USMC Bases Attack Energy Management Head-On!

Parris Island is on the verge of becoming the most energy-efficient base in the U.S. Marine Corps. Over the last few years, several FEMP approved projects have been undertaken at Parris Island (located in Beaufort, SC) to reduce supply and demand energy consumption, and to allow them better control over their co-generation steam plant and building systems. The initial project at Parris Island involved installing the Decision Support for Operations and Maintenance (DSOM II™) system, which was developed by Pacific Northwest National Laboratory (PNNL)[a], in the Central Energy Plant (CEP) to aid them in efficient generation of electricity to maintain peak demand below a penalty limit. To provide more efficient use of natural resources, minimize electrical demand, minimize environmental impact, and to allow for a more effective distribution of limited manpower, PNNL's work at Parris Island has generally been focused in four areas of activity:

- upgrading the CEP to the DSOM II system
- upgrading the Wastewater Treatment Plant (WWTP) Supervisory Control and Data Acquisition (SCADA) system with a DSOM II-related technology
- installing the DSOM II system in the remote Weapons Area Steam Plant (WAP)
- installing a site-wide energy management and control system (EMCS) for major energy intensive buildings and barracks at Parris Island.

The WAP, WWTP, EMCS, and CEP systems are tied in to the same information management system to allow a centralized management system to preside over the entire Parris Island energy landscape (Figure 1). Information is available for operations, maintenance, engineering, training, and administrative users.

The DSOM II system provides electrical demand information to the EMCS in a load shedding scheme that is actually attempting to lower the peak demand limit by over 1 megawatt. At a predetermined level of demand, after engaging the EMCS initial load shedding scheme, the DSOM II system will indicate to the CEP operators that they must generate electricity up to maximum generation capacity in guided stages. At that point, if necessary, the EMCS load shedding scheme activates additional energy cutbacks up to a final level that actually shuts down equipment to prevent exceeding the peak demand limit. The first buildings under this EMCS load shedding scheme went on-line in June 2001 and, even with only control over this limited load, the program has resulted in preliminary electricity savings valued at $23,000 and lowering the peak demand for the month from 9.2 to 8.3 MW. As additional buildings come on-line throughout the rest of this year, significant savings from this load shedding/CEP generation scheme are expected to be realized.

A similar EMCS upgrade program is in progress at Marine Corp Air Station Beaufort, SC. By the time peak demand periods approach next spring, both Parris Island and the Beaufort Air Station will have a significant number of buildings on-line, resulting in the capability to orchestrate a major reduction in energy usage. Parris Island and Beaufort

[a] Operated for the U.S. Department of Energy by Battelle Memorial Institute.

Air Station Energy Management staff have taken a proactive role in these energy reduction activities, working closely with PNNL and contractor staff to make implementation of these energy reduction technologies a successful reality.

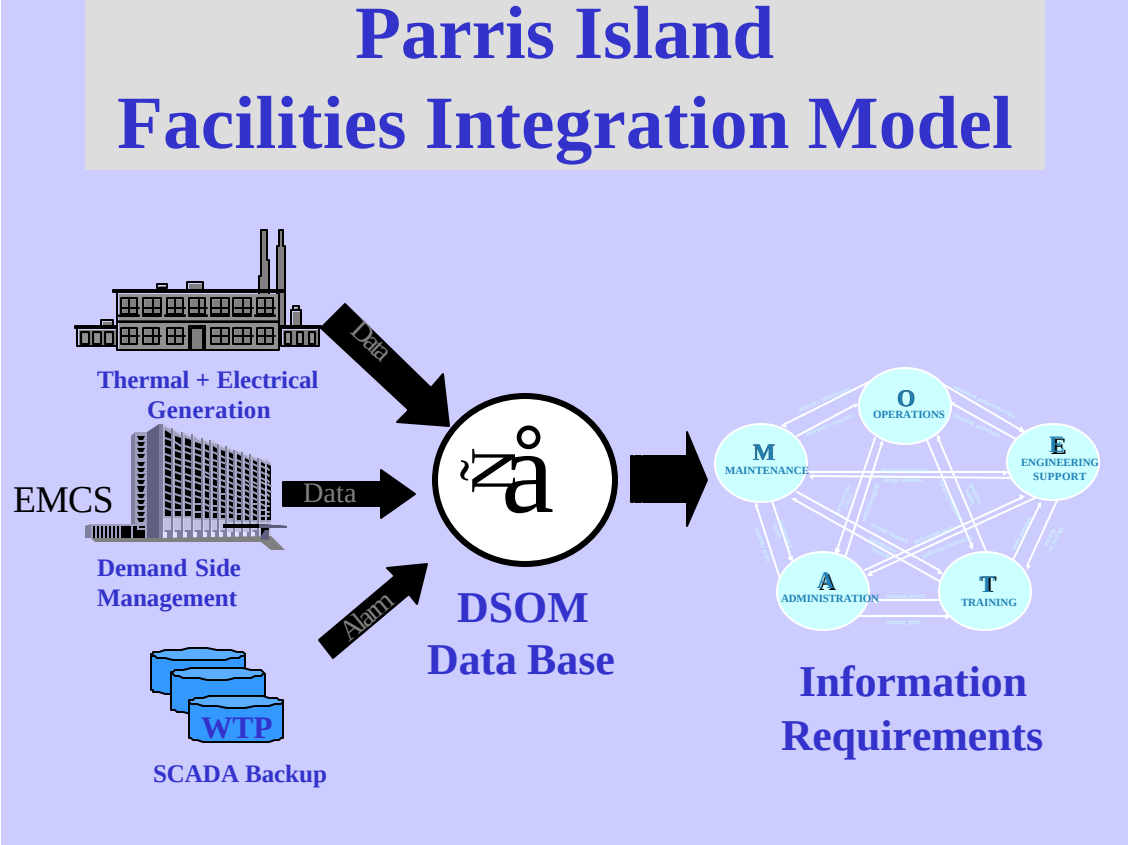

Figure 1. Facilities Integration Model

Richard J. Meador
DSOM Program Manager
Pacific Northwest National Laboratory
509/372-4098
richard.meador@pnl.gov
www.pnl.gov/dsom/
PNNL-SA-35107