Public School Facilities Authority Measurement and Verification (M&V) Pilot Program

July 2025

Success Story

LOS LUNAS SCHOOLS

GALLUP-McKINLEY COUNTY SCHOOLS

FARMINGTON MUNICIPAL SCHOOLS

MOUNTAIN VECTOR ENERGY

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Introduction

According to the U.S. Energy Star Program (energystar.gov) K-12 school districts spend over $8 billion nationwide on energy costs each year. More than 30 percent of energy use goes to waste and ten percent can be saved by implementing low-cost measures.

https://www.energystar.gov/buildings/resources-audience/k-12-schools#:~:text=K%2D12%20school%20districts%20spend,on%20energy%20costs%20each%20year

The New Mexico Public Schools Facility Authority's (PSFA) Energy and Water use is the second-highest operating expense for schools after salaries and benefits. New Mexico school districts spent $95 million on utilities in 2024. With costs rising and sustainability becoming a statewide policy, PSFA launched an initiative to help districts manage energy and water use more efficiently and effectively.

M&V Program Overview:

PSFA's Measurement & Verification (M&V) Pilot Program is an energy management program started in 2014 with the vision to enable real-time interaction with facility electricity, gas, and water usage. The vision includes enabling schools to track, measure, and analyze utility performance while identifying inefficiencies, reducing costs, and verifying the impact of energy conservation measures. A clear set of goals were defined to inform the program deliverables.

M&V Program Goals: **(PSFA FY2024 Annual Report page 22)**

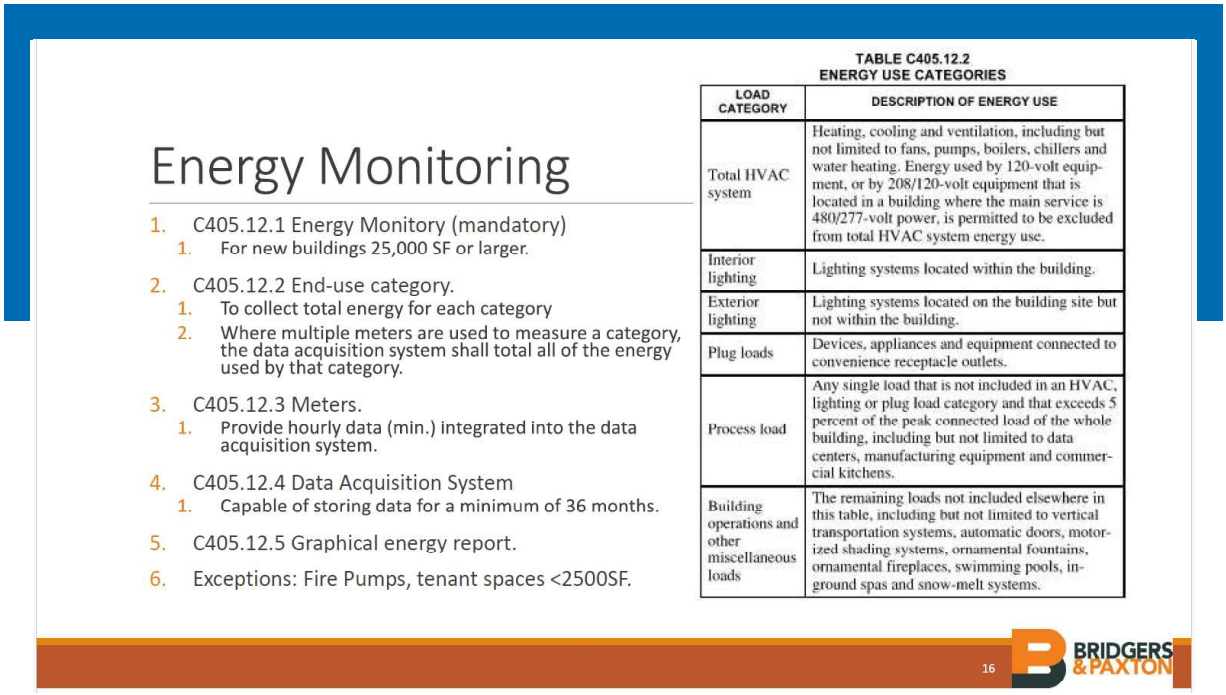
- **Energy Conservation and Cost Savings:** Offer NM districts an economical, standard service to track, document and report energy, gas, and water use, creating more sustainable schools.
- **Education:** Offer public school educators' access to real time data, which students can relate to their physical environment in classes such as environmental and physical science, building technology and engineering, and math (STEM) at different grade levels.
- **International Research:** Create a unique research platform with a credible, robust, database of energy and water use in similar facilities for continued comparisons and analysis.

Executive Summary

Beginning in April 2024, PSFA turned the M&V Program 'vision' into 'reality' connecting 166 buildings across 5 school districts that total 8,468,290 square feet, 71 real-time meters, and 1,580 utility accounts. This footprint represents $10M per year in utility costs.

The 5-district footprint is enabled with advanced utility bill and interval data fault analytics notifying team members on their phones of water leaks, peak demand alerts and other high usage events as an example. Interval data feeds and utility tariffs are connected in real time to instantly notify both usage and cost impacts at each facility. PSFA representatives and the district team members meet every two weeks to discuss energy and water performance, operational considerations, utility billing issues and savings opportunities.

This initiative is future proofing our existing facility compliance with the 2021 International Energy Conservation Code (IECC) in place today as presented by Bridgers & Paxton Consulting Engineers in April 2024 shown below.



Energy Monitoring

1. C405.12.1 Energy Monitory (mandatory)
   1. For new buildings 25,000 SF or larger.
2. C405.12.2 End-use category.
   1. To collect total energy for each category
   2. Where multiple meters are used to measure a category, the data acquisition system shall total all of the energy used by that category.
3. C405.12.3 Meters.
   1. Provide hourly data (min.) integrated into the data acquisition system.
4. C405.12.4 Data Acquisition System
   1. Capable of storing data for a minimum of 36 months.
5. C405.12.5 Graphical energy report.
6. Exceptions: Fire Pumps, tenant spaces <2500SF.

TABLE C405.12.2
ENERGY USE CATEGORIES

LOAD CATEGORY	DESCRIPTION OF ENERGY USE
Total HVAC system	Heating, cooling and ventilation, including but not limited to fans, pumps, boilers, chillers and water heating. Energy used by 120-volt equipment, or by 208/120-volt equipment that is located in a building where the main service is 480/277-volt power, is permitted to be excluded from total HVAC system energy use.
Interior lighting	Lighting systems located within the building.
Exterior lighting	Lighting systems located on the building site but not within the building.
Plug loads	Devices, appliances and equipment connected to convenience receptacle outlets.
Process load	Any single load that is not included in an HVAC, lighting or plug load category and that exceeds 5 percent of the peak connected load of the whole building, including but not limited to data centers, manufacturing equipment and commercial kitchens.
Building operations and other miscellaneous loads	The remaining loads not included elsewhere in this table, including but not limited to vertical transportation systems, automatic doors, motorized shading systems, ornamental fountains, ornamental fireplaces, swimming pools, in-ground spas and snow-melt systems.

16 BRIDGERS & PAXTON

At PSFA, we are off to a great start standing up the program telemetry and data capture to begin delivering against the M&V Program Goals. We have established FY 23-24 as our baseline year and thus far have 7 months of complete data comparing FY 23-24 to FY 24-25.

We have made great progress at the start of the PSFA journey to deliver energy and water conservation, education and STEM engagement, and world class benchmarking.

Testimonials

Shawn Drake, Director of Energy, Hobbs Municipal Schools

Hobbs School District has been actively involved with the PSFA M&V Program as it dovetails with Shawn Drake's energy and water management reporting and conservation initiatives. As a leader with the Facility Manager Association of New Mexico, Shawn is known for sharing and promoting 'best known methods' amongst his peers.

"We are appreciative of PSFA's support of the M&V Program as it informs us on energy and water waste. It allows us to perform short-term corrective action quickly and integrate those learning cycles with more strategic initiatives. For example, a recent PSFA M&V Program peak demand alert is helping us adjust our HVAC equipment sequences of operation to reduce peak demand charges district wide."

Pilot Districts

Bernalillo Public Schools
Farmington Municipal Schools
Gallup McKinley County Schools
Hobbs Municipal Schools
Los Lunas Public Schools

These districts were selected to test and demonstrate how real-time utility data can support both operational efficiency and educational goals.

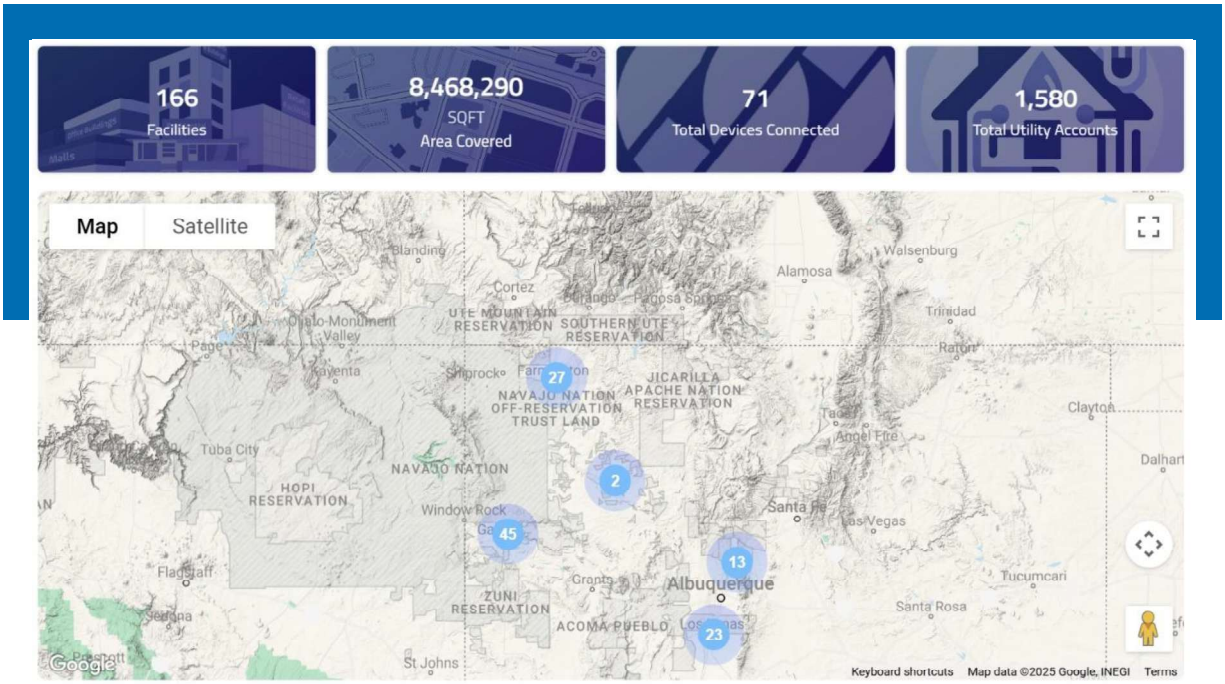
Aaron Cook, Director of Facilities, Gallup-McKinley County Schools

Gallup-McKinley County Schools, with the Operations Leadership of Aaron Cook and his Team, has been actively involved with the PSFA M&V Program data, issue identification and issue resolution. Most recently Aaron has taken steps to include the PSFA M&V Program in Gallup's new construction projects.

"As a pilot program GMCS, NMPSFA are working to get real time energy reporting to include usage along with cost data through their application. GMCS wants to ensure we plan to integrate the necessary sensors into our projects to achieve real time reporting going forward."

Program Scope, Delivery & Results

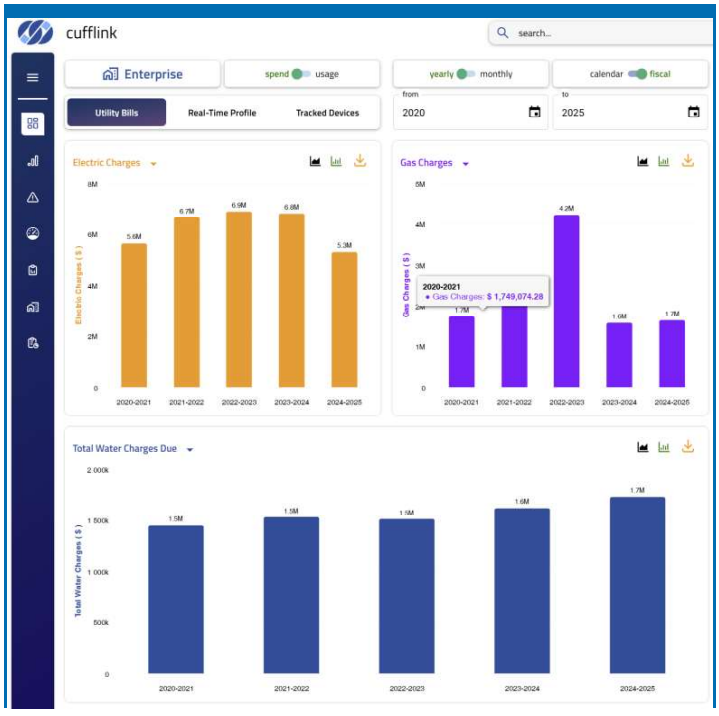
Program Scope: PSFA is currently connected to 166 Facilities across 5 School Districts comprised of 8,468, 290 square feet, 71 interval data meters and 1,580 utility accounts.



Program Delivery:

With contract execution in February 2024, install start in April 2024, and program kickoff in August 2024, PSFA and its M&V Program Delivery Team meet every 2 weeks with Hobbs, Gallup, Farmington, Bernalillo and Los Lunas School Districts to review energy and water performance, utility billing issues and recent fault analytics for their facilities.

PSFA utility performance for 5 districts is now managed enterprise wide, by district, by building type, individual facility, and individual utility account.



Utility Bill Performance Results:

With 7 months of comparable Utility Data last fiscal year to present, PSFA is pleased to demonstrate that our baseline (FY 23-24) vs. actual (FY 24-25) utility bill performance measurement & verification is actively managed and accurately reporting.

The table below represents actual utility bill performance with no weather normalization or adjustments.

Baseline: FY 23-24 AUG – FEB (7 months of Utility Data)

Current: FY 24-25 AUG – FEB (7 months of Utility Data)

Deltas, Current vs Baseline						
District	**Electric Charges**	**Electric Usage**	**Gas Charges**	**Gas Usage**	**Total Water Charges**	**Water Usage**
Farmington	-$121,691	-519,894	$100,248	5,942	$15,017	-7,025,788
Gallup	$221,585	1,175,156	-$16,861	9,886	$34,161	5,561,451
Hobbs	-$65,029	-627,047	-$39,491	668	$17,880	-10,104,092
Los Lunas	-$34,207	-73,849	$3,742	1,375	$30,395	4,284,830
Grand Total	**$658**	**-45,634**	**$47,638**	**17,871**	**$97,453**	**-7,283,599**
% change from baseline	**0.02%**	**-0.15%**	**3.95%**	**11.89%**	**11.33%**	**-5.42%**

**Negative numbers indicate a reduction, and positive numbers indicate an increase.*

Across the districts over the last 7 months, empirical non-weather normalized electricity decreases at Farmington, Hobbs, and Los Lunas are offset by an increase at Gallup.

Natural Gas, a highly weather driven expense, has cost decreases at Gallup and Hobbs offset by increases at Farmington and Los Lunas.

Water performance warrants more time and discovery with irrigation requirements and turf field implementations in progress.

We can effectively review performance relative to our peers and explore and share 'best known methods.' In the spirit of, "You can't manage what you don't measure," the PSFA M&V Program has kicked off our energy and water optimization journey.

As evidenced by the values above, we have more work to do to characterize and study utility cost increase and decrease across the districts over time.

Interval Data Performance Results:

The PSFA M&V Program established live cellular telemetry to our existing interval data meter infrastructure and brought that data to life in an advanced fault analytics software platform. Based on the severity and duration of a change in building performance, the platform automatically calculates the associated usage and cost. As an example, the day we get back from Winter Break when schools are unoccupied, the platform calculates the utility reduction and cost savings for the district.

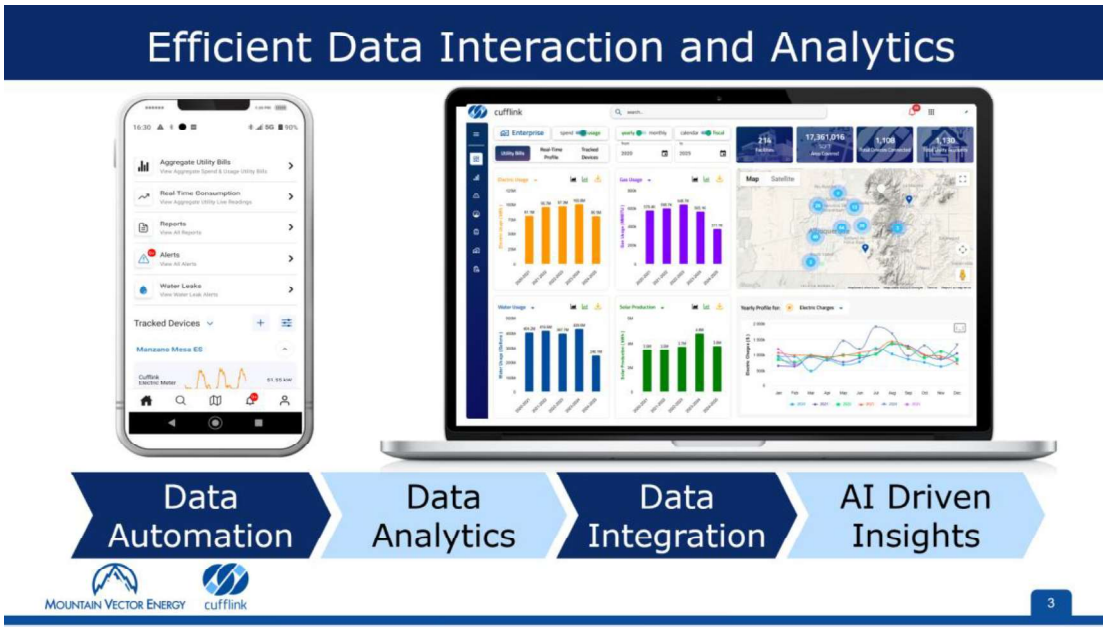
Shown below are a few examples of interval data alerts that show avoided cost impact if the problem or savings opportunity persisted for 1 month, 1 quarter or for the full year. Winter and Spring Break savings are displayed on a 'per year' basis for the 5 connected districts today.

Project	1 Month Avoided Cost	1 Quarter Avoided Cost	1 Year Avoided Cost
Santo Domingo Water Main Break	$11,823	$35,468	$153,698
Murray ES Gas Over Usage	$954	$2,532	$11,200
Murray ES Water Leak	$1,356	$4,217	$21,391
Hermosa MS Water Leak	$857	$2,571	$10,285
Hobbs Peak Demand Reduction	$5,833	$17,500	$70,000
Winter Break Savings	N/A	N/A	$62,671
Spring Break Savings	N/A	N/A	$25,156
Automated Utility Bill Upload (Time Based Estimate)	$2,000	$6,000	$24,000
Total	**$24,214**	**$72,643**	**$378,401**

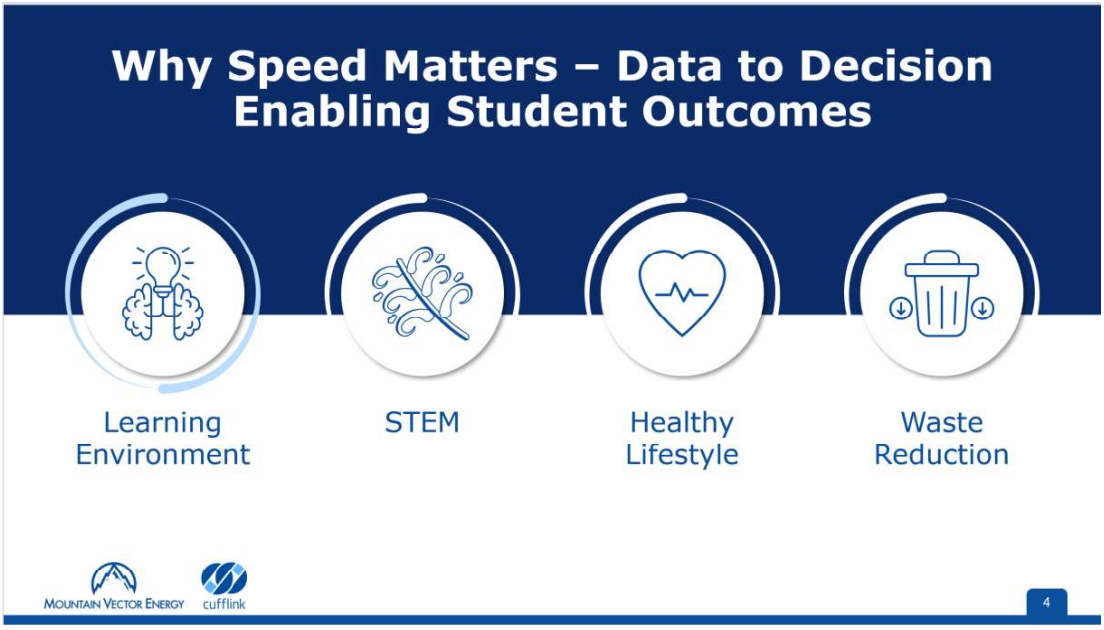
PSFA and our 5 connected districts are interacting with water leaks, peak demand events, building schedules, system offline and excessive usage alerts in real time. This enables an increase in speed from 'data to decision' at the districts.

By providing measurable and visualized examples of each occurrence that we can address immediately, we better inform our operational processes going forward.

The tools that PSFA has deployed in the first phase of the M&V Program automate many processes that were done manually. It means less data entry tasks and more efficient access to actionable information to improve learning environments while reducing cost.



Building Performance data in real time improves the learning environment for students by fixing issues faster. The software is available in the classroom and has 'built in' interactive STEM Quizzes for various grade levels. Clean air and water in our learning environments promote a healthy lifestyle with a consistent focus on waste reduction.

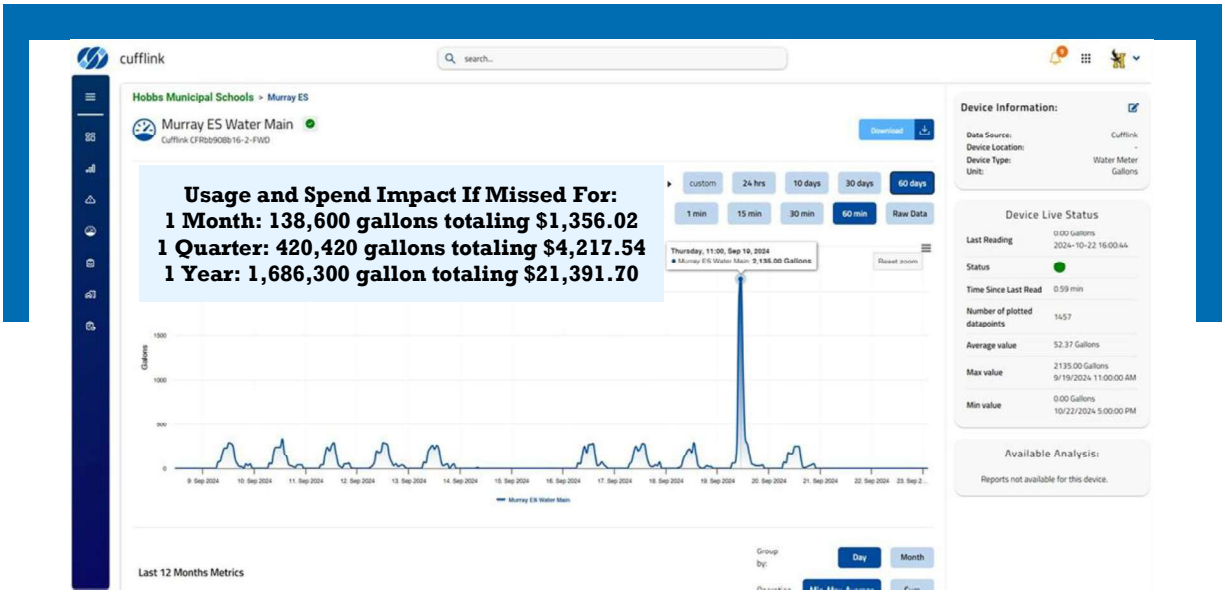


The data and associated outcomes are shared by example against the M&V Program Goals in the following sections.

Energy Conservation and Cost Savings Examples

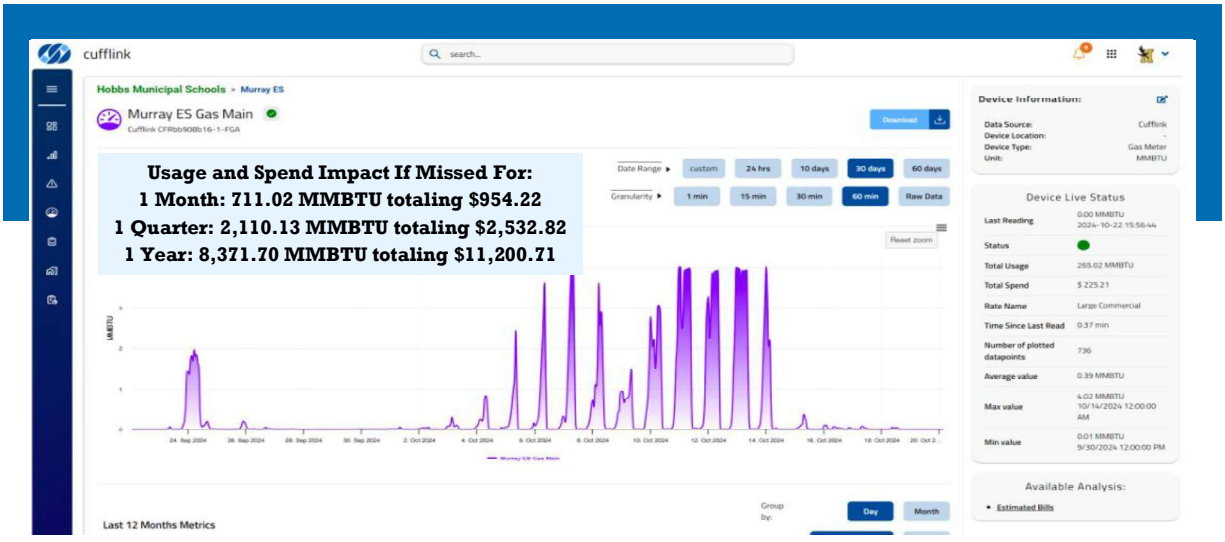
Hobbs Municipal Schools (HMS) – Water Leak

A water leak at Murray ES was detected and automatically flagged within 15 minutes by M&V platform. HMS Maintenance addressed the issue immediately, preventing water waste and cost impacts.



Hobbs Municipal Schools - Hot Water System Failure

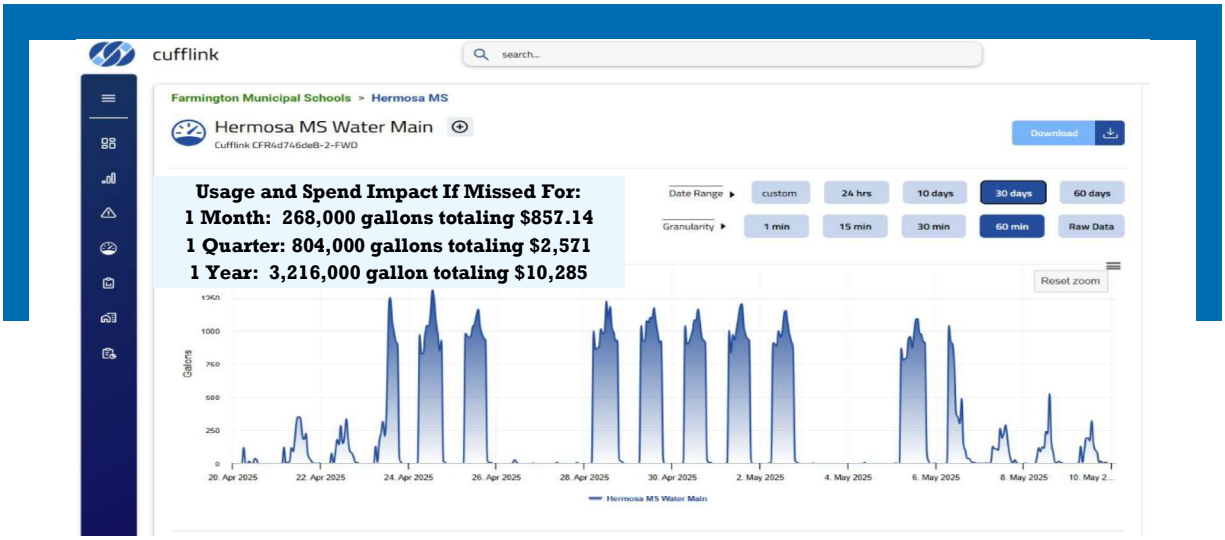
A hot water heater failure caused natural gas to be consumed at several times the normal rate. This event generated an automated alert in the M&V platform. HMS Maintenance addressed the issue within a few days, resolving the high gas usage.



Farmington Municipal Schools (FMS) – Hermosa MS Water Leak

Water leak detected automatically by M&V platform alerts engine.

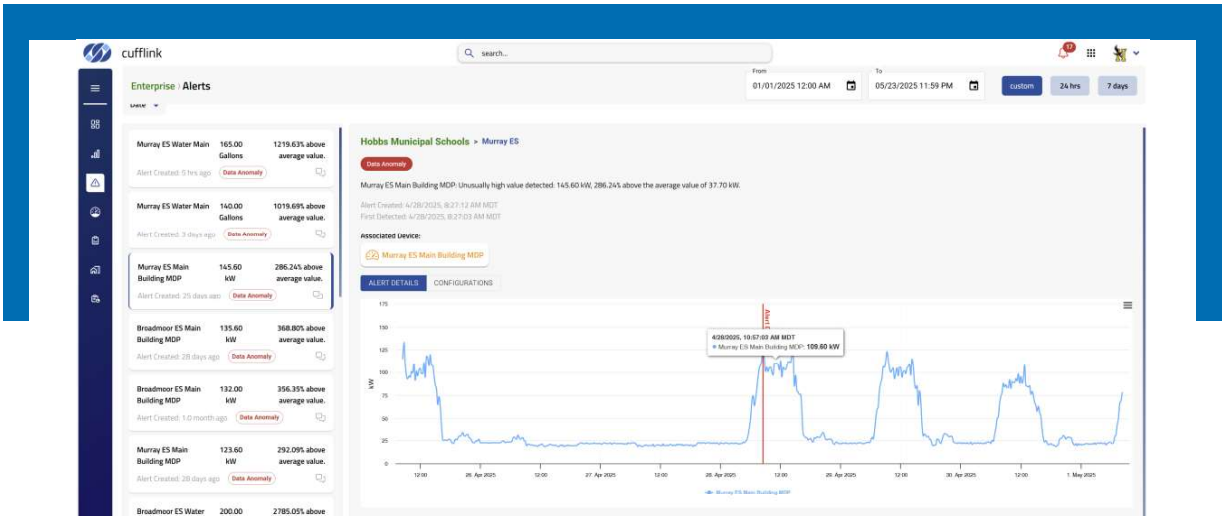
- FMS Maintenance addressed stuck drain valves immediately, preventing water waste and cost impacts.



Hobbs Municipal Schools – Peak Demand Reduction

New Peak Demand increase detected automatically by M&V platform alerts engine.

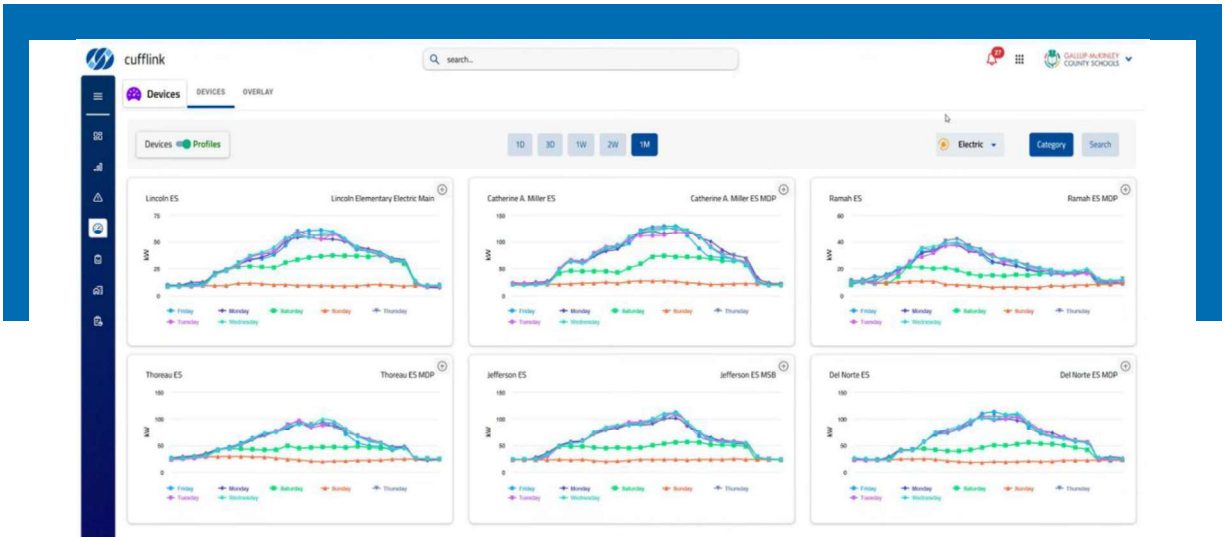
- In May 2025, Hobbs worked with their BAS Contractor to establish equipment startup resets up to 15-minute intervals to reduce Peak Demand impacts to their electric bills.



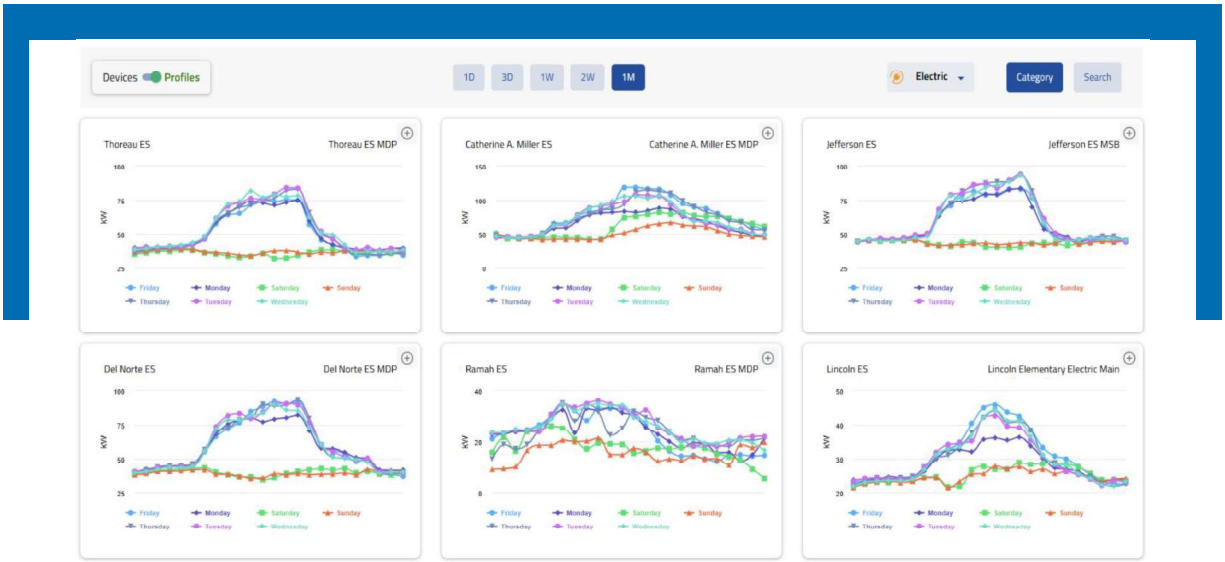
Gallup McKinley County Schools – Occupancy Schedules

The M&V Platform identified that certain facilities were running energy systems on Saturdays, resulting in unnecessary energy consumption. The district adjusted schedules to turn buildings unoccupied on weekends.

Before: Green Saturday profiles are elevated above orange Sunday profiles.



After: Saturday (green) and Sunday (orange) profiles are flatlined as expected during unoccupied hours.

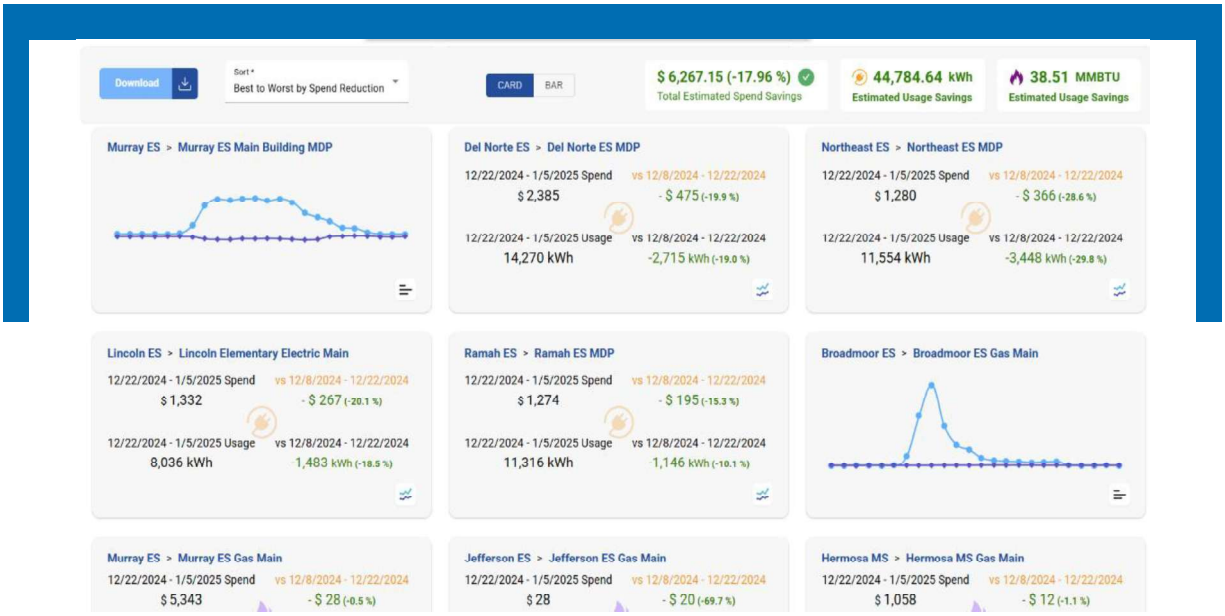


This is an example of getting systems turned off when they are not in use or needed. This represents energy conservation and cost savings consistent with the first goal of the M&V Program.

Winter Break:

Real Time M&V Connected Schools: 44,784 kWh totaling $6267.15 (18%)

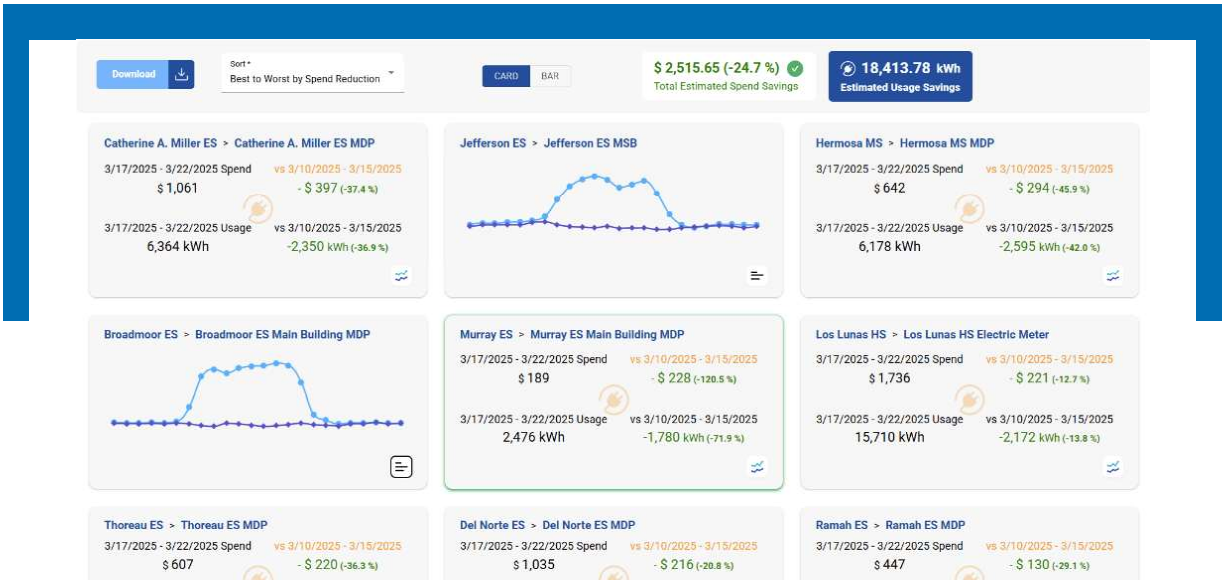
Estimated Savings for Pilot Districts: 447,840 kWh totaling $62,671.50



Spring Break:

Real Time M&V Connected Schools: 18,413 kWh totaling $2,515.65 (25%)

Estimated Savings for Pilot Districts: 184,130 totaling $25,156.50

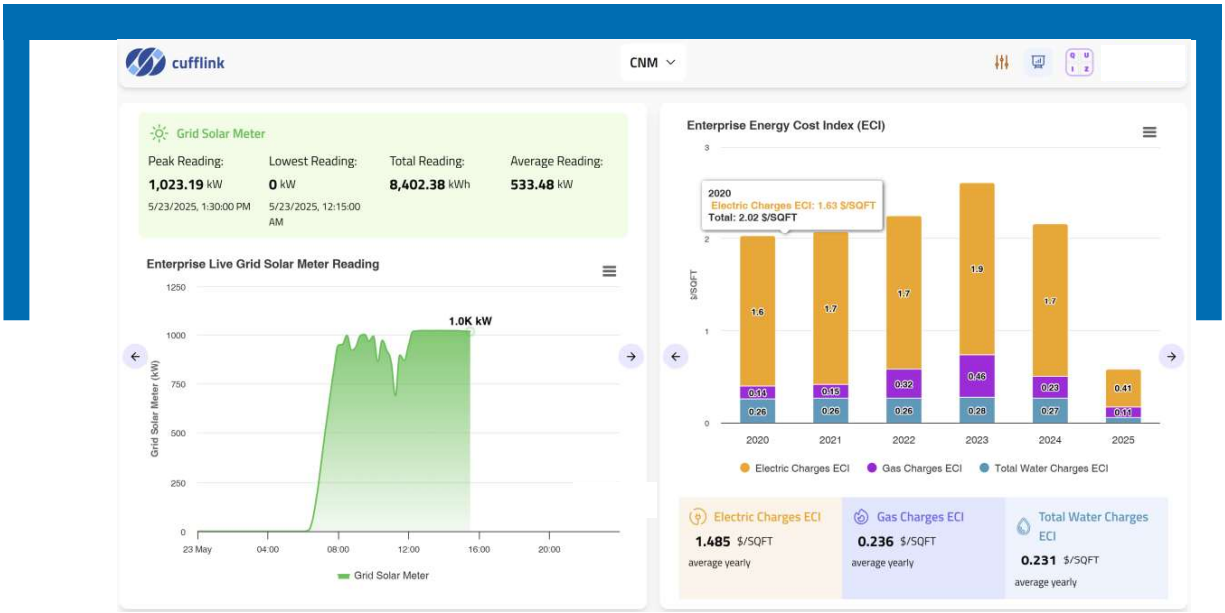


Calculating savings over school holidays and breaks used to take months for utility bill analysis. With interval data, we can enable the savings calculation instantaneously and extrapolate to the district quickly and accurately.

Energy Education and Delivering STEM in the Classroom Examples

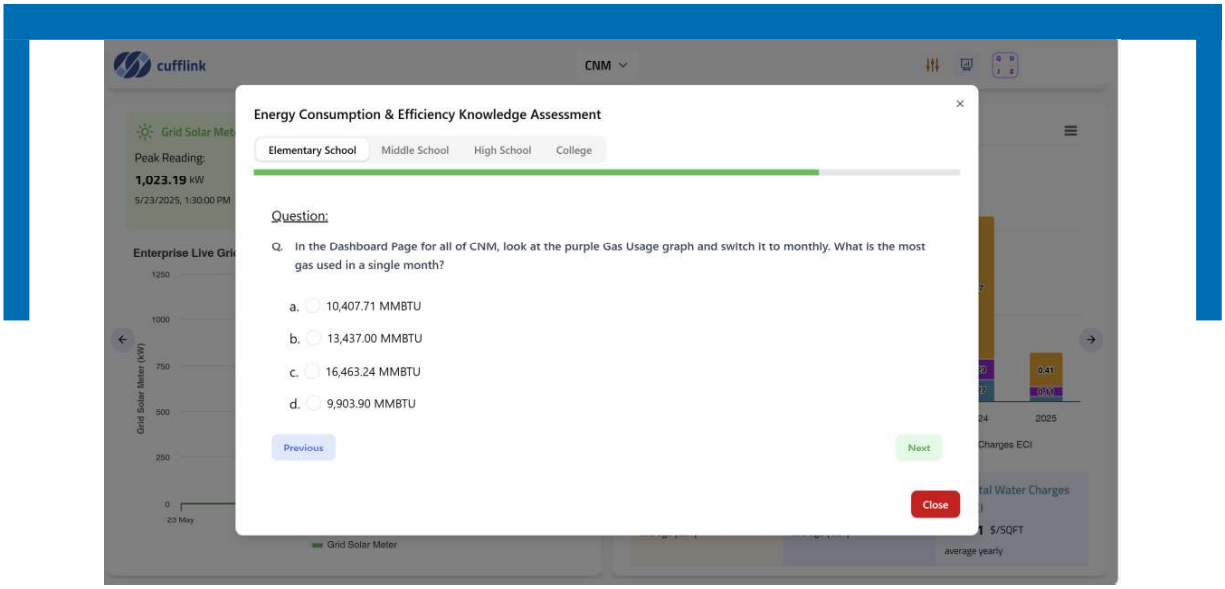
Public Facing Dashboard

Energy and Water metrics are customized to each entity's public facing requirements for reporting and transparency on energy and water usage and spend. This information can be displayed anywhere and configured for an interactive slide show mode.



STEM Quiz Integration for the Classroom

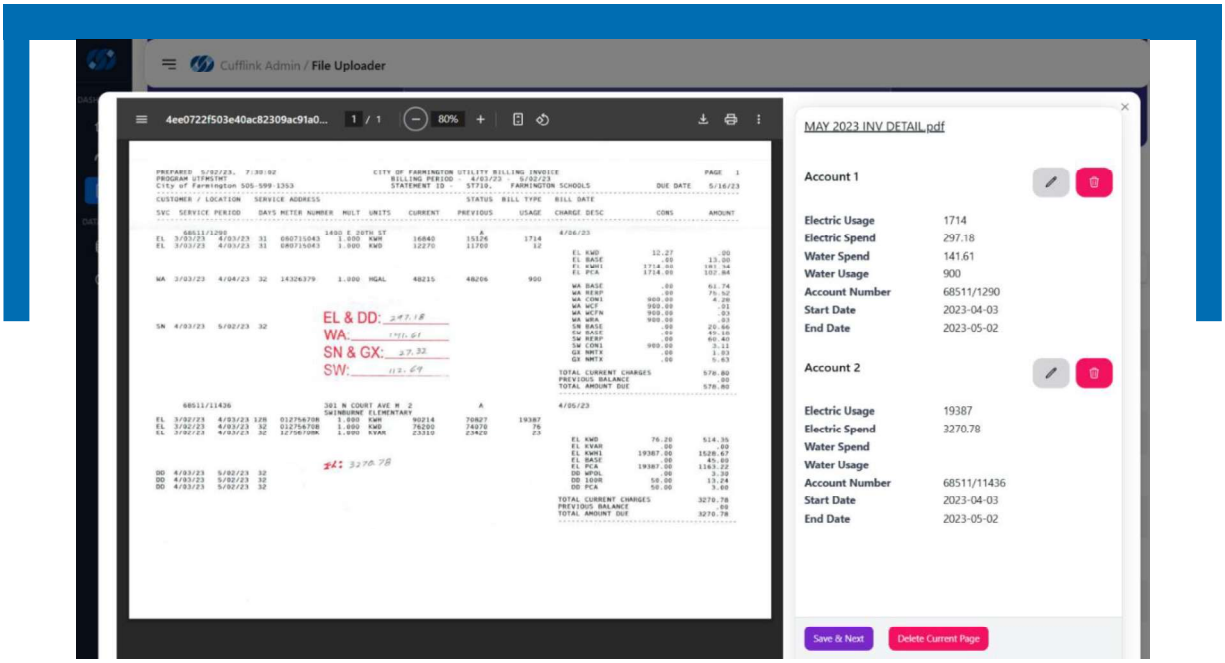
STEM self-correcting quizzes are built into the PSFA M&V Platform for Elementary, Middle, High School energy and water related STEM learning opportunities. This represents Education and STEM consistent with the second goal of the M&V Program.



International Research/Benchmarking/Advanced Data Base Performance Examples

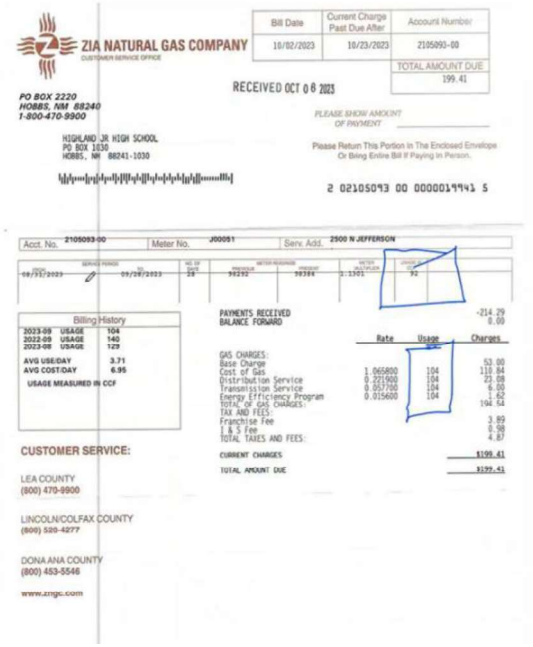
Automated Utility Bill Upload – Eliminating manual energy data entry

Legacy energy tracking systems often require manual data entry for all utility invoices. The PSFA M&V platform uses private AI models to automatically upload raw data, PDFs, scanned copies, and other formats saving days of manual entry each month for the districts.



Utility Bill Auditing

While uploading years of historical data to the M&V platform, it was discovered that a district had been tracking raw gas volume for several years without applying the appropriate temperature correction multiplier. Several years of historical gas usage was corrected during the onboarding process.



ZIA NATURAL GAS COMPANY

Bill Date	Current Charge Past Due After	Account Number
10/02/2023	10/23/2023	2105093-00

TOTAL AMOUNT DUE 199.41

RECEIVED OCT 06 2023

PO BOX 2220
HOBBS, NM 88240
1-800-470-9900

HIGHLAND JR HIGH SCHOOL
PO BOX 1030
HOBBS, NM 88241-1030

PLEASE SHOW AMOUNT OF PAYMENT

Please Return This Portion In The Enclosed Envelope Or Bring Entire Bill If Paying In Person.

2 02105093 00 0000019941 5

Acct. No. 2105093-00 | Meter No. J00051 | Serv. Add. 2500 N JEFFERSON

09/01/2023 — 09/28/2023 | 28 | 92292 | 92384 | 2.2303 | 92

Billing History

2023-09	USAGE	104
2022-09	USAGE	140
2023-08	USAGE	129
AVG USE/DAY		3.71
AVG COST/DAY		6.95

USAGE MEASURED IN CCF

PAYMENTS RECEIVED -214.29
BALANCE FORWARD 0.00

	Rate	Usage	Charges
GAS CHARGES:			
Base Charge			53.00
Cost of Gas	1.065800	104	110.84
Distribution Service	0.221600	104	23.04
Transmission Service	0.057700	104	6.00
Energy Efficiency Program	0.015600	104	1.62
TOTAL OF GAS CHARGES:			194.54
TAX AND FEES:			
Franchise Fee			3.89
1 & 5 Fee			0.98
TOTAL TAXES AND FEES:			4.87
CURRENT CHARGES			$199.41
TOTAL AMOUNT DUE			$199.41

CUSTOMER SERVICE:

LEA COUNTY
(800) 470-9900

LINCOLN/COLFAX COUNTY
(800) 530-4277

DONA ANA COUNTY
(800) 453-5546

www.zngc.com

The flexibility of the PSFA' M&V platform dovetails with the third goal of the M&V Program to provide an industry leading energy and water database for advanced benchmarking and international research. The modern automation in place today enables fast data cleaning and organization with on-going technological advances.

Conclusion

PSFA Mission: Through efficient use of state and local resources, NMPSFA will support our school communities in providing quality, sustainable, safe, and adequately equipped facilities that enhance educational outcomes for students and staff.

As stated in the NMPSFA 2024 Annual Report:

> Over $9 billion is wasted nationwide every year because of undetected faults in building sub-systems. Access to real time metered utility data by staff and management can result in a 5% to 15% reductions in energy and water expenses. By partnering with these NM school districts, PSFA hopes to garner value from the advanced energy management systems, develop proof of concept, and cost savings opportunities over time.

We have started the process to improve the efficient use of our energy and water resources through the PSFA M&V Program. We are actively working to improve outcomes in support of the M&V Program goals:

1. Energy Conservation and Cost Savings
2. Energy Education and delivering STEM engagement with the classroom
3. Providing an industry leading energy and water database for advanced benchmarking and international research.

While we are still early in the process, this PSFA Success Story is intended to serve as an outline and template for excellence with the measurement and verification of building performance, optimization, learning opportunities, and cost savings in the future.