

# Integrating Conservation & Demand Management into Distribution Operations

Tuesday, October 15<sup>th</sup>, 2013



# Agenda

- 1) THESL at a Glance
- 2) Regulatory and Asset Management Environment
- 3) CDM Evolution
- 4) CDM Integration Strategy
- 5) Policy Environment

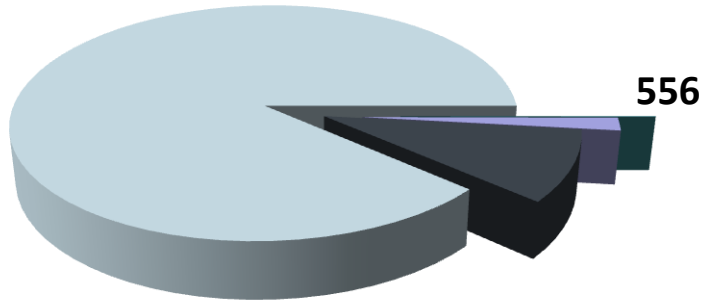
# Toronto Hydro at a Glance

- Largest municipal electricity distribution company in Canada serving a city of 2.5 million people.
- Distributes approximately 18% of the electricity consumed in Ontario
- Approximately 719,000 accounts servicing 934,000 customers
- Peak Load of 5,000 MW

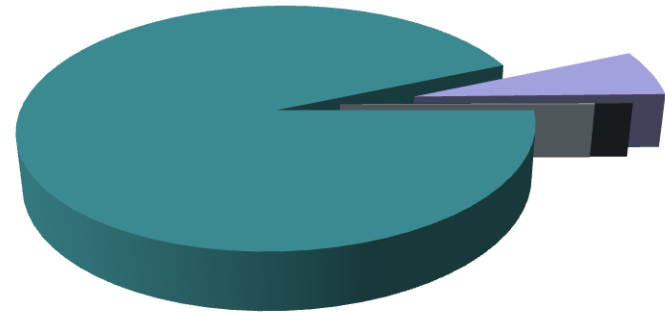


# 64% of Revenue paid by 1.8% of Customers

Customers



Revenue per Customer

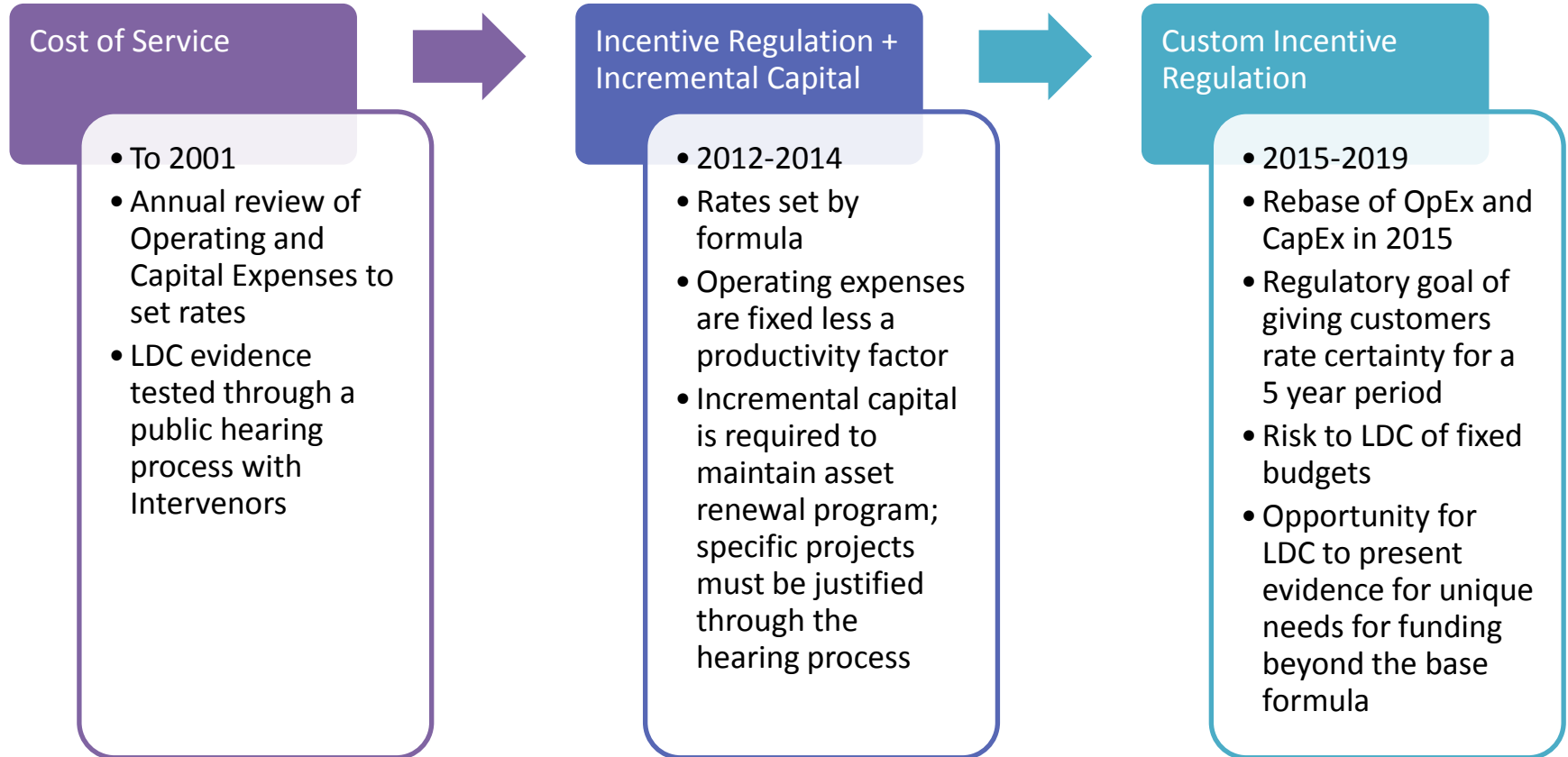


Customer Segment	Revenue (\$M)	Customers	Revenue Per Customer
Large Business >1,000 kW	\$705	556	\$1,268,562
Medium Business 50-1,000 kW	\$1,089	12,225	\$89,057
Small Business <50 kW	\$298	67,970	\$4,377
Residential <50 kW	\$710	637,910	\$1,113
Total	\$2,801	718,661	

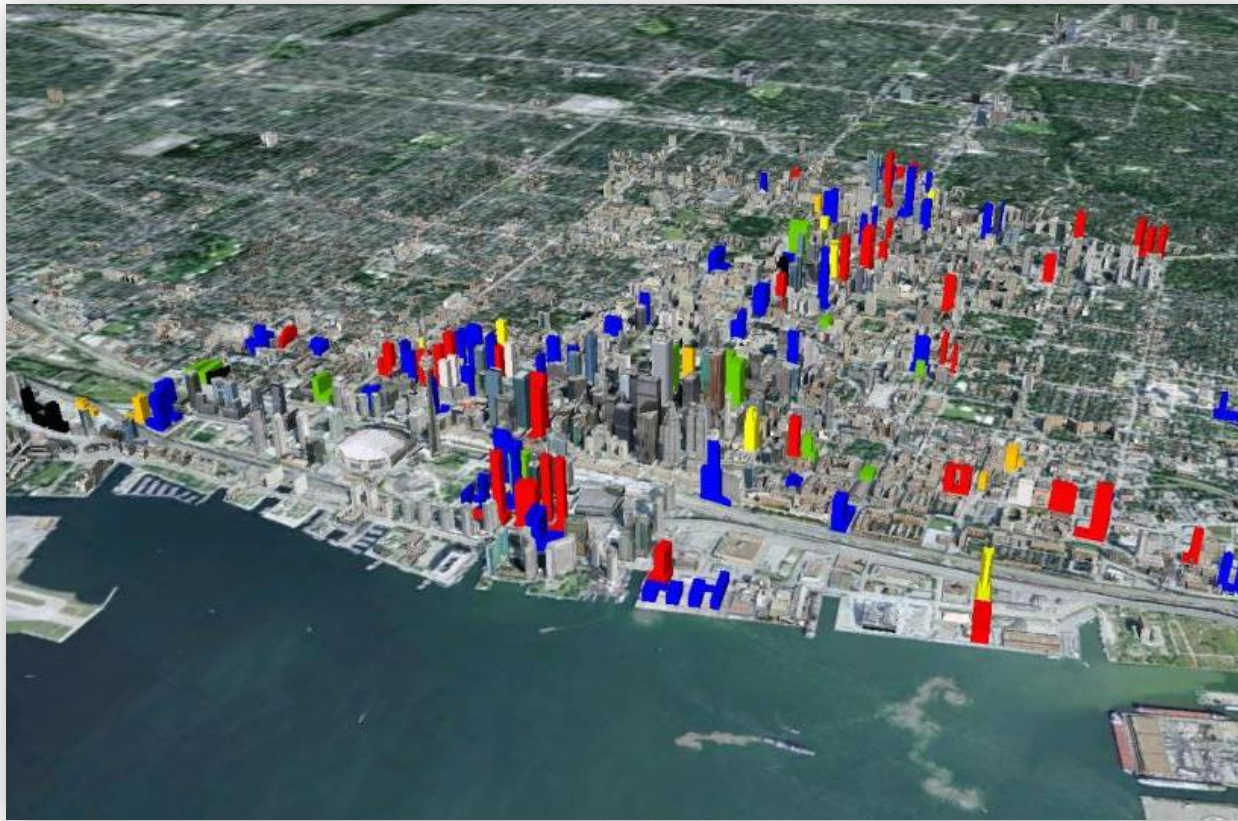
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# Regulatory Environment



# Load Intensification



## Highrises Under Construction

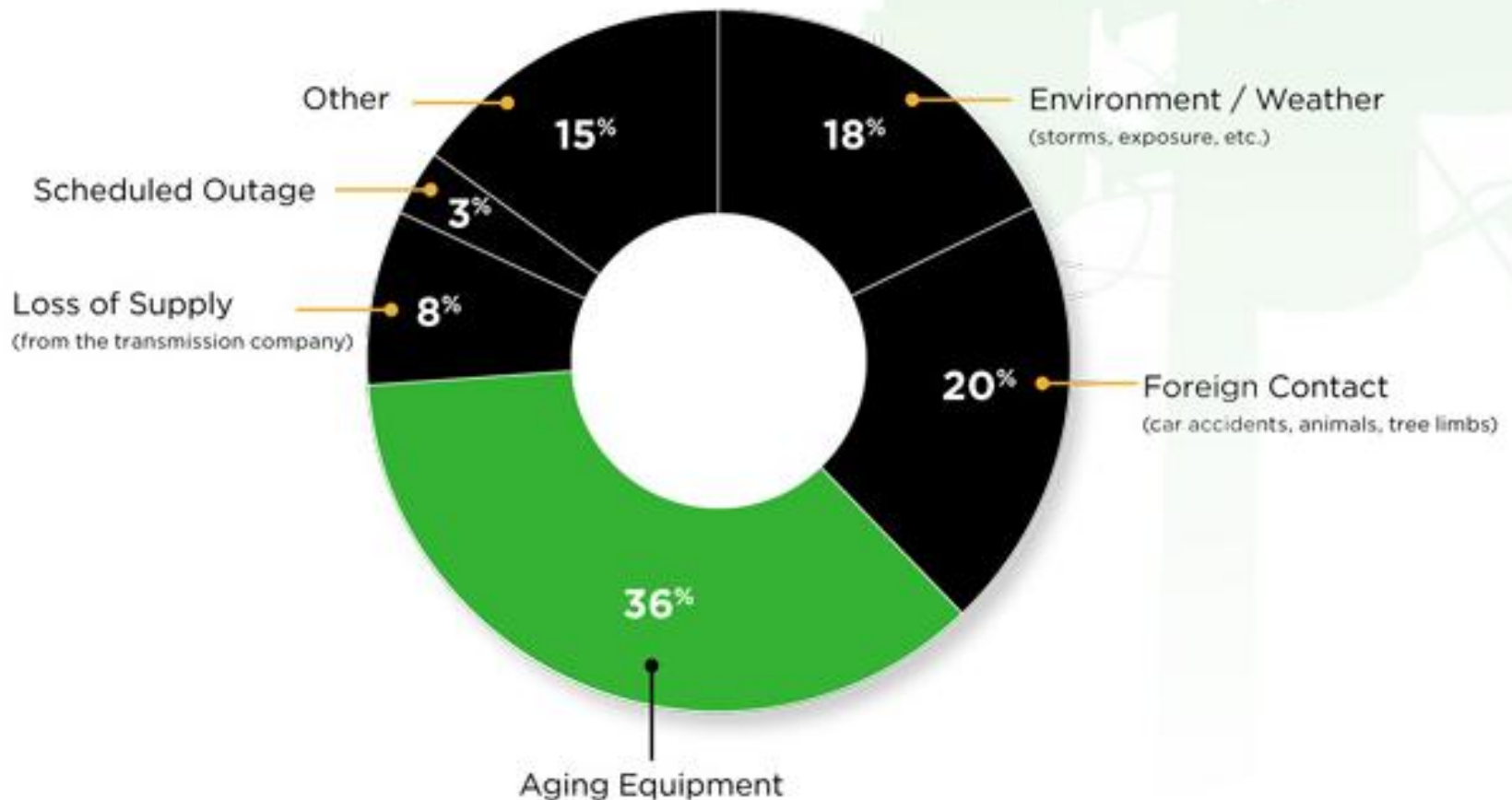
1	Toronto*	189
2	Mexico City	88
3	New York City	82
4	Chicago	24
5	Houston	22

The pace of growth is anticipated to continue in Toronto.

\*Includes highrise and other equivalent large construction projects

## Almost 40% of outages in Toronto are due to aging equipment.

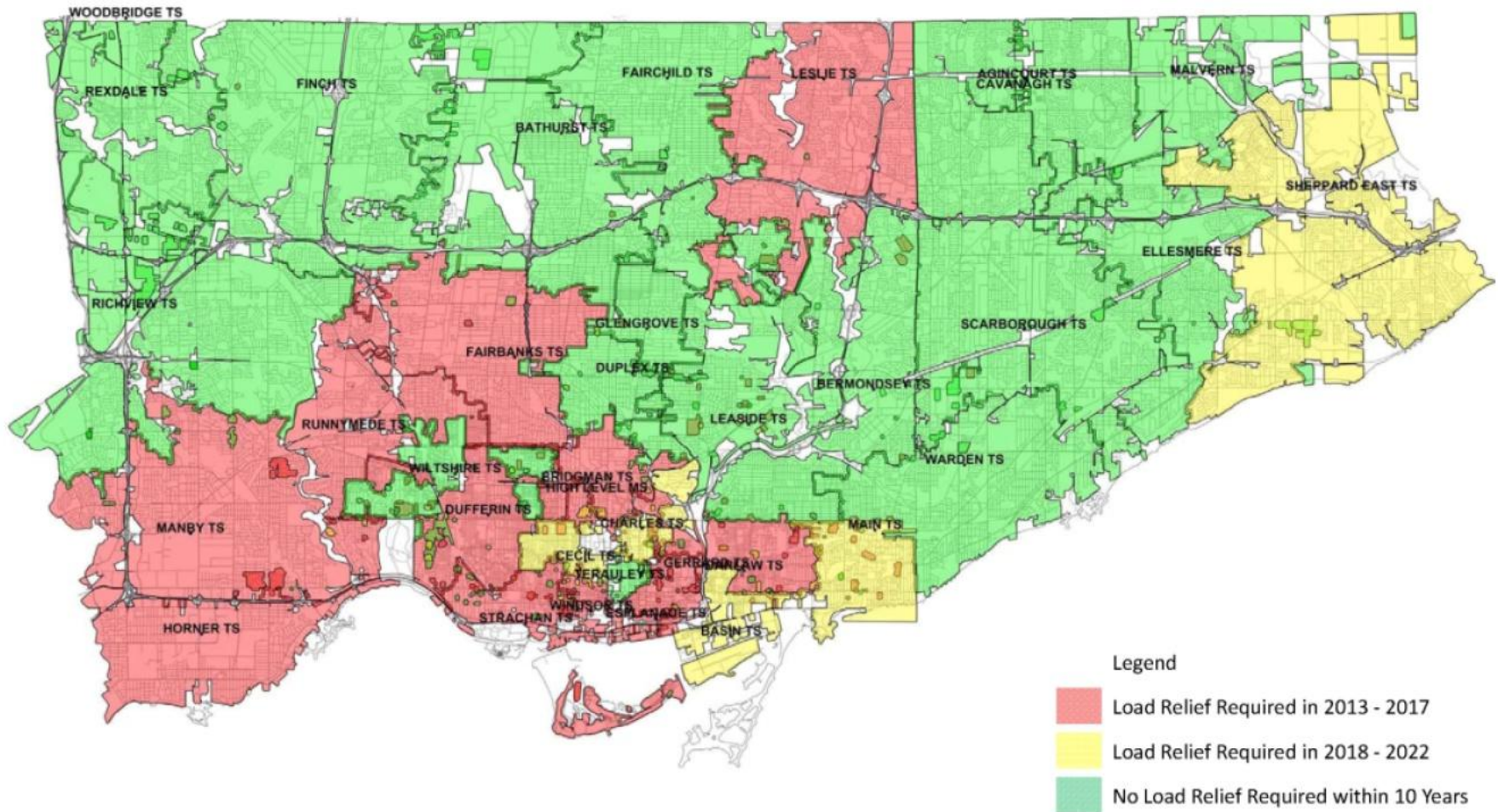
Thanks to our capital investment in infrastructure, equipment-related outages are down 10% since 2009.





# THESL Distribution Capacity Pressures

Upgrades are in-progress or planned to address station bus capacity in specific areas over the next 10 years



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# 2005 - 2014 CDM – Demand Savings (MW)



**OEB 3<sup>rd</sup> Tranche**

- on/off peak, “gross” results

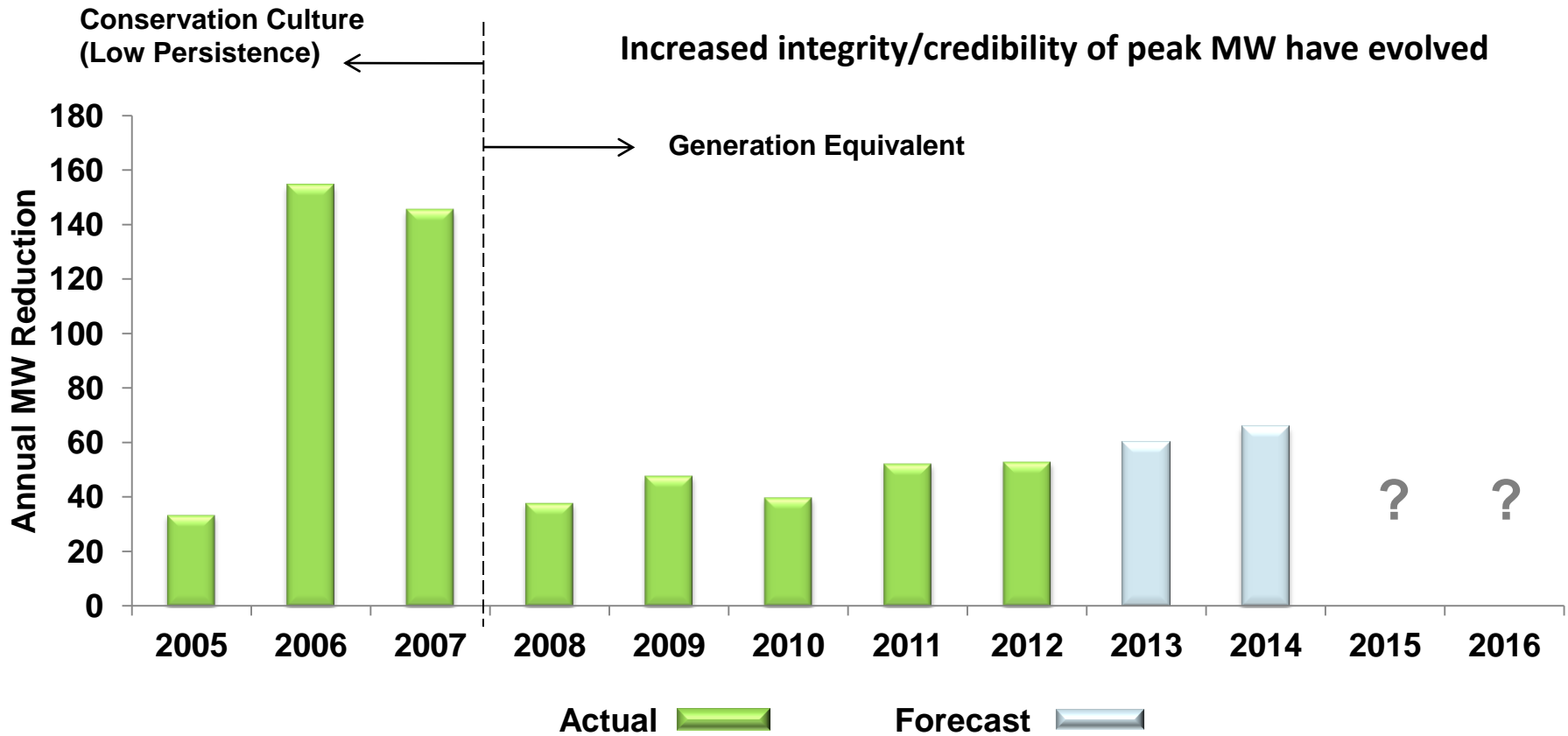
**OPA Standard Programs**

- on/off peak, “gross” results
- Growing market focus on Commercial & Industrial

**OPA Province-Wide Programs**

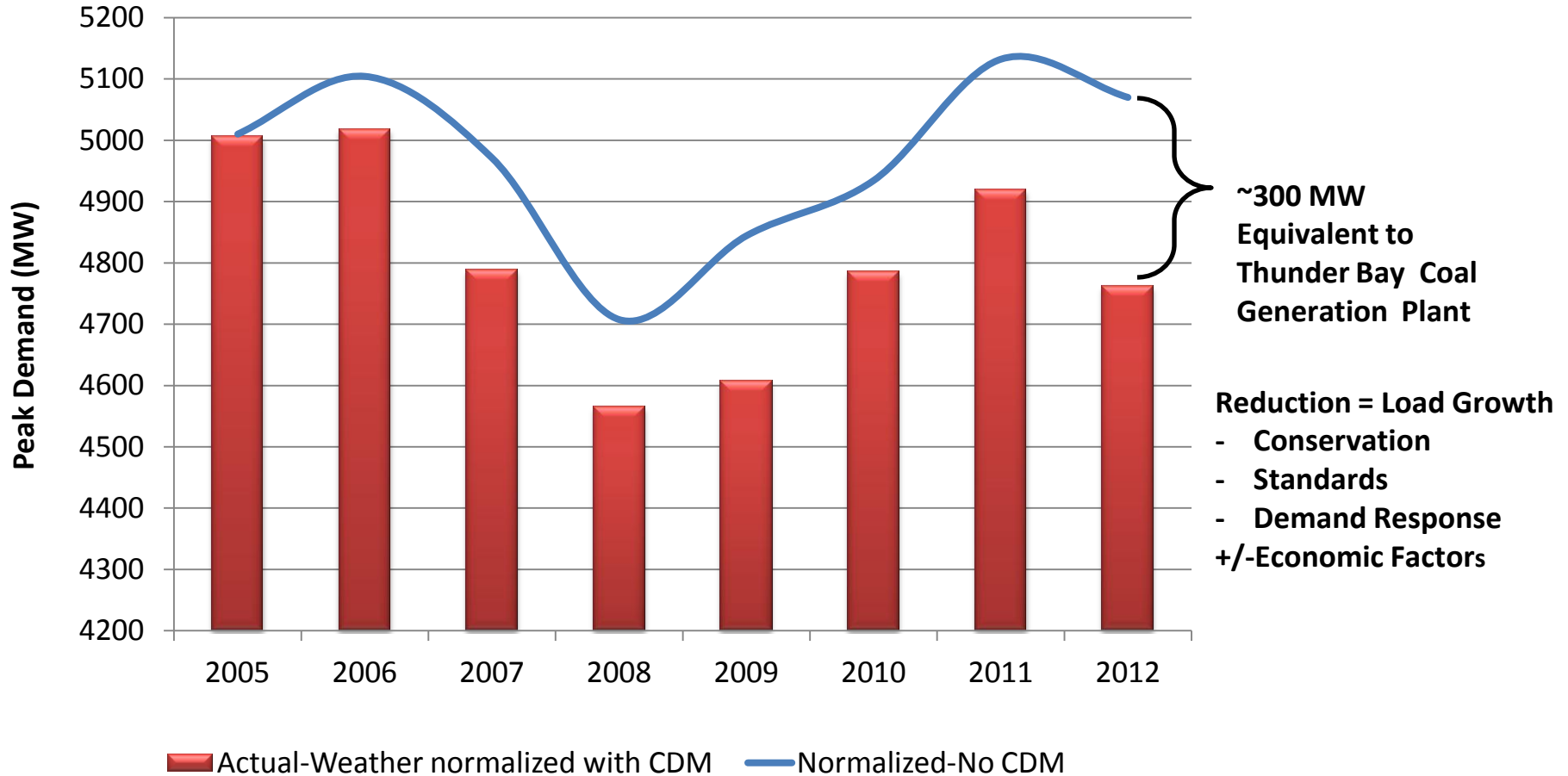
- Summer peak, “net” results
- All market sectors

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# Estimated CDM Impact on System Peak

## System Summer Peak Demand



Load growth of 1.5%

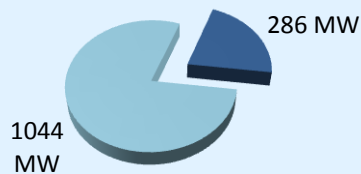
# Current CDM Program (2011 – 2014)

- Green Energy Act
- OEB CDM Code
- Mandatory Reduction Targets

Jobs

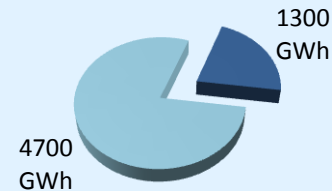
Coal plant phase out

## Summer Peak Demand



■ Toronto Hydro ■ Rest of Ontario

## Annual Consumption



■ Toronto Hydro ■ Rest of Ontario

- Consolidation of Delivery Channels  
“LDC Prime”



Lakeview: 1050 MW

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# CDM Integration Strategy

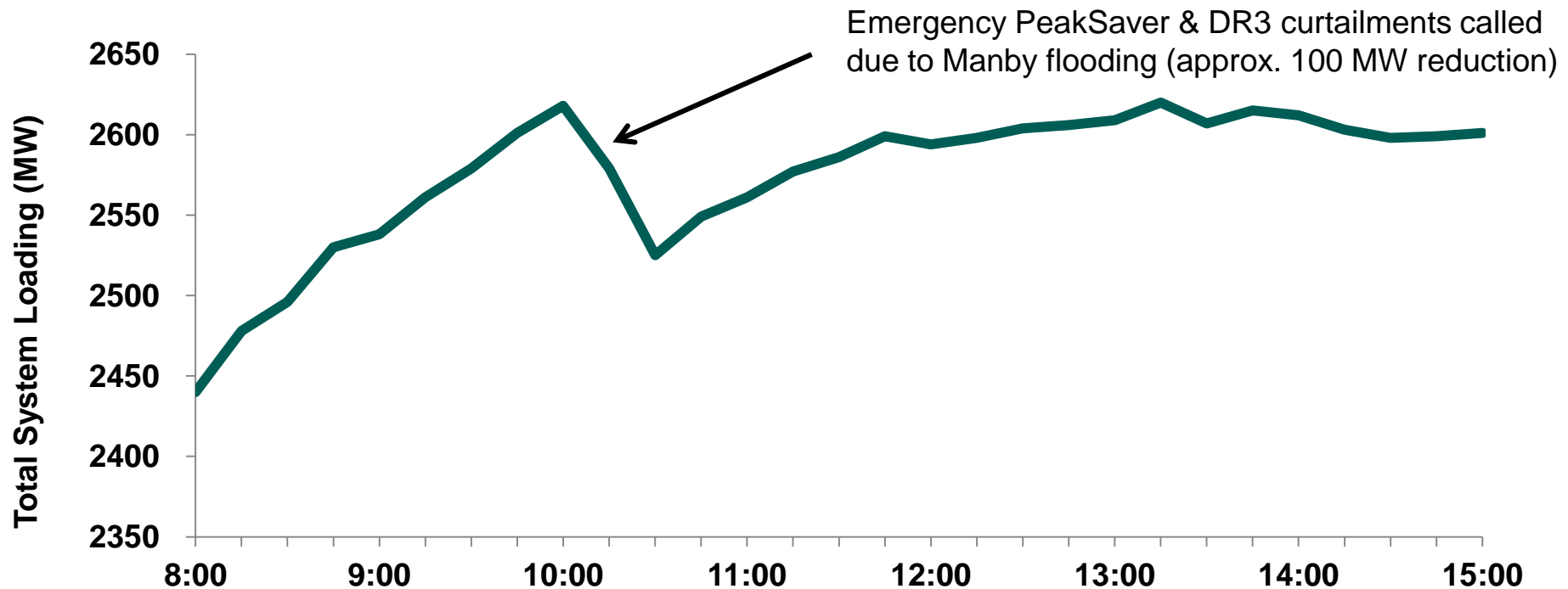
The future of CDM needs to be designed to:

- leverage and enhanced customer relationships that will evolve into a long term partnership
- reduce electricity use and help customers manage rising rate pressure and maintain competitiveness
- provide data and tools for analysis, investment decisions and reporting
- used to add new customer load while managing system peak demand and load constraints
- provide effective programs to help defer traditional investment in asset expansions and ease the pace of rate increases
- harness customer energy assets to used for DM and DR to improve operational flexibility during peak and major outage

# Demand Management & Response

On July 9<sup>th</sup>, 2013, 300,000 customers experienced outages when record rainfall caused flooding at Mandy Transformer Station. Toronto Hydro effectively relieved resulting stresses on the grid with Demand Response programs.

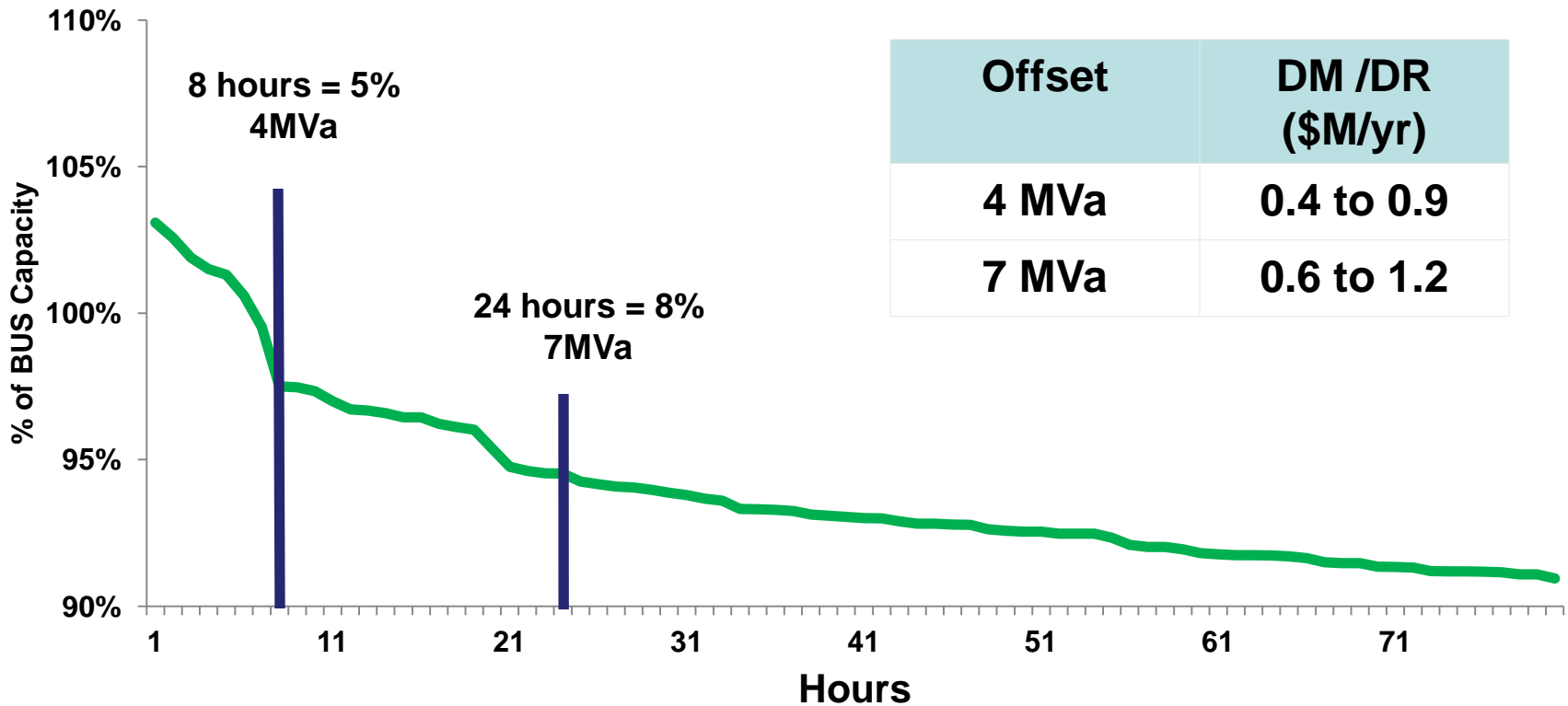
## Total System Loading – July 9, 2013





# Integration Illustration Example

## Station X - Impacted BUS



<b>Station X</b>	<b>-4 MVa</b>	<b>103% Capacity</b>	<b>Cost \$80M</b>
	<b>Rate Benefit</b>	<b>Positive</b>	

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# Policy Environment and Need for Change

- LDC investment in smart grid can be further leveraged for improved system operation and customer integration
- Large Customers need both high reliability and price predictability to remain competitive
- Adapt current framework to allow the distributor to target customer segments or sections of a distribution network, to realize benefits at a local level

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