

Council for Clean & Reliable Electricity

How Can LDCs Adapt to a Brave New World

October 15, 2014

**Dennis Nolan
PowerStream Holdings Inc.**

What is PowerStream?

- Provides electricity and related services
- Provides service to more than 370,000 customers primarily residing or owning business in communities located immediately north of Toronto and in Central Ontario
- Owned by the municipalities of Barrie, Markham and Vaughan
- More than 500 employees
- Over \$1 billion in assets
- Service area of 854 square kilometres encompasses a population of approximately 1,000,000
- Second largest municipally-owned distribution company in Ontario

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PowerStream Service Territory



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I. What's Happening in the Industry



Edison Electric
Institute

Power by Association

Disruptive Challenges:

Financial Implications and Strategic Responses to a Changing Retail Electric Business

Prepared by: Peter Kind
Energy Infrastructure Advocates

Prepared for: Edison Electric Institute

January 2013



“The threat to the centralized utility service model is likely to come from new technologies or customer behavioural changes that reduce load”

“Recent business history has provided many examples of companies and whole industries that either failed or were slow to respond to disruptive forces and suffered as a result”

Energy Infrastructure Advocates Report
prepared for EEI, January 2013



LDCs are at the Crossroads

- Consumption is dropping
- Grid price is increasing
- Off-grid technologies, micro-grids, renewables, CHP, energy storage, conservation, etc. are limiting dependence on traditional distribution

PowerStream Total Normalized Energy Sales per Customer (1998 - 2013)

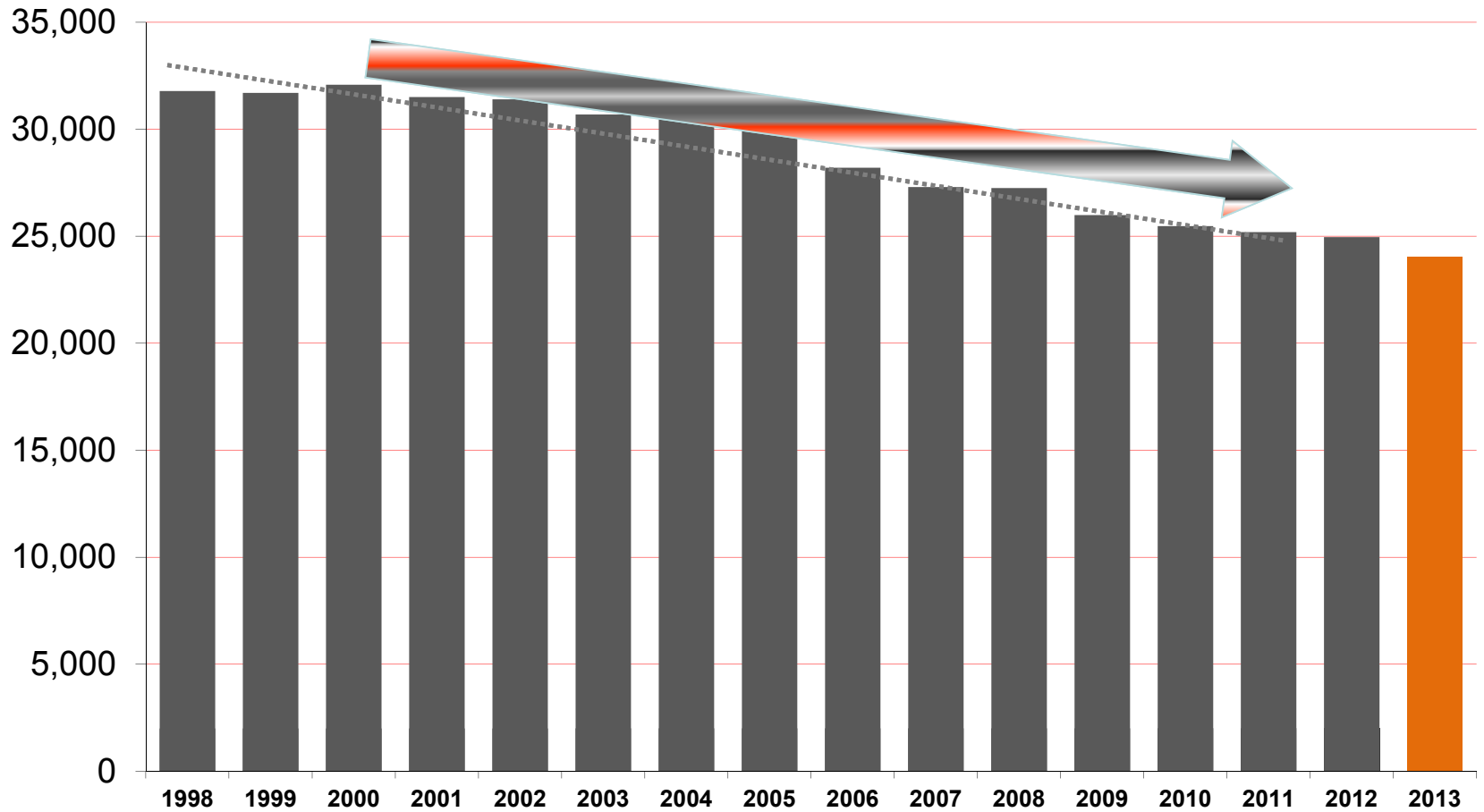


Figure 3: Residential Electricity Intensity*

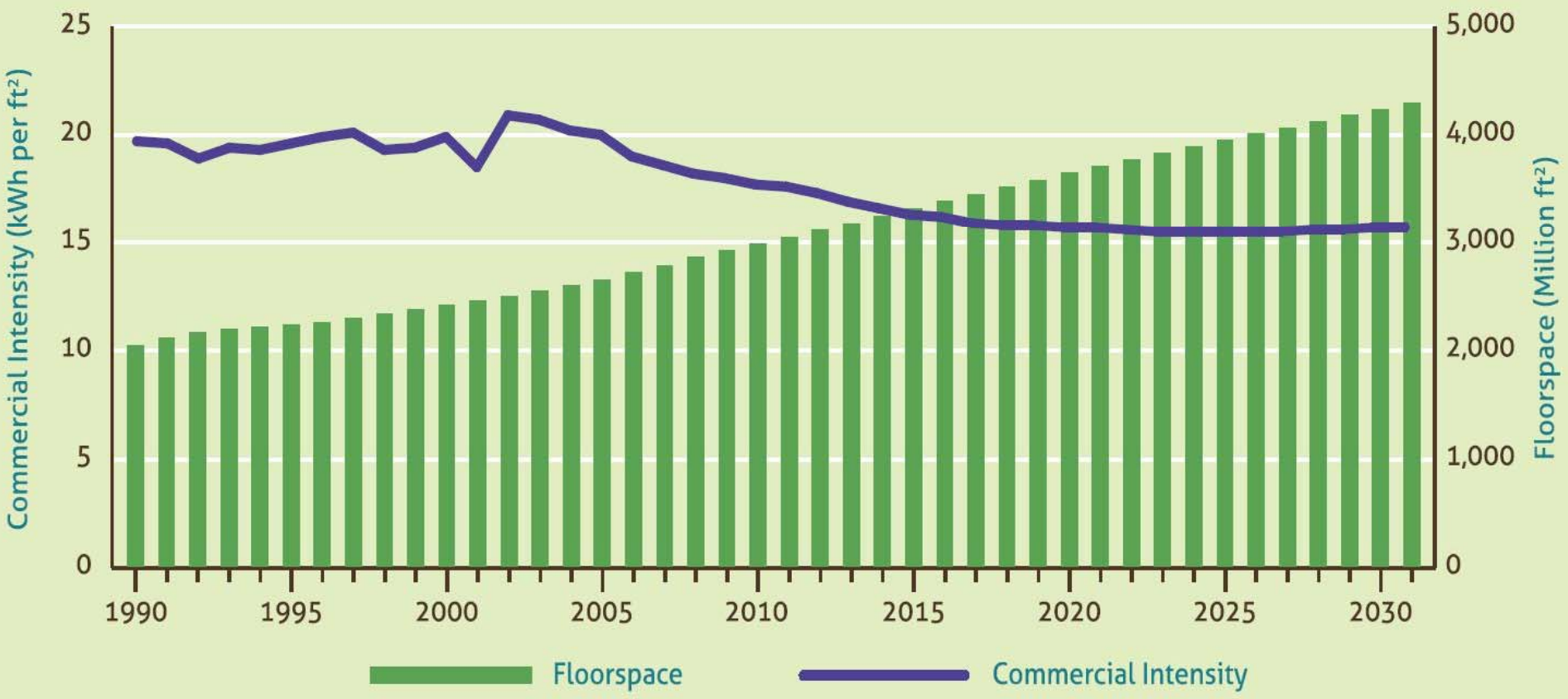
Households are becoming more efficient



2013 LTEP	2014	2032
Gross Residential Intensity (kWh/household)	8,480	7,860
Number of Households	5,310,000	6,651,000
Gross Energy Demand (TWh)	48.0	55.7

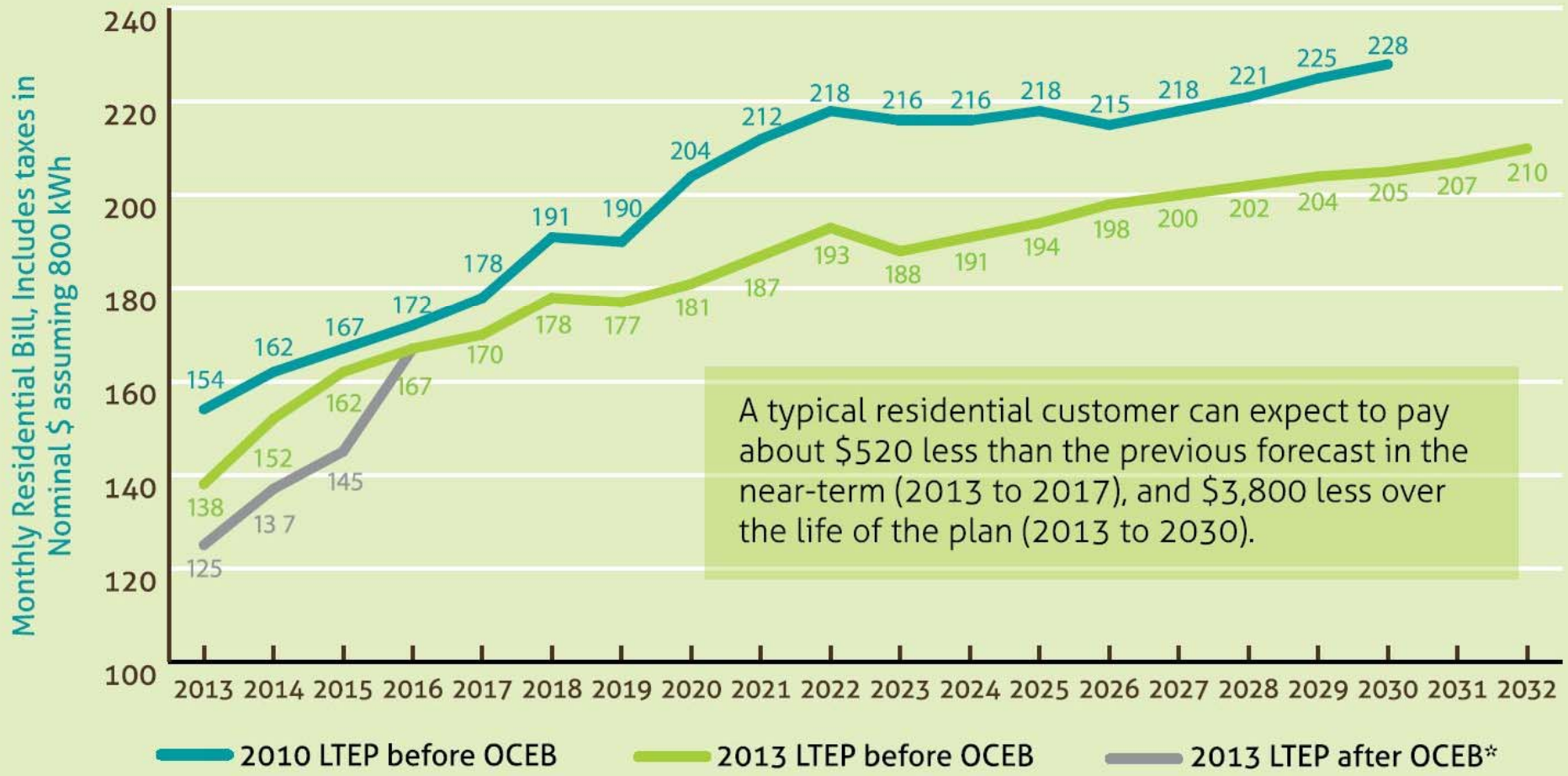
Figure 4: Commercial Electricity Intensity*

Businesses are becoming more efficient



2013 LTEP	2014	2032
Commercial Intensity (kWh per square foot)	16.6	15.7
Floor space (Million square feet)	3,287	4,409
Gross Energy Demand (TWh)	58.0	73.8

Figure 7: Typical Residential Electricity Bill Forecast



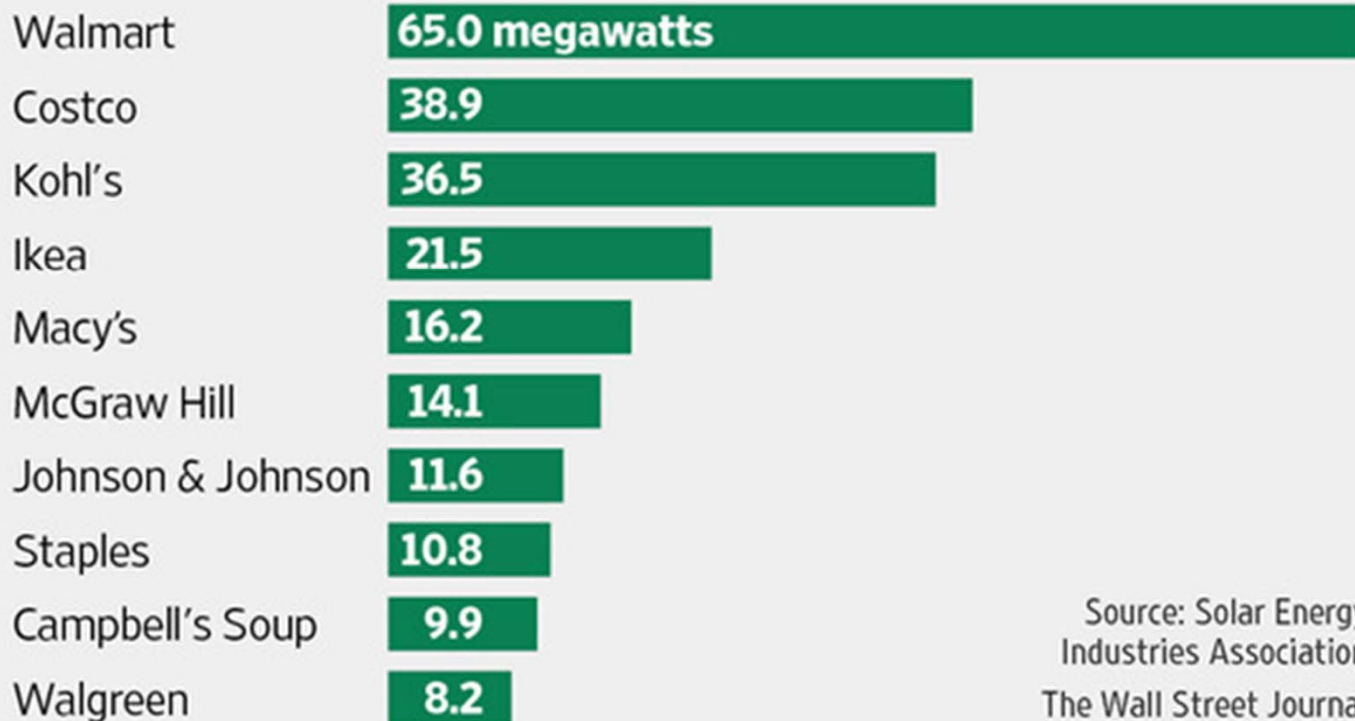
A typical residential customer can expect to pay about \$520 less than the previous forecast in the near-term (2013 to 2017), and \$3,800 less over the life of the plan (2013 to 2030).

THE WALL STREET JOURNAL.

Companies Unplug From the Electric Grid, Delivering a Jolt to Utilities

U.S. Companies Tap More Sunlight

Companies that have installed the most solar panels, by capacity



Source: Solar Energy
Industries Association
The Wall Street Journal



II. LDC Landscape

- LDCs face twin pressures:
 - aging infrastructure
 - public pressure against increased costs
- Danger of stranded costs from:
 - lower consumption per customer
 - spreading increased costs over a smaller base
- Lack of sustainable funding mechanism for:
 - capital investments
 - implementing new technologies
 - If LDCs don't do it, others will (and are!)



III. What the New Model Needs to Look Like

- Re-define the definition of permitted LDC business to balance traditional assets with new business opportunities i.e:
 - Micro-grids
 - Distributed generation
 - Behind the meter services
- Engage with and better respond to customer needs, i.e. provide behind the meter services; facilitate off grid solutions.



IV. Enablers

- Scale
- Capital (Private equity, i.e. Pension funds)
- Removal of tax barriers, i.e. transfer tax
- Change in industry regulation to support innovation and new business model
- Broadening of scope of permitted activities for LDC and affiliates
- Partnerships



The Power of Partnerships...

Nissan Canada

Nissan Leaf and V2G



**GE, Enbridge, Enviro-Energy
Technologies Inc., Rosewater Energy
Group, Navigant, Renewz, SMA
*Micro Grid Demonstration Project***



Korea Electric Power Corporation

Micro Grid/Smart Grid Technologies



Georgian College and Ford Canada

EV Charging Station





Appendix

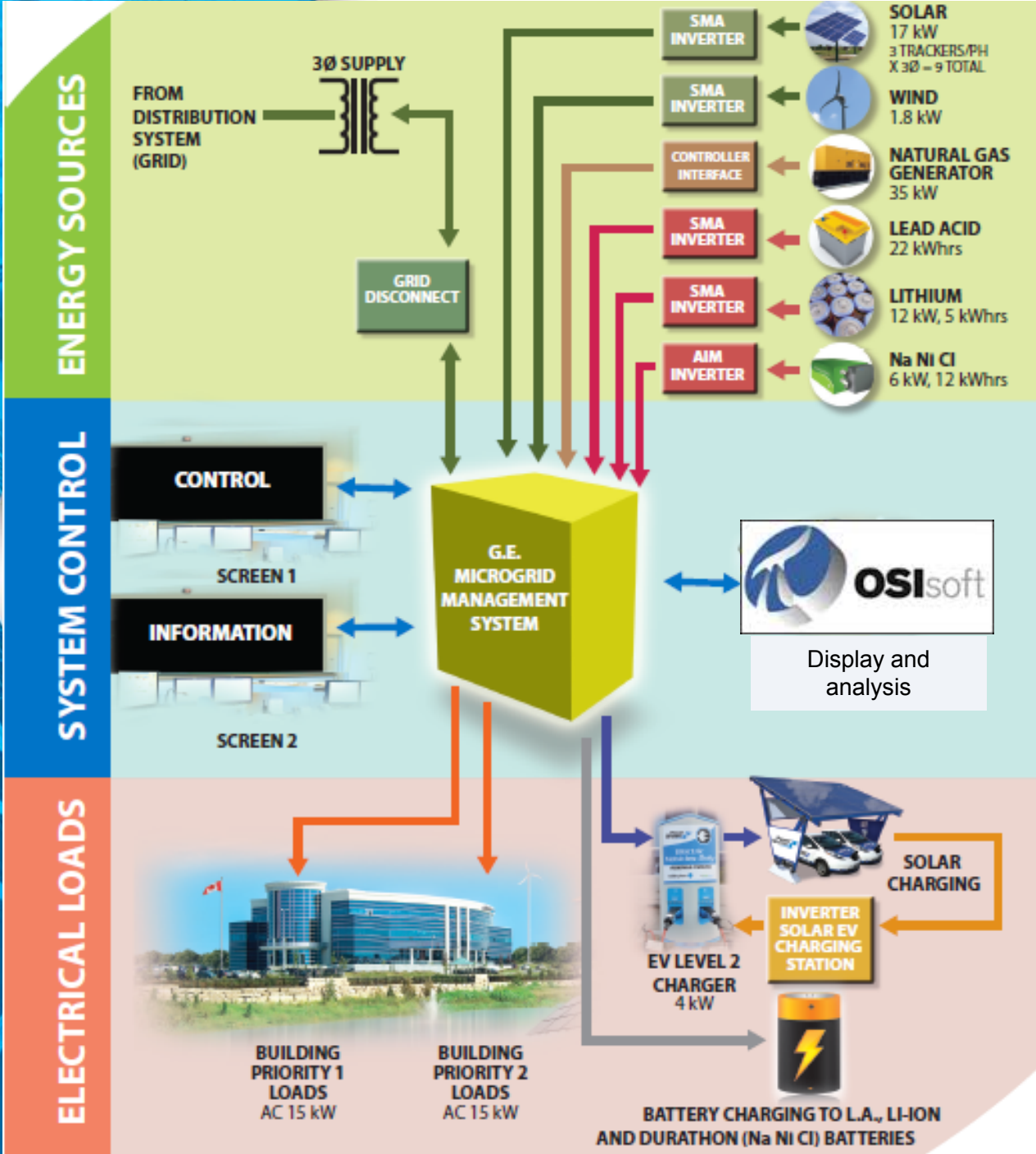
PowerStream's Micro Grid

For PowerStream, a Micro Grid is a sustainable and reliable energy system comprising of a number of different energy sources **capable of seamlessly operating on or off the provincial grid**

- Loads typically located in close proximity, and may include a single customer or load center such as a hospital, school or campus.
- Generation side consists of renewable and sustainable sources
- May have multiple connection points to distribution system
- May have load prioritization

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- 25 kW renewables
- 35 kW generator
- 40 kWh storage
- 30 kW load

Generation assets



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OEA
COMPANY OF THE YEAR
Presented by
PowerStream Inc.
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and a member of the PowerStream Group

Control and storage assets



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Thank You



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