The Army Metering Data Management System (MDMS)

Using MDMS
To Meet the Army’s Energy Goals
# The Army Metering Data Management System (MDMS): Using MDMS To Meet the Army’s Energy Goals

## US Army Corps of Engineers, Engineering and Support Center, Huntsville, 4820 University Square, Huntsville, AL, 35816-1822

Presented at the NDIA Environment, Energy Security & Sustainability (E2S2) Symposium & Exhibition held 14-17 June 2010 in Denver, CO.

The Army Metering Data Management System (MDMS) is a comprehensive tool designed to help the Army meet its energy goals. MDMS provides a centralized platform for tracking and managing energy usage across various Army facilities. By utilizing MDMS, the Army can implement more efficient energy management practices, leading to significant cost savings and reduced environmental impact. This presentation will delve into the benefits of using MDMS, including its role in achieving energy goals, and how it contributes to the Army's overall sustainability efforts. The session will also highlight case studies and best practices for implementing and optimizing MDMS within Army operations.
Meeting Army Energy Goals

- The metering data management system (MDMS) captures and reports enterprise data from advanced meters

- MDMS will help the Army to comply with:
  - Executive Orders

- MDMS measures progress on strategies such as AEWCP, AESIS, and IMCP
Meeting Army Energy Goals

Policy Drivers

DODI 4170.11, EPAct 2005, EO 13423, EISA 2007, and EO 13514

Senior Energy Council and HQDA

Provide vision, mission, and objectives

Strategic Planning

AEWCP, AESIS, IMCP

Program/Project Needs Assessment

EACA, EEAP, REM, ESCO DES as Prioritized by Army Energy Manager

ECIP, UESC, ESPC, ESP, UMCS, AMP as supported by MDMS

Reports for M&V, OMB Scorecards, and AEWRS
Army Energy and Water Campaign Plan

Initiatives

5/24/2007

Actions

5/24/2007

Initiative #1

Eliminate Energy Waste in Existing Facilities

Effective Energy Management Plans

Provide FT, trained and certified Staff

MDEP for Energy Management

Energy Management Accountability

Information and Knowledge Management Systems

Utilities Modernization and Recapitalization Program

Energy Assessment Guide

Initiative #2

Increase Energy Efficiency in New Construction and Renovations

Energy Performance Standards

Energy Design Standards

Sustainable Design using LEED

Building Design Training

Management Tools To Meet Energy Use Measurement and Accountability

Minimize Impact of Fuel Cost and Availability

Army Utility Source Evaluation Program

Initiative #3

Reduce Dependence on Fossil Fuels

Renewable Resources When LCC Effective

LCC Effective On-site Renewable Generation

Modernize and Sustain Central Energy Systems

Reduce Space Heating and Domestic Hot Water

Reduce Fossil Fuel for NTV

Reduce Fossil Fuel for NTV

Initiative #4

Conserve Water Resources

Prioritize Water Conservation Opportunities

Improve Water System Integrity

Increase Water Efficiency

Reduce Potable Water Use

Reduce Losses/Increase Efficiency for Process Water Use

Prioritize Projects and Develop Implementation Strategy

Technical Standards and Training

Initiative #5

Improve Energy Security

Institute Energy Security Concepts

Army Energy Security Program

Use Available and Economical Energy Sources

Initiative #5

Minimize Impact of Fuel Cost and Availability

Technical Standards and Training

Initiative #5

Information and Knowledge Management Systems

Utilities Modernization and Recapitalization Program

Energy Assessment Guide

Initiative #1

Increase Energy Efficiency in New Construction and Renovations

Energy Performance Standards

Energy Design Standards

Sustainable Design using LEED

Building Design Training

Management Tools To Meet Energy Use Measurement and Accountability

Minimize Impact of Fuel Cost and Availability

Army Utility Source Evaluation Program

Initiative #2

Reduce Dependence on Fossil Fuels

Renewable Resources When LCC Effective

LCC Effective On-site Renewable Generation

Modernize and Sustain Central Energy Systems

Reduce Space Heating and Domestic Hot Water

Reduce Fossil Fuel for NTV

Reduce Fossil Fuel for NTV

Initiative #3

Conserve Water Resources

Prioritize Water Conservation Opportunities

Improve Water System Integrity

Increase Water Efficiency

Reduce Potable Water Use

Reduce Losses/Increase Efficiency for Process Water Use

Prioritize Projects and Develop Implementation Strategy

Technical Standards and Training

Initiative #4

Improve Energy Security

Institute Energy Security Concepts

Army Energy Security Program

Use Available and Economical Energy Sources

Initiative #5

Eliminate Energy Waste in Existing Facilities

Effective Energy Management Plans

Provide FT, trained and certified Staff

MDEP for Energy Management

Energy Management Accountability

Information and Knowledge Management Systems

Utilities Modernization and Recapitalization Program

Energy Assessment Guide

Initiative #1

Increase Energy Efficiency in New Construction and Renovations

Energy Performance Standards

Energy Design Standards

Sustainable Design using LEED

Building Design Training

Management Tools To Meet Energy Use Measurement and Accountability

Minimize Impact of Fuel Cost and Availability

Army Utility Source Evaluation Program

Initiative #2

Reduce Dependence on Fossil Fuels

Renewable Resources When LCC Effective

LCC Effective On-site Renewable Generation

Modernize and Sustain Central Energy Systems

Reduce Space Heating and Domestic Hot Water

Reduce Fossil Fuel for NTV

Reduce Fossil Fuel for NTV

Initiative #3

Conserve Water Resources

Prioritize Water Conservation Opportunities

Improve Water System Integrity

Increase Water Efficiency

Reduce Potable Water Use

Reduce Losses/Increase Efficiency for Process Water Use

Prioritize Projects and Develop Implementation Strategy

Technical Standards and Training

Initiative #4

Improve Energy Security

Institute Energy Security Concepts

Army Energy Security Program

Use Available and Economical Energy Sources

Initiative #5

Reduce Dependence on Fossil Fuels

Increase Energy Efficiency in New Construction and Renovations

Conserve Water Resources

Eliminate Energy Waste in Existing Facilities

Effective Energy Management Plans

Provide FT, trained and certified Staff

MDEP for Energy Management

Energy Management Accountability

Information and Knowledge Management Systems

Utilities Modernization and Recapitalization Program

Energy Assessment Guide

Initiative #1

Increase Energy Efficiency in New Construction and Renovations

Energy Performance Standards

Energy Design Standards

Sustainable Design using LEED

Building Design Training

Management Tools To Meet Energy Use Measurement and Accountability

Minimize Impact of Fuel Cost and Availability

Army Utility Source Evaluation Program

Initiative #2

Reduce Dependence on Fossil Fuels

Renewable Resources When LCC Effective

LCC Effective On-site Renewable Generation

Modernize and Sustain Central Energy Systems

Reduce Space Heating and Domestic Hot Water

Reduce Fossil Fuel for NTV

Reduce Fossil Fuel for NTV

Initiative #3

Conserve Water Resources

Prioritize Water Conservation Opportunities

Improve Water System Integrity

Increase Water Efficiency

Reduce Potable Water Use

Reduce Losses/Increase Efficiency for Process Water Use

Prioritize Projects and Develop Implementation Strategy

Technical Standards and Training

Initiative #4

Improve Energy Security

Institute Energy Security Concepts

Army Energy Security Program

Use Available and Economical Energy Sources

Initiative #5

Reduce Dependence on Fossil Fuels

Increase Energy Efficiency in New Construction and Renovations

Conserve Water Resources

Eliminate Energy Waste in Existing Facilities

Effective Energy Management Plans

Provide FT, trained and certified Staff

MDEP for Energy Management

Energy Management Accountability

Information and Knowledge Management Systems

Utilities Modernization and Recapitalization Program

Energy Assessment Guide

Initiative #1

Increase Energy Efficiency in New Construction and Renovations

Energy Performance Standards

Energy Design Standards

Sustainable Design using LEED

Building Design Training

Management Tools To Meet Energy Use Measurement and Accountability

Minimize Impact of Fuel Cost and Availability

Army Utility Source Evaluation Program

Initiative #2

Reduce Dependence on Fossil Fuels

Renewable Resources When LCC Effective

LCC Effective On-site Renewable Generation

Modernize and Sustain Central Energy Systems

Reduce Space Heating and Domestic Hot Water

Reduce Fossil Fuel for NTV

Reduce Fossil Fuel for NTV

Initiative #3

Conserve Water Resources

Prioritize Water Conservation Opportunities

Improve Water System Integrity

Increase Water Efficiency

Reduce Potable Water Use

Reduce Losses/Increase Efficiency for Process Water Use

Prioritize Projects and Develop Implementation Strategy

Technical Standards and Training

Initiative #4

Improve Energy Security

Institute Energy Security Concepts

Army Energy Security Program

Use Available and Economical Energy Sources

Initiative #5
Army Energy Security & Implementation Strategy (AESIS)

Energy Security Goals (ESG)

- ESG-1: Reduce energy consumption
- ESG-2: Increase energy efficiency across platforms and facilities
- ESG-3: Increase use of new renewable and alternative
- ESG-4: Assure access to sufficient energy supplies
- ESG-5: Reduce adverse impacts on the environment.
Installation Management Campaign Plan (IMCP) Goals

Energy Goals (EN)

• EN 1 – Reduce energy and water consumption

• EN 2 – Increase energy and water efficiency and modernize infrastructure

• EN 3 – Improve the development of renewable and alternative energy, and ensure access to energy supplies

• EN 4 – Improve the development of renewable and alternative energy for vehicle fleet mobility fuel
What is MDMS?

• An enterprise system to track the Army’s energy consumption worldwide
  – Track meter data from advanced utility meters in a central database (MDMS Enterprise)
  – Automate meter data collection on a secure network
  – Produce energy reports accessible via Army Engineering Knowledge Online (EKO) and MDMS Enterprise Portal

• Provide active Army installations the ability to track utility commodities such as, electricity, water and natural gas consumption at the facility level

• Support Army’s energy goals and improve energy consumption accountability
MDMS Overview

• MDMS Pilot Phase
• Operational MDMS
• Future MDMS
MDMS Pilot Phase

• Army has developed a MDMS pilot at Fort Carson and Fort Stewart. Effort included:
  – Developing MDMS architecture and software
  – Demonstrating proof of concept from installation to enterprise data and reporting system
  – Achieving Authority to Operate (ATO) effective 23 April 2010
  – Obtaining Defense Information Assurance Certification and Accreditation Process (DIACAP) and Certificate of Networthiness (CON) (Application submitted)
MDMS Data Flow

- MDMS Enterprise
- NEC Operational Network: Gateway Server
- Local Metering Network: Head-End Server
- Installed Meters
Welcome to the Reporting Portal

Please use the navigation menu to the left to access any site(s) available to you. In the event that you require access to a site that is not listed, please refer to the Contact Us page for the appropriate personnel.

This is a DoD web site. The security accreditation level of this site is Unclassified FOUO and below. Do not process, store, or transmit information classified above the accreditation level of this system. DoD web sites may be monitored for all lawful purposes, including to ensure their use is authorized, for management of the system, to facilitate protection against unauthorized access, and to verify security procedures, survivability, and operational security. Monitoring includes, but is not limited to, active attacks by authorized DoD entities to test or verify the security of this system. During monitoring, information may be examined, recorded, copied, and used for authorized purposes. All information, including personal information, placed on or sent over this system may be monitored. Use of this DoD web site, authorized or unauthorized, constitutes consent to monitoring. Unauthorized use of this DoD web site may subject you to criminal prosecution. Evidence of unauthorized use collected during monitoring may be used for administrative, criminal or other adverse action.

Use of this system constitutes consent to monitoring for all lawful purposes.
MDMS Access Flow

User

AKO Valid?

No

Yes

DKO Valid?

No

Yes

MDMS Enterprise

Privilege Designation

User

• Site Specific Access
• Site specific Reports
• Grant use to other “Users”

Admin

• Site Specific Access
• Site specific Reports
• Add, Delete, Modify Users
• Grant use to other “Users” and “Admin”

Enterprise Admin

• Enterprise Access
• All Site Reports
• Add, Delete, Modify Users
• Grant use to “Users” “Admin” and Enterprise Admin

Data
MDMS Pilot Sites

**Available Sites**

Within this section of the portal, you will be able to navigate to any site to which you have access based on your access level. Should you require access to sites not listed below you must contact the DPW for that site.

<table>
<thead>
<tr>
<th>Site Name</th>
<th>Address1</th>
<th>Address2</th>
<th>City</th>
<th>State</th>
<th>Postal Code</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fort Carson</td>
<td>Army Community Service</td>
<td>6303 Wetzel Ave</td>
<td>Fort Carson</td>
<td>Colorado</td>
<td>80913</td>
<td>United States</td>
</tr>
<tr>
<td>Fort Lee</td>
<td>500 Lee Avenue</td>
<td></td>
<td>Fort Lee</td>
<td>Virginia</td>
<td>23801</td>
<td>United States</td>
</tr>
<tr>
<td>Fort Stewart</td>
<td>55 Pony Soldier Ave</td>
<td></td>
<td>Fort Stewart</td>
<td>Georgia</td>
<td>31314</td>
<td>United States</td>
</tr>
</tbody>
</table>

Please contact the MDMS help desk at 703-797-8500 with your questions, comments, and suggestions.
MDMS Reports

MDMS has five available reports

• Energy Glide Path- Presents report of summed MDMS-metered MMBTU/ KSqFt and degree days
• Energy Intensity – Presents report for MMBTU/KSqFt by the 57 Energy Classification Codes (ECC)
• Building Report - Presents report for MMBTU/KSqFt by building, commodity type (water/gas), and date
• Meter Reading Report – Excel export of all meter data
• Hourly Demand - Report presents 24-hour usage (MMBtu) by building, commodity type, and time
MDMS Overview

- MDMS Pilot Phase
- Operational MDMS
- Future MDMS
Operational MDMS

Focus on...

• Install MDMS at all Army installations
• Implement help desk support
• Integrate real property data
• Enhance reporting
  – Additional standard reports
  – Self-generation/ad-hoc reports
MDMS Overview

• MDMS Pilot Phase
• Operational MDMS
• Future MDMS
Future MDMS

Focus on..

- Reducing energy waste in existing facilities.
  - Identify the most and least energy efficient facilities
  - Gain insight into what facility attributes and occupant practices contribute to the best of class
  - Directly measure the energy savings

- Reducing peak power demand to qualify for lower utility rates

- Facilitating private sector investment to build the new infrastructure for energy security and independence (e.g., ESPC).
Future MDMS Applications

Beyond Legislative Compliance...

• Trending/Benchmarking

• Tenant Billing

• Efficiency Project Identification

• Measurement & Verification
MDMS Stakeholders

• Proponent - Office of the Assistant Chief of Staff for Installation Management (OACSIM)

• Customer - Army Commands (ACOMs) and Installations

• Provider - CEHNC is responsible for implementing and executing MDMS and the AMP
MDMS Contacts

**John Blount, MDMS Project Manager**

256-895-1322  John.P.Blount@usace.army.mil

**Curt Murdock, MDMS Program Manager**

256-895-1710  Curt.E.Murdock@usace.army.mil

**Stan Lee, CEHNC ISCX Energy Branch Chief**

256-895-1541  Lawson.S.Lee@usace.army.mil