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BY THE COMMITTEE

Statement of
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Subcommittee on Cybersecurity, Infrastructure Protection and Security Technologies

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Chairman Lungren and distinguished Members of the Subcommittee. Thank you for the opportunity to testify. I was asked to address the question of how the Department of Defense (DoD) would operate during a significant outage of the commercial electric power grid.

Although today's hearing is focused on the prospect of an electromagnetic pulse (EMP) event, such an event is only one scenario for a grid outage. DoD is heavily dependent on the commercial electric power grid. The Department has two closely coordinated sets of activities that focus on the need to maintain critical mission activities in the event of a commercial grid outage. One set of activities, led by DoD's office of homeland defense, is part of the Department's explicit "mission assurance strategy." The other set of activities, focused on the Department's fixed installations and led by its Installations and Environment office, falls under DoD's "facility energy strategy."

Mission Assurance Strategy

The Department has long had a major focus on mitigating risks to high priority DoD facilities and infrastructure and the critical global missions they support. Toward that end, DoD recently adopted an explicit Mission Assurance Strategy, which is focused on ensuring operational continuity in an all-hazard threat environment.

This strategy entails a two-track approach. Track I includes "in-house" mitigation efforts--activities that the Department can execute largely on its own. A key element is DoD's Defense Critical Industry Program (DCIP)—an integrated risk management program designed to secure critical assets, infrastructure and key resources for our nation. DoD and the Department of Homeland Security (DHS) work closely together as part of DCIP. Under Track I of the Mission Assurance Strategy, DCIP will continue to update the list of DoD's most critical assets and target them for special mitigation efforts through DoD's budget and other internal processes.

Track II of our Mission Assurance Strategy tackles the many challenges to DoD mission execution that require external collaboration with partners such as the Department of Energy (DOE), DHS and industry. Given that DoD mission execution relies heavily upon the energy surety of the communities surrounding our installations, Defense Industrial Base facilities spread across entire regions, and on private sector infrastructure that will collapse without electricity, this two-track approach can help meet the challenges to DoD mission assurance that lie far beyond our military bases.

DoD's Facility Energy Strategy

DoD's facility energy strategy is also focused heavily on grid security in the name of mission assurance. Although the Department's fixed installations traditionally served largely as a platform for training and deployment of forces, in recent years they have begun to provide direct support for combat operations, such as unmanned aerial vehicles (UAVs) flown in Afghanistan from fixed installations here in the United States. Our fixed installations also serve as staging platforms for humanitarian and homeland defense missions. These installations are largely dependent on a commercial power grid that is vulnerable to disruption due to aging infrastructure, weather-related events, and potential kinetic, cyber attack. In 2008, the Defense

Science Board warned that DoD's reliance on a fragile power grid to deliver electricity to its bases places critical missions at risk.¹

Standby Power Generation

Currently, DoD ensures that it can continue mission critical activities on base largely through its fleet of on-site power generation equipment. This equipment is connected to essential mission systems and automatically operates in the event of a commercial grid outage. In addition, each installation has standby generators in storage for repositioning as required. Facility power production specialists ensure that the generators are primed and ready to work, and that they are maintained and fueled during an emergency. With careful maintenance these generators can bridge the gap for even a lengthy outage. As further back up to this installed equipment, DoD maintains a strategic stockpile of electrical power generators and support equipment that is kept in operational readiness. For example, during Hurricane Katrina, the Air Force transported more than 2 megawatts of specialized diesel generators from Florida, where they were stored, to Keesler Air Force Base in Mississippi, to support base recovery.

Next Generation Microgrids

Although the Department will continue to maintain its fleet of on-site and mobile backup generators, we are moving aggressively to adopt next generation microgrids. Advanced microgrids, combined with on-site energy generation (e.g., solar or geothermal) and energy storage, offer a more robust and cost effective approach to ensuring installation energy security than the current solution (backup generators). Although microgrid systems are in use today, they are relatively unsophisticated, with limited ability to integrate renewable and other distributed energy sources, little or no energy storage capability, uncontrolled load demands, and "dumb" distribution that is subject to excessive energy losses. By contrast, we envision advanced (or "smart") microgrids as local power networks that can utilize distributed energy, manage local energy supply and demand, and operate seamlessly both in parallel to the grid and in "island" mode.

Advanced microgrids are a "triple play" for DoD's installations: First, they will facilitate the incorporation of renewable and other on-site energy generation. Second, they will reduce installation energy costs on a day-to-day basis by allowing for load balancing and demand response—i.e., the ability to curtail load or increase on-site generation in response to a request from the grid operator. Third, and most importantly, the combination of on-site energy and storage, together with the microgrid's ability to manage local energy supply and demand, will allow an installation to shed non-essential loads and maintain mission-critical loads if and when the grid goes down.

¹ "More Fight-Less Fuel," Report of the Defense Science Board Task Force on DoD Energy Strategy, February 2008. Facility energy is also important because of its high cost. With more than 300,000 buildings and 2.2 billion square feet of building space, DoD has a footprint three times that of Walmart and six times that of the General Services Administration. Our corresponding energy bill is \$4 billion annually—roughly 10 percent of what DoD spends to operate and maintain its installation infrastructure.

DoD's Installation Energy Test Bed, run out of the Department's Installations and Environment office, is funding ten demonstrations of microgrid and storage technologies to evaluate the benefits and risks of alternative approaches and configurations. The Test Bed is working with multiple vendors so as to allow DoD to capture the benefits of competition. Demonstrations are underway at Twentynine Palms, CA (General Electric's advanced microgrid system); Fort Bliss, TX (Lockheed Martin); Joint Base McGuire-Dix-Lakehurst, NJ (United Technologies); Fort Sill, OK (Eaton); and several other installations.