Environmental Security Technology Certification Program (ESTCP)

ENERGY RESILIENCE ON DOD INSTALLATIONS

OBJECTIVE
Solutions are sought to improve the energy resilience on military installations. As defined in 10 U.S.C. § 101(e), energy resilience means the ability to avoid, prepare for, minimize, adapt to, and recover from anticipated and unanticipated energy disruptions in order to ensure energy availability and reliability sufficient to provide for mission assurance and readiness, including mission essential operations related to readiness, and to execute or rapidly reestablish mission essential requirements.

Installations have a wide variety of energy systems that deliver electrical and thermal energy to power critical missions, fuel industrial processes, and power and condition facilities. Most installations rely on the commercial electrical grid for primary power and building-level diesel generators and uninterruptable power supplies (UPS) for back-up power to serve critical loads. More frequent and stronger natural disasters and threats to the commercial electric grid require new solutions to improve energy resilience and meet the energy requirements for mission assurance. Solutions such as microgrids can provide improved resilience, but multiple challenges still exist. ESTCP seeks demonstrations of innovative solutions to improve energy resilience that have broad application across military installations. Of particular interest are solutions that:

- Leverage existing photovoltaic (PV) solar power within the fence line of military installations to enhance energy resilience. Existing PV systems at installations offer the potential to support energy resilience, but many were not designed with resilience as their primary goal.
- Address the dependency of electric vehicles on a secure and reliable supply of electricity.
- Provide cost effective approaches to characterize sub-building critical loads. Many loads do not require continuous uninterruptible power. Accurately identifying the required peak critical load helps reduce capital and O&M costs.
- Provide advanced load management approaches to support mission functions during a grid outage (i.e., when islanded) and provide additional revenue when grid tied. Load shedding decisions must be based on the priority of mission requirements as well as their anticipated impacts.
- Are informed by gaps and needs identified by the Installation Energy Plans and/or Installation Resilience Plans.
- Offer innovative business models for financing resilience improvements at installations.
- Innovative on-base thermal energy or electric power generation that is carbon pollution-free, provides increased resiliency through higher efficiency, or is independent of external supplies. Technologies should be cost competitive or show a viable path to cost competitiveness with current alternatives.
Proposals that include modifying or integrating with existing assets (e.g., PV array, privatized utility) that are owned or operated by non-DoD entities should include the asset owner/operator on the project team. Proposals that address only unique site-specific needs or seek to demonstrate mature microgrid technologies will not be considered responsive to the intent of this solicitation.

**BENEFITS**
Successful technologies and solutions demonstrating increased energy resilience and reduced dependence on off-base supplies, will help the DoD build resilient and efficient installations in the future. The demonstrated solutions will inform DoD installations in their installation assessment and resilience planning activities and provide technologies/solutions that could meet the gaps/needs identified in their installation energy plans and installation resilience plans.

**BACKGROUND**
Executive order (EO) 14008 on tackling climate crisis, the DoD climate adaptation plan, and the latest EO on catalyzing clean energy industries and jobs through federal sustainability, all stress the importance of building an efficient, reduced carbon or carbon free, resilient, climate-ready installation that can withstand changing conditions and maintain operations in the event of grid outage to support mission preparedness and readiness. The National Defense Authorization Act for Fiscal Year 2021 highlighted the importance of on-base energy resources and reduction of the DoD’s dependence on off-base resources.

The installation energy priority of the DoD is to ensure mission readiness by pursuing energy resilience. Energy resilience enables the DoD’s facilities, equipment, and personnel to perform critical missions when the commercial grid and other off-base energy resources are unavailable. Significant improvements through deployment of microgrids, on-site distributed energy resources, and other technologies have been made, but the capital and long-term sustainment costs of energy resilience solutions still represent a significant issue. Finding technologies and approaches that lower these costs and provide highly reliable and securely available energy for long duration grid outages remains a priority.

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