

**BROAD AGENCY ANNOUNCEMENT
USAFA-PASCC-BAA-2016
Project on Advanced Systems and Concepts
for
Countering Weapons of Mass Destruction**

TWO-STEP CALL ANNOUNCEMENT

FEDERAL AGENCY NAME: United States Air Force Academy (USAFA) in support of the Project on Advanced Systems and Concepts for Countering Weapons of Mass Destruction

BROAD AGENCY ANNOUNCEMENT TITLE: Project on Advanced Systems and Concepts for Countering Weapons of Mass Destruction (PASCC)

BROAD AGENCY ANNOUNCEMENT NUMBER: USAFA-PASCC-BAA-2016

BROAD AGENCY ANNOUNCEMENT TYPE: Amendment 0001 to Initial announcement

CATALOG OF FEDERAL DOMESTIC ASSISTANCE (CFDA) NUMBER: 12.800

CALL ANNOUNCEMENT TITLE/NUMBER: USAFA-PASCC-BAA-2016 CALL 0003

TECHNICAL POINT OF CONTACT: The technical point of contact for this CALL as outlined in the baseline BAA is:

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CONTRACTING POINT OF CONTACT: The contracting point of contact for this CALL as outlined in the baseline BAA is:

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BACKGROUND: The USAFA is seeking unclassified research white papers and proposals (if requested) that do not contain proprietary information. If proprietary information is submitted it is the offerors responsibility to mark the relevant portions of their proposal as specified in USAFA-PASCC-BAA-2016 Amendment 0001. The United States Air Force's Institute for National Security Studies (INSS), in partnership with PASCC, invites white papers and proposals (if requested) for studies in many broad areas related to countering the threat posed by weapons of mass destruction (WMD).

The Defense Threat Reduction Agency (DTRA) has requested that USAF INSS/PASCC issue a call for papers soliciting white papers outlining studies or strategic dialogues (also referred to as Track 2 dialogues). WMD are defined as chemical, biological, radiological, and nuclear weapons.

With this Fiscal Year 2019 (FY19) call for papers, USAF INSS announces to academia, research institutions, and non-profit organizations it is soliciting white paper for studies and strategic dialogues that will help enable the DoD and the United States Government (USG) to ensure nuclear deterrence and to prepare for and combat WMD and improvised threats. The white papers should propose rigorous, innovative projects that:

1. Facilitate critical engagement between U.S. and foreign subject-matter experts (SMEs) on key WMD, counter-WMD (CWMD), or nuclear deterrence issues;
2. Address current and emerging challenges facing the Combatant Commands (CCMDs) and DoD; or
3. Expand knowledge or develop new concepts relevant to the national security missions and requirements of DoD and the Armed Services.

In general, PASCC divides its annual funding (~\$3.5 million) evenly between studies (\$50,000-\$150,000 each) and strategic dialogues (\$125,000-\$225,000 each). Award recipients must produce a written product outlining the purpose, methodology, and results of their study or dialogue, including U.S. national security risks, policy, strategy, and operational implications, and resulting recommendations. PASCC requires a written report even when the project results in a separate publication. Dialogue leads must include the cost of a pre-planning trip to Washington, DC for Defense and State Department coordination in the proposal. Likewise, proposals must factor in the cost of traveling to the Washington, DC area for study and dialogue leads to present their findings to DTRA and other USG stakeholders.

PASCC encourages collaboration between functional and regional experts on all projects. PASCC further encourages young scholars and professionals to submit white papers, often at a lower cost, to support individual/team study efforts or partnership with more experienced researchers to help expand the pool of expert CWMD researchers. PASCC does not reserve a separate pool of funding for young scholar submissions and all submissions are judged against a single set of standards, but gives due consideration to encouraging research by the next generation of scholars and policymakers. PASCC also encourages submissions alone or in partnership with researchers affiliated with Historically Black Colleges and Universities. PASCC accepts applications from both U.S. and non-U.S. citizens.

PASCC does not fund:

- Development of technologies or scientific capabilities;
- Studies about cybersecurity or traditional counterterrorism;
- Construction projects;
- Proposals from Federal Agencies, Federally Funded Research & Development Centers (FFRDCs), including Department of Energy National Laboratories, or USG schools of higher education, military laboratories, or warfare centers. This includes subcontracting/sub-recipient efforts.

FY19 KEY TOPICS: PASCC welcomes all proposals for studies and strategic dialogues that enable DoD and the USG to prepare for and combat WMD and improvised threats and to ensure nuclear deterrence. This year PASCC also highlights the following topics that are of particular interest:

1. Impacts of new technologies on the development of WMD or on efforts to counter WMD, including but not limited to: blockchain technology development, artificial intelligence, 3D printing, human augmentation, quantum computing, synthetic biology, additive manufacturing, autonomous systems, nanotechnology, or other emerging technologies within a time horizon of 5 to 10 years;
2. Improved WMD risk assessment to better address and model challenges associated with WMD risk (probability, consequences, vulnerabilities, threats), to include examination of lessons learned and quantitative and qualitative methodologies (for example modeling and simulation, Bayesian

methods, Extreme Value Theory, and others) employed in other disciplines or industries (finance, biology, psychology, and others as appropriate for the available data);

3. Detection, characterization, and attribution of WMD use, including options for/deterrence effects of conducting attribution analysis in gray-zone conflict areas;
4. Assessing the impact of convergence between improvised explosive device (IED) technology facilitation networks and WMD proliferation networks;
5. Assessment of the impact on U.S. strategies to enable DoD and the USG to prepare for and combat WMD and improvised threats and to ensure nuclear deterrence post-Joint Comprehension Plan of Action (JCPOA) (whether the agreement expires or the United States withdraws);
6. Concepts for understanding and shaping the dynamics of strategic stability among global and regional powers possessing nuclear weapons (specifically Asia-Pacific and South Asia), including the strategies and motivations of different nuclear powers and U.S. efforts to promote stable deterrence relationships;
7. Specific approaches, concepts, and methodologies for informing future negotiations on arms control agreements or confidence-building measures addressing increased military competition (to include new weapons systems) among the major powers, particularly the United States, Russia, and China;
8. Assessment of signaling by WMD-armed adversaries to determine how signaling has evolved in the past 10 years and with what implications for U.S. deterrence postures and assurance policies;
9. Assessment of the impact on U.S. alliances should a non-nuclear ally or partner decide to initiate a nuclear weapons program; and
10. Identification and analysis of indicators and warnings in understudied regions as they relate to proliferation networks, intersections of global health security and biodefense, new weapon programs, and strategic stability.

Focus Areas: In addition to the above FY19 key topics, the six focus areas below identify areas for inquiry that are of enduring interest to PASCC.

1. **Countering-WMD proliferation.** Working with interagency partners, DoD seeks to defeat WMD proliferation pathways through interdiction, network disruption, and other activities that target the will, capacity, and capabilities of potential adversaries.
 - a. Enhanced understanding of WMD proliferation pathways with a focus on dedicated proliferation networks as well as enabling actions by witting and unwitting actors in the scientific, technological, academic, and commercial communities;
 - b. New or improved means and methods to delay, disrupt, or dismantle WMD proliferation pathways and associated networks;
 - c. The effectiveness of current U.S. Government or multilateral partnership efforts to prevent and counter WMD proliferation;
 - d. Building international capacity and mechanisms of cooperation, including in understudied regions; and
 - e. Development of comprehensive policies and strategies to forge a more holistic picture of WMD proliferation challenges, address gaps, and leverage synergies.
2. **Countering improvised threats and facilitating rapid capability delivery.** DTRA enables DoD to counter improvised threats with tactical responsiveness and through anticipatory, rapid acquisition in support of CCMDs' efforts to prepare for and adapt to battlefield surprise in support of counterterrorism, counter-insurgency, and other related areas, including countering IEDs.

- a. Identifying and defeating adversary networks and pathways for creating and delivering improvised threats, to include via unmanned aerial systems; and
 - b. Preparing, adapting, and responding to improvised threats, to include via accelerated acquisition models that enable rapid delivery of adapted or new capabilities to address evolving threats.
- 3. Countering-WMD employment.** Identification, characterization, or analysis of new or improved approaches for:
- a. Force protection and countermeasures;
 - b. WMD defeat;
 - c. Operating in WMD-contaminated environments;
 - d. Defense against non-traditional means of delivering WMD (e.g., biovectors, hypersonic platforms);
 - e. Metrics for assessing progress in reducing WMD threats;
 - f. Enhancing partner capacity to defend against and respond to WMD use;
 - g. Intersections between homeland defense and CWMD;
 - h. Efforts to improve resiliency;
 - i. Assessment of current requirements for WMD defeat, defense, and elimination on the Korean Peninsula;
 - j. The potential impact of “limited” nuclear use on U.S. conventional military operations, and strategies and measures to counter this impact;
 - k. New research methods or concepts for calculating the potential impact of chemical agents on military personnel; and
 - l. Analysis of what the DoD “steady state” would look like 6-12 months after a nuclear weapon loss/theft by a non-state actor; what the security situation would be months/years after an improvised nuclear device detonation.
- 4. Deterrence, dissuasion, assurance, stability, and escalation.** The current geopolitical landscape – including changing strategic relationships, emerging regional challenges, and capability enhancements – requires new and adapted approaches for ensuring nuclear deterrence, combatting the use of WMD through dissuasion, assurance of allies facing WMD threats, establishing or maintaining the conditions for strategic stability between nuclear-armed states, and addressing the risk of escalation.
- a. Evolving requirements for detecting WMD signatures and for WMD deterrence, dissuasion, assurance, and control of escalation risks and dynamics in regional crises and conflicts;
 - b. Identifying, assessing, and understanding factors that determine how state or non-state actors intend to use WMD against the United States, its forces, allies, and partners (to include motivations, threats, coercion patterns, and use as well as DoD and the Services’ abilities to influence these factors);
 - c. Assessment of the state of global and regional stability, and the nature of alliance and partner relationships after a conflict resulting from a failure of deterrence/assurance;
 - d. Assessment of the potential for escalation, whether due to accidents, incidents, or miscommunication between two or more parties, or as the result of deliberate acts on the part of a potential adversary, and measures to prevent or counter escalation;
 - e. Assessment of current understandings of thresholds for nuclear or other forms of WMD employment, and how thresholds may change or otherwise be affected by geopolitical or technological changes; and
 - f. Applications of game theory to deterrence postures vis a vis Russia and China with focus on 1) how to model what Russia and China value, and 2) how to hold at risk what they

value in order to improve the ability to deter use of WMD for intimidation, coercion, or potential employment in future conflict.

5. Nonproliferation: Regulation, prevention, and denial of WMD by international agreements and cooperative threat reduction (CTR) initiatives. The conditions that shaped earlier approaches to treaties, agreements, multilateral initiatives, and international organizations, and CTR efforts are changing, and international efforts to prevent, limit, or otherwise regulate WMD need to adapt.

- a. The effectiveness of sanctions as instruments of strategic coercion, and assessment of how to determine their impacts on a target economy, leadership, military, and population;
- b. New approaches to future arms control, nonproliferation, cooperative security, and confidence-building measures, including relevant new technologies and novel approaches;
- c. Assessment methodologies for future mutually verifiable strategic arms control agreements as to their acceptable implications for changes in force modification and replacement, and resulting cost savings estimation – i.e., can reductions limit costs and still maintain stability; and
- d. Requirements for and proposed approaches to future global CTR initiatives.

6. Emerging and future threats.

- a. Analysis of the positive opportunities presented by emerging technologies to advance our capabilities;
- b. Development and analysis of public policy measures to incentivize the private sector to build-in security measures to mitigate the down-side potential of emerging technologies;
- c. Methods to discriminate problematic biological activities from benign research (showing credible justification for prophylactic, protective, or other peaceful purposes);
- d. Intersections of global health security and biodefense and analysis of areas for greater leveraging between the two;
- e. Novel approaches to improve existing WMD delivery systems or that result in the development of new delivery systems that CWMD planning will need to take into account;
- f. Gaps in U.S. policy, strategy, or military planning for anticipating and countering emerging threats and measures to close those gaps;
- g. Analysis of the implications of the return of great power competition for DoD CWMD priorities;
- h. New, untapped, or underutilized sources for identifying and understanding emerging threats;
- i. Assessment of how the commercial internet of things could impact DoD and the USG's preparation for and combatting WMD and improvised threats and their ability to ensure nuclear deterrence; and
- j. Acquisition and potential employment of WMD by state or non-state actors that are interested in, but do not currently possess WMD, to include their motivation(s) for acquisition and likely scenarios for use.

REQUIREMENT DESCRIPTION: The USAFA is soliciting white papers for research under Section i – Research Areas of the Broad Agency Announcement USAFA-PASCC-BAA-2016 Amendment 0001 posted on 14 March 2018.

THIS WILL BE A TWO-STEP CALL ANNOUNCEMENT:

FIRST STEP: WHITE PAPERS

WHITE PAPER FORMAT: White papers submitted in response to this CALL should conform to the requirements found in USAFA-PASCC-BAA-2016 Amendment 0001, to include a brief technical description, a short resume of the principle investigator and a rough order of magnitude of cost.

WHITE PAPER DUE DATE AND TIME: The due date for white papers submitted in response to this CALL is no later than 4:00 PM Local Time on 7 June 2018. *White papers received after the due date and time shall be governed by the provisions of FAR 52.215-1(c)(3).*

WHITE PAPERS AND ALL QUESTIONS ARE TO BE E-MAILED TO:

10 CONS/PKC

Attn: Erica Wilson

Email: 10CONS.PASCC@us.af.mil

***Please note: It is the responsibility of the submitting organization to ensure white papers have been received by the USAF Academy. If you do not receive a confirmation email within 48 hours of submitting your white paper, it is your responsibility to contact the contracting office to ensure receipt. Failure to do so may result in a late white paper. White papers not received on time will NOT be processed.**

WHITE PAPERS EVALUATED AND SELECTED: White papers will be evaluated and full proposals requested in accordance with USAFA-PASCC-BAA-2016 Amendment 0001. Only white papers that meet agency needs will be funded. Further, be advised as funds are limited, otherwise meritorious white papers may not be funded. Offerors whose white papers are not of interest to the Government will be notified via letter that the effort proposed is not of interest to the Government.

White papers may be submitted for one or more areas of interest or for a specific focus area. A proposer may submit separate white papers on different topics or different proposals on the same topic. The USG does not guarantee an award in each topic area.

SECOND STEP: PROPOSALS

INTENT TO PROPOSE: Should potential offerors receive a formal request for proposal, they are requested to advise the Grants Officer point of contact (by e-mail) if they intend to submit a proposal. Such notification is merely a courtesy and is not a commitment by the offeror to submit a proposal.

PROPOSAL INSTRUCTIONS: Offerors are requested to follow the instructions within the baseline BAA, USAFA-PASCC-BAA-2016 Amendment 0001 on how to submit a proposal. All proposals must be submitted through Grants.gov, <https://www.grants.gov> and must include all the required forms specified within the baseline BAA.

REGISTRATION REQUIREMENTS: Prospective Awardees shall be registered in the System for Award Management (SAM) database prior to award, during performance, and through final payment of

any award resulting from this announcement. Offerors may obtain information on registration and annual confirmation requirements via the Internet at www.sam.gov or by calling 1-866-606-8220.

ANTICIPATED FUNDING: The total anticipated funding for the total cumulative amount of all awards made as a result of this CALL is \$0-\$3.6M. All funding is subject to change due to Government discretion and availability, as well as technical needs.

ANTICIPATED TYPE OF CONTRACTS/INSTRUMENTS: The Government anticipates awarding the instrument best suited to the nature of research proposed including a grant, cooperative agreement, or procurement contract. Potential offerors are reminded that in accordance with 32 CFR 22.205 and 2 CFR 200.400, a fee or profit may not be paid to the recipient of a cooperative agreement or grant.

PERIOD OF PERFORMANCE: The anticipated period of performance for awards resulting from this CALL is generally 12 months but can be up to 24 months per award, depending on the proposed effort.

PROPOSAL DUE DATE AND TIME: The due date for proposals will be no less than 30 days after a formal request for proposal has been sent to the submitter of the selected white paper(s). The formal request for proposal will establish the due date. **Proposals received after the due date and time shall be governed by the provisions of FAR 52.215-1(c)(3).**

ANTICIPATED NUMBER OF AWARDS: The Government reserves the right to make multiple awards, single awards, or no awards pursuant to this CALL.

ANTICIPATED AWARD DATE: The Government anticipates issuing awards subject to this CALL in the March 2019 timeframe; however, timelines depend on quantity and merit of white papers/proposals received.

CALL AMENDMENTS: Offerors should monitor Grants.gov (<http://www.grants.gov>) for any additional notices to this CALL that may permit extensions to the white paper submission date or otherwise modify this announcement.

APPLICABILITY OF BASELINE BAA: All requirements of USAFA-PASCC-BAA-2016 Amendment 0001 apply unless specifically amended and addressed in this CALL. For complete information regarding USAFA-PASCC-BAA-2016, refer to the initial opened-ended BAA as amended. It contains information applicable to all calls issued under the BAA and provides information on the overall program, proposal preparation and submission requirements, proposal review and evaluation criteria, award administration, agency contacts, etc. Direct questions may be addressed to the points of contact identified above.