



• August 15-18, 2010 • Dallas, Texas •
• Dallas Convention Center •



Sub-metering: How is it Better than Master Metering?

ADVANCED SUBMETERING AT VARIOUS DOD FACILITIES: "YOU CAN'T MANAGE WHAT YOU DON'T MONITOR!"



Jefferey B. Murrell, PE

Utility Monitoring and Control System/Metering
Project Manager

USACE, Huntsville Center

Jefferey.B.Murrell@usace.army.mil

256-895-1544

BACKGROUND

- Energy Policy Act of 2005 (EPACT 2005) requires advanced electric meters at all federal facilities by 1 Oct 12
- Energy Independence and Security Act (EISA) of 2007 requires advanced natural gas, water, and steam meters at all federal facilities by 1 Oct 16
- DOD guidance requires metering all utilities for facilities that have estimated annual utility cost of \$35K or greater
- Army criteria for electric metering program:
 - \$35K or greater annual energy costs
 - 29,000 square feet or greater
 - reimbursable tenant facilities
- Each Army MACOM funds their respective facility metering project since FY09



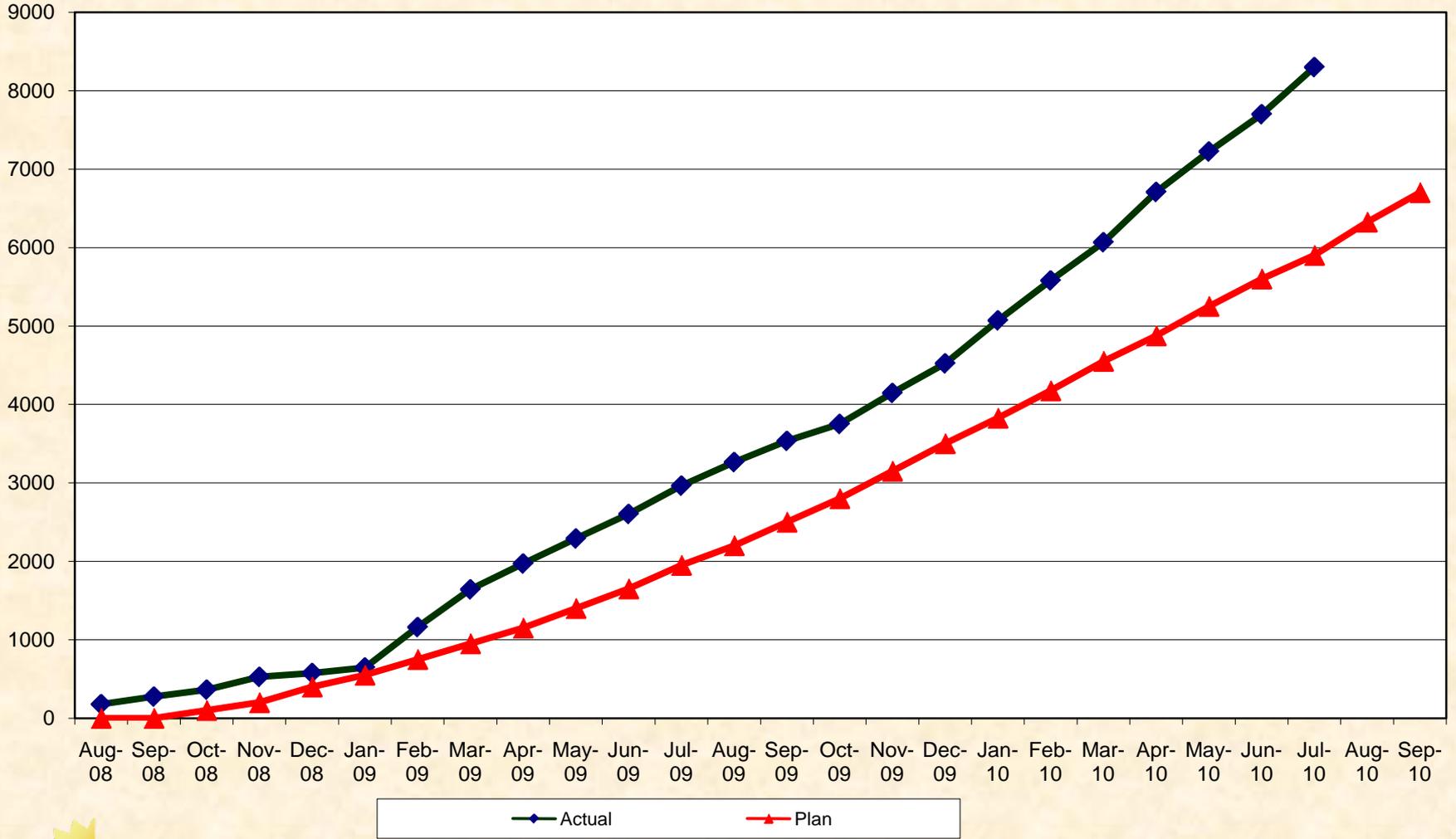
Roles of Huntsville COE

- Huntsville COE executes contracts for installation and networking of advanced meters and utility monitoring and control systems (UMCS).
- Worldwide Clients include the following:
 - US Army (Medical Command, Army Reserves, Army National Guard, Installation Command, and Army Materiel Command)
 - US Army Corps of Engineers Logistics (ULA)
 - Marine Forces Reserves (MFR)
 - Defense Logistics Agency (DLA)
 - Individual active Army garrisons
 - Various Marines camps and Air Force garrisons
- These clients have different criteria than the Army metering program.
- Future of metering programs = UMCS, basewide metering, master metering, integration with smarter grid technology, etc.

PROCESS

- Phase I:
 - Contractor visit and survey buildings
 - Interview DPW and site engineers
 - Evaluate existing Utility Monitoring and Control System (UMCS)
 - Submit Technical Data Package (TDP) w/ detailed design
 - Provide detailed cost estimate per building
- Phase II:
 - Procure & install Phase I design
 - Awarded as option after firm fixed price negotiated from Phase I
- Metering Data Management System:
 - Meters will be connected to existing UMCS system if available
 - If no UMCS, a meter data management system will be provided with reporting of metering data to a central front end

Total Funded Meter Installs



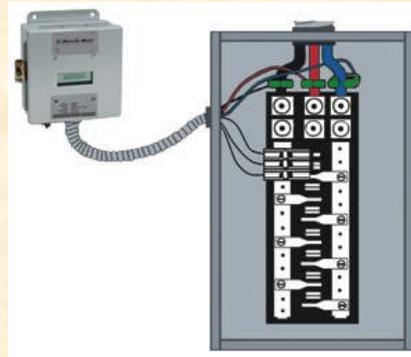
Submetering: Importance

- Energy efficiency starts with knowing how your facility is using its power
- Submetering provides an opportunity for DoD installations, camps, and centers to shift their rising utility costs to tenants who lack ownership or control over thermal efficiency of the structure, its insulation, windows, and major energy consuming appliances/operations.
- Submetering products and software are key tools for increasing efficiency and lowering energy consumption. "You can't manage what you don't monitor" is an old adage that applies to all types of energy consumption, including electric, water, gas and steam. The first step in effectively managing energy is to know exactly when, where and how much is being used.



Submetering: Three Easy Steps

- A submetering system typically includes a “primary master meter”, which is owned by the utility supplying the water, electricity, or gas, with overall usage billed directly to the DoD installation, camp, and/or center.
- Congress mandates that all federal agencies install advanced meters on all economically feasible federal facilities.
- The DoD installation/center then places its own government-owned meters on individual tenant spaces to determine individual usage levels and bill each tenant for their share.



Submetering: Opportunities

- Few CONUS DoD installations, camps, and centers have multiple tenants occupying an economically feasible single facility.
- Significant numbers of economically feasible facilities are located at OCONUS DoD installations, camps, and centers. Thus, there are more OCONUS facilities where sub-metering can not be avoided.
- Rule of Thumb: DoD guidance left it to the individual agencies to set policies regarding sub-metering.
- Research laboratories, certain AAFES malls and facilities, certain MWR facilities, CONUS/OCONUS multi-tenant facilities, etc. are basic exceptions to the rule.

Submetering: U.S. Army

- Huntsville COE, Army garrisons, and our Contractors have installed approximately 8,299 advanced utility meters (as of June 2010), including 6,327 advanced electric meters.
- ACSIM set a policy in 2008 that centralized metering funds can not be used for submetering.
- Starting in FY09, various Army MACOM's are funding submetering projects on a building-by-building basis, especially at OCONUS garrisons, medical hospitals, and Reserve centers.
- Army garrisons can contact CEHNC to install advanced utility submeters, with funding provided by garrisons.



Submetering: Air Force and Marines



- Air Force Commands and individual installations have been very progressive to install advanced utility submeters at facilities with multiple-tenant facilities.
- Marine camps installed a few advanced electric submeters at facilities with multiple-tenant facilities and high energy intensities.
- Marine Reserves Forces (MFR) will install advanced utility meters and utility monitoring and control systems (UMCS) at all MFR-owned centers.



Submetering: Other DoD Agencies

- United States Army Corps of Engineers (USACE) Logistics Agency (ULA): Due to the large number of research laboratories with multiple tenants, submetering would be essential to determine “true” utility costs and to encourage tenants to install energy saving measures.
- Project Start: Fall 2010, when funding is available.
- Defense Logistics Agency (DLA): Advanced utility meters will be installed on all DLA facilities worldwide. Thus, submetering is not necessary.
- Project Start: Spring 2010.



Submetering: Challenges

- **FUNDING AVAILABILITY.**
- Aging and inefficient transformers and electrical distribution panels at various facilities.
- Lack of network systems in buildings that are required to be metered
- No or inefficient UMCS in the buildings that are required to be metered.
- Meter connectivity problems due to security requirements
- Small number of approved, available Certificates of Networthiness (CON) for metering systems.
- Installation problems due to Privatized Utility Contractors.
- OCONUS AAFES facilities are not tenant facilities.



Any Questions?

