

JULY 29, 2021

IESO York Region Non-Wires Alternatives Demonstration Project

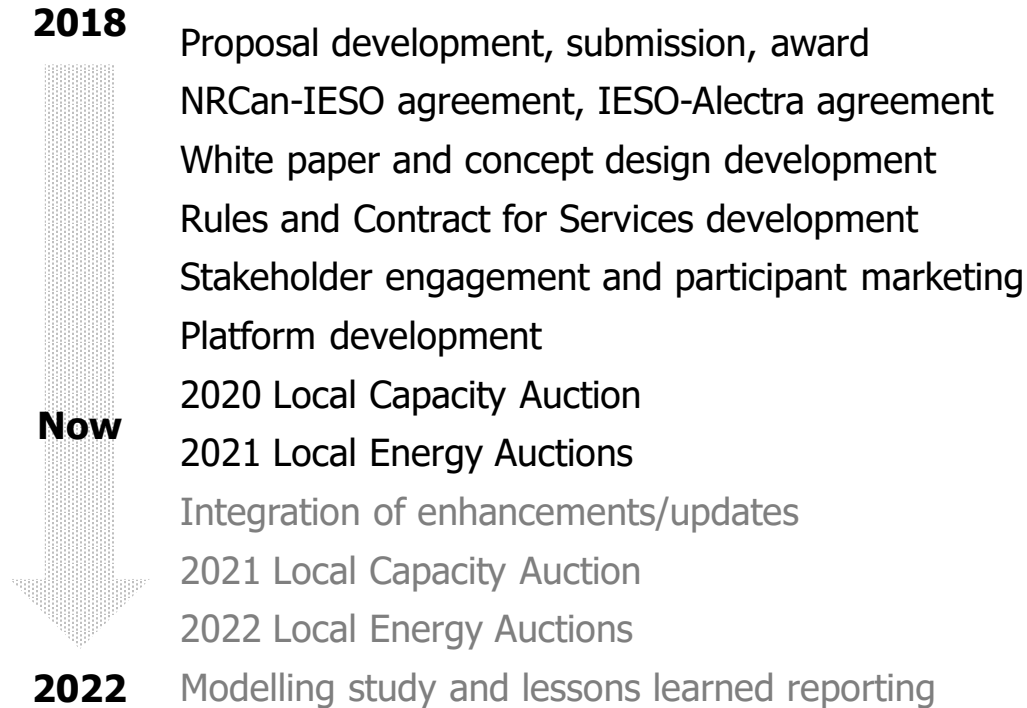
Presentation to OEB's FEI Working Group

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Demonstration Summary

- \$10M project funded by IESO's Grid Innovation Fund and NRCan
- Alectra Utilities is delivery partner and is operationalizing the project
- Independent Total DSO model adopted from project white papers
- Focused on market and system operations with DER to defer infrastructure
- Attempts to merge utility NWA program and market design constructs
- Web-based platform developed to administer auctions and activations
- Distribution-level capacity and energy auctions generate local prices
- Envisions transmission-distribution coordination using market offers

Demonstration Activities




Demonstration Platform – Live Sep. 2020


WELCOME TO

IESO York Region Non-Wires Alternatives Demonstration Project


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System Operator
Project Sponsor



Natural Resources Canada
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This demonstration project will be delivered by Alectra, under the direction of the IESO, with joint financial support from Natural Resources Canada.

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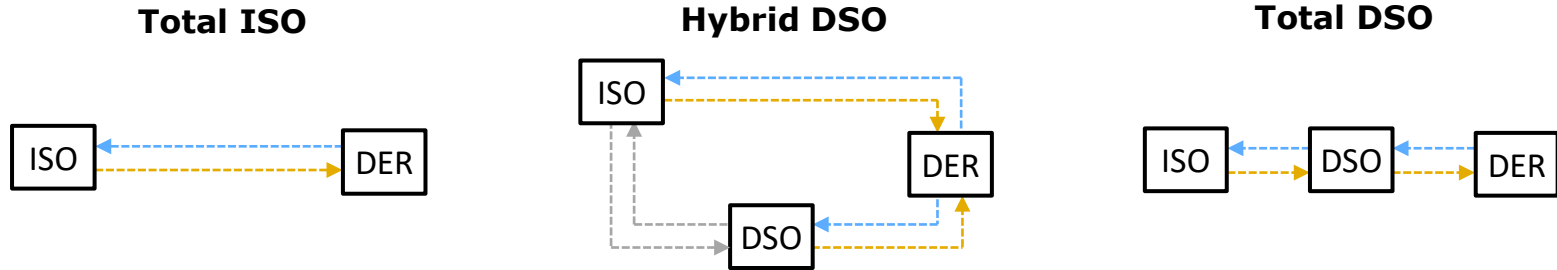
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T-D Coordination Frameworks

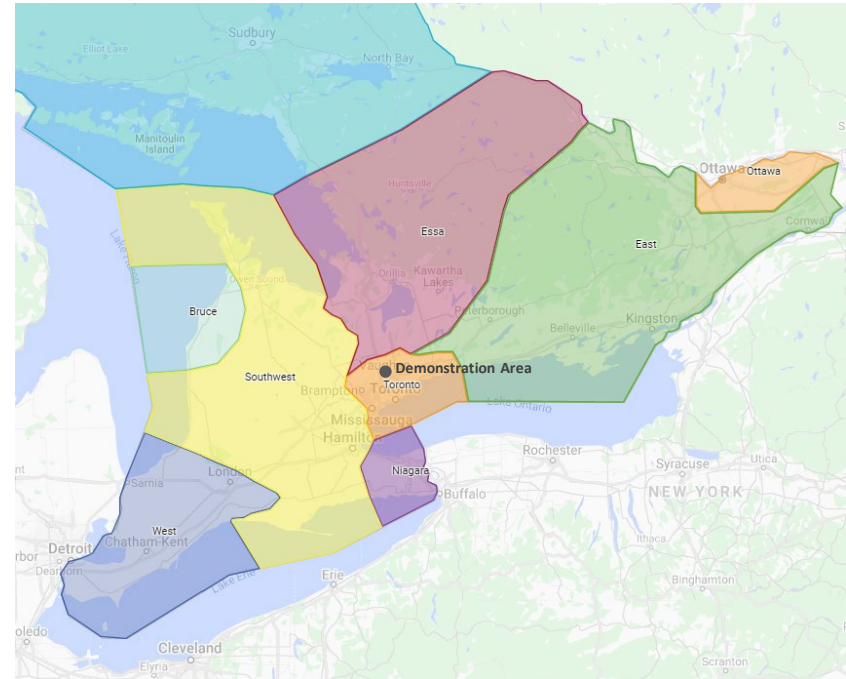
offers
awards
data



- Examining distribution NWA helps identify coordination requirements
- Focus on dispatchable DER helps identify operational challenges
- Total DSO model adopted for York Region NWA Demonstration
- For Total DSO model, DSO requirements for DER are \geq ISO requirements

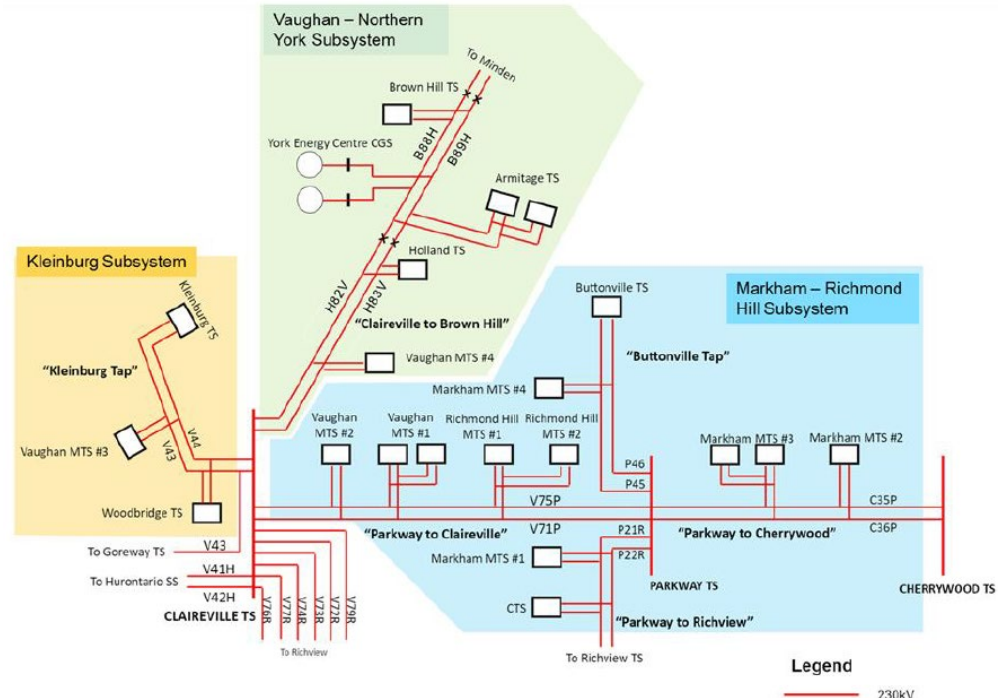
Extending Zonal Constructs

- Zonal construct exists for area of the grid bounded by major transmission limitations
- There are zonal capacity and energy requirements, and zonal/locational prices that diverge
- In concept, the Demonstration represents a more granular, distribution-level zone

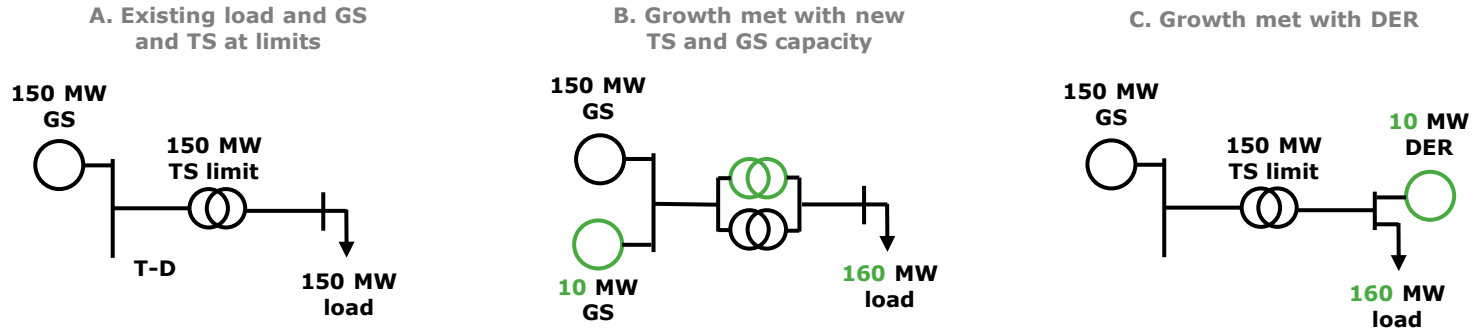


Demonstration Area

- Municipalities of Richmond Hill, Vaughan and Markham
- February 2020 Integrated Regional Resource Plan
- Fast growing with extensive urbanization
- Peak demand of $\sim 1,350$ MW
- Existing stations reach limits over the next decade

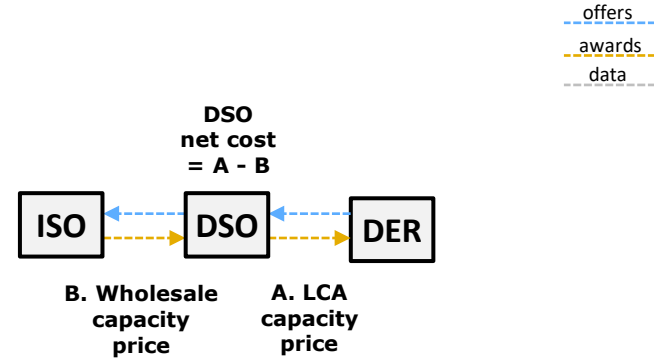
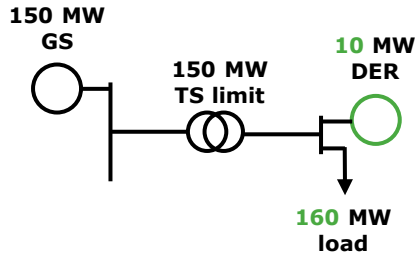


Non-Wires Alternatives, Stacking & Congestion



- DER can be used as alternative to central resource and network infrastructure
- DSO must actively monitor its system and manage dispatchable DER
- Using DER as NWA involves constraints and relieving local congestion
- Market approaches can be used to send investment/operational signals

Local Capacity Auction (LCA)



- First Demonstration LCA conducted in Nov. 2020 with 10 MW target
- Eligible DERs: demand response, gas-fired, and storage resources (with 4 hour discharge capability), incl. aggregations, between 100 kW and 3 MW
- LCA cleared at \$0.64/kW-day for commitment period May-Oct. 2021

2020 LCA Successful Participants

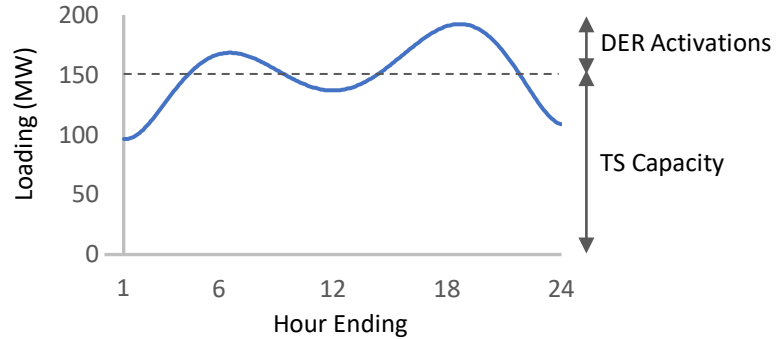
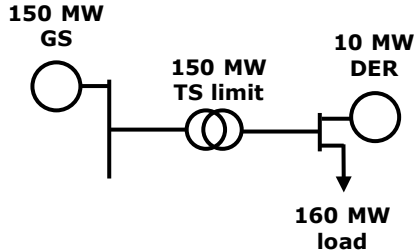
Registered Capacity: 34.3 MW

Participants: aggregated residential customers, supermarket operators, manufacturers, district energy utility, other local companies

DER Types: CHP, C&I load curtailment, residential DR (smart thermostats), BTM gas-fired generation

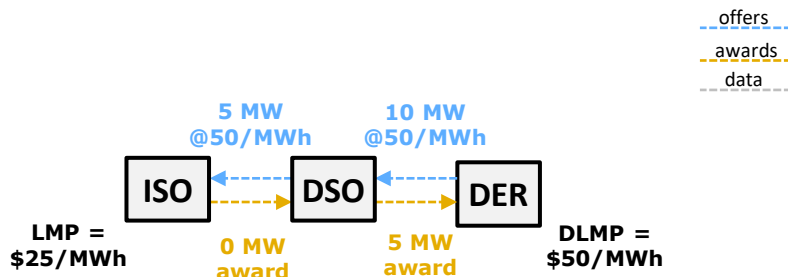
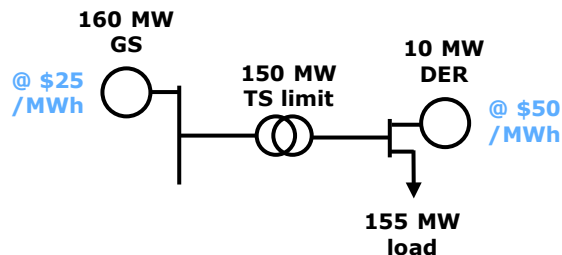
Successful Participants	Local Capacity Obligation (kW)
EnergyHub Canada	1,200
NRG Curtailment Solutions	400
Longos Brothers Fruit Markets	1,000
Edgecom Energy	3,000
GC Project	1,000
Markham District Energy	2,900
Tycho Poly	500
Total	10,000

Local Energy Requirement



- Demonstration simulates distribution congestion during local peak demand conditions that must be relieved using dispatchable DER
- When Alectra Utilities forecasts that load in the Demonstration Area will exceed an established threshold, participating DER are activated

Local Energy Auctions (LEA)



- Local Energy Auctions take place for noon to 9PM on business days
- Envisions DSO submitting adjusted aggregated DER offer to ISO
- Participating DER activated to relieve distribution congestion
- Participating DER may also be activated if wholesale price is high
- Demo DLMP = highest DER offer needed locally and \geq wholesale price

Next Steps

- Currently conducting Local Energy Auctions (May–Oct. 2021) with participants
- Design Local Operating Reserve mechanism (Mar.–Aug. 2021)
- Prepare for 2021 Local Capacity Auction to take place in Fall 2021, for commitment period of May–Oct. 2022
- Conduct DER Scenarios & Modelling Study to investigate impact at T-D interface and inform coordination requirements (2021- 2022)

Thank You

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