

# How to get NSF funding: a view from the “inside”

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# NSF Organizational Structure

- Discipline-based Directorates (7)
  - Biological Sciences
  - Computer & Information Sciences & Engineering
  - Education & Human Resources
  - Engineering
  - Geosciences
  - Mathematical & Physical Sciences
  - Social, Behavioral & Economic Sciences
- Divisions within each Directorate
  - Sections
    - Programs within Sections
    - **Program Directors (permanent & IPAs)**



# Working with your Program Director

- What is the proper etiquette for dealing with program officers?
  - Funding decisions are based on many factors, but **not** on personal relationships with program directors
  - Program Officers should be treated as you would a respected colleague
  - They are very busy: contact them only when necessary (check the agency web site first) and in a way that allows for an efficient reply (email is preferred)
  - Do not contact them when you are upset (following a declination)



- Program directors are available to you for advice and appointments (conference booths, visits to NSF)
  - Do your homework before you meet with program officers, prepare specific questions
  - Program officers can help you find out about other programs and make contacts across the Foundation
- Program officers are your contacts for becoming a reviewer and panelist



# Proposal Preparation

## NSF Resources

- Grant Proposal Guide (GPG)  
[www.nsf.gov/pubsys/ods/getpub.cfm?gpg](http://www.nsf.gov/pubsys/ods/getpub.cfm?gpg)
- NSF publication on broader impacts  
<http://www.nsf.gov/pubs/gpg/broaderimpacts.pdf>.
- NSF HomePage -- Guide to Programs  
Program Announcements – eligibility, goals, special requirements
- Announcements – eligibility, goals, special requirements



# Types of NSF proposals

- Program Solicitations/Announcements
- Cross-Directorate Programs (CAREER)
- Unsolicited proposals
- SGERs (small Grants for Exploratory Research; <\$200,000 for 2 yrs)
- Supplements (including REU, RET)

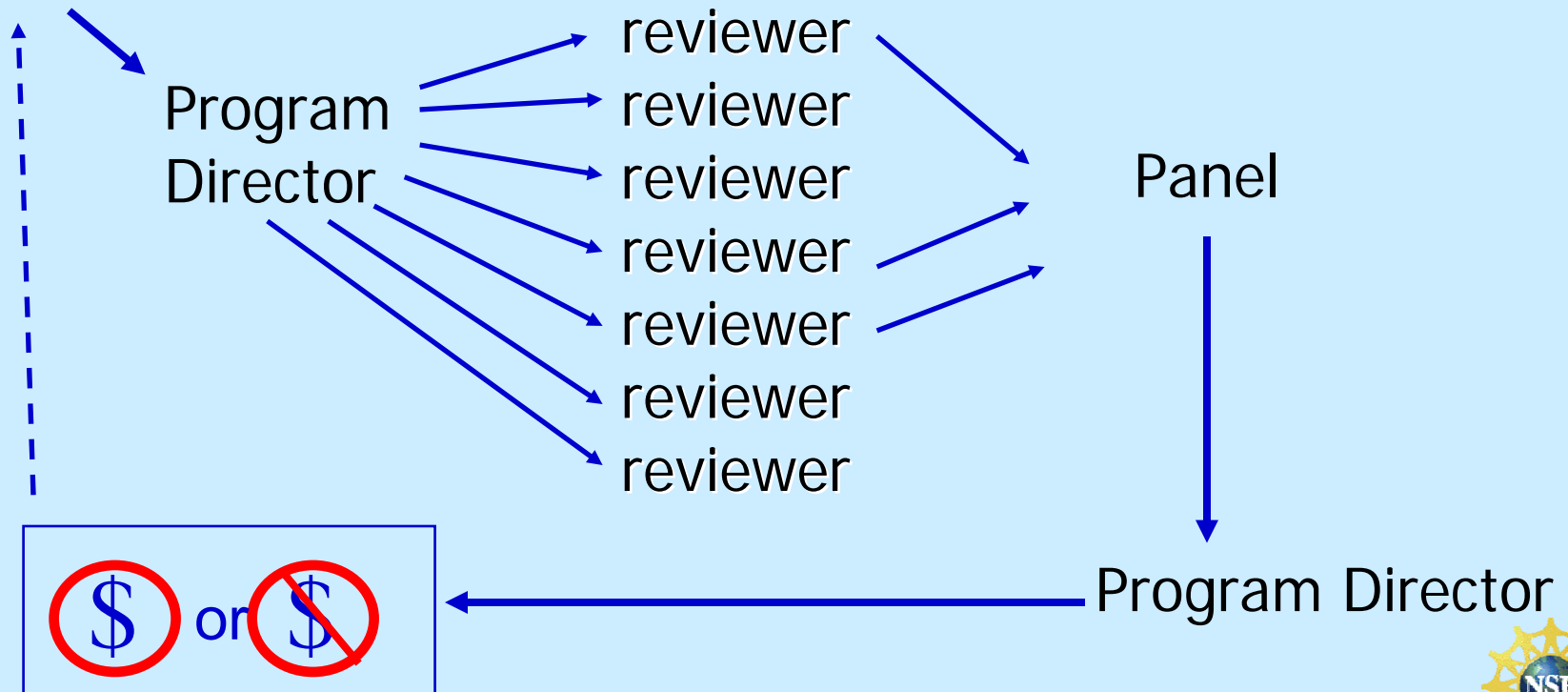


# Review Process Overview

Four possible layers of review

Two distinct audiences – technical and general

You



# General characteristics of people making decisions on your proposal

## Program director

Generalist in your field  
Busy  
Looks at all proposals  
Runs merit review  
Helpful, can be cranky  
Wears reading glasses  
Counsels PIs

## Reviewer

Technical expert in the field  
Very busy  
Reads one proposal in detail  
Wants to be doing anything else  
Often helpful, can be grumpy  
Has eyestrain

## Panelist

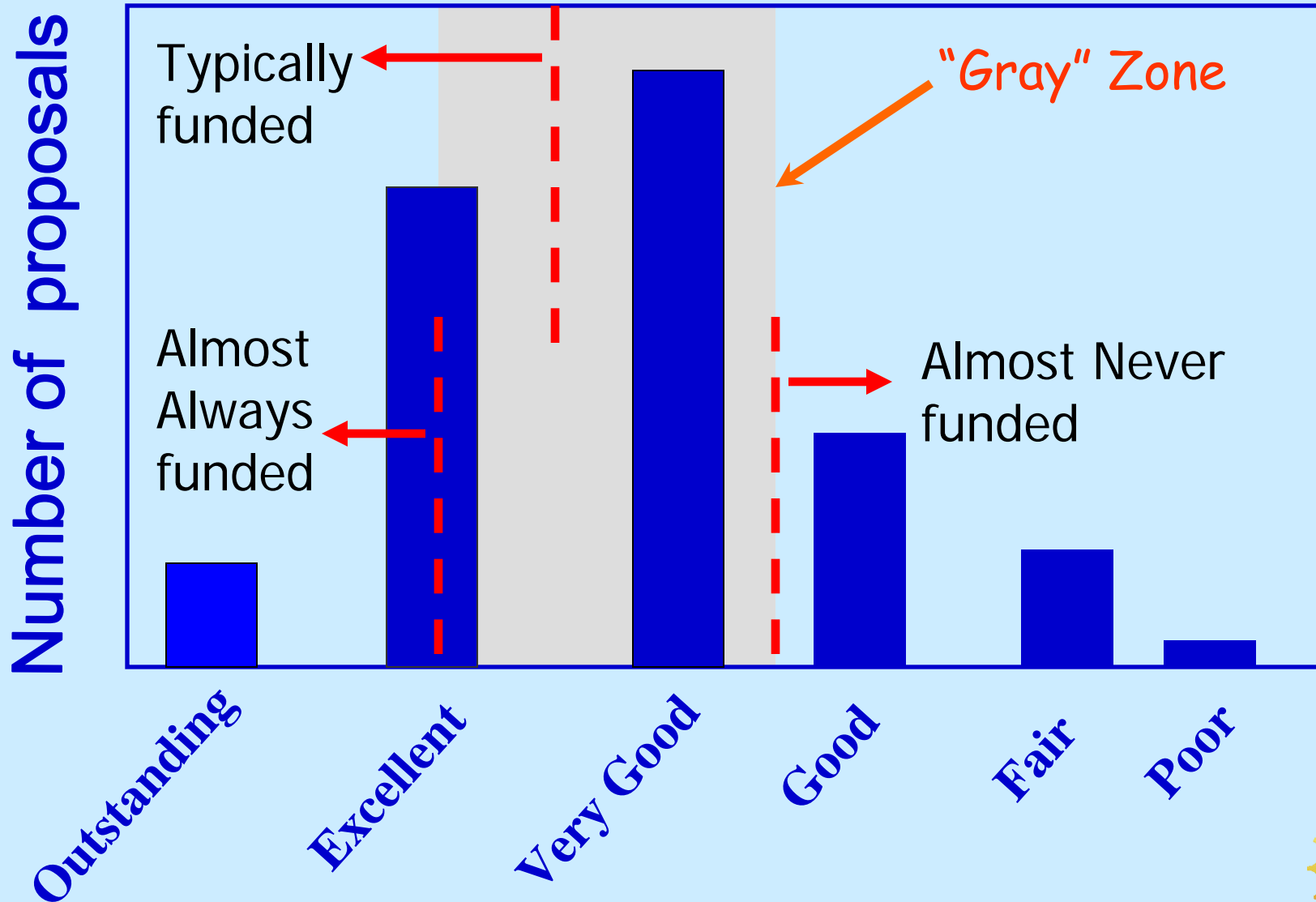
Broad Expertise  
Very, very busy  
Has glasses & eyestrain

Reads many proposals (~50)  
Compares and ranks proposals  
Just wants to be done





# Who Gets Funded



# Common Reasons for High Ratings

- “This proposal suggests a clear, elegant, well-documented approach to a problem that has plagued this field for decades.”
- “The PI has a beautiful plan. Undergraduates or new graduate students can step right into this work, yet it solves a major problem and will be publishable in a first-rate journal.”
- “This is certainly adventurous, and I frankly would have doubted it could be done. Yet the PI has proven the method in preliminary work *AND* had it accepted by a peer-reviewed journal!”
- “This reads like a dream. I have rarely seen a proposal, even from long-established investigators, that shows such careful thought and meticulous presentation.”



# Common Reasons for Low Ratings

- No well defined hypotheses or tests of same. Lack of focus. “Why all the rambling, this seems like a fishing expedition.”
- Extraneous aspects or PIs. “What does that component/co-PI have to do with the central focus of the proposal?”
- Important information on experimental and sampling procedures is omitted. “I really can’t tell what is going to be done and how.”
- The work can certainly be carried out, but it doesn’t address any topic of broad current interest. “I would probably not read a paper describing the results.”
- Scope of the work is out of proportion to the budget and amount of time needed to do the work.



# How to Interpret a Review

## Everyone Gets Bad Reviews!

Reasons:

1. Flaw in idea, logic, or approach
2. Written in a way that allows that criticism
3. Reviewer is wrong

*(if a reason is noted by more than one reviewer, you've got a problem)*

## Strategy:

Read review

Blow off steam *(in private, not to the program director)*

Think about what the reviewer is REALLY saying

Read again, annotate trouble spots in proposal

Now read the proposal pretending this is someone else's proposal



# What makes a proposal competitive?

- Original ideas
- Succinct, focused project plan
- Cost effective
- Knowledge and experience in the discipline
- Experience in essential methodology
- Realistic amount of work
- Sufficient detail
- Strong rationale or evidence of potential effectiveness



# Tips for Writing Competitive Proposals

- Discuss size and scope of intellectual payoff
- Use plain, simple English
- Let no question fester
- Do not include extra stuff
- Put specifics in the Methods section
- Use tables, figures, and flow charts to save words
- Make it visually appealing (i.e. do not make reviewers curse you for making their job harder)
- Include sufficient budget justification
- Think of your proposal as the 40th in a stack



# Preparing the Proposal:

- Start Early (3-6 months before deadline)!
- Review NSF Award Abstracts (Fastlane)
- Talk to your NSF Program Director
- Talk to your colleagues; have experienced colleagues review a draft and comment
- Recruit and describe university infrastructure support for your proposed project
- Address the merit review criteria
- Compliance checks (GPG)



# Give careful consideration

- Two NSF Merit Review Criteria
- Integration of Research and Education
- Integration of Diversity into projects and activities
- Additional program-specific Review Criteria (listed in the program announcement)
- Suggest reviewers from institutions like WWU (RUI)





# General NSF Review Criteria

- What is the **intellectual merit** of the proposed activity?
- What are the **broader impacts** of the proposed activity?
- **Additional criteria** may be listed in the solicitation/announcement of opportunity



# Intellectual Merit – 5 strands

- 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 to conduct the project?
- To what extent does the proposed activity explore **creative and original concepts**?
- How **well conceived and organized** is the proposed activity?
- Is there sufficient **access to necessary resources**?



# NSF Broader Impacts activities – 5 strands

- 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**?
- To what extent will it **enhance the infrastructure for research and education**, such as facilities, instrumentation, networks and partnerships?



# Broader Impacts

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

Examples and further information provided at:

<http://www.nsf.gov/pubs/2002/nsf022/biexamples.pdf>



## Broader Impacts activities.....

- Justify your reason for getting the money
- Address the funding agency's mission
- Tell Congress and the general public why they should care
- Allow programs to pick your proposal over others



# How to integrate research and education?

- WWU is RUI-classified (Research in Undergraduate Institution): RUI statement is important in the review process
- **Build** these efforts into your research plan (Broader Impacts criterion)
- **Target** specific NSF programs in your discipline and in Education and Human Resources (EHR)
  - Division of Undergraduate Education (DUE, eg CCLI)
  - Division of Graduate Education (DGE)
  - Division of Elementary, Secondary and Informal Science Education (ESIE)



# Support in proposal preparation

- **Talk to NSF Program Officers**
- **Serve as reviewer and panelist**
- **Review funded proposals**
- **Seek mentors on campus**
- **Use your Sponsored Research Office**

## **NSF Publications**

- ✓ Program Announcements
- ✓ Grant Proposal Guide
- ✓ Web Pages
- ✓ Funded Project Abstracts
- ✓ Reports, Special Publications

