NSF Directorate for Engineering

Engineering Research Visioning Alliance (ERVA): Future Research Directions for the Engineering Research Community

INFORMATIONAL WEBINAR

APRIL 22ND, 2020

AGENDA: April 22nd, 2020

1:00 pm	Welcome from Dawn Tilbury, Assistant Director, NSF/ENG
1:10 pm	Overview of ERVA Program Solicitation
1:45 pm	Questions

NSF/ENG personnel

Office of the Assistant Director

- Dawn Tilbury, *Assistant Director, NSF Directorate for Engineering*
- Linda Blevins, *Deputy Assistant Director, NSF Directorate for Engineering*

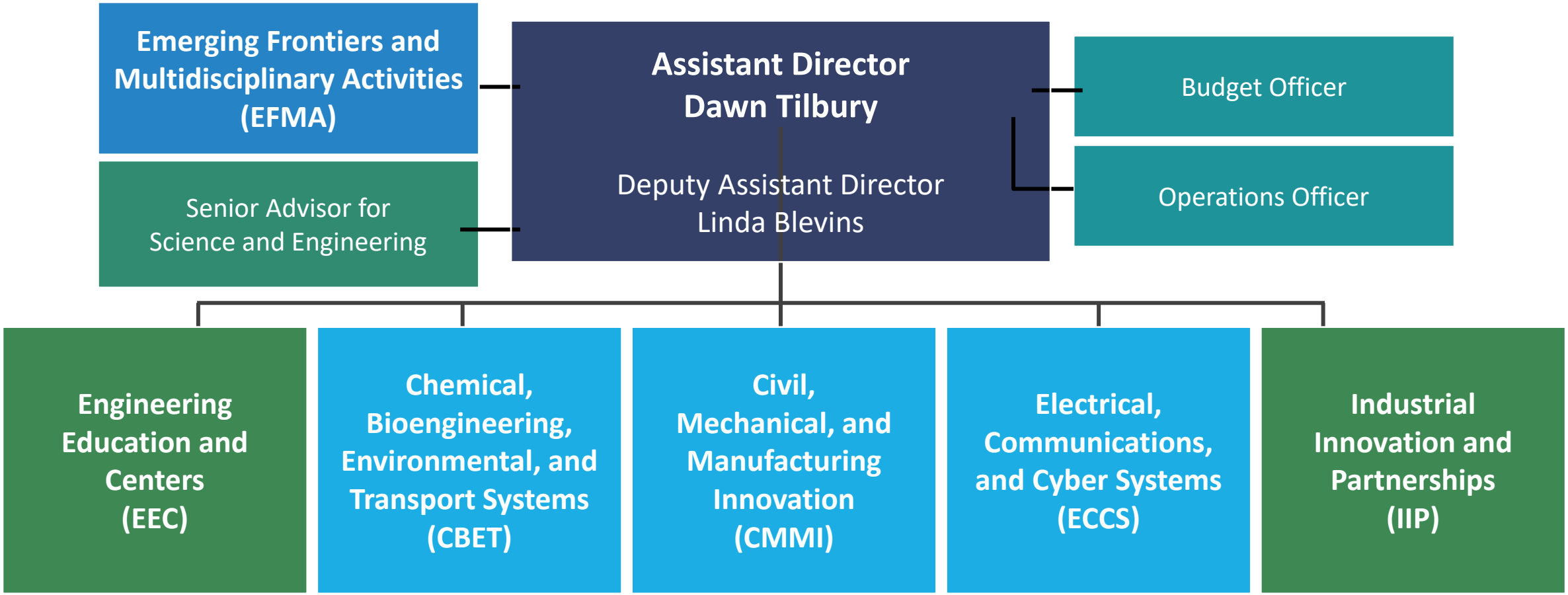
Office of Emerging Frontiers & Multidisciplinary Activities (EFMA)

- Sohi Rastegar, *Senior Advisor & Head, EFMA Office*
- Louise R. Howe, *Program Director, EFMA*

With thanks to the Visioning Working Group

- Fil Bartoli, *ENG/ECCS*; Rich Dickinson, *ENG/CBET*; Bruce Kramer, *ENG/CMMI*; Don Millard; *ENG/EEC*; Lakis Mountziaris, *ENG/CBET*; Gracie Narcho; *ENG/IIP*; Tim Patten, *ENG/CBET*; Kon-Well Wang, *ENG/EEC*

NSF Directorate for Engineering



Goals of Webinar

The goals of this webinar are:

- To inform the community about the ERVA Program Solicitation.

- To respond to questions from potential applicants.

Engineering Research Visioning Alliance (ERVA): Future Research Directions for the Engineering Research Community

The National Science Foundation Directorate for Engineering (NSF/ENG) invites the engineering research community to establish an organization that will serve to identify and develop bold and societally impactful new engineering research directions and thereby catalyze the engineering research community's pursuit of innovative, high-impact research.

Specifically, NSF/ENG calls on the engineering research community to establish an **Engineering Research Visioning Alliance (ERVA)** that ENG will support to facilitate the articulation of compelling research visions that align with national and global challenges.

Engineering Research Visioning Alliance (ERVA): Future Research Directions for the Engineering Research Community

GOALS:

1. Obtain and integrate input from all stakeholders with interest in engineering research, including:
   - Academia
   - Industry
   - Societies
   - Government agencies, and
   - the public.
2. Communicate coordinated information on nascent opportunities and priorities in engineering research to these stakeholders.
3. Strengthen connectivity across these diverse stakeholders, and increase coordination among engineering disciplinary communities.

ERVA: Responsibilities

- Embrace all fields of engineering, including emerging areas and areas overlapping with other disciplines.
- Serve as a catalyst and enabler for the engineering community in identifying new opportunities and priorities in engineering research that have the potential to address national and societal needs.
- Consider issues, challenges and opportunities in engineering research, and source novel and unanticipated perspectives.
- Provide a resource for rapid response expert advice to help inform cross-cutting engineering research initiatives.
- Convene experts from academia, industry, engineering societies and other relevant stakeholder groups to consider issues, challenges, and opportunities in engineering research.
- Facilitate the generation of visions for engineering research, including both short and medium/long range visions.

ERVA: Responsibilities, cont'd

- Communicate the research visions and their importance to a wide range of stakeholders including the research community, and government and industry stakeholders, as well as more broadly to the public.
- Provide input to the engineering research community and engage with advisory committees and groups consistent with law and regulations, as appropriate for a body that is not chartered under the Federal Advisory Committee Act (FACA).

- Evaluate ERVA outcomes including meetings and workshops, topics considered at these meetings, and effectiveness of communication and dissemination efforts.

ERVA: Deliverables-I

- Establishment of an organizational structure for providing leadership and oversight of the ERVA activities and outputs.
- Establishment and maintenance of a standing council with members from academia, industry and other relevant stakeholder groups that meets at least twice per year, and whose members can be called upon for advice and to support the selection, guidance, conduct, and oversight of rapid response studies.
- Operational support, staff and related expenses for management of logistics, the recruitment of experts, and communication of ERVA products.

ERVA: Deliverables-II

- Management of task forces, workshops, a recurring symposium, and visioning meetings.
- Organization of "blue-sky" conference tracks to facilitate collection of out-of-the-box input from diverse contributors.
- Publication of meeting reports and white papers, and dissemination of these products to the engineering research community, government and industry stakeholders, and the public.
- Maintenance of a dedicated ERVA website with up-to-date information on accomplishments and activities and access to products.

- Development of an evaluation framework for assessing the impact of ERVA activities and communication strategies.

Engineering Research Framework Visioning Summit

- Was held July 16-18, 2019; Alexandria, VA
- Participants included representatives from:
  - Engineering societies;
  - Industrial research organizations;
  - Academia; and
  - Government.
- Discussed potential models for achieving ERVA goals
- Workshop summary available at:
  https://engresearchvisioning.asee.org/wp-content/uploads/2019/11/ERFVS-Workshop-Summary-lo-res.pdf

Solicitation Requirements

Award Size and Information

Anticipated Number of Awards: One

Award Type: Co-operative Agreement

Award Duration: 5 years

Award Amount: $5-8M (including both direct and indirect costs)

From $1 million-$2 million per year.

It is anticipated that expenses necessary to effect and sustain this organization will increase from establishment through maintenance phases, consistent with an increasing scope of activities with time. Proposers are encouraged to take this into consideration when developing their proposed budget.

PI Eligibility & Constraints

Who May Serve as PI:

- Either the PI or a co-PI should hold a primary appointment at an institution of higher education.
- There is no constraint on the role of the Principal Investigator (PI) within the submitting organization.
- The proposal must document the PI's experience with leading and managing an organization involving and/or representing diverse constituents from the broad engineering community.
- A minimum of one PI and one co-PI must participate.
- Maximum number of PI plus co-PIs: 5.

Limit on Number of Proposals per individual (PI or co-PI): None

- An individual may serve as PI on one proposal and as co-PI on additional proposals
- An individual may serve as co-PI on multiple proposals

Eligibility: Organizations

Who May Submit Proposals:

- ERVA proposals may be submitted by a single organization or by a group of organizations consisting of a lead organization in partnership with one or more partner organizations.
- Proposals may be submitted by:
  - Institutions of Higher Education: universities and two- and four-year colleges (including community colleges) accredited in, and having a campus located in the United States, acting on behalf of their faculty members.
  - Non-profit, non-academic organizations: Independent museums, observatories, research labs, professional societies and similar organizations in the U.S. associated with educational or research activities.

Limit on Number of Proposals per Organization:

- An organization may submit only one ERVA proposal on which it is the lead institution.
- An organization may be the lead institution on one ERVA proposal and a sub-awardee on additional ERVA proposal(s)

Eligibility: Organizations, *cont'd*

- Only U.S. organizations are eligible to be the lead organization.
- The submitting organization should be committed to the advancement of basic research and education in engineering.
- The PI from the lead institution should consider partnering with co-PIs from other institution types to ensure representation that includes institutions of higher education (with a strong track record in fundamental engineering research) and relevant private and public sector organizations, including industry and engineering societies.

No Collaborative Proposals

If multiple organizations are involved in a proposal, it must be submitted as a single proposal with subawards.

No “Collaborative Proposals” are permitted

A Letter of Intent (LOI) Is Required
Due Date: July 8th, 2020

A Letter of Intent is REQUIRED

One Page

1. **TITLE** – The title must begin with the acronym "ERVA"
2. **PROJECT SYNOPSIS** - Brief summary of the project, including the organizational and management principles for the ERVA (maximum 500 words).
3. **TEAM** - 1) The name and departmental affiliation (if any) of the Principal Investigator (PI). 2) The name(s) and departmental affiliation(s) (if any) of the Co-PI(s) and all senior personnel. 3) The names(s) of any additional participating institutions or organizations, including all sub-awardees.

Additional Requirement (for LOI):

- A Minimum of 1 and Max. of 4 Other Senior Project Personnel (co-PIs)
- A Minimum of 0 and Max. of 6 Other Participating Organizations

LOIs are not merit reviewed and no feedback is provided to the submitters

Submission of multiple LOIs is permitted. If multiple LOIs for a single project are submitted, the last one submitted before the deadline will be used.

Full Proposals
Due Date: August 12th, 2020

Follow NSF Proposal & Award Policies & Procedures Guide or Grants.gov Application Guide

The title must include the prefix “ERVA”.

Project Summary (one page limit)

- Proposals that do not separately address both intellectual merit and broader impacts in the Project Summary will be returned without review

Project Description (15 page limit)

Standard Sections:

- References Cited; Biographical sketches; Budget; Current and Pending Support; Facilities, Equipment, & Other Resources

The Principal Investigator and Lead Institution should be identical in the Letter of Intent and in the Full Proposal.

Additional personnel and participating institutions/organizations may be included in the Full Proposal that were not listed in the Letter of Intent.

Full Proposals - Project Description: Additional Sections

Organizational Structure and Project Staffing:

1) Describe the **ERVA's relationship to the proposing organization**.

2) Describe the expected **membership of the ERVA** and explain how it will be developed to ensure that the broad research interests of the engineering community are represented.

Proposers are encouraged to engage the broadest range of stakeholders, including representatives of academia, industry, societies, and other groups with interest in engineering research. Membership should encompass diversity of discipline, demographics, geography and rank/career stage, and is expected to include all engineering disciplines. Inclusion of engineering ethicists and social scientists is encouraged.

3) Provide a **leadership and executive structure**. Describe the **selection process** for the executive leadership.

4) Discuss the **administrative and organizational structure of the ERVA**, including any necessary advisory, administrative and expert support activities.

5) Describe the **experience of the submitting institution** with managing projects of a similar nature.

6) Describe the **relevant qualifications of the PI, co-PI, and other senior personnel**.

7) Describe the **roles of sub-awardees and consultants** (if any).

Full Proposals - Project Description: Additional Sections, *cont'd*

ERVA Management Plan:

Provide a detailed management plan including schedule and milestones to establish the ERVA as an effective community proxy for the engineering community. Describe the approach and activities the ERVA will undertake to facilitate the visioning of bold and impactful future engineering research directions. Describe the planned strategies for achieving full participation of women and underrepresented minorities in all ERVA activities.

Communication Strategy:

Clearly articulate intended mechanisms for communicating ERVA-identified visions to all relevant stakeholders. Describe strategies for ensuring that visions are communicated broadly across discipline, demographics, geography and rank/career stage.

Evaluation Plan:

Describe the evaluation framework that will be used to assess the impact of ERVA activities and ERVA communication strategies. Include a description of proposed metrics that will be evaluated.

Budget & Budget Justification; Facilities, Equipment & Other Resources

Budget and Budget Justification:

Maximum Budget Request: $8,000,000 over 5 years

It is anticipated that expenses necessary to effect and sustain this organization will increase from establishment through maintenance phases, consistent with an increasing scope of activities with time. Proposers are encouraged to take this into consideration when developing their proposed budget.

Facilities, Equipment and Other Resources:

Describe physical space, resources and infrastructure that will be available to support the work of the ERVA, including office equipment, teleconference and communications capabilities, and institutional meeting space necessary to achieve project goals.

Full Proposal: Additional Documentation
Submit Via FastLane

Supplementary Documents:

1. Letters of Collaboration for each partner who will participate in the ERVA

2. A table describing the following for each member of the management team:

- Name
- Administrative Position/Project Title
- Activities Assigned
- Proposed Level of Effort
- Responsibilities for Achievement of Key Milestones and Outcomes

Review & Award Process

Required Letters of Intent due on **July 8, 2020**

- LOIs are used by NSF to gauge the level of effort for review. They will not be used as pre-approval mechanisms for the submission of proposals, and no feedback will be provided to the submitters.
- Proposals submitted without Letters of Intent will be returned without review.

Full Proposals are due on **August 12, 2020**

Full Proposals will be reviewed in **Fall 2020**

A single award is expected to be made in **FY21**, subject to availability of funds

Review Criteria

NSB-approved Merit Review Criteria

- Intellectual Merit
- Broader Impacts

Additional Solicitation-Specific Review Criteria

Review Criteria:
ERVA Solicitation-Specific

- How well does the submitting organization represent the broad engineering research community, particularly academic and industry communities including the communities supported by the NSF Directorate for Engineering? Is the proposed organization sufficiently broad to play a community proxy role?
- Does the proposing team have the appropriate perspective on current engineering research activities and priorities?
- Is the organization and management structure sufficient to meet the project goals? Does the organizational structure involve the necessary stakeholder range? Does the submitting organization have experience with similar types of projects? How qualified are the PIs and other named personnel to meet the project goals? Are appropriate milestones and associated activities included?

Review Criteria:
ERVA Solicitation-Specific, cont'd

- Are the proposed visioning approaches/activities well-positioned to catalyze the identification of bold and high-impact research directions?
- Does the submitting organization have access to appropriate physical space, resources and infrastructure to achieve the goals of the ERVA?
- Does the proposal include effective and timely mechanisms for gathering (from the community) and providing critical information and insights on future engineering research directions?
- Does the proposal include a clear and compelling plan for communicating future research visions to all relevant stakeholders?
- Does the proposal include a credible evaluation plan with appropriate metrics?

NSF 20-551: Engineering Research Visioning Alliance (ERVA)

Important Solicitation Dates

April 22nd, 2020	Informational Webinar
July 8th, 2020	Letter of Intent Due (required)
August 12th, 2020	Full Proposal Deadline

Frequently Asked Questions: Participation Limit

Question:

Can an investigator be PI on one proposal and co-PI on another proposal?

Answer:

Yes. An investigator may participate as a PI on one proposal and as co-PI on additional proposals.

Frequently Asked Questions:
Co-PI Limit

Question:

How many co-PIs can be included on a single proposal?

Answer:

Each proposal *must* have a minimum of 1 co-PI and a maximum of 4 co-PIs

Frequently Asked Questions: Academic PI/co-PI

Question:

Is it required to have a PI/co-PI from an institution of higher education?

Answer:

The PI or one of the co-PIs should hold a primary appointment at an institution of higher education.

Frequently Asked Questions: Participating Institutions

Question:

How many participating institutions are allowed on an ERVA proposal?

Answer:

There is no limit to the number of participating institutions allowed on an ERVA proposal.

(Limits are imposed in the Letter of Intent purely for administrative purposes so that key individuals and organizations can be identified early on)

Frequently Asked Questions: Participating Institutions

Question:

Is there a limit on the number of ERVA proposals that may be submitted by a single organization?

Answer:

An organization may submit only one ERVA proposal **on which it is the lead institution**.

Frequently Asked Questions: LOI Format

Question:

Do you have any formatting requirements for the Letter of Intent (font, size, margins, etc)?

Answer:

Fastlane templates will walk you through submitting the Letter of Intent and automatically format the LOI.

Please prepare your text in a word-processing (or similar) program on your computer and cut and paste the required information into Fastlane.

Acronyms and Terminology

CBET	Division of Chemical, Bioengineering, Environmental & Transport Systems	**CMMI**	Civil, Mechanical & Manufacturing Innovation
Co-PI	Co-Principal Investigator	**ECCS**	Division of Electrical, Communications and Cyber Systems
EEC	Division of Engineering Education and Centers	**EFMA**	Office of Emerging Frontiers and Multidisciplinary Activities
ENG	Directorate for Engineering	**ERVA**	Engineering Research Visioning Alliance
IIP	Division of Industrial Innovation and Partnerships	**LOI**	Letter of Intent
NSB	National Science Board	**NSF**	National Science Foundation
PAPPG	Proposal & Award Policies & Procedures Guide	**PI**	Principal Investigator

Key website

Please refer to the NSF/ENG website for current information.

www.nsf.gov/eng/

After the Meeting

A copy of the slides will be archived and available. Visit the NSF/ENG website for information: http://www.nsf.gov/eng/

You may submit questions by:

- E-mail: lhowe@nsf.gov