Microgrid control afghanistan

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ABERDEEN PROVING GROUND, Md. -- The U.S. Army, led by the Project Manager for Mobile Electric Power, or PM MEP, is installing microgrid technologies in Afghanistan as part of a groundbreaking project that could significantly lower fossil fuel consumption on the battlefield.

The effort, which kicked off at a 2,400-man Force Provider complex in June, is the first attempt by the Department of Defense to evaluate microgrid technologies in an operational environment.

A microgrid consists of "smart" generators that link with one another to intelligently manage the power supply and operate at peak efficiency. Microgrids also enable the use of alternative energy sources and energy storage.

"We know this technology can save fuel and maintenance time for our deployed forces," said Brig. Gen. N. Lee S. Price, program executive officer for Command, Control and Communications - Tactical, or PEO C3T, the Army organization overseeing the initiative. "Through this project, we can obtain reliable data on these benefits -- and lay the groundwork for successful use of microgrids in theater."

Among the goals of the three-month experiment are to collect data on fuel and maintenance savings, identify the microgrid technologies with the highest potential for military use, familiarize Soldiers with the equipment"s functions and obtain a baseline cost analysis to support future installations. The Army Materiel Systems Analysis Agency, or AMSAA, will take the lead in gathering system and cost data.

Reducing demand for energy on the battlefield is viewed as a key military challenge by the DoD, which recently released its first-ever Operational Energy Strategy. The strategy will increase the energy efficiency of operations; limit the risks troops face as they use, transport and store energy; and minimize the amount of defense dollars spent consuming energy, officials said.

"The department will therefore take steps to improve the efficiency of our energy use, both through technological innovation and nonmateriel changes," said Sharon Burke, assistant secretary of defense for operational energy plans and programs, in unveiling the strategy. "This will range from more efficient engines on aircraft, ships and vehicles to lighter materials, to concepts of operation that conserve fuel. An important first step will be collecting better data and analysis on our actual energy use."

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With dozens of initiatives already underway for different operational scenarios, the microgrid project targets a "gray area" that has not yet been addressed: an expeditionary camp that quickly grows in size and power consumption, officials said.

"They kept adding module after module, and they ended up with 96 separate generator sets," said Chris Bolton, lead engineer for PM MEP and one of the architects of the project. "The intent was to take a lot of the commercially available technology and state-of-the-art microgrid systems and apply it to that situation."

A 1-megawatt, or MW, microgrid will replace 22 of the complex"s generator sets with just four larger sets, simplifying maintenance as well as cutting fuel consumption, Bolton said. Another 180-kilowatt, or kW, microgrid configuration will not replace any of the remaining 74 generators, but will allow up to six of them to communicate and turn on and off in response to demand.