



# Demand Response Programs In Ontario

## IESO Demand Response Working Group Public Session

April 3, 2014

# Outline of Presentation

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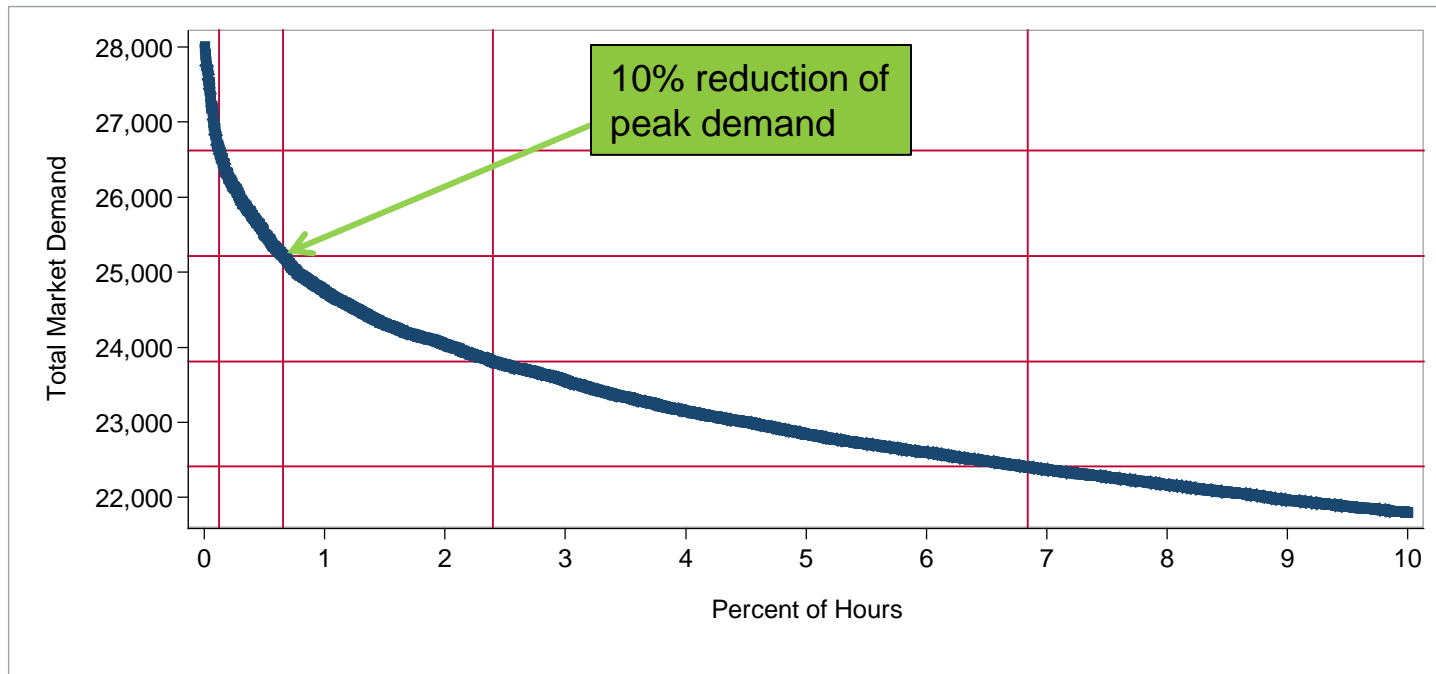
- DR Program intent
- Evolution of DR programs in Ontario
  - Program highlights
- Key findings from program evaluation

# Demand Response Programs in Ontario

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- DR is defined as changes in electricity use by demand-side resources from their normal consumption patterns in response to a signal from the electricity system
- DR is one element in a Conservation and Demand Management (CDM) portfolio approach
  - Complementary to energy efficiency, customer based generation, and behaviour change tools
  - Programs are intended to provide a range of options for customers to participate while providing tools for system operator to manage peak demand
- Customers are compensated or incented for providing capacity to the system
  - payments are based on avoided infrastructure costs
- OPA DR currently provides ~500 MW of capacity to the system

# Ontario's Load Duration Curve



# Evolution of DR programs in Ontario

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- IESO Dispatchable Load (2002-ongoing)
- IESO Transitional DR (2004)
- Northern York Region Demand Response (2006-2012)
- DR-1 (2006-2010)
- DR-2 (2007-2014)
- DR-3 (2008-ongoing)
- Peaksaver® (2008-ongoing)

# IESO Dispatchable Load

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- Introduced in 2002
- Large industrial loads can bid a portion of their electricity demand into both the energy and operating reserve markets
- Compensated when dispatched off based on market prices

## Northern York Region (2006-2012)

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- 20 MW procurement in Northern York Region
- Provided insurance against system failures during the development and construction of the York Energy Centre gas plant
- Participants were paid a monthly Capacity Payment and an Energy Rate
- Trigger conditions based on loading at Armitage TS
- Was never activated and program ended when York gas plant was in service and contract term expired

# Demand Response DR-1 (2006-2010)

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- Evolved from IESO Transitional DR
- Voluntary program enrolled ~440 MW from mainly large industrial sites
- Participant could decide based on a floor price whether or not to curtail their load
- Participants received a curtailment compensation payment (\$/MWh) for the energy use avoided



## Demand Response DR-2 (2009-2014)

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- Permanent load shifting program
- Participants shift load from on peak to off peak hours every weekday in return for an availability payment (\$/MW) and a utilization payment (\$/MWh) that compensates them for any incremental HOEP incurred due to the load shift
- Baseline period for measuring performance was in 2008
- Five year contract term expires late 2014
- 106 MW under contract

# Demand Response DR-3

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- Ongoing program launched in 2008
- About 400 MW currently under contract
- Five year contract schedules
- Firm commitment by participants to deliver demand reduction when notified
- Enforced through penalty provisions in contract and baseline methodology
- Both aggregators and direct participants permitted
- Participants are paid an availability payment (\$/MW) and a utilization payment (\$/MWh)
- Trigger based on IESO supply cushion with a floor price based on natural gas prices (4 hour events, up to 100 hours per year)

# Peaksaver® and PeaksaverPLUS®

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- Residential load control program launched in 2008 controlling central air conditioners, pool pumps and hot water heaters
- PeaksaverPlus launched in 2011 added an in home display of electricity use
- Marketed by local electrical utilities (LDCs) to their customers
- Approximately 100 MW enrolled to date
- Triggered by provincial aggregator based on IESO conditions (4 hour events, up to 40 hours per year)

# Program Evaluation Highlights

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- Voluntary program DR-1 expected response is ~ 35% of enrolled MW while DR 3 with firm commitment yields expected response rate of ~85% of contracted MW
- DR 3 yields a deeper and longer response on peak days for customers eligible for GA Hi-5
- Recommendations to vary the baseline used for reconciliation of customer response based on the type of load being curtailed – not one size fits all
- Value of aggregation diminishes with increased granularity to system operator
- Duration of events affects both customer satisfaction and value to system