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Energy Management and Efficient Electrification Series for Ontario Municipalities: Energy Management Best Practices for Organizations

Presented by
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SAVE ON ENERGY POWER WHAT'S NEXT

Agenda

1. Introduction
2. Getting Started with Energy Management
3. The Seven Key Components of Energy Management
4. LAS Energy Programs and Additional Support
5. Save on Energy: Energy Management Training and Programs
6. Questions and Answers

Workshop Overview:
Getting Started with Energy Management

Getting Started with Energy Management

Establishing energy management best practices is a great way to jump-start energy savings and get on track to achieve long-term energy savings and GHG emissions reductions.

Taking the first step can seem overwhelming. Today we will walk through seven key components of energy management. You can start with any component you choose and complete them in any order.

Management Commitment

Management commitment and support is the number one reason many energy management efforts succeed, so this is often a good starting point.

Management Commitment: Executive Sponsor

Identify an executive sponsor who will help establish energy management as a priority for your organization.

Why?

The executive sponsor acts as a megaphone to spread the message across decision-makers and department heads in the organization.

Tip:

Select an executive sponsor based personality traits, job function and relationships in the organization.

Management Commitment: Cross-Departmental Team

Establish a cross-departmental energy team to lead efforts

Why:

Everyone's input matters. Different role functions have different needs, ideas and knowledge. Energy is part of everyone's job.

Tip:

Consider carefully a volunteer basis vs. appointment from leadership.

Management Commitment: Energy Policy

Develop an energy policy that aligns energy management with existing priorities and documents specific commitments, targets, and responsibilities

Why?

An energy policy sets goals and establishes a framework for achieving them.

Tips:

Listen to perspectives of cross-departmental reps. Set realistic and achievable goals. You can always revise the policy with updated goals.

Little victories build momentum.

Case: Management Commitment & Cross-Dept Team

Poll:
Status of Your Management Commitment

Planning

Effective planning helps you focus your efforts where they will have the most impact and establish a roadmap that will lead you to achieve your goals.

Planning: Identify Significant Energy Users

Identify significant energy users (SEUs) to help focus efforts where they will have the most impact.

Why identify SEUs?

Understanding where and how energy use occurs is key to energy management.

Tip:

For each facility think of heating, cooling and air handling equipment, or process equipment like ieso or water treatment

Planning: The Opportunity Register

Establish an opportunity register to document energy-saving opportunities, prioritize actions, and track project status.

Why develop an opportunity register:

Document potential opportunities as they come up, assess each, prioritize implementation and track results.

Tip:

To populate the opportunity register, rely on other components of EM, such as energy hunts, suggestion boxes and employee engagement.

Planning: Energy Management Assessment

Conduct an energy management assessment with key stakeholders to identify gaps and prioritize opportunities for improvement.

Why assess energy management?

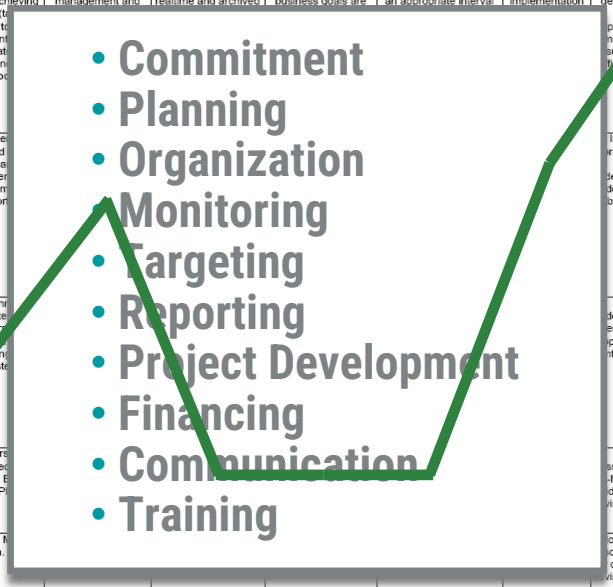
It will develop an understanding your baseline, key areas of focus and gaps in capability and resources.

Tip:

Use a tool similar to the self-assessment provided. Complete collaboratively with energy team members to assess, engage and develop consensus.

Tool: Energy Management Assessment

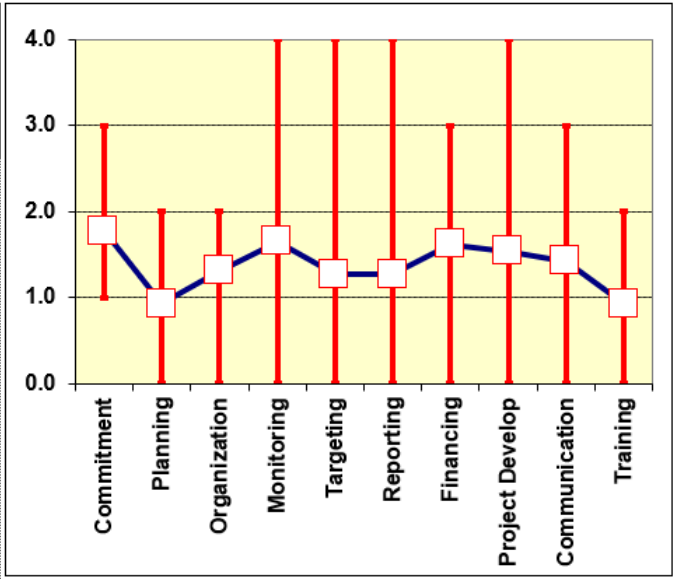
	Commitment	Planning	Organization	Monitoring	Targeting	Reporting	Financing	Project Development	Communication	Training
4	A clearly articulated commitment by top management, integrates energy into the business strategy is communicated broadly.	A formalized energy management planning process exists for achieving the results (t set by t management fully intefgrat the busin planning proc	Energy management is fully integrated into the existing management and	All appropriate facility and process energy flows are metered in realtime and archived	The desired level of energy performance, in support of the business goals are	Energy performance versus targets and budgets is reported on an appropriate interval	Clearly defined commitment (policy) to implementation	Ongoing opportunity identification, development detailed business cas plemen tion and meas emen of sul from en gy ency proje ts.	The value of energy efficiency and the performance of energy management is reported and marketed both within the organization and outside in key publications on a continuous basis.	Management are trained to analyze & control energy performance and cost. Technical staff are trained to support all energy consuming & controlling technologies and to identify develop energy projects Process operators are trained in EE practices.
3	A formal stra gy for energy ex s but lacks activ commitment fro top managemen	All departme represented planning tea some ser manager support						Infrequent but rmalized energy opportunity entification and development of basic business cases.	An ongoing gramme of staff areness exists h performance gress reported ough regular publ ty campaigns.	Operations management is trained to analyze & control energy performance and cost. Technical personal are trained to support appr ation for selec energy co ming & ntrolling chnologies.
2	An informal energy strategy is supported by an energy champion, manager or department head.	y techi pers s or te manager in dev Energy Maste						Ad-hoc of development of energy savings portunities on an frequent basis.	Occasiona d by staff awa events, pro ons or publications.	Operations management are trained to budget energy cost & consumption relative to production levels. Technical staff receive adhoc training in energy efficient technologies.
1	Self motivated individuals outside of formalized operating structure.	One pers delegate develop an E Master P						Informal sessments with hoc resources to dentify energy- ving opportunities.	Informal contacts used to promote energy efficiency ideas.	Only technical persons or technical managers are trained to maintain major energy intensive systems.
0	No visible commitment to manage energy.	No Energy M Plan.						o mechanism or ources to identify develop energy- ving opportunities.	No promotion or general awareness of energy efficiency.	No energy management or operational energy technology training.



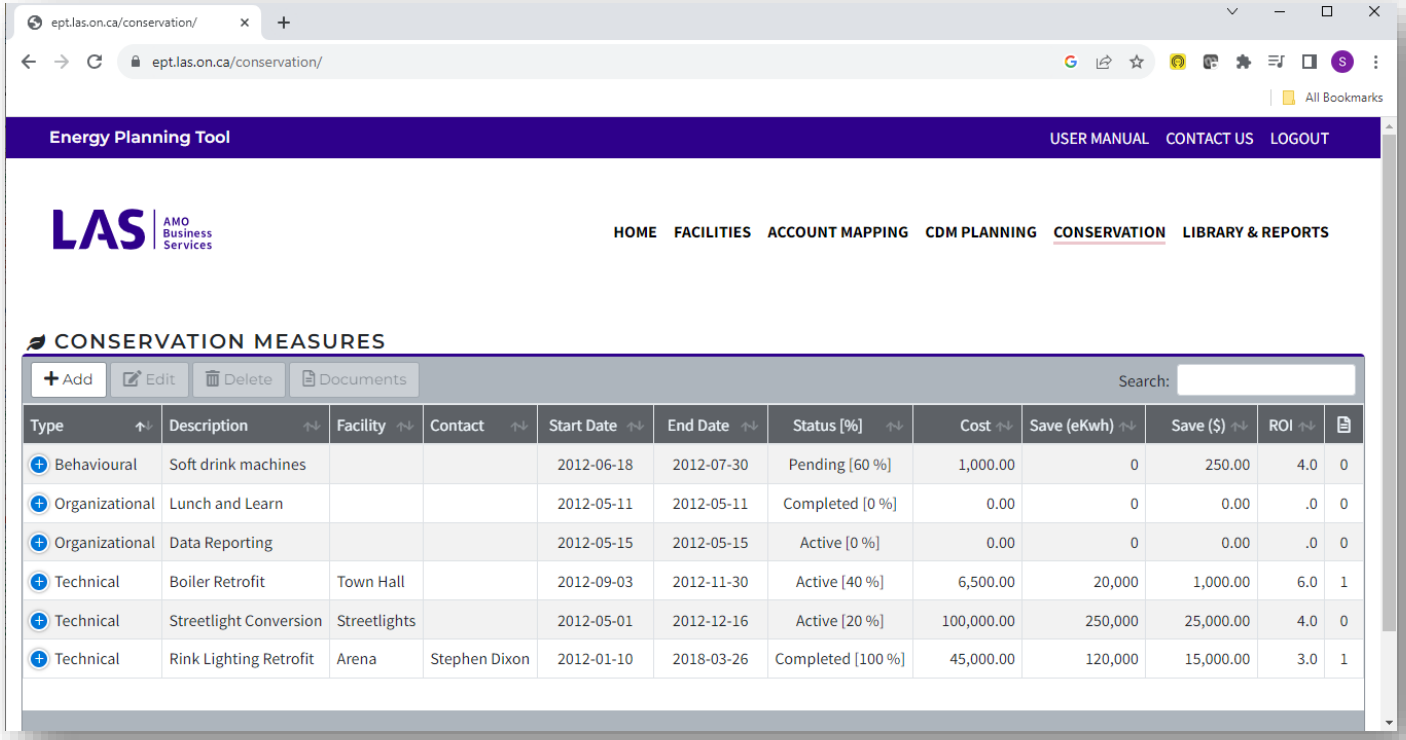
Consensus-Building Tool

Energy Management Matrix - Organizational Analysis for: **Sample**

Response	Response	Commitment	Planning	Organization	Monitoring	Targeting	Reporting	Financing	Project Develop	Communication	Training
1		1	0	1	0.5	0.5	1	1	1	1	1
2		1	0	0	0	0	0	0	0	1	0
3		2.5	1	1.5	1.5	1	1	2.5	2	2	1
4		2	2	2	2	4	4	3	3	3	2
5		1	0	0	1	1	1	1	0	0	1
6		1	0	1	1	1	1	2	2	1	1
7		2	2	2	2	1	1	2	2	1	1
8		2	1	2	3	2	2	2	2	2	1
9		3	2	2	2	0	1	3	4	2	1
10		1	1	1	2	1	1	1	1	2	1
11		1.5	0	0.5	0.5	1	1.5	0.5	0	0.5	0
12		2	1	2	2	2	2	2	2	2	1
13		3	2	2	4	2	0	1	1	1	1
14											
15											
16											
17											
18											



Tool: LAS Energy Planning Tool: Opportunity Register



Type	Description	Facility	Contact	Start Date	End Date	Status [%]	Cost	Save (eKwh)	Save ($)	ROI	
Behavioural	Soft drink machines			2012-06-18	2012-07-30	Pending [60 %]	1,000.00	0	250.00	4.0	0
Organizational	Lunch and Learn			2012-05-11	2012-05-11	Completed [0 %]	0.00	0	0.00	.0	0
Organizational	Data Reporting			2012-05-15	2012-05-15	Active [0 %]	0.00	0	0.00	.0	0
Technical	Boiler Retrofit	Town Hall		2012-09-03	2012-11-30	Active [40 %]	6,500.00	20,000	1,000.00	6.0	1
Technical	Streetlight Conversion	Streetlights		2012-05-01	2012-12-16	Active [20 %]	100,000.00	250,000	25,000.00	4.0	0
Technical	Rink Lighting Retrofit	Arena	Stephen Dixon	2012-01-10	2018-03-26	Completed [100 %]	45,000.00	120,000	15,000.00	3.0	1

Poll:
What's the Status of Your Planning

Opportunity Identification and Implementation

Achieving your energy goals requires building a pipeline of projects that will generate energy savings and reduce GHG emissions.

Opportunity Identification and Implementation: Energy Hunts

Involve staff in energy hunts to identify opportunities to eliminate waste and document efficiency improvement opportunities.

Why conduct an energy hunt?

Quickly find opportunities and engage with operational staff.

Tip:

Resources available from Energy Star

Opportunity Identification and Implementation: Reviewing Energy Data

Start reviewing energy data to find opportunities.

Why?

Analyzing and visualizing energy consumption through time series graphs can instantly show anomalies that lead to savings in many cases.

Tip:

Obtain interval meter data from your utility at 15-minute or hourly intervals. Use tools like RETScreen for analysis. Attend a Save on Energy training session.

Opportunity Identification and Implementation: Behavioural and Operational Improvements

Prioritize quick wins, like behavioural and operational improvements that save energy to build momentum.

Why?

No-cost energy-saving opportunities are easy to implement and show immediate results, which further engages staff and motivates the energy team.

Tips:

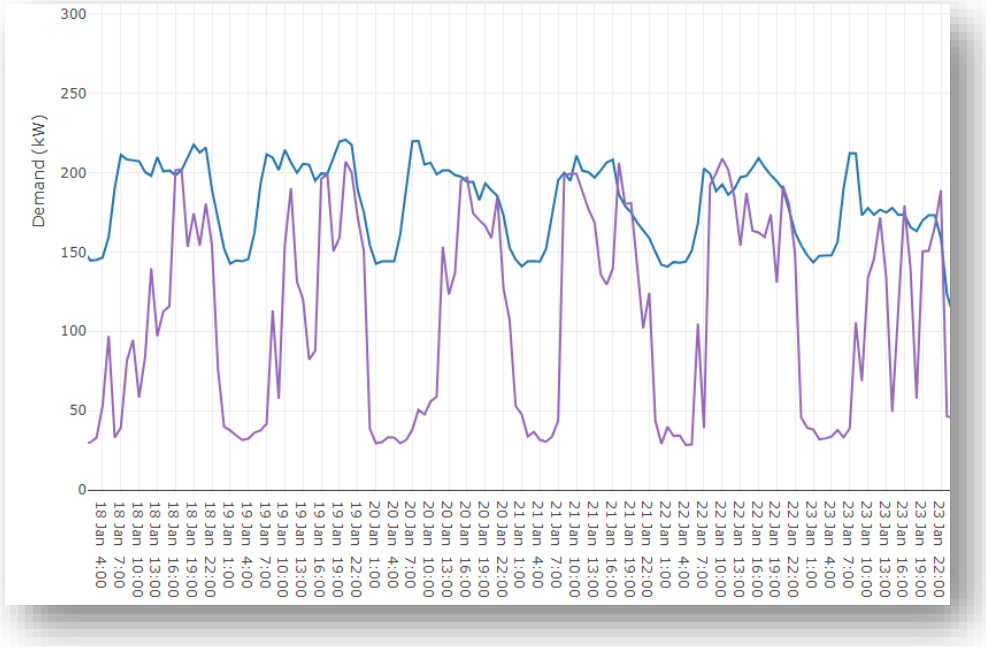
Use your data to identify and eliminate waste. Engage staff to turn off equipment when not in use or when leaving for the day.

Tool: LAS Energy Treasure Hunts

- Preparation
  - Collect and analyze energy data and create lots of charts
  - Customize a ½- to 1-day **Seven Steps Workshop**
- Workshop and Treasure Hunt Day
  - ½- to 1-day **Seven Steps Workshop**
  - Building walk through
  - Building Automation System Exploration
  - Flipchart ALL ideas
  - Quantify as many as possibly (using facilitator's expertise)
    - Hand calculation, spreadsheet, RETScreen or web tools
  - Each participant gets a certificate

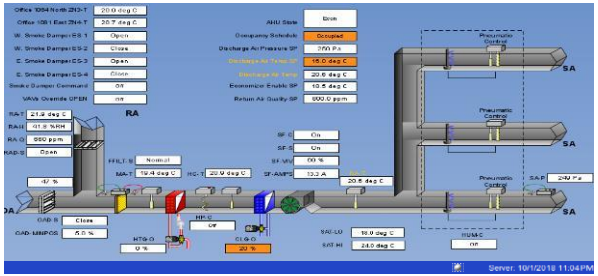
A great opportunity for building staff engagement!

What We Found: Operator Spots Similar Facility – Different Baseload



Building automation system schedule overrides

> $20,000/yr



LAS Treasure Hunt Discoveries

Municipality	Facility	Savings Identified	Potential Budget Savings
City of Guelph	West End Community Centre	$38,000	14.5%
Town of Halton Hills	Mold-Masters Sports Complex	$30,000	5%
Town of Milton	Mattamy National Cycling Centre	$48,000	Not available
Town of Oakville	Queen Elizabeth Park, Community & Cultural Centre	$98,000	12%

Poll:
Status of Your Opportunity Identification and Implementation

Monitoring and Reporting

Establish regular monitoring and reporting of energy metrics to inform data-driven decisions and monitor progress toward targets.

Monitoring and Reporting: Obtain Interval Data

Obtain interval meter data from your utilities for the best insights.

Why?

Daily or hourly interval data provides greater insights than data displayed on monthly invoices.

Tips:

Check your online access, download Excel/CSV data and add each month into one tab. Contact your LDC for support. Attend Save on Energy Training sessions.

Monitoring and Reporting: Reporting Plan

Develop a reporting plan and assign responsibility for monitoring and tracking key energy metrics with the data you currently have.

Why:

Stay on top of your energy data, use it to verify and measure implemented initiatives. Show progress to develop momentum

Tip:

Add a recurring update and delegate responsibility, and review KPIs in regular meetings.

Monitoring and Reporting: Develop Baseline Models

Develop a baseline model to normalize energy consumption against drivers like production, occupancy, or outside temperature.

Why:

Compare your facility to other similar facilities and measure success of initiatives

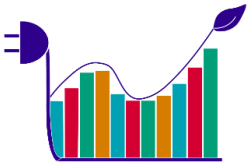
Tips:

Use tools like ENERGYSTAR® Portfolio Manager and RETScreen. Both include benchmark databases for comparison

Tool: LAS Energy Planning Tool

Track, report and manage your energy conservation efforts with ease

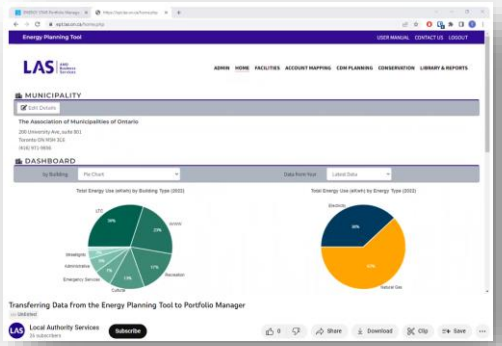
Our secure portal keeps everything energy related in one convenient place. Build your culture of conservation through energy awareness.



Track your utilities for easy incorporation into internal and annual reporting under O.Reg 507/18

Monitor your energy related projects to increase sustainability and cut energy costs.

Create a detailed 5-Year Conservation and Demand Management Plan outlining your goals and achievements.



Instructional video
EPT to ESPM interface
https://www.youtube.com/watch?v=0HURSQ-8Rpw

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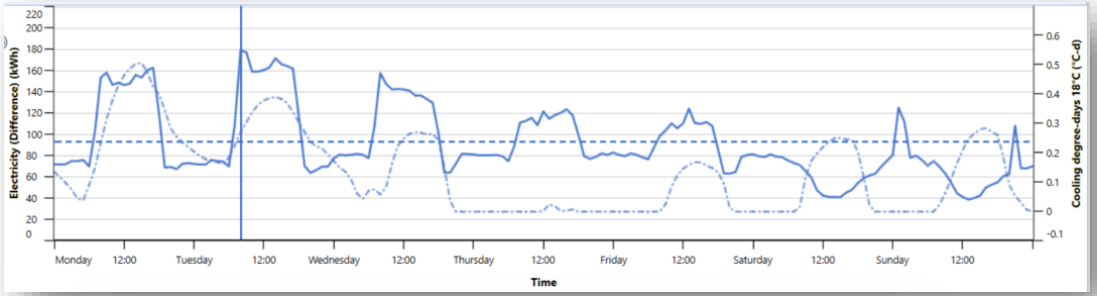
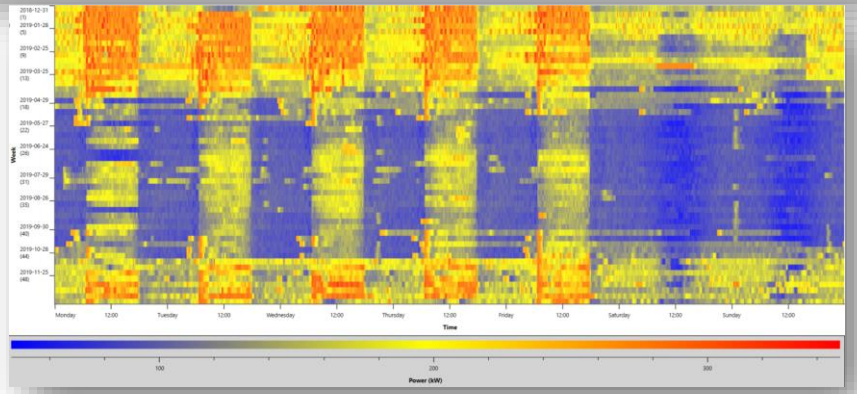
Training: Save On Energy Accessing and Analyzing Your Interval Data

Begin	End	Duration Minutes	Electricity (Meter reading) kWh	Electricity (Difference) kWh	Power kW
2017-12-31 23:45	2018-01-01 00:00	15	7,906,632		207
2018-01-01 00:00	2018-01-01 00:15	15	7,906,674	42	207
2018-01-01 00:15	2018-01-01 00:30	15	7,906,725	51	251
2018-01-01 00:30	2018-01-01 00:45	15	7,906,772	47	239
2018-01-01 00:45	2018-01-01 01:00	15	7,906,810	39	215
2018-01-01 01:00	2018-01-01 01:15	15	7,906,859	49	233
2018-01-01 01:15	2018-01-01 01:30	15	7,906,906	47	221
2018-01-01 01:30	2018-01-01 01:45	15	7,906,944	38	208
2018-01-01 01:45	2018-01-01 02:00	15	7,906,993	49	257
2018-01-01 02:00	2018-01-01 02:15	15	7,907,039	46	246
2018-01-01 02:15	2018-01-01 02:30	15	7,907,077	38	199
2018-01-01 02:30	2018-01-01 02:45	15	7,907,123	46	227
2018-01-01 02:45	2018-01-01 03:00	15	7,907,170	48	220
2018-01-01 03:00	2018-01-01 03:15	15	7,907,206	36	174
2018-01-01 03:15	2018-01-01 03:30	15	7,907,251	46	250
2018-01-01 03:30	2018-01-01 03:45	15	7,907,296	45	209
2018-01-01 03:45	2018-01-01 04:00	15	7,907,335	39	195
2018-01-01 04:00	2018-01-01 04:15	15	7,907,376	42	215
2018-01-01 04:15	2018-01-01 04:30	15	7,907,424	48	231
2018-01-01 04:30	2018-01-01 04:45	15	7,907,461	37	183
2018-01-01 04:45	2018-01-01 05:00	15	7,907,504	43	227
2018-01-01 05:00	2018-01-01 05:15	15	7,907,552	48	224
2018-01-01 05:15	2018-01-01 05:30	15	7,907,594	43	212
2018-01-01 05:30	2018-01-01 05:45	15	7,907,632	38	207
2018-01-01 05:45	2018-01-01 06:00	15	7,907,683	51	258
2018-01-01 06:00	2018-01-01 06:15	15	7,907,727	44	211
2018-01-01 06:15	2018-01-01 06:30	15	7,907,767	40	200
2018-01-01 06:30	2018-01-01 06:45	15	7,907,819	53	257
2018-01-01 06:45	2018-01-01 07:00	15	7,907,878	59	296
2018-01-01 07:00	2018-01-01 07:15	15	7,907,929	51	245
2018-01-01 07:15	2018-01-01 07:30	15	7,907,980	51	240
2018-01-01 07:30	2018-01-01 07:45	15	7,908,035	56	276





Featuring RETScreen Expert and including a free 90-day licence!

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SAVE ON ENERGY POWER WHAT'S NEXT

Poll:
What's the Status of Your Monitoring and Reporting

Operational Integration

Integrating energy efficiency throughout your organization means that everyone is working together to achieve your goals – from management to operators, design and procurement, human resources, and finance.

Operational Integration: Guidelines and Procedures

Develop guidelines and procedures for operators to ensure efficient operation of equipment and systems.

Why?

Operations and maintenance best practices and guidelines are adhered to when documented.

Tips:

Develop guidance for processes like equipment start up, shut down, maintenance contracts, schedules and contact information.

Operational Integration: Roles & Responsibilities

Ensure staff are aware of and trained on their role in energy management.

Why?

Everyone has a part to play in energy management. When all teams understand their role, initiatives are more likely to gain traction across stages.

Tips:

Encourage participation, questions, suggestions. Prepare departmental information sessions illustrating the roles and importance.

Operational Integration: Life-Cycle Costing

Incorporate life-cycle energy consumption and costs into design and procurement decisions.

Why?

Change the decision-making process of financial investments by presenting business cases with long-term outlooks and variables often overlooked.

Tips:

Using LCC analysis: consider factors such as useful life, equipment efficiency, fuel and fuel pricing escalation, including carbon charges, decommissioning and disposal costs.

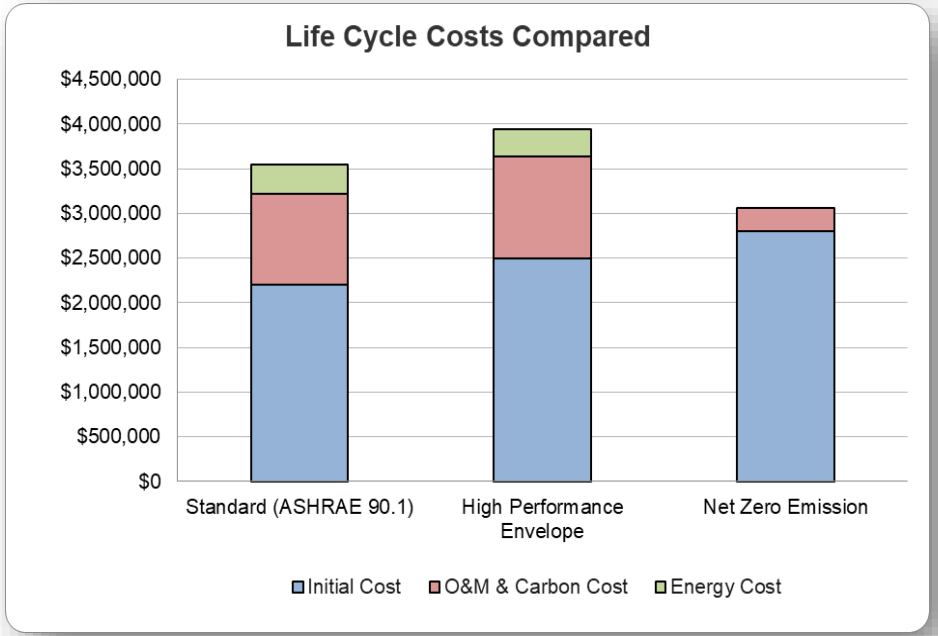
Example: Life-Cycle Costing for Coldstream Fire Station

- Middlesex Centre, Ontario
- 10,000 square-foot firehall
- Six-bay apparatus bay
- Completed in 2017
- Achieved net-zero energy in 2017/2018 and thereafter
- Thought to be the First net-zero energy fire hall in Canada

LCC and Net-Zero Emissions/Carbon Neutral

Type of Construction	Initial Cost	Energy Consumption (ekWh/year)	Annual Energy Cost (Electricity & Natural Gas)	CO2 emissions (kg/year)
Option A: Normal Fire Hall (ASHRAE 90.1 – 2010)	$2,200,000	162,530	$10,310	26,741
Option B: Energy Efficient (High Performance Envelope)	$2,500,000	148,366	$9,850	24,227
Option C: Net Zero (Emission/Carbon Neutral GSHP & Photovoltaic)	$2,800,000	120,112	$0	5,134

Firehall - LCC of three Options



Life Cycle Costing Summary

	Option A **Standard (ASHRAE 90.1)**	Option B **High Performance Envelope**	Option C **Net Zero Emission**
Initial Cost	$2,200,000	$2,500,000	$2,800,000
O&M & Carbon Cost	$1,022,690	$1,140,083	$258,818
Energy Cost	$325,208	$305,990	$0
Total Cost	**$3,547,898**	**$3,946,072**	**$3,058,818**

Poll:
What is the Status of Your Operational Integration

Employee Engagement

Involving employees in energy management can not only help achieve your goals, but it can also lead to higher retention and increased job satisfaction.

Employee Engagement: Regular Communication

Regularly communicate the importance, status, and outcomes of energy management initiatives.

Why?

Continuous improvement is a major component of energy management. Progress and goals continuously evolve.

Tip:

E-blasts, newsletters, bulletin boards: be brief, highlight goals, successes, challenges, and provide access to more detailed information for those interested.

Employee Engagement: Seek and Recognize Staff Ideas

Seek input and ideas from staff and celebrate and recognize contributions towards improved energy management.

Why?

Everyone has ideas and appreciates opportunities to have their ideas heard, implemented and recognized. This creates commitment, ownership and responsibility.

Tips

Suggestion boxes, dedicated email for EM team, celebrate and recognize.

Every idea has a disposition: Use the three buckets: do it, consider it, can't do it

Employee Engagement: Engagement Campaigns

Establish engagement campaigns with a specific objective or goal in mind to move beyond just promoting awareness

Why?

Sometimes those further removed from a challenge can see the obstacles and opportunities more clearly

Tips:

Identify and communicate a problem, host a survey, contest, or open forum focused on solutioning

Case: Employee Engagement Supports Big Projects!

Poll:
What's the Status of Your Employee Engagement

Continuous Improvement

Energy management is not a checklist to complete, but an evolving framework of continuous improvement. Each of the components discussed can be improved throughout your energy management journey. Remember to revisit, redefine, and re-evaluate your strategies, goals, and accomplishments.

Continuous Improvement: First Steps

Use your energy management plan to set aside time to identify, review and implement improvements across all other components of energy management.

Why you should plan on continuous improvement?

Energy management is not a "one and done" endeavour. Each component can and will consistently evolve.

Tips:

Set aside time to review as a team, have processes for feedback when an opportunity is identified, and have clear delegation of responsibility for action.

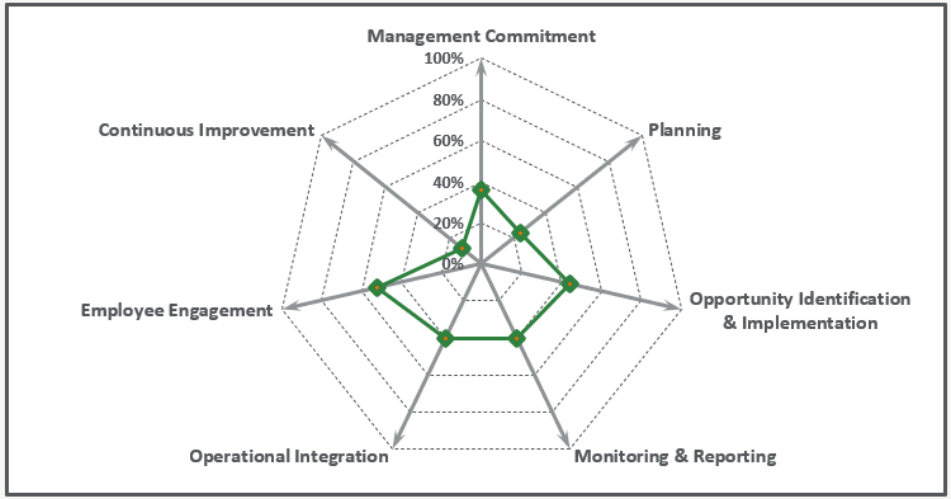
Poll:
What's the Status of Your Continuous Improvement

Tool: Track Your Improvement

Energy Mangement Assessment

Characteristic	Score		% score
	Actual	Max	
Management Commitment	9	25	36%
Planning	6	25	24%
Opportunity Identification & Implementation	11	25	44%
Monitoring & Reporting	10	25	40%
Operational Integration	10	25	40%
Employee Engagement	13	25	52%
Continuous Improvement	3	25	12%
Total Score	62	175	35%

Organization:	
Date completed:	
By:	



LAS Energy Support

las@las.on.ca

647-932-3774

LAS Energy Training Workshops

LAS Energy Training Workshops

- **Customized D2$ workshop with Treasure Hunt**
  - Eligible for 75% IESO incentives
- **Energy Efficient Building Operations (EEBO)**
  - Eligible for 50% IESO incentives
- **RETScreen Expert – Project & Performance Analysis**
  - Eligible for up to 50% of course fees

Go Deeper with Save on Energy and Energy Management

Save on Energy Programs and Training Initiatives

Programs

- Strategic Energy Management Program
- Existing Building Commissioning Program

Webinars

- Introduction to M&V webinar, November 14, 2023
- EBCx Savings Opportunities - November 22, 2023
- Retrofits for Public Sector Organizations, December 8, 2023
- EBCx Investigation Phase Essentials webinar - December 13, 2023

Free expert support available through Save on Energy!

Post your questions on the Energy Manager Learning Platform discussion forum to get advice, coaching, and support on:

- ❑ Establishing or improving **energy management best practices**

For more information:
trainingandsupport@ieso.ca

Register for the Energy Manager Learning Platform (emss.goldfin.ca)

Questions and Answers

Thank you

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