

FUNDING OPPORTUNITY ANNOUNCEMENT



PROJECT TITLE: PROLIFERATION DETECTION RESEARCH

FUNDING OPPORTUNITY ANNOUNCEMENT DE-FOA-0000568

*U.S. Department of Energy
National Nuclear Security Administration
December 2011*

Announcement Type: Initial
CFDA Number: 81.113
Issue Date: 15 December 2011
Application Due Date: 30 January 2012 at 11:59:59 PM Eastern Time

TABLE OF CONTENTS

TABLE OF CONTENTS.....	2
I. REQUIREMENTS FOR GRANTS.GOV.....	5
A. Registration Requirements.....	5
B. Questions.....	5
C. Application Preparation and Submission.....	5
D. Where to Submit.....	5
E. Important Notice to Potential Applicant.....	6
II. FUNDING OPPORTUNITY DESCRIPTION.....	7
A. Summary.....	7
B. Background.....	7
C. Technical Scope and Research Topics.....	7
1. Radiation Sensors and Advanced Materials Research.....	7
2. Remote Sensing.....	8
3. Simulations, Algorithms and Modeling.....	8
4. Enabling Technology for Mass Spectrometry.....	9
D. Teaming Considerations.....	10
III. AWARD INFORMATION.....	11
A. Type of Award Instrument.....	11
B. Estimated Funding.....	11
C. Maximum and Minimum Award Size.....	11
D. Expected Number of Awards.....	11
E. Anticipated Award Size.....	11
F. Period of Performance.....	11
G. Type of Application.....	11
IV. Eligible Information.....	12
A. Eligible Applicants.....	12
B. Cost Sharing.....	12
D. Other Eligibility Requirements.....	12

V.	APPLICATION AND SUBMISSION INFORMATION	14
A.	Address to Request Application Package	14
B.	Letter of Intent and Pre-applications	14
C.	Content and Application Forms	14
D.	Submissions from Applicants	19
E.	Submission Dates and Times	19
1.	Application Due Date	19
F.	Intergovernmental Review	19
G.	Funding Restrictions	20
H.	Other Submission and Registration Requirements	20
1.	Where to Submit	20
2.	Registration Process	20
VI.	APPLICATION REVIEW INFORMATION	21
A.	Criteria	21
1.	Initial Review Criteria	21
2.	Merit Review Criteria	21
B.	Review and Selection Process	22
1.	Selection	22
2.	Discussions and Award	22
C.	Anticipated Notice of Selection and Award Dates	22
VII	AWARD ADMINISTRATION INFORMATION	23
A.	Award Notices	23
1.	Notice of Selection	23
2.	Notice of Award	23
B.	Administrative and National Policy Requirement	23
1.	Administrative Requirements	23
2.	Duns and CCR Requirements	23
3.	Subaward and Executive Reporting	23
4.	Special Terms and Conditions and National Policy Requirements	23
5.	Intellectual Property	24
C.	Reporting	24
D.	Questions	24
E.	Agency Contact	24

VIII. OTHER INFORMATION.....25

- A. Modifications 25
- B. Government Right to Reject or Negotiate 25
- C. Commitment of Public Funds 25
- D. Propriety Application Information 25
- E. Evaluation and Administration by Non-Federal Personnel 25
- F. Intellectual Property Developed Under this Program 26
- G. Notice of Right to Request Patent Waiver 26
- H. Notice Regarding Eligible / Ineligible Activities 26

IX. APPENDICES.....27

- A. Environmental Questionnaire27
- B. Equipment Quotes and Specifications Template27
- C. Travel Summary Template27

I. REQUIREMENTS FOR GRANTS.GOV

A. Registration Requirements

You must complete the one-time registration process (all steps) before you can submit your first application through Grants.gov (www.grants.gov). We recommend that you start this process at least three weeks before the application due date. It may take 21 days or more to complete the entire process. Use the Grants.gov Organization Registration Checklists at: <http://www.grants.gov/assets/OrganizationRegCheck.pdf> to guide you through the process. **IMPORTANT:** during the CCR registration process, you will be asked to designate an E-Business Point of Contact (EBIZ POC). The EBIZ POC must obtain a special password called "Marketing Partner Identification Number" (MPIN). When you have completed the process you should call the Grants.gov Helpdesk at 1-800-518-4726 to verify that you have completed the final step (i.e. Grants.gov registration).

Applicants must also register with FedConnect to submit questions. FedConnect website: www.fedconnect.net

Questions relating to the registration process, system requirements, how an application form works, or the submittal process must be directed to Grants.gov at 1-800-518-4726 or support@grants.gov, DOE/NNSA cannot answer these questions.

B. Questions

Questions regarding the **content** of the announcement must be submitted through the FedConnect portal. You must register with FedConnect to respond as an interested party to submit questions, and to view responses to questions. It is recommended that you register as soon after release of the Funding Opportunity Announcement (FOA) as possible to have the benefit of all responses. DOE/NNSA will try to respond to a question within 3 business days, unless a similar question and answer have already been posted on the website.

Questions involving proprietary or confidential information which is unique to a particular applicant may be addressed directly to the grant specialist identified in Section VII of this FOA. When questions are directed to the grant specialist, the grant specialist may determine that the questions do not involve proprietary or confidential information unique to one applicant and may direct the applicant to resubmit its questions via FedConnect before an answer will be provided. The grant specialist shall not provide answers to questions that will give any applicant an unfair competitive advantage over any other applicant.

C. Application Preparation and Submission

Applicants must download the application package, application forms and instructions, from Grants.gov. Grants.gov website: <http://www.grants.gov/>. Click on the "Apply for Grants" link, then, click on the "Download a Grant Application Package" link and follow the instructions. Insert the announcement number (DE-FOA-0000568) to download the Application Package. (Additional instructions are provided in Section V. A. of this FOA.)

D. Where to Submit

Applications must be submitted through Grants.gov to be considered for award. You cannot submit an application through Grants.gov unless you are registered. Please read the registration requirements carefully

and start the process immediately. **Remember you have to update your CCR registration annually. Grants.gov through a validation process will reject submission of any application if the CCR registration is not active.** If you have any questions about your registration, you should contact the Grants.gov Helpdesk at 1-800-518-4726 to verify that you are still registered in Grants.gov.

E. Important Notice to Potential Applicants

When you have completed the process, you should call the Grants.gov Helpdesk at 1-800-518-4726 to verify that you have completed the final step (i.e. Grants.gov registration).

II. FUNDING OPPORTUNITY DESCRIPTION

A. Summary

The U.S. Department of Energy (DOE), National Nuclear Security Administration (NNSA), Defense Nuclear Nonproliferation (DNN), Office of Nonproliferation and Verification Research and Development (DNN R&D) is soliciting applications for the research and development (R&D) needs described herein.

DNN R&D has the responsibility to sponsor R&D activities to improve capabilities to detect and monitor indicators of foreign nuclear weapons programs. DNN R&D is sponsoring research in Radiation Sensors and Advance Materials Research; Remote Sensing; Simulations, Algorithms and Modeling; and Enabling Technology for Mass Spectrometry. To meet its mission, DNN R&D applies the broad base of U.S. technical expertise to include the DOE National Laboratories, academia and industry. This Funding Opportunity Announcement (FOA) solicits research grant applications from universities as defined in Section IV. A.

B. Background

This FOA encompasses technology development for the early detection of nuclear proliferation by national, sub-national, and trans-national entities, especially on activities indicative of the production and transport of special nuclear material, fabricated components, and weapons. It also includes technology that supports counter-proliferation and counter-terrorism missions where there is synergy with the nonproliferation mission.

DNN R&D applies the unique skills and capabilities of the NNSA and DOE national laboratories and facilities to meet the nonproliferation R&D requirements necessary to improve proliferation detection capabilities. It is the intent of this announcement to increase the participation of academia in the DNN R&D programs thereby broadening their R&D sources and diversifying the types of organizations working on its programs.

C. Technical Scope and Research Topics

Research is being sought in the following topic areas:

1. Radiation Sensors and Advanced Materials Research

a. Innovative Radiation Detection Concepts

Applications are sought for high-risk, high-reward radiation detection concepts that have the potential to significantly advance capabilities in detection, identification, localization, and characterization of special nuclear materials. This broad area includes but is not limited to:

- Alternative concepts for detection or readout that do not rely on direct charge collection or collection of scintillation light.
- Moderate to high resolution gamma ray spectroscopy systems that are scalable to large sizes.
- Large-area thermal and fission neutron detection systems including concepts for ³He replacement technology.
- High efficiency gamma-ray and neutron imaging methods.

b. Nuclear Data Measurements

Applications are sought in advancing our current understanding of ionizing radiation and neutron emission. In general, gamma-ray and neutron emissions from special nuclear materials have been well characterized

across various parameters including magnitude, energy, and time. Less well understood is understanding of joint probability distributions, for example when considering correlated neutron emissions across energy and angle or correlations between prompt gamma-ray and neutron emissions. Another area for potential advancement relates to fully exploiting photofission and nuclear resonance fluorescence signatures. Applications are sought that address these areas and clearly articulate their relevance to developing systems or methods for nonproliferation missions.

c. Advanced Materials

Applications are sought for discovery and development of new materials that will enable the next generation of ionizing radiation detectors. The ideal gamma ray detector would provide good spectral energy resolution, operate at room temperature, and would be reproducibly manufactured at relatively low cost. All potential materials must have promise of fabrication into large size scales of order 100-1000 cm³. The existing conventional devices in widespread use are high purity germanium semiconductors (which require cooling) and sodium iodide scintillators (which have inadequate resolution). A clear goal of this program is to find materials that will outperform and replace those materials in practical, field operable gamma-ray spectrometers. For neutron detection, there is a continuing need to detect thermal and fission spectrum neutrons without the use of ³He, with high efficiency, while rejecting or discriminating gamma rays.

2. Remote Sensing

DNN R&D seeks applications for development of enabling technologies for novel remote sensing systems and methods. The Remote Sensing Program sponsors the development of detectors, sources, advanced optical systems, image and signal processing algorithms, and sensor and phenomenology modeling to advance remote sensing capabilities. Of particular interest are:

- Novel nanoscale imaging and spectrometer devices enabling extremely compact systems with reduced cooling requirements.
- Innovative multilayer diffractive optical elements capable of efficiencies greater than 90% over the VNIR, SWIR, or MWIR spectral regimes.
- High time resolution photon-counting imaging systems and/or supporting technologies to enable megapixel-class imaging and sub-nanosecond time resolution at photon rates above 10⁸ detected photons per second.
- Three-dimensional scene reconstruction with automatic registration of multi-sensor field-experiment data in support of ground truth methods for remote sensing capability developments.
- Methods for modeling and measuring the inherent optical properties (e.g. complex indices of refraction, bidirectional reflectance function) of geologic and industrial materials to predict reflectance or emissivity to enable improved discrimination of remotely-sensed spectral anomalies.

3. Simulations, Algorithms and Modeling (SAM)

The SAM program supports advancements in Spectroscopic method development, Geospatial analysis, Facility Modeling, Knowledge Representation and Integrated Modeling. Applications are sought to advance the state-of-the-art for nuclear nonproliferation applications. Particular interest is in:

- Object reconstruction from radiation measurements. Applications are being sought that would enable passive neutron and gamma-ray measurements to be used to numerically reconstruct an

unknown radioactive object in terms of its geometry, dimensions, and materials. NNSA is interested in all aspects of this problem, including the application of novel inverse or optimization strategies as well as the application of approximations that enable fast forward modeling and an estimate of their applicability, the development of a robust means of finding non-unique inverse solutions in different types of solution spaces, and the design of a standard verification and validation methodology that could be applied to quantify the success of different solution methods.

- Integration of multi-view, multi-time, multi-resolution, and multi-sensor imagery, incorporating EO/IR, gamma and/or neutron, and other spectroscopic data sources. Improving the integration and fusion of the sensor data requires new and intelligent synchronization and registration techniques. Fusion techniques which do not treat all sensor data equally but incorporate sensor uncertainty into the algorithms (Sukumar et al, 2008) constitute one promising approach to improved data fusion.
- Methodology behind systems of systems modeling, where the underlying systems may include process monitoring, infrastructure, process modeling, and fate and transport. Techniques should allow for dramatically different information to be incorporated into a single framework are of interest, as well as uncertainty propagation and information utility. Validation methodologies for complex facility models are also of interest.
- Algorithms and tools for semantic context extraction from geospatial imagery data. New tools for the automatic extraction of content from geospatial imagery of industrial facilities are needed. There is also valuable information that can be captured not just from the final annotation, but also from the process of annotation and, for instance, the identification of the image features which drive a Subject Matter Expert to manually place a boundary in one location versus another (Gururajan, et al., 2010). To capture this process knowledge for subsequent use by image/scene interpretation algorithms, advanced annotation methods are required to effectively capture SME annotation process knowledge for incorporation into the final ground truth data.

S.R. Sukumar, H. Bozdogan, D.L. Page, A.F. Koschan, M.A. Abidi, "Uncertainty Minimization in Multi-sensor Localization Systems Using Model Selection Theory," in Proc. IEEE 19th International Conference on Pattern Recognition ICPR2008, Tampa, Florida, December 2008.

A. Gururajan, H. Sari-Sarraf and E. Hequet, "Interactive Texture Segmentation Via IT-SNAPS," IEEE Proc. SSIAI, Austin, TX, 2010.

4. Enabling Technology for Mass Spectrometry

DNN R&D sponsors the development of technologies and techniques in the area of isotope quantification via mass spectrometer techniques to advance capabilities in several programs. Applications are sought for development of enabling technologies for novel mass spectrometry systems. These developments can in any aspect of analysis: sample requirements, ionization method, ion separation method, or detector used to measure concentration. Of particular interest are:

- improve uncertainty of isotopic composition determinations: Develop technologies or improvements that lower the uncertainty of isotopic composition measurements routinely used by various nonproliferation applications
- improve throughput of isotopic composition determinations: Develop technologies or improvements that enable increased throughput of samples assuming steady instrument availability and personnel levels

- reduce sample size required for isotopic composition determination: Develop technologies or improvements that improve the sensitivity (e.g. increase the limits of detection) of a given measurement
- reduce the sample purity required for isotopic composition determinations: Develop technologies or procedures for reducing separations and thereby lowering the sample purity requirements for a given measurement
- improve ability to measure isotopic composition regardless of sample type: Develop technologies or improvements capable of determining isotopic composition of solids, liquids, and gases in a variety of matrices.

D. Teaming Considerations

Teaming with organizations of advanced technical and scientific competencies is permitted. In particular, teaming with the DOE National Laboratory system is preferred. Teaming arrangements that result in the training of graduate students will enhance programmatic value and programmatic value is a consideration in Evaluation Criterion 1 (see Section VI. A. 2.) A University must be designated the lead organization and one individual from that university must be designated as the lead principal investigator. The lead organization is accountable for the full team effort and is responsible for integration, management, and reporting for the team. For any single project, the total participation by organizations other than academic institutions, may not exceed 50% of the total effort in terms of the total proposed costs.

III. AWARD INFORMATION

A. Type of Award Instrument

DOE anticipates awarding grants under this Funding Opportunity Announcement.

B. Estimated Funding

Approximately \$10 million is expected to be available for new awards in FY2012 and an additional \$10 million is expected to be available for new awards under this announcement in FY 2013.

C. Maximum and Minimum Award Size

Ceiling (i.e., the maximum amount for an individual award made under this announcement): \$900,000

Floor (i.e., the minimum amount for an individual award made under this announcement): None

D. Expected Number of Awards

DOE anticipates making 8-10 awards under this announcement depending on the size of the awards in FY2012. DOE also anticipates making 8-10 awards under this announcement depending on the size of the awards in FY2013. DOE reserves the right to make more or less awards than the number anticipated, or to make no awards at all.

E. Anticipated Award Size

DOE expects to fund each award in the range of \$150,000 – \$300,000 per year for up to 3 years.

F. Period of Performance

DOE anticipates making awards that will run no longer than 3 years.

G. Type of Application

DOE will accept only new applications under this announcement.

IV. ELIGIBILITY INFORMATION

A. Eligible Applicants

In accordance with 10 CFR 600.6(b), eligibility for award is restricted to universities as required by Section 313 of the Omnibus Appropriations Act of 2009, Public Law 111-8. The university selected for award will be the lead organization and will be held responsible for managing the entire scope, schedule and cost of the project, to include all reporting.

For the purpose of this announcement, the term "university" means an educational institution in any State that: (1) admits as regular students only persons having a certificate of graduation from a school providing secondary education, or the recognized equivalent of such a certificate; (2) is legally authorized within such State to provide a program of education beyond secondary education; (3) provides an educational program for which the institution awards a bachelor's degree or provides not less than a 2-year program that is acceptable for full credit toward such a degree; (4) is accredited by a nationally or regionally recognized accrediting agency or association, or if not so accredited, is an institution that has been granted reaccreditation status by such an agency or association that has been recognized by the U.S. Secretary of Education for the granting of reaccreditation status, and the U.S. Secretary of Education has determined that there is satisfactory assurance that the institution will meet the accreditation standards of such an agency or association within a reasonable time.

B. Cost Sharing

Cost sharing is not required.

C. Other Eligibility Requirements

FFRDC/National Laboratories

Federally Funded Research and Development Center (FFRDC) Contractors. FFRDC contractors may be proposed as a team member on another entity's application subject to the following guidelines:

- Authorization for non-DOE/NNSA FFRDCs. The Federal agency sponsoring the FFRDC contractor must authorize in writing the use of the FFRDC contractor on the proposed project and this authorization must be submitted with the application. The use of a FFRDC contractor must be consistent with the contractor's authority under its contract and must not place the FFRDC contractor in direct competition with the private sector.
- Authorization for DOE/NNSA FFRDCs. The cognizant contracting officer for the FFRDC must authorize in writing the use of a DOE FFRDC contractor on the proposed project and this authorization must be submitted with the application. The following wording is acceptable for this authorization.
"Authorization is granted for the [Name] Laboratory to participate in the proposed project. The work proposed for the laboratory is consistent with or complimentary to the missions of the laboratory, will not adversely impact execution of the DOE assigned programs at the laboratory, and will not place the laboratory in direct competition with the domestic private sector."
- Value Funding: The value of, and funding for the FFRDC contractor portion of the work will not normally be included in the award to a successful applicant, however, the successful applicant is authorized to issue subawards to the FFRDCs from grant awards resulting from this Funding Opportunity Announcement DE-FOA-0000568. In addition, the FFRDCs portion of the work must be

included in the applicant's proposed budget for purposes of evaluating the total project costs. Applicant selected for funding shall contract directly with the FFRDC through an appropriate contractual agreement. Applicant shall be solely responsible for coordinating the work of the FFRDC Contractor.

- FRDC Contractor Effort. The scope of work to be performed by the FFRDC contractor may not be more significant than the scope of work to be performed by the applicant. The FFRDC contractor effort, in aggregate, shall not exceed more than 50% of the total estimated cost of the project, including the applicant's and the FFRDC contractor's portions of the effort.
- Responsibility of Successful Applicant: The applicant, if successful, will be the responsible authority regarding the settlement and satisfaction of all contractual and administrative issues, including but not limited to, disputes and claims arising out of any agreement between the applicant and the FFRDC contractor. Applicants will receive and disburse funding directly to FFRDCs. The applicant should contact the FFRDC Principal Investigator (Team Member) on the project to request the name of the FFRDC Contracting Officer for purposes of coordinating the issuance of the Funding for the FFRDC contractor.

V. APPLICATION AND SUBMISSION INFORMATION

A. Address to Request Application Package

Application forms and instructions are available at Grants.gov. To access these materials, go to <http://www.grants.gov> select "Apply for Grants," and then select "Download Application Package." Enter the CFDA and/or the funding opportunity number located on the cover of this announcement and then follow the prompts to save the application package.

B. Letter of Intent and Pre-applications

Letters of Intent and pre-applications are not required.

C. Content and Application Forms

You must complete the mandatory forms (V.C (g) and any applicable optional forms (e.g., Disclosure of Lobbying Activities (SF-LLL)) in accordance with the instructions on the forms and the additional instructions below. Files that are attached to the forms must be in Adobe Portable Document Format (PDF) unless otherwise specified in this announcement.

a) SF 424 Research & Related (R&R) (3-Year Budget)

Complete this form first to populate data in other forms. Complete all the required fields in accordance with the pop-up instructions on the form. The list of certifications and assurances referenced in Field 17 can be found on the DOE Financial Assistance Forms Page at:

<http://energy.gov/management/office-management/operational-management/grants-and-assistance>

(Under recipient's page, DOE budget Forms.)

b) Research and Related Other Project Information

The Research & Related Other Project Information form of the Grants.gov template should be completed in the following manner. Complete fields 1 through 6 and attach files for fields 7 and 8. Do not attach separate files for fields 9 through 11. Attach the NEPA compliance form to field 12. The attached files must comply with the following instructions:

Project Summary/Abstract (Field 7 on the Form):

The project summary/abstract must contain a summary of the proposed activity suitable for dissemination to the public. It should be a single page that identifies name of the applicant, the project director/principal investigator(s), the project title, the objectives of the project, a description of the project, including methods to be employed, the potential impact of the project (i.e., benefits, outcomes), and major participants (for collaborative projects). This document must not include any proprietary or sensitive business information as the Department may make it available to the public. The project summary must not exceed one page when printed using standard 8.5" by 11" paper with 1" margins (top, bottom, left and right) with font not smaller than 11 point. To attach a Project Summary/Abstract, click "Add Attachment."

Project Narrative (Field 8 on the Form):

There is no page limit to the project narrative. When printed using standard 8.5" by 11" paper, the margins should be one inch (top, bottom, left, and right). The font must not be smaller than 11 point. Do not include any Internet addresses (URLs) that provide information necessary to review the application, because the

information contained in these sites will not be reviewed. **All applications should be in a single PDF file.** To attach a Project Narrative, click "Add Attachment."

The project narrative must include:

Cover Page: This page identifies the announcement number, the Topic/Subtopic number the application is submitted under, the project title, the full name, address, phone, email, organization, name of the applicant, the principal investigator(s), business point of contact, and major participants (for collaborative projects).

Project Objectives: This section should provide a clear, concise statement of the specific objectives and aims of the proposed project.

Mission Relevance, Outcomes, and Impacts: This section should explain the relevance of the effort to the objectives in the program announcement and the expected outcomes and/or impacts and clearly demonstrate how the project will support the research goals of advancing state-of-the art nuclear proliferation detection or nuclear forensics capability in accordance with one or more the four technical scope and research topics described in Part II of this FOA.

Scientific and Technical Merit: This section should address how the project will advance the current state of science and technology. Address the scientific and technical risks associated with the proposed approach.

Management Plan: This section should address the proposed management plan and timeline that will lead to the achievement of the stated objectives. Address the plan through phases (as many or as few as appropriate), with specific tasks identified with each phase. Tasks, concisely written, should be provided in a logical sequence. Include in the management plan:

Project Timetable: This section should outline as a function of time, year by year, all the important activities or phases of the project, including any activities planned beyond the project period.

Roles of Participants: For multi-organizational or multi-investigator projects, describe the roles and the work to be performed by each participant/investigator, business agreements between the applicant and participants, and how the various efforts will be integrated and managed.

Deliverables: This section should address any proposed deliverables associated with the project, e.g. End of Phase reports, algorithms, etc.

Appendix 1: Biographical Sketch Appendix.

Provide a biographical sketch for each project director/principal investigator (PD/PI) and each senior/key person listed in Section A on the R&R Budget form. **Provide the biographical sketch information as an appendix to your project narrative. Do not attach as a separate file.** The biographical information for each person must not exceed 2 pages when printed on 8.5" by 11" paper with 1 inch margins (top, bottom, left, and right) with font not smaller than 11 point and must include:

Education and Training. Undergraduate, graduate and postdoctoral training, provide institution, major/area, degree and year.

Research and Professional Experience: Beginning with the current position list, in chronological order, professional/academic positions with a brief description.

Publications. Provide a list of up to 10 publications most closely related to the proposed project. For each publication, identify the names of all authors (in the same sequence in which they appear in the publication), the article title, book or journal title, volume number, page numbers, year of publication,

and website address if available electronically. Patents, copyrights and software systems developed may be provided in addition to or substituted for publications.

Synergistic Activities. List no more than 5 professional and scholarly activities related to the effort proposed.

Identification of Potential Conflicts of Interest or Bias in Selection of Reviewers. Provide the following information in this section:

Collaborators and Co-editors: List in alphabetical order all persons, including their current organizational affiliation, who are, or who have been, collaborators or co-authors with you on a research project, book or book article, report, abstract, or paper during the 48 months preceding the submission of this application. Also, list any individuals who are currently, or have been, co-editors with you on a special issue of a journal, compendium, or conference proceedings during the 24 months preceding the submission of this application. If there are no collaborators or co-editors to report, state "None."

Graduate and Postdoctoral Advisors and Advisees: List the names and current organizational affiliations of your graduate advisor(s) and principal postdoctoral sponsor(s) during the last 5 years. Also, list the names and current organizational affiliations of your graduate students and postdoctoral associates during the past 5 years.

Appendix 2: Current and Pending Support.

Provide a list of all current and pending support (both Federal and non-Federal) for the Project Director/Principal Investigator(s) (PD/PI) and senior/key persons, including subawardees, for ongoing projects and pending applications. For each organization providing support, show the total award amount for the entire award period (including indirect costs) and the number of person-months per year to be devoted to the project by the senior/key person. Concurrent submission of an application to other organizations for simultaneous consideration will not prejudice its review. **Provide the Current and Pending Support information as an appendix to your project narrative. Do not attach as a separate file.**

Appendix 3: Bibliography & References Cited.

Provide a bibliography of any references cited in the Project Narrative. Each reference must include the names of all authors (in the same sequence in which they appear in the publication), the article and journal title, book title, volume number, page numbers, and year of publication. Include only bibliographic citations. Applicants should be especially careful to follow scholarly practices in providing citations for source materials relied upon when preparing any section of the application. **Provide the Bibliography and References Cited information as an appendix to your project narrative. Do not attach as a separate file.**

Appendix 4. Facilities & Other Resources.

This information is used to assess the capability of the organizational resources, including subawardee resources, available to perform the effort proposed. Identify the facilities to be used (Laboratory, Animal, Computer, Office, Clinical and Other). If appropriate, indicate their capacities, pertinent capabilities, relative proximity, and extent of availability to the project. Describe only those resources that are directly applicable to the proposed work. Describe other resources available to the project (e.g., machine shop, electronic shop) and the extent to which they would be available to the project. **Provide the Facility and Other Resource information as an appendix to your project narrative. Do not attach as a separate file.**

Appendix 5: Equipment.

List major items of equipment already available for this project and, if appropriate identify location and pertinent capabilities. **Provide the Equipment information as an appendix to your project narrative. Do not attach as a separate file.**

Appendix 6: Other Attachments.

If you need to elaborate on your responses to fields 1-6 on the "Other Project Information" document, provide the information as an appendix to your project narrative.

Do not attach any of the requested appendices described above as files for fields 9, 10, 11 and 12; instead follow the above instructions to include the information as appendices to the project narrative file.

Environmental Questionnaire.

All NNSA grants must comply with the National Environment Policy Act (NEPA) compliance requirements. Complete the environmental questionnaire attached to this announcement. Save the questionnaire in a single file named "Env.pdf" and click on "Add Attachments" in Field 12 to attach.

The Travel Summary and the Equipment Quote and Specification Form, if applicable, may be downloaded from Fedconnect.net.

Subaward Budget Justification (if applicable).

Budget for a Federally Funded Research and Development Center (FFRDC) contractor, or National Laboratory, if applicable:

If a DOE FFRDC contractor is to perform a portion of the work, you must provide a DOE Work Proposal in accordance with the requirements in DOE Order 412.1A Work Authorization System. For additional requirements regarding FFRDC contractors, please see Section III Subsection C of the FOA. This order and the DOE Work Proposal form are available at:

<http://energy.gov/management/office-management/operational-management/grants-and-assistance>

(Go to Recipient's page/DOE Budget Forms/DOE Order 412.1a/Attachments 2 & 3)

Use the FFRDC name as the file name (up to 10 letters) and attach in Field 12.

c) Research and Related Budget

Complete the Research and Related Budget form in accordance with the instructions on the form and the following instructions. You must complete a separate budget for each year of support requested. The form will generate a cumulative budget for the total project period. You must complete all the mandatory information on the form before the NEXT PERIOD button is activated. You may request funds under any of the categories listed as long as the item and amount are necessary to perform the proposed work, meet all the allowable criteria under the applicable Federal cost principles, and are not prohibited by the funding restrictions in this announcement (See Section V.G).

Budget Justification (Field K on the form)

Provide the required supporting information for the following costs (See R&R instructions): equipment (over \$5k); domestic and foreign travel; participant/trainees; material and supplies; publication; consultant services; ADP/computer services; attending and fully participating in the annual University Industry Technical Interchange (UITI) meeting, including paper preparation and submission, subaward/consortium/contractual;

equipment or facility rental/user fees; alterations and renovations; tuition fees; and indirect cost type. In addition, percentage of effort and estimated costs associated with donated services by individuals participating under this program, must also be provided in your Budget and Budget Justification for each year of the project period. Provide a copy of the latest negotiated rate agreement and any other information you wish to submit to justify your budget request. Attach a single budget justification file for the entire project period in Field K. The file automatically carries over to each budget year.

d) R&R Subaward (Total Fed + Non-Fed) Form

Budgets for Subrecipients, other than DOE FFRDC Contractors. You must provide a separate cumulative R&R budget for each subrecipient that is expected to perform work estimated to be more than \$100,000 or 50 percent of the total work effort (whichever is less). Download the R&R Budget Attachment from the R&R SUBAWARD BUDGET (Total Fed + Non-Fed) Form and e-mail it to each subrecipient that is required to submit a separate budget. After the Subrecipient has e-mailed its completed budget back to you, attach it to one of the blocks provided on the form. Use up to 10 letters of the subrecipient’s name as the file name.

e) Project/Performance Site Locations(s)

Indicate the primary site where the work will be performed. If a portion of the project will be performed at any other site(s), identify the site location(s) in the blocks provided.

Note that the Project/Performance Site Congressional District is entered in the format of the 2 digit state code followed by a dash and a 3 digit Congressional district code, for example VA-001. Hover over this field for additional instructions. Use the Next Site button to expand the form to add additional Project/Performance Site Locations.

f) Disclosure of Lobbying Activities (SF-LLL)

If applicable, complete SF- LLL. Applicability: If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the grant/cooperative agreement, you must complete and submit Standard Form - LLL, "Disclosure Form to Report Lobbying."

g) Summary of Required Forms and Files. Your application must include the following documents:

Name of Document	Format	Attach to
SF 424 (R&R)	Form	N/A
RESEARCH AND RELATED Other Project Information	Form	N/A
Project Summary/Abstract	PDF	Field 7
Project Narrative	PDF	Field 8
Budget for DOE FFRDC (if applicable)	PDF	Field 12
Environmental Questionnaire	PDF	Field 12

Equipment Quotes and Specifications (if applicable)	xlsx	N/A
Travel Summary	xlsx	N/A
RESEARCH AND RELATED BUDGET	Form	N/A
Budget Justification	PDF	Field K
R&R SUBAWARD ATTACHMENT, if applicable (submit a budget for each year)	Form	N/A
R&R SUBAWARD Justification for costs (if applicable)	PDF	N/A
PROJECT/PERFORMANCE SITE LOCATION	Form	N/A
SF-LLL DISCLOSURE OF LOBBYING ACTIVITIES (if applicable)	Form	N/A

D. Submissions from Applicants

DOE reserves the right to request additional or clarifying information for any reason deemed necessary, including, but not limited to:

- Indirect cost information
- Other budget information
- Name and phone number of the Designated Responsible Employee for complying with national policies prohibiting discrimination (See 10 CFR 1040.5)
- Representation of Limited Rights Data and Restricted Software, if applicable
- Commitment Letter from Third Parties Contributing to Cost Sharing, if applicable

E. Submission Dates and Times

1. Application Due Date

Applications should be received by 30 January 2012 not later than 11:59:59 PM Eastern Time in Grants.gov. Because applications must be submitted electronically, applicants should be aware that it is always possible for technical difficulties to prevent applications from being received by NNSA on time. NNSA will not consider any applications that are received after the application deadline. This includes applications that are received by NNSA late as a result of technical difficulties. Therefore, applicants are strongly encouraged to submit their applications well in advance of the application deadline.

Applications received after the deadline will not be reviewed or considered for award.

F. Intergovernmental Review

This program is not subject to Executive Order 12372 – Intergovernmental Review of Federal Programs.

G. Funding Restrictions

Cost Principles. Costs, whether funded by Federal funds or cost-sharing contributions, must be allowable, allocable and reasonable in accordance with the applicable Federal cost principles referenced in 10 CFR Part 600. The cost principals for commercial organizations are in Federal Acquisition Regulations 48 CFR, Part 31.

Pre-award Costs. Recipients may charge to an award resulting from this announcement pre-award costs that were incurred within the ninety (90) calendar day period immediately preceding the effective date of the award, if the costs are allowable in accordance with the applicable Federal cost principles referenced in 10 CFR Part 600. Recipients must obtain the prior approval of the contracting officer for any pre-award costs that are for periods greater than this 90 day calendar period.

Pre-award costs are incurred at the applicant's risk. DOE is under no obligation to reimburse such costs if for any reason the applicant does not receive an award or if the award is made for a lesser amount than the applicant expected.

H. Other Submission and Registration Requirements

1. Where to Submit

Applications must be submitted through Grants.gov to be considered for award. You cannot submit an application through Grants.gov unless you are registered. Please read the registration requirements carefully and start the process immediately. **Remember you have to update your CCR registration annually.** If you have any questions about your registration, you should contact the Grants.gov Helpdesk at 1-800-518-4726 to verify that you are still registered in Grants.gov. **Grants.gov through a validation process will reject submission of any application if the CCR registration is not active.**

2. Registration Process

There are several one-time actions you must complete in order to submit an application (e.g., obtain a Dun and Bradstreet Data Universal Numbering System (DUNS) number, register with the Central Contract Registry (CCR), register with the credential provider, and register with Grants.gov). See <http://www.grants.gov/> Use the Grants.gov Organization Registration Checklist at:

<http://www.grants.gov/assets/OrganizationRegCheck.doc> to guide you through the process. Designating an E-Business Point of Contact (EBiz POC) and obtaining a special password called an "Marketing Partner Identification Number (MPIN)" are important steps in the CCR registration process. Applicants, who are not registered with CCR and Grants.gov, should allow at least 21 days to complete these requirements. It is suggested that the process be started as soon as possible. When you have completed the process, you should call the Grants.gov Helpdesk at 1-800-518-4726 to verify that you have completed the final step (i.e., Grants.gov registration).

VI. APPLICATION REVIEW INFORMATION

A. Criteria

1. Initial Review Criteria

Prior to a comprehensive merit evaluation, DOE will perform an initial review to determine that (1) the applicant is eligible for an award; (2) the information required by the announcement has been submitted; (3) all mandatory requirements are satisfied; and (4) the proposed project is responsive to the objectives of the funding opportunity announcement.

2. Merit Review Criteria

Proposals will be evaluated against the following criteria:

1. Mission Relevance – To what extent does the application support the research goals of advancing state-of-the-art nuclear proliferation detection capability in accordance one or more of the four technical scope and research topics described in Part II of this FOA? Are there plans for collaboration with the National Laboratories (facilities and/or personnel) and to what extent will the proposed collaboration assist the applicant in meeting the said objectives? Applicants who include plans for collaboration with National Laboratories for their projects will receive higher scores for this criterion commensurate with the quality of the proposed collaboration than applicants who do not.
2. Overall Scientific and Technical Merit – To what extent is the project based on a solid understanding of the current state of science and technology? How appropriate is the proposed method for achieving the objectives stated in the application and the program objectives described in this FOA? To what extent does the proposed work complement or avoid duplication of already ongoing or completed work?
3. Risk Assessment – What is the likelihood the stated mission objective is achievable? The qualifications, capabilities, and experience of the principal investigators, team leaders, and key personnel as well as corporate capabilities and relevant experience will factor into this assessment.
4. Research Duplication – To what extent does the proposed work complement or avoid duplication of already ongoing or completed work? Higher scores for this criterion will be given to applications which minimize duplication and which complement or add to already ongoing or completed work.
5. Management Plan – What is the likelihood that the proposed management plan and timeline will lead to the achievement of the objectives stated in the application as well as the overall program objectives described in this FOA?

Criteria 1 and 2 are individually significantly more important than Criterion 3, 4 and 5. Criterion 3 and 5 are equally significant with Criterion 4 being significantly less important than Criterion 3 and 5. The merit review evaluation board will evaluate the proposals against all five evaluation criteria.

Proposed budgets and costs will be evaluated for those applications which receive the highest merit review ratings in order to determine whether or not the budgets are substantiated and reasonable. NNSA reserves the right to request applicants to provide additional/supplemental information in order to verify costs and to justify proposed budgets. NNSA also reserves the right to negotiate changes to any proposed budget and/or project scope prior to making award to any applicant. NNSA shall not make awards based on unreasonable budgets or where costs outweigh any advantages in the technical approach.

B. Review and Selection Process

1. Selection

The Selection Official will consider the merit review recommendation, program policy factors, and the amount of funds available.

In addition, the Selection Official will consider using the following Program Policy Factors to evaluate applications to determine if:

- It is desirable to select for award a group of projects which represents a diversity of technical approaches and methods;
- It is desirable to support complementary or duplicative efforts or projects, which, when taken together, will best achieve the research goals and objectives;
- It is desirable that different kinds and sizes of organizations be selected for Award in order to provide a balanced programmatic effort and a variety of different technical perspectives.

2. Discussions and Award

The Government may, but is not required to, enter into discussions with any applicant, prior to or after award selection, for any reason deemed necessary, including but not limited to: (1) the budget is not appropriate or reasonable for the requirement; (2) only a portion of the application is selected for award; (3) the Government needs additional information to determine that the recipient is capable of complying with the requirements in 10 CFR part 600; and/or (4) special terms and conditions are required. Failure to resolve satisfactorily the issues identified by the Government will preclude award to the applicant.

C. Anticipated Notice of Selection and Award Dates

DOE anticipates notifying applicants selected for FY12 funding sometime after March 2012 and expects to make FY12 awards by the end of May 2012. DOE expects to notify FY13 applicants and to make FY13 awards as soon as funding becomes available. However, DOE reserves the right to make award selection and notify the applicants prior to or after the anticipated dates specified above.

VII. AWARD ADMINISTRATION INFORMATION

A. Award Notices

1. Notice of Selection

DOE will notify applicants selected for award. This notice of selection is not an authorization to begin performance. (See Section V.G with respect to the allowance of pre-award costs.) Organizations whose applications have not been selected will be advised as promptly as possible. This notice will explain why the application was not selected.

2. Notice of Award

An Assistance Agreement issued by the contracting officer is the authorizing award document. It normally includes either as an attachment or by reference: (1) Special Terms and Conditions; (2) Applicable program regulations, if any; (3) Application as approved by DOE; (4) DOE assistance regulations at 10 CFR part 600, (5) National Policy Assurances to be Incorporated as award terms; (6) Budget Summary; and (7) Federal Assistance Reporting Checklist, which identifies the reporting requirements.

B. Administrative and National Policy Requirements

1. Administrative Requirements

The administrative requirements for DOE grants and cooperative agreements are contained in 10 CFR 600 (See: <http://ecfr.gpoaccess.gov>). Grants and cooperative agreements made to universities, non-profits and other entities are also subject to the Research Terms and Conditions located on the National Science Foundation web site at <http://www.nsf.gov/bfa/dias/policy/rtc/index.jsp>.

2. DUNS and CCR Requirements

Additional administrative requirements for DOE grants and cooperative are contained in 2 CFR, Part 25 (see: [http://ecfr.gpoaccess.gov/.](http://ecfr.gpoaccess.gov/)) Prime awardees must keep their data at CCR current. Subawardees/Contractors at all tiers must obtain DUNS numbers and provide the DUNS to the prime awardee before the Subawardee/contract can be issued.

3. SUBAWARD AND EXECUTIVE REPORTING

Additional administrative requirements necessary for DOE grants and cooperative agreements to comply with the Federal Funding and Transparency Act of 2006 (FFATA) are contained in 2 CFR, Part 170. (See: <http://ecfr.gpoaccess.gov>). Prime awardees must register with the new FFATA Sub-award Reporting System (FSRS) database and report the required data on their first tier Subawardees. Prime awardees must report the executive compensation for their own executives as part of their registration profile in the CCR.

4 Special Terms and Conditions and National Policy Requirements

Special Terms and Conditions and National Policy Requirements. The DOE Special Terms and Conditions for Use in Most Grants and Cooperative Agreements are located at:

<http://energy.gov/management/office-management/operational-management/grants-and-assistance>

(Go to recipient's page then Award Terms)

5. Intellectual Property

Intellectual Property Provisions. The Standard DOE financial assistance intellectual property provisions applicable to the various types of recipients are located at

<http://energy.gov/gc/standard-intellectual-property-ip-provisions-financial-assistance-awards>

C. Reporting

Reporting requirements are identified on the Federal Assistance Reporting Checklist and Instructions for RD&D Projects, DOE F 4600.2, attached to the award agreement. For a sample Checklist, see:

<http://energy.gov/management/office-management/operational-management/grants-and-assistance>

(Under Recipient page, Award Forms)

D. Questions

Questions regarding the content of the announcement must be submitted through the FedConnect portal. You must register with FedConnect to respond as an interested party to submit questions, and to view responses to questions. It is recommended that you register as soon after release of the FOA as possible to have the benefit of all responses. More information is available at:

<https://www.fedconnect.net/FedConnect/>

DOE will try to respond to a question within 3 business days, unless a similar question and answer have already been posted on the website.

Questions relating to the registration process, system requirements, how an application form works, or the submittal process must be directed to Grants.gov at 1-800-518-4726 or support@grants.gov. DOE/NNSA cannot answer these questions.

E. Agency Contact

Name: Delmeria Pacheco, Grants Management Specialist

E-mail: Delmeria.Pacheco@nnsa.doe.gov

VIII. OTHER INFORMATION

A. Modifications

Notices of any modifications to this announcement will be posted on Grants.gov and the FedConnect portal. You can receive an email when a modification or an announcement message is posted by registering with FedConnect as an interested party for this FOA. It is recommended that you register as soon after release of the FOA as possible to ensure you receive timely notice of any modifications or other announcements. More information is available at:

<http://www.fedconnect.net>

B. Government Right to Reject or Negotiate

DOE reserves the right, without qualification, to reject any or all applications received in response to this announcement and to select any application, in whole or in part, as a basis for negotiation and/or award.

C. Commitment of Public Funds

The Contracting Officer is the only individual who can make awards or commit the Government to the expenditure of public funds. A commitment by other than the Contracting Officer, either explicit or implied, is invalid.

D. Proprietary Application Information

Patentable ideas, trade secrets, proprietary or confidential commercial or financial information, disclosure of which may harm the applicant, should be included in an application only when such information is necessary to convey an understanding of the proposed project. The use and disclosure of such data may be restricted, provided the applicant includes the following legend on the first page of the project narrative and specifies the pages of the application which are to be restricted:

"The data contained in pages [*Insert pages*] of this application have been submitted in confidence and contain trade secrets or proprietary information, and such data shall be used or disclosed only for evaluation purposes, provided that if this applicant receives an award as a result of or in connection with the submission of this application, DOE shall have the right to use or disclose the data herein to the extent provided in the award. This restriction does not limit the government's right to use or disclose data obtained without restriction from any source, including the applicant."

To protect such data, each line or paragraph on the pages containing such data must be specifically identified and marked with a legend similar to the following:

"The following contains proprietary information that (name of applicant) requests not be released to persons outside the Government, except for purposes of review and evaluation."

E. Evaluation and Administration by Non-Federal Personnel

In conducting the merit review evaluation, the Government may seek the advice of qualified non-federal personnel as reviewers. The Government may also use non-Federal personnel to conduct routine, nondiscretionary administrative activities. The applicant, by submitting its application, consents to the use of

non-Federal reviewers/administrators. Non-Federal reviewers must sign conflict of interest and non-disclosure agreements prior to reviewing an application. Non-Federal personnel conducting administrative activities must sign a non-disclosure agreement.

F. Intellectual Property Developed Under This Program

Patent Rights. The government will have certain statutory rights in an invention that is conceived or first actually reduced to practice under a DOE award. 42 U.S.C. 5908 provides that title to such inventions vests in the United States, except where 35 U.S.C. 202 provides otherwise for nonprofit organizations or small business firms. However, the Secretary of Energy may waive all or any part of the rights of the United States subject to certain conditions. (See "Notice of Right to Request Patent Waiver" in paragraph G below.)

Rights in Technical Data. Normally, the government has unlimited rights in technical data created under a DOE agreement. Delivery or third party licensing of proprietary software or data developed solely at private expense will not normally be required except as specifically negotiated in a particular agreement to satisfy DOE's own needs or to insure the commercialization of technology developed under a DOE agreement.

G. Notice of Right to Request Patent Waiver

Applicants may request a waiver of all or any part of the rights of the United States in inventions conceived or first actually reduced to practice in performance of an agreement as a result of this announcement, in advance of or within 30 days after the effective date of the award. Even if such advance waiver is not requested or the request is denied, the recipient will have a continuing right under the award to request a waiver of the rights of the United States in identified inventions, i.e., individual inventions conceived or first actually reduced to practice in performance of the award. Any patent waiver that may be granted is subject to certain terms and conditions in 10 CFR 784:

<http://www.gpo.gov/fdsys/pkg/CFR-2010-title10-vol4/pdf/CFR-2010-title10-vol4-sec784-3.pdf>

Domestic small businesses and domestic nonprofit organizations will receive the patent rights clause at 37 CFR 401.14, i.e., the implementation of the Bayh-Dole Act. This clause permits domestic small business and domestic nonprofit organizations to retain title to subject inventions. Therefore, small businesses and nonprofit organizations do not need to request a waiver.

H. Notice Regarding Eligible/Ineligible Activities

Eligible activities under this program include those which describe and promote the understanding of scientific and technical aspects of specific energy technologies, but not those which encourage or support political activities such as the collection and dissemination of information related to potential, planned or pending legislation.

IX. APPENDICES

These templates are required for application submission. They are included, should you wish to prepare them earlier. Forms are included as attachments and may be downloaded from Fedconnect.net.

- A. Environmental Questionnaire**
- B. Equipment Quotes and Specifications Template (if applicable)**
- C. Travel Summary Template**

Attachment A

U.S. DEPARTMENT OF ENERGY

NATIONAL NUCLEAR SECURITY ADMINISTRATION (NNSA) HEADQUARTERS FINANCIAL ASSISTANCE ENVIRONMENTAL CHECKLIST

Background for the Checklist: In compliance with the National Environmental Policy Act (NEPA), Department of Energy-funded activities are reviewed to determine if they will have any environmental impacts and, if so, what mitigating actions might be implemented. The attached form provides the information necessary for that NEPA review.

Checklist Instructions: Parts I, II, and III of the form are completed by the grant applicant. Part IV solicits information that the grant applicant may not be aware of so that Part, and any items of section 8 that are unclear, should be completed by the grant applicant in coordination with the environment, health, and safety coordinator/officer at each non-federal institution* at which the proposed project will be undertaken. Personnel at that office are asked to complete and sign Part V before returning the form to the applicant.

* Please note, Department of Energy National Laboratories are federal institutions.

U.S. DEPARTMENT OF ENERGY
NNSA HEADQUARTERS
FINANCIAL ASSISTANCE ENVIRONMENTAL CHECKLIST

Part I: Recipient Information

Project Title:

Principal Investigator:

Date:

Organization Name:

Solicitation Number:

Award Number:

(To be Completed by NNSA)

Part II: Project Description

1. Please describe the intended use of Department of Energy funding in your proposed project. Describe the project as specifically as possible, e.g., does it involve conducting a feasibility study, developing a design, data analysis, or education or outreach activities? Does it involve use of established research facilities, construction, capital purchases and/or equipment installation or modification? At what location(s) will the project be conducted? What is the desired outcome of the project?

2. Indicate below if the funding you are requesting will be applied to the entire project or only to support a phase of the project. Entire Project Project Phase Explain:

3. Which, if any, of the following activities apply to your proposed project?
 - Award of a contract for technical services
 - Entirely a "Paper Study"
 - Information gathering such as literature surveys, inventories, audits
 - Data analysis including computer sciences/modeling, applied mathematics, modeling and simulation
 - Document preparation such as design, feasibility studies, analytical energy supply and demand studies
 - Information dissemination, including document mailings, publication, distribution, training, conferences, internships, and informational programs.

- 4(A). Which, if any, of the following describe the scale of the actions you are proposing for the present effort?
 - Laboratory (Batch) Research
 - Full-Scale Demonstration
 - Pilot Plant Construction/Operation
 - Pilot- or Proof-of-concept-Scale Research
 - Bench-top/scale Research
 - Other (please describe):

- 4(B). Which, if any, of the following describe the scale of the entire project?
- | | |
|---|--|
| <input type="checkbox"/> Laboratory (Batch) Research | <input type="checkbox"/> Pilot- or Proof-of-concept-Scale Research |
| <input type="checkbox"/> Full-Scale Demonstration | <input type="checkbox"/> Bench-top/scale Research |
| <input type="checkbox"/> Pilot Plant Construction/Operation | <input type="checkbox"/> Other (please describe): |

If you selected any option in item 4(A) or 4(B), please continue. If you did not select an option in item 4(A) or 4(B), please proceed to Part III, Certification.

5. Will the work occur outdoors or have an outdoor component? Yes No
If yes, please describe.
6. Will the work to be performed take place entirely in existing buildings? Yes No
7. Will the work to be performed require new construction? Yes No
If yes: Developed site Undeveloped site

If Yes, please describe the construction and the site.

Or, will the work to be performed require existing facility modification and upgrades?
 Yes No If yes, please describe.

8. Potential Environmental Effects:

Insert an explanation for each "Yes" response in the table at the end of item 49.

A. Sensitive Resources: Will the proposed action result in changes and/or disturbances to any of the following resources?

	Yes	No
1. Threatened/Endangered Species and/or Critical Habitats	<input type="checkbox"/>	<input type="checkbox"/>
2. Other Protected Species (e.g., Burros, Migratory Birds)	<input type="checkbox"/>	<input type="checkbox"/>
3. Sensitive Environments (e.g., Tundra/Coral Reefs/Rain Forests)	<input type="checkbox"/>	<input type="checkbox"/>
4. Archaeological/Historic Resources	<input type="checkbox"/>	<input type="checkbox"/>
5. Important Farmland	<input type="checkbox"/>	<input type="checkbox"/>
6. Non-Attainment Areas for Ambient Air Quality Standards	<input type="checkbox"/>	<input type="checkbox"/>
7. Class I Air Quality Control Region	<input type="checkbox"/>	<input type="checkbox"/>

- | | | | |
|--|--|--------------------------|--------------------------|
| 8. | Special Sources of Groundwater (e.g. Sole Source Aquifer) | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. | Navigable Air Space | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. | Coastal Zones | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. | Areas with Special National Designation (e.g. National Forests, Parks, Trails, wild & scenic rivers) | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. | Floodplains and Wetlands | <input type="checkbox"/> | <input type="checkbox"/> |
| B. Regulated Substances/Activities: Will the proposed action involve any of the following regulated items or activities? | | | |
| | | Yes | No |
| 13. | Natural Resource Damage Assessments | <input type="checkbox"/> | <input type="checkbox"/> |
| 14. | Exotic Organisms | <input type="checkbox"/> | <input type="checkbox"/> |
| 15. | Noxious Weeds | <input type="checkbox"/> | <input type="checkbox"/> |
| 16. | Clearing or Excavation (indicate if greater than one acre) | <input type="checkbox"/> | <input type="checkbox"/> |
| 17. | Dredge or Fill (under Clean Water Act, Section 404, indicate if greater than ten acres) | <input type="checkbox"/> | <input type="checkbox"/> |
| 18. | Noise (in excess of regulations) | <input type="checkbox"/> | <input type="checkbox"/> |
| 19. | Asbestos/Lead Removal | <input type="checkbox"/> | <input type="checkbox"/> |
| 20. | PCB's | <input type="checkbox"/> | <input type="checkbox"/> |
| 21. | Import, Manufacture, or Processing of Toxic Substances | <input type="checkbox"/> | <input type="checkbox"/> |
| 22. | Chemical Storage/Use | <input type="checkbox"/> | <input type="checkbox"/> |
| 23. | Pesticide Use | <input type="checkbox"/> | <input type="checkbox"/> |
| 24. | Hazardous, Toxic, or Criteria Pollutant Air Emissions ^A | <input type="checkbox"/> | <input type="checkbox"/> |
| 25. | Liquid Effluents | <input type="checkbox"/> | <input type="checkbox"/> |
| 26. | Underground Injection | <input type="checkbox"/> | <input type="checkbox"/> |
| 27. | Hazardous Waste ^B | <input type="checkbox"/> | <input type="checkbox"/> |
| 28. | Underground Storage Tanks | <input type="checkbox"/> | <input type="checkbox"/> |
| 29. | Radioactive Mixed Waste ^B | <input type="checkbox"/> | <input type="checkbox"/> |

- | | | |
|--|--------------------------|--------------------------|
| 30. Radioactive Waste ^B | <input type="checkbox"/> | <input type="checkbox"/> |
| 31. Radiation Exposure | <input type="checkbox"/> | <input type="checkbox"/> |
| 32. Surface Water Protection | <input type="checkbox"/> | <input type="checkbox"/> |
| 33. Pollution Prevention Act reporting | <input type="checkbox"/> | <input type="checkbox"/> |
| 34. Ozone Depleting Substances | <input type="checkbox"/> | <input type="checkbox"/> |
| 35. Off-Road Vehicles | <input type="checkbox"/> | <input type="checkbox"/> |
| 36. Biosafety Level 3-4 Laboratory | <input type="checkbox"/> | <input type="checkbox"/> |
| 37. Greenhouse Gases (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, or sulfur hexafluoride) ^A | <input type="checkbox"/> | <input type="checkbox"/> |

^A If yes, please indicate in the table the amounts of each to be released to the atmosphere.

^B If yes, please indicate in the table the approximate quantities and plans or arrangements for disposal.

Part III: Certification

(to be completed by the grant applicant)

I hereby certify that the information I have provided is current, accurate, and complete as of the date noted with my signature.

Signature: _____

Date:

Name:

Telephone(s)

Email:

Part V: Environmental Impacts Review

(A Part V is to be completed by each non-federal institution hosting the project.)

Part II of this form describes a project planned to take place at your institution. Based on that information and the information provided in Part IV, please respond to the following questions.

1. Is a National Environmental Policy Act or similar state-level review required for this project?

Yes, please explain:

No, please explain:

2. Does your institution have environmental permits (e.g., Resource Conservation and Recovery Act, Clean Air Act) or licenses (e.g., radioactive materials) to host this project?

Yes, please explain:

No, please explain:

If an existing radioactive materials license applies to the proposed project, please supply the number(s):

3. Will your institution be required to receive or modify environmental permits (e.g., Resource Conservation and Recovery Act, Clean Air Act) or licenses (e.g., radioactive materials) to host this project?

Yes, please explain:

No, please explain:

Additional comments:

I hereby certify that the information I have provided is current, accurate, and complete as of the date noted with my signature.

Signature: _____

Date:

Name:

Title:

Email:

Telephone(s)

Name of Organization:
 Principal Investigator:
 Title of Project:

Equipment Quotes and Specifications (Attachment B)

ITEM	UNIT COST	QTY	TOTAL COST	SOURCE OF COST ESTIMATE (ex: vendor quote, quote from internet market research)
Example: Broad Energy Germanium Detector Purpose: This item is needed to complete the third training station for nondestructive assay measurement techniques for the applied safeguards technologies laboratory.				
GRAND TOTAL				

