



# Demand Response and Smart Grid in Ontario

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# About Rodan Energy

- Largest provider of demand response in Canada (300MW of load under control)
- Smart grid integration company; expertise in metering, energy management and demand response
- Played an integral role in development and implementation of Ontario Power Authority's (OPA) demand response programs
- Load control operator for OPA's residential and small commercial DR program (peaksaver);
- DR clients include: City of Toronto, Loblaw, Gerdau Ameristeel, University of Ottawa, University of Toronto and Chrysler Canada



# Smart Grid in Ontario (Where It Is and Where It's Going)

## Where It Is

- Smart grid is key to a sustainable energy economy and an essential element of Ontario's clean energy future
- Ontario is Canada's smart grid pioneer and a North American leader in smart grid investment
- Closing down coal in 2014
- Continued AMI (Smart meter) roll-out
- Certifications and standards incorporating energy management technologies (LEED, ISO 50001)
- Most wind power in Canada

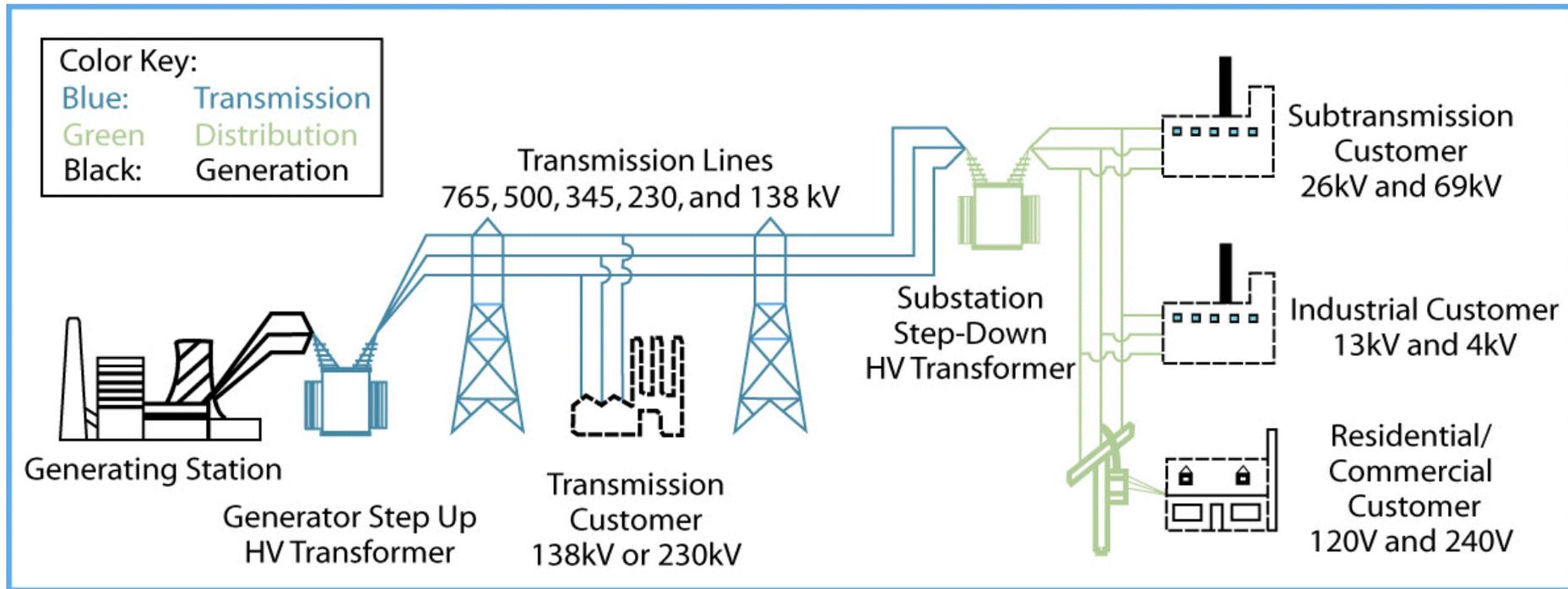
## Where It's Going

- Worldwide smart grid investments rising dramatically
- Ontario smart grid spend - \$200M/year over next 5 years (SG Forum)
- Canada's electricity infrastructure spend - \$15 billion a year for the next 20 years (Conference Board of Canada)
- Innovation and investment is key



# Today's Power Grid

## Centralized Power System

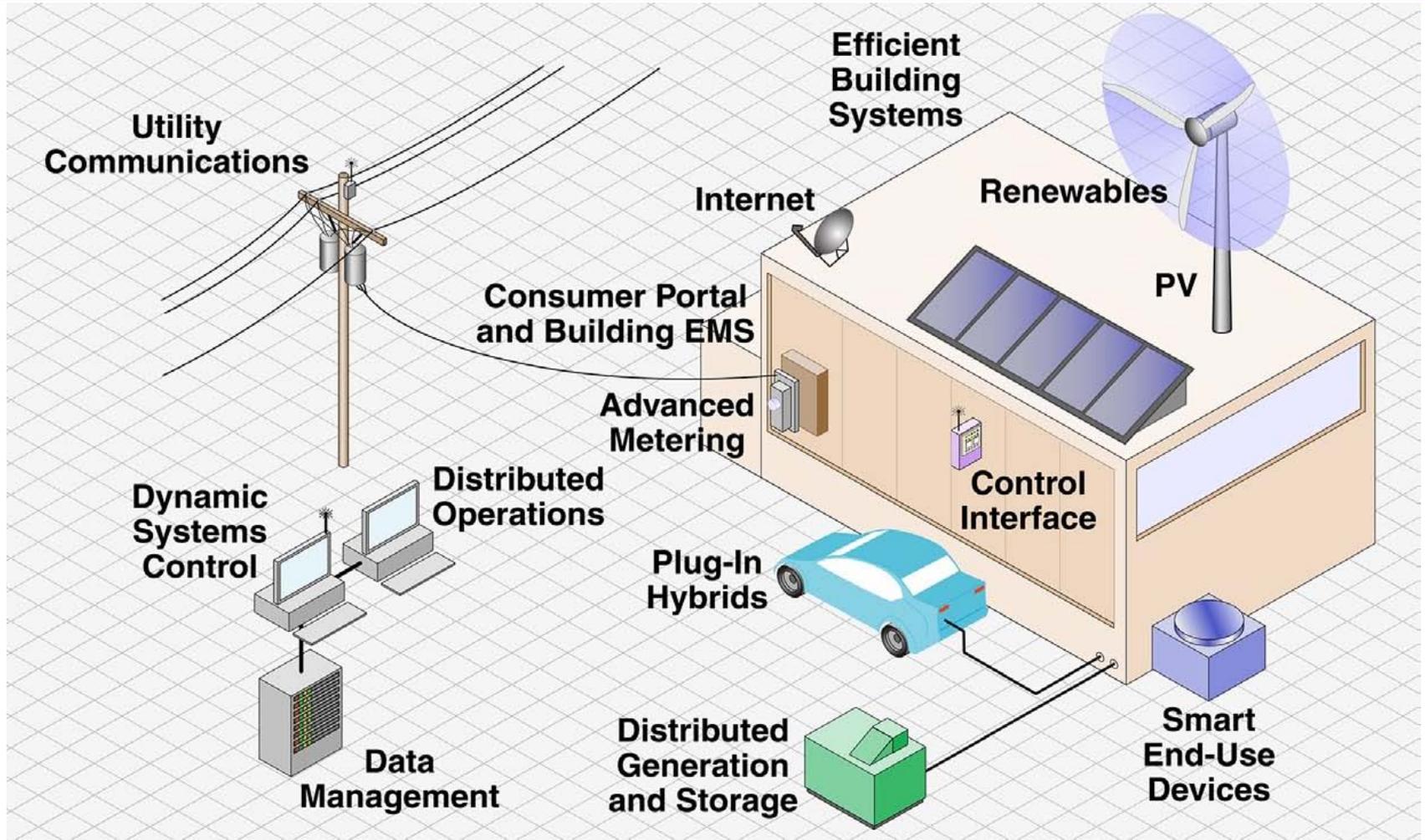


# The Smart Grid

Source: IESO Smart Grid Forum Report 2009



# Understanding the Smart Home or Business

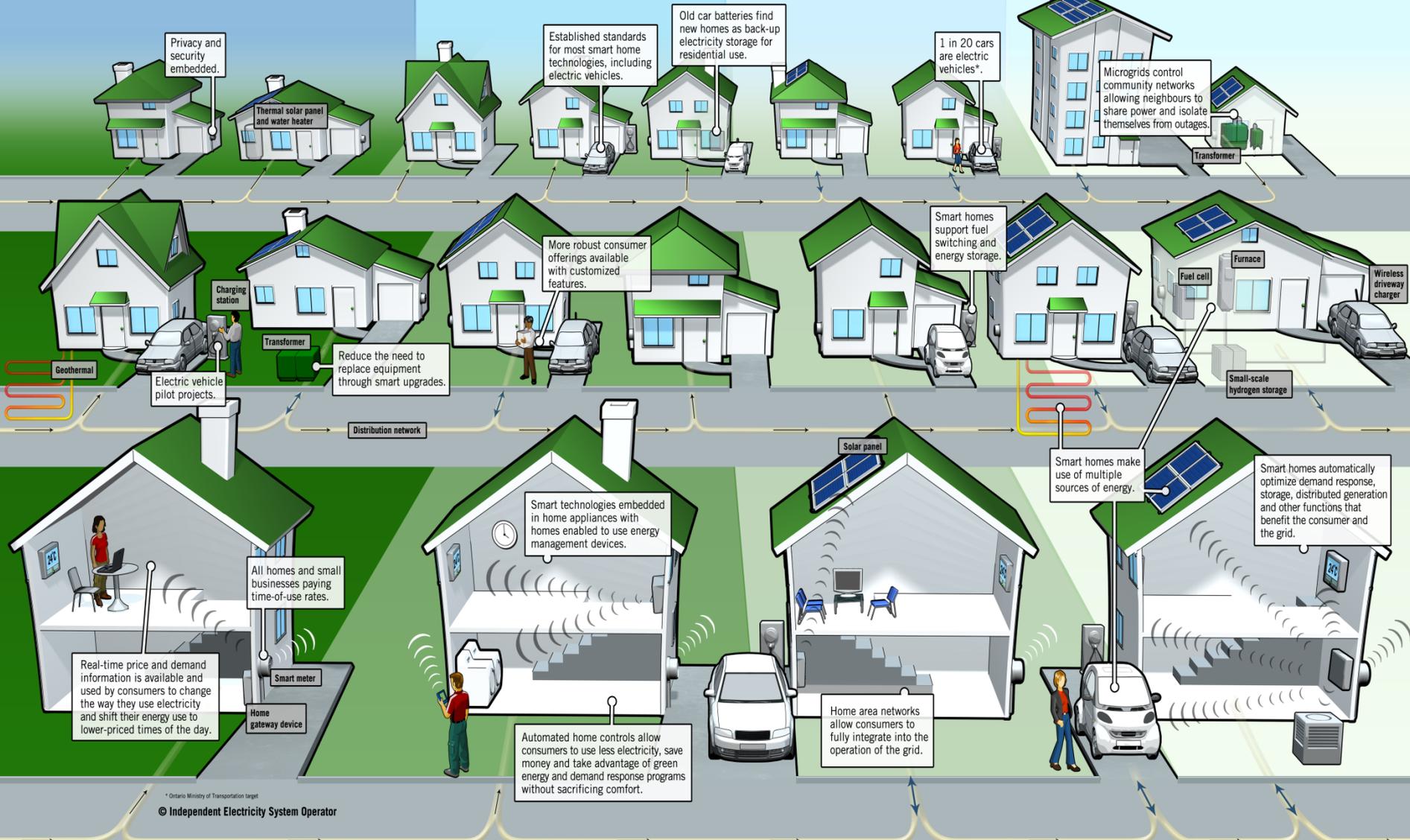


## 2012

## 2015

## 2020

## 2030



# Case Study: Loblaw

# Loblaw<sup>®</sup>

C O M P A N I E S   L I M I T E D

Loblaw Companies Limited is Canada's largest food retailer with more than 1,000 corporate and franchise stores from coast-to-coast.

- Successfully implemented demand response in 170+ retail locations using lighting and HVAC
- Rodan working with Loblaw to determine DR capabilities at new state-of-the-art data centre (with planned capacity of 15MW) using back-up generation
- Developed customized program to fully automate demand response program participation
- Rodan continues to work with Loblaw to seek out and implement new demand management opportunities



# Loblaw (Challenges/Opportunities & Results)

## Challenges

- Risk averse to using data centre for DR; concerns: data loss, 100% uptime
- Limited resources to manage program; needed fully automated experience
- Customer experience at store level could not be effected

## Opportunities & Results

- DR at data centre allows for regular usage of back-up generation in true load setting; ensures availability in emergency situation and “fitness” of equipment
- Rodan delivered fully automated DR experience using controls technology limiting Loblaw resources needed
- DR had no adverse effect on customer experience and showed Loblaw commitment to efficient energy usage and provided new revenue stream
- Additional demand management opportunities exist for Loblaw (ie. Regulation Service)



# Case Study: *peaksaver*®

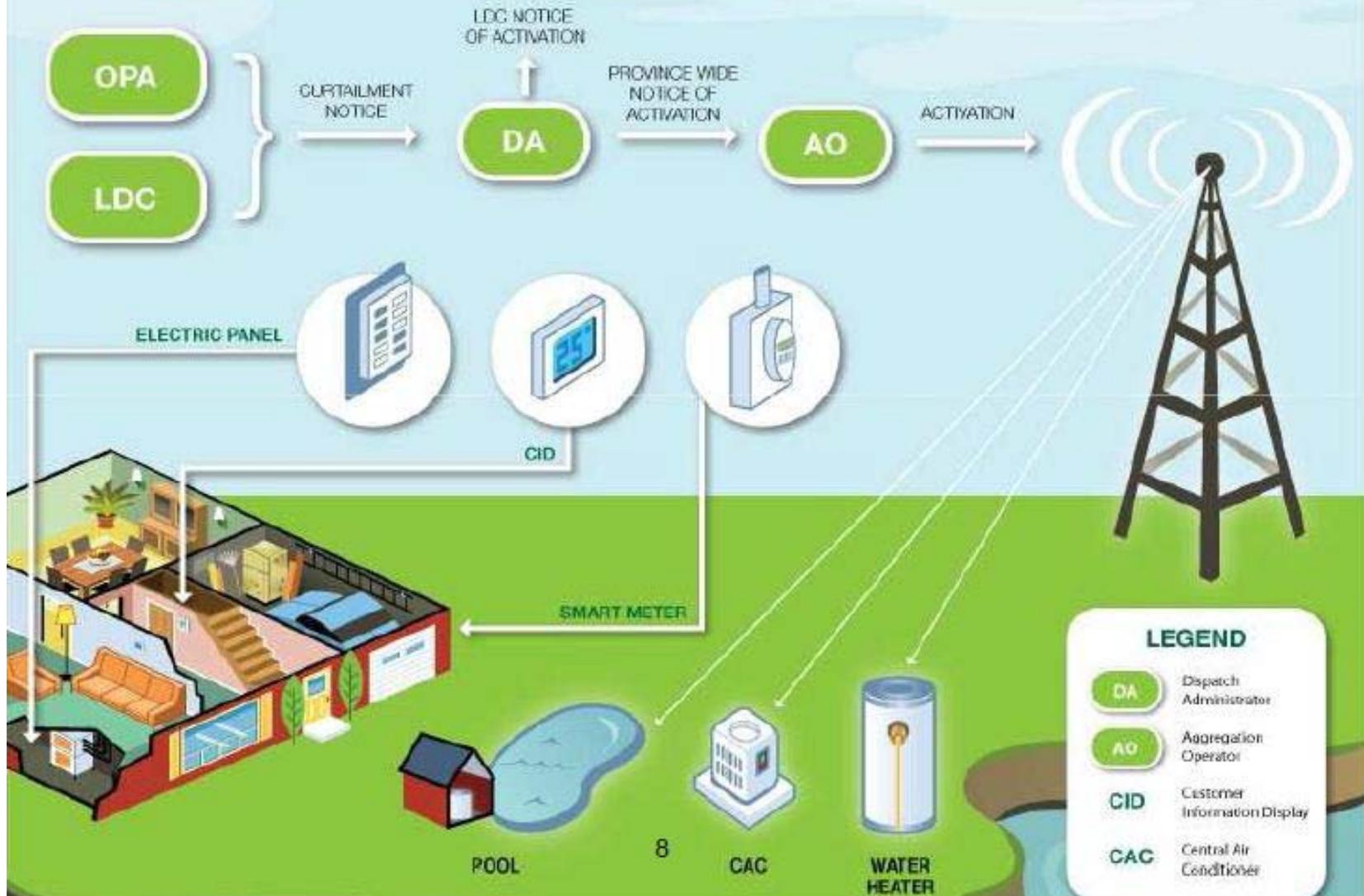


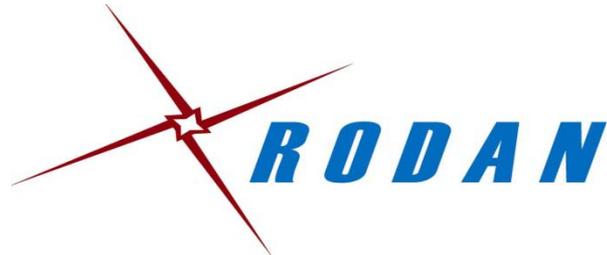
- Dispatch Administrator and Aggregation Operator for Ontario Power Authority's (OPA) peaksaver™ program.
- Rodan has been the Aggregation Operator of the program since 2008
- DR program involving thousands of residential and small commercial facilities embedded within Ontario's leading utilities, representing over 144 MW of demand response capacity.
- Rodan's Network Operations Centre (NOC) operates numerous technologies allowing utilities to operate a wide variety of devices offering greater choice to their customer



# Case Study: *peaksaver*®

## RESIDENTIAL DEMAND RESPONSE 101





## ***Enabling tomorrow's Smart Grid today***

***Paul Shervill, VP, Strategic Initiatives***

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