Environmental Security Technology Certification Program (ESTCP)

CLIMATE IMPACTS ON DOD WATER INFRASTRUCTURE

OBJECTIVE
The Department of Defense (DoD) ESTCP Program seeks analysis of DoD installation water infrastructure and its vulnerability to the effects of climate change. Aging infrastructure is susceptible to changing climate and related weather events, resulting in increasing maintenance costs and disruption to installation operations. In Phase 1, ESTCP seeks proposals for analysis of the impact of climate change and related weather events on DoD installation water and wastewater infrastructure (including distribution system, storage tanks, wastewater treatment facilities, holding ponds, etc.). Analysis should identify and prioritize investment in preventative and corrective interventions to reduce impact on water availability, quality, security, and overall cost to the Department for the sustainment of water systems. Proposers are encouraged to partner with subject matter experts from a range of relevant fields and industry sectors. In Phase 2, technological solutions to gaps in water infrastructure climate resilience identified in Phase 1, may be invited to submit proposals for demonstration projects following the completion of the study. Pre-proposals are requested for Phase 1 only.

Of particular interest are analysis that address the following:

- Assessment of the existing water infrastructure on DoD installations and the potential impact of climate change and extreme weather on it and on water availability.
- Assessment of investment needs to upgrade the water infrastructure to be climate resilient and efficient, to ensure the availability of required water quantity and quality to support installation missions.
- Assessment of the installations’ dependence on non-DoD water infrastructure and resources and the associated vulnerabilities.
- Efficient approaches to identifying, prioritizing, and implementing mitigation and adaptation measures to climate impacts on water infrastructure.
- Innovative solutions and tools to monitor and assess the water infrastructure needs and impacts due to changing climate. Where possible, integrate with existing DoD water system models, tools and datasets to enable data-informed decisions.
- Identification of gaps in DoD data, information or understanding of climate-related vulnerabilities to installations’ reliable access to water.
- Determine the changes or updates needed to existing policies, guidance, specifications (e.g. unified facility criteria) to build and sustain climate-resilient water infrastructure.
- Provide robust data-driven cost-benefit analysis of water system upgrades in terms that inform near-term to long-term investment planning, to include consideration of alternative financing and co-funding with local governments/municipalities.

BENEFITS
Assured access to the necessary quantity and quality of water supply is critical for the long-term
water security and military readiness of an installation. Outcomes from the ESTCP analysis will help identify, mitigate, and/or reduce potential water service failures due to extreme weather or climate change impacts, that may have direct impact on an installation’s ability to execute its mission and welfare of its resident community.

BACKGROUND
DoD has installations in different climate zones, with varying geographies and topographies. According to the 2019 DoD’s Improving Water Security and Efficiency on Installations Report to Congress \(^1\), majority of water infrastructure within DoD is near the end of its useful life. The report identified aging infrastructure and leaks as among the top issues facing DoD’s effort to increase water security and efficiency. Upgrading aging infrastructure may have high upfront costs but it offers lifecycle cost savings. Many DoD installation locations are already witnessing the impact of climate change on infrastructure, resulting in competing resources and funding. To ensure mission assurance and longer life of the water infrastructure, climate change needs to be considered in the water infrastructure planning, design, build and maintenance.

The pre-proposals shall follow the general instructions provided on the ESTCP website and should consider the following information:

- In the Technology Description section, proposers should provide information that generally describes their approach to analyze, assess, and inform cost effective improvements to make DoD’s aging water infrastructure efficient and climate resilient. Aging infrastructure is susceptible to changing climate and related weather events, resulting in increasing maintenance costs and capital costs due to unexpected failures.
- In the Technical Approach section, proposers should provide sufficient detail that the technical approach can be clearly understood by the reader. No demonstration plan will be required for Phase 1 efforts.
- In the Expected Benefits section, a qualitative and semi-quantitative description of the expected benefit of the resultant analysis should be included.
- The Technology Transfer section should discuss activities to engage with key stakeholders involved with potential Phase 2 development for military installations to facilitate information exchange and explore collaboration for a potential Phase 2 demonstration.

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For pre-proposal submission due dates, instructions, and additional solicitation information, visit the ESTCP website.