ONTARIO ENERGY BOARD

INNOVATION HANDBOOK

Revised as of September 2024

Ontario Energy Board

Innovation Handbook Updates

Page Number	Description of Changes
4	Updated Section 1: Introduction to reflect additional types of information – Rules and Code Amendments, evolution from Conservation and Demand Management to Non-Wires Solutions Guidelines
6	Revised Section 2 to add link to updated OEB Business Plan 2024-2027
7	Updated Section 3: Innovation Sandbox to highlight new features
8	Addition of Section 3.1: Innovation Sandbox Challenge
9	Updated Section 4: Application of Section 71 of the OEB Act to Electricity Distributor Innovative Activities
14	Updated Section 4.3: Staff Sandbox Guidance, added link to Joint Targeted Call Interim Report
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1. Introduction

Innovation is a key component of a thriving and sustainable energy sector as it evolves with the energy transition. In keeping with the OEB's objective to facilitate innovation, OEB staff has compiled this Innovation Handbook, a compendium of existing OEB policies, staff guidance and Decisions that relate to innovative activities, services or business models.

The intent of the Innovation Handbook is to serve as a reference guide for energy sector innovators. While this Handbook is not an exhaustive list of all OEB innovation-related activities, it is intended to provide broader awareness of the OEB's work in this area to date and may inform distributors in the preparation of applications that may propose innovative approaches to meeting customer or system needs. This Handbook is updated on an ongoing basis to ensure it reflects the latest compendium of OEB innovation activities. Updates to this Handbook cover the period of April 2023 to March 2024.

This Handbook provides an overview of specific projects and references existing policies and related materials as they relate to innovation:

OEB Decisions

Decisions and Orders embody the OEB's determination of adjudicative matters (e.g., natural gas and electricity rate applications, Integrated Resource Planning). Typically, major applications are decided by a panel of OEB Commissioners after a hearing in which interested stakeholders are given an opportunity to intervene. Some more routine applications are decided by OEB staff acting under delegated authority. From time to time the OEB holds "generic" hearings to address a sector-wide issue; an example is the current hearing on the cost of capital for regulated utilities.

Staff Bulletins

Staff Bulletins provide OEB staff's interpretation of legal and regulatory requirements to assist industry participants' understanding of those requirements. The views set out in Staff Bulletins are those of staff and are not binding on Commissioners of the OEB, as they conduct their adjudicative roles in making determinations on matters in specific applications. While a Staff Bulletin is also not considered an "enforceable provision" for regulated entities, it can be expected that OEB staff will follow the guidance set out in a Staff Bulletin in the course of responding to enquiries, reviewing applications, and conducting compliance reviews and inspections. Commissioners do not formally approve Staff Bulletins, although staff may seek their input, guidance and advice as part of the Staff Bulletin development process.

Staff Support through the Innovation Sandbox

The Innovation Sandbox is led by OEB staff and provides two services:

1. Information Service provides innovators the opportunity to engage in an informal dialogue with OEB staff about the OEB's legal and regulatory framework, and how it may apply to an innovative idea or concept.
2. Project-specific Support relates to a particular pilot project and consists of written guidance from staff that is specifically tailored to that project. Written guidance provided through the Innovation Sandbox that may be of broader interest to regulated entities or other stakeholders may be shared more broadly through a Staff Bulletin or other means.

Similar to a Staff Bulletin, information and guidance provided by staff through the Innovation Sandbox is not binding on Commissioners of the OEB. OEB staff reports on activities in the Innovation Sandbox through an "as-it-happens" Dashboard and other reporting.

Filing Requirements for Electricity Distributors

The filing requirements for rate applications set out the information that the OEB expects will be included in rate applications by electricity distributors. In 2021, the OEB introduced a new "Facilitating Innovation" section in the filing requirements for cost-of-service applications that encourages distributors to consider innovation in shaping their applications and how innovative alternatives should be considered in place of traditional investments.

Non-Wires Solutions (NWS) Guidelines for Electricity Distributors

The NWS Guidelines replace the OEB's Conservation and Demand Management (CDM) Guidelines and provide OEB guidance on the role of NWSs[1] for rate-regulated electricity distributors, considering current and previous provincial CDM frameworks and addressing the treatment of NWSs in distribution rates.

Rule and Code Amendments

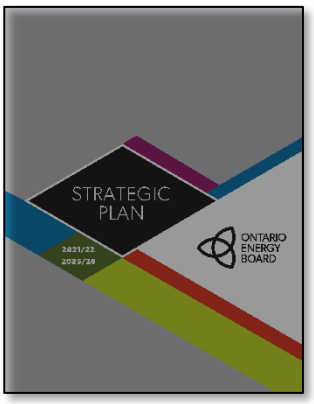
The OEB issues rules and codes that energy companies must follow. The rules and codes define their responsibilities and obligations to consumers, other energy companies and energy-related agencies. For some individual innovative projects where a provision of a code or rule may be a barrier, the OEB may be able to issue an exemption.

[1] The OEB has adopted the term "non-wires solution" (NWS), which is synonymous with the term "non-wires alternatives" used in certain source materials referenced throughout this Handbook.

2. Background: 2024 – 2027 Business Plan and 2020/21 – 2025/26 Strategic Plan

2024 – 2027 Business Plan

2021/2022 to 2025/26 Strategic Plan



On December 8, 2020, section 1 of the *Ontario Energy Board Act, 1998* (the OEB Act) was amended to include a new objective for the OEB: to facilitate innovation in the electricity sector.

This objective is reflected in both the OEB's 2024 – 2027 Business Plan and its 2021/22 – 2025/26 Strategic Plan, the latter of which describes the OEB's strategic goals as follows:

> The OEB facilitates innovation that can provide demonstrable value to Ontario's energy consumers and solve energy challenges cost effectively.
>
> The OEB provides clear direction on when and how regulated distributors can recover costs for innovation-related activities from ratepayers, and for how risk is addressed.
>
> The OEB continually evaluates which activities or emerging needs are better undertaken or addressed through competitive markets.

To meet these strategic goals, the OEB has been working towards:

- Increased transparency and thought leadership.
- Identifying and removing barriers to innovation that impact quality, cost efficiency and resiliency.
- Communicating lessons learned from projects to support moving them from the testing environment within the Innovation Sandbox to implementation, where appropriate.

3. Innovation Sandbox

Innovation Sandbox

The Innovation Sandbox, launched in January 2019, is a streamlined, accessible way for OEB staff to support innovators who want to test new activities, services and business models in the electricity and natural gas sectors. The Innovation Sandbox was the first regulatory sandbox in the energy sector in North America when it was launched.

Although the Innovation Sandbox was successful at supporting innovation in Ontario's energy sector from the outset, the OEB recognized that it could be leveraged to do more. In June 2021, the OEB launched the Innovation Sandbox Renewal Consultation to solicit stakeholder input on the design and features of a renewed Innovation Sandbox.

The Innovation Sandbox Renewal Consultation culminated in the launch of Innovation Sandbox 2.0, which added new features that reflected the priorities of stakeholders, including increased outreach to the sector by way of OEB staff attendance at industry events, and an enhanced annual report and webinar.

3.1 Innovation Sandbox Challenge

Innovation Sandbox Challenge

The Innovation Sandbox Renewal Consultation included a commitment to revisit the idea of a thematic sandbox, whereby the OEB would set out one or more specific themes that it would like innovators to test. It would also determine the support that would be provided to allow innovators to conduct pilot projects that test those themes. In response, in March 2023 the OEB launched the Innovation Sandbox Challenge. With the Sandbox Challenge, the OEB is providing $1.5 million in total funding[2] and regulatory guidance to support projects focusing on the following two themes based on public input:

1. How to move pilots to broader implementation and,
2. Innovative strategies to enhance customers' understanding of their role in the energy transition.

In October 2023, the OEB announced it had selected the following projects for funding:

- Alectra Utilities Corp. will build upon an existing customer engagement platform to test the ability of residential customers with Level 2 electric vehicle (EV) chargers to participate in demand response events. During demand response events, customers reduce or eliminate their energy use at times when the electricity system is experiencing high demand.

- Hydro One Networks Inc. will engage low-income customers to help them play a more active role in and better understand the effect of demand response in the energy transition.
- Oakville Hydro Electricity Distribution Inc. will build a digital tool to help residential and small business customers understand and assess their energy transition options (e.g., solar, storage, heat pumps).
- Pollution Probe will develop a framework to help Ontario's rural, remote and Indigenous communities better understand, participate in and benefit from energy innovation.
- Powerconsumer Inc. will leverage existing pilot projects to enable scalable flexibility markets. These markets are a way for distributors to allow for demand-side participation from customers, encouraging those customers to modify their level and pattern of electricity usage.
- Taykwa Tagamou Nation will investigate the challenges and opportunities arising from the energy transition for Ontario's First Nations communities.

[2] The funding comes from administrative monetary penalties collected by the OEB through its compliance activities.

4. Application of Section 71 of the OEB Act to Electricity Distributor Innovative Activities

Many enquiries from electricity distributors relate to requests for guidance on the application of section 71 of the OEB Act. Section 71 of the OEB Act generally prohibits an electricity distributor from conducting any business activity other than distributing electricity, except through an affiliate, subject to certain exceptions. As exceptions to the rule set out in section 71(1):

- Section 71(2) allows distributors to undertake activities that would assist the Government of Ontario in achieving its goals in electricity conservation.
- Section 71(3) allows distributors to own and operate certain types of generation and energy storage facilities.
- Section 71(4) empowers the OEB to authorize a distributor to engage in other business activities if the special circumstances of a particular case so require. This power has been delegated to OEB staff.

The information provided below relates to enquiries and requests on Section 71 of the OEB Act.

4.1 Decisions and Orders

4.1.1 Toronto Hydro Electric Systems Ltd. (Toronto Hydro) Application for Electricity Distribution Rates Decision and Order

EB-2018-0165

In August 2018 (and updated in September 2018), Toronto Hydro filed a five-year Custom Incentive Rate-setting application seeking approval for changes to its distribution rates. Relevant to their battery storage work, Toronto Hydro proposed capital expenditures in three distinct segments for an energy storage systems (ESS) program:

- Grid performance ESS would use batteries to remediate power quality problems, improve reliability and increase feeder capacity at peak periods.
- Renewable enabling ESS would use batteries to absorb excess energy from renewable generators to maintain an appropriate generation-to-load ratio on a feeder. Toronto Hydro requested that the cost for most of this segment of its ESS program be recovered on a provincewide basis under section 79.1 of the OEB Act.
- Customer-specific ESS would use a battery installed behind a customer's meter, at the customer's request, to provide improved power quality and reliability, as well as financial benefits from peak-shaving and Global Adjustment relief for Class A customers through the Industrial Conservation Initiative.

Toronto Hydro sought approval to add amounts to rate base for the grid performance ESS and the renewable enabling ESS. Toronto Hydro proposed that the costs of customer-specific ESS would be recovered directly from the specific customer(s) through a contribution in aid of capital.

The OEB accepted Toronto Hydro's evidence that the grid performance ESS would provide benefits to the power quality, reliability and capacity of the distribution system, and approved the proposed additions to rate base related to this project. The OEB also accepted that the proposed rate base additions for the renewable enabling project were appropriate (though most of the costs of that program would be recovered separately under section 79.1 of the OEB Act).

The OEB confirmed that Toronto Hydro is permitted to undertake the customer-specific ESS projects under section 71(3) of the OEB Act. The OEB further determined that Toronto Hydro could only undertake the customer-specific ESS projects as non-rate regulated activities, in accordance with relevant legislation and regulatory policies,[3] and that these projects cannot be considered part of Toronto Hydro's regulated rate base and associated revenue requirement.

4.1.2 London Hydro Inc. (London Hydro) Application for an Order to Approve Certain Non-Distribution Business Activities Decision and Order

EB-2018-0118

In March 2018, London Hydro applied to the OEB for approval under section 71(4) of the OEB Act to carry on certain business activities other than the distribution of electricity. Under section 71(4), the OEB may authorize a distributor to carry out additional activities "if in its opinion special circumstances of a particular case so require." The business activities that were proposed related to London Hydro's Green Button services. London Hydro proposed to undertake the activities directly, rather than through an affiliate.

London Hydro wished "to expand the scope of the Company's Green Button Services to include services relating to utilities other than electricity, to expand the customer base to whom the Company provides expanded Green Button Services to include non-electricity utilities and customers as well as customers outside of Ontario, and to provide Green Button Directory Services to enable customers/service providers/utilities of all kinds to access and share utility related data."

The OEB authorized London Hydro to carry out the activities until its next cost of service rate application. The OEB identified three "special circumstances" warranting an exemption from the general rule against carrying on non-distribution activities except

[3] The relevant legislation and regulatory policies are referenced in EB-2018-0165, Decision and Order, December 19, 2019, pp. 114-115.

through an affiliate:

- The proposed business activities were in keeping with the OEB's commitment to promoting innovation in the energy sector.
- The proposed business activities would be undertaken on a temporary basis.
- There is low risk of harm to ratepayers from the proposed business activities.

London Hydro's exemption was extended in its subsequent cost of service rate application heard by a panel of Commissioners. (EB-2021-0041).

4.2 Staff Bulletins

4.2.1 Ownership and Operation of Behind-the-Meter (BTM) Energy Storage Assets for Remediating Reliability of Service

BTM Energy Storage Bulletin

On August 6, 2020, OEB staff released a Bulletin that set out staff's view that ownership and operation of BTM energy storage is a distribution activity within the meaning of section 71(1) of the OEB Act, where the purpose driving the distributor's decision to engage in the activity is to bring reliability in relation to certain of its customers to a level comparable with what is provided by the distributor to other customers in the same rate class. This Bulletin was issued to provide broader awareness of staff views that were provided to a rate-regulated electricity distributor in response to a request for support through the Innovation Sandbox.

4.2.2 EV Charging

EV Charging Bulletin

Prior to 2016, several inquiries were received relating to the nature of the OEB's regulatory authority over the activity of EV charging – specifically, whether ownership or operation of an EV charging station and the selling of EV charging services from that facility constitute distribution or retailing.

In July 2016, a Bulletin was issued that provided OEB staff's view that ownership or operation of an EV charging station, and the selling of EV charging services from that facility, do not constitute distribution or retailing. A licence from the OEB is therefore not required to engage in those activities, and as a result, the OEB's codes and other regulatory requirements do not apply to them. The Bulletin further expressed OEB staff's view that electricity distributors are not precluded by section 71 of the OEB Act from owning and operating EV charging stations, so long as the equipment provides for the management of load in keeping with the Government of Ontario's goals for electricity conservation as contemplated in section 71(2) of the OEB Act.

4.3 Staff Sandbox Guidance

4.3.1 Joint Targeted Call for Pilot Projects on Distributed Energy Resources

In 2021, the Independent Electricity System Operator (IESO) Grid Innovation Fund (GIF) and the OEB Innovation Sandbox held a joint targeted call for innovative pilot projects demonstrating the potential of distributed energy resources (DERs) to provide value to consumers and the grid at both the local and provincial levels. Proposals for the joint targeted call were accepted between November 1 and November 30, 2021, with successful projects being announced in March and April 2022.

The following projects sought guidance specific to section 71 of the OEB Act:

Toronto Hydro

Project Summary: Toronto Hydro will aggregate local, BTM demand response (DR) resources (that are currently participating in Toronto Hydro's existing ratepayer-funded Local DR program) to simulate participation in the IESO's Capacity Auction, and subsequently simulate managing this capacity in real-time energy markets. The project expects to provide insights into the potential benefits of creating a new market participation pathway that enables the same DER to provide services to the bulk and distribution systems. The project is also seeking to understand how distributors can work with the IESO to optimize DR resource acquisition and dispatch.

Support Sought: Toronto Hydro sought guidance through the Innovation Sandbox on whether these incremental activities, which build upon its Local DR program, are permissible under section 71(1) of the OEB Act.

Staff Guidance Provided: In May 2022, OEB staff expressed the view that it is appropriate to consider the pilot project holistically in the unique context of Toronto Hydro's Local DR program, which was intended primarily to manage short- to medium-term capacity constraints, while avoiding or deferring infrastructure upgrades to the distribution system. Treating the "net new" pilot project activities as distribution activities for the purposes of section 71(1) is aligned with the OEB's CDM Guidelines and in keeping with the OEB's statutory objective of facilitating innovation in the electricity sector on a cost-effective basis.

BluWave-ai in Partnership with Hydro Ottawa Limited

Summary: The project will test two types of NWSs to mitigate capacity limitations associated with EV charging: 1) Remote load management by Hydro Ottawa of customers' BTM EV chargers, and 2) Remote management by Hydro Ottawa of front-of-the-meter (FTM) batteries. This project will also test the capabilities of DER aggregations to provide bulk-level services.

An Artificial Intelligence software platform will be used to test both methods as a complete solution. The project expects to reduce peak demand and may defer the need for infrastructure builds.

Support Sought: Hydro Ottawa sought guidance on whether the project activities to be undertaken by Hydro Ottawa are permissible under section 71. These activities are primarily related to curtailing BTM EV chargers, installing a FTM battery, and using these resources to simulate participation in IESO-administered markets.

Staff Guidance Provided: In May 2022, OEB staff provided its view that these activities are permissible under section 71(1) of the OEB Act, as their main purpose is to meet distribution system needs (i.e., to test two NWSs to mitigate constraints caused by increased EV charging within Hydro Ottawa's distribution system). Further, wholesale market participation is a simulation and does not involve participation in the IESO-administered market. The activities align with the kinds of activities that the OEB's CDM Guidelines contemplate may be funded through distribution rates.

Essex Powerlines Corporation (Essex Powerlines)

Project Summary: Essex Powerlines and NODES will set up and operate a live, local (distribution-level) market for DER services with Essex Powerlines acting as a Distribution System Operator (DSO). The project will demonstrate the use of DERs participating in the local market and explore how those same resources can also provide bulk level services. Expected benefits of the project include demonstrating the ability of a utility to act as a DSO, testing whether DERs can provide services to both distribution and bulk systems, and testing distribution level/IESO co-ordination.

Support Sought: Essex Powerlines sought guidance on whether its activities, which are primarily related to it acting as a DSO, are permissible under section 71 of the OEB Act.

Staff Guidance Provided: In May 2022, OEB staff provided its view that the proposed activities are permissible under section 71(1), as their main purpose is to meet distribution system needs using customer-owned DER assets as NWSs. This is intended to create flexibility within Essex Powerlines' distribution system and mitigate local constraints on the grid, thereby helping avoid the need to build new infrastructure. The activities also align with the kinds of activities that the OEB's CDM Guidelines contemplate may be funded through distribution rates.

All three of these accepted projects are underway. In November 2023, the OEB and IESO released their Joint Targeted Call Interim Report. The report presented an overview of the projects, provided an update on their statuses, and highlighted how they are contributing to ongoing OEB/IESO initiatives as well as broader industry discussions.

4.3.2 York Region NWA Demonstration Project

Project Summary: In partnership with the IESO and Natural Resources Canada (NRCan), Alectra Utilities Corporation (Alectra) enabled Canada's first local electricity market at the distribution level, the IESO York Region NWA Demonstration Project (Demonstration Project), in 2020. The Demonstration Project aims to explore how DERs, acquired and deployed through market-based approaches, can be co-ordinated across the electricity system and be used as NWSs to help meet electricity system needs while also contributing to transmission-level needs. These NWSs can be used for managing local peak demand and can offer services to defer, reduce or avoid costs associated with expanding distribution networks as well as transmission network and resource infrastructure. Participating businesses, institutions and homes can leverage their DERs to earn revenue and help power local communities during the Demonstration Project.

The demonstration has been leveraging both existing and new resources in southern York Region, where electricity demand is growing and expected to exceed system capability in the latter part of the decade. The Demonstration Project, delivered by Alectra, is funded through the IESO's GIF and NRCan's Smart Grid Program.

Support Sought: Alectra sought guidance on whether the activities in which Alectra intends to engage for the Demonstration Project, which are primarily around facilitating the use of DR resources (one type of DER eligible to participate in the Demonstration Project) to meet system needs, are permissible under section 71(2) of the OEB Act.

Staff Guidance Provided: In November 2020, OEB staff provided its view that the proposed activities are permissible under section 71(2) of the OEB Act, as the goals of the Demonstration Project aligned with the Government of Ontario's vision for CDM in that it will explore the use of, and provide insight into, opportunities to increase efficiencies and potentially defer or avoid investment in new infrastructure.

4.3.3 Hydro One Networks Inc. (Hydro One) + NRStor Clear Creek Guidance

Project Summary: Hydro One proposed to co-own a battery energy storage facility with NRStor that will be connected to Hydro One's distribution system. The battery would be owned and operated by both NRStor and Hydro One, but NRStor would use its share of the battery's capacity to generate and sell electricity and/or ancillary services to the IESO.

Support Sought: Hydro One requested confirmation that the business model is permitted and considered a distribution activity under section 71(1) of the OEB Act.

Staff Guidance Provided: In May 2021, OEB staff provided its view that the proposed activities will address a reliability issue and can therefore be considered a distribution activity under section 71(1) of the OEB Act, and that Hydro One's stake in the co-ownership should be proportional to the amount of battery capacity required to serve its customers.

4.3.4 AlectraDrive @Home Project

Project Summary: The AlectraDrive @Home project was launched in 2020 to develop and implement an EV deployment model for residential customers. Alectra advised that the purpose of the model is to understand the economic, technical, regulatory and customer outreach considerations for deploying EV charging solutions at scale and enable EV chargers to provide grid flexibility through managed charging technology. Through this project, the utility is facilitating access to EV charging in single-family and multi-unit residential buildings, as well as encouraging off-peak charging behaviour to benefit EV drivers as well as the electricity system.

Support sought: Alectra sought guidance on whether it can provide services related to load management, as part of the project, under section 71 of the OEB Act.

Staff guidance provided: In April 2021, OEB staff provided its view that the project can be considered load management, conservation and/or the efficient use of electricity under section 71(2) of the OEB Act. This is based on the project providing insight into opportunities to increase efficiencies, reduce peak demand and address local electricity system needs, including, among other things, the use of a time-differentiated fee for EV charging services. As such, staff's view was that while the project cannot be considered a distribution activity under section 71(1) of the OEB Act, Alectra could proceed with the project as a non-distribution activity under the exception provided by section 71(2) of the OEB Act.

4.3.5 EPCOR Electricity Distribution Ontario Inc. (EPCOR) Project

Project Summary: As part of NRCan's Zero Emission Vehicle Infrastructure Program, EPCOR would receive grant funding to allow it to act as a "Delivery Organization," making EPCOR responsible for distributing funding to eligible applicants to install EV chargers. The project expects the increased availability of EV chargers to support increased EV adoption.

Support sought: EPCOR sought guidance related to whether project activities are permissible under section 71 of the OEB Act.

Support Provided: In December 2021, OEB staff provided its view that acting as a Delivery Organization is permitted as a non-distribution activity under section 5(3)(c) of Ontario Regulation 161/99 (Definitions and Exemptions) made under the OEB Act, as EPCOR would be providing "services related to the use of cleaner energy sources.

5. Decisions and Orders Unrelated to Section 71

While most Decisions and Orders included in this Handbook relate to Section 71 of the OEB Act, the Decisions and Orders included below relate to innovative activities in respect of smart grid development and licensing requirements where there was no section 71 issue to be decided.

5.1 North Bay Hydro Services Inc. (North Bay Hydro) Applications for Electricity Generation Licence and Electricity Retailer Licence Decision and Order

EB-2018-0339/EB-2018-0340

In December 2018, North Bay Hydro applied for an electricity generation licence to own and operate a 0.63 MW natural gas-fired combined heat and power generation facility, 10 kW of solar generation and 250 kW of battery storage (collectively, the generation facilities). These generation facilities are part of the Community Energy Park, which the applicant described as a "microgrid," operated by North Bay Hydro. The electricity injected into the microgrid will serve five consumers located within the Community Energy Park, which is owned by the City of North Bay and located on three abutting parcels of City-owned land, within the City of North Bay. In order to sell electricity to the Community Energy Park, North Bay Hydro also applied for an electricity retailer licence.

The OEB found that it was in the public interest to grant the applications and issue the electricity generation licence and electricity retailer licence to North Bay Hydro. The OEB also found that the owner/operator of the Community Energy Park does not require an electricity distribution licence since the three properties upon which the Community Energy Park is located are immediately adjacent to each other and share the same owner, the City of North Bay.

5.2 PUC Distribution Inc. (PUC Distribution) Smart Infrastructure Decision and Order

EB-2020-0249/EB-2018-0219

The Sault Smart Grid (SSG) Project proposed by PUC Distribution is a community-wide smart grid that covers PUC Distribution's entire service area. The SSG Project was brought before the OEB as an application for Incremental Capital Module (ICM) funding and approved by the OEB in a Decision and Order issued on April 29, 2021. The SSG Project implements various technologies such as Voltage/VAR Optimization, Distribution Automation and Advanced Metering Infrastructure which have been implemented by other distributors. This project is being funded in part by NRCan as well as ratepayers.

In approving the SSG Project, the OEB imposed a number of conditions to manage the risks associated with the project and monitor its progress. These risks include uncertainties in project costs, the possibility that the projected energy savings might not be fully realized, outdated design work, and potential inequitable impacts on different customer segments. For example, the OEB required PUC Distribution to file performance metrics and targets in its next rate application and include metrics that link aspects of the project to the utility's allowable Return on Equity for the project. PUC Distribution is also required to file annual updates, for 10 years after project completion, which show the actual benefits of the project by customer class.

6. Net Metering

Net metering is governed by Ontario Regulation 541/05 (Net Metering) made under the OEB Act and section 6.7 of the OEB's Distribution System Code. It is a billing arrangement, whereby an electricity customer of a distributor (referred to in the Regulation as an "eligible generator" or "eligible customer") earns credits for the value of excess renewable electricity generated behind the customer's meter that is sent back to their distributor's distribution system.

Based on questions received in 2020-2021 through the Innovation Sandbox and the Industry Relations Enquiry process, OEB staff understood that some stakeholders were exploring different types of arrangements between a distribution customer and a third party in the net metering context, including leasing, lease-to-own and financing arrangements related to the generation facility intended to be used for net metering.

Questions were raised as to whether a customer of an electricity distributor can participate in net metering if the customer operates but does not own the generation facility.

6.1 Net Metering Staff Bulletin

Net Metering Bulletin

In October 2021, OEB staff issued a Bulletin that provides staff's view that an electricity distributor customer can qualify for net metering where the customer operates but does not own the renewable energy generation facility. Put another way, if the customer is the operator of the generation facility, the customer can qualify for net metering.

6.2 OEB Code Amendments to Implement Subsequent Changes to the Net Metering Regulation

Effective July 1, 2022, the Net Metering Regulation was amended to clarify that customers can access third-party ownership arrangements like leasing, renting, financing and power purchase agreements (PPAs) for the provision of renewable generation equipment or to purchase renewable electricity for the purposes of net metering. The amendments, along with changes to Ontario Regulation 389/10 (General) made under the *Energy Consumer Protection Act, 2010*, also introduce consumer protection measures that apply to electricity retailing under a PPA for net metering purposes.

To facilitate the implementation of these regulatory changes, the OEB amended three of its Codes: the Distribution System Code, Electricity Retailer Code of Conduct and Retail Settlement Code. The Distribution System Code was amended to ensure that the form used to confirm to the distributor that certain equipment-related information has been disclosed to the customer (where applicable) is in the form approved by the OEB.

The Electricity Retailer Code of Conduct was revised to remove the five-year limitation on

retail contracts for the net metering context and set out rules that protect low-volume consumers regarding disclosure of information related to the PPA. A new Disclosure Statement and Price Comparison forms were developed to suit the net metering retail context.

The Retail Settlement Code was amended to confirm that a distributor has no obligations to a retailer who is an eligible third-party generator under the Net Metering Regulation as amended.

7. Framework for Energy Innovation

Framework for Energy Innovation: Setting a Path Forward for DER Integration

The OEB initiated the Framework for Energy Innovation (FEI) consultation to clarify the regulatory treatment of innovative and cost-effective solutions, including DERs, and facilitate their adoption in ways that enhance value for consumers. In January 2023, the OEB issued its Report, *Framework for Energy Innovation: Setting a Path Forward for DER Integration* (FEI Report), which sets out the OEB's policy determinations and next steps with respect to the integration of DERs into distribution system planning and operations, as well as the use of DERs by electricity distributors as NWSs. The FEI Report established OEB policy and next steps for:

- Expectations of distributors with respect to DERs so that distributors can begin to evolve their planning, operations and overall businesses to maintain cost-effective, reliable service that considers the impacts of widespread DER adoption.
- A Benefit Cost Analysis Framework to help distributors make the business case for DER solutions, when cost effective, as alternatives to traditional system investments in their rate applications.
- Incentives for distributors to use third-party DER solutions as NWSs to ensure distributors give equal consideration to the use of these solutions within their own system investments.

The FEI Report also promised further guidance on NWSs, including investigating how the OEB can facilitate, standardize and provide appropriate oversight over arrangements between distributors and third-party DERs to deploy NWSs.

7.1 Benefit Cost Analysis Framework

Phase One Benefit-Cost Analysis (BCA) Framework for Addressing Electricity System Needs

In May 2024, the OEB issued the final Phase One BCA Framework for Addressing Electricity System Needs. This Framework is an OEB policy that outlines the methodology electricity distributors are to employ when assessing the economic feasibility of using DERs as NWSs to address defined electricity system needs.

The BCA Framework establishes a multi-test approach for use by rate-regulated electricity distributors in support of system planning and distribution rate-setting applications to the OEB. The intent of the BCA Framework is to encourage the development of solutions that are in the best interests of both an electricity distributor's customers and Ontario's energy customers more broadly. It seeks consistency in how distributors choose between non-wires and traditional poles-and-wires infrastructure solutions to meet an electricity system need.

Development of the BCA Framework is being carried out in two phases. Phase one of the BCA Framework places a focus on the mandatory distribution service test. It compares the costs of implementing an NWS against the benefits it provides in terms of improved distribution service. It also includes an optional energy system test that considers the benefits and costs associated with an NWS from the perspective of the Ontario electricity system. It is focused on assessing broader benefits and costs associated with an NWS, including impacts on transmission capacity and generation capacity.

With phase one complete, work has begun on phase two and its focus on broader energy system impacts. This phased approach to developing the BCA Framework was noted in the OEB's FEI Report.

7.2 Filing Guidelines for Incentives for Electricity Distributors to Use Third-Party DERs as Non-Wires Alternatives

Filing Guidelines for Incentives for Electricity Distributors to Use Third-Party DERs as Non-Wires Alternatives

In March 2023, the OEB released the Filing Guidelines for Incentives for Electricity Distributors to Use Third-Party DERs as Non-Wires Alternatives (Guidelines). Distributors may submit a proposal, as part of a rate-rebasing application, or as a stand-alone application, for an incentive to adopt DER solutions in lieu of traditional distribution investments. To support distributors in submitting an incentive proposal, the Guidelines identify the information that distributors should include to facilitate effective and timely regulatory review.

Distributors may choose one of the following three incentive mechanisms:

Incentive Mechanism	Description
1. Shared Savings Mechanism	Calculates the savings for customers from DER solutions and allocates a formula-based portion of savings to the distributor's shareholders.
2. Performance Target or Scorecard-Based Incentive	Allows a distributor to earn a fixed incentive payment, based on its performance against an established target or scorecard metrics.
3. Margin on Payments	Allows a distributor to add a margin on payments to DER providers (customers or third parties) for providing services to the distribution system, such as capacity, reliability, etc.

The Guidelines outline how an incentive proposal should describe the proposed third-party DER solution, the system needs it addresses, and the incentive mechanism (e.g., methodology for calculating the incentive amount and approach to implementing and awarding it). Specific guidance for meeting these requirements for each incentive option is also provided, including how to describe the rationale for the incentive amount.

To provide further guidance on the information and analysis requirements set out in the Guidelines, the OEB facilitated a webinar in November 2023 to present hypothetical examples of proposals for each incentive mechanism. The examples reflect the key considerations that may be included in an incentive proposal, but do not prescribe specific requirements or approaches. Materials and a recording of the webinar are provided on the Guidelines webpage.

8. Filing Requirements for Electricity Distributors

Filing Requirements for Transmission and Distribution Applications

Filing requirements for cost-of-service applications are revised periodically to reflect new or changing issues. Applicants should reference the most current filing requirements when preparing their applications. In 2021, the OEB introduced a new "Facilitating Innovation" section in these filing requirements, which has been refined in recent filing requirement updates. Some relevant excerpts are included here:

> Panels of OEB Commissioners will continue to make determinations that establish rates that are just and reasonable and which are made on the basis of evidence before them. In its consideration of innovation by licensed electricity distributors, the OEB will also continue to have regard to the restrictions on business activity laid out in section 71 of the Act, which prohibits these entities (and transmitters) from undertaking non-utility activities within the utility business, subject to certain exceptions. A distributor may wish to refer to the OEB's Innovation Sandbox to discuss innovative approaches, and to obtain customized guidance. If distributors engage in activities that fall within the parameters set out in section 71(2), (3) or (4) of the Act, those non-distribution activities must be accounted for separately from distribution activities to assist the OEB in ensuring that costs related to these non-distribution activities are not included in rates.
>
> Distributors are encouraged to include in their cost-based applications a description of the ways that their approach to innovation has shaped the application. This could include an explanation of its approach to innovation in its business more generally, or related to specific projects or technologies, including enabling characteristics or constraints in its ability to undertake innovative solutions, for enhancing the provision of distribution services in a way that benefits customers, or facilitating its customer's ability to innovate in how it receives electricity services. Distributors could also include an explanation of how innovative alternatives have been considered in place of traditional investments.

9. Non-Wires Solutions Guidelines for Electricity Distributors

Non-Wires Solutions Guidelines for Electricity Distributors

The OEB's Non-Wires Solutions Guidelines for Electricity Distributors (NWS Guidelines) provide guidance on the role of NWSs, including CDM, for rate-regulated electricity distributors, including the treatment of NWSs in distribution rates.

The NWS Guidelines were issued in 2024 and replace the previous CDM Guidelines for Electricity Distributors. The change reflects the fact that NWSs to address system needs can encompass a broader range of solutions than traditional CDM, including third-party DERs such as energy storage and distributed (embedded) generation.

Distribution rate-funded NWSs are expected to address a specific system need at the distribution or the regional level. As system needs are often driven by peak electricity demand, it is anticipated that many NWSs may be designed to reduce peak demand. NWSs may also be geotargeted to the portion of the distribution system that is experiencing a need/constraint. Examples of NWSs that distributors may consider for the purpose of addressing system needs include:

- Energy efficiency programs
- Demand response programs
- Programs that improve the efficiency of the distribution system and reduce distribution losses
- Energy storage (in front of or behind the meter)
- Generation (in front of or behind the meter)
- Managed charging of EVs

NWSs may also include non-distributor owned, behind the meter (BTM solutions where the cost and benefits of the solution may be shared between the distributor and another party. The NWS Guidelines also permit distributors partnering with the IESO in the Local Initiatives Program (LIP) to apply for distribution rate funding to procure incremental resources to meet local distribution system needs. This builds on the OEB's establishment of an LIP Deferral Account to record costs incurred by a distributor associated with the distributor's participation as a supporting partner to the IESO in the LIP.

The NWS Guidelines encompass the BCA Framework methodology to assess the economic feasibility of NWSs (section 7.1 of this Handbook) and the Filing Guidelines enabling distributors to apply for incentives related to the use of third-party DERs as NWSs (section 7.2).

10. Innovation in the Gas Sector

While the OEB does not have a statutory objective to facilitate innovation in the gas sector, the OEB will support innovation in the gas sector in ways that benefit customers. There are innovative activities taking place in the gas sector, some of which are described in this section.

In 2020, the OEB approved two separate pilot projects in the gas sector. Both pilot projects are related to reducing greenhouse gas (GHG) emissions. The first pilot project involves reducing the amount of carbon in natural gas consumed by customers by blending hydrogen gas with conventional natural gas. The second pilot project involves offering consumers the opportunity to pay a premium for renewable natural gas.

The OEB also approved the Integrated Resource Planning (IRP) Framework in 2021 that requires Enbridge Gas Inc. (Enbridge Gas) to consider both facilities and non-facilities alternatives to address many identified system needs, as well as a new Demand Side Management Plan for Enbridge Gas, approved in November 2022.

10.1 Low Carbon Energy Project Decision and Order

EB-2019-0294; sometimes referred to as the Hydrogen Blending Project

On October 29, 2020, the OEB issued a Decision and Order approving an application from Enbridge Gas to begin a five-year pilot project involving the blending of hydrogen gas with conventional natural gas (blended gas). Blended gas may be one way to help reduce GHG emissions, acknowledging that there may be some limitations to the impact blended gas may have in reducing carbon emissions due to factors such as cost and safety related to concentration levels.

The purpose of the pilot project is to study the effect of hydrogen gas on the natural gas distribution system and consumers' end-use appliances. The OEB granted approval for Enbridge Gas to construct facilities to enable this pilot project and approved a rate rider to ensure that consumers receiving blended gas do not pay more than its other consumers.

Hydrogen gas is typically more expensive than conventional natural gas. However, for the purposes of the pilot project, Enbridge Gas is procuring hydrogen gas from an affiliate at the current market price of conventional natural gas.

Under the OEB's Conditions of Approval for the pilot project, Enbridge Gas is required to inform the OEB before continuing with additional phases of blended gas distribution. Also, after five years of operational experience (which would not be until around 2026), Enbridge Gas is required to file a report with the OEB that addresses, among other things, the costs of the project, any evidence of negative impacts on the distribution system and end-use appliances, conclusions arising from project-generated knowledge (e.g.,

risks/mitigations), and recommendations for next steps (e.g., discontinue or expand the project, adjust the concentration of hydrogen) and the potential timing of any related applications to the OEB.

10.2 Voluntary Renewable Natural Gas Program Decision and Order

EB-2020-0066

On September 24, 2020, the OEB issued a Decision and Order approving Enbridge Gas's application to offer a Voluntary Renewable Natural Gas Program (RNG Program), on a pilot or test basis. Residential and small business customers that take part in the RNG Program pay a charge of $2 per month, which is shown separately on their bills. The RNG Program started in April 2021 and can continue only as a pilot project until the OEB issues a further decision on the RNG Program, either as part of Enbridge Gas's next major rate application or in response to a stand-alone application filed by Enbridge Gas.

In approving the proposed project, the OEB noted that renewable natural gas is a renewable energy source that reduces GHG emissions relative to conventional natural gas and should be explored as a means of diversifying the gas supply portfolio. RNG is a higher cost alternative to conventional natural gas, and the OEB decided that exploring the addition of RNG is best done on a voluntary and pilot basis. The results from the pilot would lead to a better understanding of RNG options and provide information to assess future RNG program proposals. The $2 monthly charge for customers that participate in the RNG Program will be used to fund the higher cost to Enbridge Gas of obtaining RNG rather than conventional natural gas. The cost of operating the RNG Program will be managed within Enbridge Gas's existing budgets until Enbridge Gas's rates are rebased for 2024.

As part of Phase 2 of Enbridge Gas' 2024 rebasing application, Enbridge Gas proposes to amend the RNG program to procure low-carbon energy, with a focus on RNG as part of the gas supply commodity portfolio beginning in 2026.[2]

10.3 Enbridge Gas IRP Decision and Order

EB-2020-0091

Engage With Us – Natural Gas Integrated Resource Planning

IRP is a natural gas facilities planning process and strategy that considers alternatives to traditional facilities projects (primarily pipelines) to address system needs. The OEB approved an IRP Framework for Enbridge Gas in its Decision and Order on July 22, 2021.

[2] EB-2024-0111, Phase 2, Exhibit 4, tab 2, Schedule 7, p. 1

The IRP Framework requires Enbridge Gas to consider facilities and non-facilities alternatives (such as geotargeted energy efficiency measures), or a combination of both, to address many identified system needs. The IRP Framework is designed to identify the alternative (or combination of alternatives) that is in the best interests of Enbridge Gas and its customers, taking into account reliability and safety, cost-effectiveness, public policy, optimized scoping and risk management. The Framework is also expected to enhance Enbridge Gas's understanding, consideration and use of alternatives to pipelines and traditional facility infrastructure. It is expected that Enbridge will be able to better consider IRP alternatives in its Asset Management Plans. To support this work, the OEB established an IRP Technical Working Group to facilitate an efficient and transparent implementation of the initial phase of the IRP Framework.

Enbridge Gas is integrating the IRP evaluation process into its Asset Management Plan, beginning with the 2023 to 2032 Plan. Enbridge Gas is also expected to develop and implement two IRP pilot projects that are intended to be an effective approach in understanding and evaluating how IRP can be implemented to avoid, delay or reduce facility projects. Enbridge has filed an IRP pilot project application with the OEB (EB-2022-0335).

While the IRP Framework has been established for Enbridge Gas, it should also be used as a resource to guide EPCOR Natural Gas Ltd. Partnership when it examines infrastructure investments and potential alternatives.

10.4 Natural Gas Demand Side Management (DSM)

Engage with Us – Natural Gas Conservation Evaluation Advisory Committee

Engage with Us – DSM Stakeholder Advisory Group

The OEB has overseen utility natural gas conservation plans in Ontario since 1995. These plans have provided conservation and energy efficiency opportunities to the majority of Ontario's natural gas customers. Through the approval of DSM plans and associated framework development, the OEB sets budgets, targets and cost-effectiveness thresholds, in addition to establishing a shareholder incentive for the successful delivery of the approved programs. OEB staff support adjudication, working groups and savings verification to ensure that these programs leverage emerging opportunities, maintain cost-effectiveness and are ultimately relevant for Ontarians.

The energy conservation programs emphasize energy efficient technologies and equipment using various methods, such as financial incentives, building modifications, education and outreach. These programs attempt to impact customers' energy usage (demand), rather than utility energy capacity (supply), which is why they are referred to as DSM programs. The OEB verifies, on an annual basis, natural gas savings and other aspects of energy conservation programs provided by Enbridge Gas and funded by ratepayers. This work is supported by the Natural Gas and Conservation Evaluation Advisory Committee.

On November 15, 2022, the OEB approved a new three-year DSM plan for Enbridge Gas that will run from January 1, 2023, to December 31, 2025. Included in the approved plan are opportunities for customers to achieve energy savings and bill reductions. More information on those approved programs can be found in the OEB's Decision and Order (EB-2021-0002).

In March 2023, the OEB established the DSM Stakeholder Advisory Group (SAG). The SAG is intended to provide meaningful input and recommended changes to Enbridge Gas's future conservation programs, including identifying cost-effective areas that can be expanded, as well as specific changes to programs to increase the level of natural gas savings and contribute to a greater reduction in overall natural gas sales volumes and GHG emissions.

Although the OEB's decision applies only to Enbridge Gas, EPCOR Natural Gas Ltd. Partnership is an observer of the SAG and may also benefit from the work products that result from the Group's efforts.

11. Distribution System Code Amendments

Distribution System Code (DSC)

Distributed Energy Resources (DER) Connections Review | Engage with Us (oeb.ca)

Effective March 27, 2024, the OEB made amendments to the DSC to enable electricity distributors to offer flexible hosting capacity arrangements for DERs. These arrangements are designed to connect DERs safely and reliably to the grid, even when their aggregated output may surpass the technical capacities of distribution feeders and/or substations, provided the distributor has the technical ability to do so. Customers connected to constrained portions of the distribution system may now be afforded the choice to take advantage of DERs.

These amendments will facilitate innovation in the electricity sector, accommodate additional DERs and improve utilization of the distribution system that can delay or reduce costs for new system investments. The amendments also provide for sufficient time to establish connection requirements and other terms and conditions to help ensure minimal impact on the system and existing customers by exempting compliance with certain DSC timeline requirements. Distributors are also required to outline the operating terms and conditions that govern the output and/or operation of the DERs to provide enhanced clarity and transparency during the connection process. They are also advised to inform prospective DER customers about the availability of flexible hosting capacity arrangements. The flexibility in these arrangements is intended to help accommodate the growing demand for sustainable energy solutions, support customer choice, further optimize Ontario's competitive energy advantage and facilitate the energy transition.

The OEB made further amendments to the DSC aimed at streamlining the connection of non-residential EV charging infrastructure. Effective May 27, 2024, these changes are designed to standardize the connection process for all electricity distributors in Ontario, reducing potential barriers and facilitating timely deployment of EV charging stations. These amendments establish a uniform procedure for connecting charging facilities that require modifications or additions to the electricity distribution system, such as the connection of public charging facilities that serve multiple EVs and fleet charging stations designed for commercial use. The amendments stem from the OEB's ongoing efforts to support the expansion of EV infrastructure. These amendments also include new EV supply equipment-related definitions and requirements for distributors to comply with the Electric Vehicle Charging Connections Procedures (EVCCP).

The EVCCP and the accompanying amendments are expected to streamline the connection process, reduce administrative burden and promote the expansion of EV charging infrastructure in Ontario. The OEB will continue to monitor the implementation and effectiveness of these procedures, adjusting as necessary based on stakeholder feedback and operational experiences.

12. Ultra-Low Overnight Price Plan

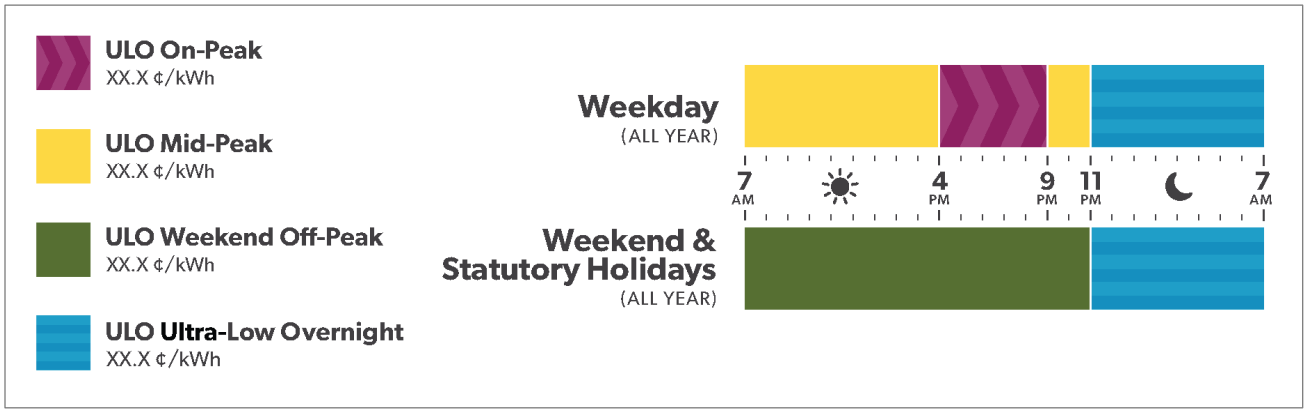
Engage with Us – Enabling the Implementation for the Ultra-Low Overnight (ULO) Price Plan

In 2022, the OEB designed and enabled the implementation of the ULO price plan to further incentivize Regulated Price Plan (RPP) consumers (residential and small business customers) to shift electricity demand from peak periods to lower demand periods. The ULO price plan was the first of its kind in Canada. The addition of the ULO price plan gives RPP customers a choice between three price plans: ULO, Time-of-Use (TOU) and Tiered prices.

The ULO price plan consists of four price periods:

- **Ultra-Low Overnight**, when demand for electricity is lowest on average.
- **Weekend Off-peak**, when demand for electricity is generally lower.
- **Mid-peak**, when demand for electricity is moderate.
- **On-peak**, when demand for electricity is highest on average.

These periods are consistent year-round, with the cheapest prices applying all day on weekends and holidays. Prices are set annually by the OEB on November 1. The ULO plan was launched on May 1, 2023, and Ontario electricity distributors had to offer it by November 1, 2023.



13. Licence Exemptions for Innovative Pilot Projects

Following the Innovation Sandbox Renewal Consultation, the OEB committed to identifying opportunities with the Ontario government to facilitate innovation through legislative change. The OEB explored potential legislative amendments aimed at better supporting innovation in the electricity sector, enabling it to approve and support more projects through the Innovation Sandbox.

In June 2023, Section 57.1 was added to the OEB Act, enabling the OEB to grant exemptions from the requirement to be licensed as an electricity distributor, retailer, wholesaler, unit sub-meter provider or gas marketer for a pilot or demonstration project that furthers the OEB's statutory objective to facilitate innovation in the electricity sector. Effective January 1, 2024, those who are granted a temporary licence exemption under the new section 57.1 are also exempt from certain additional provisions under the OEB Act, the *Electricity Act, 1998*, and the *Energy Consumer Protection Act, 2010*.

The OEB is accepting applications for exemptions under section 57.1, and an application form is available on our Applications webpage.

14. Other Staff Bulletins

14.1 Residential Customer Connections and Service Upgrades

Residential Customer Connections and Service Upgrades Bulletin

In August 2023, OEB staff issued a bulletin to provide guidance to electricity distributors about residential customer connections and service upgrades, addressing inconsistencies and compliance issues with cost responsibility. By clarifying expectations, the OEB aims to support the evolving needs of residential electricity consumers and ensure a consistent approach among distributors.

A key focus of the bulletin is the importance of electrical capacity planning to accommodate the growing demand for residential electrification, driven by the adoption of equipment such as EV chargers and heat pumps. This bulletin may lead to innovation by encouraging electricity distributors to develop new methods and technologies to enhance electrical capacity planning and management. The OEB emphasizes that distributors must ensure their distribution systems can support these increased demands. The DSC requires a distributor to define a Basic Connection for residential customers that includes, at a minimum, transformation capacity and conductor. While the DSC does not explicitly state the specific capacity amount, the bulletin expresses the view that it is good practice to provide a 200-amp service capacity as part of the Basic Connection. This would prevent premature asset replacements and accommodate future capacity demands.

15. Conclusion

The Innovation Handbook reflects the OEB's ongoing commitment to fostering innovation and adapting to the evolving energy landscape. Periodic updates ensure that this Handbook remains a relevant and comprehensive resource for stakeholders, providing current guidance and reflecting the latest advancements and regulatory changes in the energy sector.

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