

Extramural Fire Research Grants Program

Announcement and Preparation Guide

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Building and Fire Research Laboratory
National Institute of Standards and Technology
U.S. Department of Commerce
Gaithersburg, MD 20899-8660
<http://www.bfrl.nist.gov/866/extramuralprogram.htm>

NIST

National Institute of Standards and Technology
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I. Introduction

The Fire Research Division of the Building and Fire Research Laboratory (BFRL) of the National Institute of Standards and Technology (NIST) sponsors a program of grants, cooperative agreements, and contracts in support of basic and applied fire research, as authorized by 15 U.S.C. 278f, and the Federal Fire Prevention and Control Act of 1974 (PL 93-493). Section 18 of the Act authorizes the Secretary of Commerce, through the Center For Fire Research (now BFRL)," ...to conduct, directly or through contracts or grants, a fire research program..."

This document describes the grants program and provides guidance on the preparation of proposals. The BFRL Fire Research Program and the Fire Research Division organization are described in the Fire Research Division web site [<http://www.bfrl.nist.gov/866/>]. Copies of technical reports on these projects can be found by searching through the Building and Fire Research Information Service (BFRLRIS) [<http://bfrlris.nist.gov/>].

The Building and Fire Research Laboratory works closely with many other Federal agencies on tasks relating to their safety problems. Grants and contracts in support of such activities may be jointly sponsored by the interested agencies.

The annual budget of BFRL for the support of fire research contracts and grants has been about \$1.3 million over the past few years. Because of commitments for the support of multi-year programs, only a portion of the budget is available to initiate new programs in any one year. Grants typically range between \$10,000 and \$100,000 per year, over a maximum of three years.

II. Guidelines for Submission of Proposals

The Fire Research Grants Program is open to institutions of higher education; hospitals; non-profit organizations; commercial organizations; state, local, and Indian tribal governments; foreign governments; organizations under the jurisdiction of foreign governments; and international organizations. Joint programs with participation by more than one eligible entity are possible.

All grant awards are made on a competitive basis. An annual notice that provides additional information on the availability of grant funds, applicant eligibility, program objectives, and selection criteria is issued in the *Federal Funding Opportunity Notice* posted at www.grants.gov when funds are approved by Congress (normally by the end of the first quarter of each fiscal year). Proposals should be compatible with the following program goals and objectives:

- A. Analysis and Prediction: The objectives are to develop understanding and predictive methods for dynamic fire phenomena to advance fire science and engineering practice and to perform research to understand the heat and mass transfer processes occurring in fires in order to improve predictions of the growth, spread, suppression, and emissions transport from fires of all scales. Experiments and metrology are

developed and used to develop, support, and verify advanced computer simulations of fire phenomena, fire hazards, fire protection, and fire fighting. The contact person for this group is **Anthony Hamins**, and he may be reached at (301) 975-6598 or anthony.hamins@nist.gov.

- B. Fire Metrology: The objective is to apply measurement science in the development and quantification of new and existing measurement methods for studying fire growth, fire-induced flows, flame radiation, smoke formation and dynamics, species production, heat transfer, fire suppression, and fire detection. The contact person for this group is **Giann Yang**, and he may be reached at (301) 975-6662 or jcy@nist.gov.
- C. Fire Fighting Technology: The objectives are to conduct research that enables advances in fire fighter safety, fire ground operations, and effectiveness of the fire service; develop and apply measurements, modeling, and technology, and improve the understanding of the behavior, prevention and control of fires to enhance fire fighting operations and equipment, fire suppression, fire investigations, and disaster response; and provide input, including experimental data, fire modeling and test protocols, to advance the effectiveness of fire safety standards and codes. The contact person for this group is **Nelson Bryner**, and he may be reached at (301) 975-6868 or nelson.bryner@nist.gov.
- D. Integrated Performance Assessment: The objective is to produce tools utilizing enhanced data and prediction methods to quantify fire events for fire hazard and risk assessment; for fire fighting operations and training; for fire investigations; and for performance evaluations of fire protection systems in buildings, transportation systems, and vehicles in response to fire. Stakeholders include architects and design engineers; manufacturers of building materials, products, and furnishings; code developers, enforcers, and regulatory authorities; and those exposed to direct risk such as building owners, occupants, the fire service, and the general public. The contact person for this group is **Tom Cleary**, and he can be reached at (301) 975-6858 or tclear@nist.gov.
- E. Materials and Products: The objective is to perform research enabling the confident development by industry of new, less-flammable materials and products. This capability is based on understanding fundamentally the mechanisms that control the ignition, flame spread and burning rate of materials, as well as and the chemical and physical characteristics that affect these aspects of flammability. This include developing methods of measuring the response of a material to fire conditions that enable assured prediction of the full-scale performance of the final product; developing computational molecular dynamics and other mechanistic approaches to understand flame retardant mechanisms and the effects of polymer chemical structure on flammability; characterizing the burning rates of charring and non-charring polymers and composites; and delineating and modeling the enthalpy and mass transfer mechanisms of materials combustion. The contact person for this group is **Jeff Gilman**, and he can be reached at (301) 975-6573 or jwgilman@nist.gov.

Prospective proposers are encouraged to become familiar with the fire program of BFRL through visits to NIST, study of reports, and discussions with appropriate staff members before submitting proposals.

Proposals are accepted any time. Those received after April 30 may not be processed in time for funding in the same fiscal year, but may be considered for funding in the next fiscal year, subject to the availability of funds.

Submit one signed original and three copies of the proposal to:

Fire Grants Program Assistant
Building and Fire Research Laboratory (BFRL)
National Institute of Standards and Technology
100 Bureau Drive, MS - 8660
Gaithersburg, Maryland 20899-8660
Tel: (301) 975-6863
E-mail: wanda.duffin@nist.gov

Electronic filing is accepted through www.grants.gov. Cover page should include a statement that says the technical proposal is for the Fire Research Grant Program.

III. Proposal Format

The proposal must contain sufficient information to permit evaluation of the significance of the proposed research and the probability of achieving the objectives. The proposal should not exceed 25 pages in length, including all required forms, budget sheets, vitae and supporting appended materials (unless specifically requested by BFRL). The key parts to the proposal, described in the following paragraphs, should be submitted as numbered to facilitate processing:

SF Forms are available through the Grants.gov website
http://www.grants.gov/agencies/aapproved_standard_forms.jsp

1. Cover Sheet - **Form SF-424**, "Application for Federal Assistance"
(Catalog of Federal Domestic Assistance Number: 11-609)
2. Budget Information - **Form SF-424a** – Fill out one for each year you are requesting funding (up to 3 years) as follows:

- Section A* (a)1 - Fire Research
(b) - 11609
(c) - N/A
(d) - N/A
(e) - Amount requested
5 - Fill in the totals

Section B - Fill in cumulative amounts in columns (1) and (5) for each category. Provide an attachment with a detailed budget showing how the amounts were determined; e.g.:

Personnel - Names of individuals if known (if not, the position title); yearly salary; level of effort (percent) or staff months.

Travel - Travel to a major technical meeting and/or to NIST to present research results is expected, and suitable provisions should be made in the budget. When foreign travel is an essential part of the proposed program, support should be requested and justified.

Equipment - Grantees are expected to have available standard office, shop and laboratory equipment for use on the proposed research. Specialized equipment needs costing more than \$5,000 should be separately listed and justified.

Supplies - break into general categories; e.g., computer supplies, office supplies, laboratory supplies, publications costs.

Contractual - List all subcontracts. Subcontracts for more than \$25,000 must have an accompanying budget and a sole source justification. (If the contractor is not known, the amount should be budgeted but if awarded, prior approval must be requested from NIST when negotiating with a subcontractor).

Other - Anything that does not fit into the categories above.

Sections C through F need not be filled out.

3. **Form SF-424B** - "Assurances - Non-construction" - Please review information and sign document.

(CD Forms are available from the DOC OCIO Forms Management Web Site.

http://ocio.os.doc.gov/ITPolicyandPrograms/Electronic_Forms/SSDATA_FORMSMANAGEMENT_REGION7)

4. **Form CD-511** - "Certification Regarding Lobbying".
http://ocio.os.doc.gov/s/groups/public/@doc/@os/@ocio/@oitpp/documents/content/dev01_002530.pdf

5. **CD-346** - "Application for Funding Assistance" (not for Universities)
 - Technical Proposal
 - Budget Narrative
 - Supporting Budget Documentation (e.g. Negotiated Indirect Cost Rate Agreement)
 - http://ocio.os.doc.gov/s/groups/public/@doc/@os/@ocio/@oitpp/documents/content/dev01_002454.pdf

For assistance with obtaining forms contact the Fire Grants Program Assistant – see contact information above.

6. **Summary Project Description** - (one page maximum)
 - Technical area which proposal addresses (relate to specific group or project from Section II. information.)
 - Concise statement of primary objective
 - Brief description of problem
 - Summary of technical approach
 - Major milestones on way to achieving objectives
7. **Statement of Significance** - (1/2 page maximum)
 - a. Explain how the results of the proposed research relate to the basic BFRL objective of providing the technical base for reducing the nation's fire losses. Describe how the results will be utilized for this purpose (e.g., the publication of basic data, development of improved materials or systems, introduction of findings into regulations and codes, etc.)
 - b. Describe the value and impact of the proposed research and the benefits to the grantee's institution and the general public.
 - c. Summarize in two sentences using lay terms the specific nature of the work.

8. **Technical Proposal:**

Background: Describe the present state of knowledge of the problem. An exhaustive review is not needed, but the discussion should show a familiarity with past and current work in the area and demonstrate how the proposed work relates to the internal BFRL research program and how it will advance our understanding of the problem.

Research Plan: Describe how the work will be accomplished. Indicate, where appropriate, the range of variables to be explored, the number of tests to be performed, and the method of presenting the results. Describe any unusual techniques, apparatus, or special facilities to be employed in the program.

Schedule: Show dates at which major milestones are expected to be attained, including technical reports, papers, presentations and demonstrations.

Program Organization: Identify the principal professional staff members who will participate in the program and describe their roles and level of effort.

Students' Participation: Participation of students at both the graduate and undergraduate levels is an important objective of the BFRL grants program. Participation in the program can make the student more aware of fire safety problems, as well as providing training for future professional activities in fire research and fire protection. Plans for student participation should be detailed in the proposal.

Related Programs: Current research support of the principal staff members should be stated, as well as pending research proposals, with the time and commitment involved. Specify other agencies to which the present proposal has been or will be submitted. Submission to another agency will not prejudice the evaluation of the proposal.

9. **Resume of Principal Investigator(s):** (not to exceed five pages)
10. **Proprietary Material** - Where proprietary material must be included for proper evaluation of the proposal, the proprietary material must be identified and labeled in accordance with the DOC instruction for submissions of unsolicited proposals. Proposals which do not contain restrictive identification and labeling will be considered to be free of all restrictions.

IV. Evaluation of Proposals

The Fire Grants Program Assistant reviews the proposal package when received to ensure that it is complete, and that it is responsive to the general requirements of the program. A letter is sent to the principal investigator acknowledging receipt of the complete package.

Responsive proposals will be assigned, as received, to the appropriate group leader of the five programs listed in Section II. Proposals are evaluated for technical merit based on the evaluation criteria by three or more reviewers chosen from among NIST professionals, technical experts from other interested government agencies, and experts from the fire research community at large. At least one reviewer of each proposal is external to BFRL. The technical evaluation criteria are as follows:

Technical quality of the research. Reviewers will assess the rationality, innovation and imagination of the proposal. (0 - 35 points).

Potential impact of the results. Reviewers will assess the potential impact and the technical application of the results to the fire safety community. (0 - 25 points).

Staff and institution capability to do the work. Reviewers will evaluate the quality of the facilities and experience of the staff to assess the likelihood of achieving the objective of the proposal. (0 - 20 points).

Match of budget to proposed work. Reviewers will assess the budget against the proposed work to ascertain the reasonableness of the request. (0 - 20 points).

Group Leaders will make funding recommendations to the Division Chief based on the technical evaluation and the relationship of the work proposed to the objectives of the program. In making application selections, the Division Chief will take into consideration the results of the evaluations, the group leader's recommendation, the availability of funds, and relevance to the objectives of the Fire Research Program.

The principal investigator will be notified by letter as to the final recommended decision, usually within 6 months of submission. Copies of the reviewers' comments will be provided. The final approval of selected applications and award of financial assistance will be made by the NIST Grants Officer based on compliance with application requirements as published in the *Federal Funding Opportunity Notice*. Applicants may be asked to modify objectives, work plans, or budgets and provide supplemental information required by the agency prior to award.

When a proposal for a multi-year project is approved, funding will initially be provided for only the first year of the program. Funding for each subsequent year of a multi-year proposal will be contingent on satisfactory progress as documented in an annual report (see Reporting Requirements below), and the availability of funds.

V. Reporting Requirements

All technical information and data developed under BFRL grants must be made available to the public. Presentations at appropriate technical meetings and publications in archival journals are expected. Appropriate acknowledgment of NIST support should be made. Reasonable costs for such activities should be included in the budget. A final report summarizing all of the technical activities conducted under each grant is required. BFRL reserves the right to reprint and distribute interim and final technical reports and to list them with the National Technical Information Service (NTIS).

Three different types of reports are required:

- A. **Quarterly Reports** - A one page summary of the progress made in the previous three months is due **January 1, April 1, July 1 and October 1** beginning with the first full quarter following an award, and should be sent to the NIST scientific officer (electronic submission is encouraged). Describe progress on milestones, changes in direction or unexpected problems encountered. Include a paragraph on work planned for the next quarter.

- B. **Annual Report** - A report (electronic or paper) is due annually to the NIST scientific officer **two months prior to the anniversary date** of the grant. The report should stand by itself and include an abstract, a brief section on background material, a summary of objectives, progress made, significant findings, major redirection, and (if a multi-year grant) plans for next year and a request to implement the next year's funding as stated in your multi-year proposal. The annual report will be used to make decisions on funding the next increment for multi-year projects. (The annual report is replaced by the final report at the end of the last year of the grant). The titles of articles submitted, student projects and theses should be included. Preprints and complete copies of theses and project reports are not required.
- C. **Final Project Report** - A comprehensive written report is due to the NIST scientific officer **within 90 days of the original (or extended) grant expiration date**. The report (or portions of it) should be suitable for publication as a NIST-GCR, at the discretion of the NIST scientific officer. A list of all students supported by the grant, the titles and abstracts of their theses or projects, and a complete citation of all papers and presentations fully or partially supported by the grant should be included.

VI. Renewal Proposals and No-Cost Extensions

A renewal proposal is not required if the original grant was for a multi-year project. Significant changes in the direction of research must be submitted in writing and approved by the NIST scientific officer. A decision for continued funding of a multi-year project will be contingent upon satisfactory progress as documented in the annual report and the availability of funds. No liability will be assumed by the government because of non-renewal or extension of a grant.

The grant will terminate automatically at the end of the grant period (three years or less). The proposed program should be planned so that all objectives can be met and a final report prepared within 90 days following the end of the grant period. Follow-on proposals will be evaluated as a new grant application in competition with other proposal submissions.

If additional time beyond the expiration date is required and exceptional circumstances are warranted, a formal request for a no-cost extension to the NIST scientific officer at least 30 days prior the termination is required. The request must explain the need for the extension and include an estimate of the unobligated funds remaining and a plan for their use. In the event of an extension, all reporting requirements described in Section V remain in effect, with the final report due within 90 days of the end of the extension period.