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Outline

- Overview of NSF
- Overview of Division of Civil, Mechanical and Manufacturing Innovation (CMMI) and its Programs
- Proposal Preparation
- Merit Review Process

**National Science Foundation
Alexandria, Virginia
At Eisenhower Metro stop (yellow line)
<https://www.nsf.gov>**



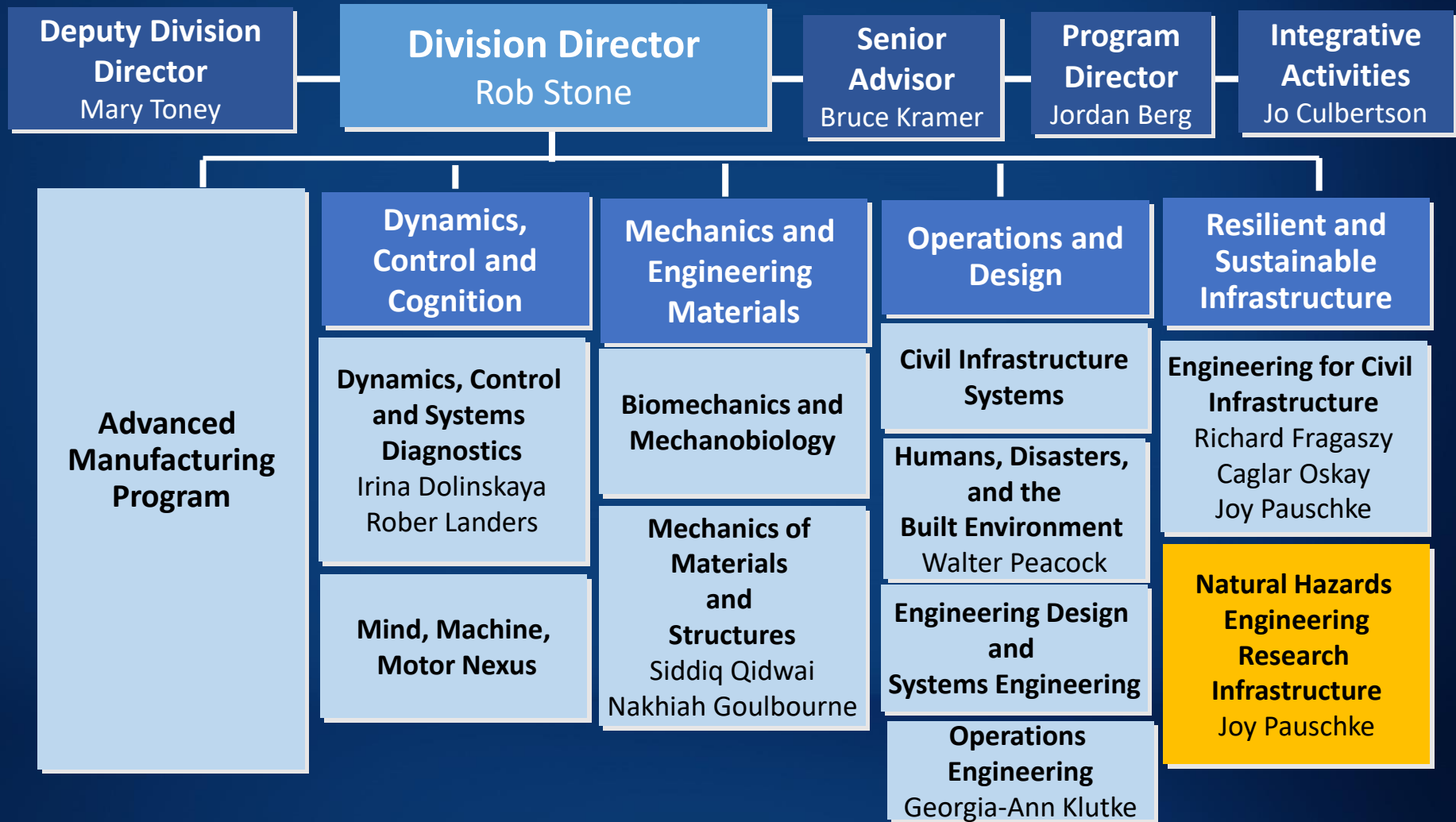
NSF Information Databases

NSF's information sharing mechanism is its website <https://www.nsf.gov> and its public, searchable databases about its awards and its awardee-submitted project outcomes:

- NSF Award Abstracts <https://www.nsf.gov/awardsearch/>
- NSF Public Access Repository (NSF-PAR) <https://par.nsf.gov/>
- NSF Research Spending and Results, including Project Outcomes Reports: <https://www.research.gov/research-portal/appmanager/base/desktop?nfpb=true&eventName=viewQuickSearchFormEvent> so [rsr](#)



NSF CMMI Division - CORE Research Programs (in blue)



Leading Engineering for American Prosperity, Health, and Infrastructure

Bruce Kramer



ENG Divisions remove deadlines for Core Programs

New, unsolicited proposals may be submitted at any time.

- Change effective August 15, 2018 for CBET, CMMI, ECCS, & EEC Divisions.
- Core Programs only. Solicitations & CAREER still have deadlines.
- Investigators have one-year moratorium on resubmitting a substantively revised version of a declined proposal.
- NSF can take up to six months to process a proposal/reach decision.

Dear Colleagues Letters on Removal of Deadlines for Core Programs
in the Directorate for Engineering and FAQ

<https://www.nsf.gov/pubs/2018/nsf18082/nsf18082.jsp>

<https://www.nsf.gov/pubs/2018/nsf18083/nsf18083.jsp>



Engineering for Civil Infrastructure (ECI) (core)

- Advances knowledge and methodologies within geotechnical, structural, architectural, materials, coastal, and construction engineering
- Focuses on
 - Physical infrastructure, such as the soil-foundation-structure-envelope-nonstructural building as a system; geotechnical structures; underground facilities; adaptive building envelope systems; nonconventional building materials; breakthroughs in remediated geological materials; and transformational construction processes
 - “Normal” operating conditions; intermediate stress conditions (such as deterioration, and severe locational and climate conditions); and extreme single or multi natural hazard events (including earthquakes, windstorms, tsunamis, storm surges, sinkholes, subsidence, and landslides)
- Encourages use of NHERI resources - <https://www.designsafe-ci.org>



Natural Hazards Engineering Research Infrastructure (NHERI)



Slide courtesy of Julio Ramirez,
Purdue University

Research not Supported by ECI

- Research part of mission agency responsibilities:
 - Nuclear power plants
 - Energy-related infrastructures (e.g., wind farms; offshore drilling platforms; power and transmission lines, including towers)
 - Transportation infrastructure (e.g., bridges, roadways, pavements, waterways)
- Hazard characterization for and hazard mitigation of impact of explosions, fire, blast loading, flooding, and solar wind and storms
- Sensor and measurement technologies, e.g., advancing imaging techniques and diagnostics, remote sensing techniques
- Field instrumentation and monitoring
- Induced seismicity
- Construction safety and management
- Hazard characterization



NSF 20-525 Early Faculty Career Development Program (CAREER)

- Foundation-wide activity that offers NSF's most prestigious awards for faculty members beginning their independent careers
- Provides stable support at a sufficient level and duration to enable awardees to develop careers as outstanding researchers and educators who effectively integrate teaching, learning, and discovery
- High priority for Engineering
 - ENG minimum award size now \$500,000 for five years
 - See solicitation for annual July due date

***The CAREER award is not just a research award,
it is a career development award***



NSF 19-1 (NSF 20-1) PAPPG

Proposal and Award Policies and Procedures Guide

https://www.nsf.gov/pubs/policydocs/pappg19_1/nsf19_1.pdf

- NSF updates PAPPG annually ~January (NSF-wide document)
NSF 18-1, NSF 19-1, NSF 20-1, etc.
Must use version in effect at time of proposal submission
- Used for submission of unsolicited proposals; solicitations may have additional proposal preparation, review criteria, and post-award requirements
- Table of contents
 - PART I: PROPOSAL PREPARATION AND SUBMISSION GUIDELINES
 - Chapter II: Proposal Preparation Instructions
 - PART II: AWARD, ADMINISTRATION AND MONITORING OF GRANTS AND COOPERATIVE AGREEMENTS



NSB Report on Merit Review Criteria: Two Review Criteria (see PAPPG)

When evaluating NSF proposals, reviewers should consider

- what the proposers want to do,
- why they want to do it,
- how they plan to do it,
- how they will know if they succeed, and
- what benefits would accrue if the project is successful.

These issues apply both to the technical aspects of the proposal and the way in which the project may make broader contributions. To that end, reviewers are asked to evaluate all proposals against two criteria:

- **Intellectual Merit**: The intellectual Merit criterion encompasses the potential to advance knowledge; and
- **Broader Impacts**: The Broader Impacts criterion encompasses the potential to benefit society and contribute to the achievement of specific, desired societal outcomes.



NSB Report on Merit Review Criteria: Five Review Elements

Consider five elements for each criterion: **Intellectual Merit and Broader Impacts:**

1. What is the potential for the proposed activity to:
 - a. advance knowledge and understanding within its own field or across different fields (Intellectual Merit); and
 - b. benefit society or advance 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? Does the plan incorporate a mechanism to assess success?
4. How well qualified is the individual, team, or institution to conduct the proposed activities?
5. Are there adequate resources available to the PI (either at the home institution or through collaborations) to carry out the proposed activities?





National Science Foundation

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NSF, Directorate for Engineering, Division of Civil, Mechanical and Manufacturing Innovation

<https://www.nsf.gov/div/index.jsp?div=CMMI>

