National Science Foundation Overview

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CREATE Future Through Technology
CONFERENCE
March 1-3, 2017
$8.0 billion FY 2017 budget request

93% funds research, education and related activities

50,000 proposals

12,000 awards funded

2,000 NSF-funded Institutions

350,000 NSF-supported researchers

All S&E disciplines funded

Funds research into STEM education

223 Nobel Prize winners

NSF by the numbers

Other than the FY 2017 estimation, numbers shown are based on FY 2016 estimated activities.
$952 million FY 2017 budget request

97% funds research, education and related activities

4,250 proposals

845 awards funded

650 EHR-funded Institutions

145,100 EHR-supported individuals

42 former GRF fellows received Nobel Prize

All S&E disciplines funded

Funds research into STEM education

EHR is committed to an inclusive STEM enterprise for science and society
2017: Our New Building in Alexandria VA!
DUE’s Mission:

To promote excellence in undergraduate science, technology, engineering, and mathematics (STEM) education for all students.

Potentially Transformative Education R&D
Workshop Outline

• Merit Review Criteria
  ➢ Intellectual Merit
  ➢ Broader Impacts
    – Mock Review
    – Report Out and Debrief
    – Questions and Answers

• Project Management

• Project Assessment and Evaluation

• Budget Considerations

• Q&A
Merit Review Criteria
NSF has TWO Merit Review Criteria

• Intellectual Merit
  ➢ What will we learn?
  ➢ How will it advance knowledge?

• Broader Impacts
  ➢ What will the impact be on society?
  ➢ How will it make the world a better place?

*Educationally-focused projects often have a hard time disentangling these, but you need to separate them out in your proposal.*
Elements of the Merit Review Criteria

1) What is the potential for the proposed activity to make a difference?
   a) By advancing knowledge and understanding within its own field or across different fields (Intellectual Merit); and
   b) By benefitting society or advancing desired societal outcomes (Broader Impacts)?

2) To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts?

3) Is the plan for carrying out the proposed activities well-reasoned, well organized, and based on a sound rationale?

4) Does the plan incorporate a mechanism to assess success?

5) How qualified is the individual, team, or institution to conduct the proposed activities?

6) Are there adequate resources available to the PI (either at the home institution or through collaborations) to carry out the proposed activities?
Mock Review

Award #1432018

“RISE: Research-based Interdisciplinary STEM Education”
Typical Format of a Review

• Intellectual merit
  ➢ General summary of project (2-3 sentences)
  ➢ Strengths
  ➢ Weaknesses/concerns

• Broader impacts
  ➢ Strengths
  ➢ Weaknesses/concerns

• Summary statement
  ➢ Overall strengths
  ➢ Overall concerns
  ➢ Rationale that justifies your rating
Rating the Proposal

- Excellent
- Very Good
- Good
- Fair
- Poor

Be discerning and supportive!
- Rating all the proposals “good” does not help the Program Officer or the PI.
- Put yourself in the PI’s shoes.
Mock Review Process

- Read the proposal.
- Note strengths and weaknesses.
- Note **Intellectual Merit** and **Broader Impacts**, and organize strengths and weaknesses in each area.
- Consider summary statement.
- Assign your own overall rating.
What is your rating?
Panel comments/concerns?

- Excellent (E)
- Very Good (V)
- Good (G)
- Fair (F)
- Poor (P)
Project Management
Project management

- Initiating or completing an activity
- Finishing a “product”
- NOT to be confused with Data management plan (supplemental document)

Describe the project management plan

- Team responsibilities
- Tasks
  - Implementation (Objectives & Activities)
  - Evaluation
  - Dissemination
- Timeline
Team

- Define the organizational structure of the project
- Multiple roles may be assigned to a single individual
- Projects that use contractors should reflect this relationship

Sample Project Organization Chart
Team Responsibilities

Clearly define roles and who will be in charge of key actions

Roles/responsibilities should be tailored for your project
- Check solicitation for team composition specifics

Hint: Let the bio-sketches speak to personnel qualifications. Don’t waste space in the narrative
Tasks

Implementation Plan

**Activities** that will be undertaken in order to achieve the project’s goals and expected outcomes

Include *evaluation* and *dissemination* (and any other deliverables)
Ultimately the implementation plans should convince the reader that the PIs:

- Understand the activities needed to achieve the expected outcomes
  - Technical details for each activity
  - Interrelationships between the activities
  - Scheduling of the activities
  - Resources and effort required

- Have a doable plan

- Will complete the activities and achieve the expected outcomes

- Have considered the intellectual aspects and the broader implications
A *project schedule* is used to manage and track the project’s progress.

The schedule should be based on the project lifecycle and the objectives, activities and milestones (i.e. deliverables).

The project schedule may be displayed in a variety of formats. A *Gantt Chart* is a common *graphical representation* of tasks/milestones and their dependencies across time.
Timeline

❖ Sample Gantt Chart
  • Chart tools: MS Excel, Word (tables), Project

❖ Associating resources with the schedule may also be useful
Mock Review Process

- Read the project management plan
- Note Team, Tasks and Timeline and organize strengths and weaknesses in each area
- Consider content and clarity
Project Assessment and Evaluation Plans
FORMATIVE SUMMATIVE

WHEN THE CHEF TASTES THE SOUP

WHEN THE GUESTS TASTE THE SOUP

FROM STEVE WHEELER’S BLOG “THE AFL TRUTH ABOUT ASSESSMENT”

Elements of an Assessment and Evaluation Plan

Evaluator

Outcomes

Instruments

Data Analysis

Controls
Data Management Plan

- Types of Data
- Format and Content Standards
- Access and Sharing Policies **Including Privacy Protection**
- Reuse, Redistribution, and Derivative Policies
- Plans for Archiving

DATA MANAGEMENT PLAN ≠ EVALUATION PLAN
Finding an Evaluator

- On Your Campus
- Colleagues
- Professional Organizations
- Independent Consultants
- NSF Projects
Example Tool: Logic Model

What new and existing resources will be used to support the project?

What are the main things the project will do/provide?

How many and what sort of tangible results will be achieved? (typically, things that can be counted or directly observed)

What will occur as a direct result of the activities and outputs? (typically, changes in knowledge, skills, attitudes)

What results should follow from the initial outcomes? (typically, changes in behavior, policies, practice)

What results should follow from the initial outcomes? (typically, changes in broader conditions)
Perspectives on Project Evaluation

• Evaluation is **complicated** and involved
  – It’s not an end-of-project “add-on”

• Evaluation requires **expertise**

• Get an evaluator involved **early**
  – In conceptualizing the project
  – In proposal writing

**Question:** Internal or External Evaluator?
Mock Review Process

- Read the project evaluation plan.
- Note strengths and weaknesses relative to:
  - Formative and summative components
  - Evaluator
  - Anticipated outcomes
  - Instruments
  - Data analysis
  - Controls
- Consider content and clarity.
Budget Considerations (Budget ‘No-Nos’)

[Word cloud image]
Participant Support

PARTICIPANT SUPPORT COSTS – DEFINITIONS

 Uniform Guidance

Direct costs for items such as stipends or subsistence allowances, travel allowances, and registration fees paid to or on behalf of participants or trainees (but not employees) in connection with conferences or training projects.

 NSF – See PAPPG for entire definition

Direct costs for items such as stipends or subsistence allowances, travel allowances, and registration fees paid to or on behalf of participants or trainees (but not employees) in connection with NSF-sponsored conferences or training projects. Any additional categories of participant support costs other than those described in 2 CFR § 200.75 (such as incentives, gifts, souvenirs, t-shirts and memorabilia), must be justified in the budget justification, and such costs will be closely scrutinized by NSF. (See also GPG Chapter II.D.9) For some educational projects conducted at local school districts, however, the participants being trained are employees. In such cases, the costs must be classified as participant support if payment is made through a stipend or training allowance method. The school district must have an accounting mechanism in place (i.e., sub-account code) to differentiate between regular salary and stipend payments.
It’s important to note, some costs can be accounted for on multiple budget lines.

- **Line F.1 – Stipends**: To help defray the costs of participating in a conference or training activity, funds may be proposed for payment of stipends, per diem or subsistence allowances, based on the type and duration of the activity. Such allowances must be reasonable, in conformance with the policy of the proposing organization and limited to the days of attendance at the conference plus the actual travel time required to reach the conference location.

- **Line F.2 – Travel**: Funds may be requested for the travel costs of participants.

- **Field Trips**: When the purpose of the field trip is directly related to and necessary to meet the objectives of the training activity, costs of transportation for participants can be allowable.
Incentive Payments

Incentives such as gift cards, souvenirs, t-shirts and/or other memorabilia are not typically considered allowable costs, however, when necessary to accomplish program objectives, and if reasonable in amount, these costs could be allowable. When it's unclear, you can ask the institution for additional information, such as:

- What leads you to believe that participation is unlikely without the use of an incentive?
- What is the estimated impact without the use of an incentive?
- How will incentives be distributed and tracked?
- What is the justification for the amount to be considered?
Unallowable Costs

**THESE COSTS ARE UNALLOWABLE!!**

**Entertainment:** Costs of entertainment, amusement, diversion and social activities, and any costs directly associated with such activities (such as tickets to shows or sporting events, meals, lodging, rentals, transportation and gratuities) are unallowable.

**Intramural Meetings:** No funds may be requested for meals or coffee breaks for intramural meetings of an organization or any of its components, including, but not limited to, laboratories, departments and centers.
Unallowable Costs

THESE COSTS ARE UNALLOWABLE!!

**Alcoholic Beverages:** NSF funds may not be proposed or spent on alcoholic beverages

**Recognition Awards:** Payments given for the purpose of conferring distinction or to symbolize respect, esteem, or admiration may not be paid from grant funds.

**Prizes:** Prizes are unallowable costs on grants.
Subaward Issues

- No budget attached
- Incorrect or no indirect rate applied
- No Policies and procedures
Indirect Costs

- Explain any exclusions from your base

- Use 10% modified total direct cost if grantee does not have a federally negotiated rate
Helpful Hints

- Adhere to your federally negotiated rate. Using any rate less than or more than any rate is unallowable and deemed involuntary cost sharing which is prohibited by NSF.
- Use 10% de minimus rate including subawards if you do not have a current federally negotiated indirect cost.
- State if your institution has a current federally negotiated rate and the cognizant federal agency in budget justification.
- Participant support costs are excluded from your indirect cost rate base allocation.
- Provide a detailed budget justification along with your budget prepared by line item.
Helpful Hints (cont.)

- Include tuition remission amounts for all years in budget justification.
- Do not mingle travel funds between PIs and participant support trainees.
- Participants support costs should be students/teachers. Employees of an institution are not participants except for school districts.
- Place all related participant support costs in designated participant cost categories unless otherwise stated in solicitation.
- IRB approval or exemption must be completed by prior to receiving a NSF award regardless of project affected.
Important Resources
Useful Resources: NSF Policies

PROPOSAL AND AWARD POLICIES AND PROCEDURES GUIDE

PAPPG
NSF 17-1
Useful Resources: Evaluation

The 2010 User-Friendly Handbook for Project Evaluation

DESCRIBING & MEASURING UNDERGRADUATE STEM TEACHING PRACTICES

A Report from a National Meeting on the Measurement of Undergraduate Science, Technology, Engineering and Mathematics (STEM) Teaching
17-19 December 2013
Useful Resource: Education Research

Common Guidelines for Education Research and Development

A Report from the Institute of Education Sciences, U.S. Department of Education and the National Science Foundation
August 2013

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Thank you!

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