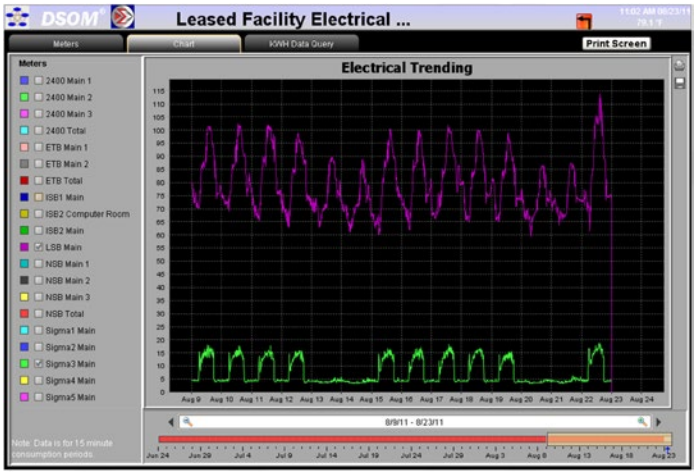

# Providing a Comprehensive View of Facility Energy Systems

## KNOWLEDGE TO SAVE POWER

We spend quite a bit of our lives in buildings these days. Whether these buildings are our shelter or work location or both—the quality of the energy environment these facilities provide affects the quality of our lives and our work. Energy is a major cost of building operations and as budgets are trimmed, the efficient use of energy is one way to preserve that quality of work and life and save money.

Pacific Northwest National Laboratory (PNNL) developed a tool known as Decision Support for Operations and Maintenance, or DSOM, which provides a holistic view of operations and maintenance of energy systems. In development and improvement for more than 20 years, DSOM is a patented, award-winning software developed with U.S. Department of Energy (DOE) and U.S. Department of Defense (DOD) funding.


DSOM dashboard showing electrical, gas, and water consumption at a Pacific Northwest National Laboratory building.




DSOM trends electrical use at Pacific Northwest National Laboratory buildings.

## WATCHING POWER USE AT MILITARY BASES

DSOM supports warfighting readiness and lethality by enabling the reliable, efficient use of power at DOD installations. Used at PNNL to manage some of its own buildings, DSOM has been installed at DOD sites around the country, including Twentynine Palms Marine Corps Air Ground Combat Center, U.S. Army Aberdeen Proving Ground, and U.S.

## RELATED TOOL MONITORS MILITARY CONTINGENCY BASE POWER

Understanding energy use and operations at contingency bases helps save lives, energy, and equipment wear. PNNL developed a modular version of DSOM—the Contingency Base Energy Management System (CB-EMS) to monitor several key parameters for power generating systems, structures that consume power, and fuel and water tanks. Operation of these bases depend on a steady supply of fuel and water among other items. Knowing the level of these commodities can inform delivery of resupply along potentially dangerous routes and right-size the personnel staffing the delivery. Learn how CB-EMS can benefit your bases at https://www.pnnl.gov/dsom/index.stm.

Marine Corps Recruit Depot, Parris Island. PNNL is improving and expanding the installations at Parris Island and the PNNL campus to add features and expand DSOM's capabilities. A new installation of DSOM is being developed for the Army's Ft. Bragg.

Energy and building managers know that equipment can operate for years in a fault condition without any obvious signs of failure. When this happens, the costs associated with wasted energy can be considerable. Using DSOM, the site's energy manager will be alerted to energy loss and provided an estimated cost of the loss while the fault is active. DSOM identifies and quantifies faults for many systems and this information allows staff to prioritize maintenance and repair activities.

## MONITORING THE GRID FOR MORE RELIABLE POWER

Until recently, the faults monitored by DSOM focused on energy efficiency for the site, now DSOM also monitors the electrical grid. At Parris Island, work is ongoing to monitor the base electrical grid to provide more reliable power to the base and remote operations capability for the operators. PNNL is leveraging its expertise in the nation's electrical grid and applying it to site power grids, such as those found on military bases.

DSOM has no licensing costs when deployed at government sites, but it uses commercially licensed software that requires licensing. DSOM's current architecture uses Ignition by Inductive Automation as the supervisory control and data acquisition (SCADA) engine for DSOM. Ignition provides connections to most common open source protocols and databases for data acquisition and will run on the latest operating systems with the latest patches. Ignition is web-based, which allows any device that is connected to the same network as the DSOM server to view the DSOM pages without additional licensing fees.

DSOM can help reduce energy consumption for the nation. It gives operations staff visibility of how a site or facility is operating. The tool identifies faults and quantifies them for a comprehensive view that allows operations staff to prioritize maintenance and repair activities. Learn more about DSOM at https://www.pnnl.gov/dsom/index.stm.

**For more information, contact:**

**Joseph (Jake) Tucker**
jake.tucker@pnnl.gov
(509) 375-2811

**For licensing opportunities, contact:**

**Sara Hunt, Commercialization Manager**
sara.hunt@pnnl.gov
(206) 528-3535

U.S. DEPARTMENT OF ENERGY

PNNL-SA-160082 | MARCH 2021