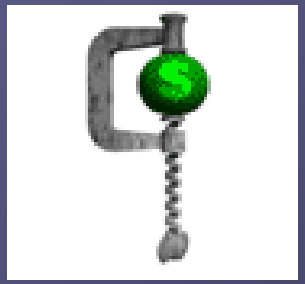
The Big Picture

NSF FY 2009 Budget

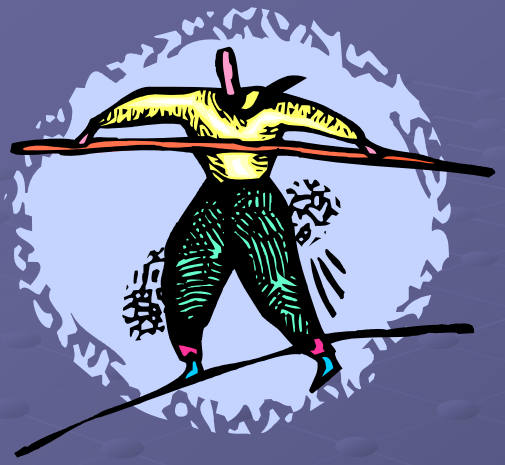
TOTAL: $6.85 billion

Increase: 13%

FY 2009 Outcomes



- Who knows?
- CR through March 6
- Congressional action in February will likely be impacted by outcomes of the November elections
- FY 2010 budget request will be submitted by next President – maybe ~ April, 1, 2009



Challenges & Opportunities

America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science Act: The America COMPETES Act

- Signed into law on August 9, 2007
- Shares goals of the American Competitiveness Initiative (ACI)
- Focuses on three primary areas of importance:
  - Increasing research investment;
  - Strengthening educational opportunities in science, technology, engineering, and mathematics from elementary through graduate school;
  - Developing an innovation infrastructure.

Transformative Research

- The National Science Board (Board) unanimously approved a motion by National Science Foundation (NSF) Director Arden L. Bement, Jr. to enhance support of transformative research at the NSF.
- Additionally, NSF Director proposed -- and the Board adopted -- a change to the intellectual merit review criterion to specifically include evaluation of proposals for potentially transformative concepts.

Transformative Research Working Definition

- Transformative research involves ideas, discoveries, or tools that radically change our understanding of an important existing scientific or engineering concept or educational practice or leads to the creation of a new paradigm or field of science, engineering, or education. Such research challenges current understanding or provides pathways to new frontiers.

Revised Intellectual Merit Review Criterion

- **What is the intellectual merit of the proposed activity?**
  - How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields? How well qualified is the proposer (individual or team) to conduct the project? (If appropriate, the reviewer will comment on the quality of prior work.) To what extent does the proposed activity suggest and explore creative, original, **or potentially transformative** concepts? How well conceived and organized is the proposed activity? Is there sufficient access to resources?

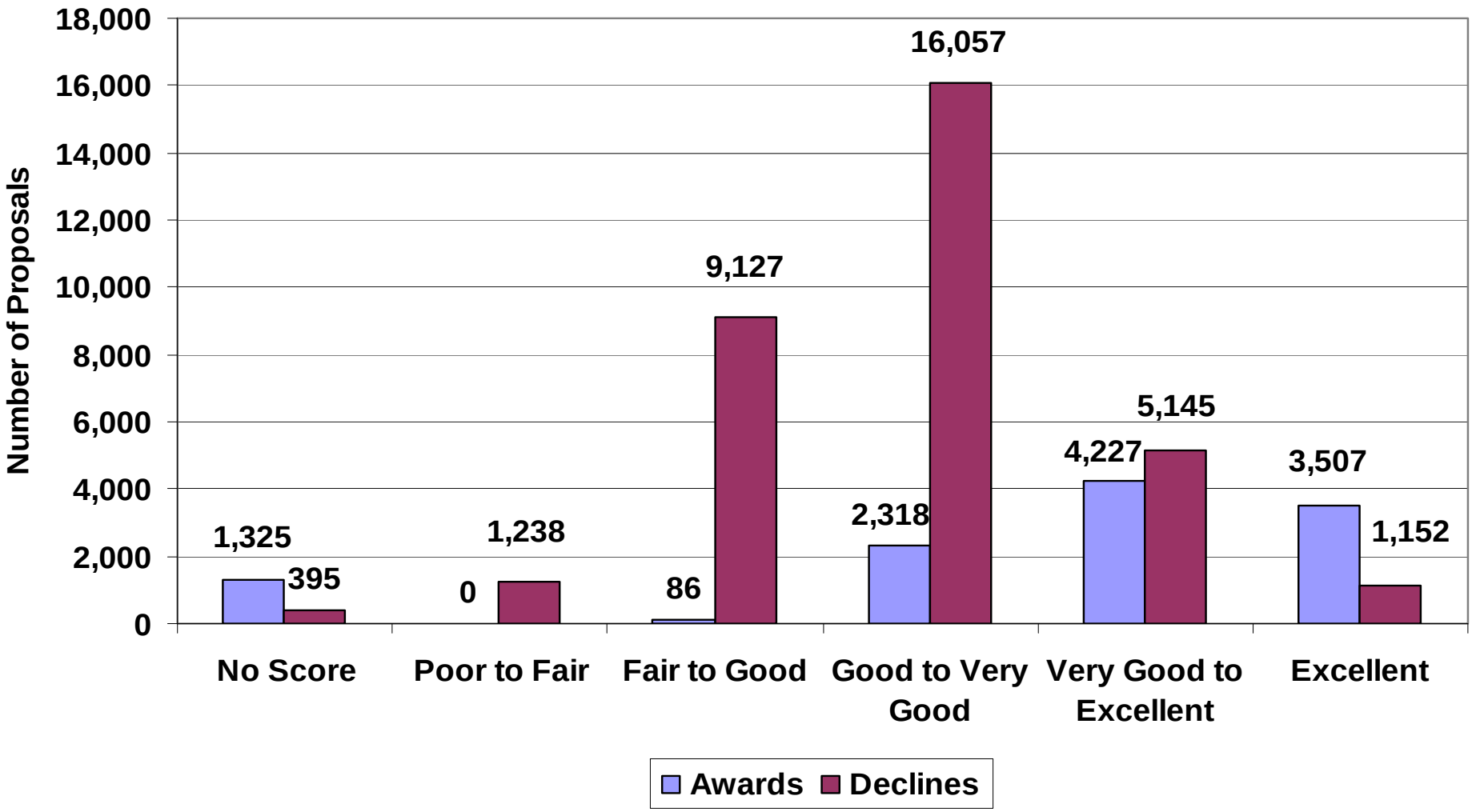
Federal Funding Accountability & Transparency Act (FFATA)

- FederalSpending.gov launched (Feb. 2007)
- Data elements defined
- Impact: Place of performance
- Next Step: Pilot grantee and sub-awardee data

Current Proposal, Award & Funding Trends

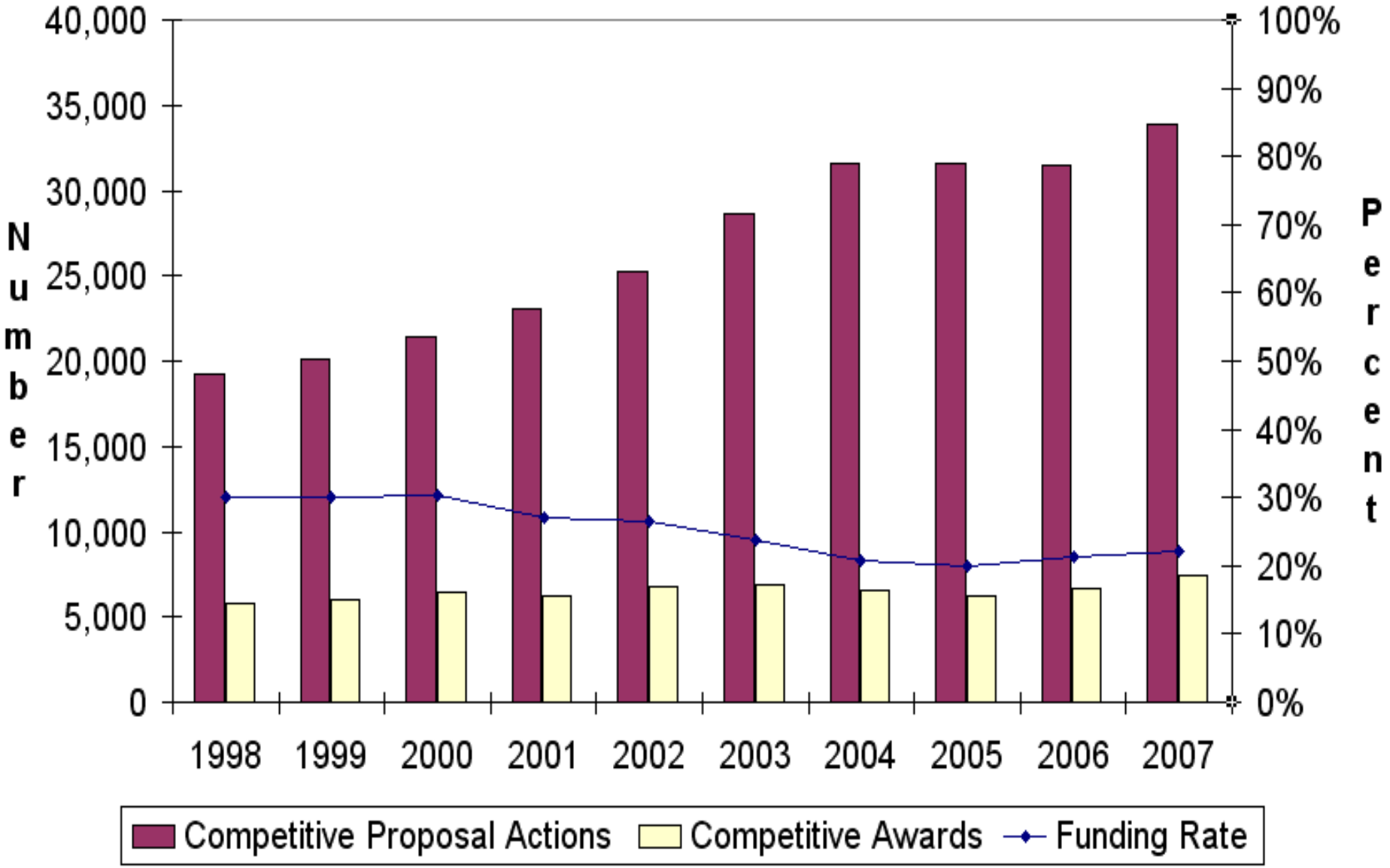
Distribution of Average Reviewer Ratings

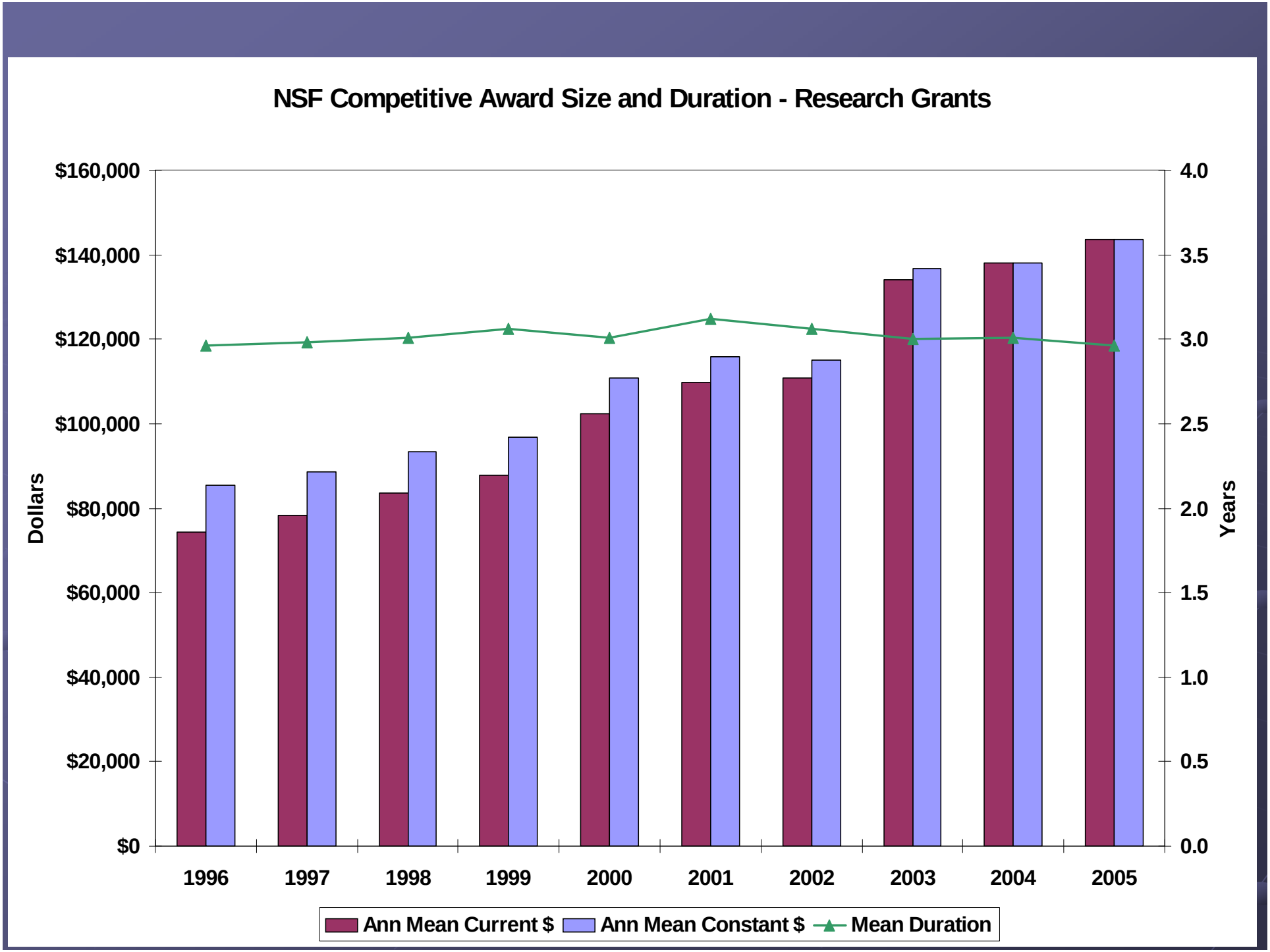
FY 2007



Number of Proposals: 33,114 Declines, 11,463 Awards

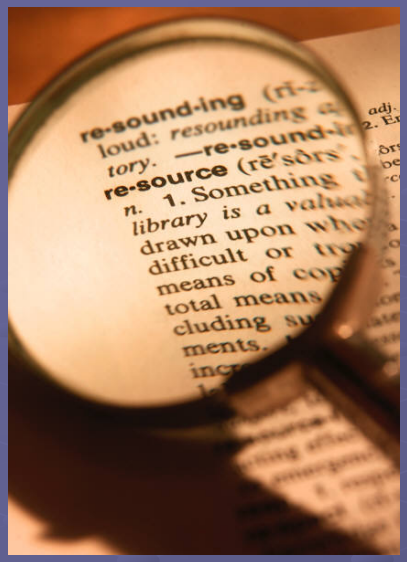
NSF Funding Rate for Competitive Awards - Competitive Research Grants




NSF Competitive Award Size and Duration - Research Grants
$160,000
$140,000
$120,000
$100,000
$80,000
$60,000
$40,000
$20,000
$0
Dollars
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Years
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
Ann Mean Current $
Ann Mean Constant $
Mean Duration

Key Documents

- FY 2008 NSF Budget Appropriation
  - http://www.nsf.gov/about/congress/110/highlights/cu08_0108.jsp
- FY 2009 NSF Budget Request
  - http://www.nsf.gov/about/budget/fy2009/index.jsp
- Proposal & Award Policies & Procedures Guide
  - http://www.nsf.gov/publications/pub_summ.jsp?ods_key=papp
- Science and Engineering Indicators
  - http://www.nsf.gov/statistics/seind08/
- When in doubt:
  - http://www.nsf.gov/



FY 2009 Budget Request Resource Information

FY 2009 Budget Request by Appropriations Account (millions)

2009 BUDGET REQUEST

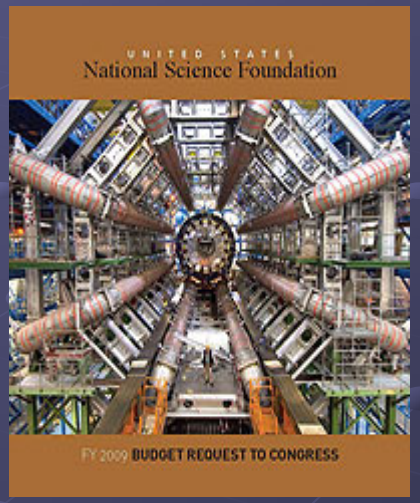
Appropriations Account	FY 2009 Request	Change from FY 2008	
Research & Related Activities	$5,593.99	$772.52	+16.0%
Education & Human Resources	$790.41	$64.81	+8.9%
Major Research Equipment & Facilities Construction	$147.51	-$73.23	-33.2%
Agency Operations & Award Management	$305.06	$23.27	+8.3%
National Science Board	$4.03	$0.06	+1.5%
Inspector General	$13.10	$1.67	+14.6%
TOTAL, NSF	$6,854.10	$789.10	+13.0%

FY 2008 Appropriation and FY 2009 Request by Directorate (millions)

Directorate	FY 2008 Appropriations	FY 2009 Request
Biological Sciences	$612.26	$675.06
Computer & Information Science & Engineering	$535.12	$638.76
Engineering	$639.54	$ 759.33
Geosciences	$755.81	$ 848.67
Mathematical & Physical Sciences	$1,170.80	$ 1,402.67
Social, Behavioral & Economic Sciences	$215.08	$ 233.48
Office of Cyberinfrastructure	$185.18	$220.08
Office of International Science & Engineering	$41.32	$47.44
Office of Polar Programs	$445.72	$490.97
Integrative Activities	$241.17	$276.00
U.S. Arctic Research Commission	$1.47	$1.53
Education & Human Resources	$765.60	$790.41

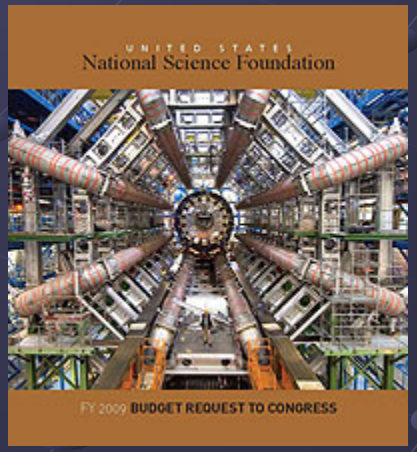
FY 2009 Budget Highlights

- Cross-Foundation Investments
- Support for Research Grants
- New Faculty & Beginning Investigators
- Graduate Research Fellowships
- Science & Technology Centers
- Cybersecurity
- International Science & Engineering
- Oceans Research



FY 2009 Budget Highlights (Cont'd)

- Polar Research & Logistics
- Major Research Equipment & Facilities Construction (MREFC)
- Enriching the Education of STEM Teachers
- Promoting Learning through Research and Evaluation
- Broadening Participation
- Interagency R&D Priorities
- Stewardship



US-Ireland R&D Partnership
Visit to the National Science Foundation

Fundamentals of the
NSF Proposal & Award Process

November 6, 2008

Ask Early, Ask Often!

Name	Title	Contact
Jean Feldman	Head, Policy Office, Division of Institution & Award Support (DIAS)	jfeldman@nsf.gov (703) 292-4573
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NSF Proposal Preparation Basics

Grant Proposal Guide (GPG)

- Applicability of GPG:
  - Provides guidance for the preparation and submission of proposals to NSF:
    - Contains guidelines for preparation of proposals;
    - GPG is used unless program solicitation stipulates otherwise.

GPG (Continued)

- Describes content and formatting requirements for all parts of an NSF proposal:
  - Single Copy Documents
  - Cover Sheet
  - Project Summary
  - Table of Contents
  - Project Description
  - References Cited
  - Biographical Sketch(es)
  - Budget
    - Budget Justification
  - Current & Pending Support
  - Facilities, Equipment & Other Resources
  - Special Information & Supplementary Documentation

GPG (Continued)

- Identifies overall Foundation eligibility categories and guidelines.
- Describes types of NSF due dates:
  - Target dates
  - Deadline dates
  - Submission Windows (MPS, ENG)
- Specifies process for deviations including:
  - individual program solicitations;
  - by written approval of cognizant Assistant Director or designee; or
  - procedure to follow for those proposers unable to submit electronically.

GPG (Continued)

- Establishes NSF policy regarding inclusion of Universal Resource Locators (URLs) in the Project Description
  - Note different policy is established for use of URLs in References Cited and Biographical Sketch portion of the proposal

GPG (Continued)

- Details process for submission of collaborative proposals via:
  - issuance of one proposal that contains a subaward from the proposer to the collaborating organization; and
  - submission of separate proposals from collaborating organizations.
  - Note: contact with cognizant program officer is strongly encouraged prior to submission!

- Outlines reasons why a proposal **may be** returned without review. Reasons include:
  - The proposal is inappropriate for NSF funding;
  - The proposal is submitted with insufficient lead time before the activity is scheduled to begin;

GPG (Continued)

- The proposal is a full proposal that was submitted by a proposer that has received a “not invited” response to the submission of a preliminary proposal;
- The proposal is a duplicate of, or substantially similar to, a proposal already under consideration by NSF from the same submitter;
- The proposal does not meet NSF proposal preparation requirements, such as page limitations, formatting instructions, and electronic submission, as specified in the Grant Proposal Guide or program solicitation;
- The proposal is not responsive to the GPG or program announcement/solicitation;
- The proposal does not meet an announced proposal deadline date (and time, where specified); or
- The proposal was previously reviewed and declined and has not been substantially revised.

GPG (Continued)

- Contains NSF procedures on special categories of proposals:
  - Rapid Response Research and Early-concept Grants for Exploratory Research;
  - Facilitation Awards for Scientists and Engineers with Disabilities;
  - Equipment Proposals;
  - Conferences, symposia & workshops;
  - Proposals that include vertebrate animals and human subjects; and
  - Proposals to support international travel.

GPG (Continued)

- Provides policy requirements for specific FastLane capabilities:
  - Revised budgets (required for budget reductions of 10% or more) – note no budget justification section is required; only impact statement;
  - Proposal File Updates; and
  - Electronic Proposal Withdrawal (in collaboratives, withdrawal of one, is withdrawal of all!)

GPG (Continued)

- Describes process -- and criteria -- by which proposals will be reviewed
- Contains information on potentially disqualifying conflicts of interest for use in the proposal process.

What to Look for in a Program Announcement/Solicitation

- Goal of program
- Eligibility
- Special proposal preparation and/or award requirements

Program Announcement versus Solicitation

Program Announcement/ Program Descriptions

- Follows GPG guidelines
- Standard eligibility criteria
- NSF merit review criteria
- Often use target dates instead of deadline dates

Program Solicitation

- May deviate from supplement the GPG
- May include specialized eligibility requirements
- May include additional merit review criteria
- May require special reporting requirements
- Established proposal due date

Types of Submissions to NSF

- No deadlines
- Deadlines
- Target dates

- Submission Windows
- Preliminary proposals
- Letters of Intent

Budgetary Guidelines

- Amounts
  - Reasonable for work - Realistic
  - Well Justified - Need established
  - In-line with program guidelines

- Eligible costs
  - Personnel
  - Equipment
  - Travel
  - Participant Support
  - Other Direct Costs (including subawards, consultant services, computer services, publication costs)

- Program practices

Budgetary Guidelines (Continued)

- General Suggestions
- All funding sources noted in Current and Pending Support
- Help from Sponsored Projects Office

How to Electronically Submit a Proposal to NSF

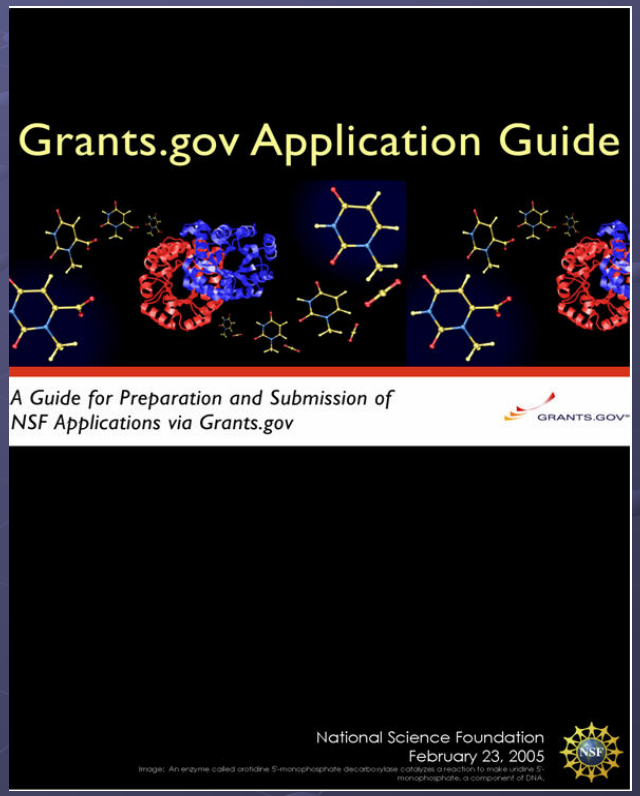
- FastLane
- Grants.gov

Grants.gov

- President's Management Agenda
  - Applicants for federal grants apply for and manage grant funds through a common site, to simplify grant management and eliminate redundancy.

NSF Grants.gov Application Guide

- Intended to serve as the primary document for use in preparation of NSF applications via Grants.gov
- Includes step-by-step instructions for completion of each of the SF 424 (R&R) forms as well as the NSF specific forms
- Provides specific instructions for inclusion and conversion of pdf files

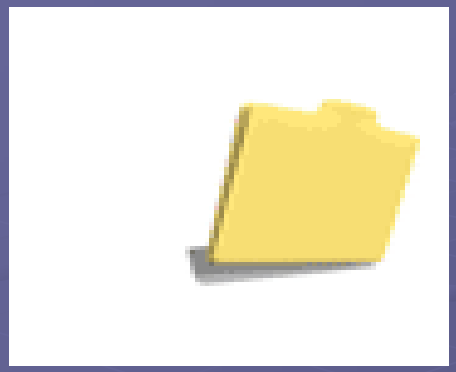


NSF Grants.gov Implementation in FY 2009

- Unless otherwise specified, optional submission for the vast majority of NSF programs
- Will not be used until a Grants.gov solution has been developed for:
  - Separately submitted collaborative proposals
  - Fellowship programs that require submission of reference letters

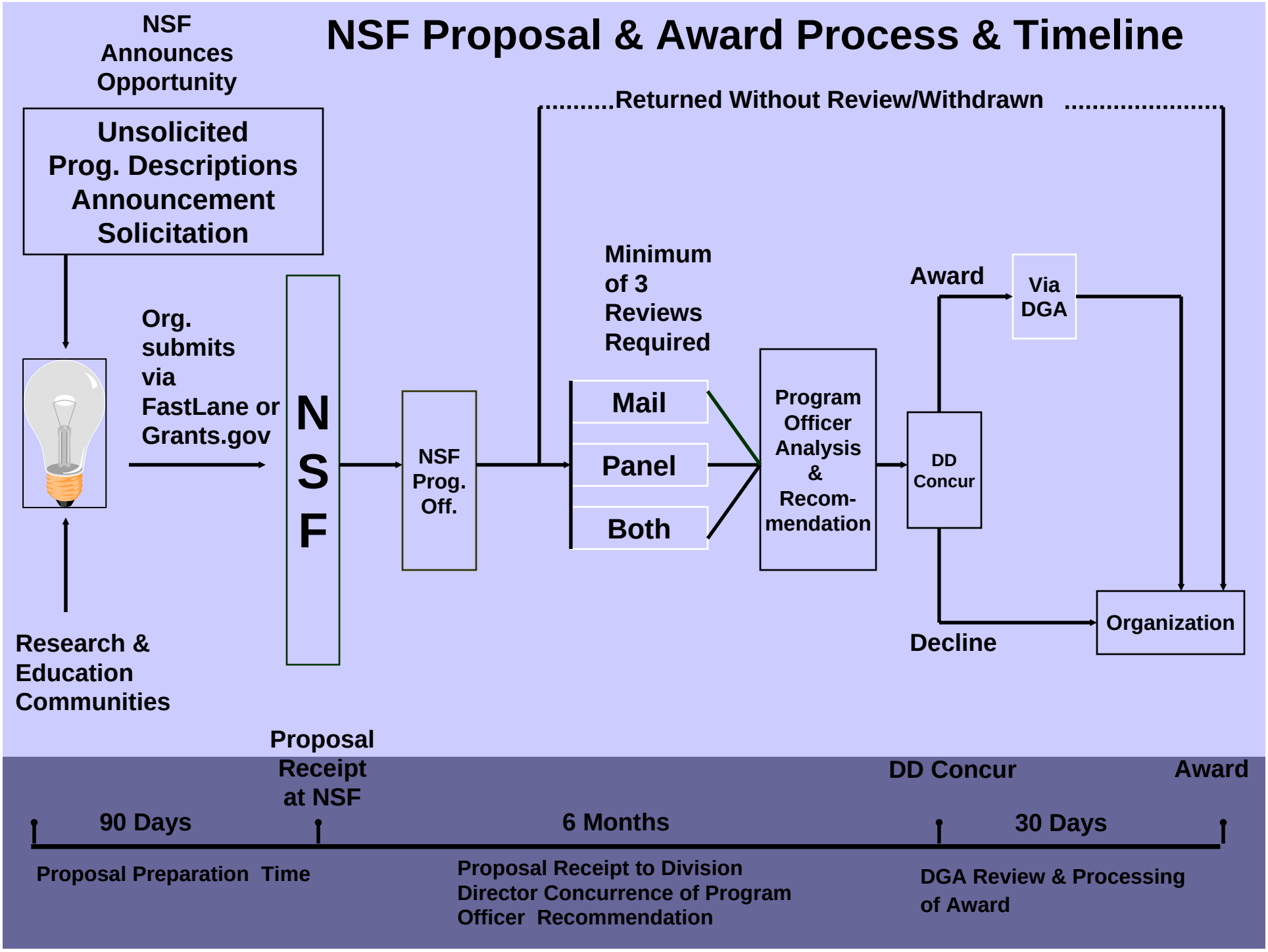
Implementation (Cont'd)

- NSF does not accept applications through Grants.gov for:
  - Submission of Letters of Intent and Preliminary Proposals
  - Changed/Corrected Applications
  - Revisions
  - Continuations
  - Supplemental Funding Requests



NSF Merit Review Process

NSF Proposal & Award Process & Timeline



NSF Merit Review Criteria

- NSB Approved Criteria include:
  - Intellectual Merit
  - Broader Impacts of the Proposed Effort

Intellectual Merit

- Potential considerations include:
  - How important is the proposed activity to advancing knowledge and understanding within its own field or across different fields?
  - How well qualified is the proposer (individual or team) to conduct the project? (If appropriate, the reviewer will comment on the quality of prior work.)
  - To what extent does the proposed activity suggest and explore creative, original or potentially transformative concepts?

Intellectual Merit (Continued)

- How well conceived and organized is the proposed activity?
- Is there sufficient access to resources?

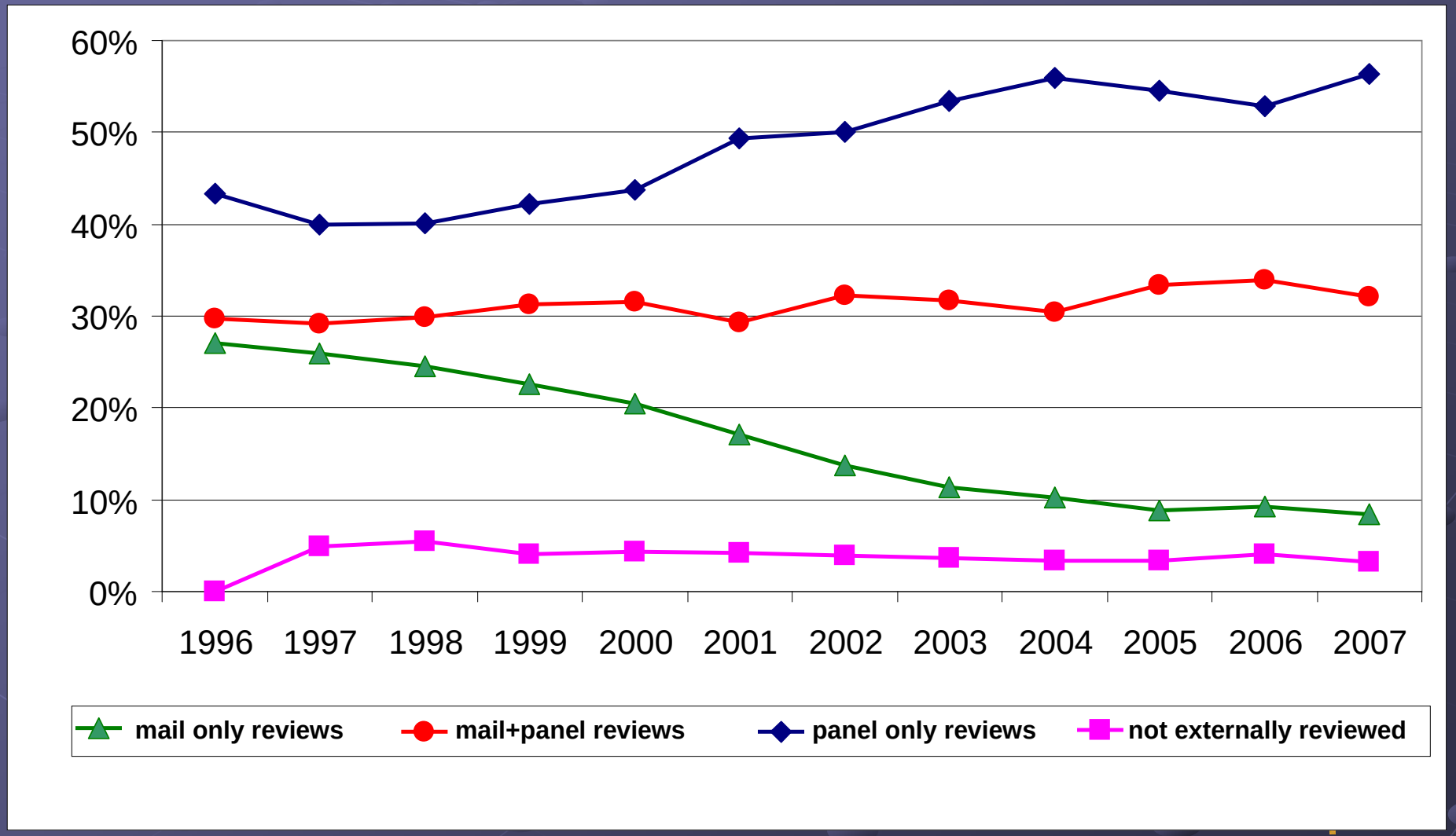
Broader Impacts

- Potential considerations include:
  - How well does the activity advance discovery and understanding while promoting teaching, training and learning?
  - How well does the 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?

Broader Impacts (Continued)

- Potential considerations include:
  - Will the results be disseminated broadly to enhance scientific and technological understanding?
  - What may be the benefits of the proposed activity to society?

NSF Review Methods



Selection of Reviewers

Optimally, reviewers should have:

- Special knowledge of the science and engineering subfields involved in the proposals to be reviewed. to evaluate competence, intellectual merit, and utility of the proposed activity.
- Broader or more generalized knowledge of the science and engineering subfields involved in the proposals to be reviewed to evaluate the broader impacts of the proposed activity.
- Broad knowledge of the infrastructure of the science and engineering enterprise, and its educational activities, to evaluate contributions to societal goals, scientific and engineering personnel, and distribution of resources to organizations and geographical areas.
- To the extent possible, diverse representation within the review group. The goal is to achieve a balance among various characteristics. Important factors to consider include: type of organization represented, reviewer diversity, age distribution and geographic balance.

Sources of Reviewers

- Program Officer's knowledge of the research area
- References listed in proposal
- Recent professional society programs
- Computer searches of S&E journal articles related to the proposal
- Reviewer recommendations included in proposal or sent by email - proposers are invited to either:
  - Suggest persons they believe are especially well qualified to review the proposal.
  - Identify persons they would prefer not review the proposal.

Role of the Peer Reviewer

- Review and consider all proposal materials.
- Make independent written comments on the quality of the proposal content.
- Each proposal is reviewed by at least *three* individual peer reviewers.

Role of the Peer Review Panel

- Discuss the merits of the proposal with other panelists who reviewed the proposal.
- Write a summary proposal review based on discussion.
- Make a panel recommendation to NSF on whether the proposal should be funded.
- *Some panels may be supplemented with ad hoc reviewers if additional expertise is needed.*

Managing Conflicts of Interest in the Review Process

- Primary purpose is to remove or limit the influence of ties to an applicant institution or investigator that could affect reviewer advice

- Second purpose is to preserve the trust of the scientific community, Congress, and the general public in the integrity, effectiveness, and evenhandedness of NSF's peer review process

Examples of Affiliations with Applicant Institutions

- Current employment at the institution
- Other association with the institution such as consultant
- Being considered for employment or any formal or informal reemployment arrangement at the institution
- Any office, governing board membership or relevant committee membership at the institution

Examples of Relationships with Investigator or Project Director

- Known family or marriage relationship
- Business partner
- Past or present thesis advisor or thesis student
- Collaboration on a project or book, article, or paper within the last 48 months
- Co-edited a journal, compendium, or conference proceedings within the last 24 months

Funding Decisions

- The peer review panel summary provides:
  - Review of the proposal and a recommendation on funding
  - Feedback (strengths and weaknesses) to the proposers
- NSF Program Officers make funding recommendations guided by program goals and portfolio considerations.
- NSF Division Directors either concur or reject the program officer's funding recommendations.
- NSF's Grants and Agreements Officers make the official award - as longs as:
  - The institution has an adequate grant management capacity.
  - The PI does not have overdue annual or final reports.
  - There are no other outstanding issues with the institution or PI.

Reasons for Declines

- The proposal was not considered competitive by the merit review and the program office concurred.
- The proposal had flaws or issues identified by the program office.
- The program funds were not adequate to fund all competitive proposals.

NSF Reconsideration Process

- Explanation from Program Officer
- Written request for reconsideration to Assistant Director within 90 days of decline
- Request from organization to Deputy Director

NSF Merit Review Website

- A new merit review website is now live on the NSF Homepage.

- The goal of the Merit Review website is to help you better understand the NSF merit review process as well as identify resources for additional information (including applicable chapters in the GPG).

National Science Foundation

WHERE DISCOVERIES BEGIN

SEARCH

NSF Web Site

HOME | FUNDING | AWARDS | DISCOVERIES | NEWS | PUBLICATIONS | STATISTICS | ABOUT | FastLane


Scientists Find Earliest Oxygen on Earth


Growing Science and Engineering Students


R&D Increases Economic Growth

Looking for Funding?

- For the Research & Education Community
- Find Funding Opportunities
- Upcoming Due Dates

Program Areas: Select One

Quick Links: Select One

Specialized Information for: Select One

About NSF

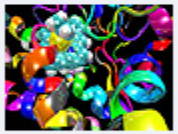
- General Information About NSF
- Merit Review
- View Staff Directory

Search Staff Directory

- Career Opportunities

Latest News

See All


NSF Announces $26 Million Solicitation for Projects That Advance Innovative Computational Thinking
Released October 1, 2008

NSF and Department of Homeland Security Partner to Drive Frontier Research in Nuclear Detection
Released September 24, 2007


Nutrient Pollution Drives Frog Deformities by Ramping Up Infections
Released September 24, 2007

Now Showing: Film, TV, Museums and More

See All

NSF supports great television, inspiring museum exhibits, breathtaking IMAX films, and compelling radio.


Sea Monsters: A Prehistoric Adventure
"Sea Monsters: A Prehistoric Adventure" is a giant-screen film that brings dinosaurs of the late Cretaceous period to life.

Site Features

- NSF at a Glance
- News
- For the News Media
- Special Reports
- Discoveries from NSF Research
- Research Overviews
- Speeches & Lectures
- Multimedia Gallery
- NSF & Congress
- Classroom Resources
- NSF-Wide Investments
- Science and Engineering Statistics
- Search NSF Awards

Merit Review

Merit Review Home
Director's Statement
Phase I: Proposal Preparation and Submission
Phase II: Proposal Review and Processing
Phase III: Award Processing
Non-Award Decisions and Transactions
Merit Review Facts
Why You Should Volunteer to Serve as an NSF Reviewer
Additional Resources
Contact Us

Proposals and Awards

Proposal and Award Policies and Procedures Guide
Introduction
Proposal Preparation and Submission
• Grant Proposal Guide
• Grants.gov Application Guide
Award Administration
• Award Administration Guide
Award Conditions
Other Types of Proposals
NSF Outreach
Policy Office Website

Merit Review Process

Click the square buttons to find out more information about the review process.

Download a printable version of the Merit Review Process Illustration. PDF (21K)

PHASE I

PROPOSAL PREPARATION AND SUBMISSION
90 DAYS

1 OPPORTUNITY ANNOUNCED → 2 PROPOSAL SUBMITTED → 3 PROPOSAL RECEIVED

PHASE II

PROPOSAL REVIEW AND PROCESSING
6 MONTHS

4 REVIEWERS SELECTED → 5 PEER REVIEW → 6 PROGRAM OFFICER RECOMMENDATION → 7 DIVISION DIRECTOR REVIEW

PHASE III

AWARD PROCESSING
30 DAYS

8 BUSINESS REVIEW → 9 AWARD FINALIZED

9 - Award Finalized

The award itself is comprised of an award notice, budget, proposal, applicable NSF conditions, and any other documents or requirements incorporated by reference into the agreement.

Each NSF award notice specifically identifies certain conditions that are applicable to, and become part of, that award. When these conditions reference a particular Award and Administration Guide (AAG) section, that section becomes part of the award requirements through incorporation by reference.

Merit Review

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Proposals and Awards

Proposal and Award Policies and Procedures Guide
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Proposal Preparation and Submission
• Grant Proposal Guide
• Grants.gov Application Guide
Award Administration

Phase III: Award Processing

GRANTS AND AGREEMENTS OFFICER CONDUCTS BUSINESS REVIEW

8 An NSF Grants and Agreements Officer in the Division of Grants and Agreements (DGA) reviews the recommendation from the Program for business, financial and policy implications and the processing and issuance of a grant or cooperative agreement. DGA generally makes awards to academic institutions within 30 days after the program division/office makes its recommendation. Grants to organizations that have not received an NSF award within the preceding two years, or involving special situations (such as coordination with another Federal agency or a private funding source), cooperative agreements, and other unusual arrangements may require additional review and processing time.

Only an appointed NSF Grants and Agreements Officer may make commitments, obligations or awards on behalf of NSF or authorize the expenditure of funds. No commitment on the part of NSF or the Government should be inferred from technical or budgetary discussions with an NSF Program Officer. For more information, see GPG, Chapter III.E. Award Recommendation.

View the Merit Review Process Illustration

GRANTS AND AGREEMENTS OFFICER NOTIFIES ORGANIZATION OF AWARD DECISION

9 NSF awards are electronically signed by a Grants & Agreements Officer, and transmitted to the organization via e-mail. In addition to the e-mail notification, grantees may access their NSF awards via FastLane. Sponsored projects offices are able to view, print, and/or download NSF awards for their organizations. Information on the contents of an NSF award is contained in AAG, Chapter I.B.

View the Merit Review Process Illustration

Accessing Documents on the NSF Website

- www.nsf.gov
- Proposal & Award Policies & Procedures Guide
  - Proposal Preparation & Submission
    - Grant Proposal Guide
    - Frequently Asked Questions
  - Award Administration
    - Award & Administration Guide
    - Grant & Agreement Conditions
    - Frequently Asked Questions