

**PROGRAM SOLICITATION: NSF 14-524**

# **Resilient Interdependent Infrastructure Processes and Systems (RIPS)**

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Division of Civil, Mechanical and Manufacturing Innovation

Directorate for Engineering

**National Science Foundation**

28 January 2014

**NSF WEBINAR**

# Solicitation: NSF 14-524

The information about the WEBINAR is available at  
<http://www.nsf.gov/eng/efri>

Please send your questions to us at any time during the Webinar  
and we will try to answer during the Webinar Q&A

*By email at:* [rips2014@nsf.gov](mailto:rips2014@nsf.gov)

The solicitation is available at  
<http://www.nsf.gov/pubs/2014/nsf14524/nsf14524.htm>

# Outline

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# **NSF RIPS: A Cross-Directorate Program**



## **National Science Foundation**

Directorate for Computer & Information Science & Engineering  
Division of Computer and Network Systems

### **Directorate for Engineering**

Emerging Frontiers in Research and Innovation

Division of Electrical, Communications and Cyber Systems

Division of Chemical, Bioengineering, Environmental, and Transport Systems

Division of Civil, Mechanical and Manufacturing Innovation

### **Directorate for Social, Behavioral & Economic Sciences**

**Full Proposal Deadline(s)** (due by 5 p.m. proposer's local time)

**March 19, 2014**

# RIPS Solicitation Context

Critical infrastructures are the mainstay of our nation's economy, security and health

These infrastructures are interdependent and interconnected:

The electrical power system depends on the delivery of fuels to power generating stations through transportation services, the production of those fuels depends in turn on the use of electrical power, and those fuels are needed by the transportation services.

These are interactive complex dynamic systems

# RIPS Program: Goals

- Foster an interdisciplinary research community
- Enhance understanding and design of interdependent critical infrastructure systems (ICIs) and processes not only in response to failures from any cause (natural, technological, or malicious) but also in response to normal operations
- Create the knowledge for innovation in ICIs to advance society with new goods and services
- Develop predictive models that can be integrated into decision making

# RIPS Program: Objectives

- Create theoretical frameworks and multidisciplinary computational models of interdependent infrastructure systems, processes and services, capable of
  - Analytical prediction of complex behaviors, in response to changes (system, policy, etc.)
- Increase resilience, interoperation, performance, and readiness in ICIs
- Understand organizational, social, psychological, regulatory, political and economic obstacles to improving ICI's, and identifying strategies for overcoming those obstacles
- Validate empirically predictive models

# RIPS: Submission Guidance

- Propose innovative research for new knowledge useful to ICI services
  - Effective, efficient, dependable, adaptable, resilient, safe, and secure
    - Focus simultaneously on multiple infrastructures as interdependent
    - Contribute to a new interdisciplinary paradigm in infrastructure research
- Broadly integrate (1) cyber, (2) engineering, and (3) social, behavioral and economic sciences
- Collect new data or use existing data on ICIs
- Choose: Type-I (small) and Type-II (large)

# RIPS: Submission Guidance: Type-I Proposals

## Type-I Proposals

- Theory, modeling, and metrics projects that will create the knowledge, methodologies and approaches to conceptualize and study interdependent infrastructures
- **Not intended** for empirical testing of models or theories
- Can be used for **team building** that will help clarify basic terminology, assumptions and premises that enable theories for interdependent infrastructures as processes and services
- Duration **1-2 years** with a maximum of **\$300,000** for each project in total direct and indirect costs

# RIPS: Submission Guidance: Type-II Proposals

## Type-II Proposals

- Support **interdisciplinary** research to conduct major new interdependent infrastructure research using **empirical data**
- Include the creation of knowledge, methodologies, and approaches to conceptualize and study interdependent infrastructures as processes and services
- Duration of **3 years** with a maximum of **\$1,000,000 to \$2,500,000** for each project in total direct and indirect costs

# Proposal Submission Guidelines: Type-II Only

Supplementary Documentation section must include a  
Management and Integration Plan

# Additional Proposal Review Criteria

Projects are **required** to be interdisciplinary – **incorporating cyber, engineering and SBE research**

- the breadth of research is expected to be reflected in the Principal Investigators' education, training, professional certifications and experience

Whether proposals are responsive to the solicitation will be assessed according to

1. Does the proposal primarily address scientific research on interdependencies among critical infrastructures?
2. Does the research sufficiently reflect interests of the participating directorates?
3. Do the project personnel have the expertise to conduct necessary interdisciplinary research?

# Submission Details

- Submit proposal to NSF via Fastlane or Grants.gov
- Deadline: **19 March 2014** no later than 5 PM your time zone
- Recommend Proposal Title begin with “**RIPS:**”
- **No** classified proposals and **No** references to classified material will be accepted
- Eligibility:
  - The categories of proposers eligible to submit proposals to the National Science Foundation are identified in the Grant Proposal Guide, Chapter I, Section E

# Webinar Recap for the RIPS Solicitation

- Please send your questions to us at any time during the Webinar and we will try to answer during the Webinar Q&A

*By email at: [rips2014@nsf.gov](mailto:rips2014@nsf.gov)*

- After the webinar, please send additional questions via email to any RIPS program director listed in the solicitation or these slides
- The information about the WEBINAR is available at <http://www.nsf.gov/eng/efri>

The solicitation is available at <http://www.nsf.gov/pubs/2014/nsf14524/nsf14524.htm>

**Thank you for your participation!**

# Questions and Answers