

## **Black Start Exercise: Train the Trainer**

### **Project Description**

Utility electrical power directly enables organizations to function, but the interdependence of needed systems is typically overlooked. Power outages can result in critical mission failures through backup power equipment failures or impacts to critical personnel. As a result, operations and mission capabilities may be degraded via a physical or cyber-attack to the utility or site electrical generation or distribution systems.

Massachusetts Institute of Technology Lincoln Laboratory (MIT LL) has conducted a series of black start exercises (where all facilities within an organization are disconnected from utility power and powered only by backup power sources) to identify systems and equipment that do not provide the required support during a power outage. These exercises include in-depth stakeholder interviews to identify mission requirements and known issues, a planning process to develop the most useful exercise to justify resilience projects, and mitigations planning to minimize personnel risk or mission failure. MIT LL is now looking to transition the black start exercise planning and execution process to one or more external companies to lead these exercises more broadly.

### **Desired Team Capabilities**

A black start exercise planning and execution team must include a combination of technical expertise, systems level thinking, and emotional intelligence to maximize the effectiveness of an exercise. Teams will be expected to have:

- Sufficient technical experience and expertise to understand and apply site documentation such as generator lists, single-line diagrams, communications maps, critical facility lists, refueling plans, utility bills to identify inconsistencies or issues, and to flag atypical systems;
- Organization skills to compile, validate, and highlight useful information from site documentation, as well as the ability to reconcile conflicting, inaccurate, and outdated information through physical observation and interviews;
- Emotional intelligence required to conduct interviews to determine mission energy and interdependent communications requirements and to identify exercise goals and concerns;
- Systems analysis and architecture design skills to identify and prioritize challenges and potential mitigations;
- Adaptability to uncertain and varying situations and environments;
- Coordination experience to organize exercise logistics including team selection, assignments, and communication with the site.

The team must also have the ability to:

- Rapidly assemble clear and concise documentation and presentations to organization leadership and stakeholders for exercise In-briefs and Out-briefs;
- Secure required buy-in to fully assess and stress-test the most vulnerable systems;
- Consider a wide range of expected, realistic, and catastrophic scenarios (including a nation-state level attack); interview organization personnel to understand what the current actions

would be; and assess what changes in tactics, techniques, procedures, personnel, or infrastructure would be required to ensure that all power requirements are met;

- Field teams composed of solely United States citizens with DoD security clearances of SECRET or higher.

The team should be comprised of members from different technical backgrounds to evaluate the interdependent nature of systems throughout the planning process. Team members with backgrounds in electrical transmission and distribution systems, power generation and storage technologies, data and communication networks, water and wastewater systems, program management and contracting, and systems analysis have previously provided significant value during the planning process. Additional areas of expertise (such as SCADA, facility-related controls systems, and operational technology cyber security) can be helpful to the team and encouraged to be part of the process, but are not required to ensure the basic value of the black start exercise is achieved. Companies providing technical background as well as those with experience in information gathering and exercise planning are both encouraged to apply; in such cases teaming is highly recommended. Traditional defense contractors are also encouraged to submit white papers, however a different contracting process will be required if selected for an award.