

Development of a Utility Data Management System (UDMS)

For the U.S. Department of Energy (DOE), EMR is providing ongoing technical and administrative support to develop a Utility Data Management System (UDMS) in response to DOE's needs to collect, aggregate, manage, archive, and report the Agency's energy data in compliance with EAct 2005, EO 13423, and EISA 2007. The developed UDMS will meet the following objectives:

- Provide national, aggregated, accurate, and timely utility consumption, demand, and cost data to meet Agency Mission Needs and Legislative Reporting Requirements.
- Automate the process.
- Track the progress at the Agency level and report all metered utilities.
- Be user-friendly and easy to expand and update.
- Be secure and compliant with DOE-IT security.
- Be expandable and provide a standardized automated report process for an annual DOE report to Congress.

EMR is providing consultation, coordination, and technical assistance to DOE Phase I site Energy Managers to make available UDMS collected, formatted, and analyzed data to the sites for their maximum benefit for reporting and energy management and monitoring purposes. EMR is assisting the Phase I site Energy Managers in identifying metering, software, database, communication protocol, and data security requirements to ensure compliance and format compatibility with the DOE centralized system; as well as assisting the Phase I site Energy Managers in their capability to report reliable and accurate energy and water demand and consumption data reporting to Headquarters automatically with minimal human intervention.

Savings and Benefits

- A single consistent Department-wide data collection and reporting system will streamline the DOE's multiple and often duplicative data collection and report generation process.
- Only one energy consumption reporting process for all energy and water consumption will permit straightforward compliance and minimizes site resource workload.
- Data for all utilities, carbon footprint, and greenhouse gas emissions will be documented on a single dashboard display and report.
- HQ can use the UDMS model to provide the guidance and lead demonstration to other Federal Agencies as required by Energy Policy Act of 2005 (EAct 05) and other EOs.



View the prototype dashboard at <http://EnergyData.US>

- The UDMS tools available to the Energy Managers will encourage development and use of a common department-wide process methodology for energy management.
- Site Energy Managers will have a tool to compare and evaluate their energy use efficiency with other sites of similar load profiles or sites in similar environments.
- Assurance that data collection and reporting to support Annual Congressional and budgetary tasks are being developed in a year-wide continuous process to assure no “last-minute” crash efforts are required to meet deadlines. The continuous and “always” up to date UDMS system will assure that data reporting and collection anomalies are resolved shortly after detection rather than at the end of the year when key deliverables are due.
- Automated reporting of energy consumption will relieve sites of need for human review and authentication of data.
- Use of automated reporting can provide significantly improved data accuracy of reporting and automated auditing and data base validation programs will identify data anomalies and missing values to permit routine corrective measures to be implemented prior to data being misinterpreted.
- Headquarters can be assured that all sites large and small can monitor and manage their energy intensity reduction goals and achievements on a continuous basis throughout the year.
- Small sites do not have to invest in a high degree of building automation controls if they choose to use UDMS as an energy monitoring tool to meet their target goals. This will permit easier target achievement as local load profiles may be adjusted to maximize the site’s specific operation profile taking into account local conditions and environmental factors.

The UDMS project continues to be developed within project scope, on schedule, and within estimated costs. The potential for the system is reflected by DOE’s own expansion of the Phase I scope that consisted of four prototype sites and reporting of electricity for those sites only, to six prototype sites reporting all utilities, carbon footprint, and greenhouse gas emissions of each. EMR expects the project be approved for expansion to Phases II and III which will include all utilities, carbon footprint and greenhouse gas emission reporting for all 62 DOE sites.

Eric Haukdal, DOE Headquarters:

I realize the difficulty in obtaining real-time or almost real-time electronic data from our various utility providers and am very pleased with UDMS pilot efforts so far. As it stands now, compiling our monthly energy consumption is extremely labor intensive – requiring visits to multiple websites to download monthly billing information from our various utilities. Based on the pilot so far, I can easily imagine and look forward to a time when all the facility’s energy consumption data is available at the UDMS website which will make our frequent energy-related data gathering and reporting efforts much easier and less time intensive.

Wayne Parker, ORNL (Oak Ridge National Laboratory):

We at ORNL have been very pleased with the overall progress of the UDMS pilot project. We have had ample opportunity to review the dashboard and provide our comments and input more than once. Initially, ORNL was concerned with the workload that would be associated with the gathering of the data and/or its transmission and in just supporting the pilot project. In meeting with EMR engineers here at ORNL, however, that concern was alleviated.



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