



MDMS UPDATE

~ METER DATA MANAGEMENT SYSTEM ~



US Army Corps of Engineers®

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FROM THE PROGRAM MANAGER

Welcome to our February - March 2022 issue of the *Meter Data Management System Update (MDMS)*, designed to keep you informed on the growth and latest developments of the Meter Data Management System and the Army Metering Program.

This newsletter focuses on two new modules within MDMS. The first module, the Energy Project Identification Tool (EPIT) is covered in our first article, beginning below. This tool provides a list of energy savings measures on various systems— fans/pumps, air conditioning, lights—prioritized by savings.

The second module, which supplements the EPIT, is the Potential Energy Savings Notification email and is covered on pages 4-5. This module allows users across the

Army to opt-in for email notifications of potential energy savings opportunities.

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: cehnc-army-meter-help@usace.army.mil



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ENERGY PROJECT IDENTIFICATION TOOL

As MDMS continues to add modules for assisting the Army's Energy Managers and Resource Efficiency Managers in identifying potential energy savings opportunities, we are proud to announce the latest set of tools: the Energy Project Identification Tool (EPIT) and the Potential Energy Savings Notification email module. The EPIT is based on the existing Base Load Comparison Report within MDMS, but then takes the output even further by prioritizing savings for a list of energy savings measures on various systems.

As a reminder, the Base Load Comparison report is a report that provides a comparison of the Baseload (kW) of a building converted into a Watts/SF, 12 Months Consumption (kWh), Baseload as % of annual Consumption in kWh, 12 Month EUI (Electric) and Climate Zone for the buildings within the selected organization (Command, Region, Installation, or Site).

The new EPIT can be found on the Energy Management page, under the Benchmarking sub-menu. The EPIT is designed to identify the amount of energy being used and the cost for those systems over the previous 12 months. (Continued on pg. 2)


The screenshot shows the 'Meter Data Management System' interface. On the left, a navigation menu includes 'Usage Summary', 'Usage Details', 'Benchmarking', 'Interval kW', 'Base Load Comparison', 'Cat Code Performance Metrics', 'Override Rollup Report', and 'Energy Project Identification Tool' (which is circled in red). Below this are 'AEWRS' and 'Energy Use Intensity'. On the right, the 'Energy Project Identification Tool' page is displayed, featuring an 'Organization' section with dropdown menus for 'HQDA', 'Select Command', 'Select Region', 'Select Installation', and 'Select Site', along with an 'Export to Excel' button.



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ENERGY PROJECT IDENTIFICATION TOOL (CONT. FROM PG. 1)

Once an organization is selected, the Export to Excel option becomes activated. After an installation/site is selected for the organization, a set of default parameters are displayed for the site, as shown in the screenshot below.

Selected Organization														
Site	Cost per kwh	Duty hrs	% (Plug Load + weather load)	Air Conditioning System % of Load	Fan/Pump Load % of Load	Lighting Sytem % of Load	Plug Load % of Load	% of Maximum Savings	% Demand Impact on Cost for Override	% Demand Impact on Cost for Air Conditioning	% Demand Impact on Cost for Fan Pumps	% Demand Impact on Cost for Lights	Edit	Remove
FORT CARSON	0.0526	2607	18.00	15.00	55.00	16.00	14.00	30.00	65.00	80.00	85.00	95.00	Edit	

These defaults can be modified by selecting the edit button and changing each parameter. Most of these inputs are relatively close but it depends on your installation's systems and the billing structure of your utility. The Cost per kWh value is variable for each installation and is pulled from the Army rates for Installations within the Army Energy and Water Reporting System (AEWRS). This is a blended rate and can be changed if your AEWRS doesn't have the correct number. Duty hours are normal, but you can adjust as needed. Your plug load plus your weather offset is taught in several of the MDMS training courses but note your plug load is generally around 6-8% for the off-duty hours and can increase by an additional 4-12% for the winter weather loading of usage below 45° F (range varies based on your weather zone). The percent value for the next four systems are related to the mix on your installation or in some cases your building. This should theoretically be around 25% for each system but we find the average for the Army closer to the numbers above. % of Maximum Savings input is the % of savings you want to use for the maximum savings category. For example, it is preset at 30% but if you want to add a Variable Frequency Drive (VFD) that you know will increase your savings to 50% then you can update the % of Maximum Savings field with this 50% value.

The next four inputs are related to the impact of demand on your utility rate for that particular time and system. We assumed a US average impact of demand at 35% of your bill. With the override energy measure, you will not impact the demand cost on your bill, so the 65% in that input parameter shows no impact of demand. You are only affecting 65% of the blended rate with this energy measure since demand is 35% of the bill. For lights, we show they do impact demand and leave in 5% for flat fees on the bill. This assumes you have a demand charge hitting during duty hours for this energy savings measure. If your demand is between 1800 - 2000 then your demand savings will not be affected in most cases by the air conditioning, fan/pumps, or lights, thus that multiplier should be set to 65%.

Once the user is ready to run the report, selecting the Export to Excel option downloads the generated report as an Excel spreadsheet with the following 5 tabs:

- Master
- Override
- Air Conditioning
- Fan Pumps
- Lights

The master tab contains the core values that feed each energy project related tab. That data is the basic calculation and shows all the fixed and variable inputs. The second tab is the override tab. This calculation uses the base load to calculate the amount of energy used during off-duty hours. This data uses the percent of the baseload converted into an annual baseload usage divided by the overall usage for the year. We take that off-duty usage and subtract the two types of usage that must be on during off-duty hours—the plug load which is constant all the time and the energy used to power systems when the Outdoor Air Temperature (OAT) drops below 45° F. That required load will generally range between 12% and 20% of the building's energy that is used during non-duty hours. The remainder is potential savings available to you if you can get the systems and/or their schedules under control. Therefore, the calculation takes the % of off-duty and subtracts the plug load and the load below 45° F. This generally will give a potential savings of 25-30%. You can then rank order the dollar savings by building to determine which would be the highest priority for your efforts. One can also see the overall impact for the Overrides of Schedule column for that energy savings measure, which for the Army Reserve's 88th Regional Support Command example shown below, is around \$300,000 per year in potential savings—even though our screenshot only shows a portion of the spreadsheet. This could be managed easily by a REM to work with the shops and the local building managers to ensure these systems are off when they are not occupied. (Continued on pg. 3)

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ENERGY PROJECT IDENTIFICATION TOOL (CONT. FROM PG. 2)

The chart below shows how this looks if we rank from highest to lowest savings for the Army Reserve's 88th Regional Support Command example.

Override Worksheet								
Report Generated 02/24/2022								
Command	Region	Installation	12 Months Extrapolated EUI (Electricity)	% of Data Available	Climate	Electric Cost Annually	% of Energy Non Duty Plug Load	Overrides of Schedule
USARC	88TH REGIONAL SUPPORT	KANSAS	64.121	68.767	4A	\$149,930.39	26.7%	\$26,042.54
USARC	88TH REGIONAL SUPPORT	INDIANA	42.601	100.000	5A	\$148,304.19	24.7%	\$23,840.51
USARC	88TH REGIONAL SUPPORT	MISSOURI	34.439	84.658	4A	\$77,082.21	31.5%	\$15,801.44
USARC	88TH REGIONAL SUPPORT	IOWA	31.948	100.000	5A	\$65,682.13	33.7%	\$14,382.41
USARC	88TH REGIONAL SUPPORT	ILLINOIS	37.424	100.000	5A	\$74,407.97	28.5%	\$13,792.12
USARC	88TH REGIONAL SUPPORT	WASHINGTON	26.500	84.658	4C	\$48,870.75	35.7%	\$11,345.60
USARC	88TH REGIONAL SUPPORT	INDIANA	47.642	100.000	5A	\$75,690.57	22.3%	\$10,965.68
USARC	88TH REGIONAL SUPPORT	KANSAS	55.457	100.000	4A	\$55,520.63	27.6%	\$9,956.85
USARC	88TH REGIONAL SUPPORT	ILLINOIS	57.370	84.658	5A	\$51,321.14	28.7%	\$9,573.47
USARC	88TH REGIONAL SUPPORT	MINNESOTA	16.601	50.959	6A	\$34,964.77	36.8%	\$8,374.75
USARC	88TH REGIONAL SUPPORT	COLORADO	23.771	62.192	5B	\$32,775.15	37.1%	\$7,906.85
USARC	88TH REGIONAL SUPPORT	IOWA	29.144	100.000	5A	\$37,180.26	29.0%	\$7,005.39
USARC	88TH REGIONAL SUPPORT	MICHIGAN	27.229	100.000	5A	\$44,589.64	21.3%	\$6,159.65

The Annual Electric Cost is 12 Months Consumption (kWh) * Cost per kWh. The override/savings for each building under the selected organization are calculated as follows: Annual Electric Cost * % of Energy Non Duty * % of Demand Impact on Cost for Override.

The next set of savings potential targets the following three systems: air conditioning, fans/pumps, and lights. In each of these tabs we look at the usage for each of those systems as proportioned by the standard usage for the systems on that site. As stated above these percentages for each system can be adjusted as desired. Once you know the usage for a system you have to decide how much savings your energy measure would bring for that system.

The chart below shows the Fan/Pump cost projected based on the usage identified. (Continued on pg. 4)

Fan/Pump Worksheet											
Report Generated 02/24/2022											
Command	Region	Installation	Site	Building	Square Footage	12 Months Consumption (kWh)	% of Data Available	Climate	Electric Cost Annually	Revised Fan/Pump % of Load	Fan/Pump
USARC	88TH	ILLINOIS	PHILIP H. SHERIDAN RESERVE CENTER	HP181 - ARC, FT SHERIDAN RESERVE CENTER	43,418	347,746.078	100.000	5A	32,841.518	55.0%	\$15,353.41
USARC	88TH	MICHIGAN	DR MARY E WALKER MEDICAL CENTER	WR021 - ARC, DR. MARY E. WALKER MEDICAL CENTER	59,165	472,142.340	100.000	5A	44,589.636	37.4%	\$15,059.25
USARC	88TH	ILLINOIS	SGT JAMES W ROBINSON CENTER	CP001 - ARC, SGT JAMES W ROBINSON CENTER	38,178	543,419.575	84.658	5A	51,321.136	31.2%	\$14,889.88
USARC	88TH	WASHINGTON	VANCOUVER AFRC	1 - ARMED FORCES CENTER, VANCOUVER AFRC	78,704	517,473.343	84.658	4C	48,870.745	25.4%	\$11,909.67
USARC	88TH	IOWA	FORT DES MOINES MEDICAL CENTER	P0050 - ARC, FORT DES MOINES MEDICAL CENTER	46,092	393,687.299	100.000	5A	37,180.257	30.9%	\$10,717.39
USARC	88TH	MICHIGAN	RAYMOND ZUSSMAN USARC	IN001 - ARC, 2LT RAYMOND ZUSSMAN USARC	50,438	314,276.054	100.000	5A	29,680.572	37.4%	\$10,030.58
USARC	88TH	MISSOURI	WELDON SPRING TRAINING CENTER	14700 - AMSA/ECS, WELDON SPRING TRAINING CENTER	22,258	260,240.635	85.479	4A	24,577.409	37.6%	\$8,350.51
USARC	88TH	MINNESOTA	FORT SNELLING USARC	506 - ARC, FORT SNELLING	149,332	370,228.423	50.959	6A	34,964.775	24.4%	\$8,252.46
USARC	88TH	KANSAS	LEAVENWORTH USARC	LE002 - ARC, LEAVENWORTH RESERVE CENTER	43,950	294,790.426	75.068	4A	27,840.328	31.6%	\$8,177.59
USARC	88TH	COLORADO	WILLIAM T. FITZSIMONS USARC	290 - USARC Center, William T. Fitzsimons USARC	80,100	347,043.342	62.192	5B	32,775.151	24.2%	\$7,676.44
USARC	88TH	WISCONSIN	W. SILVER SPRING COMBAT CENTER	317 - ARC, W SILVER SPRINGS COMBAT CENTER	64,474	171,517.005	64.110	6A	16,198.252	55.0%	\$7,572.68
USARC	88TH	UTAH	FORT DOUGLAS AFRC	103 - ARC, FRANKLIN L. MCKEAN HALL, FORT DOUGLAS AFRC	33,240	200,963.926	89.589	5B	18,979.252	39.9%	\$6,774.29
USARC	88TH	IOWA	DUBUQUE USARC	P0001 - ARC, DUBUQUE USARC	34,504	188,668.405	100.000	5A	17,818.049	41.7%	\$6,596.72
USARC	88TH	UTAH	FORT DOUGLAS AFRC	131 - ARC, OSBORNE USARC, FORT DOUGLAS AFRC	25,200	224,162.671	85.479	5B	21,170.166	31.1%	\$6,122.23
USARC	88TH	KANSAS	TOPEKA USARC	P0001 - * ARC, BG William C Menninger USARC	45,874	173,792.940	46.575	4A	16,413.194	40.2%	\$5,890.41
USARC	88TH	INDIANA	LYLE J. THOMPSON USARC	SD001 - * ARC, Lyle J. Thompson USARC	27,931	153,534.948	100.000	5A	14,500.007	43.2%	\$5,528.49
USARC	88TH	IDAHO	SGT JAMES E JOHNSON ARMED CENTER	15 - ARC, SGT JAMES E. JOHNSON ARMED CENTER	34,150	178,135.663	75.068	6B	16,823.326	34.3%	\$5,291.97



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ENERGY PROJECT IDENTIFICATION TOOL (CONT. FROM PG. 3)

Generically, you might think you would affect 30% savings for a set of fans by adjusting the VFD correctly. So, you rank order the 30% savings column based on the highest savings by building. This gives you the annual savings projected. If you want to know what construction cost is supported, then the percent savings are followed by three columns that give you a general idea of the construction cost supported by an ESPC or UESC contractor. Therefore, you can determine if you are in the ballpark for financing the construction costs over 20 years by determining if you could fix that system for the costs shown in the 30% savings column in this instance. If your savings were 20%, then follow the same logic to the 20% construction cost column.

The following chart is a continuation of the previous chart showing the continuation of the calculations to the right side of the spreadsheet. This now includes the savings based on the % savings calculated by you and the construction costs identified that can be supported by that project.

Fan/Pump Worksheet												
Report G 02/24/2022												
Command	Region	Installation	Site	Building	Fan/Pump	Projected savings for ECM - 10%	Projected savings for ECM - 20%	Projected savings for ECM - 30%	Construction Costs supportable for 20 years contract for 10% savings	Construction Costs supportable for 20 years contract for 20% savings	Construction Costs supportable for 20 years contract for 30% savings	
USARC	88TH ILLINOIS	PHILIP H. SHERIDAN RE	HP181 - ARC, FT SHERIDAN RESERVE C			\$15,353.41	\$1,535.34	\$3,070.68	\$4,606.02	\$15,353.41	\$30,706.82	\$46,060.23
USARC	88TH MICHIGAN	DR MARY E WALKER ME	WR021 - ARC, DR. MARY E. WALKER ME			\$15,059.25	\$1,505.92	\$3,011.85	\$4,517.77	\$15,059.25	\$30,118.50	\$45,177.75
USARC	88TH ILLINOIS	SGT JAMES W ROBINSON	CP001 - ARC, SGT JAMES W ROBINSON			\$14,889.88	\$1,488.99	\$2,977.98	\$4,466.96	\$14,889.88	\$29,779.76	\$44,669.64
USARC	88TH WASHINGTON	VANCOUVER AFRC	1 - ARMED FORCES CENTER, VANCOUVER			\$11,909.67	\$1,190.97	\$2,381.93	\$3,572.90	\$11,909.67	\$23,819.35	\$35,729.02
USARC	88TH IOWA	FORT DES MOINES MED	P0050 - ARC, FORT DES MOINES RESE			\$10,717.39	\$1,071.74	\$2,143.48	\$3,215.22	\$10,717.39	\$21,434.78	\$32,152.16
USARC	88TH MICHIGAN	RAYMOND ZUSSMAN US	IN001 - ARC, 2LT RAYMOND ZUSSMAN U			\$10,030.58	\$1,003.06	\$2,006.12	\$3,009.17	\$10,030.58	\$20,061.16	\$30,091.74
USARC	88TH MISSOURI	WELDON SPRING TRAIN	14700 - AMSA/ECS, WELDON SPRING T			\$8,350.51	\$835.05	\$1,670.10	\$2,505.15	\$8,350.51	\$16,701.01	\$25,051.52
USARC	88TH MINNESOTA	FORT SNELLING USARC	506 - ARC, FORT SNELLING			\$8,252.46	\$825.25	\$1,650.49	\$2,475.74	\$8,252.46	\$16,504.92	\$24,757.39
USARC	88TH KANSAS	LEAVENWORTH USARC	LE002 - ARC, LEAVENWORTH RESERVE			\$8,177.59	\$817.76	\$1,635.52	\$2,453.28	\$8,177.59	\$16,355.18	\$24,532.76
USARC	88TH COLORADO	WILLIAM T. FITZSIMONS	290 - USARC Center, William T. Fitzsimons			\$7,676.44	\$767.64	\$1,535.29	\$2,302.93	\$7,676.44	\$15,352.89	\$23,029.33
USARC	88TH WISCONSIN	W. SILVER SPRING COM	317 - ARC, W SILVER SPRINGS COMPLE			\$7,572.68	\$757.27	\$1,514.54	\$2,271.80	\$7,572.68	\$15,145.37	\$22,718.05
USARC	88TH UTAH	FORT DOUGLAS AFRC	C103 - ARC, FRANKLIN L. MCKEAN HALL,			\$6,774.29	\$677.43	\$1,354.86	\$2,032.29	\$6,774.29	\$13,548.58	\$20,322.87
USARC	88TH IOWA	DUBUQUE USARC	P0001 - ARC, DUBUQUE USARC			\$6,596.72	\$659.67	\$1,319.34	\$1,979.02	\$6,596.72	\$13,193.45	\$19,790.17
USARC	88TH UTAH	FORT DOUGLAS AFRC	C131 - ARC, OSBORNE USARC, FORT DO			\$6,122.23	\$612.22	\$1,224.45	\$1,836.67	\$6,122.23	\$12,244.45	\$18,366.68
USARC	88TH KANSAS	TOPEKA USARC	P0001 - * ARC, BG William C Menninger U			\$5,890.41	\$589.04	\$1,178.08	\$1,767.12	\$5,890.41	\$11,780.82	\$17,671.22
USARC	88TH INDIANA	LYLE J. THOMPSON USA	SD001 - * ARC, Lyle J. Thompson USARC			\$5,528.49	\$552.85	\$1,105.70	\$1,658.55	\$5,528.49	\$11,056.97	\$16,585.46
USARC	88TH IDAHO	SGT JAMES E JOHNSON	15 - ARC, SGT JAMES E. JOHNSON ARM			\$5,291.97	\$529.20	\$1,058.39	\$1,587.59	\$5,291.97	\$10,583.94	\$15,875.91

The MDMS Outreach Team has been working with Ray Wrobel, Energy Manager for the 88th, through several one-on-one sessions focusing on overrides to schedule. On the most recent session, Wrobel showed the results of his analysis identifying 20+ buildings with overrides, things he had found, actions that had been set in motion, and the estimates he had prepared. At that point, the Outreach Team was able to show him a preview of the EPIT which would help him tremendously in his estimation and project prioritization efforts. He was very excited about the new module and wanted to be notified as soon as it went into production. Stay tuned for an upcoming newsletter article on Wrobel's findings from his overrides to schedule investigation, as well as the projects that were identified.

POTENTIAL ENERGY SAVINGS NOTIFICATION

To supplement the Energy Project Identification Tool, a new Potential Energy Savings Notification email module has been added to MDMS on the Self Service page under the Email Notifications sub-menu. The interface is identical to the Offline Meter and Water Leak Notification interfaces. You can opt-in for email notifications of potential energy savings opportunities. The buildings with Overrides of Schedule calculated values greater than \$10,000 qualify for the Potential Energy Savings Notifications.

An example of the email notification for potential energy savings, which comes from the Army Meter Service Desk at cehnc-army-meter-help@usace.army.mil, is shown below. In this example, the organization level selected was HQDA and note that the sort order in the email report for HQDA is sorted lowest to highest on the SiteID. (Continued on pg. 5)



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POTENTIAL ENERGY SAVINGS NOTIFICATION (CONT. FROM PG. 4)

Potential Energy Savings Notification as of 03/02/2022



cehnc-army-meter-help@usace.army.mil
To Jane Doe

Wed 3/2/2022 3:05 AM

We removed extra line breaks from this message.

You are receiving this potential Energy Savings notification from the MDMS system for your opted-in organization. Based on the MDMS data/calculations, the system has determined that there could be some potential Energy Cost Savings of over \$10,000 for the following buildings. Please let us know if assistance is required by notifying the Army Meter Service Desk (AMSD) via the Feedback/Help Request option under the Support menu in MDMS or you may e-mail them at: usarmy.coe-huntsville.cehnc.mbx.armymeterhelp@mail.mil so that a trouble ticket may be created and assigned to the MDMS Outreach Team in order to setup a one-on-one session or phone call.

Total Potential Energy Savings Count for HQDA with cost > \$10,000: 133

USARC/88TH REGIONAL SUPPORT COMMAND/WASHINGTON

Site: VANCOUVER AFRC
Number of Buildings found: 1

Building: 1 - ARMED FORCES CENTER, VANCOUVER AFRC; Cost Annually: \$52,146.80; Potential Cost Savings: \$12,252.96

USARC/88TH REGIONAL SUPPORT COMMAND/MISSOURI

Site: ST LOUIS #3/SVERDRUP USAR
Number of Buildings found: 1

Building: P3001 - ARC, MG LEIF J SVERDRUP ARMY RESERVE CENTER; Cost Annually: \$81,872.62; Potential Cost Savings: \$17,088.77

USARC/ARMY RESERVE/FORT HUNTER LIGGETT

Site: PARKS RESERVE FORCES TNG AREA
Number of Buildings found: 4

Building: 370 - BATTLE PROJECTION CENTER; Cost Annually: \$122,804.52; Potential Cost Savings: \$29,133.69
Building: 517 - TASS; Cost Annually: \$107,238.97; Potential Cost Savings: \$23,438.53
Building: 340 - GENERAL INSTRUCTION BUILDING; Cost Annually: \$65,948.24; Potential Cost Savings: \$13,859.84
Building: 650 - ARMY RESERVE CENTER BUILDING; Cost Annually: \$58,319.51; Potential Cost Savings: \$12,778.71

The MDMS Outreach Team will be adding instruction and examples on using the Energy Project Identification Tool to the "Setting Up for Energy Projects" course, but one-on-one sessions may also be scheduled by contacting the AMSD via the Feedback/Help Request option under the Support menu in MDMS or you may e-mail them at: cehnc-army-meter-help@usace.army.mil.

