



Utilities and Energy Efficiency:

Modernizing Michigan School Energy Systems in a Deregulated Market



Performance Services

On the Agenda

- The Reality Facing Michigan Districts
- Maintenance Best Practices
- Understanding Energy Management
- Energy Management Tools
- District Examples
- Financing & Funding
- Grants & Incentives



Today's Speakers



Neal Fleck

Engineering Supervisor
Performance Services



Cal Ormanovich, P.E.

Mechanical Engineer
Performance Services



Andrew Hascher

Business Development Manager
Performance Services

2 Building Envelope Specialists



32 Architects & Designers

3 Estimators



57 Engineers

11 Performance Assurance



85 Construction Operations

41 Consultants



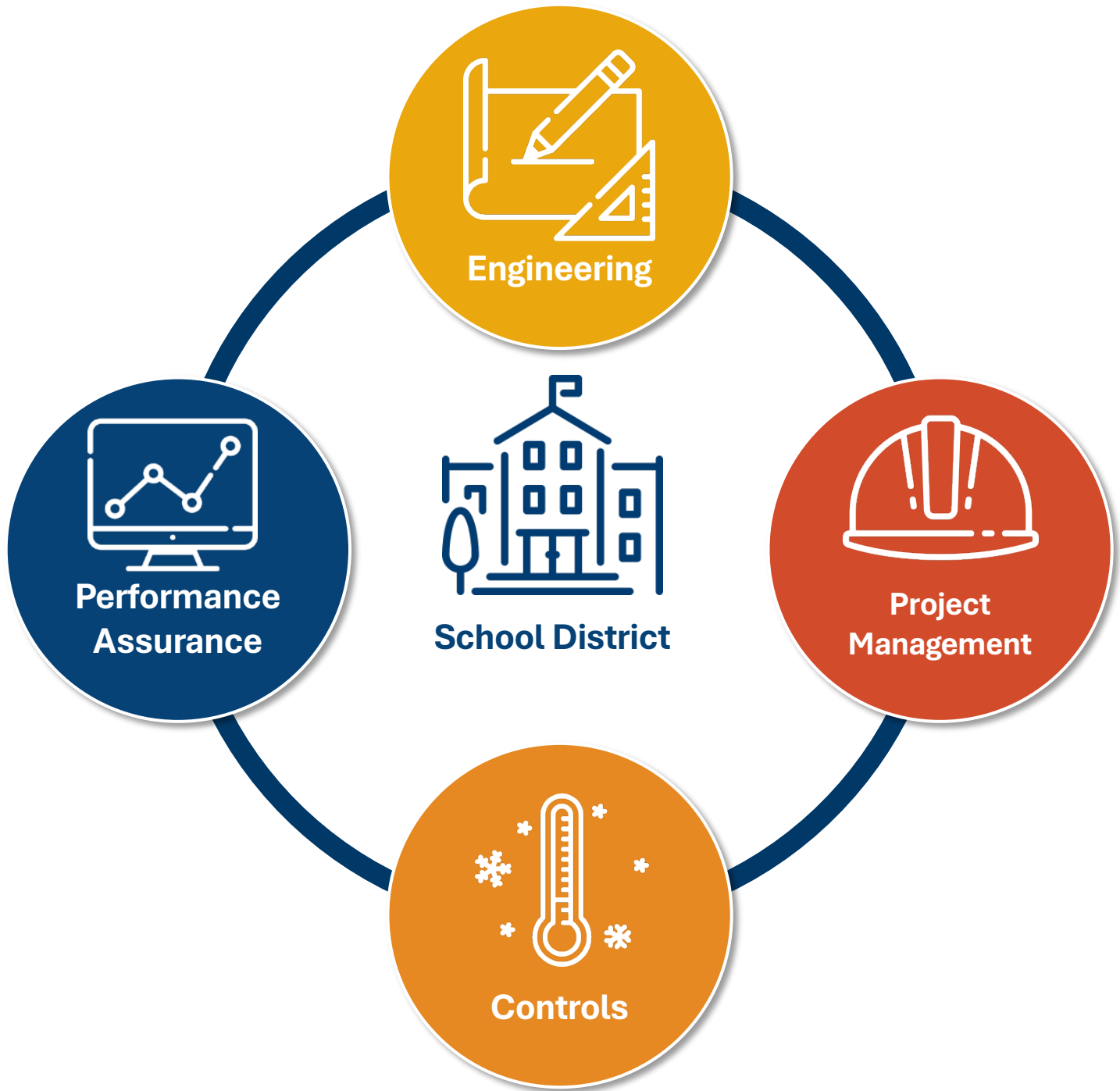
31 Controls Specialists

2 Educational Planners

Local Team
with **National Resources**



Integrated Project Approach



The Reality Facing Michigan Districts



Aging facilities, combined with limited school budgets result in an estimated

\$270 BILLION

needed for deferred maintenance

A 2025 Michigan study identified a

\$22.8 BILLION

**gap in funding related to basic
building health, safety, and wellness
standards over the next decade.**

Administrator Challenges



AGING CAMPUS
INFRASTRUCTURE



DEFERRED
MAINTENANCE



RISING ENERGY &
UTILITY COSTS



CAPITAL FUNDING
CONSTRAINTS



STAFFING & RESOURCE
LIMITATIONS



PRESSURE TO MEET
SUSTAINABILITY GOALS

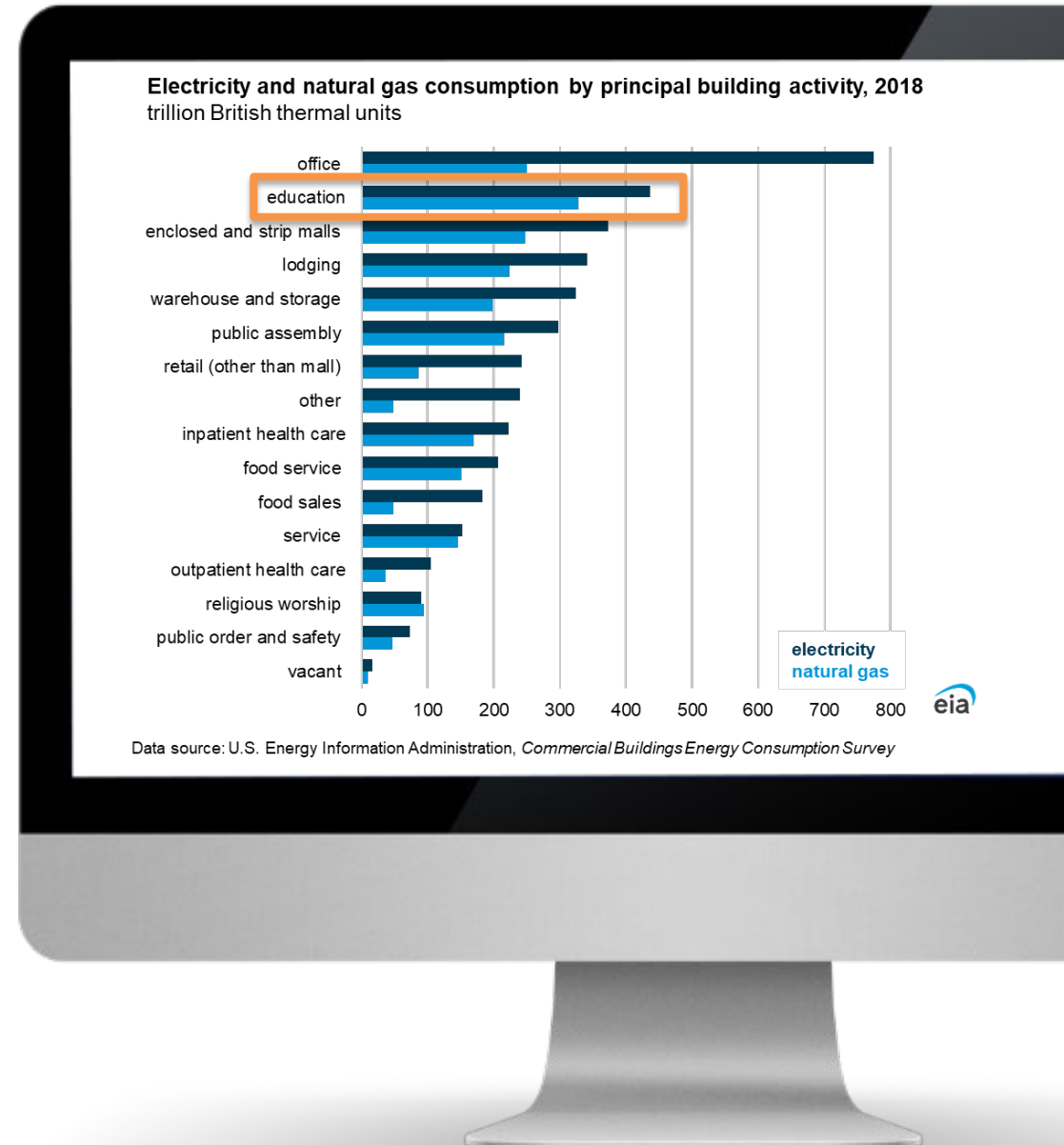
Challenges Facing Administrators

“Education wastes \$2.4B a year in energy an amount equivalent to 40M text books”

- K-12 spends nearly \$8B in energy per year with 30% inefficiency, 2nd largest expense to salaries (DOE).
- Education sector uses the most natural gas per SF and the 2nd most electricity (see right).

Funding is tight and schools struggle to pay for repairs and renovations.

- Everyone wants to be “Green” but not go in the “Red”.
- Facility staff has poor visibility into energy consumption.



Maintenance Best Practices



There Just Isn't Enough Time in the Day

Mechanical

- Filters & Belts
- Check Motors
- Clean Coils
- Verify BAS operation

Building Envelope

- Roof Inspections
- Clear Drains
- Check Walls
- Inspect Windows

Plumbing

- Fix Leaks
- Check Valves
- Test Pumps
- Inspect for Corrosion

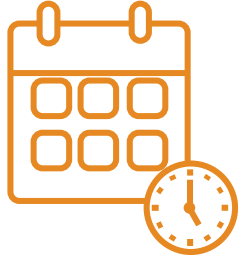
Electrical

- Inspect Panels
- Check Breakers
- Inspect Circuits
- Test GFCI and AFCI



And this is only a fraction of what's required...

The Facilities Playbook: Take Control



Maintain Schedules

Action: Implement and maintain equipment schedules to reduce run times and eliminate overrides and 24/7 operation. Develop schedules for events and partial occupancy.



Replace Filters

Action: Replace your HVAC filters on a regular basis. Too much buildup requires your equipment to work harder and less efficiently.



Keep the Lights Off

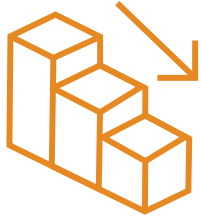
Action: Utilize Occupancy or Vacancy Sensors for Interior Lighting. Utilize Photocells or timers for exterior lighting.



Clean HVAC Coils

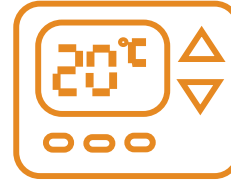
Action: Clean HVAC coils quarterly or semi-annually to keep your equipment running efficiently.

The Facilities Playbook: Take Control



Staggered Scheduling

Action: Never start all rooftop Units (RTU) simultaneously. Sequence startups in 15-30 minute intervals to avoid setting a massive KW peak.



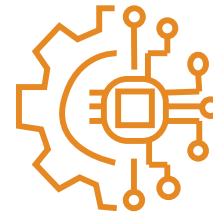
Aggressive Setpoints

Action: Widen deadbands during unoccupied hours. A few degrees of drift prevents compressors and boilers from firing unnecessarily.



After-Hours Shutdown

Action: Audit evening schedules. Ensure gymnasiums, cafeterias, and distinct zones revert to unoccupied modes immediately after events end.



Automated Controls

Action: Rely on Building Automation Systems (BAS) rather than manual overrides. Automation ensures the 'Flattened Curve' happens consistently, every single morning.

Potentially 10%-25% in Utility Savings

Optimal Learning Environment Criteria

Criteria	Performance Services Standard	EPA Various “Indoor Air Quality” Publications	ASHRAE Standards	IES Standards
Ventilation	Generally, 15 CFM per person (Varies based upon room type, air distribution effectiveness and local guidelines)	Generally, 15 CFM per person (Varies based upon room type)	Generally, 10 CFM per person plus .12 CFM per SF floor area (Varies based upon room type, air distribution effectiveness and local guidelines)	NA
Temperature	70°F to 74°F (Classrooms)	68°F to 80°F (Varies based upon multiple factors)	68°F to 78°F (Varies based upon multiple factors)	NA
Relative Humidity	30% to 60%	30% to 60%	30% to 60% (Varies based upon multiple factors)	NA
CO₂ Levels	700 ppm above outdoor levels	700 ppm above outdoor levels	700 ppm above outdoor levels	NA
Air Filtration	MERV (Minimum Efficiency Report Value) 8 to 13 (Depending on application)	MERV 8 to 13 (Depending on application)	MERV 8 to 13 (Depending on application)	NA
Classroom Lighting	40 to 50 footcandles	NA	NA	30 to 50 footcandles
Classroom Acoustics (Background Noise)	35 to 45 dBA (Depending on application)	NA	35 dBA	NA

Notes:

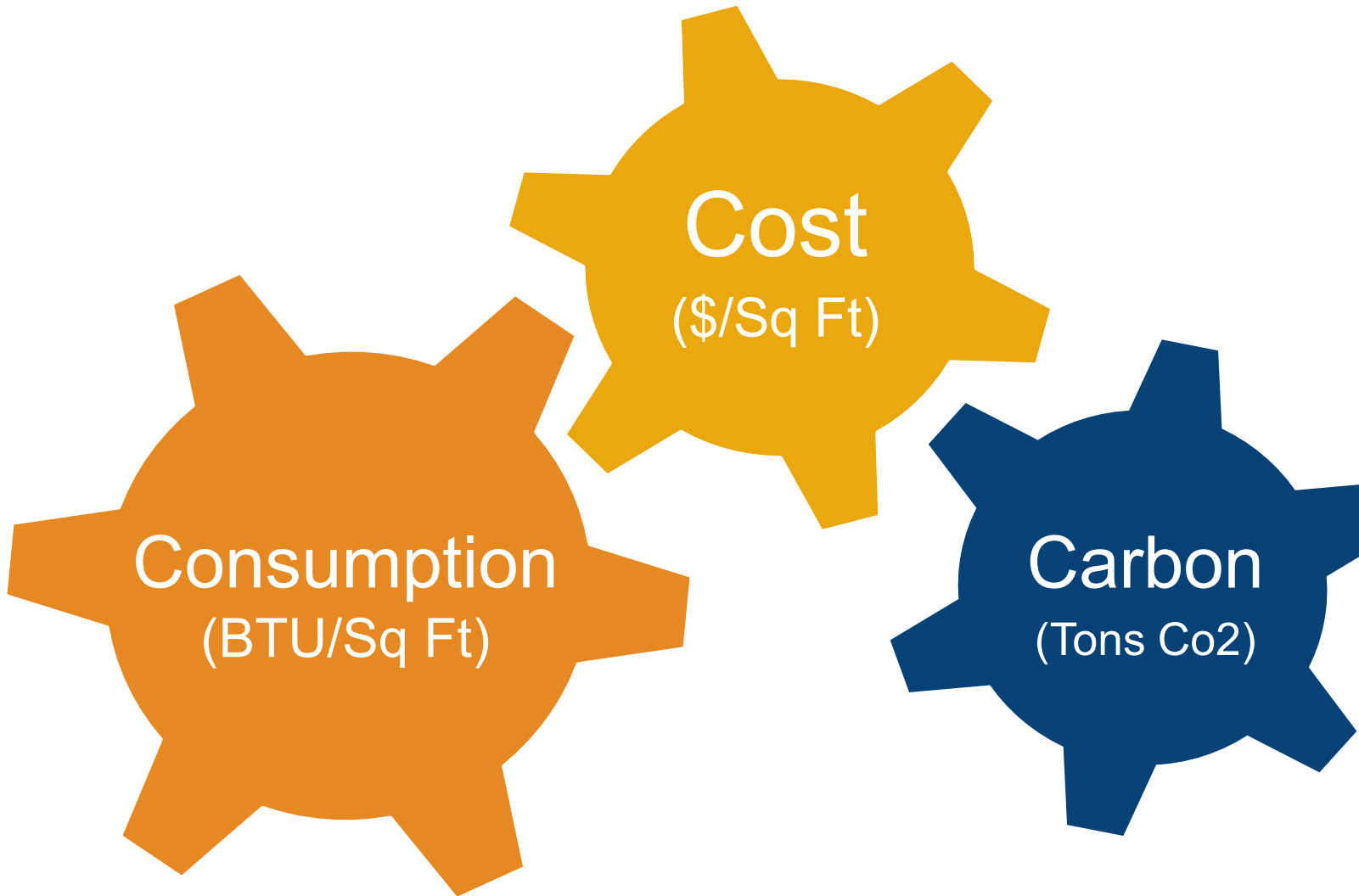
1. Local codes must be consulted for additional requirements; 2. Recommendations may vary during epidemics or pandemics.

Understanding Energy Management



What is Energy Management?

The Process of monitoring, controlling, and managing the Three C's



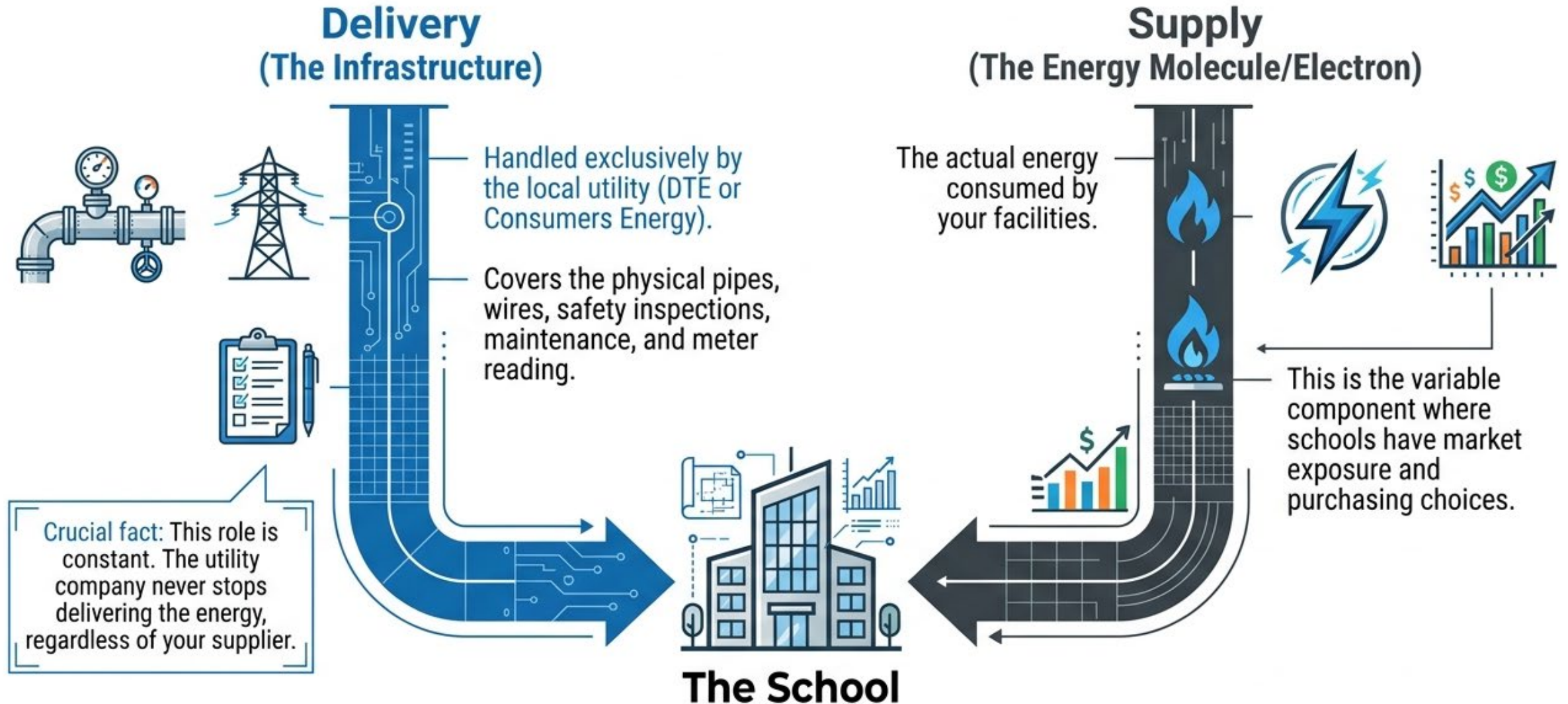
The Benefits of Energy Management

- Helps administrators create a positive public image
- Contributes to reducing fossil fuel usage and emissions
- Can serve as an educational tool and models positive behaviors for students



The Universal Rule of Utilities:

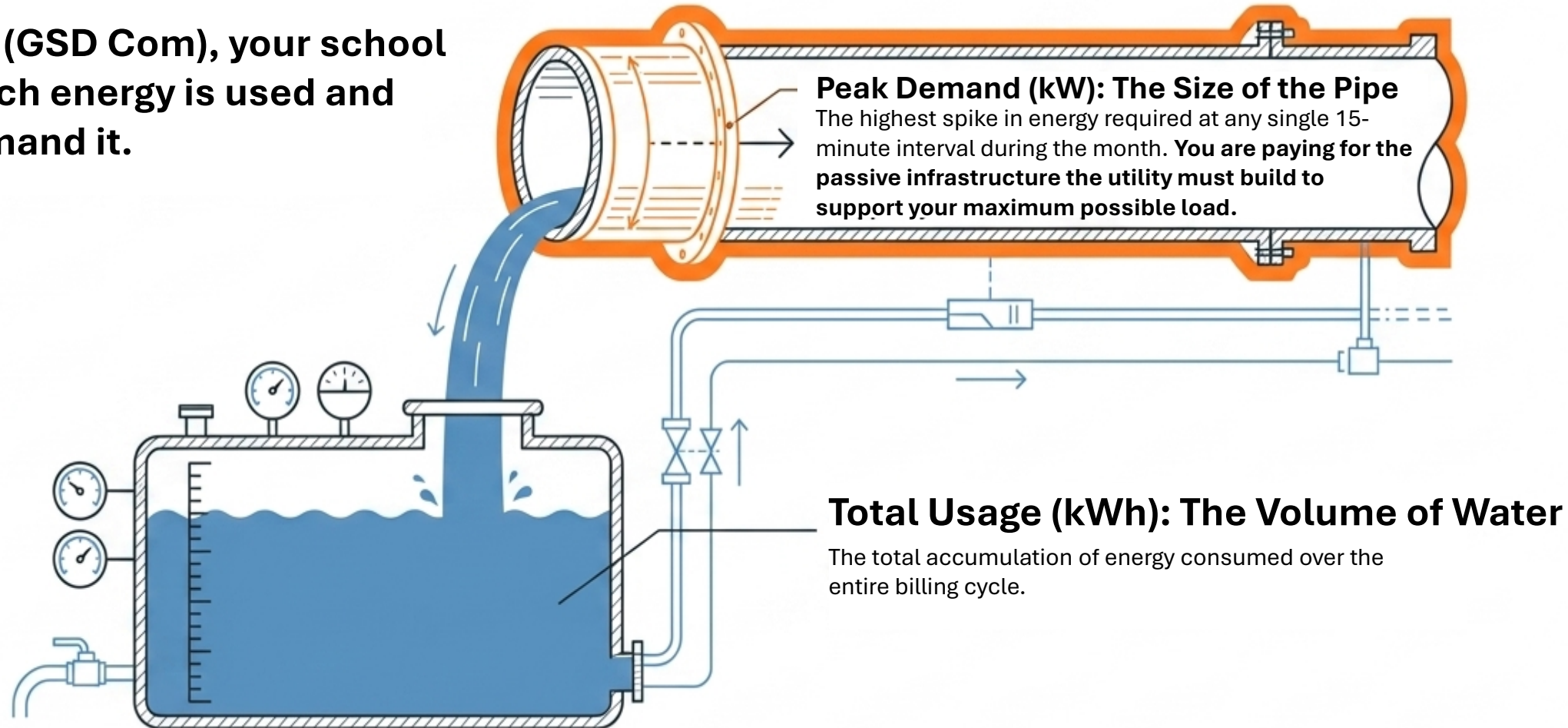
Delivery vs Supply



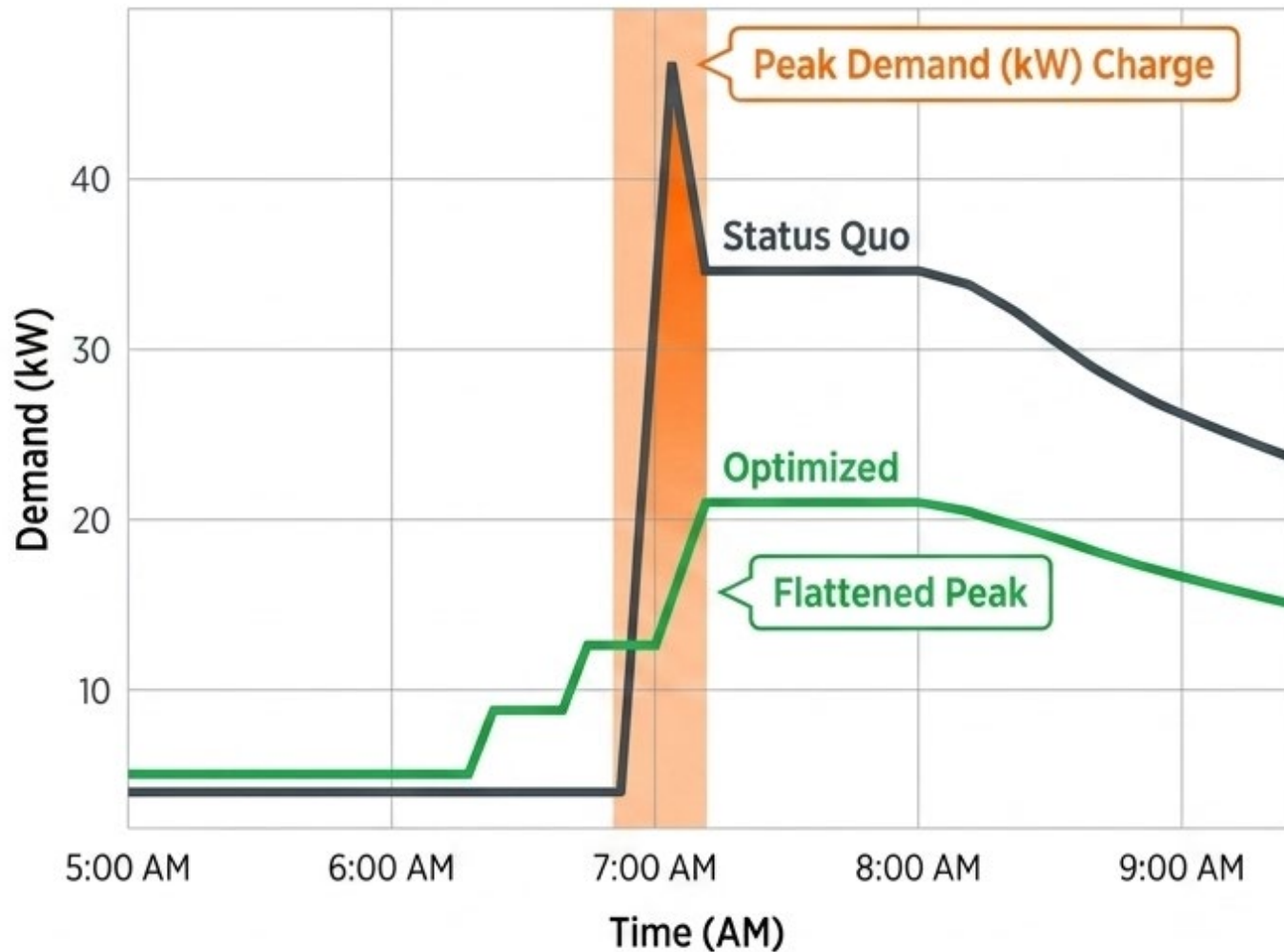
Commercial Electric Billing Charges

For Both Volume & Capacity

Under Rate 1120 (GSD Com), your school pays for how much energy is used and how fast you demand it.



Simultaneous morning startups trigger your highest monthly demands



The Problem:

Turning on all hallway lighting, HVAC rooftop units, and cafeteria equipment simultaneously at 7AM sets a massive Peak Demand (kW) charge for the entire month in a single 15- minute window.

The Solution:

Staggered mechanical scheduling

- **6:20 AM:** Kitchen systems power on
- **6:40 AM:** Primary wing HVAC activates
- **7:00 AM:** Secondary wing HVAC and lighting activate

Takeaway: Flattening the peak saves capital, even if total usage remains exactly the same

Natural gas service requires two district jobs: Delivery & Supply



THE UTILITY (Delivery)

Who: DTE Gas, Consumers Energy

What They Do: Own and maintain the pipes, read meters, issue the primary bill, maintain reliability, and respond to emergencies.

Strategic Reality: Always constant. You cannot shop for delivery. Regardless of who supplies the gas, the utility delivers it.



THE SUPPLIER (Commodity)

Who: The Utility OR an Alternative Gas Supplier

What They Do: Provide the actual gas, dictate commodity pricing, structure the contract, and manage market hedging.

Strategic Reality: Often flexible. You can shop for supply to control costs and manage budget predictability.

Most gas bills combine regulated delivery charges with shoppable commodity charges

Customer Charge

Fixed monthly fee for maintaining an active account and meter on the system.

Distribution/ Transportation

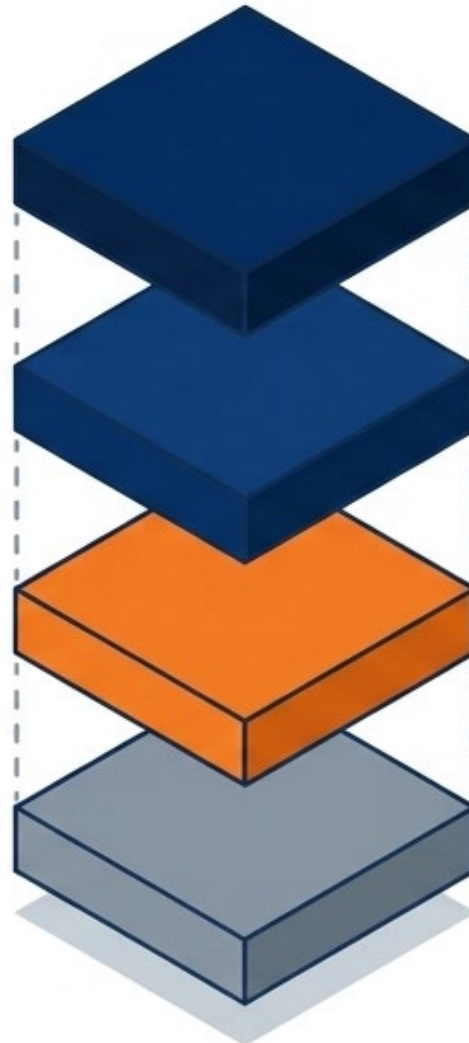
The variable cost to move gas through the local utility's pipe network.

Commodity/ Gas Supply

The cost of the gas itself.

Riders & Adjustments

State program charges, taxes, and utility surcharges.



This is the primary portion you can shop, hedge, or manage.

Context Note


For traditional utility sales, the commodity is purchased by the utility and recovered through mechanisms like DTE's Gas Cost Recovery.

However, smaller commercial businesses and schools can often opt into programs like Gas Customer Choice to manage this orange block differently.

The Gas Translation

Electric Equivalents	Gas Realities
Volume is kWh	Gas Volume: billed in CCF or Mcf . (Lowering runtime, infiltration, and heat loss lowers this)
Commodity is Supply	Commodity Charge: GCR or AGS (May come from utility or alternate gas supplier)
Delivery is Distribution	Delivery: Customer/dist charges (Fixed service, pipeline deliver, and riders. These do not replace the value of using less gas)

Procurement Pathways

	Path 1: Utility Sales / Gas Customer Choice (GCC)	Path 2: Gas Transportation (Open Access)
Best Fit For...	Smaller individual buildings and standard loads.	High-volume commercial facilities and large institutional campuses.
How It Works...	The school buys gas from the utility under regulated rates OR shops an alternative licensed supplier. The utility continues delivery.	The school secures supply directly from the market, reserves pipeline capacity, and the utility acts strictly as the delivery mechanism.
Primary Benefit...	Simplicity and basic budget predictability.	Deep procurement flexibility across multiple meters and advanced price hedging.
Risk Profile...	Lower market exposure. Note: While MPSC regulates utility delivery, alternative supplier rates under GCC are not MPSC-regulated.	High. Requires active management of timing, basis, and balancing. <div style="border: 1px solid #ccc; border-radius: 10px; padding: 10px; background-color: #f9f9f9;">  <p>The lowest price offer is not always the lowest total cost if contract terms leave you exposed.</p> </div>



Lower Total Use
(kWh / CCF)

+



Lower Peaks
(kW)

=



Lower Spend

Bottom line: lower use + lower peaks = lower spend. This is where conservation and building controls show up on the bill.

Less efficient schools spend

\$60-\$100
more per student

use 3x more energy, and have less money for classroom education

Energy Management Cornerstones

A good energy management framework needs to address people, process, technology and change



Executive Buy-In

Creating a top-down approach to creating and implementing behavioral change



Energy Management System

Having a tool to proactively collect, analyze and act on energy management data



Facility Improvements

Continuously tracking, maintaining, and improving the critical energy systems in your buildings



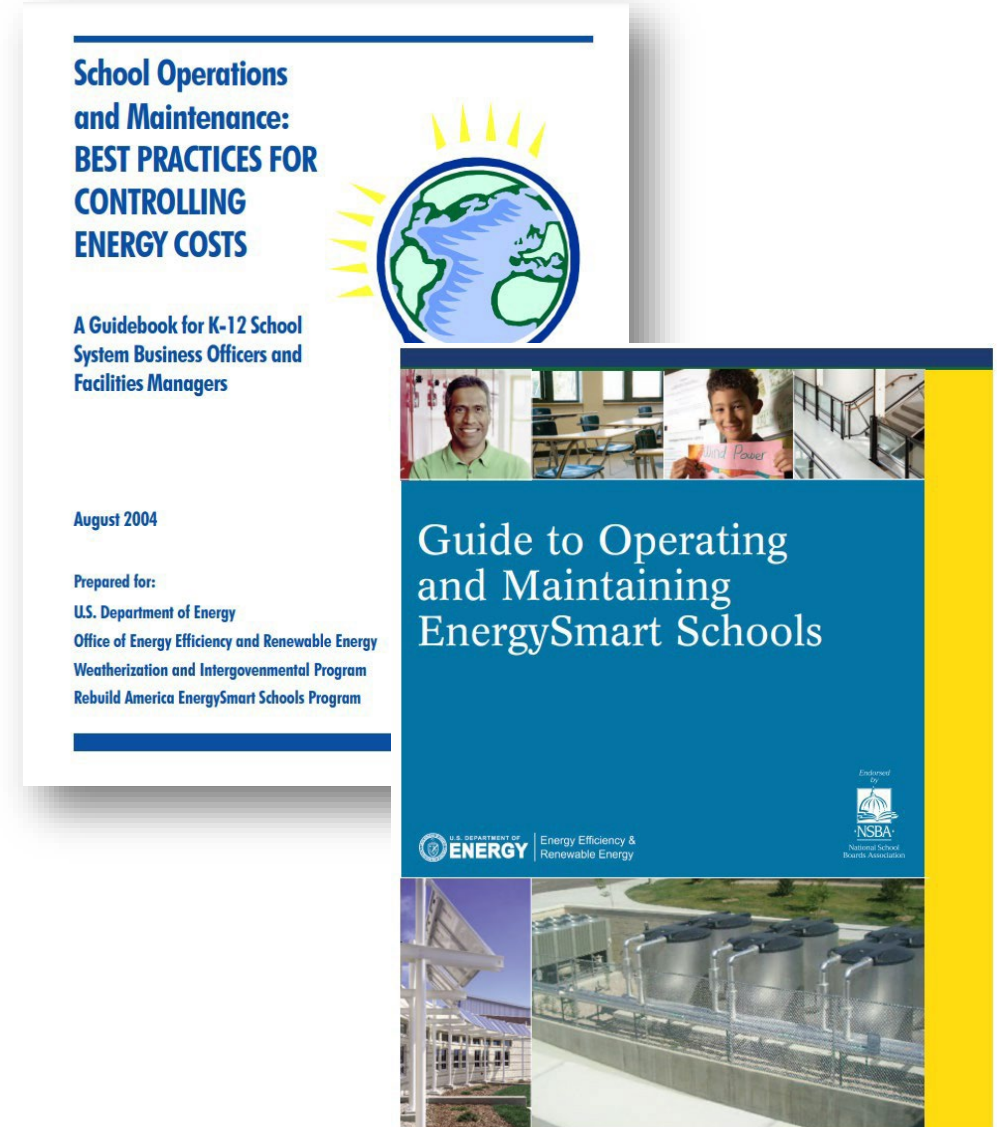
Empowering People

Empowering people to embrace and evangelize the power of energy efficiency

Cornerstone #1:

Executive Buy-in

- Culture is created and driven from the top down
- Needs to be put in writing in the form of a policy, program or charter
- Needs to be revisited several times per year
- At a minimum, it needs to state:
 - Rising utility, operations and maintenance costs are a concern
 - A plan will be prepared and implemented
 - Specific energy management goals will be obtained
 - The Administration is authorizing the Energy Manager position
 - Incentive and reward ideas will be considered



Cornerstone #2: Energy Management System

- The foundation of sound energy management program is data
- Quality of information and data is key:
 - **Accurate** – correct and complete
 - **Timely** – available as needed
 - **Comparable** – data definitions and units of measures
 - **Utility** – investment grade
- Pay close attention to data types, sources and use because, at some point, they will all come into play

Data Types

- KWH
- KW
- BTU
- Building
- Square Footage
- Degree Days
- Operating Hours
- Meter Serial Number
- Meter Service Address
- Fuel Type

Data Sources

- Electric Utility Company
- Gas Utility Company
- Water Utility Company
- Interval Meters
- Energy Management System
- As-Built Electrical & Mechanical Drawings

Data Use

- Utility Cost & Consumption
- Measurement & Verification
- Utility Baseline
- Billing Error Dispute Resolution
- Energy Audit & Assessment
- Ongoing Commissioning
- Facility Performance Tracking

“You can’t manage what you don’t measure”

Cornerstone #3: Facility Infrastructure

Client Type	Energy Conservation Measure Installation	ECM Investment	Annual Savings	15 Year Cum Cash Flow	Simple Payback
Educational – K-12	9 Schools, <u>3 Boiler Plants (Condensing) w/OAR</u>	\$7,498	\$4,619	\$61,483	1.6 yrs
Educational – K-12	9 Schools, <u>3 Boiler Plants (Non-Cond) w/OAR</u>	\$7,498	\$1,732	\$18,178	4.3 yrs

- Boiler systems sized for the highest load on the coldest day of the year (design day)
- Hot water boiler system oversized majority of the heating season
- Outside Air Reset is control strategy for that leverages:
 - Higher the outdoor air temperature
 - Lower the building heat loss
 - Cooler the boiler loop water can be
- Sends out cooler water on warm days; warmer water on cold days
- Amount savings depends on boiler type – condensing vs. non-condensing



Hot Water Condensing Boiler - 97% Efficient

Condensing Boiler: Boiler Loop Temp Range (inlet) – **160°F to 100°F**

Rule of Thumb: For every 4°F boiler water is reduced, there is 1% energy savings.

Example: 160°F vs. 100°F will provide minimum **15%**.



Hot Water Non-Condensing Boiler - 88% Efficient

Non-Condensing Boiler: Boiler Loop Temp Range (inlet) – **160°F to 140°F**

Rule of Thumb: For every 4°F boiler water is reduced, there is 1% energy savings.

Example: 160°F vs. 140°F will provide minimum **5%**.

Cornerstone #4: Empowering People

Share Good News

- Newsletters
- Website
- Public Events
- Social Media

Incentives

- Spirit wear
- Coupons
- Pizza Parties
- Parking Privileges

Continuous Communication

- Make it visible
- Ensure it's Relevant
- Reach out regularly

Friendly Competitions

- Room by Room
- Building by Building
- School and Home



Cornerstone #4: Empowering People

“Simple behavioral and operational measures alone can reduce costs by 25%”

EPA Report, Clean Energy Strategies for EE in K-12 Schools

No Cost

- Adjust Thermostats (1 Degree= 1% cost reduction – USGBC)
- Reduce Hot Water Temperature
- Reduce Lighting

Low Cost

- Demand Controlled Ventilation with CO2 Sensors
- Retro-Commissioning
- Variable Frequency Drives

Capital Intensive

- Retrofit 32/28/25 Watt Lamps and Exterior Lights with LED
- Rooftop Units (RTU) and Air Handling (AHU) Upgrades
- Replace Non-Condensing with Condensing Boilers

Energy Management Tools



Spreadsheets

Good

- First step in understanding energy usage.
- Readily accessible tool for organizing utility data
- Low cost or no cost to implement
- Useful for initial awareness of utility usage and costs



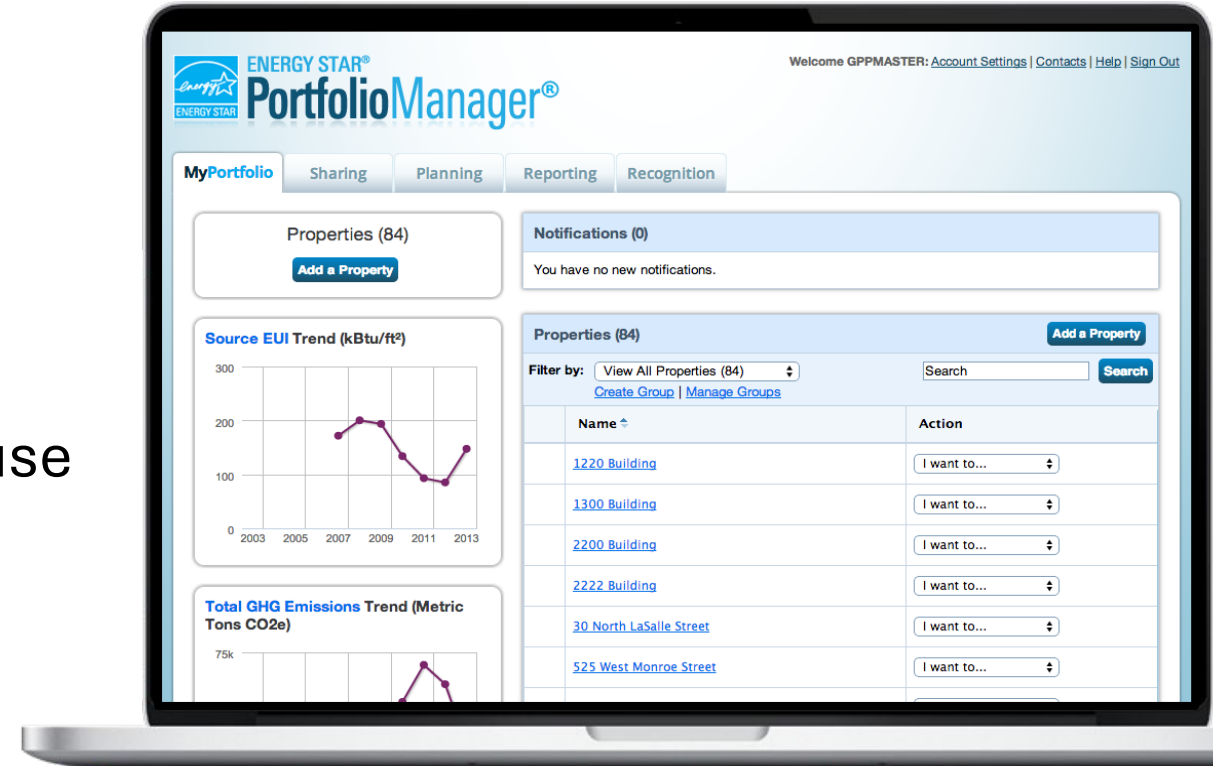
S.F. = 150,000 **Electric** \$ / kWh = \$ 0.1183 \$ / S.F. = \$ 1.355
 Utility: Consumers Eenergy Meter #: 98765432 \$ / kW = \$ 66.135 BTU / S.F. = 21,548
 Account #: 12345678 \$ / Cmp = \$ 0.2145

Year	Month	Read Dates		On Peak Consumpton		On Peak Demand		Adjustments	Customer Charge	Total \$
		Start	End	kWh	\$	kW	\$			
2025	Jan	12/31/24	to 1/31/25	78,512	\$ 8,627	541.0	\$ 7,574	\$ -	\$ 20	\$ 16,221
2025	Feb	1/31/25	to 2/28/25	73,628	\$ 8,296	561.0	\$ 7,574	\$ -	\$ 20	\$ 15,890
2025	Mar	2/28/25	to 3/31/25	78,972	\$ 8,737	544.0	\$ 7,574	\$ -	\$ 20	\$ 16,331
2025	Apr	3/31/25	to 4/30/25	74,516	\$ 8,120	850.0	\$ 7,574	\$ -	\$ 20	\$ 15,714
2025	May	4/30/25	to 5/31/25	74,576	\$ 8,006	1,042.0	\$ 7,574	\$ -	\$ 20	\$ 15,600
2025	Jun	5/31/25	to 6/30/25	78,172	\$ 8,574	887.0	\$ 7,574	\$ -	\$ 20	\$ 16,168
2025	Jul	6/30/25	to 7/31/25	103,436	\$ 13,434	1,136.0	\$ 7,574	\$ -	\$ 20	\$ 21,028
2025	Aug	7/31/25	to 8/31/25	88,584	\$ 12,457	1,090.0	\$ 7,574	\$ -	\$ 20	\$ 20,051
2025	Sep	8/31/25	to 9/30/25	81,692	\$ 9,638	963.0	\$ 7,574	\$ -	\$ 20	\$ 17,232
2025	Oct	9/30/25	to 10/31/25	82,252	\$ 10,121	1,374.3	\$ 7,574	\$ -	\$ 20	\$ 17,715
2025	Nov	10/31/25	to 11/30/24	69,404	\$ 8,133	958.0	\$ 7,574	\$ -	\$ 20	\$ 15,727
2025	Dec	11/30/24	to 12/31/24	63,540	\$ 7,936	538.0	\$ 7,574	\$ -	\$ 20	\$ 15,530
Total				947,284	\$ 112,079	1,374.3	\$ 90,888	\$ -	\$ 240	\$ 203,207

Energy Star Portfolio Manager – Better

Management Tool

- Assess whole building energy and water consumption, plus waste
- Track green power purchase
- Share/report data with others
- Track changes in energy, water, greenhouse gas emissions, and cost over time
- Create custom reports
- Apply for ENERGY STAR certification



Energy Star Portfolio Manager – Better



Sample ENERGY STAR Progress and Goals Report

Create your own Progress and Goals Report to review your building's energy use (baseline and current) and compare your actual energy use against your target and the national median.

ENERGY STAR® Progress & Goals Report

LEARN MORE AT
energystar.gov

71

ENERGY STAR®
Score¹

Sample Property

Primary Property Function: Office
Gross Floor Area (ft²): 51,000
Built: 1951

Property Address:
Sample Property
123 Main St
Boston, Massachusetts 02134

For Year Ending: August 31, 2014
Date Generated: October 01, 2014

Property ID: 3681885

1. The ENERGY STAR score is a 1-100 assessment of a building's energy efficiency as compared with similar buildings nationwide, adjusting for climate and business activity.

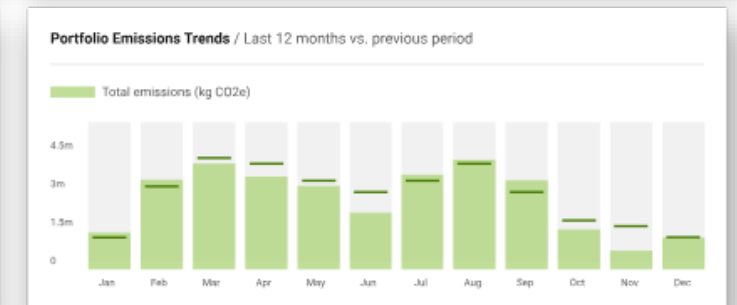
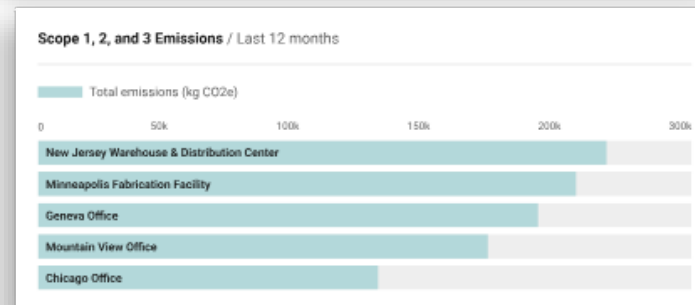
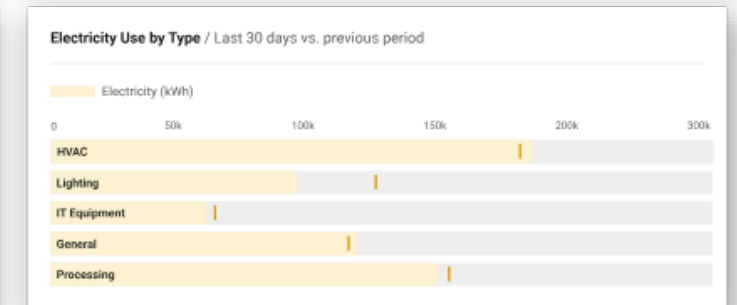
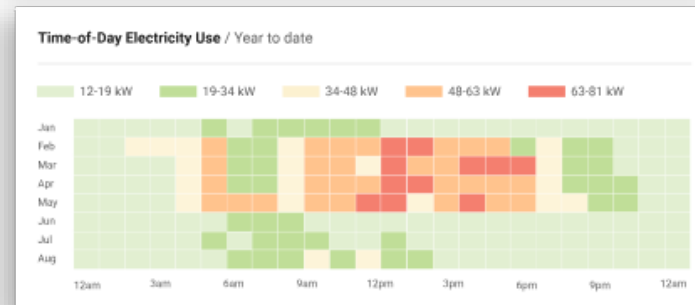
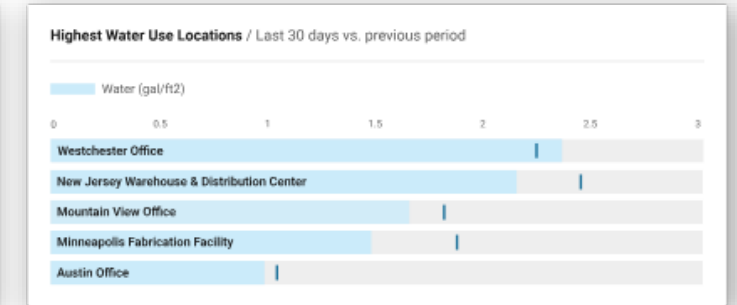
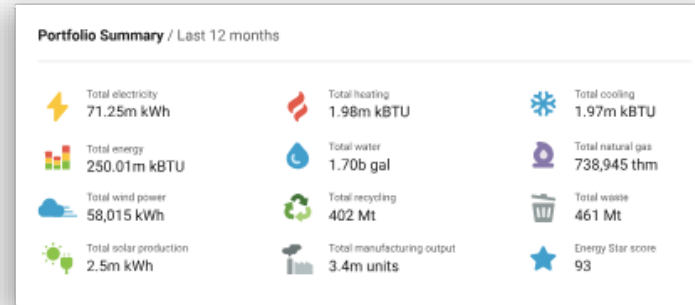
Performance Comparison

	Progress			Performance Goals		
	Year Ending 12/31/2012 (Baseline)	Year Ending 8/31/2014 (Selected)	% Change	Property's Target	National Median	ENERGY STAR Score of 75
ENERGY STAR Score	61	71	14	85	50	75
Energy						
Site EUI (kBtu/ft ²)	59.5	71.9	-17.25	57.8	92.7	68.5
Source EUI (kBtu/ft ²)	186.8	169	10.53	135.8	217.8	161.1
\$	88,999.01	83,409.65	-6.28	67,052.54	107,513.12	79,465.38
\$/ft ²	1.75	1.64	-6.28	1.31	2.11	1.56
Greenhouse Gas Emissions						
Metric Tons CO ₂ e/year	293.5	295.3	0.61	237.4	380.6	281.3
kgCO ₂ e/ ft ² /year	5.8	5.8	0.61	4.7	7.5	5.5
Water						
All Water Consumption (kgal)	300	295	-1.67	*	*	*
Indoor Water Consumption (kgal)	300	295	-1.67	*	*	*
Indoor Water Consumption (kgal/ft ²)	5.88	5.78	-1.67	*	*	*
\$	450	442.51	-1.66	*	*	*

*Setting and managing water targets is not yet available in Portfolio Manager.

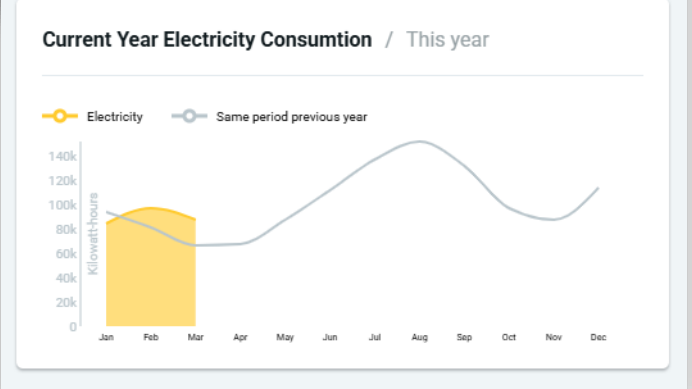
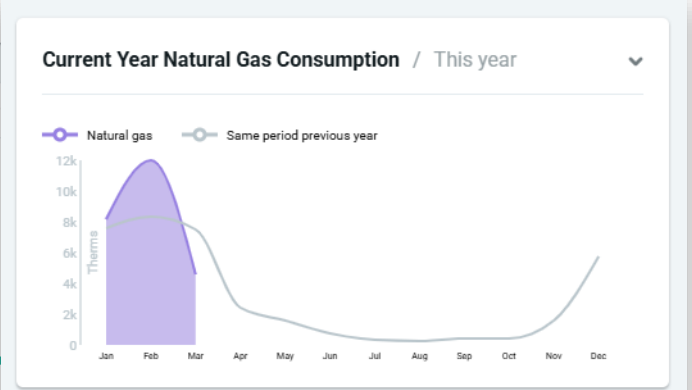
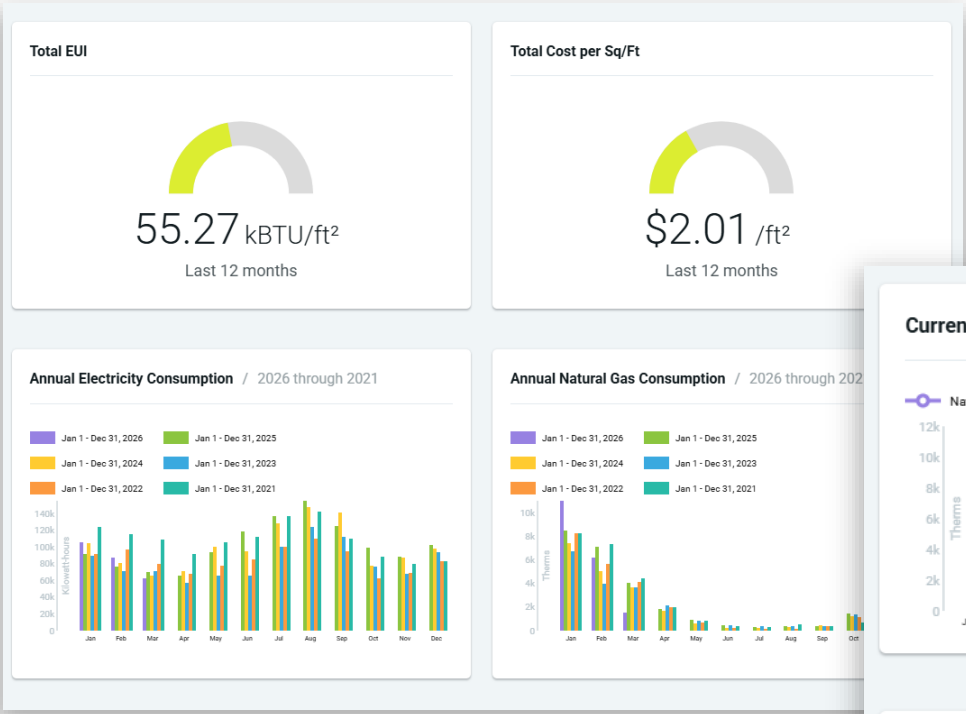
Building Management Software – Best

- Energy and utility data management platform
- Centralizes electric, gas, water, steam and sub-meter data
- Turns raw utility bills into actionable insights
- Real-time dashboards and custom reporting



Building Management Software – Best

- Automated utility bill ingestion (no manual spreadsheets)
- Weather normalization and EUI benchmarking
- Enter and keep a log of work orders.



Vendor Neutral vs. Proprietary

*What makes a control system
“vendor neutral”?*

**Products to expand or modify the system
can be purchased from multiple sources.**

*What makes a control
system proprietary?*

**Product can only be purchased from a
single source – regardless of protocol.**

Proprietary Manufacturers

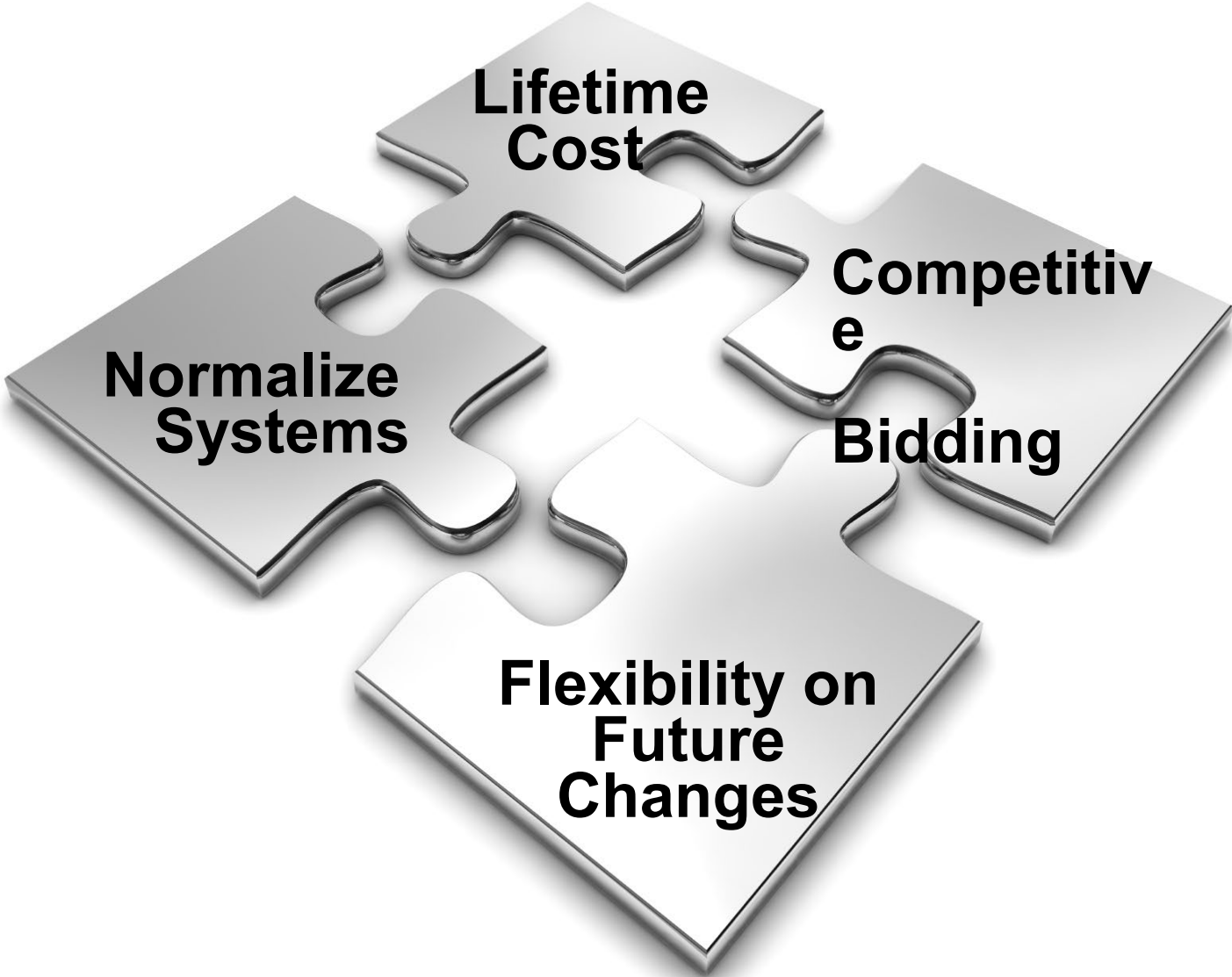


SIEMENS



Honeywell

Vendor Neutral Vs. Proprietary Considerations



Lifetime Cost Considerations

- Maintenance and servicing options
- Upgrade/Expansion options available with open protocol



Normalized System

Efficiencies and cost savings

- Visible, front-end display dashboard
- Plug in existing equipment
- Time savings



Open Protocol Controls

Benefits:

- Guards against obsolescence
- Allows competitive bids
- Unified user interface
- Scalability
- Can be serviced by local dealers
- Integrates with existing systems to extend life

DISTECH
CONTROLS™

TRIDIUM

ALERTON

The logo for Delta Controls features a red triangle on the left, followed by the word "Delta" in a large, grey, sans-serif font, and the word "CONTROLS" in a smaller, grey, sans-serif font below it. A trademark symbol (TM) is located to the upper right of the word "Delta".
Delta
CONTROLS™

Systems Universe

- Honeywell Spyder
- Automated Logic
- Schneider Vista
- Schneider I/A
- Schneider Invensys
- Johnson Controls
- Siemens
- Carrier CCN
- Reliable
- Trane Tracer SC
- KMC BACnet Digital



Benefits

- **A customized control solution:** Each client is unique
- **Web-based energy optimization services:** Collaborative interface and performance assurance staff for monitoring, analyzing and optimizing energy consumption
- **Four-season optimization:** Establishes a benchmark at project completion for monitoring indoor air quality
- **Automated alarm alerts:** Provides text messaging and/or email alerts for timely notification of building conditions.
- **Operational services:** Scheduling support, consultation and assistance to facility managers to supplement facility resources

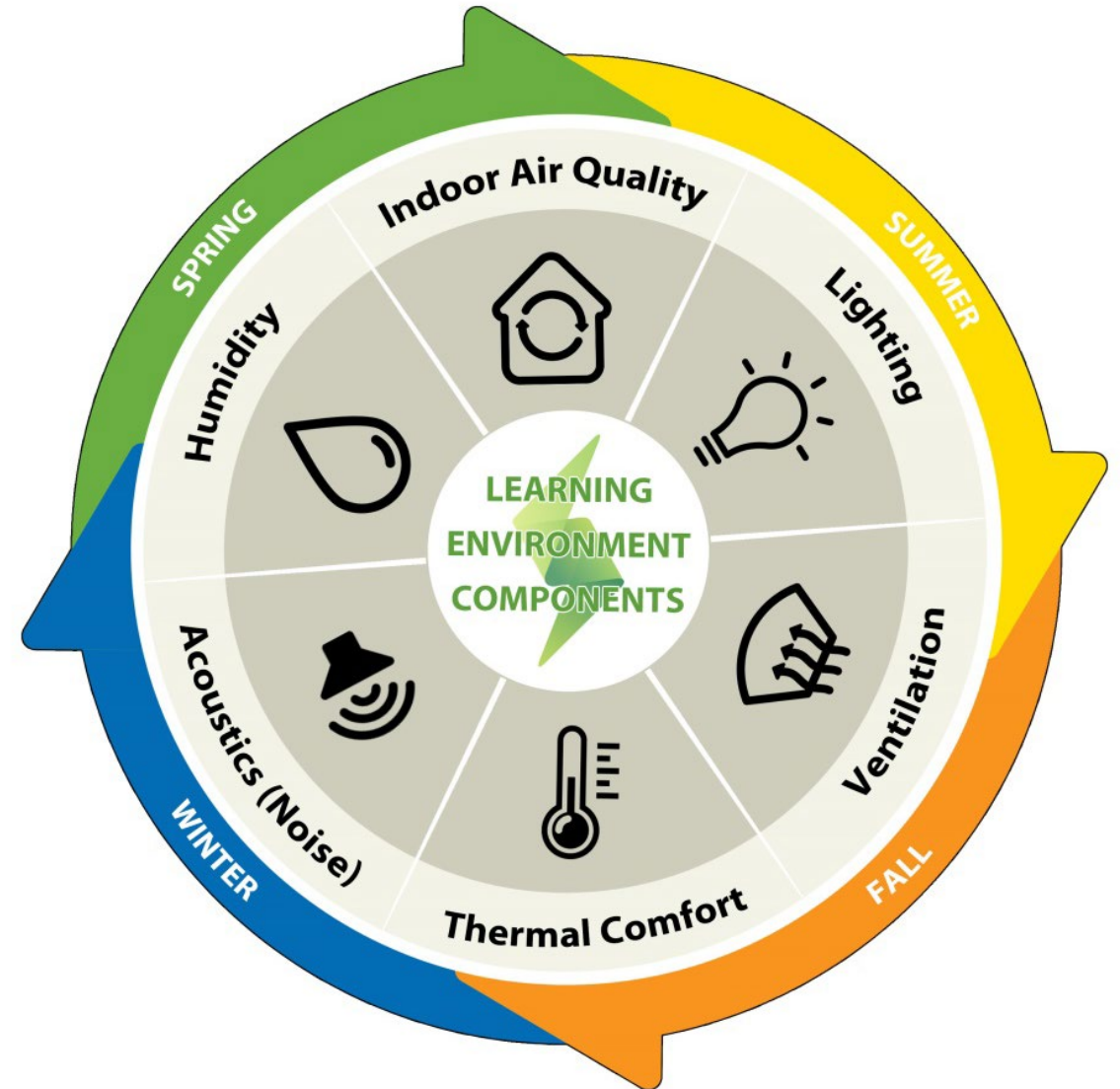


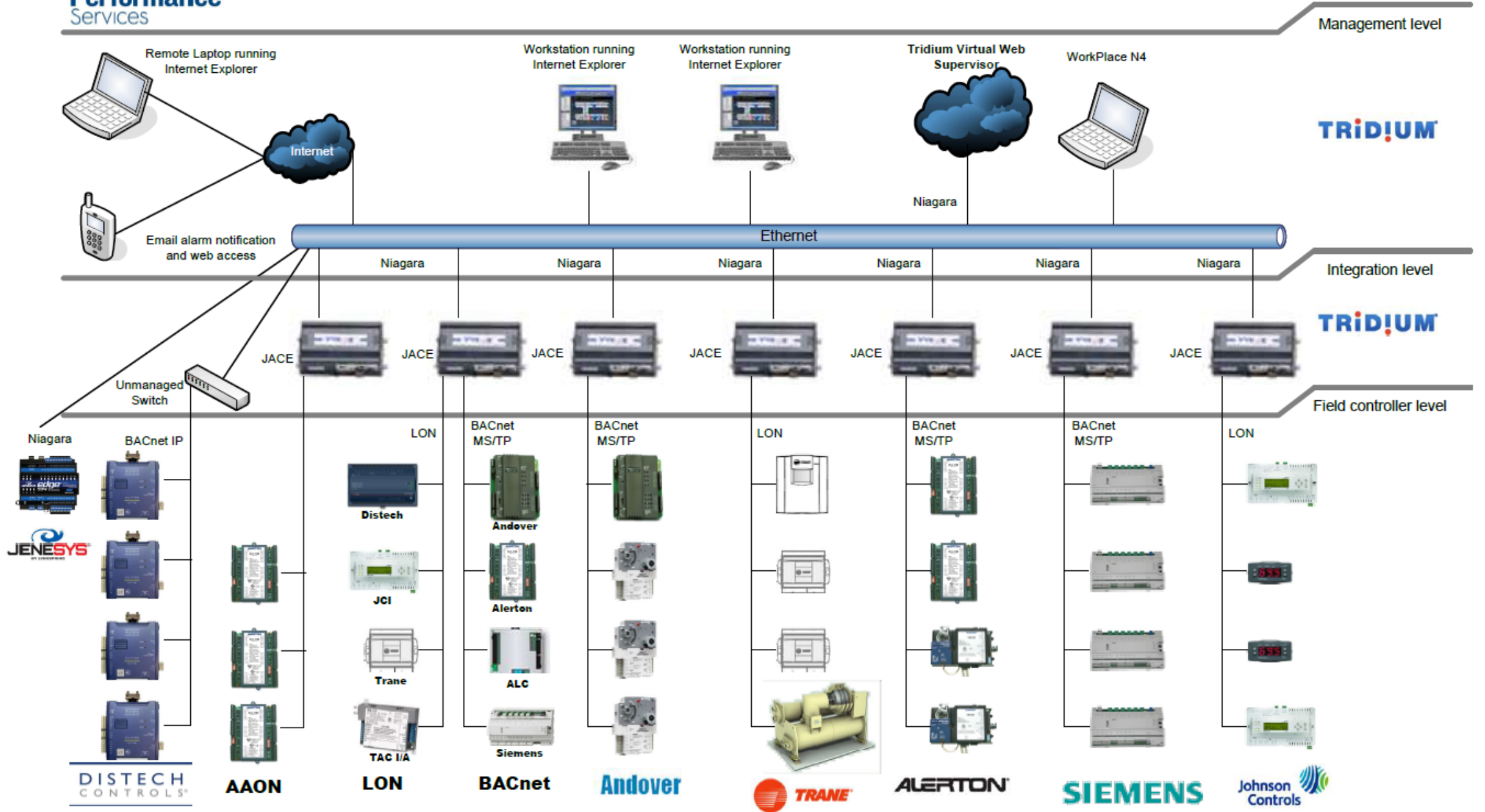
Controls Approach Comparison

Factor	Vendor-Neutral Platform	Proprietary Manufacturer
Competitor products can reside on same system	Yes	Yes*
Cost effective changes and/or additions	Yes	No*
Service options	Yes	No
Owner controls the software	Yes	No
Functionality of day-to-day tasks	Yes	Yes

Four Season-Optimization

Each season for 12 months after project completion, we optimize building controls to ensure mechanical and control elements work as specified.





Management level

TRIDIUM

Integration level

TRIDIUM

Field controller level

Center for Math and Science



ALARMS

EMERGENCY	CRITICAL	MAINTENANCE
0	0	0

TEMPERATURE

AVG TEMP	MIN TEMP	MAX TEMP
70.3 °F	68.5 °F	74.0 °F

WEATHER

OSA TEMP	OSA HIGH	OSA LOW
70.9 °F	77.0 °F	53.0 °F

Denkman Elementary School



ALARMS

EMERGENCY	CRITICAL	MAINTENANCE
0	1	0

TEMPERATURE

AVG TEMP	MIN TEMP	MAX TEMP
72.3 °F	69.5 °F	75.4 °F

WEATHER

OSA TEMP	OSA HIGH	OSA LOW
72.8 °F	77.0 °F	53.0 °F

Eugene Field Elementary School



ALARMS

EMERGENCY	CRITICAL	MAINTENANCE
0	0	0

TEMPERATURE

AVG TEMP	MIN TEMP	MAX TEMP
71.7 °F	61.0 °F	73.4 °F

WEATHER

OSA TEMP	OSA HIGH	OSA LOW
70.9 °F	77.0 °F	53.0 °F

Earl Hanson Elementary School



ALARMS

EMERGENCY	CRITICAL	MAINTENANCE
0	0	0

TEMPERATURE

AVG TEMP	MIN TEMP	MAX TEMP
72.3 °F	70.3 °F	73.4 °F

WEATHER

OSA TEMP	OSA HIGH	OSA LOW
70.9 °F	77.0 °F	53.0 °F

Edison Junior High School



ALARMS

EMERGENCY	CRITICAL	MAINTENANCE
0	5	0

TEMPERATURE

AVG TEMP	MIN TEMP	MAX TEMP
72.2 °F	68.3 °F	78.1 °F

WEATHER

OSA TEMP	OSA HIGH	OSA LOW
70.9 °F	77.0 °F	53.0 °F

Francis Willard Elementary School



ALARMS

EMERGENCY	CRITICAL	MAINTENANCE
0	0	0

TEMPERATURE

AVG TEMP	MIN TEMP	MAX TEMP
72.8 °F	70.6 °F	75.9 °F

WEATHER

OSA TEMP	OSA HIGH	OSA LOW
65.6 °F	77.0 °F	53.0 °F

Horace Mann Early Learning Center



ALARMS

EMERGENCY	CRITICAL	MAINTENANCE
0	1	0

TEMPERATURE

AVG TEMP	MIN TEMP	MAX TEMP
72.1 °F	68.8 °F	74.1 °F

WEATHER

OSA TEMP	OSA HIGH	OSA LOW
70.9 °F	77.0 °F	53.0 °F

Longfellow Elementary School



ALARMS

EMERGENCY	CRITICAL	MAINTENANCE
0	0	0

TEMPERATURE

AVG TEMP	MIN TEMP	MAX TEMP
72.7 °F	70.6 °F	75.7 °F

WEATHER

OSA TEMP	OSA HIGH	OSA LOW
70.9 °F	77.0 °F	53.0 °F

Ridgewood Elementary School



ALARMS

EMERGENCY	CRITICAL	MAINTENANCE
0	0	0

TEMPERATURE

AVG TEMP	MIN TEMP	MAX TEMP
72.5 °F	69.7 °F	74.4 °F

WEATHER

OSA TEMP	OSA HIGH	OSA LOW
70.9 °F	77.0 °F	53.0 °F

Rock Island Academy



ALARMS

EMERGENCY	CRITICAL	MAINTENANCE
1	7	0

TEMPERATURE

AVG TEMP	MIN TEMP	MAX TEMP
72.3 °F	68.7 °F	76.8 °F

WEATHER

OSA TEMP	OSA HIGH	OSA LOW
73.4 °F	77.0 °F	53.0 °F

Rock Island High School



ALARMS

EMERGENCY	CRITICAL	MAINTENANCE
0	5	0

TEMPERATURE

AVG TEMP	MIN TEMP	MAX TEMP
73.6 °F	73.1 °F	74.5 °F

WEATHER

OSA TEMP	OSA HIGH	OSA LOW
72.8 °F	77.0 °F	53.0 °F

Thomas Jefferson Elementary School



ALARMS

EMERGENCY	CRITICAL	MAINTENANCE
0	6	0

TEMPERATURE

AVG TEMP	MIN TEMP	MAX TEMP
72.1 °F	69.4 °F	75.2 °F

WEATHER

OSA TEMP	OSA HIGH	OSA LOW
70.9 °F	77.0 °F	53.0 °F

Thurgood Marshall Learning Center



ALARMS

EMERGENCY	CRITICAL	MAINTENANCE
0	2	0

TEMPERATURE

AVG TEMP	MIN TEMP	MAX TEMP
72.9 °F	70.6 °F	75.8 °F

WEATHER

OSA TEMP	OSA HIGH	OSA LOW
71.1 °F	77.0 °F	53.0 °F

Washington Jr. High School



ALARMS

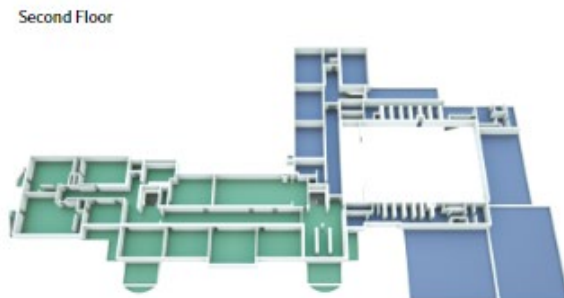
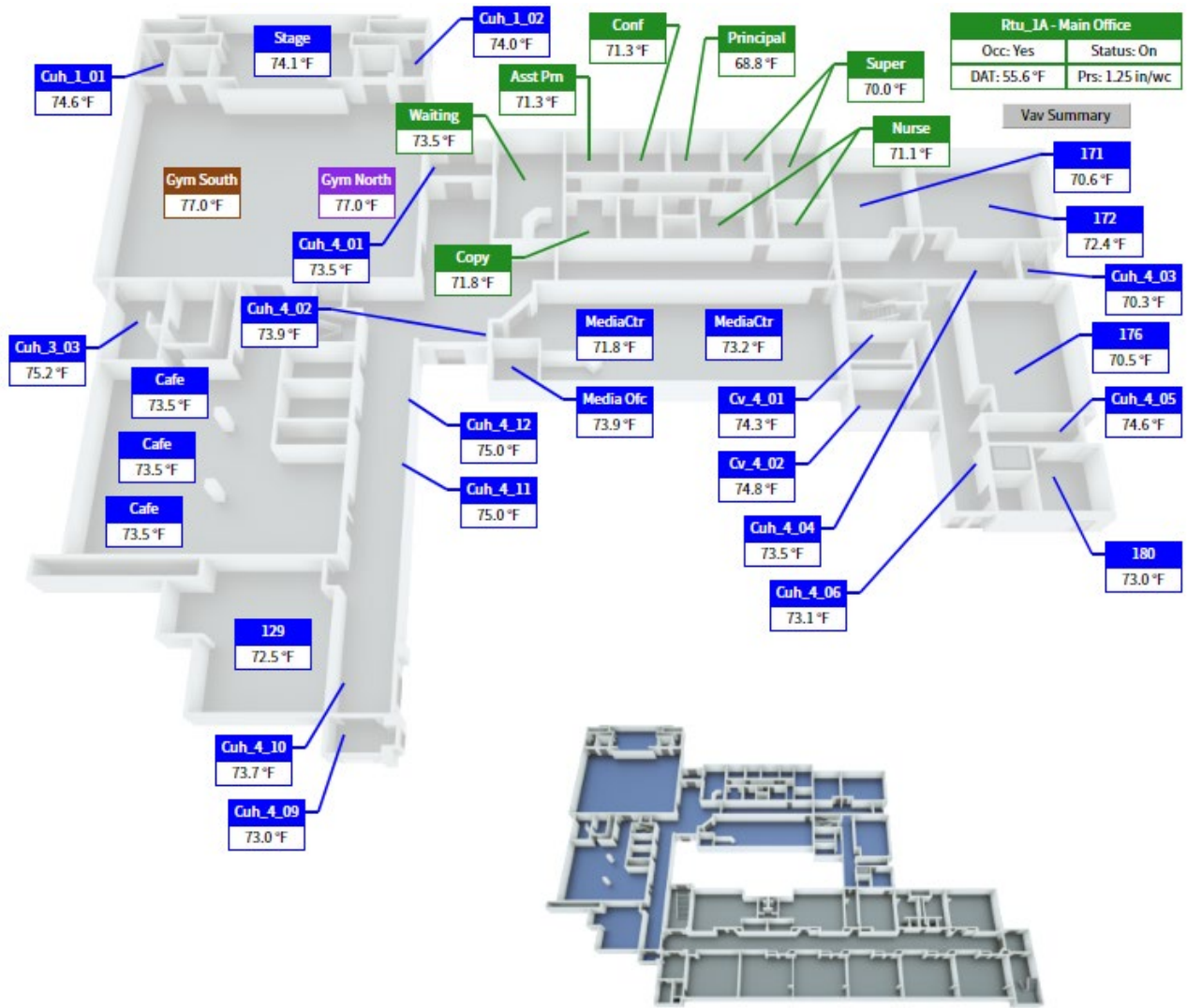
EMERGENCY	CRITICAL	MAINTENANCE
0	1	0

TEMPERATURE

AVG TEMP	MIN TEMP	MAX TEMP
71.0 °F	68.1 °F	75.3 °F

WEATHER

OSA TEMP	OSA HIGH	OSA LOW
73.4 °F	77.0 °F	53.0 °F



Ventilation Units

Rtu_E01 - Rm 108,109,209&210	Vav
Rtu_E02 - Rm 110, 211 & 212	Vav
Rtu_E03 - Rm 207, 208 & MC N	Vav
Rtu_E04 - Rm Art,111B,213&21	Vav
Rtu_E05 - Rm 205, 206 & MC S	Vav
Rtu_E06 - Rm 215, 216 & Admir	Vav
Rtu_E07 - Rm 1-2,103,203&204	Vav
Rtu_E08 - Rm 1-1N, 102 & 202	Vav
Rtu_E09 - Rm 1-1S, 101 & 201	Vav
Rtu_E10A - Cafe N	
Rtu_E10B - Cafe S	
Rtu_E12 - Music	
Rtu_E13 - Band	
Ahu_E1A - Main Gym E	
Ahu_E1B - Main Gym W	
Ahu_E2A - Small Gym N	
Ahu_E2B - Small Gym S	
Ahu_E11 - Kitchen	

Building Info

OsaTemp	71.8 °F
OsaHumidity	45.3 %
SpaceTempMin	68.3 °F
SpaceTempMax	78.3 °F
SpaceTempAvg	72.2 °F
OsaForceMin	No
OsaLockout	No
OsaLockoutMin	No
EmergencyShutdown	No

Summaries

Air Handler Units
All Vavs
IP Devices

Legend

Overriden
Fault
Down
Disabled
Alarm
Stale

Modes			
Occ	Occupied		
Dehum	No	NightClg	No
WarmUp	No	HwAvl	Yes
CoolDn	No	ChwAvl	No
NightHtg	No	Econ	Yes

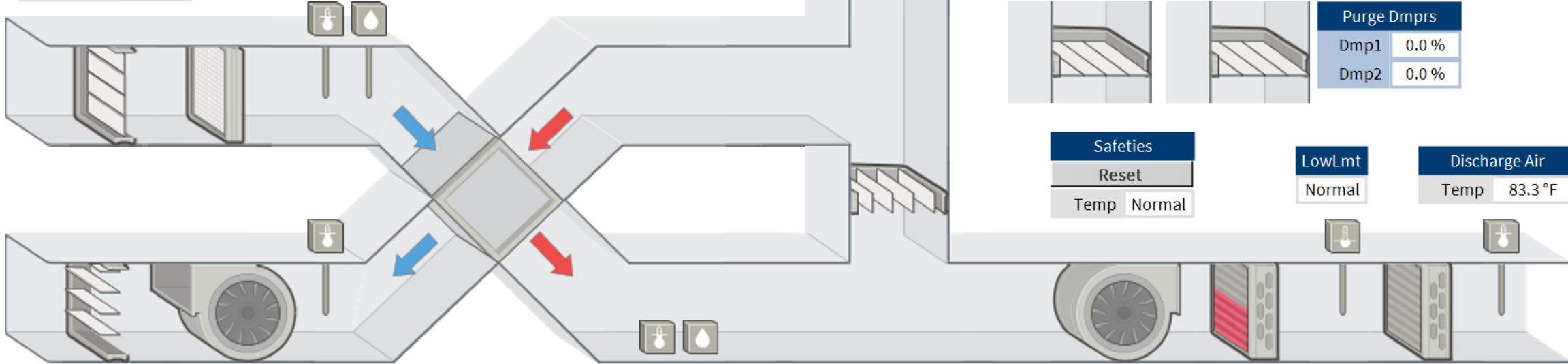
Point Details

West Gym
Ahu_1A

Outside	
Temp	54.0 °F

Space	
Temp	66.3 °F
Stpt	67.0 °F
UnoccClg	80.0 °F
UnoccHtg	79.5 °F
Co2	495 ppm
Co2Stpt	1100 ppm
Humid	38.5 %RH

OutsideAir	
Cmd	10.0 %
Temp	54.0 °F
Humid	0.0 %RH



Smoke
Normal

Return Air	
Temp	66.2 °F

Purge Dmprs	
Dmp1	0.0 %
Dmp2	0.0 %

Safeties	
Reset	
Temp	Normal

LowLmt	
Normal	

Discharge Air	
Temp	83.3 °F

Exhaust Fan	
Cmd	On
Speed	25.0 %
Status	On
Failure	Normal

Hrw Exhaust Air	
Temp	64.4 °F

HX Air	
FB Dmprs	100.0 %
Temp	66.6 °F
Humid	0.0 %RH

Supply Fan	
Cmd	On
Speed	25.0 %
Status	On
Failure	Normal

HW Valve	
Cmd	41.6 %

CHW Valve	
Cmd	0.0 %

HW Pump	
Cmd	Off
Status	Off



District Examples

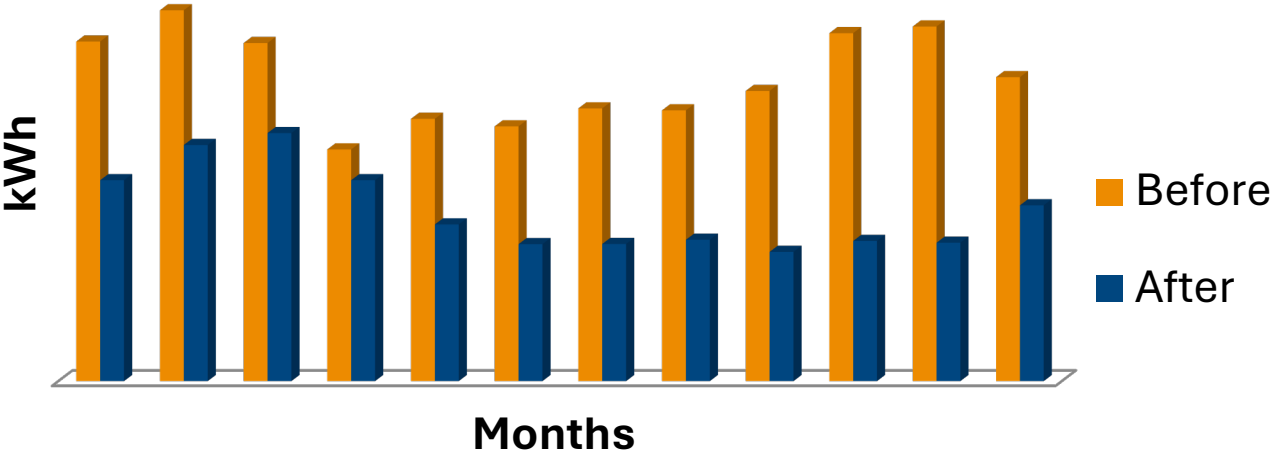


District Example #1

	# of Buildings included	Total Square Footage	ECM Investment	Total Annual Savings	Electricity Saved (kWh)	Natural Gas Saved (MMBTU)	15 Year Cum Cash Flow
Total	5	665,157	\$17,960,350	\$430,857	3,769,571	147,307	\$2,901,375

Implemented Projects

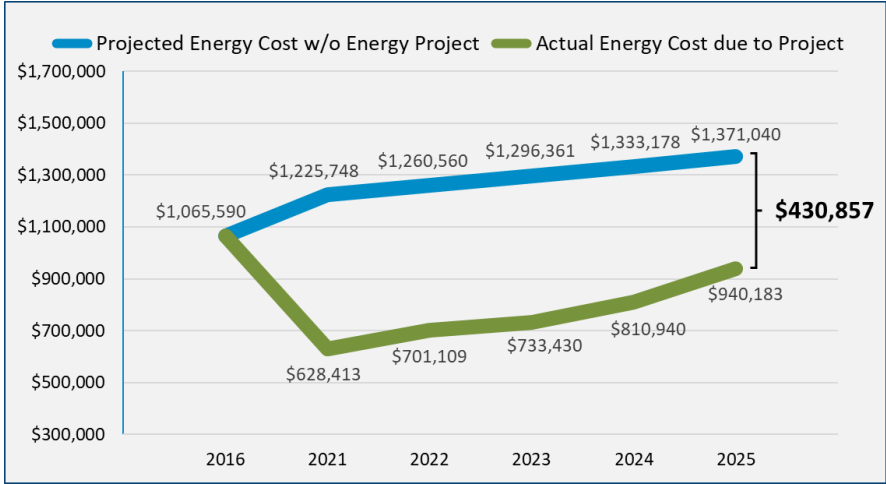
- Air Handling Unit Replacement
- Unit Ventilator Replacement
- Select Chiller and Boiler Replacement
- Select Window Replacement
- Lighting Replacement/Retrofit
- Temperature Control Replacement



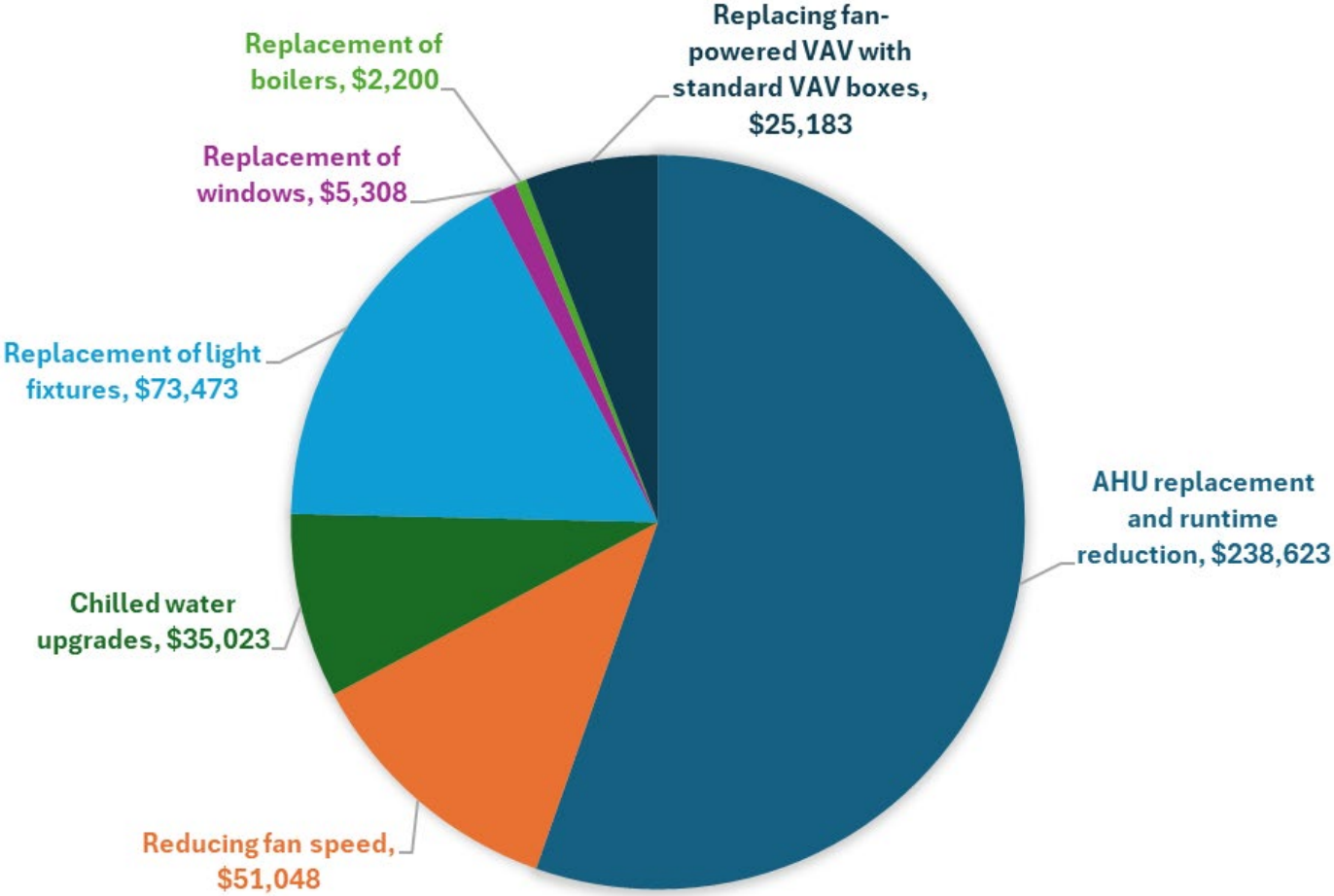
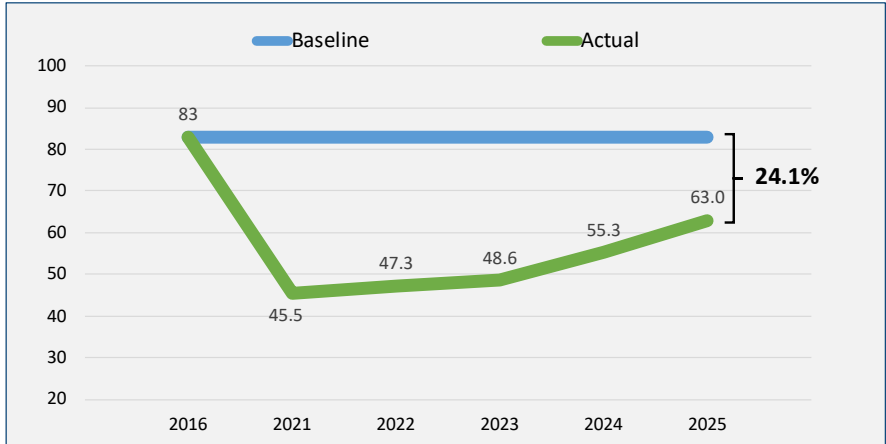
District-wide kWh Usage Profile

District Example #1

Total Cost Avoidance



Energy Use Comparison (EUI)

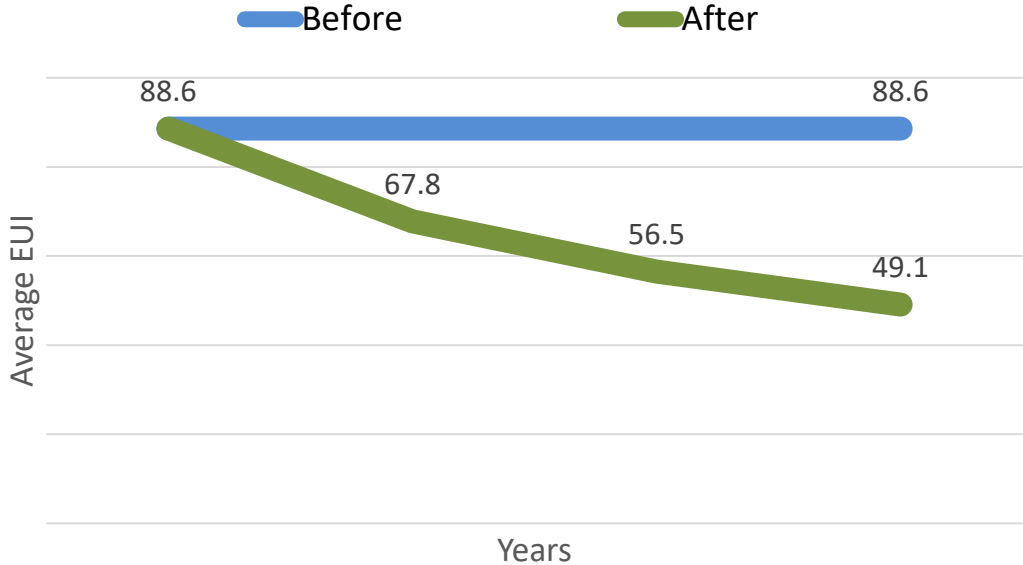


District Example #2

	# of Buildings included	Total Square Footage	ECM Investment	Total Annual Savings	Electricity Saved (kWh)	Natural Gas Saved (MMBTU)	15 Year Cum Cash Flow
Total	23	1,129,152	\$18,425,720	\$536,596	4,728,716	333,349	\$8,048,940

Implemented Projects

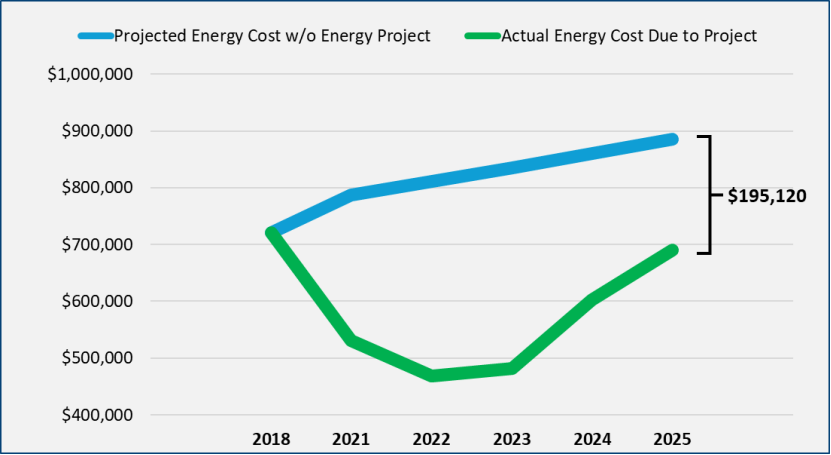
- Select Chiller and Boiler Replacement
- Select Air Handling Unit Replacement
- Lighting Replacement/Retrofit
- Select Temperature Control Replacement
- Retro-commissioning



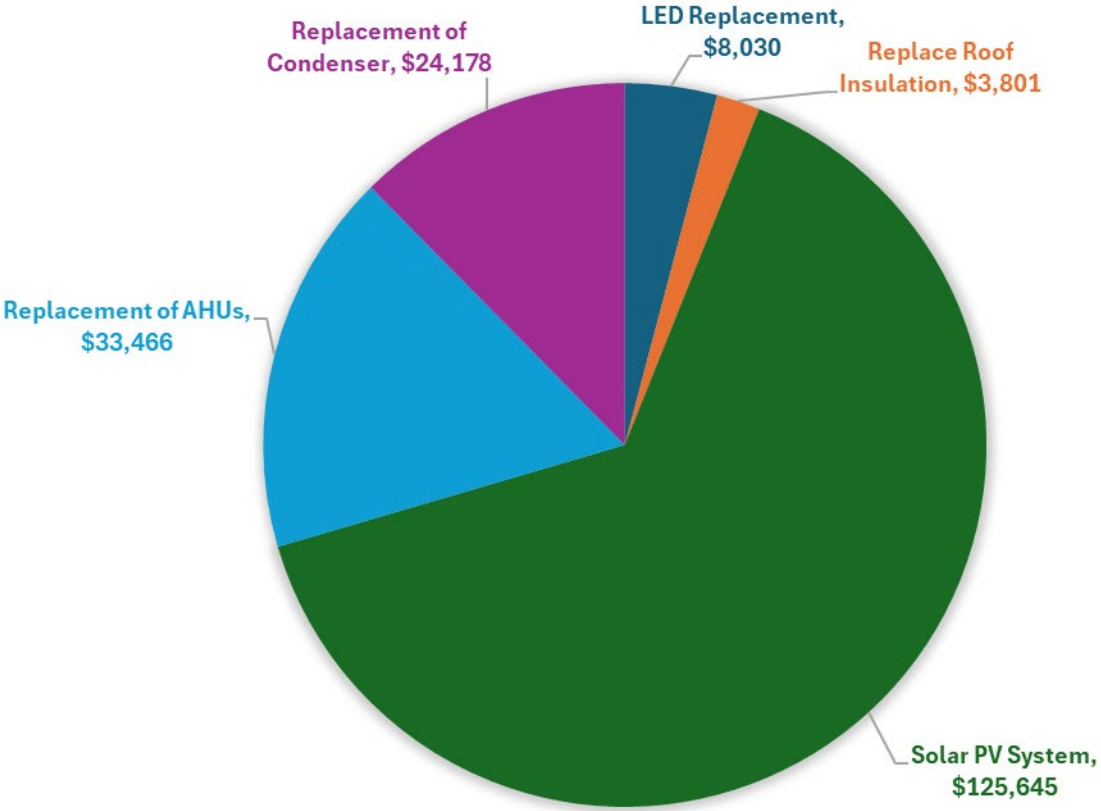
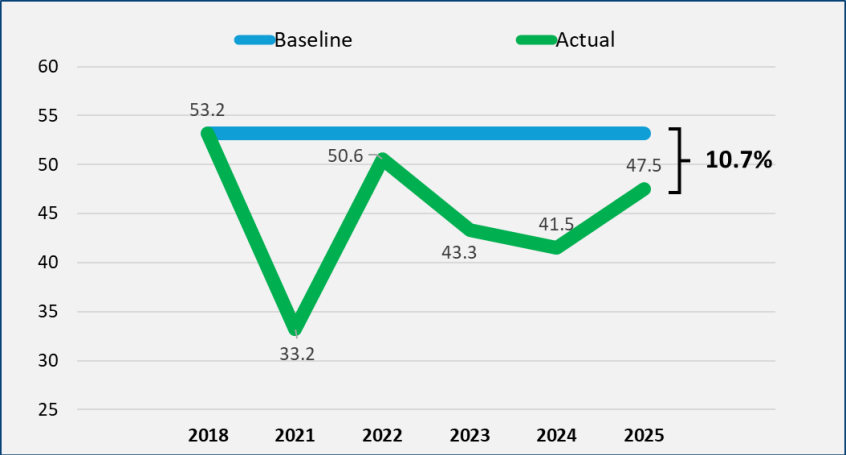
District Wide Energy Use Comparison (EUI)

District Example #2

Total Cost Avoidance



Energy Use Comparison (EUI)

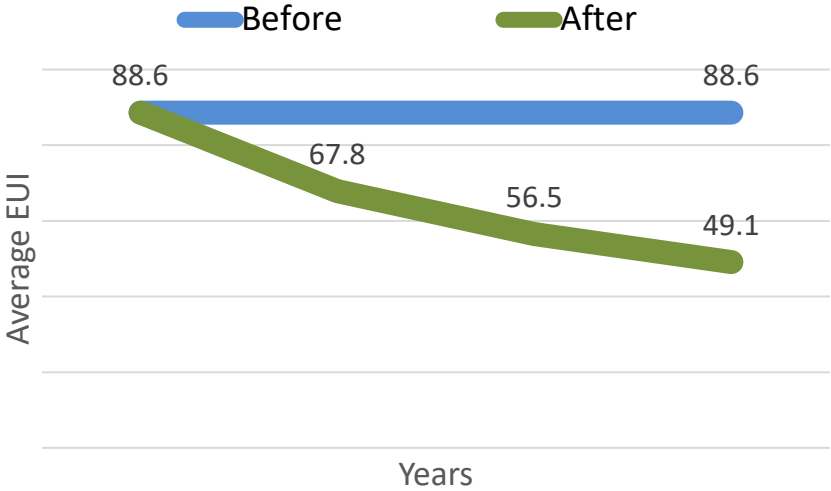


District Example #3

	# of Buildings included	Total Square Footage	ECM Investment	Total Annual Savings	Electricity Saved (kWh)	Natural Gas Saved (MMBTU)	15 Year Cum Cash Flow
Total	23	1,129,152	\$18,425,720	\$536,596	4,728,716	333,349	\$8,048,940

Implemented Projects

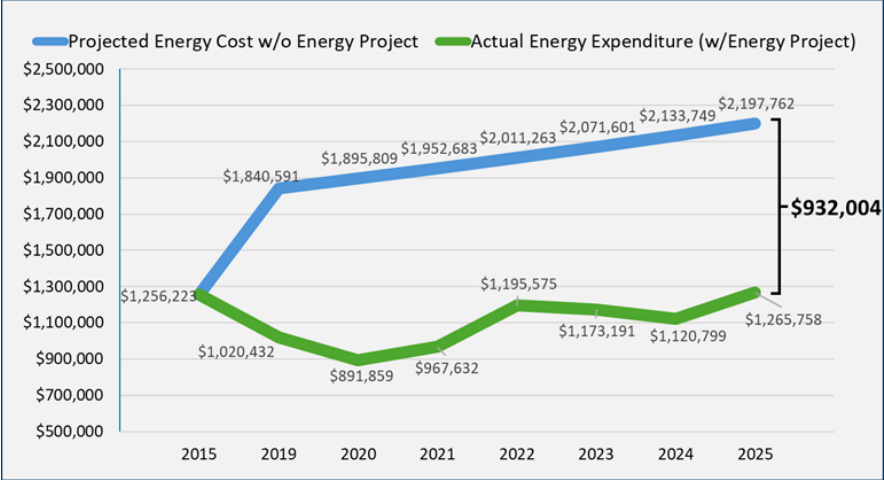
- Select Chiller and Boiler Replacement
- Select Air Handling Unit Replacement
- Lighting Replacement/Retrofit
- Select Temperature Control Replacement
- Retro-commissioning



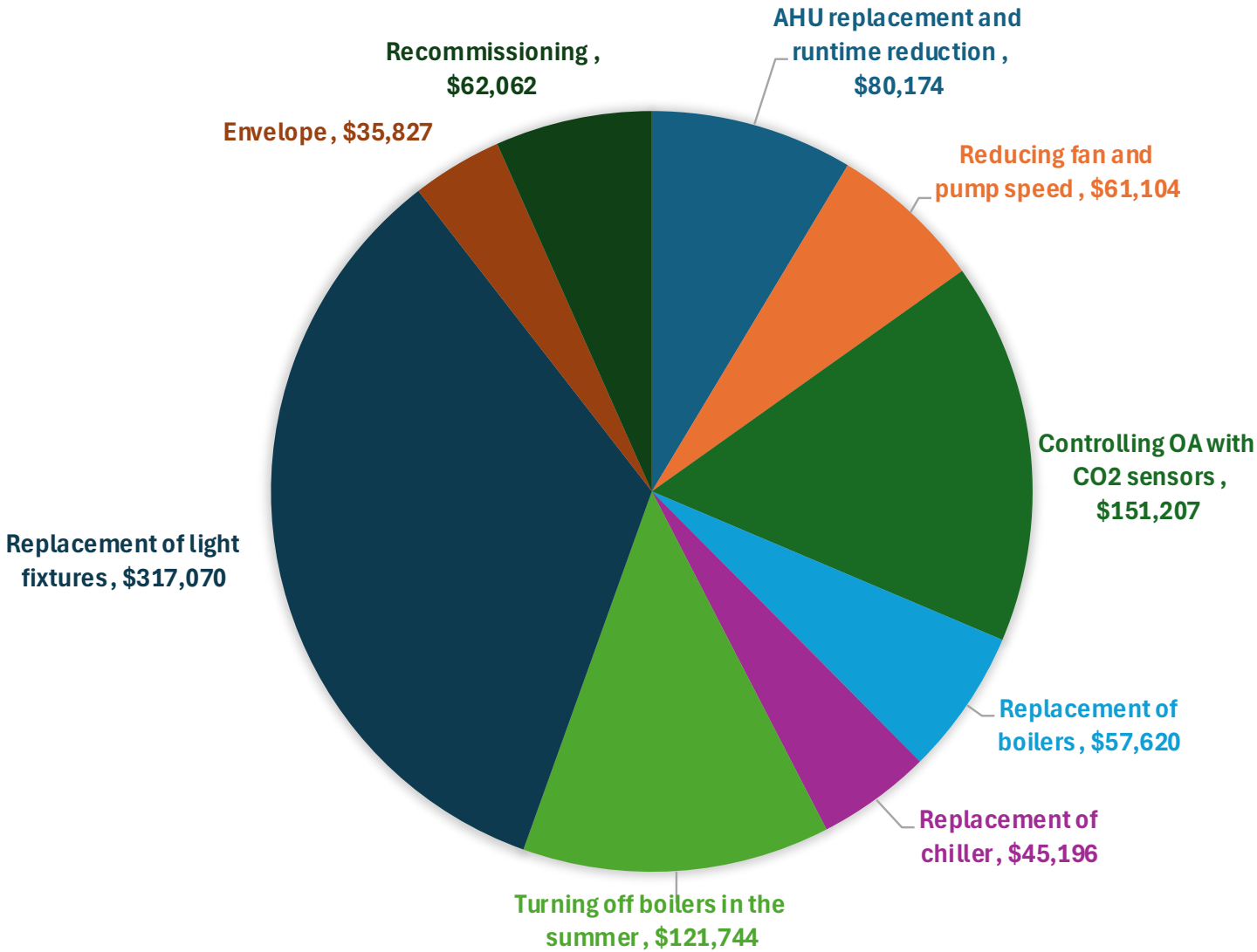
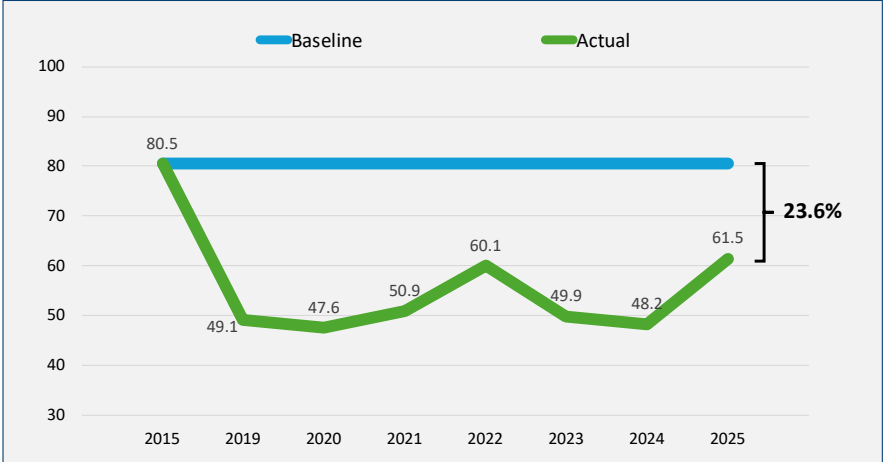
District Wide Energy Use Comparison (EUI)

District Example #3

Total Cost Avoidance



Energy Use Comparison (EUI)



Financing & Funding



Michigan is

1 of 9 states

that lack direct building funding

Ways to Fund School Improvements

Bond Proposals
Traditional Route

Sinking Funds
3mil-10 Year Cap

Non-Voted Options
Energy Bonds, Bank
Financing, Etc.

**Federal Grants and
& Incentives**



Understanding Funding Options:

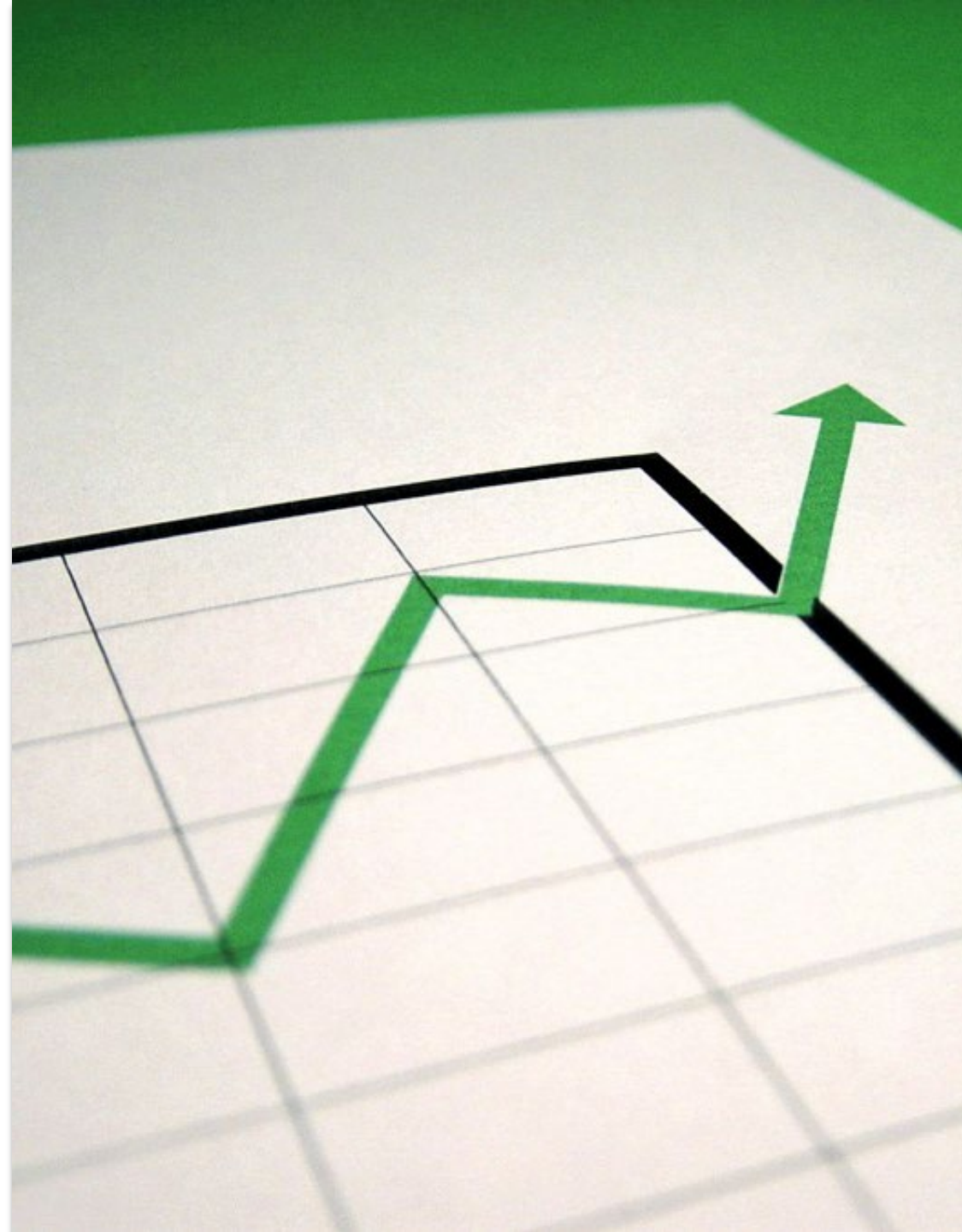
Energy Bonds

- Energy Efficiency, building envelope, renewables & additions
- Board Approval Requirement Only
- Exempt from 5% of SEV debt limit
- Paid from sinking fund or general fund (utility and operational savings)



How Energy Bonds Benefit You

- Protection from Inflation Impacts
- Stretch Existing Bond Dollars
- More Money for Education
- Attraction and Retention
(Students/Staff/Teachers)



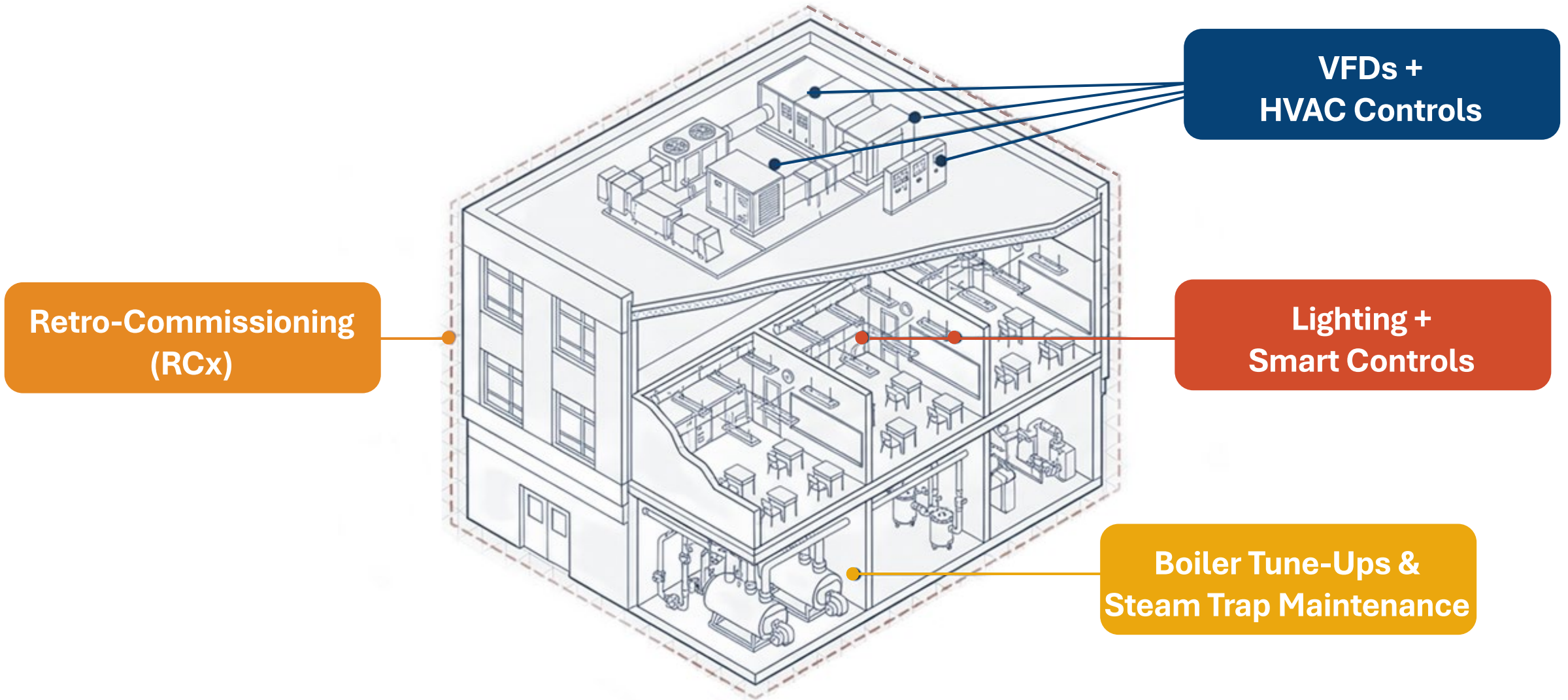
Grants & Incentives



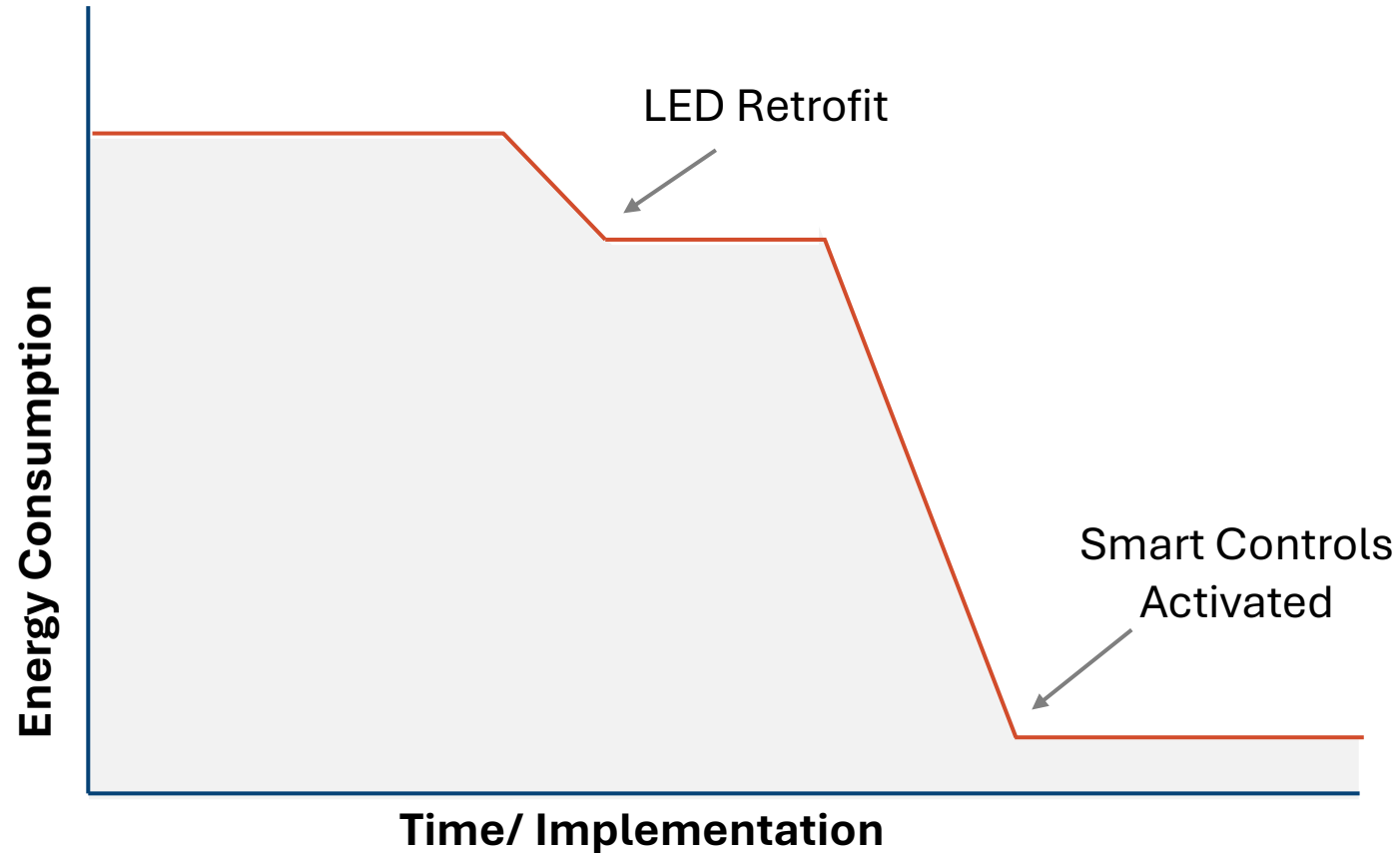
Unlocking Utility Rebates

Program	Fuel	Effort	Strategic Value
Lighting + Controls	Electric	Medium	Largest Electric Savings
Retro-Commissioning (RCx)	Electric & Gas	Low	Low-Cost Operational Gains
Steam Traps	Gas	Low/Medium	Fast Gas Savings
Boiler Tune-Ups	Gas	Low	Preventative Maintenance with Immediate ROI
VFDs+ HVAC	Electric	High	Deep, Long-Term Energy Reduction

Where the Incentives Are



Lighting + Smart Controls: The Largest Electrical Savings



Lighting

Baseline prescriptive rebate for legacy fixture upgrades.



Smart Controls

Drastically increases custom incentive pool via occupancy sensors and scheduling

Retro-Commissioning (RCx):

Low-Cost Operational Gains



The Concept

Calibrating and optimizing existing Building Automation Systems without buying heavy equipment

The Alignment

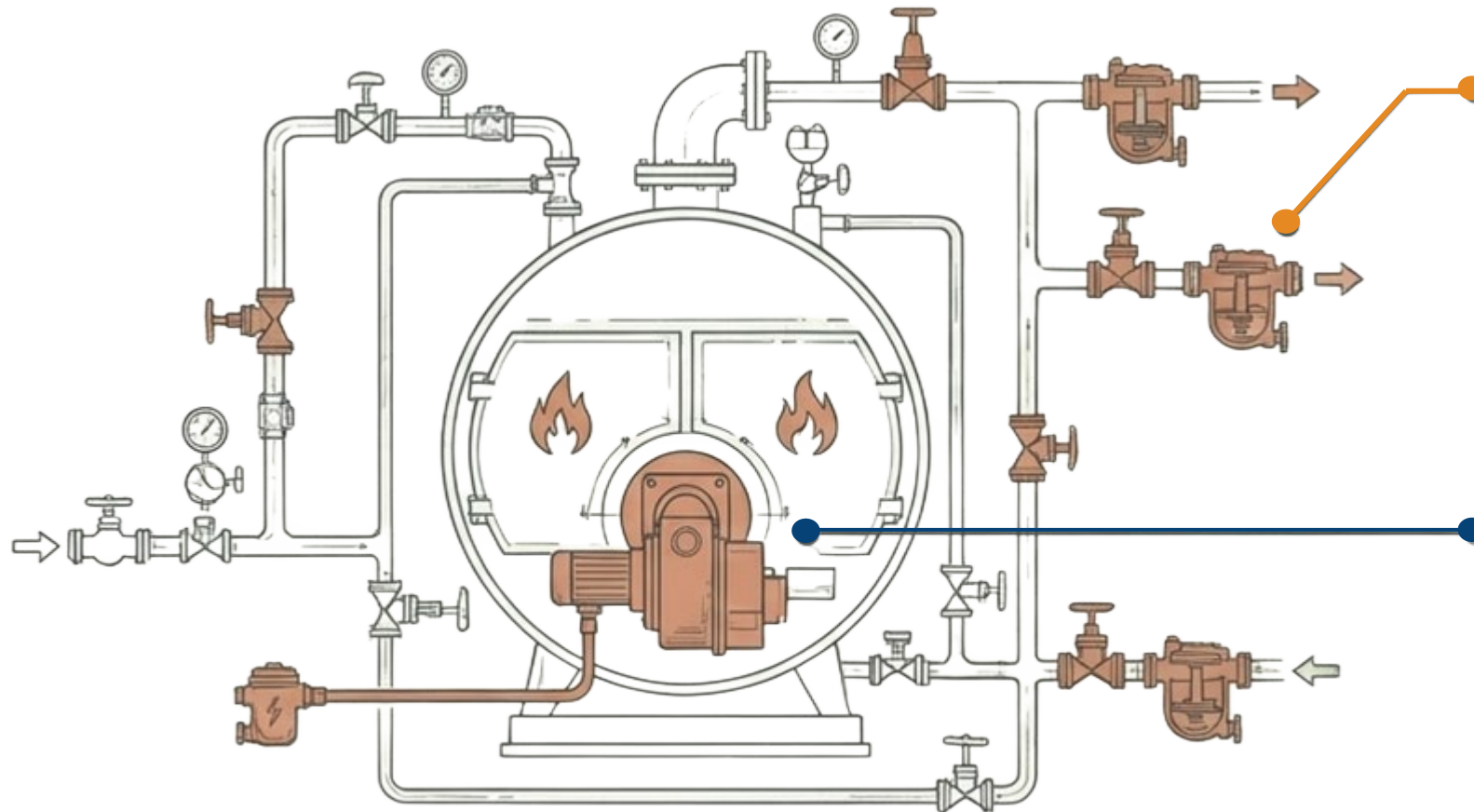
A core strength of DTE Energy's custom incentive structure

The Result

Extracts hidden efficiency from existing equipment, yielding high-margin savings

Fast Gas Savings: Boilers & Steam

High-Impact Optimizations for Immediate Returns



Steam Trap Maintenance

Replacing or repairing failed open/closed traps yields predictable payouts based on published rates (\$/trap)

Boiler Tune-Ups

Annual optimization of the burner and air-to-fuel ratios ensures seasonal efficiency with minimal capital planning

Potential Funding Opportunities

Funding Source	Eligible Activities	Award Information
Section 12e – School Health & Safety Grant (State School Aid)	<ul style="list-style-type: none"> • Improve air quality & ventilation (HVAC, filters, portable HEPA) • Sanitation/cleaning supplies • PPE and other health & safety measures 	<ul style="list-style-type: none"> • Allocation provided to districts (formula-based) <p>Source: FAQ-12e.pdf</p>
Section 31aa – School Safety & Student Mental Health (Michigan State Aid)	<ul style="list-style-type: none"> • School safety staffing, including School Resource Officers • Contracted safety dogs for threat detection • Student mental health professionals (counseling, behavioral health, nursing) 	<p>For FY26 Section 31aa(4) and Section 31aa(5), the Michigan Department of Education has identified total statewide funding levels; however, award amounts will be determined through a competitive review based on each applicant’s proposed scope and budget.</p> <p>Source: Fiscal-Year-26-31aa4-and-5-FAQ32426.pdf</p>
61v Michigan Career & Technical Education (CTE) Expansion Grant (MDE – OCTE)	<ul style="list-style-type: none"> • Expansion of new, state-approved CTE programs • Equipment, startup costs, and program development aligned with high-wage, high-skill, high-demand careers • Focus on addressing CTE access gaps and CTE deserts 	<ul style="list-style-type: none"> • Competitive grant funding • Up to \$400,000 per new CTE program • Local match and in-kind contributions expected <p>Source: 61v Michigan CTE Expansion Grant</p>
School Violence Prevention Program (SVPP) – COPS Office School Violence Prevention Program	<ul style="list-style-type: none"> • School security and threat-prevention infrastructure • Access control, locks, lighting, cameras, and alerting systems • Communication and notification technology for emergency response • Coordination with local law enforcement and school safety planning 	<ul style="list-style-type: none"> • Competitive federal grant funding • Awards of up to \$500,000 per applicant • 25% local cost share required (waivers available for select applicants) <p>Source: https://cops.usdoj.gov/svpp</p>
Clean Air School Challenge (American Lung Association / U.S. EPA-funded program)	<ul style="list-style-type: none"> • Indoor air quality (IAQ) assessments and monitoring • Development of energy-efficient IAQ management plans • Targeted actions to improve classroom air quality and ventilation practices • Staff training and technical assistance related to clean air strategies 	<p>Source: Clean Air School Challenge American Lung Association</p>

Understanding Federal Incentives:

Direct Pay

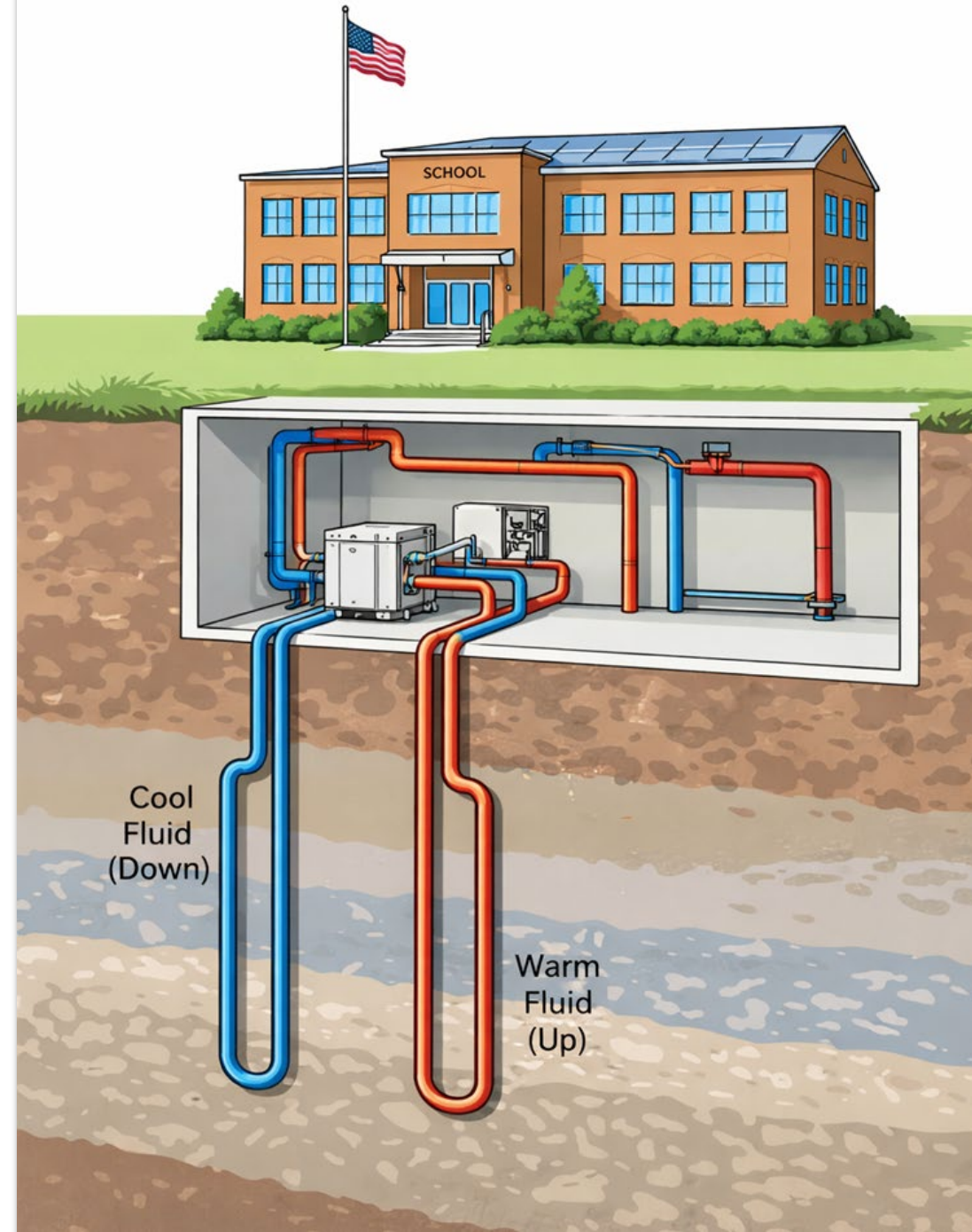
- Schools receive credits as cash payments
- No tax liability required
- Converts incentives into direct project cost reductions
- Available for solar and geothermal projects



Understanding Federal Incentives:

Geothermal

- 30% Federal Tax Credit
- Applies to new construction and major HVAC replacements
- Often stackable with utility rebates and state initiatives
- One of the strongest incentives for full building electrification



Understanding Federal Incentives: Solar

- 30% Investment Tax Credit (ITC) on total solar project cost
- Applies to rooftop, ground, and carport systems
- Covers equipment and installation
- Timing matters: Federal construction and in-service deadlines apply



Facility Assessment Process

1

**Review Situation &
Establish Goals**

2

**Stakeholder
Interviews**

3

**Survey Buildings/
Physical Conditions**

4

**Identify Needs,
Solutions, Costs,
and Benefits**

Facility Assessment Report

Identifies potential improvements and project viability.

The report includes:

- Key findings and recommended solutions
- Equipment inventory
- Condition of equipment
- Lifecycle evaluation
- Utility analysis
- Priority checklist for building improvements
- Financial/cost estimate summaries for recommendations

Performance Services
 Peshtigo School District
 342 N. Emery Ave.
 Peshtigo, WI 54157

Facility Study
 August 3, 2020

SUBMITTED TO:
 Peshtigo School District
 341 N. Emery Ave.
 Peshtigo, WI 54157

SUBMITTED BY:
 Lauren Warner, Business Development Manager
 Jim Weide, Business Development Manager
 Jason Arpiles, P.E., Project Development Engineer
 Chris Staab, P.E., Senior Mechanical Engineer
 Jason Ratten, AIA, Senior Architect

Preliminary Recommendations
 Peshtigo School District

Energy Conservation Measures	Location	Primary Benefit						ECM Category
		Energy Savings	Peak Demand Reduction	Operational Cost Reduction	Improved Indoor Air Quality	Enhanced Comfort	Improved Building Resilience	
LED Lighting and Occupancy Sensor	Multiple School Buildings	✓	✓	✓	✓	✓	✓	Lighting
Outdoor Facilities Improvement	Multiple School Buildings	✓	✓	✓	✓	✓	✓	Outdoor Work
Plumbing Fixtures	Multiple School Buildings	✓	✓	✓	✓	✓	✓	Plumbing
High-Efficiency Air Handler Unit Upgrades	Multiple School Buildings	✓	✓	✓	✓	✓	✓	Mechanical
High-Efficiency Exhaust Fans Upgrades	Multiple School Buildings	✓	✓	✓	✓	✓	✓	Mechanical
Pumping Improvements	Multiple School Buildings	✓	✓	✓	✓	✓	✓	Mechanical
OH Equipment (Pneumatic or Oil) Improvements	Multiple School Buildings	✓	✓	✓	✓	✓	✓	Mechanical
Boiler and Steam System Improvements	Multiple School Buildings	✓	✓	✓	✓	✓	✓	Mechanical
AHU Heating Equipment Improvements	Multiple School Buildings	✓	✓	✓	✓	✓	✓	Mechanical
Terminal Unit Improvements	Multiple School Buildings	✓	✓	✓	✓	✓	✓	Mechanical
Classroom Ventilation Improvements	Multiple School Buildings	✓	✓	✓	✓	✓	✓	Mechanical
Refrigerant Charge Control	Multiple School Buildings	✓	✓	✓	✓	✓	✓	Controls
Controls and Sensor Reliability	Multiple School Buildings	✓	✓	✓	✓	✓	✓	Mechanical
Improved Ventilation/Exhaust Equipment	Multiple School Buildings	✓	✓	✓	✓	✓	✓	Mechanical
Water Treatment	Multiple School Buildings	✓	✓	✓	✓	✓	✓	Building
Roof Replacement	Multiple School Buildings	✓	✓	✓	✓	✓	✓	Building
Roof Repair (Including Gables)	Multiple School Buildings	✓	✓	✓	✓	✓	✓	Building
Exterior Sealing	Multiple School Buildings	✓	✓	✓	✓	✓	✓	Exterior Work
Paving/Driveway Work	Multiple School Buildings	✓	✓	✓	✓	✓	✓	Exterior Work
Building Envelope Improvements (Windows)	Multiple School Buildings	✓	✓	✓	✓	✓	✓	Building
Building Envelope Improvements (Walls)	Multiple School Buildings	✓	✓	✓	✓	✓	✓	Building
Structural Repair (Including Foundation/Retention)	Multiple School Buildings	✓	✓	✓	✓	✓	✓	Building
Vehicle Sealing Infrastructure	Multiple School Buildings	✓	✓	✓	✓	✓	✓	Mechanical

Priority: Based on average impact and customer input. Legend: Green (High), Yellow (Medium), Red (Low).

Confidential and Proprietary | Preliminary Study



Andrew Hascher

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Performance Services

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