MDMS UPDATE

~ METER DATA MANAGEMENT SYSTEM ~

US Army Corps of Engineers®

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FROM THE PROGRAM MANAGER

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Welcome to our October - November 2019 issue of the *Meter Data Management System (MDMS) Update,* designed to keep you informed on the growth and latest developments of the Meter Data Management System and the Army Metering Program.

The MDMS Outreach Team continues to provide many training opportunities and has published a list of training sessions—see below. The first 10 courses have been offered repeatedly throughout the year, and the remaining 12 courses will be under development and offered to our user community when ready. So stay tuned for more information on those courses.

On pages 2 and 3, we discuss the different uses and benefits of the Army Energy and Water Reporting System (AEWRS) and the Meter Data Management System (MDMS). While they both allow energy managers to analyze and manage energy use for trends, measure progress toward energy goals/targets, and more effectively manage energy resources, there are some fundamental differences.

On pages 3 and 4, we detail two new reports: the Army AEWRS and the AEWRS Compared to MDMS reports. The Army AEWRS Report provides consumption values for the year selected by installation. The AEWRS Compared to MDMS report provides a comparison of AEWRS values to MDMS values for the year selected by installation.

As always, our mission is to improve the MDMS experience for end users. Your input is valuable, and we welcome your feedback via the Army Meter Service Desk (AMSD) at: usarmy.coe-huntsville.cehnc.mbx.armymeterhelp@mail.mil

MDMS CURRENT CATALOG OF TRAINING SESSIONS

The MDMS Outreach Team originally started with 18 training courses. After going through many iterations of the courses, we have combined a few and added some new courses—thus putting us currently at 22. The first 10 courses have been provided repeatedly this year. We are waiting for sites/installations to get to the next stages in their energy programs where they are ready for the next level of classes. Here is a breakdown of the sessions:

Basics

1. Basic orientation/overview
2. Setting up your dashboard
3. Setting up billing
4. Checking meter status

Analytics

5. Basic Benchmarking (1st level) including plug load analysis
6. Understanding and troubleshooting system overrides
7. Using MDMS for M&V (Active Energy Management)
8. 2nd level Benchmarking
9. Monitoring Commissioning (MCX) Process
10. Evaluating the Energy Use Intensity (EUI) report including Custom Usage comparison
11. Comparing EUI to other metrics
12. Setting up for energy projects
13. 3rd level Benchmarking
14. Advanced Analytics 1: AEWRS/MDMS
15. Advanced Analytics 2 (In development)
16. Advanced Analytics 3 (In development)

Normalization

17. Normalization for weather
18. Establishing potential savings for schedule
19. Establishing potential savings for base load
20. Establishing potential savings for lights
21. Establishing potential savings for Chiller
22. Establishing potential savings for AHUs/Pumps

Stay tuned, as the AMSD will send notifications when these additional courses are made available.

AEWRS VERSUS MDMS

Both the Army Energy and Water Reporting System (AEWRS) and MDMS allow energy managers at installations, commands, regions, and HQDA levels to analyze and manage energy use for trends, measure progress toward energy goals/targets, and more effectively manage energy resources. With that being said, what is the intended use and benefits of each of these systems to an Energy Manager?

AEWRS

AEWRS is the Army's database of record for Energy and Water reporting. It is an assortment of data and reports that supports the collection of utility cost and consumption, electricity, heating fuels, water, and weather data for active Army, Reserve, and National Guard installations to fulfill and support DoD energy reporting requirements. It also provides management and analysis data to Installations, Command, Regions, and HQDA managers.

AEWRS also captures data on Outages, Metering, Demand Response, Cogeneration, private sector investment under Energy Savings and Performance Contracts (ESPC) and Utility Energy Services Contracts (UESC) programs. Information on renewable energy sources, water, energy management accomplishments of Army facilities, and how facilities are achieving their required Leadership in Energy and Environmental Design (LEED) certifications is also collected in this system. This data is useful for generating Annual Energy Report and general data tracking.

AEWRS facilitates requirements compliance with energy initiatives and performance reporting to OSD and DOE. It creates a standard reporting format and defines data requirements to help installations report consistent and accurate information into the Annual Energy Management and Resilience Report (AEMRR) and quarterly program review.

Capabilities of the system include data entry and report/ graph creation to facilitate energy management. However, the data is only useful when it is timely and accurate. In accordance with AR 420-1, installations are required to report energy consumption monthly, water data is reported quarterly, and square footage data is imported quarterly. Information is input in the system via custom designed forms and retrieved in any of the pre-scripted reports. The commands validate that data and then certify/lock the data as complete and accurate for their individual installations. Reports may be output to PDF and Excel formats.

Pre-scripted reports are grouped under three sections:
• **Utility Reports** – all reports related to Utility, Water, and Square footage are found under this section except those reports that support the Energy Annual Report.
• **Energy Manager Reports** – all reports related to the Energy manager section are found under this report except those that are used for annual reporting.
• **Annual Reports** – reports related to the AEMRR are found in this section.

The other option available under the reports option is Graphs. Graphs are limited to energy and progress graphs.

All pre-scripted reports and graphs are limited by access level:
• Installations have access to most reports but not to Management-level Reports.
• Command managers at AMC/IMCOM, ARNG, USAR and HQDA G-9 have access to all reports in AEWRS .

MDMS

The intent of the Army Meter Data Management System (MDMS) is to inform and enable resource efficiency-related decisions to improve performance, reduce energy and water use, decrease operations costs, and improve occupant satisfaction. Meter data analysis can highlight usage patterns and identify deviations from expected use. Entire-building metered data can support virtual or remote auditing and monitoring-based continuous commissioning. MDMS delivers functional capabilities enabling Army energy professionals and Department of Public Works (DPW) staff to understand facility energy use, pinpoint anomalies, track trends, benchmark building or installation performance, and identify effective savings opportunities by providing the information, tables, and/or calculations required to perform energy engineering.

These tools included facility energy consumption normalization by Square Foot, heating and cooling degree day (HDD/CDD) calculations, facility benchmarks for component loads (plug, air handling unit, lights, and chiller), automatic energy use threshold key element notifications, energy systems override reports, and detailed customer billable applications with multiple configurable rate structures, including peak hours, and tiered thresholds. MDMS enables Army Energy Managers (EMs) and Resource Efficiency Managers (REMs) to exploit the MDMS data to save energy through monitoring performance and commissioning and meet energy program goals.

Given the wide variety of tools, not all tools will serve everyone to the same extent. Each garrison has the flexibility to use the tools as needed to complete their task. Most reports have the ability to be exported to Excel and/or to an image file (for graph/charts).

The MDMS reports and modules are grouped in the following functional areas:
• **Home Dashboard** – users' configurable dashboard of up to 18 preconfigured report widgets that can be edited, rearranged, replaced, or deleted, such as Total Energy by Org FYTD, Cumulative Usage with Degree Days, Highest EUI Rank, Avg EUI by Cat Code & Climate Zone, and the GIS Map to name a few.
• **Energy Management** – reports are grouped based on Usage, Benchmarking, AEWRS, Energy Use Intensity and M&V (Energy Projects). Reports under Usage include Interval, Hourly, Daily, Monthly, *(Continued on pg.3)*

AEWRS VERSUS MDMS (CONT. FROM PG. 2)

and Custom Usage Reports, as well as Daily Comparison. Reports under Benchmarking include Interval kW, Base Load Comparison, and Override Rollup Report. Reports under AEWRS include AEWRS FYTD Comparison, Army AEWRS Report, AEWRS Compared to MDMS, Modeled Consumption Report.

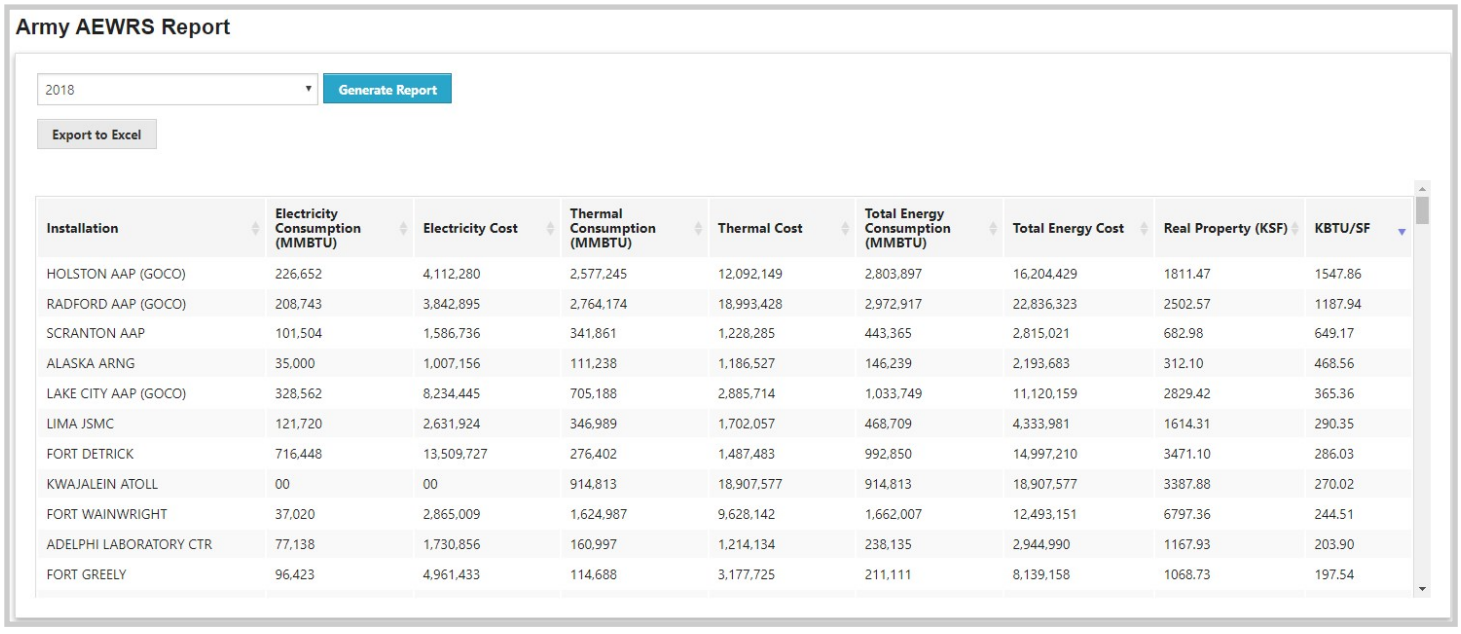
- **Network Status** – reports for checking the health and status of the meter network.
- **Meter Readings** – provides the raw meter readings, power factor, peak demand, and average demand for the selected meter(s).
- **Meter Inventory** – one-time data stream provided to USACE during the FY16 meter inventory effort.
- **Self Service** – enables users to add new, modify, and save contextual data about buildings or meters via the Tagging functionality and also enables users to add new, modify and save a Custom Group of buildings or meters for energy reporting.
- **Customer Billing** – allows the creation of rates and bills, tracking of existing bills and charges, and updating customer information as necessary.
- **Library** – collection of training videos and documentation.

MDMS reports are not limited by access level. Any user can run any level of reports.

ADDITIONAL AEWRS REPORTS AVAILABLE

In an ongoing effort to provide users with more tools to help with their analysis and reporting needs, two more AEWRS report modules have been added to MDMS. They will be briefed here.

The **Army AEWRS Report** provides consumption values for the year selected by installation. The report shows the consumption and cost of each commodity, including total consumption and cost, as well as the Real Property Footage in thousands of square feet (KSF) and the KBTU/SF.



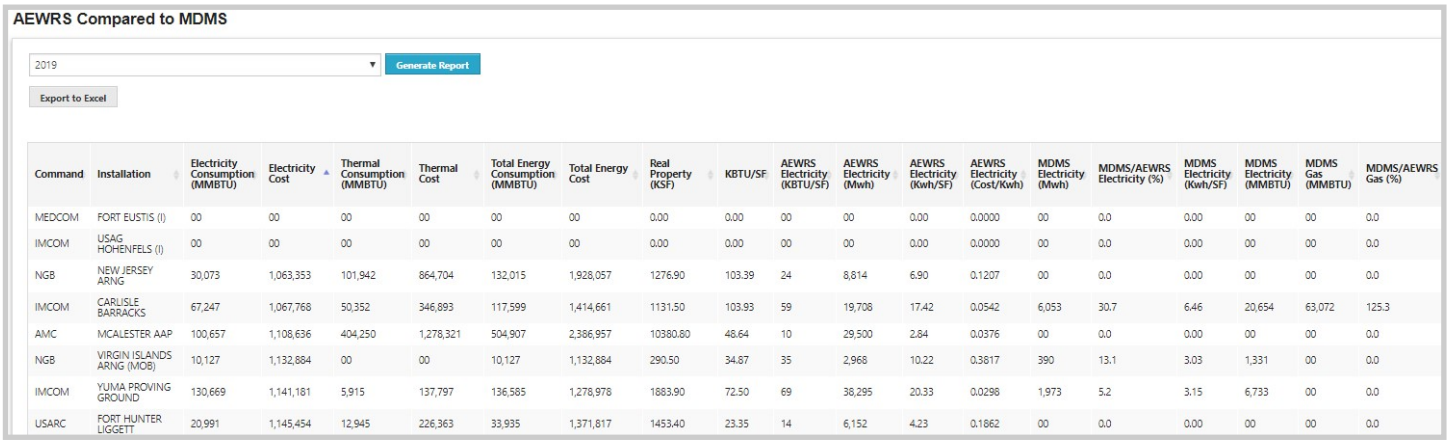
Installation	Electricity Consumption (MMBTU)	Electricity Cost	Thermal Consumption (MMBTU)	Thermal Cost	Total Energy Consumption (MMBTU)	Total Energy Cost	Real Property (KSF)	KBTU/SF
HOLSTON AAP (GOCO)	226,652	4,112,280	2,577,245	12,092,149	2,803,897	16,204,429	1811.47	1547.86
RADFORD AAP (GOCO)	208,743	3,842,895	2,764,174	18,993,428	2,972,917	22,836,323	2502.57	1187.94
SCRANTON AAP	101,504	1,586,736	341,861	1,228,285	443,365	2,815,021	682.98	649.17
ALASKA ARNG	35,000	1,007,156	111,238	1,186,527	146,239	2,193,683	312.10	468.56
LAKE CITY AAP (GOCO)	328,562	8,234,445	705,188	2,885,714	1,033,749	11,120,159	2829.42	365.36
LIMA JSMC	121,720	2,631,924	346,989	1,702,057	468,709	4,333,981	1614.31	290.35
FORT DETRICK	716,448	13,509,727	276,402	1,487,483	992,850	14,997,210	3471.10	286.03
KWAJALEIN ATOLL	00	00	914,813	18,907,577	914,813	18,907,577	3387.88	270.02
FORT WAINWRIGHT	37,020	2,865,009	1,624,987	9,628,142	1,662,007	12,493,151	6797.36	244.51
ADELPHI LABORATORY CTR	77,138	1,730,856	160,997	1,214,134	238,135	2,944,990	1167.93	203.90
FORT GREELY	96,423	4,961,433	114,688	3,177,725	211,111	8,139,158	1068.73	197.54

Clicking on any of the report column headings will sort the list in ascending or descending order. The first click will sort the data in ascending order. An additional click will sort the data in descending order. If results are sorted, a blue arrow icon appears to the right of the column heading. A blue arrow facing down indicates descending order (in above example, the KBTU/SF column is sorted in descending order), while a blue arrow facing up indicates ascending order. The scrollbar on the right scrolls through all results. This report may be exported to Excel. *(Continued on pg.4)*

ADDITIONAL AEWRS REPORTS AVAILABLE (CONT. FROM PG. 3)

The **AEWRS Compared to MDMS** report provides a comparison of AEWRS values to MDMS values for the year selected by installation. The report shows the AEWRS consumption and cost of each commodity, including total consumption and cost, as well as the Real Property Footage in thousands of square feet (KSF) and the KBTU/SF, as is shown in the previously discussed Army AEWRS Report. Additionally, this report shows the following comparison values:

- AEWRS Electricity in KBTU/SF
- AEWRS Electricity in Mph
- AEWRS Electricity in Kwh/SF
- AEWRS Electricity Cost/Kwh
- MDMS Electricity in Mwh
- % Electricity in MDMS versus AEWRS
- MDMS Electricity in Kwh/SF
- MDMS Electricity in MMBTU
- MDMS Gas in MMBTU
- % Gas in MDMS versus AEWRS
- MDMS Total Electricity & Gas in MMBTU
- % Total Electricity & Gas in MDMS versus AEWRS
- MDMS Real Property Square Footage in SF
- % SF in MDMS versus AEWRS


AEWRS Compared to MDMS

2019 Generate Report

Export to Excel

Command	Installation	Electricity Consumption (MMBTU)	Electricity Cost	Thermal Consumption (MMBTU)	Thermal Cost	Total Energy Consumption (MMBTU)	Total Energy Cost	Real Property (KSF)	KBTU/SF	AEWRS Electricity (KBTU/SF)	AEWRS Electricity (Mwh)	AEWRS Electricity (Kwh/SF)	AEWRS Electricity (Cost/Kwh)	MDMS Electricity (Mwh)	MDMS/AEWRS Electricity (%)	MDMS Electricity (Kwh/SF)	MDMS Electricity (MMBTU)	MDMS Gas (MMBTU)	MDMS/AEWRS Gas (%)
MEDCOM	FORT EUSTIS (I)	00	00	00	00	00	00	0.00	0.00	00	00	0.00	0.0000	00	0.0	0.00	00	00	0.0
IMCOM	USAG HOHENFELS (I)	00	00	00	00	00	00	0.00	0.00	00	00	0.00	0.0000	00	0.0	0.00	00	00	0.0
NGB	NEW JERSEY ARNG	30,073	1,063,353	101,942	864,704	132,015	1,928,057	1276.90	103.39	24	8,814	6.90	0.1207	00	0.0	0.00	00	00	0.0
IMCOM	CARLISLE BARRACKS	67,247	1,067,768	50,352	346,893	117,599	1,414,661	1131.50	103.93	59	19,708	17.42	0.0542	6,053	30.7	6.46	20,654	63,072	125.3
AMC	MCALESTER AAP	100,657	1,108,636	404,250	1,278,321	504,907	2,386,957	10380.80	48.64	10	29,500	2.84	0.0376	00	0.0	0.00	00	00	0.0
NGB	VIRGIN ISLANDS ARNG (MOB)	10,127	1,132,884	00	00	10,127	1,132,884	290.50	34.87	35	2,968	10.22	0.3817	390	13.1	3.03	1,331	00	0.0
IMCOM	YUMA PROVING GROUND	130,669	1,141,181	5,915	137,797	136,585	1,278,978	1883.90	72.50	69	38,295	20.33	0.0298	1,973	5.2	3.15	6,733	00	0.0
USARC	FORT HUNTER LIGGETT	20,991	1,145,454	12,945	226,363	33,935	1,371,817	1453.40	23.35	14	6,152	4.23	0.1862	00	0.0	0.00	00	00	0.0

As with the Army AEWRS Report, clicking on any of the report column headings will sort the list in ascending or descending order. This report may also be exported to Excel. Since the screenshot above was unable to capture the entire report, the last four columns of the report are shown here to the right.

MDMS Total Electricity & Gas (MMBTU)	MDMS/AEWRS Total Electricity & Gas (%)	MDMS Real Property (SF)	MDMS/AEWRS SF (%)
00	0.0	00	0.0
00	0.0	00	0.0
00	0.0	213,814	16.7
83,726	71.2	936,808	82.8
00	0.0	00	0.0
1,331	13.1	128,907	44.4
6,733	4.9	627,204	33.3
00	0.0	337,000	23.2

This report provides a lot of value to the Energy Manager in comparing the data of the two reporting systems. For example, the value of **MDMS/AEWRS Electricity (%)** should compare to the value of **MDMS/AEWRS SF (%)** for your installation. If the value of **MDMS/AEWRS Electricity (%)** is significantly higher than the value of **MDMS/AEWRS SF (%)**, you are most likely double-counting meters somewhere. If the value of **MDMS/AEWRS Electricity (%)** is significantly lower than the value of **MDMS/AEWRS SF (%)**, you most likely have meter multipliers off somewhere.

For more information about this report and its intended uses and benefits, join one of our training sessions on Advanced Analytics 1: AEWRS/MDMS.