

FUNDING OPPORTUNITY ANNOUNCEMENT
FOA-RVK-2019-0001
AFRL RV/RD UNIVERSITY ASSISTANCE INSTRUMENT PROGRAM
ANNOUNCEMENT OVERVIEW

FEDERAL AGENCY NAME: Air Force Research Laboratory (AFRL) Space Vehicles (RV) and Directed Energy (RD) Directorates; Kirtland Air Force Base (AFB), NM

FUNDING OPPORTUNITY ANNOUNCEMENT (FOA) TITLE: AFRL Space Vehicles (RV) and Directed Energy (RD) University Assistance Instruments

FUNDING OPPORTUNITY ANNOUNCEMENT TYPE: Initial Announcement.

FUNDING OPPORTUNITY NUMBER: FOA-RVK-2019-0001

CATALOG OF FEDERAL DOMESTIC ASSISTANCE (CFDA) NUMBER(S): 12.800
Air Force Defense Research Sciences Program

PROPOSAL DUE DATE AND TIME: This is a 5 year open Funding Opportunity Announcement (FOA) accepting proposal from the date of publication for award of grants and cooperative agreement assistance instruments. Once the announcement has reached the 5 year period or the ceiling value is expended, the announcement will be modified to reflect the announcement as closed. This FOA will be reviewed on an annual basis to ensure awards are maintained within the ceiling values. In the event the ceiling is near the anticipated funding limit for the year, the announcement may be closed for a period of time and reopened accordingly via modification.

Proposals may be submitted any time during this 5 year period and are evaluated as they are received. Prior to submitting a proposal, applicants are required to contact the Core Technical Competency (CTC) Points of Contact (POCs) listed in Section I under the applicable topic area. This procedure is intended to minimize unnecessary efforts in proposal preparation.

All proposals must be submitted electronically through the Grants.gov government-wide electronic portal at <https://www.grants.gov/>. You must notify the Primary Agreements POC and CTC POCs listed in the respective topic description immediately upon submitting your proposal electronically. In addition to the on-line proposal submission, a two-page synopsis must be submitted directly to the applicable CTC POCs listed in the specific topic area.

No hard copy submissions will be accepted.

BRIEF PROGRAM SUMMARY: AFRL RV and RD lead the nation in space supremacy and directed energy research and development. This 5 year, open FOA is to solicit research proposals for basic, applied, and advanced research for AFRL RV and RD. Proposals are invited for research in many broad areas. These areas are described in detail in Section I, Funding Opportunity Description. Multiple awards of assistance instruments are anticipated with periods of performance ranging from one to ~~two~~ five years. Subject to the availability of

funding, the Government plans to award a minimum of one assistance instrument per fiscal year. However, the Government reserves the right to make multiple awards or no awards pursuant to this announcement.

AFRL RV and RD is seeking **unclassified** proposals that do not contain proprietary information. Proprietary information is defined as information that is not public knowledge and that is viewed as the property of the holder. Proposed research should be fundamental research. As defined in Attachment B of the National Security Decision Directive 89, "Fundamental Research means basic and applied research in science and engineering, the results of which ordinarily are published and shared broadly within the scientific community, as distinguished from proprietary research and from industrial development, design, production, and product utilization, the results of which ordinarily are restricted for proprietary or national security reasons."

a) DoD Directive 5230.24 and DoD Instruction 5230.27 define contracted fundamental research in a DoD context as follows:

"Contracted Fundamental Research. Includes [research performed under] grants and contracts that are (a) funded by budget Category 6.1 ("Research"), whether performed by universities or industry or (b) funded by budget Category 6.2 ("Exploratory Development") and performed on-campus at a university. The research shall not be considered fundamental in those rare and exceptional circumstances where the 6.2-funded effort presents a high likelihood of disclosing performance characteristics of military systems or manufacturing technologies that are unique and critical to defense, and where agreement on restrictions have been recorded in the contract or grant."

b) 32 CFR § 22.105 further defines fundamental research with regard to 6.1 and 6.2 funding in a comparison to Basic and Applied Research as follows:

Basic Research. Efforts directed toward increasing knowledge and understanding in science and engineering, rather than the practical application of that knowledge and understanding. It is funded within Basic Research (Budget Activity 1 and Research Category 6.1) programs within Research, Development, Test and Evaluation (RDT&E). For the purposes of this part, basic research includes:

- (1) Research-related, science and engineering education including graduate fellowships and research traineeships.
- (2) Research instrumentation and other activities designed to enhance the infrastructure for science and engineering research.

Applied Research. Efforts that attempt to determine and exploit the potential of scientific discoveries or improvements in technology such as new materials, devices, methods and processes. It is funded in Applied Research (Budget Activity 2 and Research Category 6.2) programs within Research, Development, Test and Evaluations (RDT&E). Applied research normally follows basic research but may not be fully

distinguishable from the related basic research. The term does not include efforts whose principal aim is the design, development, or testing of specific products, systems or processes to be considered for sale or acquisition; these efforts are within the definition of “development.”

DATA RIGHTS: The Government reserves the right to assert intangible property rights in accordance with 32 CFR § 32.36 for any assistance instrument awarded as a result of this announcement.

NOTICE TO OFFEROR(S): Funds are not presently available for this effort. No award will be made under this announcement until funds are available. The Government reserves the right to cancel the announcement, either before or after the closing date. In the event the Government cancels the announcement, the Government has no obligation to reimburse an offeror for any costs.

GENERAL INFORMATION: Only U.S./U.S. territory educational institutions are eligible to submit proposals in response to this notice. Proposals submitted and selected for award are considered to be in accordance with 32 CFR §22.315 merit-based, competitive procedures to an institution of higher education for the performance of research and development.

TYPE OF INSTRUMENTS: The Air Force reserves the right to award the instrument best suited to the nature of the research proposed. It is anticipated the awards will be made in the form of cost-reimbursement grant and cooperative agreement awards, which requires the successful offerors to have an accounting system considered adequate for tracking costs applicable to the award. The Government reserves the right to select for award all, some, part, or none of the proposals in response to this announcement.

SYSTEM FOR AWARD MANAGEMENT (SAM): Unless exempted by 2 CFR § 25.110 all offerors must (1) Be registered in the System for Award Management (SAM) prior to award; (2) Maintain an active SAM registration with current information at all times during which it has an active Federal award or an application or proposal under consideration by an agency; and (3) Provide its Dun and Bradstreet Data Universal Numbering System (DUNS) number in each application or proposal it submits to the agency. On-line registration instructions can be accessed from the SAM home page at <https://www.sam.gov/>.

ESTIMATED PROGRAM COST: The Government anticipates awarding multiple assistance instrument of various values and periods of performance under this FOA. All funding is subject to change due to Government discretion and availability. Potential offerors should be aware that, due to unanticipated budget fluctuations, funding may change with little or no notice. Anticipated funding for the program (not per award) is \$90M over the FOA lifespan with funding allocations as follows: \$4.5M in FY19, \$18M in FY20, \$18M in FY21, \$18M in FY22, \$18M in FY23, and \$13.5M in FY24.

ASSISTANCE INSTRUMENT POINTS OF CONTACT: The points of contact (POC) for this FOA are:

PRIMARY AGREEMENTS TECHNICAL POC:

Oscar Martinez, Ph.D; oscar.martinez.16@us.af.mil; phone (505) 853-3221

CONTRACTING POCs:

Primary: Grants Specialist: Benjamin Bray; benjamin.bray.3@us.af.mil; phone- (505)-853-2261 Grants Officer: Ms. Deborah Moyer; deborah.moyer@us.af.mil; (505) 853-3306

Alternate: Grants Officer: Deborah Moyer; deborah.moyer@us.af.mil; (505)-853-3306

**FUNDING OPPORTUNITY ANNOUNCEMENT
FOA-RVK-2019-0001**

**AFRL RV/RD UNIVERSITY ASSISTANCE INSTRUMENTS PROGRAM
FULL TEXT ANNOUNCEMENT**

FEDERAL AGENCY NAME: Air Force Research Laboratory (AFRL) Space Vehicles (RV) and Directed Energy (RD) Directorates; Kirtland AFB, NM

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No hard copy submissions will be accepted.

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- (1) Research-related, science and engineering education including graduate fellowships and research traineeships.

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GENERAL INFORMATION: Only U.S./U.S. territory educational institutions are eligible to submit proposals in response to this notice. Proposals submitted and selected for award are considered to be in accordance with 32 CFR §22.315 merit-based, competitive procedures to an institution of higher education for the performance of research and development.

TYPE OF INSTRUMENTS: The Air Force reserves the right to award the instrument best suited to the nature of the research proposed. It is anticipated the awards will be made in the form of cost-reimbursement grant and cooperative agreement awards, which require the successful offerors to have an accounting system considered adequate for tracking costs applicable to the award. The Government reserves the right to select for award all, some, part, or none of the proposals in response to this announcement.

It is anticipated that awards under this FOA will be administered in accordance with the non-Federal entity’s preexisting internal accounting policies and practices. However, the accounting practices of the non-Federal entity must be consistent with Cost Accounting Standards and must provide for adequate documentation to support costs charged to the Federal Government. Cost sharing is not required under this FOA.

1. *Grant* means a legal instrument which, consistent with 31 U.S.C. 6304, is used to enter into a relationship:

- a) Of which the principal purpose is to transfer a thing of value to the recipient to carry out a public purpose of support or stimulation authorized by a law of the United States, rather than to acquire property or services for the DoD's direct benefit or use.
 - b) In which substantial involvement is not expected between DoD and the recipient when carrying out the activity contemplated by the award.
2. *Cooperative agreement* means a legal instrument which, consistent with 31 U.S.C. 6305, is used to enter into the same kind of relationship as a grant (see definition of "grant" in this part), except that substantial involvement is expected between the DoD and the recipient when carrying out the activity contemplated by the cooperative agreement. The term does not include "cooperative research and development agreements" as defined in 15 U.S.C. 3710a.

SYSTEM FOR AWARD MANAGEMENT (SAM): Unless exempted by 2 CFR § 25.110 all offerors must (1) Be registered in the System for Award Management (SAM) prior to award; (2) Maintain an active SAM registration with current information at all times during which it has an active Federal award or an application or proposal under consideration by an agency; and (3) Provide its Dun and Bradstreet Data Universal Numbering System (DUNS) number in each application or proposal it submits to the agency. On-line registration instructions can be accessed from the SAM home page at <https://www.sam.gov/>.

ESTIMATED PROGRAM COST: The Government anticipates awarding multiple assistance instrument of various values and periods of performance under this FOA. All funding is subject to change due to Government discretion and availability. Potential offerors should be aware that, due to unanticipated budget fluctuations, funding may change with little or no notice. Anticipated funding for the program (not per award) is \$90M over the FOA lifespan with funding allocations as follows: \$4.5M in FY19, \$18M in FY20, \$18M in FY21, \$18M in FY22, \$18M in FY23, and \$13.5M in FY24.

This funding profile is an estimate only and will not be a contractual obligation for funding. All funding is subject to change due to the Government's discretion and availability of funding. All potential offerors/applicants should be aware that due to unanticipated budget fluctuations, funding in any or all areas may change with little or no notice; thus the requirement to contact the POC.

THIS ANNOUNCEMENT CONSTITUTES THE ONLY SOLICITATION: Offerors MUST monitor <http://www.Grants.gov> in the event this announcement is amended. Offerors must monitor this system to ensure they receive the maximum proposal preparation time for subsequent amendments as these are the official notification websites to request proposals. No paper copies of this announcement will be issued. The Government provides no funding for direct reimbursement of proposal development costs. 1. The cost of proposal preparation in response to this Announcement is not considered an allowable direct charge to any

resulting award. Such cost is, however, an allowable expense to the normal bid and proposal indirect cost specified in OMB Circular A-21, Cost Principles for Educational Institutions. No material submitted in response to this FOA will be returned.

I. Funding Opportunity Description

The AFRL Space Vehicles and Directed Energy Directorates are interested in receiving proposals under this announcement in order to establish assistance agreements with U.S. /U.S. territories' colleges and universities in space vehicles and directed energy-related basic, applied, and advanced research projects that provide a public purpose and are of interest to the Department of Defense mission. The scope of the research will include the entire spectrum of space vehicles and directed energy technology applicable to the Air Force, including all tangentially-related space vehicle and directed energy. The research shall include, but not be limited to the following Core Technical Competencies (CTCs): Space Vehicles – Space Environment, Space Platforms and Electronics Technologies, Space Experiments, and Battlespace Capability Enhancements; Directed Energy – Laser Systems, Directed Energy and Electro-Optics for Space Superiority, High Power Electromagnetics, and Weapons Modeling, Simulation and Analysis. The research activities managed within each CTC are summarized below. Furthermore, topics should advance public purpose of these areas, have the potential for commercialization, or involve student research, thereby contributing to potential future workforce development.

Multiple awards of assistance agreements are anticipated with periods of performance ranging from one to ~~two~~ **five** years. Potential offerors must contact the appropriate CTC POC to confirm interest in the effort to be proposed and funding availability prior to submitting a proposal. Proposals submitted without prior contact with the CTC POC may not be considered for award.

A. Space Vehicles CTCs:

1. Advanced Space Resilience Technologies

As the AF moves toward meeting the challenges of the more congested and contested space environment, it is moving toward more resilient space architectures of a smaller class of very capable satellites that will require technologies for rapid manufacturing, better Size, Weight and Power (SWaP), easier launch, innovative networking and robust autonomy. The “Advanced Space Resilience Technologies” CTC focuses on technologies to improve the affordability, resiliency, autonomy and capabilities of space platforms with the goal of increasing the effectiveness of our space force. The main investment areas are space power, thermal management, deployable structures, space electronics and satellite autonomy. In concert with these pervasive technology investments, this CTC is also exploring technologies and opportunities for exploiting capabilities possible with a class of satellites that are smaller, more agile and flexible in design and in construction techniques.

Primary Program Manager: Dr. Andrew Williams
Phone: (505) 846-0396

Email: andrew.williams.24@us.af.mil

Alternate Program Manager: ~~Dr. Scott Erwin~~

~~Phone (505) 846-9816~~

~~Email: richard.erwin@us.af.mil~~

Alternate: Mr. David Wilt

Phone (505) 846-2462

Email: david.wilt@us.af.mil

2. Space Comm and Navigation Technologies

The “Space Comm and Navigation Technologies” CTC develops innovative, interdisciplinary technologies for two major warfighting force enhancement capability areas: space communications and precision navigation and timing, both critical to Air Force missions in Space-Based Intelligence, Surveillance and Reconnaissance (ISR), Missile Warning, Space Situational Awareness, Defensive Space Control, and Guidance, Navigation, and Communication. As the nation faces increasingly contested, congested, and competitive space operations, the Air Force faces a broad spectrum of challenges requiring new ways of architecting and space operations and for the stressing realities of anti-access area denial (A2AD) military engagements. The goal of this CTC is to provide new technology options to address these challenges in the space, air, and ground domains, working in cooperation with partners in Department of Defense, government agencies, industry, academia, and with international allies.

Primary Program Manager: Dr. Robbie Robertson

Phone (505) 846-7687

Email: lawrence.robertson@us.af.mil

Alternate Program Manager: Dr. David Chapman

Phone (505) 846-8256

Email: david.chapman.18@us.af.mil

3. Space Awareness and Command & Control

As the nation faces increasingly contested, congested, and competitive space operations, the Air Force confronts a broad spectrum of challenges, requiring new ways of architecting space capabilities and new ways of operating multi-domain space command and control systems. The early days of the Joint Space Operations Center (JSpOC) and its heavy dependence on the “legacy” AF Space Surveillance Network (SSN) has matured in both understanding new and stressing needs and in growing into the new space warfighting operations capability, the National Space Defense Center (NSDC). This “Awareness and C2” CTC supports critical space and global awareness phenomenology research that will in part provide some of the critical information integrated by the NSDC as well as the technology development of the analytics and operations capabilities that will support its operations. The goal

of this CTC is to provide new technology options (both in space and on ground) to address these challenges for the space, air, and ground domains, working in cooperation with partners in DoD, government agencies, industry, academia, and with international allies.

Primary Program Manager: Dr. Jamie Stearns
Phone: (505) 846-6998
Email: jaime.stearns.1@us.af.mil

Alternate Program Manager: ~~Dr. Geoff Barbier~~
~~Phone: (505) 853-6589~~
~~Email: geoffrey.barbier@us.af.mil~~
Alternate: Dr. Wellesley Pereira
Phone: (505) 853-3624
Email: wellesley.pereira@us.af.mil

4. Space Environment

The “Space Environment” CTC encompasses a wide range of space environmental impacts on space satellite systems and their services that they provide. The “Space Environment” largely a result of solar by-products composed of energetic particles and strong radiation. Both can damage or disrupt spacecraft systems and subsystems operations. Particle in particular, can adversely affect radio waves traveling through near-earth space disrupting essential Command and Control signals critical to early warning and missile defense, adversely affect positioning navigation and timing (PNT) signals from GPS, and disrupt over-the-horizon radar and long range High Frequency (HF) communications. RV’s breadth of research efforts runs from basic research in understanding space domain phenomenology to understanding the effects that it has on AF and DoD systems and services. RV’s applied research works toward identifying measurable sources of space information that can provide threat warning or anomaly resolution; ultimately the directorate’s military goal is to develop techniques to mitigate or exploit system impacts, including artificial modification of the space environment.

Primary Program Manager: ~~Dr. Michael Starks~~
~~Phone: (505) 846-5881~~
~~Email: michael.starks@us.af.mil~~
Primary: Mr. Adrian Wheelock
Phone: (505) 846-4642
Email: adrian.wheelock@us.af.mil

Alternate Program Manager: ~~Dr. Jonah Colman~~
~~Phone: (505) 846-3172~~
~~Email: jonah.colman.1@us.af.mil~~
Alternate: Mr. R. Todd Parris
Phone: (505) 846-7806
Email: richard.parris.1@us.af.mil

B. Directed Energy CTCs:

1. Laser Systems

This includes solid-state, fiber, and hybrid laser sources for scalable, high energy laser devices. This also includes advanced beam control, laser effects, and predictive modeling for laser subsystems, systems, propagation, and target vulnerability.

Primary Program Manager: ~~Dr. Nick Morley~~

Phone: (505) 846-0805

Email: nicholas.morley@us.af.mil

Primary: Dr. Roy Hamil

Phone: (505) 846-0874

Email: roy.hamill@us.af.mil

Alternate Program Manager: ~~Mr. Kent Wood~~

Phone: (505) 846-4964

Email: kenton.wood.2@us.af.mil

Alternate: Dr. David Medina

Phone: (505) 846-2991

Email: david.medina.9@us.af.mil

2. Directed Energy and Electro-Optics for Space Superiority

This includes advanced optical and imaging technologies such as optical components, optical coatings, advanced beam control, atmospheric compensation, adaptive optics, and pointing and tracking specifically for tracking and imaging space objects from ground-based telescopes.

Primary Program Manager: Dr. David Barnaby

Phone: (505) 846-2294

Email: david.barnaby.1@us.af.mil

Alternate Program Manager: ~~Col. Joseph Roth~~

Phone: (505) 846-6793

Email: joseph.roth.2@us.af.mil

Alternate: Ms. Laura Durr

Phone: (505) 846-0357

Email: laura.durr.1@us.af.mil

3. High Power Electromagnetics

This includes generation and transmission of high power microwaves (HPM), identification of the susceptibility and vulnerability of electronic systems to HPM, and applications of HPM to meet national defense needs. Technologies include HPM sources, pulsed power, high energy beam and plasma physics, and full system, High Performance Computing-enabled numerical simulation.

Primary Program Manager: Mr. Robert Torres

Phone: (505) 846-8054

Email: robert.torres.10@us.af.mil

Alternate Program Manager: ~~Ms. Marylou Robinson~~

~~Phone: (505) 846-4040~~

~~Email: marylou.robinson@us.af.mil~~

Alternate: Dr. Julie Lawrance

Phone: (505) 853-6223

Email: julie.lawrance@us.af.mil

4. Weapons Modeling, Simulation, and Analysis

This includes computer simulation/analysis of directed energy and kinetic weapons concepts at the mission level and development of coupled computation models for Directed Energy concept analysis.

Primary Program Manager: Mr. Ed Duff

Phone: (505) 846-4062

Email: edward.duff@us.af.mil

Alternate Program Manager: ~~Mr. Keith Shrock~~

~~Phone: (505) 846-5792~~

~~Email: keith.shrock@us.af.mil~~

Alternate: Mr. Dustin Culbertson

Phone: (505) 846-5032

Email: dustin.culbertson.2@us.af.mil

II. Eligibility Information

A. Only U.S./U.S. territory educational institutions are eligible to submit proposals in response to this announcement.

B. All proposed grants or cooperative agreements must meet criteria for public purpose in accordance with 32 CFR § 22.205 and U.S and U.S. territory educational institutions are

reminded that any proposals submitted in response to this announcement must stimulate or support a public purpose (i.e. to provide assistance), rather than acquisition (i.e. to acquire goods or services for direct benefit of the United States Government).

C. In order to be eligible to receive any DoD award, applicants must be registered in the System for Award Management (SAM) Database. On-line instructions can be accessed from the SAM website home page at <https://www.sam.gov/>.

D. Proposals must substantially comply with the proposal submission instructions identified in Section V or they will be rejected. Proposal pages in excess of the identified page limitations will not be reviewed.

III. Application and Submission Information

This announcement may be accessed at the Grants.gov website <https://www.grants.gov/>.

To begin the proposal submission process under this notice, go to <http://www.grants.gov> and click on the “Apply for Grants” tab on the left side of the page. Then click on “Apply Step 1: Download a Grant Application Package” to download the compatible Adobe viewer and obtain the application package. To apply through Grants.gov, you must use Adobe Reader application and download the compatible Adobe Reader version. (Adobe Reader applications are available to download for free on the grants.gov website. For more information on Adobe Reader, please visit the Help section on Grants.gov).

Additionally, the Grants.gov Organization Registration Checklist is located at http://www.grants.gov/applicants/get_registered.jsp to guide you through the process.

Once you have downloaded the viewer, you may retrieve the application package by entering the FOA number (FOA-RVK-2019-0001) or the CFDA number (12.800) that applies to the notice, in the appropriate field.

The process an organization must complete includes obtaining a Data Universal Numbering System (DUNS) number, registering with the System for Award Management (SAM) and registering with Grants.gov.

Organizations are now required to send a notarized letter to SAM and an Employee Identification Number (EIN) in conjunction with the SAM registration process. After SAM receives the notarized letter appointing the authorized Entity Administrator, up to 2 weeks (up to 5 more weeks may be required to acquire an EIN). Use the Grants.gov Organization Registration Checklist at: <https://www.grants.gov/web/grants/applicants/organization-registration.html> to guide you through the process. Also, reference Attachment 4-Grants.gov Application Submission and Receipt Procedures for additional guidance on submission & receipt procedures.

(Designating an E-Business Point of Contact (E-Biz POC) and obtaining a password are important steps in the SAM registration process.) Go to:

<https://www.grants.gov/web/grants/applicants/registration.html>

Consult Grants.gov to ensure you have the required version of Adobe Reader installed. Should you have questions relating to the registration process, system requirements, how an application form works, the submittal process or Adobe Reader forms, call Grants.gov at 1-800-518-4726, email support@grants.gov for updated information or visit the support page at <https://www.grants.gov/web/grants/support.html>.

- 1. Content and Form of Application Submission:** Proposals shall be submitted electronically through the Grants.gov website. The electronic submission of your proposal must be made by an official representative of your institution who is registered with Grants.gov and is authorized to sign applications for federal assistance.

There are no limits to the number of proposals an offeror may submit for this FOA provided the CTC POC has confirmed interest and availability of funding.

A cover letter shall accompany each proposal. The cover letter must reference this FOA number, and include a unique University generated proposal identification number, the technology area under which the proposal is submitted, technical and business points of contact with contact information (phone, address, and email address), and CAGE code. The proposal must be signed and dated by an authorized official of the institution.

Proposals not in compliance with this solicitation may be rejected. All proposers must include the SF 424 (R&R) form as the cover page. Unnecessarily elaborate brochures, reprints or presentations beyond those sufficient to present a complete and effective proposal are not desired.

Full Proposal Format (PDF);

- Paper Size – 8.5 x 11 inch paper
- Margins – 1 inch
- Spacing – single or double spaced
- Font – Times New Roman, 10 or 12 point
- Page Limitation – Technical proposals shall not exceed twenty (20) pages.
Unnecessarily elaborate proposals are not desirable.
- Attachments – submit in **PDF** format (Adobe Portable Document Format)
- Cover Page should include AFRL Address, but not limited to the following:
AFRL Det 8/ RDMX (Attn: Dr. Oscar Martinez)
FOA-RVK-2019-0001
Main Topic Area (Reference Section I)
Government Technical POC (Reference Section I)
- Content – as described below:

The recipient shall submit a proposal describing the proposed research project's (1) objective, (2) general approach, (3) public purpose in accordance with 32 CFR § 22.205, and 22.215 and (4) impact on Department of Defense (DoD) mission. The proposal shall also contain any unique capabilities or experience you may have (e.g., U.S. Air Force, DoD, or other Federal laboratory).

a) Submitting the Application

(1) Electronic Submission – Application forms and instructions are available at Grants.gov. In the Grants.gov search function, enter the funding opportunity number for this announcement (FOA-RVK-2019-0001). If you are unsure which Department and Program Manager is appropriate for your specific area of interest, select the Competition ID and Competition Title “Other” to download.

(2) SF 424 Research and Related (R&R) - The SF 424 (R&R) must be used as the cover page for all proposals. Complete all required fields in accordance with form instructions for the specified fields. Mandatory fields will have an asterisk marking the field and will appear yellow on most computers. In Grants.gov, some fields will self-populate based on the FOA selected. Complete the SF 424 (R&R) first, as some fields on the SF 424 are used to auto populate fields in other forms. The completion of most fields is self-explanatory except for the following special instructions:

- **Field 2:** The Applicant Identifier may be left blank.
- **Field 3:** The Date Received by State and the State Application Identified are not applicable to research.
- **Field 7:** If the organization is a Minority Institution, select "Other" and under “Other (Specify)” note that you are a Minority Institution (MI).
- **Field 9:** List Air Force – Research Lab as the reviewing agency. This field is pre-populated in Grants.gov.
- **Field 16:** Choose ‘No’. Check 'Program is Not Covered by Executive Order 12372'.

If your proposal is selected for award, the listed POC will be contacted to provide a fully disclosed budget proposal with all formulas (Reference Det 8 AFRL/RD and RV Budget Proposal Instructions Assistance Instruments, Attachment 1).

(3) Certification/Unique Agency Attachments: All awards require certifications of compliance with national policy requirements and unique agency requirements or assistance awards, i.e., grants, proposers using the SF 424 (R&R) are providing the certification required by 32 CFR § 28 regarding lobbying (Reference Attachment 2 for the full text of this certification).

(4) Research and Related (R&R) Other Forms: The following other forms must be used for proposals:

(5) DoD Women in Science, Technology, Engineering, and Mathematics Data Collection Implementation: To evaluate compliance with Title IX of the Education Amendments of 1972 (20 U.S.C. A§ 1681 Et. Seq.), the Department of Defense is collecting certain demographic and career information to be able to assess the success rates of women who are proposed for key roles in applications in STEM disciplines. To enable this assessment, each application must include the following forms completed as indicated.

(6) Research and Related Senior/Key Person Profile (Expanded) form:

The Degree Type and Degree Year fields on the Research and Related Senior/Key Person Profile (Expanded) form will be used by DoD as the source for career information. In addition to the required fields on the form, applicants must complete these two fields for all individuals that are identified as having the project role of PD/PI or CO-PD/PI on the form. Additional senior/key persons can be added by selecting the “Next Person” button.

(7) Research and Related Personal Data Form:

This form will be used by DoD as the source of demographic information, such as gender, race, ethnicity, and disability information for the Project Director/Principal Investigator and all other persons identified as Co-Project Director(s)/Co-Principal Investigator(s). Each application must include this form with the name fields of the Project Director/Principal Investigator and any Co-Project Director(s)/Co-Principal Investigator(s) completed; however, provision of the demographic information in the form is voluntary. If completing the form for multiple individuals, each Co-Project Director/Co-Principal Investigator can be added by selecting the “Next Person” button. The demographic information, if provided, will be used for statistical purposes only and will not be made available to merit reviewers. Applicants who do not wish to provide some or all of the information should check or select the “Do not wish to provide” option.

(8) The R&R Sub award Budget Attachment Form is required when sub awardees are involved in the effort. Prime recipients shall ensure sub recipients’ cost information reflects the same level of detail as the primes’ cost information. The format shall follow the Prime’s submission as well. See section IV. 3. (j.) R&R Budget Form for detail on submission of the Prime’s budget information.

(9) The SF-LLL form is required when applicants have lobbying activities to disclose. PDF forms may be obtained at the Grants.gov website. Standard Form – LLL, ‘Disclosure of Lobbying Activities’ is in the down-loaded forms package.

(10) R&R Project/Performance Site Locations Form – Complete all information as requested.

(11) R&R Other Project Information Form - Human Subject/Animal Use and Environmental Compliance.

(a) Human Subject Use- Each proposal must address human subject involvement in the research by addressing Field 1 and 1a of the R&R Other Project Information Form. If selected for award, additional documentation in accordance with U.S. Air Force standards will be required.

(b) Animal Use- Each proposal must address animal use protocols by addressing Field 2 and 2a of the R&R Other Project Information Form. If selected for award, additional documentation in accordance with U.S. Air Force standards will be required.

(c) Environmental Compliance- Federal agencies making assistance awards and recipients of such awards must comply with various environmental requirements. The National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. Sections 4321-4370 (a), requires that agencies consider the environmental impact of “major Federal actions” prior to any final agency decision. With respect to those awards which constitute “major Federal actions,” as defined in 40 CFR § 1508.18, federal agencies may be required to comply with NEPA and prepare an environmental impact statement (EIS) even if the agency does no more than provide assistance funds to the recipient. Questions regarding NEPA compliance should be referred to the applicable AFRL Program Manager. Most research efforts funded by AFRL will, however, qualify for a categorical exclusion from the need to prepare an EIS. U.S. Air Force instructions/regulations provide for a categorical exclusion for basic and applied scientific research usually confined to the laboratory, if the research complies with all other applicable safety, environmental and natural resource conservation laws. Each proposal shall address environmental impact by filling in fields 4a through 4d of the R&R Other Project Information Form. This information will be used by AFRL to make a determination if the proposed research effort qualifies for categorical exclusion.

(12) Abstract- Include a concise (not to exceed 300 words) (public releasable) abstract describing the research objective, technical approaches, anticipated outcome and impact of the specific research, and public purpose in accordance with 32 CFR § 22.205. In the header of the abstract include the CTC POC’s name. Attach the Abstract to the R&R Other Project Information form in field 7.

(13) R&R Other Project Information Form - Project Narrative Instructions

(a) Project Narrative – Clearly describe the research, objective and approach to be performed. Discuss the nature of the expected results. Additionally, state knowledge in the field and include a bibliography and a list of literature citations. **Identify and describe how the effort will provide assistance that will stimulate or support a public purpose.** The adequacy of this information will influence the overall evaluation. Refer to the evaluation criteria listed in Section V of this

announcement. Also briefly indicate whether the intended research will result in environmental impacts outside the laboratory, and how the proposer will ensure compliance with environmental statutes and regulations. Attach the proposal narrative to R&R Other Project Information form in field 8.

(b) Project Narrative - Statement of Work – Offeror/applicant must submit a document entitled “Statement of Work” (SOW) describing the actual technical tasks/subtasks to be completed, including goals and objectives, and a detailed description of the approach for each. This SOW will be incorporated into the award instead of incorporating the entire technical proposal. Active verbs should be used in this statement of work (i.e., “conduct” research into a topic, “investigate” a problem, “determine” to test a hypothesis). The SOW should not contain proprietary information.

(c) Project Narrative - Research Effort – Describe in detail the research to be performed. State the objectives and approach and their relationship and comparable objectives in progress elsewhere. Additionally, state knowledge in the field and include a bibliography and a list of literature citations. Discuss the nature of the expected results. The adequacy of this information will influence the overall evaluation. Proposals for renewal of existing support must include a description of progress if the proposed objectives are related.

(d) Project Narrative - Principal Investigator (PI) Time - List the estimated time the PI and other senior professional personnel will devote to the research. This shall include information pertaining to other commitments of time, such as sabbatical or extended leave; and proportion of time to be devoted to this research and to other research. Awards may be terminated when the principal investigator severs connections with the organization or is unable to continue active participation in the research. State the number of graduate students for whom each senior staff member is responsible. If the principal investigator or other key personnel are currently engaged in research under other auspices, or expect to receive support from other agencies for research during the time proposed for AFRL support, state the title of the other research, the proportion of time to be devoted to it, the amount of support, name of agency, dates, etc. Send any changes in this information as soon as they are known. Submit a short abstract (including title, objectives, and approach) of that research and a copy of the budget for both present and pending research projects.

(e) Project Narrative – Facilities - Describe facilities available for performing the proposed research and any additional facilities or equipment the organization proposes to acquire at its own expense. Indicate government-owned facilities or equipment already possessed that will be used. Reference the facilities contract number or, in the absence of a facilities contract, the specific facilities or equipment and the number of the award under which they are accountable.

(f) Project Narrative – Special Test Equipment - List special test equipment or other property required to perform the proposed research. The Government will

not provide special test equipment. When possible and practicable, give a description or title and estimated cost of each item. When information on individual items is unknown or not available, group the items by class and estimate the values. In addition, state why it is necessary to acquire the property with award funds.

(g) Project Narrative – Equipment - Justify the need for each equipment item. Additional facilities and equipment will not be provided unless the research cannot be completed by any other practical means. Include the proposed life expectancy of the equipment and whether it will be integrated with a larger assemblage or apparatus. If so, state who owns the existing apparatus.

(14) R&R Budget Form - Estimate the total research project cost. Budget detail should clearly identify costs, which are internal to the offeror and those that are used in pursuit of the objectives such as scholarships, training, course preparation, etc. Categorize funds by year and provide separate annual budgets for projects lasting more than one year. In addition to the Research and Related Budget forms available on Grants.gov, the budget proposal should include a budget justification for each year, clearly explaining the need for each item. Applicants who enter a fee on Part J of the budget will not be eligible to receive a grant or cooperative agreement. Attach the budget justification to Section K of the R&R Budget form.

2. Other Submission Requirements:

Conferences and Workshops: The Government understands that it is essential for the scientific community to maintain clear lines of communication for thorough and well-reasoned research to be accomplished. **One** conference or workshop may be allowed for each proposed assistance agreement. Conferences and workshops have proven to be extremely valuable tools for AFRL. They allow our technical managers the opportunity to receive current information in their respective disciplines. They also allow AFRL the opportunity to inform the research community of the current thrust of AFRL's programs. Conferences and workshops constitute key forums for research and technology interchange. AFRL's financial support through appropriate financing vehicles for conferences and workshops is dependent on the availability of funds, Program Officer's discretion, and certain other restrictions including:

AFRL/RD and RV support for a workshop or conference is not to be considered as an endorsement of any organization, profit or non-profit.

The subject matter of the conference or workshop is scientific, technical, or involves professional issues that are relevant to the purpose of the technical description of the grant.

Proposals should include the following for all proposed conferences and workshops:

a) Conference/Workshop Information:

- (1) Summary indicating the objective(s) of the conference/workshop
- (2) Title, location, and date(s) of the conference/workshop
- (3) Explanation of how the conference/workshop will relate to the research interests of AFRL identified in Section III of the Funding Opportunity Announcement (FOA)
- (4) List of proposed participants and method (or copies) of announcement or invitation

b) Include cost information for the proposed conference/workshop (in addition to information required on SF 424 (R&R) Budget forms):

Proposals shall provide cost information in accordance with Attachment 1, Budget Proposal Instructions-Assistance Instruments.

If you have questions concerning the scientific aspects of a potential proposal to AFRL for conference or workshop support, please contact the Primary CTC POC listed in Section I responsible for the particular scientific area of the proposal.

IV. Application Review Information

Proposals submitted under this FOA are evaluated through merit-based competitive procedures in accordance with 32 CFR § 22.315. Proposals may be evaluated by the appropriate AFRL Technology Departments, and other military services. The evaluation criteria are listed in descending order of importance

- a. Technical merits of the proposed research and development
- b. Potential relationship of the proposed research and development to the Department of Defense missions.
- c. Cost - Proposals shall be complete, reasonable and realistic

No further evaluation criteria will be used to evaluate proposals. The technical and budget proposals will be evaluated at the same time. The Government reserves the right to award all, part or none of the technical/SOW proposals received. The Agreements Officer is the only official authorized to make award; award will be made in accordance with the 2 CFR.

Employees of commercial firms under contract to the Government may be used to administratively process proposals and may gain access to proprietary information contained in proposals and/or post award documentation. These support contracts include nondisclosure

agreements prohibiting their contractor employees from disclosing any information submitted by other contractors.

The U.S. Government does not guarantee an award in each topic area. Further, be advised that as funds are limited, otherwise meritorious proposals may not be funded. Therefore, it is important that proposals show strength in as many of the evaluation area as practicable for maximum competitiveness.

V. Award Information

1. Application Receipt Notices: The applicant's approved account holder for Grants.gov will receive confirmation upon completing the submission to Grants.gov. After an institution submits an application, Grants.gov generates a submission receipt via email and also sets the application status to "Received". This receipt verifies the application has been successfully delivered to the Grants.gov system. Next, Grants.gov verifies the submission is valid by ensuring it does not contain viruses, the opportunity is still open, and the applicant login and applicant DUNS number match. If the submission is valid, Grants.gov generates a submission validation receipt via email and sets the application status to "Validated". If the application is not validated, the application status is set to "Rejected". The system sends a rejection email notification to the institution and the institution must resubmit the application package. Applicants can track the status of their application by logging in to Grants.gov.

It is expected that applicants will be notified in writing of funding decisions via email. Notification of selection does not indicate that the applicant can start work on the project. Project initiation is dependent upon award of the actual Grant or Cooperative Agreement Reporting Requirements

All awards require final technical reports, financial reports, and final patent reports. Copies of publications and presentations shall be submitted in accordance with the terms and conditions of the assistance award.

VI. Additional Information

1. Agency Contacts: For administrative issues regarding this FOA, contact the grants specialist at the email address identified above. For technical issues regarding this FOA, please contact the Primary Technical POC at the email address identified above. All questions must be received in writing via email with the reference line referring to this notice (FOA-RVK-2019-0001).

**** Important Notice Regarding Questions of a Business Nature ****

-All questions shall be submitted in writing by electronic mail.

-Questions presented by telephone call, fax message, or other means will not be responded to.

2. Federal Awardee Performance and Integrity Information System (FAPIIS):

There is a Government-wide policy on the use of the Federal Awardee Performance and Integrity Information System (FAPIIS) in the award of assistance instruments that may affect the agencies' processes for judging proposed recipients to be qualified to receive an assistance award. The policy implements requirements of section 872 of the Duncan Hunter National Defense Authorization Act for fiscal year 2009 (Public law 110-417).

3. Ombudsman:

- a) An ombudsman has been appointed to hear and facilitate the resolution of concerns from recipients, potential recipients, and others for this requirement. When requested, the ombudsman will maintain strict confidentiality as to the source of the concern. The existence of the ombudsman does not affect the authority of the Program Manager, Agreements Officer, or Approving Official. Further, the ombudsman does not participate in the evaluation of proposals, the award process, or the adjudication of protests or formal disputes. The ombudsman may refer the party to another official who can resolve the concern.
- b) Before consulting with an ombudsman, interested parties must first address their concerns, issues, disagreements, and/or recommendations to the Agreements Officer for resolution. Consulting an ombudsman does not alter or postpone the timelines for any other processes (e.g., agency level protests, GAO protests, requests for debriefings, employee-employer actions, contests of OMB Circular A-76 competition performance decisions).
- c) If resolution cannot be made by the Agreements Officer, concerned parties may contact the AFRL ombudsmen:

Ombudsman: Ms. Lisette K. LeDuc, HQ AFRL/PK, Wright Patterson AFB OH. Telephone: (937) 904 4407. Email: lisette.leduc@us.af.mil
Mr. Steven L. Ewers, AFRL/PK, 1864 4th Street, Bldg 15, Room 225, Wright-Patterson AFB OH 45433-7130, Phone 937-255-5235, E-mail: steven.ewers@us.af.mil

Alternate Ombudsman: Ms. Kimberly L. Yoder, AFRL/PK 1864 Fourth Street, Wright Patterson AFB, OH 45433 7130, Phone 937 255 4967, Email: kimberly.yoder@us.af.mil

- d) The ombudsman has no authority to render a decision that binds the agency.
- e) Do not contact the ombudsman to request copies of the announcement, verify offer due date, or clarify technical requirements. Such inquiries shall be directed to the Agreements Officer.

4. Assistance Instrument Payment Process:

- a) The Wide Area WorkFlow (WAWF) application has been designated as the Department of Defense standard for electronic invoicing and payment. To facilitate this effort for Universities and Nonprofit Organizations with awards administered by the Office of Naval Research (ONR) Regional Offices, the WAWF website is available to assist at <https://wawf.eb.mil/>. All parties doing business with ONR are strongly encouraged to register to participate in the WAWF program. By submitting your invoices and receiving reports online—through electronic data interchange (EDI) or file transfer protocol (FTP)—invoices and reports are routed, reviewed and processed electronically, resulting in more efficient payment. You are not required to participate in the WAWF program, but the benefits are substantial. If the Awardee participates in the WAWF system, the Awardee shall submit an electronic request for payment to the Administrative Grants Officer (AGO) at the Administrative Office in Block 12 of the award. Universities and Nonprofit Organizations with awards administered by ONR Regional Offices may obtain information on registration and the electronic payment process via the Internet at <https://wawf.eb.mil/>.
- b) Electronic submission of payment requests requires the Awardee to register in WAWF and have the appropriate CAGE code activated. Please note that each Awardee must be registered in SAM and have an Electronic Business Point of Contact (EBPOC) set up to approve new registrations within their Institution. Electronic Business Point of Contact (EBPOC) is responsible for activating the CAGE code in WAWF by calling 1-866-618-5988. Once the Awardee's CAGE Code is activated, the EBPOC will self-register in WAWF (https://wawf.eb.mil) and follow the instructions for a group administrator. The ONR Regional Offices will assist in this process. The ONR Regional Office is listed as the Administrative Office in Block 12 of the award.

5. AFRL Policy on No Cost Extensions (NCEs): AFRL grants NCEs only in situations which the extension is truly warranted and properly documented. In no event will the period of performance be extended merely for the purpose of using unobligated balances. Institutions should make every effort to insure work is completed on time. NCEs shall not extend beyond the FOA period of performance. If an institution deems an NCE is truly warranted, it shall submit its request for an extension and supporting reasons to the relevant Program Officer. (Reference 32 CFR § 32.25, Revision of Budget and Program Plans for further guidance)

Attachments:

1. Budget Proposal Instructions
2. Representations and Certifications
3. DoD Research General Terms and Conditions – September 2017
4. Grants.gov Application Submission and Receipt Procedures