IMPLEMENTATION OF A PAY FOR PERFORMANCE PROGRAM IN ONTARIO

Evelyn Lundhild

Manager, Market Transformation, IESO

April 3, 2017

ieso
Connecting Today.
Powering Tomorrow.

AGENDA

- Overview of Ontario's IESO
- Why Pay for Performance
- Pilot program (2012-14)
- Energy Performance Program for Multi-Site Customers

Ontario at a Glance

Installed Capacity	36,070 MW (December 2016)
Record Summer Peak	27,005 MW (August 1, 2006)
Record Winter Peak	24,979 MW (December 20, 2004)
Total Annual Energy Consumed	137 TWh (2016)
Energy Savings Through Conservation (2015)	1.3 terawatt-hours (TWh)
Customers	4.9 million
Ontario Import Capability	4,800 MW
Transmission Lines	30,000 km
Interconnections	New York, Quebec, Manitoba, Michigan, Minnesota

The IESO is the reliability coordinator for Ontario and works closely with other jurisdictions to ensure energy adequacy across North America.

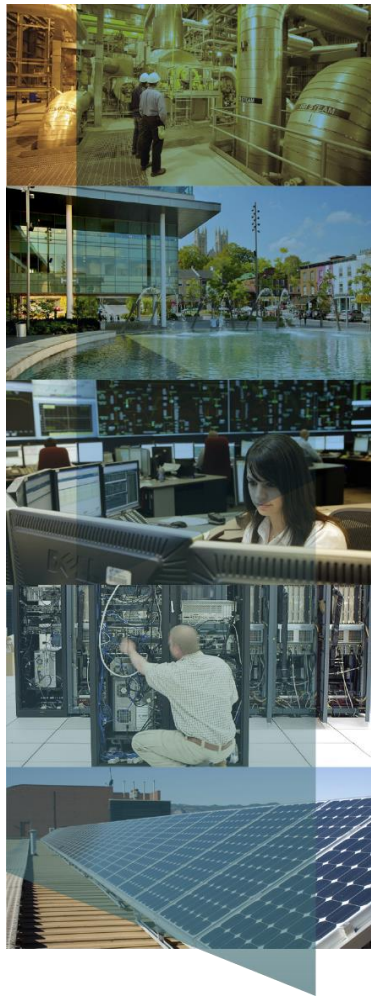
ieso
Connecting Today.
Powering Tomorrow.

Who We Are and What We Do

The Independent Electricity System Operator (IESO) works at the heart of Ontario's power system – ensuring there is enough power to meet the province's energy needs in real time while also planning and securing energy for the future

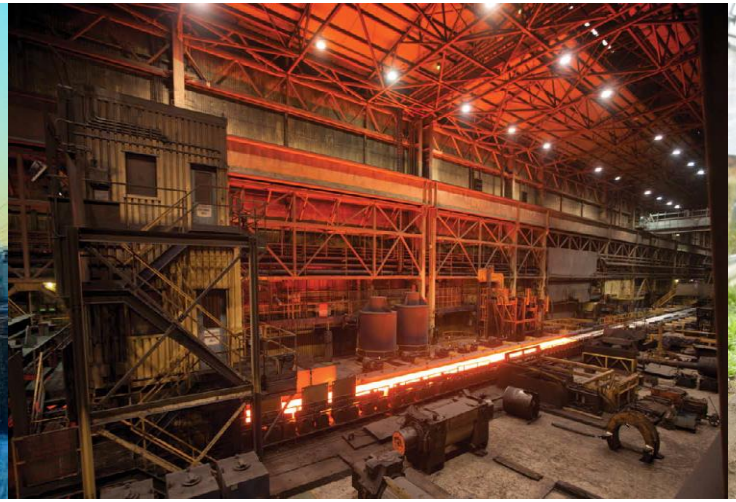
We do this by:

- Planning
- Enabling Conservation
- Operating the Grid and Wholesale Market
- Ensuring Supply
- Engaging Stakeholders and Communities



ieso
Connecting Today.
Powering Tomorrow.

Long-Term Conservation Goals


Almost all electricity demand growth over the next 10 years to be met by energy efficiency and improved codes and standards

Goals:
8.7 TWh in 2020
30 TWh in 2032

Demand response to meet 10% of peak demand by 2025

ieso
Connecting Today.
Powering Tomorrow.

Conservation First Framework: 2015-2020

- The Conservation First Framework (CFF) spans a six-year period, from 2015-2020.
- 7 TWh of energy savings are to be achieved by the end of 2020 through LDC Conservation and Demand Management (CDM) Plans
  - $2.2B in funding over a six-year term, administered by the IESO
    - $1.8B for LDC delivery costs
    - $0.4B for central services costs
- 1.7 TWh energy savings to be delivered by the IESO to transmission-connected customers
  - $500 million budget
- LDC CDM six-year plans support consideration of CDM in local/regional planning
- LDCs are planning to meet their 2015-2020 targets with a combination of province-wide, regional and local programs

ieso
Connecting Today.
Powering Tomorrow.

Why Pay for Performance?

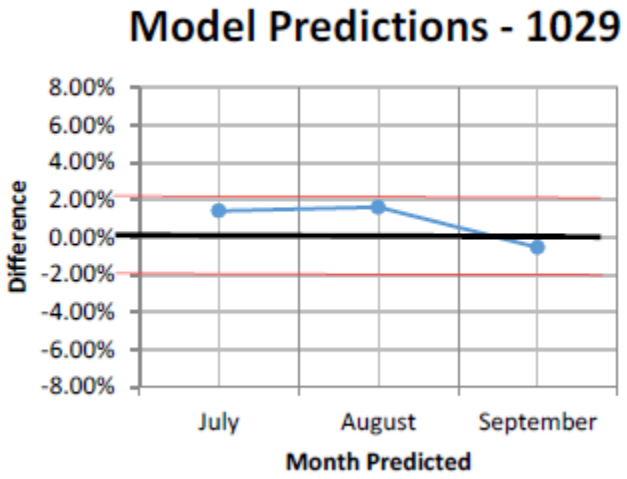
- Encourage holistic energy management practices at large commercial customers
- Capture energy savings from a wider range of activities (both capital improvements and operational savings)
- Streamline administrative burden for both customer and utility
- Tie incentive payments more closely to actual measured results

Results Based Performance Optimization (RBPO) Pilot Program

- Enrolled 18 grocery stores across Ontario
- Initiated in 2013; performance period April 1, 2014-March 31, 2016
- Incentive of $0.10/kWh for energy reductions from baseline
- Whole building level savings measurement

Pilot Baseline Development

- Baselines were developed for each store based on interval meter data from 2011-12
- Data was weather normalized
- Summer 2013 data was used to validate the models
- Average difference of 0.84% across all stores

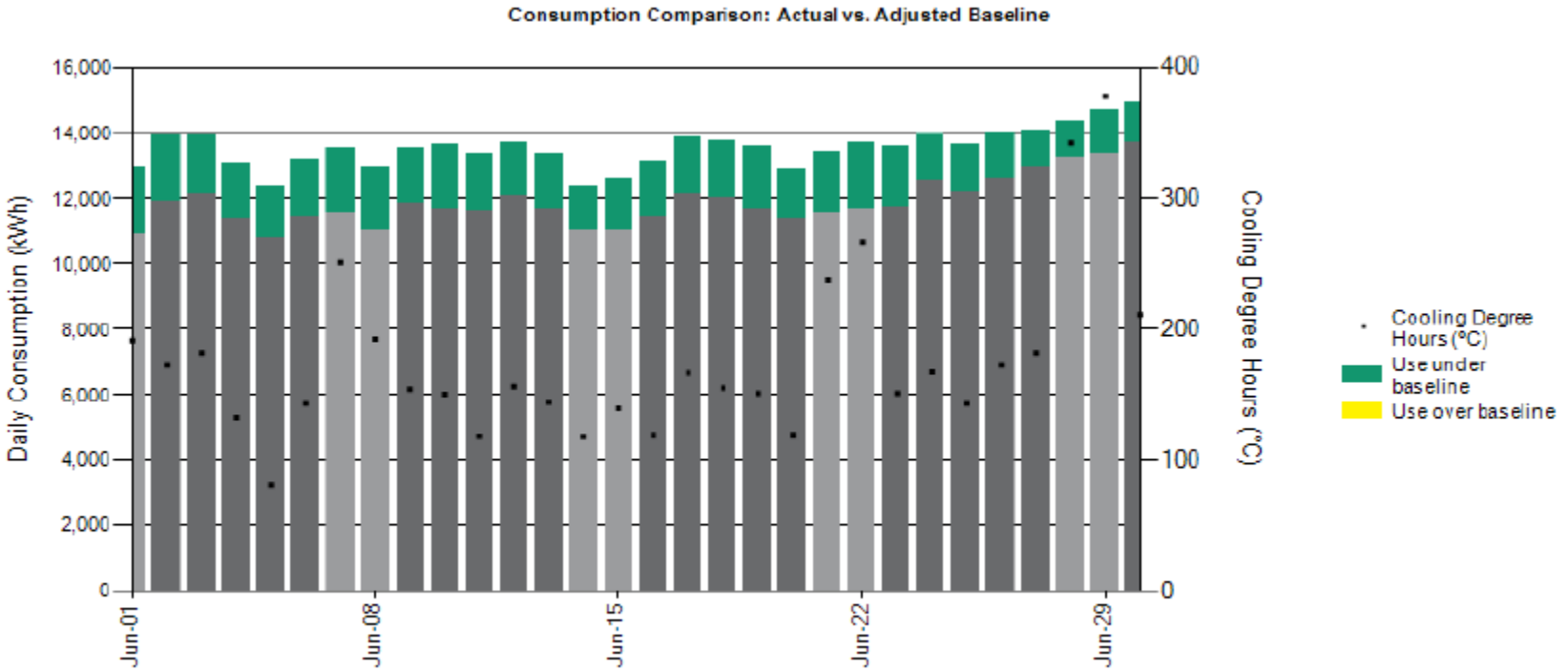


Customer Investment

Customer invested $3.2M in equipment upgrades across the 18 stores including LED conversions, refrigeration case upgrades and HVAC recommissioning and controls upgrades.

Description	Lighting	HVAC	Refrigeration	Misc.	Totals
Total Invoiced Costs	$1,279,940	$511,215	$1,470,820	$59,284	$3,321,258

Sample Store Performance



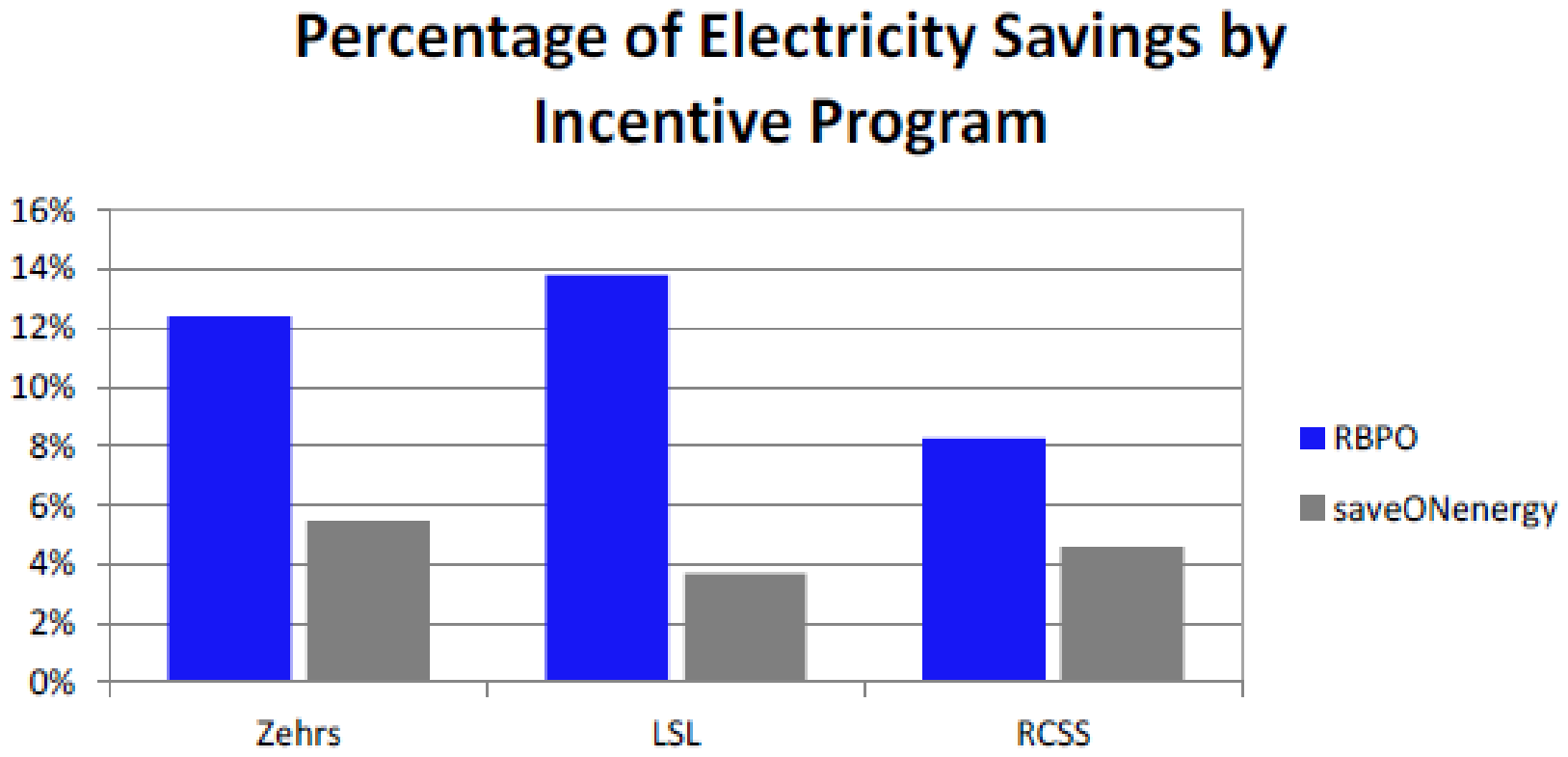
Pilot Energy Savings Results

On average participating stores reduced their energy consumption by 12% over the two years of the pilot.

Period	Consumption (kWh)			Total % Savings	Calculated Incentive ($) [1]
	Baseline	Measured	Savings		
April 1, 2014 to March 31, 2015	73,860,516	66,248,835	7,611,681	10.3%	$501,133
April 1, 2015 to March 31, 2016	74,591,427	65,437,974	9,153,453	12.3%	$348,867
Totals	148,451,943	131,686,809	16,765,135	11.3%	$850,000

[1] Incentive has been capped to a 2 year maximum of $850,000

Customer Experience – stores saved more in the performance program than similar stores participating in standard programs

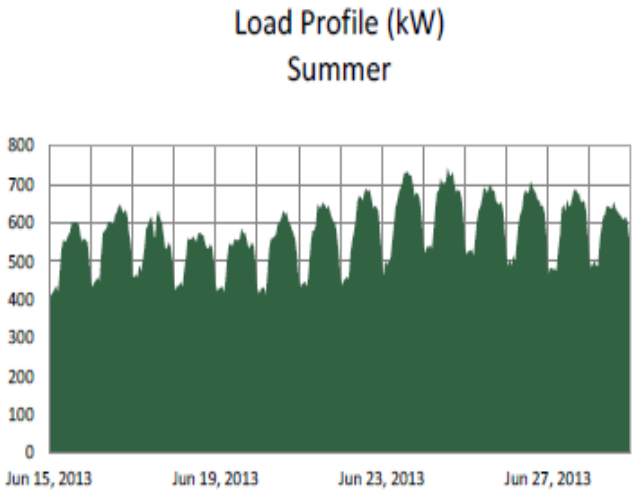


Energy Performance Program for Multi-site Customers

- Program launched December 21, 2016
- Customers can receive incentive of $0.04/kWh per year for four years for reduction from baseline
- Customers must provide baseline model based on 2 years of hourly interval data
- Minimum annual consumption of 1,500,000 kWh
- Customers can aggregate up to 5 buildings

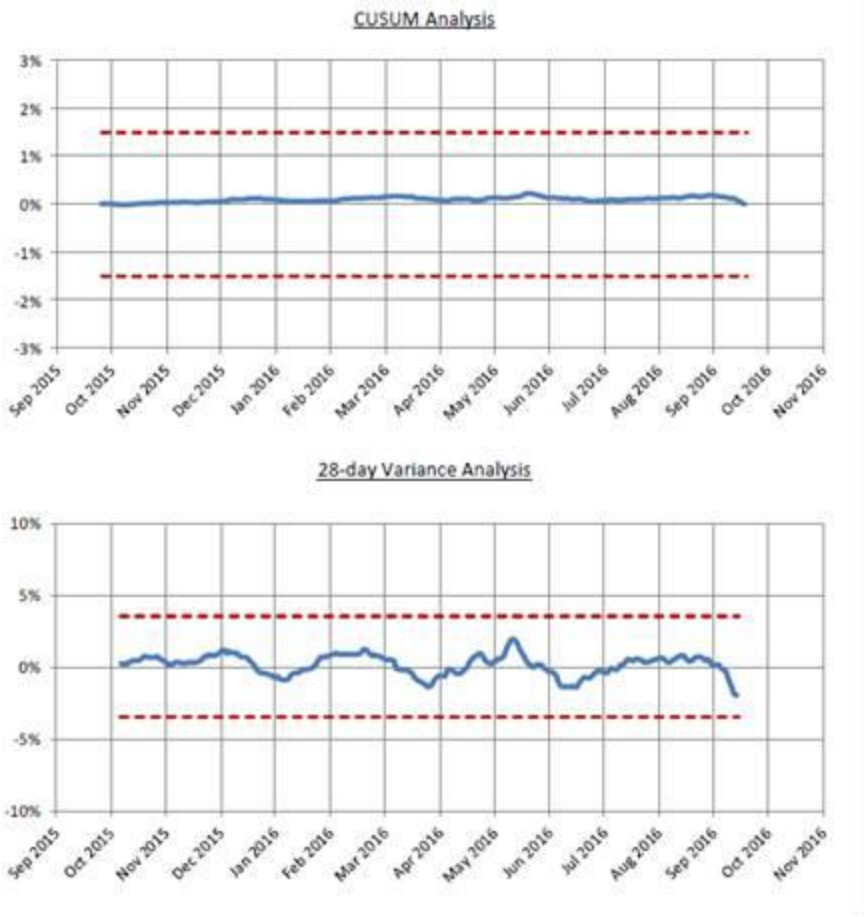
Baseline Energy Models

- Baseline Energy Models are developed through regression analysis of historical interval meter data with weather, hours of operation, or other appropriate independent variable data.
- Models must be validated using a tool (provided) that compares daily consumption predicted by the model against actual measured consumption during a historic period.
- Customers may use the tool of their choice (Excel, RETScreen, specialty energy software, etc.) to derive the model (i.e. formula).



Validation of Energy Models

Customer enters one year of data into the tool (model plus actual)
If performance is within red bands then model is accepted; otherwise baseline adjustments are required



ieso
Connecting Today.
Powering Tomorrow.

Advantages & Considerations

Advantages

- Multi-year, whole-building approach enables full capture of savings from O&M measures as well as capital improvements
- Single incentive application and savings M&V process
- Performance assessed annually relative to established baseline

Considerations

- Must maintain the savings over multiple years to get full incentive value
- Unable to participate in other Save on Energy programs
- Incentive paid once annually

Targeted Customers

- Commercial Real Estate
- Retail
- Regional Municipalities
- Multi Unit Residential Buildings
- University/Schools

What Makes a Facility a Good Candidate?

- Minimum 2 years hourly electrical interval data is available.
- Daily energy consumption can be reliably predicted based on weather, hours of operation, or other quantifiable variables.
- Data for relevant variables is accessible/verifiable.
- Consistent energy use patterns to establish baseline energy consumption (model) against which savings can be measured.

What Makes a Customer a Good Candidate?

- Organizational commitment to energy management and/or continuous improvement.
- Performance monitoring systems in place
- Experience with energy savings projects with a history of participation in the Save on Energy program
- Focus on operational/behavioural savings as well as capital projects

Questions?

www.saveonenergy.ca

Evelyn.lundhild@ieso.ca