

Environmental Security Technology Certification Program (ESTCP)

IMPROVED ENERGY RESILIENCY

OBJECTIVE

The Department of Defense (DoD) Installation Energy Test Bed seeks demonstration projects of innovative technologies and processes to improve the performance and reduce the cost of providing 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.

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, natural gas for thermal energy, and building-level diesel generators and uninterruptable power supplies (UPS) for back-up power to serve critical loads. Microgrids also can provide improved resiliency and are beginning to be deployed across the DoD. 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. During long duration outages, the potential for disruption in other supplies also greatly increases. ESTCP seeks demonstrations that contribute to energy resilience that have broad application across military installations worldwide. Of particular interest are pilots and demonstrations that address the following issues:

- Innovative thermal energy that is inherently resilient and cost effective. Technologies that provide thermal energy that are independent of off-base supplies that can be disrupted are of particular interest.
- Innovative on-base electric power generation that provides increased resiliency through higher efficiency or is independent of external supplies. Power generation technologies should be cost competitive or show a viable path to cost competitiveness with current alternatives.
- 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.
- Innovative agreements and tariffs that exploit a microgrid's capability while grid tied to provide revenue or cost savings that help offset a microgrid's O&M costs. Projects conducted in partnership with local utilities are of particular interest.
- Low-cost solutions (such as how to plan, retrofit, and test generator quick connects to existing buildings) to increase the flexibility of on-site or portable generation assets to adapt to changing energy demands during unplanned outages.

Other innovative technologies that would enhance energy security on their own or through integration with a microgrid are also of interest. Proposals for building microgrid systems and testing common renewable energy generation assets are not of interest. Proposals that address only unique site-specific needs or seek to demonstrate mature technologies will not be considered responsive to the intent of this solicitation.

BACKGROUND

The installation energy priority of the Department of Defense is to ensure mission readiness by pursuing energy resilience. Energy resilience enables the Department's weapons platforms, 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. The National Defense Authorization Act for Fiscal Year 2021 highlighted the important of on-base energy resources and reducing the DoD's dependence on off-base resources.

POINT OF CONTACT

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For pre-proposal submission due dates, instructions, and additional solicitation information, visit the [ESTCP website](#).