



Proud member of



Evolution of the Smart Grid in Ontario A Driver for Ontario's Manufacturing Sector

Energy Connections Summit
Paul Grod, President & CEO, Rodan Energy
May 4, 2011



About Rodan Energy

- We are a leading smart grid services provider delivering integrated energy solutions to electricity consumers, distributors and power producers.
- Combining our expertise in metering, energy management and demand response, we are enhancing power system reliability and price responsiveness in today's green energy sector.

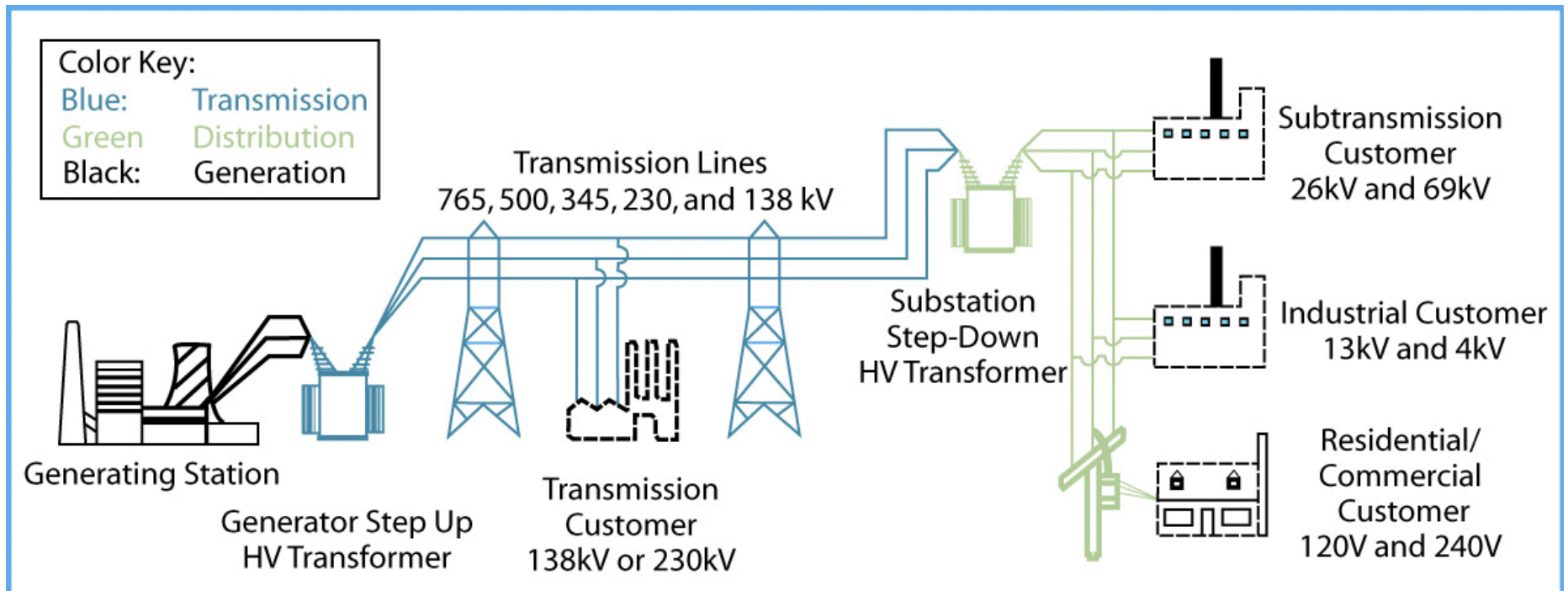


Smart Grid – what is it?

- Reliable and fast-adapting power grid
- Matches supply and demand in real-time
- Combines computing and communications to manage/automate two-way flow of electricity
- Integrates:
 - Renewable (intermittent) energy
 - Distributed generation
 - Demand response
 - Smart appliances
- The internet of electricity systems

Today's Power Grid

Centralized Power System

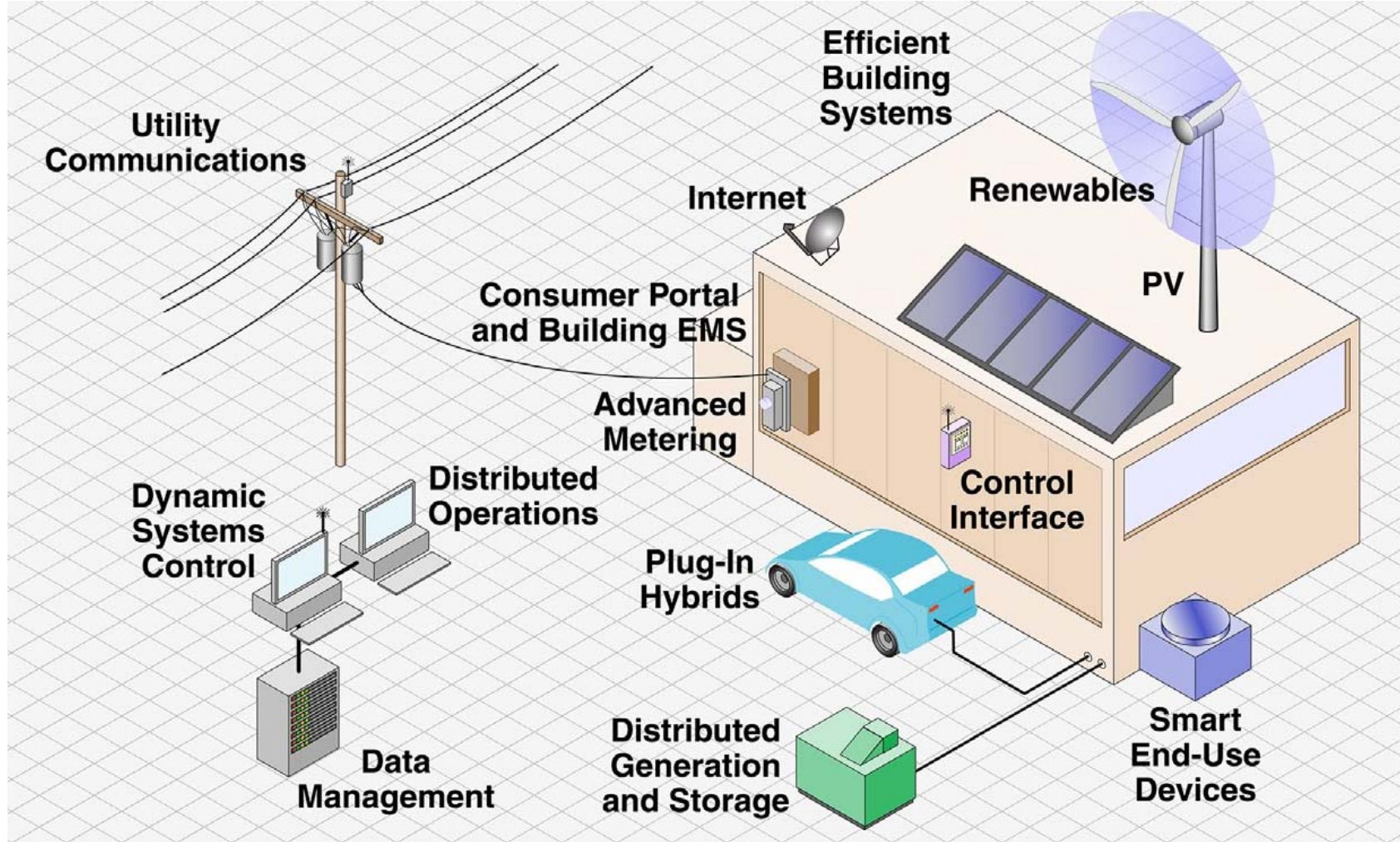


The Smart Grid

Source: IESO Smart Grid Forum Report 2009

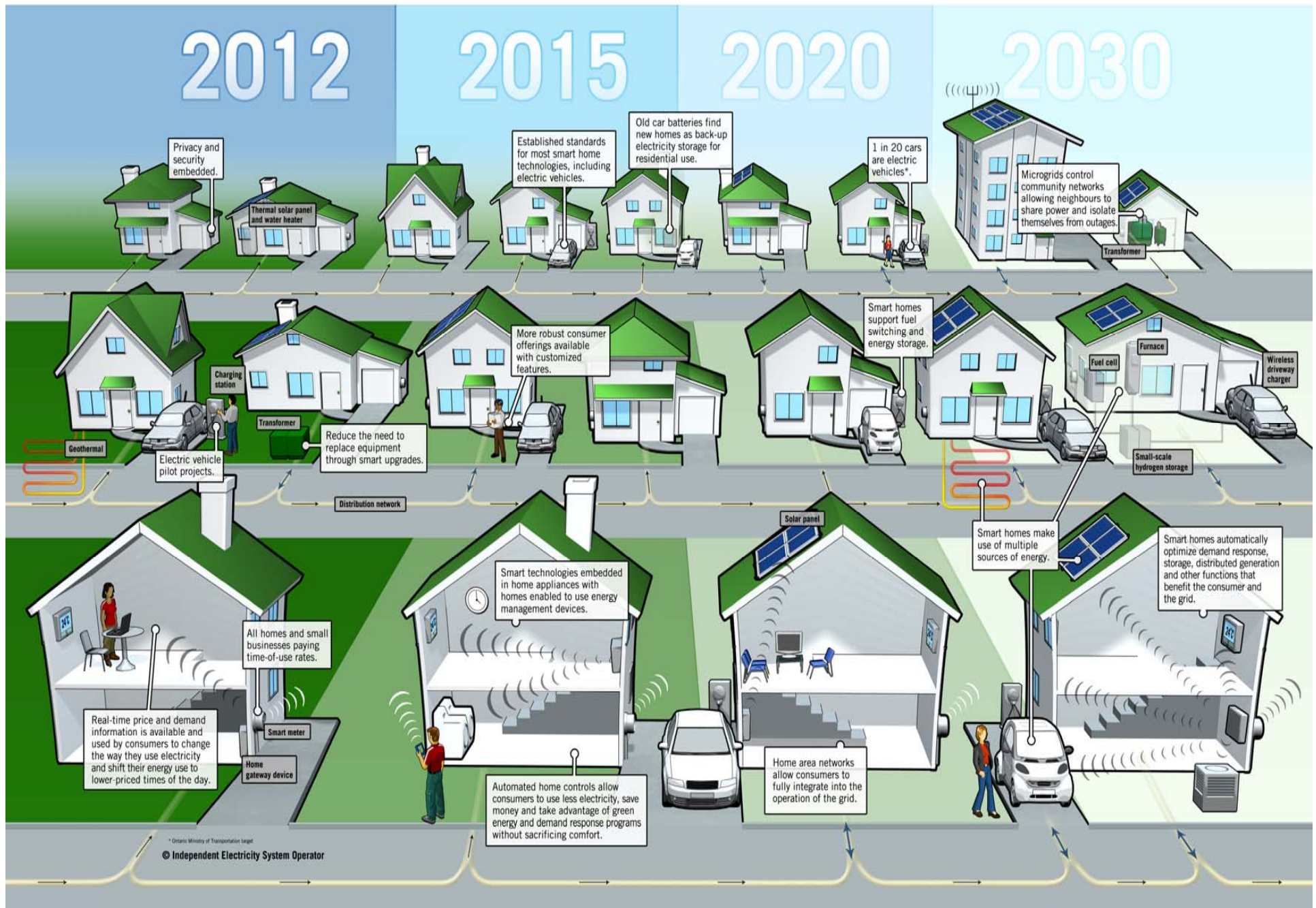


Understanding the Smart Home or Business



Ontario Smart Home Roadmap

Source: IESO Smart Grid Forum Report 2011



Introduction

- Smart grid is key to a sustainable energy economy and an essential element of Ontario's clean energy future.
- What is a sustainable energy economy?
 - Environmentally sustainable
 - Reliable
 - Economically viable
- Ontario is Canada's smart grid pioneer – tremendous opportunities for early movers

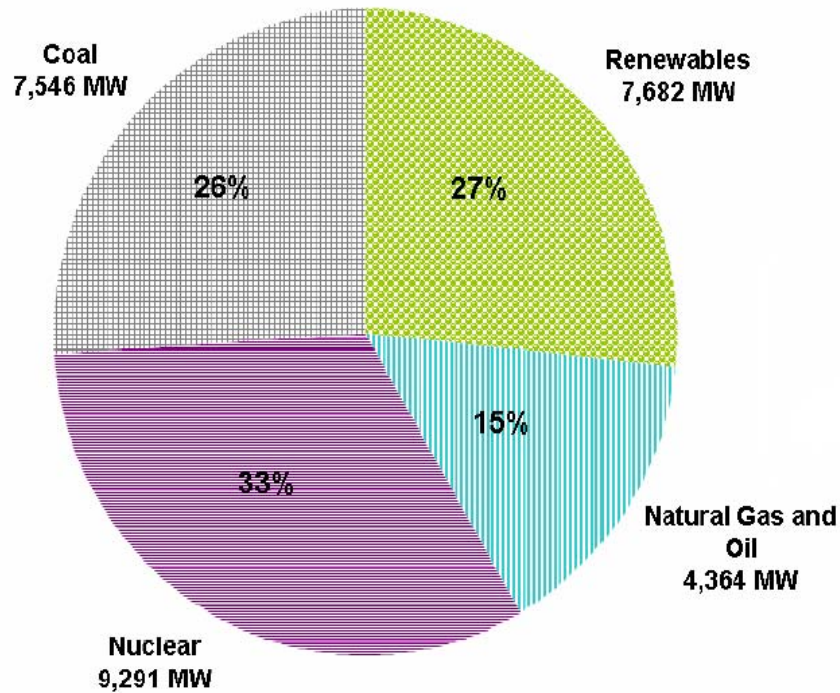
Catalysts for Change

What's causing this dramatic change?

- Closing down the Coal in 2014
- AMI (Smart meter) roll-out
- Green Energy Act (Ontario) passed May 14/09
 - Policy commitment to conservation, smart grid and renewables
 - Feed-in tariffs to procure renewables and distributed power
 - Incentives for demand management
- Change in electricity supply mix and the way we use power

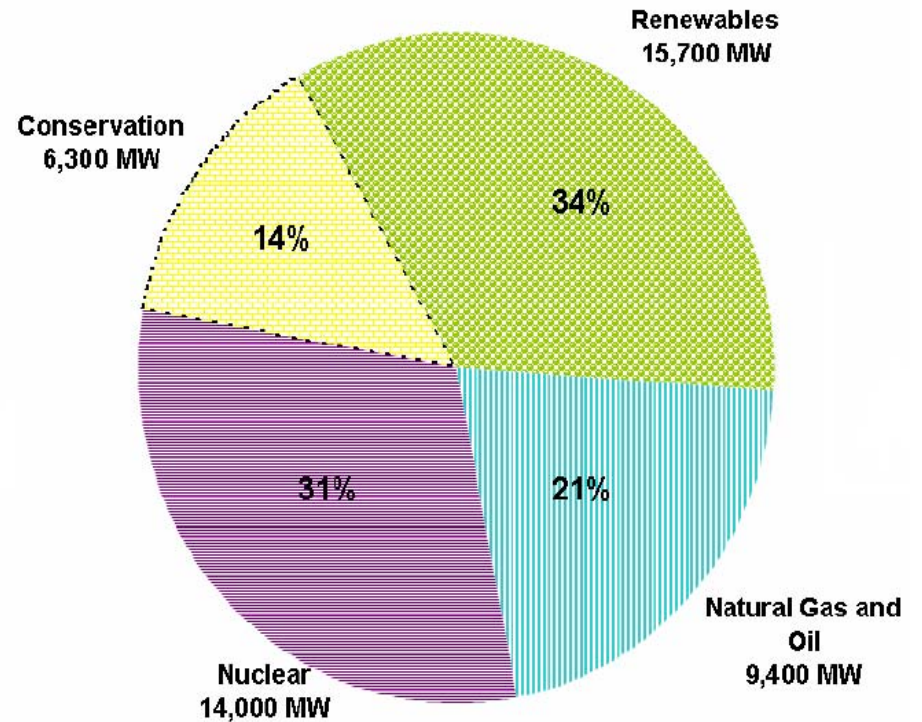
Ontario's Electricity Supply Mix

2003 Supply Mix



Total 28,883 MW

2025 Supply Mix



Total 39,100 MW

Catalysts for Change

- Electric utilities to deliver 1300MW Conservation and Demand Management by end of 2014
- Certifications and standards are incorporating energy management technologies
 - LEED - Demand Response LEED Pilot Credit to be launched later this spring
 - ISO 50001 international standard for energy management – 3Q 2011

Catalysts for Change

- In past 2 years over 25,000 FIT project applications
- Increasingly dynamic production and consumption of power
- Most wind power in Canada
- Largest solar plant in North America (80MW)
- Worldwide smart grid investments rising dramatically – other provinces, U.S. states and other countries

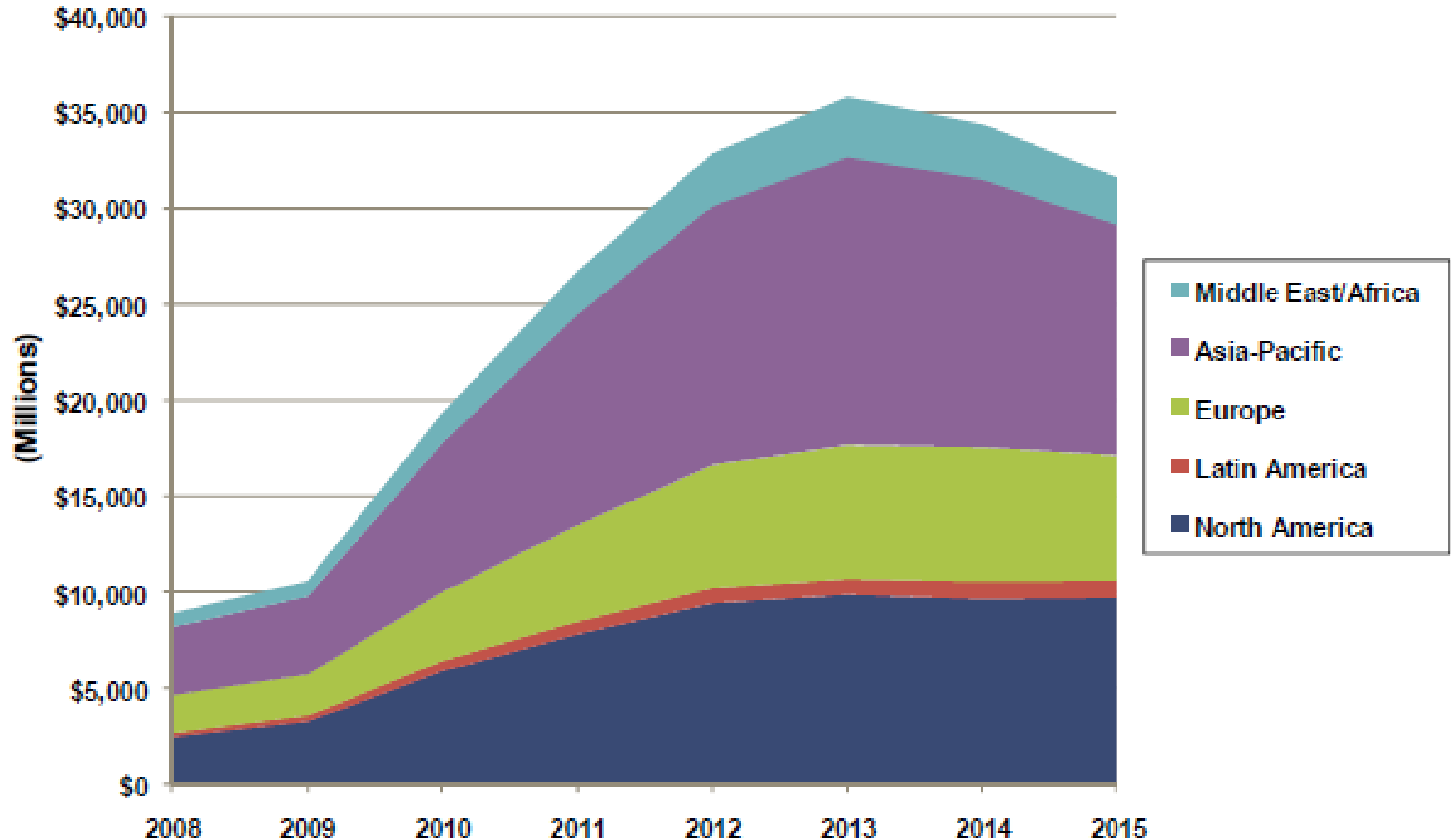
Smart Grid Market Potential

North American smart grid spend

- Ontario smart grid spend - \$200M/year over next 5 years (IESO SG Forum)
- Canada's electricity infrastructure spend - \$15 billion a year for the next 20 years (Conference Board of Canada)

Smart Grid Market Potential

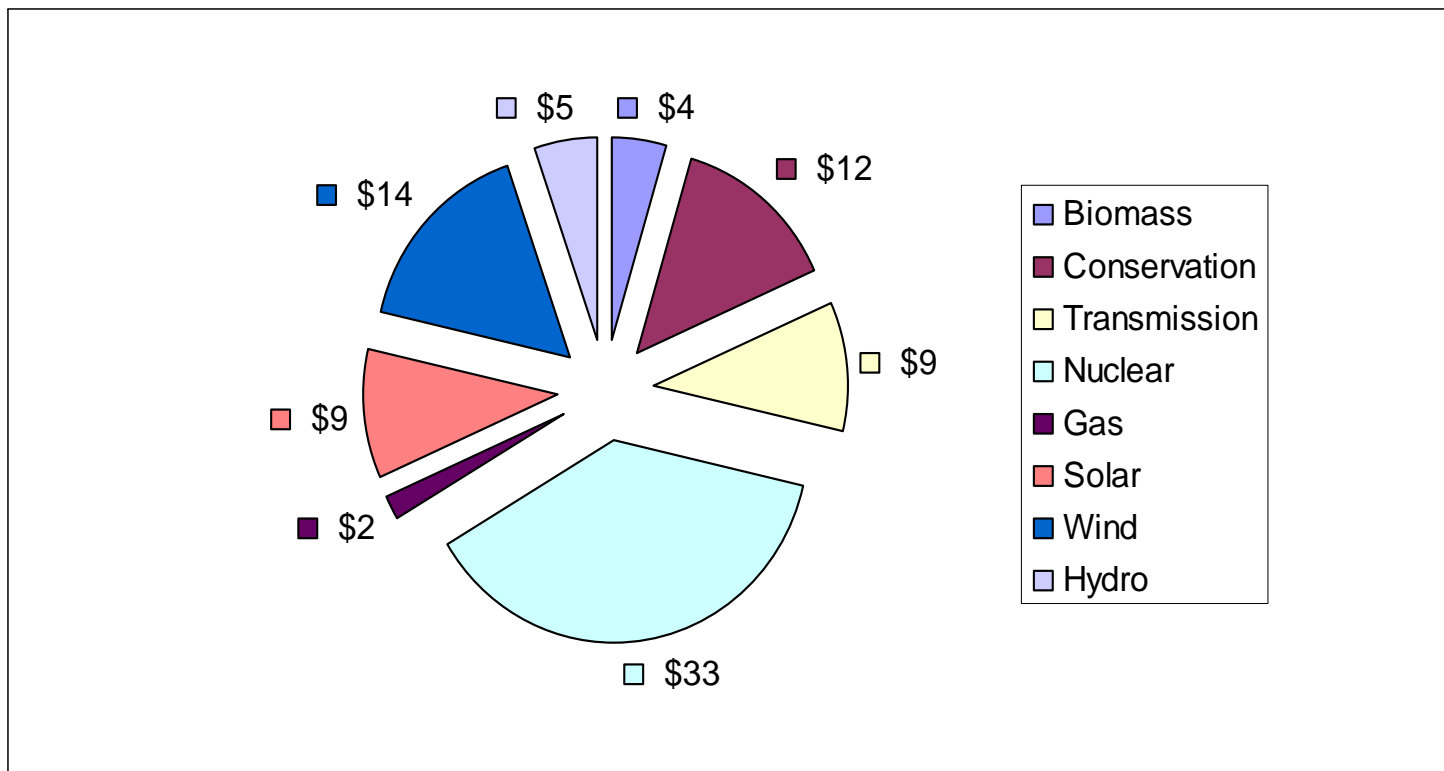
Smart Grid Revenue by Region, World Markets: 2008-2015



(Source: Pike Research)

Smart Grid Market Potential

Capital Cost of Ontario's Long Term Energy Plan \$87B (2010-30)



Source: Ontario Ministry of Energy

Business Opportunities for CME

- Renewable technologies
- Conservation and demand management technologies
- Electric vehicles and charging stations
- Energy/battery storage

Business Opportunities for CME

- Smart communications and switching technologies
- Cyber security
- Metering and monitoring
- Home-energy management
- Smart building technologies
- Supporting infrastructure

Smart grid investment & innovation

- Key to competitiveness is innovation
 - E.g. GE's new \$40M smart grid innovation center Markham, ON
- \$50M Smart Grid Fund announce last week to supporting the growth of Ontario's smart grid by investing in Ontario-based projects
- \$7B investment announced by Samsung
- Satcon one of more than 20 companies setting up or expanding plants to manufacture parts for the solar and wind industry

Smart grid investment & innovation

- Ontario Centers of Excellence
 - New Solar technologies which exceed world record efficiencies with McMaster and Arise Technologies.
 - A PV- Statcom - providing night time utility for solar farms (with UWO, and several partners involved in the Sarnia Solar Farm).
 - A range of storage technologies - including Temporal Power (flywheel technology), Hydrostor (compresses air) and Electrovaya (battery technologies).
 - Wind turbine for extreme cold northern environments (with Hydro One and U Waterloo).
 - And the Energy Hub System with U Waterloo, Milton Hydro and Energent.



Conclusion

- Renewables, the smart grid and demand response are the killer apps of a sustainable economy
- Ontario is a NA leader in smart grid investment
- Incentives to invest in Ontario
- Political risk is real but mitigated by global trends, sustainable energy economy, and international standards
- Early mover opportunities for Ontario companies
- Innovation and investment is key to success



Enabling tomorrow's Smart Grid today

Paul Grod, President & CEO

RODAN ENERGY SOLUTIONS INC.

165 Matheson Blvd. East, Suite 6
Mississauga, ON L4Z 3K2
(905) 625-9900 x225
paul.grod@rodanpower.com

www.rodanenergy.com

