

Distribution System Operator Capabilities

OEB Stakeholder Consultation

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DISTRIBUTION SYSTEM OPERATOR ROADMAP

EXECUTIVE SUMMARY

Objective

- Manage active distribution network (e.g. Coordinate & Dispatch DERs, Local Markets)

Benefits

- ❖ Increased sources of supply
- ❖ Enhanced load management capabilities
- ❖ Customer solutions/empowerment
- ❖ Decarbonization
- ❖ Economic activity
- ❖ Benefits maximization for local/bulk systems

Outcomes

- ✓ Grid Enhancement (Reliability & Resiliency)
- ✓ Cost Efficiency
- ✓ Customer Experience
- ✓ Societal/Community Benefit



Decade of quiet, steady regulatory progress led to precursor DSO operations



With OEB oversight, LDCs have taken the lead in developing capabilities and deploying functionality **in-the-field with DER partners (e.g. aggregators)**



Toronto Hydro's Local Demand Response & Benefit Stacking Programs are **proof-of-concept that the current OEB approach yields results**

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OEB Proposal #3: **Further Development of Advanced Model** is the only approach that extrapolates current success into **near-term scaled results**

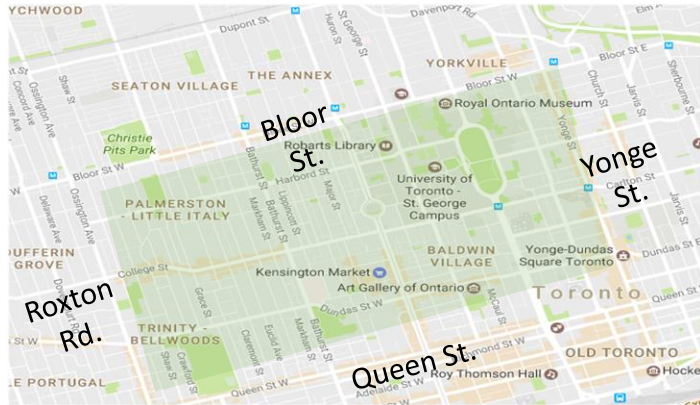


Build upon – don't rebuild – the **decade's policy-making & ratemaking roadmap**

ROAD TO BECOMING A DSO

REGULATORY & OPERATIONAL SUCCESSES

2015-2019 Local Demand Response Cecil TS Pilot



- Contractual Demand Response (DR), large customers curtail load when asked (“dispatched”)
- Reduced summer peak demand by ~ 8 MW in 2018 and 2019

PARTNERS & PARTICIPANTS

- Telecommunication customers, institutional customers, Peak Power (small commercial customers)
- NRStor Inc.

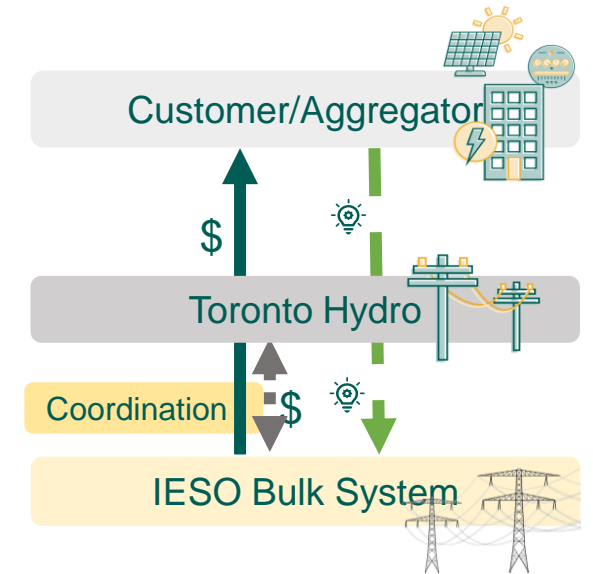
2020-2024 Benefit Stacking Pilot



Toronto Hydro was awarded funding for a Benefit Stacking Pilot under the IESO Grid Innovation Fund & OEB Innovation Sandbox, targeting Manby & Horner Transformer Station areas

PARTNERS & PARTICIPANTS

- Power Advisory
- Toronto Metropolitan University Centre for Urban Energy
- Rodan Energy Solutions



The OEB approved Toronto Hydro’s 2025-2029 proposal to further scale-up these distribution operations, allowing 30MW of customer and aggregator value-creation that will benefit all layers of the sector.

DEVELOPING AN ADVANCED DSO MODEL

QUICKEST & BEST PATH TO REALIZED OUTCOMES



Proposal #3: Developing an Advanced DSO Model is the only path forward

DNV Observations	OEB Observations	Toronto Hydro Regulatory Treatment
<p>Market Facilitator Model</p> <ul style="list-style-type: none"> • Moving to a markets-based approach with neutral market facilitation aligns with DNV’s observation: <i>“The most common feature among all currently implemented DSOs is a market-based approach which relies on open and competitive markets that adhere to the principle of neutral market participation.”</i> • Distributors with a DSO role can enable neutral markets, not restrict them • Reflects customization, a model of innovation in local responsiveness (local solutions to local needs), and maximizing the value of available resources across the value stack 	<p>Advanced DSO Model</p> <ul style="list-style-type: none"> • Utility actions today are aligned under Advanced DSO Model (demonstrated by LDC use cases), which is the next step in an evolutionary approach of the work of distributors • Supportive of necessary oversight (rules, standards, etc.) to ensure fairness, prudence, etc. • OEB should ensure interoperability encouraging market-led innovation • Mandatory and standardized assessments can be seen as pre-cursor activities to a DSO, but not enough to move the needle on its own • Risks of a Simplified DSO approach <ul style="list-style-type: none"> • Premature framework may hinder evolution to an advanced model • Weakens customer experience coordination across the energy system • Fails to unlock DER value stack, limiting customer and system benefits 	<p>Local Flexibility Markets</p> <ul style="list-style-type: none"> • Market Facilitator and Advance DSO models are the best reflection of OEB policy-making and ratemaking that, over the past decade, has led to the design, deployment, and operation of numerous precursor DSOs by multiple LDCs • Restarting the progression to DSO would delay getting to full DSO functionality by many years and waste a decade of action by the OEB, IESO, LDCs, aggregators, and others in the sector • OEB has a long history of approving a few leading deployments of technology, which then quickly scale and get adopted sector-wide • Precursor DSO functionality proves it belongs in regulated LDCs: maximizing customer value, system efficiency, local responsiveness, and regulatory oversight • Interoperability through regulation resolves opposition to diversity while enabling innovation

FROM PRECURSOR FUNCTIONALITY TO DSO

TORONTO HYDRO ROADMAP



Intimate Knowledge of Grid

At Toronto Hydro, we have a deep operational knowledge of our local distribution network, including grid constraints, peak demand patterns, and infrastructure needs, enabling targeted & efficient implementation of flexibility solutions.



Facilitating DER Integration

Toronto Hydro is already engaged in various DER pilots and community-based demand response programs making us the ideal stakeholder to coordinate customer participation in flexibility markets.



Localized Focus

Flexibility markets operate at the distribution level, making Toronto Hydro better equipped to identify and address localized issues compared to other stakeholders, having capabilities and experience in distribution grid operations.



Relationships with Customers

Our pre-existing strong relationships with customers effectively enables and uniquely positions us to address the specific needs of local communities, tailored solutions to regional challenges and opportunities.



Regulatory Alignment

Ontario's regulatory framework gives LDCs the authority to manage distribution grids & innovate within their service areas. As Toronto Hydro has received regulatory approval to expand our Local Demand Response Program, implementing flexibility markets further aligns with our existing plans and responsibilities.



Cost-Effectiveness

By leveraging existing networks, data, and operations, we can implement flexibility markets in a cost-efficient manner, minimizing the need for additional infrastructure and reducing costs for ratepayers.



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