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Army Metering Program — Closing the Gap

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The Army Metering Program is closing in on its primary objective: Website access to near real-time meter data for thousands of Army facilities worldwide. More than 6,000 advanced electric meters and 1,400 advanced gas meters have been installed to date on existing Army facilities by the U.S. Army Engineering and Support Center, Huntsville.

The current plan is to double this amount by end of FY 2012. However, installing an advanced meter on a building is only half the battle. The other half is achieving connectivity of the meters with the Meter Data Management System (MDMS), the central Armywide system for meter data analysis and reporting.

Advanced meters electronically transmit data to a head-in server typically located within the server room of the Network Enterprise Center (NEC), formerly known as Directorates of Information Management. The consolidated meter data is then transmitted from the head-in server to the MDMS via a secure Internet connection.

That is the plan but not the reality at many installations at the moment. The NEC is responsible for protection of the installation's network against cyber attacks. The cyber threat is real and the implications are scary — the Army and our society at large depend heavily upon functioning and secure networks. It is understandable given the complexity and the brave new world aspects of cyber security that many NECs will not allow facility applications such as Utility Monitoring and Control Systems (UMCS) and advanced metering to connect to the installation network without a Certificate of Networkiness (CON).

At some installations, the NEC is requiring system accreditation under the Defense Information Assurance Certification and Accreditation Program, a much more involved and stringent requirement. The concern is not with the MDMS which has already received DIACAP certification and a CON. The concern is over meters electronically reporting to a head-in server. Using the information highway metaphor, the expressway (MDMS) is approved for secure travel whereas the feeder streets are not.

Differences in the interpretation and application of Army network security requirements to metering and UMCS have prompted the formation of a team to recommend policy clarifications, technical approaches and a more streamlined CON application approval process. The team is comprised of representatives from the Installation Management Command, Engineering Research and Development Center and Huntsville Center. Metering and UMCS are to be covered by this initiative. The recommendations of this team will be presented to the chief information officer/G6 and 7th Signal Command (the major command for the installation NEC) for decision making.

The current situation does include some connectivity successes. Two sites, Forts Carson, Colo., and Stewart, Ga., are now transmitting facility meter readings to the MDMS central server. The U.S. Military Academy, West Point, N.Y., is expected to come on line in early FY11.

A task order with the MDMS contractor, CALIBRE, is planned for September 2010 award to perform the technical work necessary to expand MDMS connectivity to 19 other installations. Assuming the initiative described in the preceding paragraph is also successful, 22 installations should be able to download their meter data analysis reports from a website accessible with an Army Knowledge Online password before the end of FY 11. Roll-out of MDMS connectivity to other installations is expected to accelerate once the CON issues are resolved and CALIBRE works through all the varieties of head-in server software and meter data output configurations for MDMS compatibility.

While some temporary technical work-arounds will be necessary to achieve MDMS connectivity with meter networks constructed using legacy UMCS networks, the goal is a universal standard output protocol for transmission of meter data to the MDMS. The Army is actually helping to lead industry in achieving this objective by being the first major buyer of an open protocol advanced metering system—one that can accommodate a variety of equipment from different manufacturers and multiple sources of compatible head-in server software. This approach will assure the Army has a system that will continue to be supported by industry and have competitive sources for expanding and modernizing the system in the future.

While installing meters is required to comply with the letter of the Energy Policy Act 2005 and the Energy Independence Security Act of 2007 laws, the MDMS is needed to comply with the Congressional intent. The MDMS will access facility data from the real property inventory and local meteorological data sources so that facility meter readings can be analyzed and reported in the proper context. Installation energy managers will have access to a menu of action-able reports. Examples include a list of buildings at an installation that consume the most energy per square foot for a particular facility type grouping, buildings that have the most variation in their hourly energy use (useful for managing peak loads), and list of buildings where the current energy use is significantly higher than its historical average for the same outdoor temperature range (warrants timely investigation).

Other planned MDMS applications include automated reimbursable tenant utility billing, measurement and verification of Energy Savings and Performance Contracts, determining the actual energy savings payback of a completed project and other applications yet to be envisioned. The MDMS will also allow energy managers to perform their own analyses and download customized reports. The only path forward for achieving this vision is solving the cyber security concerns and is currently priority one for the Metering Program.

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Acronym List

CON - Certificate of Networthiness

MDMS - Meter Data Management System

NEC - Network Enterprise Center

UMCS - Utility Monitoring and Control Systems

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