

Enabling Resilient Business

Proactively embracing new service models

Paul Ferguson, President
Newmarket-Tay Power Distribution Ltd.

Sandford Fleming Forum
October 11, 2018

Our mission

Earning the trust of our customers by safely and reliably meeting their electricity needs.



Our territory

- OEB-licensed local electricity distribution company (LDC)
- Operate distribution system in OEB-approved service area
- Shareholders:
 - Town of Newmarket
 - Township of Tay

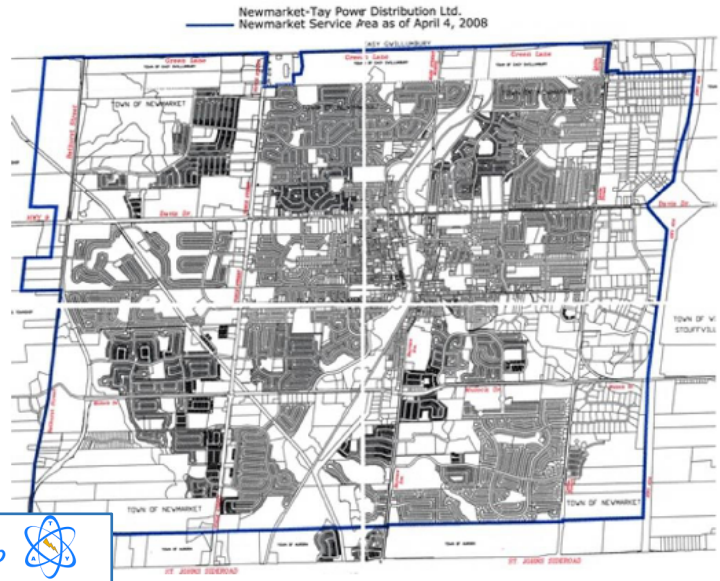
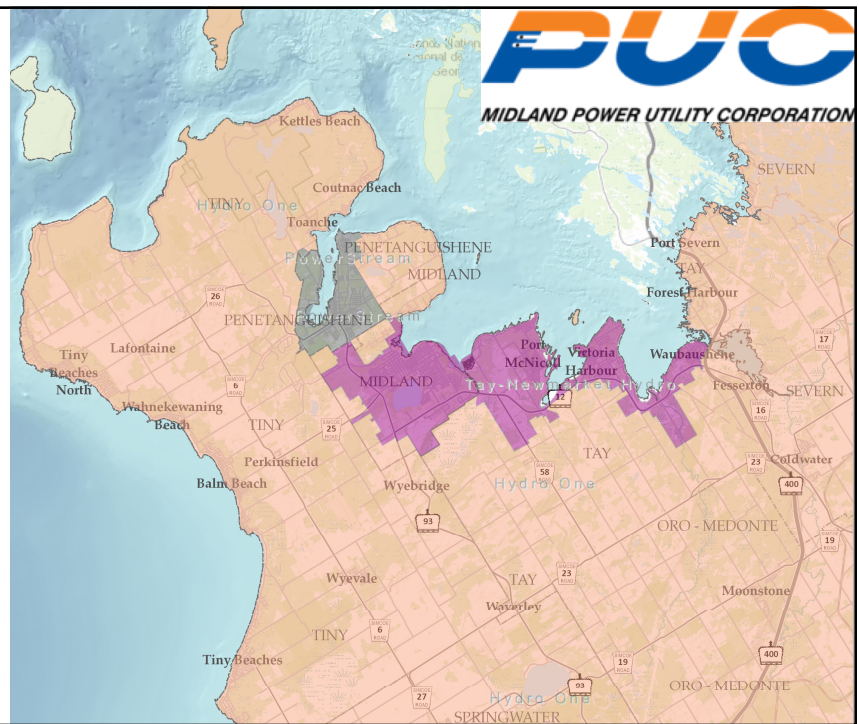


Figure 9 - Newmarket Service Territory

Our territory

- OEB recently approved Midland PUC acquisition



LDC distribution today

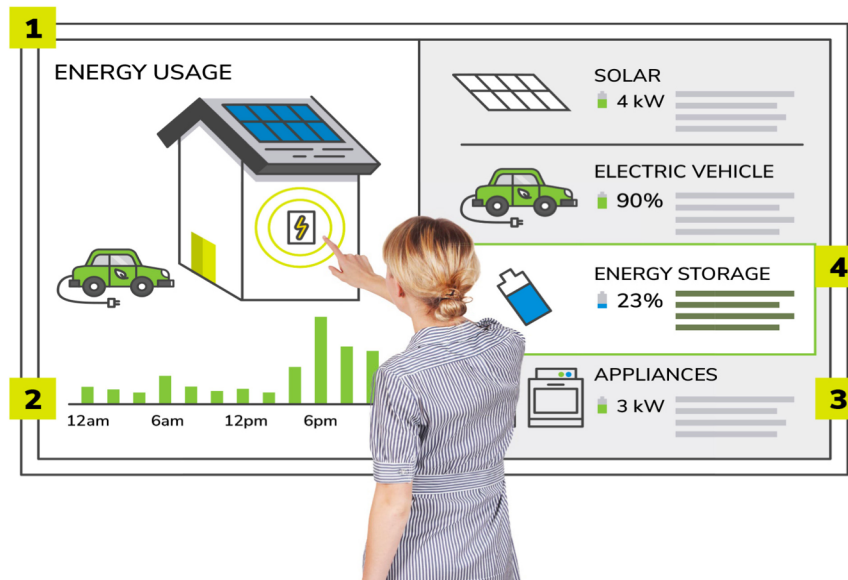
...is a one-way street.

- We receive electricity from the IESO
- We deliver it to customers
- The price is what it is
- All electrical protection and metering systems are one-way
- We only get paid to deliver



What do customers want?

- Price stability
- Reliability
- Smart homes



What our customers are thinking about



How to achieve electricity self-sufficiency at home or in their businesses... driven by rising costs of electricity + availability of new technologies



Adopting new technologies and investments in local power generation might help stabilize or reduce costs



Re next 10 years: "green energy", energy efficiency, solar, greater dependency on electronics and electric vehicles

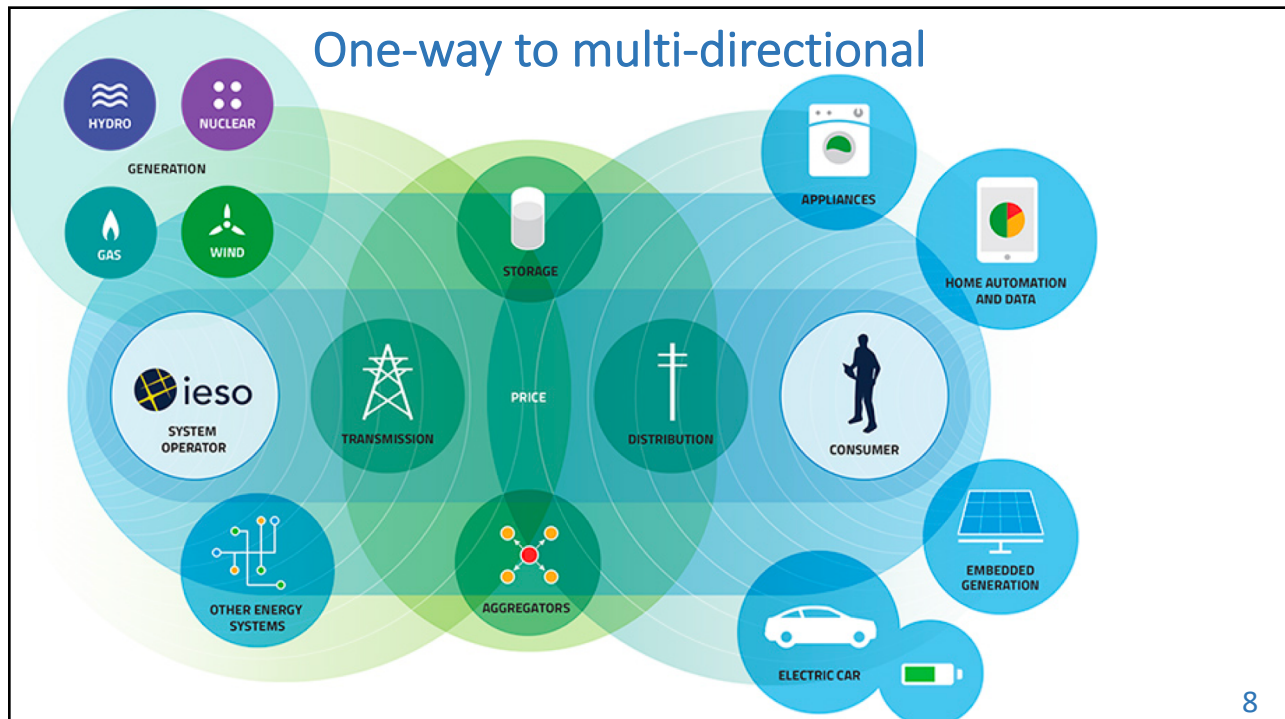
50% considering owning an EV



Developers and Council members:

population densification, impact on electricity infrastructure, including need for EV charging stations

One-way to multi-directional



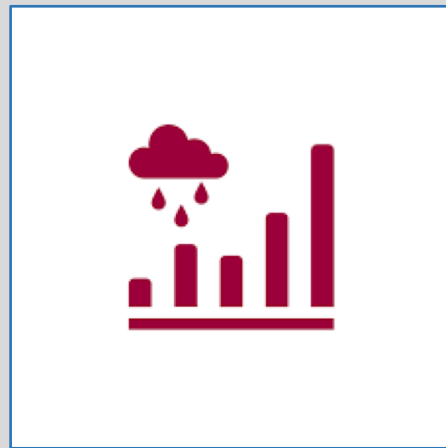
Where we're going: our vision

An independent, industry-leading LDC committed to our customers' changing needs








Risk and resilience assessment Climate change: 2040 – 2049

- Climate and extreme weather effects on NTPDL operations now, in future
- State-of-the-science climate weather modelling: extension of 2012 City of Toronto study
 - » Used average IPCC projection to 2049
 - » Projected climate weather in 2049 Newmarket, validated by a projection to 2000 and compared



JYAS Inc. Newmarket's Future Climate (2040-2049) Dec. 8, 2017

Yonge corridor 2040-2049 example

- Av. **annual** temperature  4.5°C
- Av. **winter** temperature  5.9°C
- Extreme **winter** temperature  19.2°C
- Av. **summer** temperature  2.6°C
- Extreme **summer** temperature  7.8°C



JYAS Inc. Newmarket's Future Climate (2040-2049) Dec 8, 2017

11

Yonge corridor 2040-2049 example

- 22% less snow
- 86% more rain
- 13% more precipitation overall
 - » One-day maximum rainfall up 52%
 - » More "shoulder days" per year
- 35% increase in intense rain storms >50mm
- 39% increase in winter storms



JYAS Inc. Newmarket's Future Climate (2040-2049) Dec 8, 2017

12

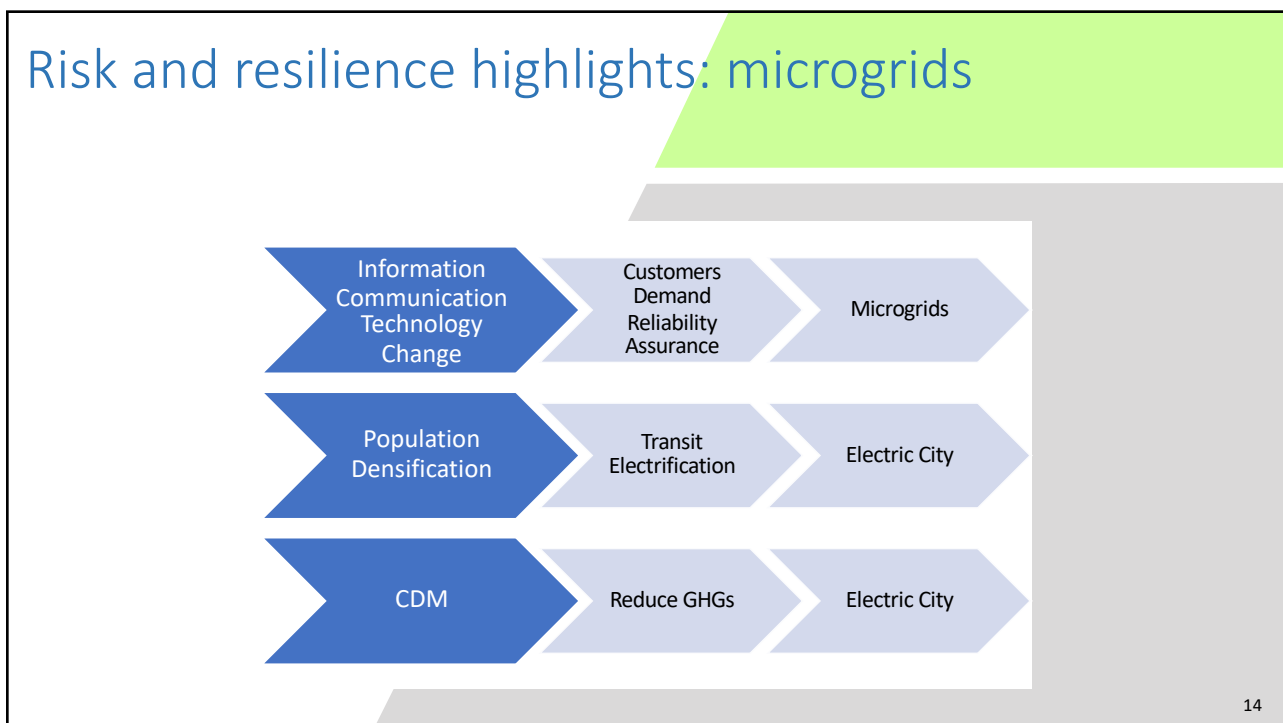


So what do we need to do?

Risk and Resilience Assessment recommendations:

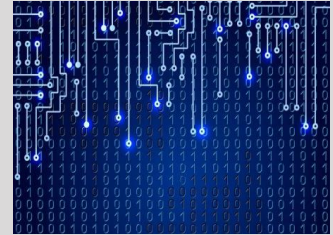
- Develop infrastructure to meet future market demands – understand and address customers' changing needs
- Avoid stranded assets – the answer isn't necessarily hardening infrastructure
- Assurance of service is critical – reliability is key to customer trust

13



End-state Vision 2040

From an electricity distribution perspective, we anticipate that each of the clusters will be mostly self-sufficient for essential demand, incorporating generators and consumers within regulated cluster micro-grids.



All cluster consumers will be capable of sustained operations using electricity generated from within the cluster.

15

End-state Vision 2040

By 2040, we envision that Newmarket, Tay and Midland will be leading Electric Cities in Ontario and achieving or exceeding the net zero carbon emissions target and climate change goals set by the Provincial and Federal governments.



The Smart Grid and Smart City will have converged enabling the implementation of Electric City, where everything is powered by electricity, with much of the electricity produced by local, small scale generation linked by microgrids.

16

Our risk and resilience strategy

- Proactive development
 - » Engage customers in identified clusters
 - » Facilitate and enable localized electricity trading between micro-generators and consumers
- Our Role
 - » Become a service-provider partner to consumers and micro-generators
 - » Develop and enables infrastructure and service support for customer transition



17

End-state Vision 2040: enabling Electric City

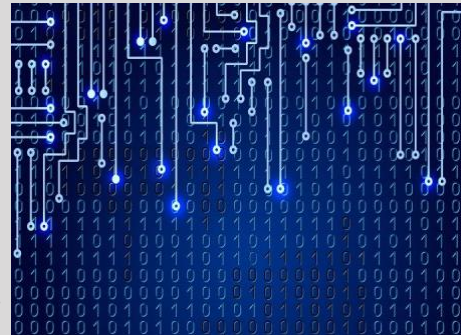
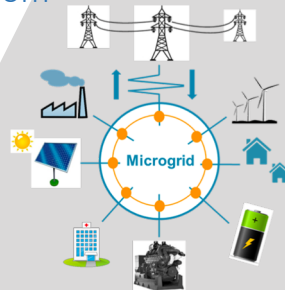
Our role – create and support the conditions that enable our service areas to become Electric Cities



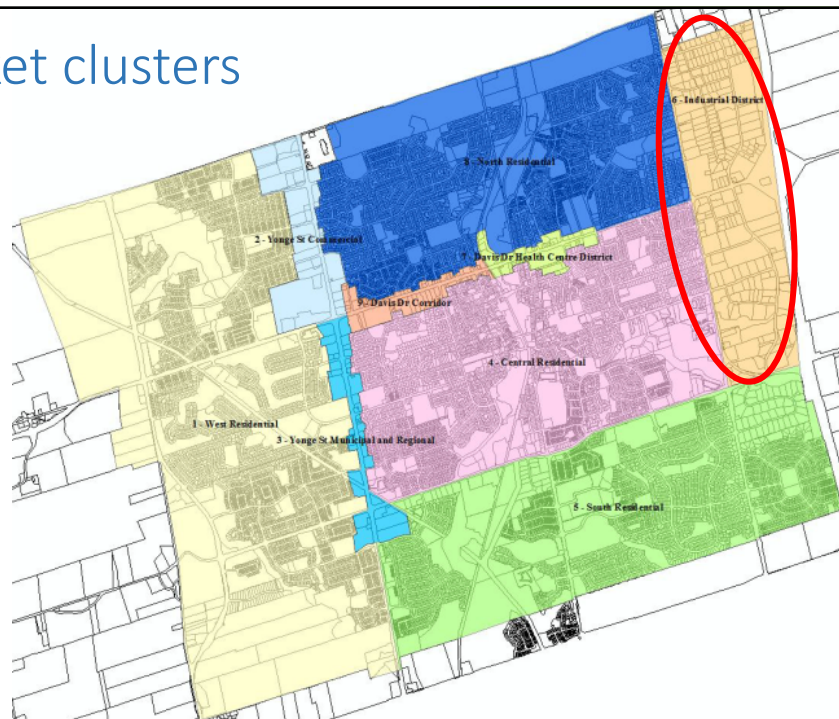
18

End-state Vision 2040 – clusters

- Mostly self-sufficient
- Incorporating generators and storage
- Capable of self-sustained operations using electricity generated from within the cluster



Newmarket clusters

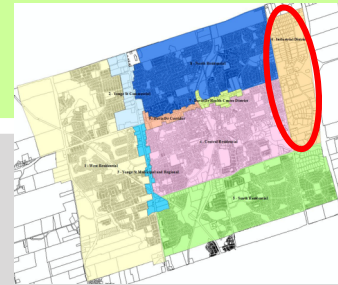


Cluster 6 pilot

- Cluster 6 Pilot launched September
- Outstanding team:
 - » Alex Braletic is our internal lead + external lead
 - » Adam White, powerconsumer
- Phase 1: Customer engagement and initial data collection
- Phase 2: Preliminary economic analysis
- Phase 3: Detailed economic analysis
- January



... is Cluster 6 viable?



21

End-state Vision 2040 – our role

- Trusted service provider
- Provide distribution network connecting and regulating electricity flow – voltage and frequency – between and within the connected clusters
- Facilitate electricity delivery
- Balance multi-directional flow of electricity – ensure electricity to and within clusters is stable, safe, **reliable**
- Key role: balancing electricity within our cluster systems



22



Working with customers and partners to create the future