

CleanVision Energy Waste Reduction

DTE Commercial Strategic Energy Management (SEM) Program

DTE SEM January 11, 2023

Agenda

- What is SEM?
- SEM program benefits
- How SEM works
- Is SEM the right program for you?



What is Strategic Energy Management (SEM)

- A <u>comprehensive approach</u> whereby organizations <u>systematically</u> manage energy use to <u>continuously improve energy performance</u>.
- Focuses on <u>improving business practices</u> and <u>establishing organizational</u> <u>cultures and mindsets</u> to
 - <u>Reduce energy waste</u>
 - Improve energy efficiency
 - Verify results
- Engages and commits executives and facility management to <u>long term</u> strategic energy performance improvement.
- Holistic view of energy performance:
 - Understanding your energy use
 - Building Automation Systems (BAS) / control strategies
 - Reviewing and prioritizing energy efficiency projects
 - Implement low cost no cost operational improvements



Benefits of SEM

- Support and build upon existing or new programs
- Achieve between 2% and 8% energy savings
- Incentives and staffing grants!
- Support complex energy conservation measures
- Standardization of program across all facilities
- Creation equipment registers
- Use of regression models to visualize energy savings



SEM Incentives

Staffing Grant Activity Incentives (\$20,000)

- Up to \$10,000 year 1
- Up to \$10,000 year 2

Savings Incentives

- \$0.05/kWh Operational energy saved (DTE electric provider)
- \$0.30/Therm Operational energy saved (DTE gas provider)
- Customers may earn an annual maximum incentive up to \$125,000 for DTE electric energy savings and \$75,000 for DTE gas energy savings subject to change at DTE's discretion.



Example: DTE SEM Savings

Participant benefits	Approximate SEM value Over \$200,000
DTE Provided SEM Expertise	\$50,000
DTE Provided Energy Savings Incentives \$0.05/kWh and \$0.30/therms	\$62,500 ⁽²⁾
DTE Provided Staffing Grants	\$20,000
Utility Energy Savings	\$100,000 ⁽¹⁾
Sustainable energy management system	Year over year energy savings



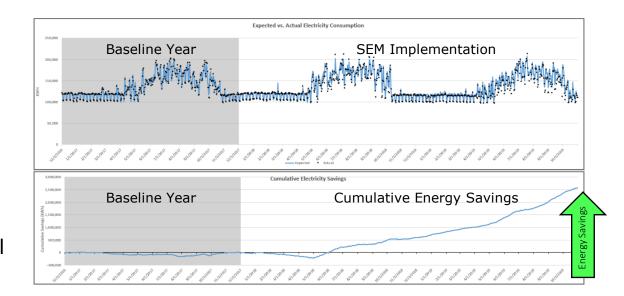
SEM Staffing Grants

SEM Activity	Incentive Value							
1. Energy Team Monthly Meetings	\$250 per month over 2 years up to \$6,000							
2. Energy Equipment and Operations Review	Year 1 - \$1,000 Year 2 - \$1,000							
 3. Establish Opportunity Register (Action Plan) Develop and Document ECMs Chiller/boiler/AHU specs BAS Trends/Archiving Remote BAS Access 	Year 1 - Q2 \$3,000 Year 1 - Q4 \$3,000 Year 2 - Q2 \$3,000 Year 2 - Q4 \$3,000							
Total SEM Staffing Grants Incentives	\$20,000							



How SEM Works

- Sign Up for SEM
- One day kick-off event
 - Energy review
 - Site walk-through
 - Equipment inventory
 - Opportunity review
 - Review energy model
 - Goals and objectives
- Monthly/Bi-weekly working sessions
 - Discuss and prioritize opportunities/action plan
 - Review BAS data and historical trends
 - Discuss performance model
- Semi-annual executive review
- Verify results and issue incentive checks





Projects and Opportunities

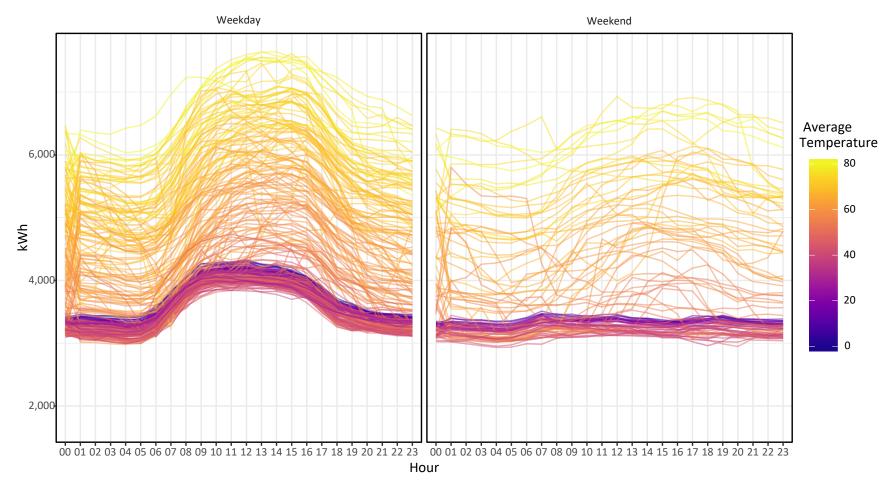
- Implemented Projects
- In-Progress Projects
- Future Projects
 - Planned
 - Considering

- Typical SEM Opportunities
 - Schedule AHU Off
 - Unoccupied Temp Setback
 - Economizer Optimization
 - Discharge Air Temp Reset
 - VAV CFM Setbacks
 - Duct Static Pressure Reset
 - CFM/ACH Setbacks
 - Chilled Water Reset
 - Condenser Water Reset
 - Chilled Water DP SP Reset
 - Hot Water DP SP Reset



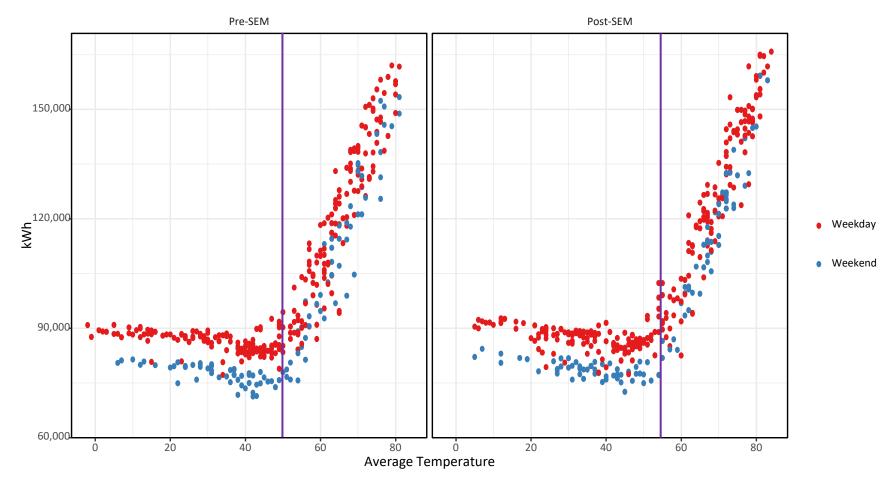
Analyzing Energy Performance Data

Electricity Consumption by Hour





Analyzing Energy Performance Data



Daily Electricity Consumption vs. Temperature



DTE SEM Opportunity Register

Opportunity Register

DTE SEM				\$38,000	800,000	0.04	32000											
Paid and F	Potential E	nergy Savings	Incentives	\$10,233	20,000	0.3	3 6000	\$łk∀h	0.076	Totals	\$93,571		15,521		\$10,233	\$0) 0.0	D
Available I	incentives	Remaining		\$27,767				\$/Therm	0.473	Subtotals	\$38,571	200,508	15,521	\$22,606	\$10,233	\$0) 0.0	<mark>)</mark>
ID 🔻	Ur Iten 👻	Facili 🔻	Buildi 🔽	Dept//	ECM Categor	Retrofit Opportunite	DTE Incentiv Program	Status 🔻	Implement on Date	Priori	Project Co	kWh Saving 🏹	Gas Savings (Therms/yr)	Annual Savings	Incentive Amount	Net Proje-+ Cost		Notes
			_	Chiller		Implement Condenser Water Reset control				_								
8	1		Classic	Plant	Chiller System	strategy on both chiller 1 and chiller 2.	SEM	Implemented	4/15/18	High		60,185	0	\$4,574	\$2,407			Received training on new Trane contols on 5/7/18
26	0		Classic	Kitchen	HVAC	Install Demand Control Ventilation system in cooking hoods	Prescriptive	Open		High	\$38,571	43,315	2,370	\$4,413			8.7	7 Exahust fan is connected to a VFD
32	0		ACS	Surgery	BAS	Implement nightime ACH setbacks in operating rooms	SEM	Open		Low		72,401	12,161		\$6,544			UHs and 2 procedure rooms. Still need ability to setback status in off hours Are we able to modulate airflow through exhaust fan powered boxes?
41	1			C-Section	BAS	Mother/Baby Renovation - For New replacement AHU TBD - Implement ACH Setback strategy for c-section and other TBD control strategies.		Open	Q2 2020	High		24,606	991	\$2,347	\$1,281			Ist phase to open 10/28/13. AHU for C-Section. Part of the MothertBaby Renovation. New AHU currently has a 22 week (55. mHz) lead time as of 18/2013. Phase I currently schedule for wrap up mid August 2013. Phase II starts around mid August 2013. (Other side of Mother Baby, Metro is the controls contractor.

Equipment Register

Total	2														Control Strategies Implemented												
Subtota	al 2	9							S	iupply	Fan		Re	turn Fan	Sc	nedule AHl	J Off	U	noccupied	Temp Setb	ack	Econor	nizer Optin	nization	Duct Static	Pressure Re	educe/Reset
С1	Buildin	Equipmen* Type	AHU Equip ID 💌	Locatior 🔻	Areas Served 🔻	BAS 💌 (Cooling Sourc 💌	Distribution Configurati	SF H ▼	SF VF 💌		Min 7 of (*	BF B HI⊻ VI		Pre St	Post SEM ▼	Post SEM Statu ▼	AHU or VAV Boxe 🍸	Pre SE 🔻	Post SI 🔻	Post SEM Statu		Post SEM ▼	Post SEM Statu ▼	Pre SEI 🔻	Post SE 🔻	Post SEM Status 🔻
1	Pavillion	AHU	AHU-1	Roof / Mamouth	Lower level - caffeteria and medical libarary, Central Steril Processing	Viewable via Automated Logio. Minimal Control (On/Off) VAV Boxes controled by ALC D2	X Unit	DDC VAV	75	Y	35,000	37%	60 Y	/ 22,09	0 24/7	NA	NA	NA	VAV Boxes Scheduled	NA	NA	50-60	72 and 27	4/11/2020	1.5	NA	NA
1	Pavillion	AHU	AHU-2	Roof / Mamouth	1st Floor: Common Area, Outpatient Pharmacy	Viewable via Automated Logic. Minimal Control (On/Off) VAV Boxes controled M by ALC PI	lamouth Chiller Iant	DDC VAV	75	Y	33,500	17%	80 \	· 27,83	5 24/7	NA	NA	NA	VAV Boxes Scheduled	NA	NA	50-60	72 and 27	4/11/2020	1.5	0.5	Open
1	Pavillion	AHU	AHU3	Roof / Mamouth	2nd floor only - Operating N Rooms		lamouth Chiller Iant	DDC VAV	60	Y	68,000	4%	80 \	< 65,10	5 24/7	NA	NA	NA	VAV Boxes Scheduled	NA	NA	50-60	72 and 27	Open	2	NA	NA
1	Pavillion	AHU	AHU-4	Roof / Mamouth	3rd, 4th and 5th Floor: Patient Rooms	Viewable via Automated Logic. Minimal Control (On/Off) VAV Boxes controled M by ALC PI	lamouth Chiller Iant	DDC VAV	105	Y	72,000	20%	150 \	7 57,60	0 24/7	NA	NA	NA	VAV Boxes Scheduled	NA	NA	50 - 60	72 and 27	4/11/2020	1.8	NA	NA



Requirements for Enrollment in SEM

- Program duration is 12-24 months with option to extend
- Enrollment requires
 - Signatory support of a top-level site representative
 - Signatory commitment of a day-to-day site contact who will be available throughout the SEM participation period
- Customer must be willing to share daily or weekly energy data on a monthly, confidential basis with the DTE Energy SEM Program.
- Customer will ideally have a functioning Building Automation System (BAS) or equivalent.
- Annual electric energy use greater than ~15,000,000 kWh.



Participant resource commitments

Who	Role	Estimated Time Commitment
Management	On-going commitment to SEM	1 hour per quarter
Energy Champion	Key person responsible for SEM initiative	~10-15%
Energy Team	Support the Energy Champion throughout the program	4 hour per month for meetings, plus 2 to 4 hours per month to implement Plan



Question?



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