# National Science Foundation

## RESEARCH INFRASTRUCTURE:

- **Major Research Instrumentation (MRI)**
- **Mid-scale Research Infrastructure (Mid-scale RI)**

## NSF Grants Conference
## Los Angeles, CA

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# MRI
# Major Research Instrumentation

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# *The Solicitation for the FY 2018 and FY 2019 MRI Competitions (NSF 18-513) had Some Significant Changes wrt Previous Years*

- *Discussions for FY 2020* Competition Underway*
- *Stay tuned*

**Subject to change*

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# *Submission Window*

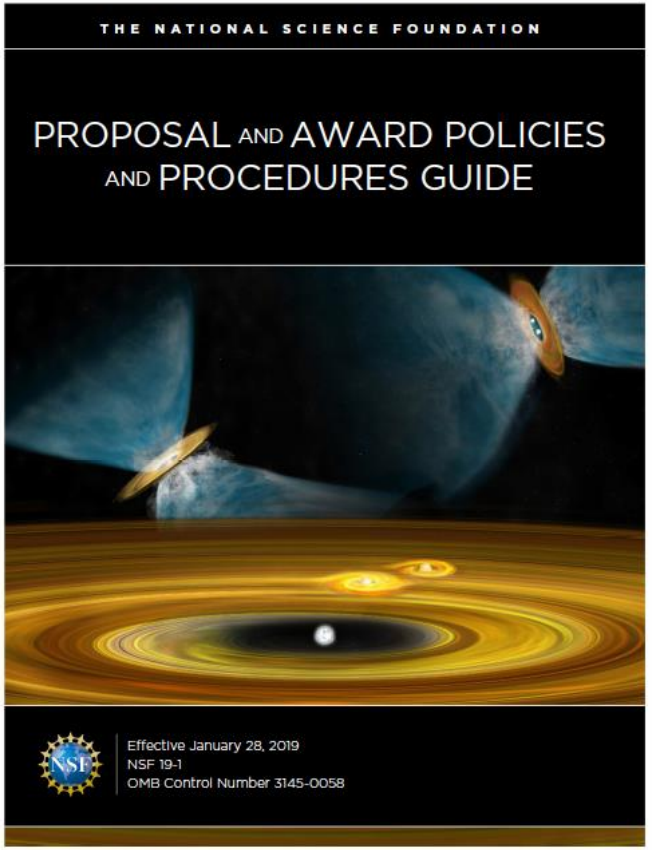
***A designated period of time during which proposals will only be accepted for review by NSF. It is NSF's policy that the end date of a submission window converts to, and is subject to, the same policies as a deadline date.***

# *Submission window for FY 2019 MRI proposals was January 01 – January 22, 2019*

- *PAPPG 18-1 applied*
- *During "lapse in appropriation"*
- *FY 2020: TBD*

*→ 01/01/20-01/21/20 (?)*

- *PAPPG 19-1 (?)*

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# Major Research Instrumentation

## Effective Beginning with FY 2018 Solicitation:

### *1. Submission Criteria*

***The number of MRI proposal submissions allowed per institution continues to be a maximum of three, but is now based on the dollar value of the NSF request.***

- ***No more than two submissions are permitted in a newly-defined Track 1 (proposals requesting from NSF $100,000[1] to less than $1 million)***
- ***No more than one submission is permitted in a newly defined Track 2 (proposals requesting from NSF $1 million up to and including $4 million).***

***Proposal submissions within the two tracks may be either for acquisition or development of a research instrument.*** (NSF seeks to support development proposals in numbers (i.e., 20-25% of awards) consistent with past competitions, depending on the numbers and quality of the proposals).

[1] Track 1 proposals may request less than $100,000 only from non-Ph.D.-granting institutions of higher education, or for the disciplines of mathematics or social, behavioral and economic sciences from any institution.

# MRI: Classification of Organizations

- **Ph.D. granting institutions of higher education** are accredited colleges and universities that have awarded more than 20 Ph.D.s or D.Sci.s in all NSF-supported fields during the combined previous two academic years. Additionally, any organization that awards Ph.D. or D.Sci. in NSF-supported fields is considered to be a Ph.D.-granting institution if the only degrees it awards in NSF-supported fields are post-Bachelor's degrees. → ***Cost sharing at 30% of total project cost required.***

- **Non-Ph.D. granting institutions of higher education** are accredited colleges and universities(including two-year community colleges) that award Associate's degrees, Bachelor's degrees, and/or Master's degrees in NSF-supported fields, but have awarded 20 or fewer Ph.D./D.Sci. degrees in all NSF-supported fields during the combined previous two academic years.

- **Non-degree granting organizations** are those that do not award Associate's degrees, Bachelor's degrees, Master's degrees, and/or Ph.D.s or D.Sci.s. Non-degree-granting organizations also include institutions of higher education that award all of their degrees outside of NSF-supported fields.
  → ***Cost sharing at 30% of total project cost required.***

http://www.nsf.gov/od/oia/programs/mri/

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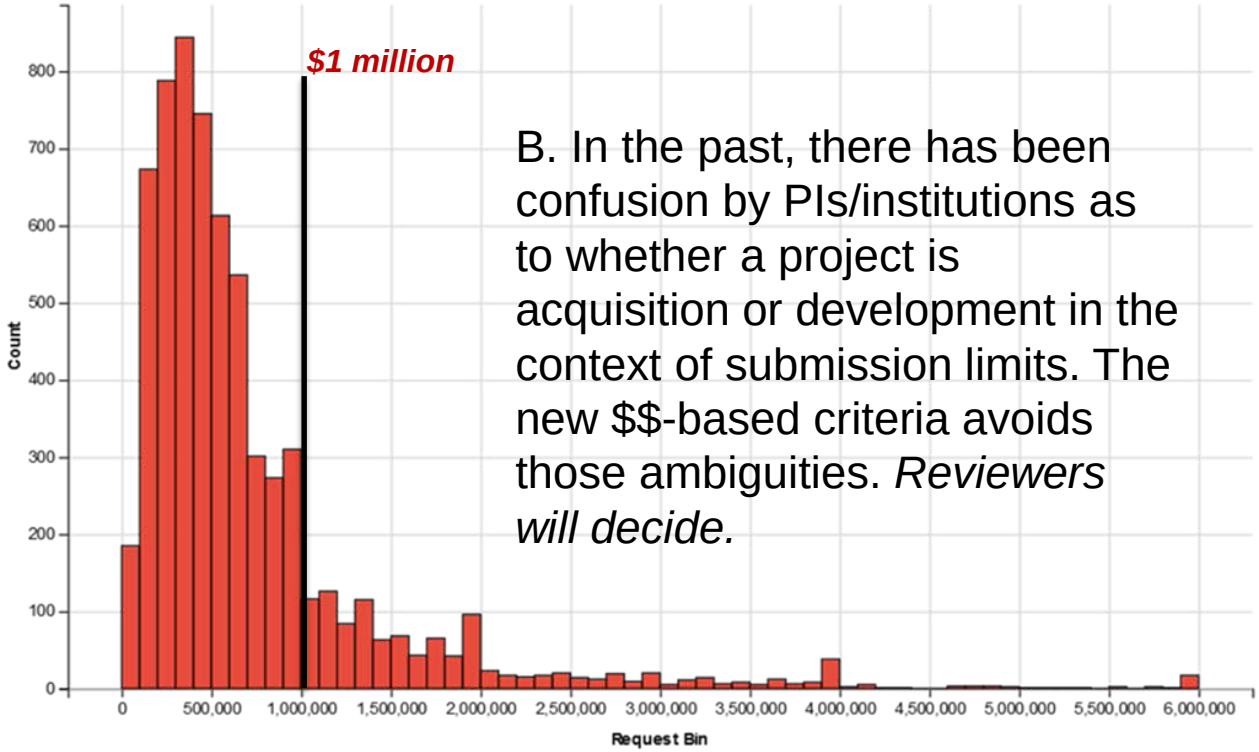
# Major Research Instrumentation

## Why these new submission criteria?

A. Submission limits based on $-value of request is a “clean” way to limit submissions:

- 85% of proposals requested under $1M for 2010-2015
- 90% of proposals requested under $1.3M for 2010-2015




**# Proposal Submissions by $ requested, FY 2010-FY2015**

B. In the past, there has been confusion by PIs/institutions as to whether a project is acquisition or development in the context of submission limits. The new $$-based criteria avoids those ambiguities. *Reviewers will decide.*

# *Instrument Development*

- *NSF seeks to support MRI awards that develop next-generation research instruments that open new frontiers of research.*
- *Up to 1/3 of the MRI awards are expected to support instrument development in either track.*
- *Within their submission limit, organizations are encouraged to submit proposals for innovative development projects. See solicitation guidance.*

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# Major Research Instrumentation

## *Reminder*

### *2. Women/Underrepresented Minority PI Representation*

- Emphasis in the solicitation has been provided indicating that the "*MRI Program seeks broad representation by PIs in its award portfolio, including* ***women***, ***underrepresented minorities*** *and* ***persons with disabilities****. Since demographic diversity may be greater among early-career researchers, the MRI program also encourages proposals with* ***early-career PIs.****" (*Also part of the MRI-specific Review Criteria.)

# Major Research Instrumentation

## *Reminder*

### *Clarification on Supported Cyber Instruments:*

- Statements have been added to emphasize that an MRI research instrument need not be physically located in a conventional laboratory setting, nor does an instrument need to be physical at all. MRI continues to support distributed/networked instruments and cyberinstrumentation that is *not appropriate for support through other NSF programs*.

# MRI Part II
# The Review Process

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# Major Research Instrumentation
## Strategic Goals

Supports the ***acquisition*** or ***development*** of a *major research instrument* that is, in general, too costly or not appropriate for support through other NSF programs. The instrument is expected to be operational for regular research use by the end of the award period.

- Supports the ***acquisition*** of a shared, major, state-of-the-art instrument, thereby improving access to, and increased use of, a modern research instrument by scientists, engineers and students;

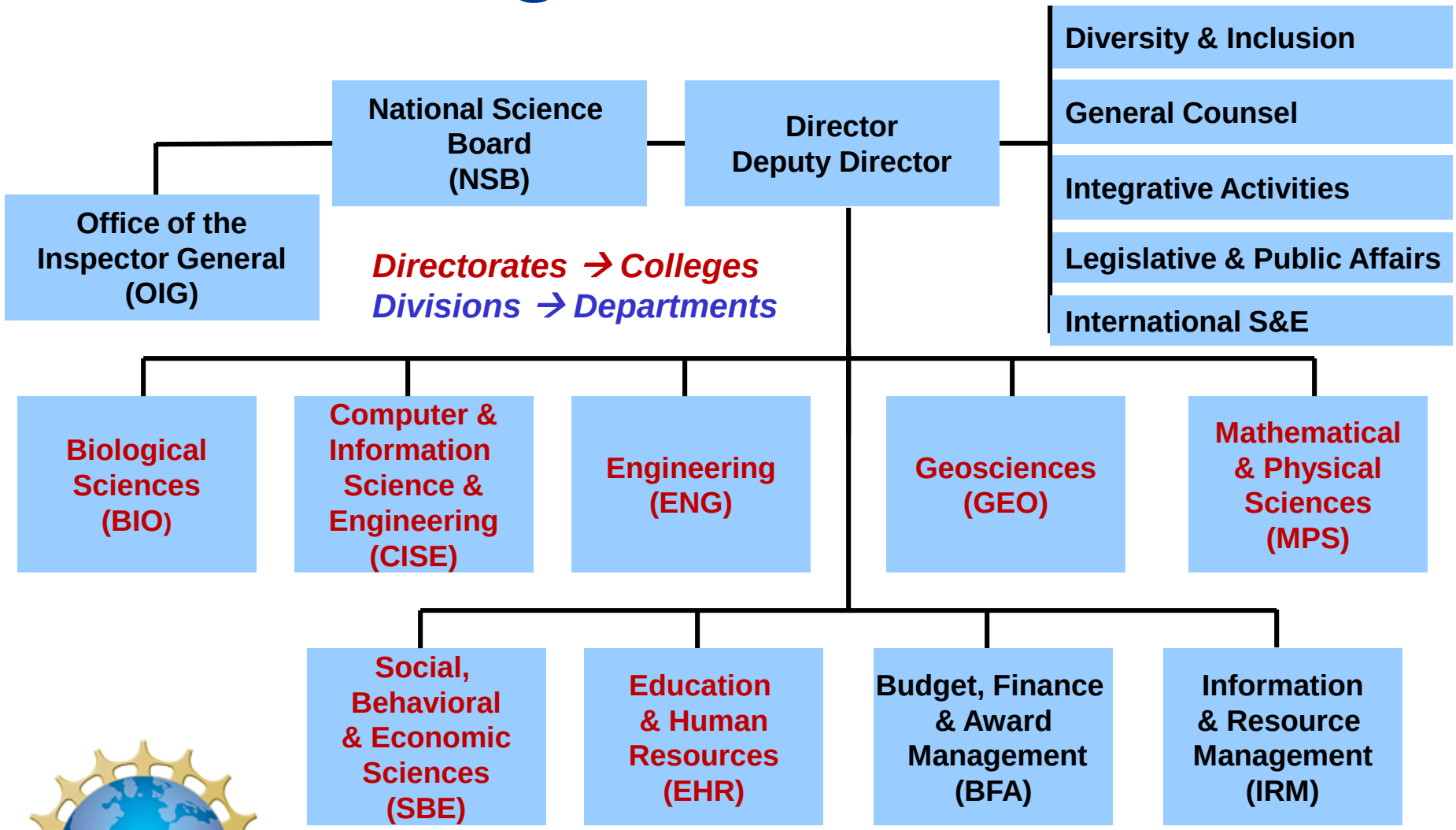
**OR**

- Supports the ***development*** of the next generation of major instrumentation, resulting in a new type of instrument that is more widely used, and/or opens up new areas of research and research training;

**AND**

- Enables academic departments, disciplinary & cross-disciplinary units, and multi-organization collaborations to integrate research with ***research training***.

# Finding a Home at NSF

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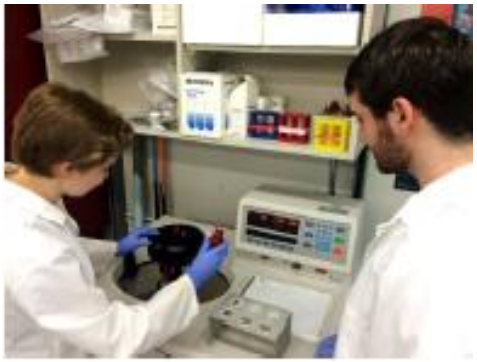
# Proposal Review and Award:

- Proposals reviewed in division(s) selected (largely) by PI. May be co-reviewed.
- Divisions recommend awards (OIA concurrence) and declines.
- MRI funding formula:
  - Initial funds allocated to divisions based on proportion of total MRI $$ a division is reviewing. → *comparable success rate by divisions.*
    - Division funds further parsed by percentage of proposals from a) non-PhD/MSIs and b) PhD/non-degree → *comparable success rate by institution-type.*
  - Some funds reserved for >$1 million meritorious Directorate-level priorities → *all Directorates have opportunity to make large (Track 2) awards.*
  - A reserve is held for portfolio balance.

# MRI Part III:
# Proposal "Best" Practices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# *Understand NSF Before Considering a Proposal!*

- **Know the NSF Website (www.nsf.gov)**
- **Search Recent Awards (www.nsf.gov/awardsearch)**
- **Identify appropriate funding opportunities (www.nsf.gov/funding)**
- **Talk to Program Officers in Divisions where you fit**
- **Know the "Proposal and Award Policies and Procedures Guide" (http://www.nsf.gov/publications/pub_summ.jsp?ods_key=papp)**
- **Know program purpose, goals, and requirements**
- **Serve as a panelist!**
- **Talk to successful PIs**
- **Know NSF's role compared to other Federal agencies**

# MRI Proposals

## *So what makes an MRI proposal competitive?*

***Note the term "competitive", rather than "successful"!***

***Due (in part) to budget limitations, 20-25% of submitted proposals are funded***

***Good proposals may not get funded***

# MRI Proposals

## *Think like a reviewer*

- *What "story" would you want to hear?* ***Science drives the request!***
- *If you wonder if reviewers will have a concern, almost certainly they will!*
- *MRI, like other grants programs, is a competition – what makes your proposal stand out?*

# MRI Proposals

## *So what makes an MRI proposal competitive?*

Build your case on its merits

What is the intellectual merit of the proposed activity?

What are the broader impacts of the proposed activity?

• Describe (enthusiastically) compelling research / research training activities to be undertaken with the instrument. *Buy/Build it and they will come is not a good reason…*

• Demonstrate how your activities will make meaningful contributions within and across disciplines in both research and research training. *We are the ones best able/positioned to do this work!*

- Establishing a *need* is usually not enough. *What makes you unique?*

• Match your proposed effort to the mission of your institution and describe it in that context. *MRI awards build institutional capacity…*

# MRI Proposals

## *Some Additional Thoughts…*

• Demonstrate appropriate leadership and commitment to bring the project to completion. *Being a good research scientist is one thing, being a good manager is quite another…*

• How would the project enable the integration of research and education? *MRI is a Research and Research Training program.*

• How would the project enable integrating diversity into NSF programs, projects, and activities? *Saying it will is not enough!*

• Ask for what you need, no more no less. *Bells and whistles are nice, but..*

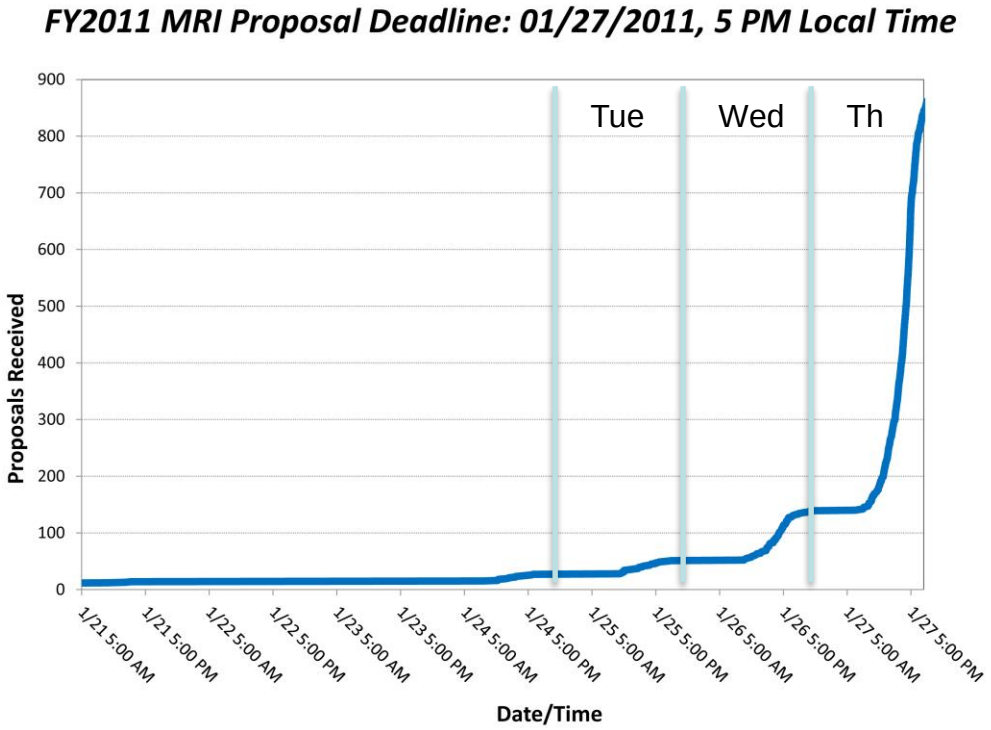
• Avoiding pitfalls (*i.e.,*"Don't Do This") will not guarantee a competitive proposal. *So your proposal is technically flawless but is it compelling?*

*There is a vast range of possible approaches, strategies, and designs for your proposal.*

# Important Takeaway

***Submit early and check that what was <u>received</u> at NSF is what you intended to submit!***

***You can always revise and resubmit proposals prior to the deadline, but not afterwards!***



# MSRI
## Mid-scale Research Infrastructure

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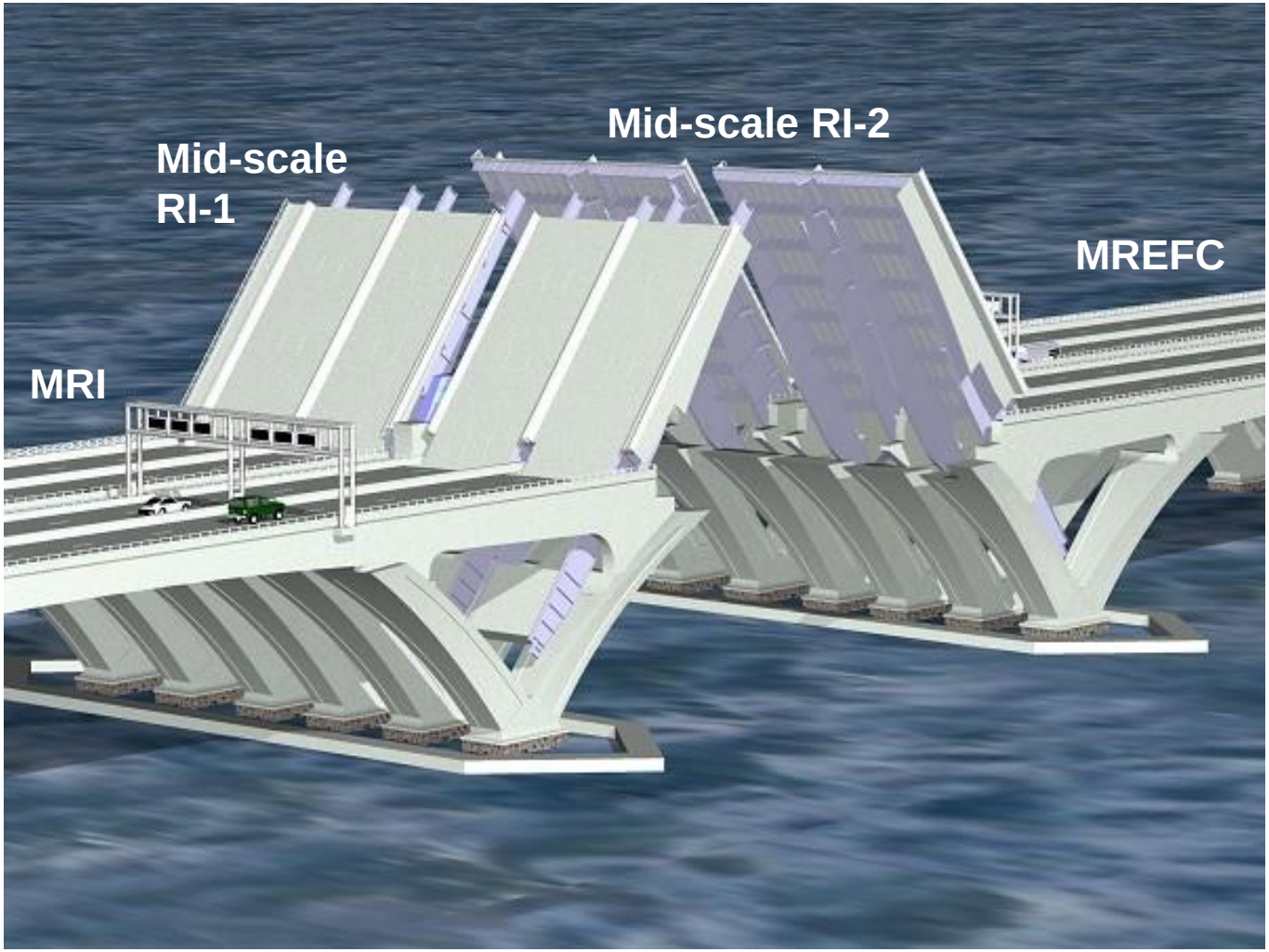
# *Big Idea:*
# *Mid-scale Research Infrastructure*


- Many important potential experiments and facilities fall between the $100K to $4M[1] Major Research Instrumentation (MRI) program and the > $70M Major Research Equipment and Facilities Construction (MREFC) account.
- This gap results in missed opportunities that may leave essential science undone.
- NSF needs a new agile process for funding experimental research capabilities in the mid-scale range.

[1]$5.7 million with the addition of Congressionally mandated cost sharing

# *Mid-Scale Research Infrastructure (Mid-scale RI)*

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# *Big Idea*
# *Mid-scale Research Infrastructure*

- Mid-scale RI is an NSF Big Idea to address the growing needs for RI to advance research.
- NSF-wide program will support projects in the MRI – MREFC gap ($6 to $70 million range).
- RI is broadly defined, from disciplinary instrumentation to mid-scale facilities, upgrades, cyberinfrastructure, and others.
- NSF published **two solicitations (Mid-scale RI-1: NSF 19-537 and Mid-scale RI-2: NSF 19-542)** for projects between $6M[1] and <$20M and for $20 - $70 million.
- Requirements: Strong scientific merit & ***responsive to identified community need***; technical and management readiness; and plan for training and workforce diversity.

1. $600K for Design of Mid-scale and larger projects.


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https://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf19013

# Thank You!

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