MEETING NOTE

NAME OF ORGANIZATION:	Electricity Distributors Association (EDA)
DATE/TIME OF MEETING:	Tuesday May 29, 2018
LOCATION OF MEETING:	900 Bay – 4th floor, DMO Boardroom

PURPOSE: Quarterly Meeting

ATTENDEES:
Teresa Sarkesian, President & CEO, EDA
Natasha Galati, Executive Assistant to the President & CEO, EDA

AGENDA:
1. EDA's Vision Paper Road Map
2. Electricity Conservation Framework Mid-Term Review and Post-2020 Conservation
3. OEB Modernization Panel
4. EDA's continued support in implementing EWRB

NOTES ON AGENDA ITEMS:

1. EDA's Vision Paper Road Map

In February 2017, the EDA published 'The Power to Connect – Advancing Customer-Driven Electricity Solutions for Ontario:' their vision for the LDC of the future: an entity charged with enabling, owning, and coordinating distributed energy resources (DERs). The EDA has characterized these entities as Fully Integrated Network Orchestrators (FINOs).

In February 2018, the EDA released a second report, the Power to Connect: A Roadmap to a Brighter Ontario, which articulates a number of barriers and proposed resolutions to enable the transition of LDCs to Fully Integrated Network Orchestrators (FINOs), including legislative and regulatory amendments for removing restrictions on LDC ownership of Distributed Energy Resources (DER) assets.

The EDA's vision largely aligns with the Ministry's grid modernization framework, mainly, creating an "enabling platform" for DER and other smart assets to reduce costs throughout the sector in the long-term. The EDA, while supportive of recent enhancements to Ontario's net metering framework, is recommending adoption of Locational Marginal Pricing (LMP) for net metering as a medium to long-term action.

Suggested Response:

- **I would be interested to know about how the FINO model could help LDCs capture the full range of economic and technical benefits of smart technologies. Can these changes reduce rates for customers?**

- **I appreciate the EDA's recommendations for future changes to Ontario's net metering regulatory framework related to LDC ownership of net-metered DER assets and Locational Marginal Pricing mechanisms.**

- **The Ministry of Energy also appreciated the feedback provided on the regulatory postings for enhancements to Ontario's net metering framework. The regulations were filed on April 20, 2018.**

- **I look forward to seeing innovative projects from the sector in response to the IESO's Renewable Distributed Generation Integration (RDGI) Fund, which will explore some of the concepts discussed in the Power to Connect report.**

If asked about LDC ownership of net-metered assets or Locational Marginal Pricing mechanisms

- **I appreciate the EDA's recommendations for future changes to Ontario's net metering regulatory framework related to LDC ownership of net-metered DER assets and Locational Marginal Pricing mechanisms. The Ministry of Energy will keep these proposals in mind for future net metering and DER policy development.**

    - **The recent enhancements to Ontario's net metering framework to allow third-party ownership of net-metered generation and storage systems will provide opportunities for LDC affiliates to participate in ownership and operation on behalf of LDCs.**

- **The Ministry of Energy also appreciated the feedback provided on the regulatory postings for enhancements to Ontario's net metering framework. The new regulations were filed on April 20, 2018.**

- **I look forward to seeing innovative projects from the sector in response to the IESO's Renewable Distributed Generation Integration (RDGI) Fund, which will explore ownership and operation of DER, including a first call for virtual net metering demonstration projects.**

Background:

The *Power to Connect* Vision and Roadmap

- The vision paper proposed that over the next 15 years, LDCs should transform into Fully Integrated Network Orchestrators (FINOs) which actively manage DERs within their network with an aim to provide greater value and services to their customers. This is akin to LDCs becoming "small IESOs". In order to facilitate this transition, the EDA sees LDCs taking on three roles:

    - Offering a DER-enabling, intelligent platform for DER integration in distribution systems;

    - LDC ownership of DERs; and,

    - Allowing LDCs to be able to control and operate DER to optimize their value (see Appendix A for more details).

- Power Advisory worked with the EDA to produce a second report, *Power to Connect: A Roadmap to a Brighter Ontario*. This report identifies challenges LDCs face in attempting to achieve these opportunities and potential solutions to address them:

Challenges	Solutions
1. Inconsistent Rules and Provisions	1. Levelling the playing field for distributed energy resources. 2. Clearly defining distributed energy resources and clarifying obligations.
2. Uncertainty with Distribution Planning and Rate-Basing	3. Improving Distribution System Plans through investments in grid visibility. 4. Remove restrictions on LDC ownership of distributed energy resources. 5. Enable rate-basing of distributed energy resources and other assets that are consistent with distribution system plans.
2. Uncoordinated Centralized Procurements	6. Coordinating and decentralizing procurement of distributed energy resources. 7. Empowering LDCs to control and operate relevant assets.
3. Perception of LDC Capabilities	8. Incentivizing shared services of LDCs with respect to control and operations.
4. Inefficient Pricing and Rate Design	9. Developing a locational market price for distributed energy through the Market Renewal program.

- Among the strategies to enable these solutions are amendments to the *Electricity Act, 1998*, the *Ontario Energy Board Act, 1998*, and the Ontario Energy Board's Distribution System Code (see Appendix B).

Grid Modernization:

- A conventional electricity grid includes assets that serves very specific technical functions. These assets – power generation, transformers, wires – have a well-understood economic value based on their technical benefits, like producing and delivering power to customers. The regulator values these technologies when reviewing applications and determining the appropriate rate to cover the costs of these assets.

- Smart grid technologies – grid automation, intelligent controls, advanced asset management – have the potential to serve multiple technical functions, and thereby create economic value from the dynamic use of these functions.

    - Energy storage is a great example – a battery installed behind the meter can serve to manage voltage levels from the grid, protecting sensitive equipment and improving reliability.

    - However, that battery could also be dispatched to provide services to the grid, including both power and ancillary services (e.g. voltage and frequency regulation).

    - Using the battery this way could reduce costs by encouraging cost-sharing, avoiding capital upgrades, and reducing demand on the system. However, there is currently no regulatory framework that enables all of these economic and technical values to be captured.

- The LTEP outlined a vision for grid modernization that creates the right environment for utilities to invest in technologies that make the most sense for their grids and their customers, both from an economic and technical perspective. To support modernization, the OEB was asked to investigate a range of regulatory barriers, most of which focus on how to capture the full value of smart grid technologies.

- The EDA's vision largely aligns with the Ministry's distribution grid modernization vision from the LTEP, including addressing regulatory and other barriers to promote a modern grid.

- The LTEP and the EDA paper articulates a vision of a grid powered by a digital platform, and enabling LDCs to partner with their customers both in-front and behind-the-meter. Ultimately, the goal of a platform is to reduce costs for ratepayers in the long-term by empowering LDCs to capture the full technical benefits of smart grid technologies.

- A platform can ensure that DERs are utilized so they generate the most value for the grid, provide the visibility LDCs need to proactively – avoiding problems before they occur to avoid costly, rate-based asset replacement, and provide the information customers need about their energy usage so that they can make decisions that ultimately reduce their bills.

- In order to enable many of the EDA's recommendations, there would need to be significantly greater visibility and coordination between the IESO and LDCs. To support this coordination, the IESO convened a standing committee on LDC-IESO Grid Interoperability in mid-2017 to discuss matters relating to the coordination of IESO and LDC-controlled grid resources. The goals of the committee are to:

    - To continue to develop relationships between the IESO, LDCs and observer members;

    - To continue to explore enhanced collaboration and interoperability and come to agreement on their definitions and scope; and,

    - Focus on advancing opportunities for enhanced coordination between the IESO and LDCs.

- The Committee last met on February 8, 2017, with representatives from CRED and SNAP in attendance as observers.

LDC ownership of net-metered DER assets

- EDA's recommendation to remove restrictions on LDC ownership of DER assets in the near-term would allow LDCs to own and operate behind the meter DER assets under Ontario's enhanced net metering framework, competing directly with renewable energy businesses.
    - The EDA does not make a case why LDC ownership would be more beneficial than doing these activities through their affiliates or what specific types of projects would be of interest to LDCs.
    - The Ministry will monitor implementation of the net metering regulatory changes and market reaction to third-party ownership business models, including uptake by LDC affiliates, who expressed interest in pursuing third-party ownership models during stakeholder consultations.

- The 2017 LTEP also committed to a new IESO program that will support a select number of innovative, renewable distributed generation projects, strategically located and paired with other DERs and smart grid technologies.
    - The IESO initiated stakeholder engagement and program development on the Renewable Distributed Generation Integration Fund as part of its 2017 LTEP Implementation Plan.

- The IESO has released draft guidelines for its first call for virtual net metering demonstration projects.
- Focus areas for future funding calls will be informed by stakeholder feedback, and could include non-wires alternatives, advanced DER aggregation models, and alternative distribution services.

Locational Marginal Pricing (LMP)

- The EDA recommends, as a medium to long-term initiative, that Ontario adopt Locational Marginal Price (LMP+D, where D is higher where it displaces or defers expansion of the LDC's distribution system) as an alternative to retail rate compensation under net metering, pointing to other jurisdictions (e.g. New York) that have successfully adopted locational pricing.
    - Uptake of LMP pricing in other jurisdictions has been very limited and complicated to administer. As well, those jurisdictions referenced in the EDA report do not have fixed distribution charges, as is the case for residential customers in Ontario.
    - The Ministry is considering the costs and benefits of enabling TOU settlement for net-metered customers in Ontario. Net-metered customers are currently settled using tiered rates due to limitations with the province's Meter Data Management/Repository (MDM/R).
    - The IESO's new RDGI Fund will support exploration of alternative pricing and valuation mechanisms for DERs and net metering in the near-term.

2. Electricity Conservation Framework Mid-Term Review and Post-2020 Conservation

The IESO has completed the engagement for the Mid-Term Review (MTR) of the Conservation First Framework (CFF) and Industrial Accelerator Program (IAP) and will submit a final MTR Recommendations Report to the ministry by June 1, 2018. The EDA may provide views on: the experiences and role of LDCs in delivering conservation programming under the CFF, to date and to 2020; opportunities for LDCs for new Green Ontario Fund (GreenON) programs; and approaches for post-2020 conservation.

Suggested Response:

- **The ministry is pleased at the progress the LDCs are making in achieving their electricity savings targets under the CFF, and their overall commitment to conservation programming.**

- **We are also pleased that the EDA actively participated in the MTR Advisory Group, and that the Advisory Group expressed verbal support for the MTR Report (engagement summary) prepared by Navigant.**

- **We know that LDCs are thinking about the future of their programs and services. Are there particular issues or opportunities about the balance of the framework and beyond that the EDA would like to discuss?**

    - **We have read and are considering the EDA's recommendations on conservation provided in its Vision Paper (*Power to Connect: A Roadmap to a Brighter Ontario*.**

If asked about ENERGY's post-2020 conservation plans

- **We look forward to receiving the IESO's MTR Final Recommendations Report, and expect to respond by late summer or early fall, pending government direction and any required government decisions.**
- **It is premature for us to comment on what will come after December 31, 2020. Subject to government direction, we would plan to engage with the industry and other stakeholders in developing conservation policy for the post-2020 period.**

Background:

- To date, under the CFF, LDCs have achieved more than half of the 7 TWh electricity savings target, and the CFF is on track to exceed the target by 12% (based on IESO forecasts included in Q4 2017 results).

- The IESO was directed to work with distributors to complete a formal MTR of the 2015-2020 CFF and IAP by June 1, 2018 (*March 31, 2014 Minister's direction to Ontario Power Authority, now IESO*).

- The formal review and engagement began in November 2016 and ended in March 2018, and focused on: conservation targets/budgets, lessons learned on LDC funding models, customer needs, conservation integration with regional planning, CFF alignment with Climate Change Action Plan (CCAP) initiatives and post-2020 approaches to energy efficiency.

- Key recommendations from Navigant through the MTR process include:

    - Reorganization of the CFF governance structure to enhance program design and responsiveness.

        - A new Joint Programs Operations Committee has been established, and the IESO presented to LDCs on its governance, work plan and communications strategy at an IESO-LDC event on May 15, 2018.

    - Addressing Central Services budget constraints

        - Achieved through issuance of February 8th, 2018 Direction which asked the IESO to move 0.4 TWh of IAP target to the CFF.

- Government should address structural issues causing program duplication.

- Other issues the IESO is planning to bring to the ministry's attention through its MTR Final Recommendations Report (which builds on Navigant's report):

  - Some LDCs forecast that they will be running out of their allocated conservation target or budget before the end of 2020, and will be unable to continue to deliver conservation programs in their service territory.

  - Some LDCs have large conservation projects which, if funded out of their CDM Plan budgets, will create a shortfall and inability to continue to deliver conservation programs in their service territory.

  - LDCs have expressed concern about duplication between GreenON programs and their own programs under the CFF, and limited opportunities for collaboration with GreenON.

EDA Vision Paper – Conservation Recommendations

- Through *Power to Connect: A Roadmap to a Brighter Ontario*, the EDA identifies the role that conservation can play in a modern electricity system and how conservation resources can be leveraged by a FINO to the benefit of their distribution systems and consumers.

- The EDA report contains three broad recommendations for conservation:

  - Leverage conservation resources, including demand response and in front of the meter conservation (IFMC), through an augmented distribution system planning process and by the OEB providing greater certainty and guidance on what types of investments LDCs can recover through rates.

  - Reduce the role of province-wide conservation and demand management (CDM) programs to enable a greater role for LDCs to plan for, own and/or operate DER assets, including CDM assets.

  - Incentivize LDCs to pursue local CDM investments through implementing Locational Marginal Pricing (LMP) for electricity, which would capture the value of electricity (or alternative conservation investments) at particular points on the distribution system.

3. OEB Modernization Panel

In December 2017, the Minister of Energy announced the creation of the Ontario Energy Board Modernization Review Panel. The panel is chaired by Richard Dicerni, a former senior public servant with the Canadian government, as well as governments of Ontario and Alberta. He also served as President of Ontario Power Generation between 2003 and 2005.

Also serving as Panel members are Cara Clairman, founder, President, and CEO of Plug'n Drive with more than 20 years of experience working in the environmental and sustainability fields, including 12 years working at Ontario Power Generation, and Bruce Campbell, who was President and Chief Executive Officer of Ontario's Independent Electricity System Operator (IESO) from May 2013 to June 2017.

In March, the Panel released discussion notes on 7 themes the Panel wished to consult with Ontarians on regarding the province's energy regulator:

- *Mandate and Activities*
- *Disruption and Innovation*
- *Governance Framework*
- *Stakeholder relationship*
- *Relationship to Government*
- *Regulatory Excellence and Benchmarking*
- *Resourcing*

The consultation was held from March 26 to May 7, 2018 and is now closed. During this period, the panel received 58 submission from a wide variety of interested parties.

The Panel is in the process of reviewing the submissions and plans to release a "What We Heard" document summarizing what stakeholders have told the Panel. As part of the submission process, the panel has undertaken to preserve the confidentiality of the submissions and no attribution to any party will be made when reporting on the submission.

The panel has also retained expert consulting resources to provide the Panel expert advice to craft its Final Report, which may be released in late 2018.

Suggested Response:

- **I would be interested in hearing your comments about the Panel's work and any advice you feel comfortable in sharing regarding the Panel's identified themes or your views of the future of the sector.**

4. EDA's continued support in implementing EWRB

On February 6, 2017, Ontario introduced mandatory energy and water reporting and benchmarking (EWRB) for large buildings under O.Reg 20/17, Reporting of Energy Consumption and Water Use. The regulation requires utilities, when requested, to provide building owners with their building's consumption data. Approximately 1,000 buildings will be required to report by the first reporting deadline of July 1, 2018.

Suggested Response:

- **As you are aware, to prepare for the first EWRB reporting deadline of July 1, 2018, the Ministry of Energy has held a series of meetings with a working group made up of the EDA and utility staff in order to seek input and advice on EWRB implementation.**

- **I am pleased the EDA has taken a leadership position, to ensure that utilities are ready to provide data to building owners as required under the regulation.**

- **I would like to thank the EDA for partnering with ENERGY to host an EWRB webinar for utilities on February 22, 2018.**

- **Are you aware of any additional steps we can take to ensure LDCs are ready for the first reporting deadline?**

Background:

- ENERGY staff worked collaboratively with the EDA to co-host a webinar attended by over 40 LDCs on February 22, 2018.
    - During the webinar ENERGY and the EDA, Toronto Hydro, Alectra and Enbridge presented materials discussing the key role of LDCs in making building consumption data available to building owners, and the potential benefits to utilities of EWRB reporting and benchmarking.
- ENERGY staff would like the EDA to continue to raise awareness with all its members and reinforce the importance and benefits of LDCs supporting building owners in obtaining aggregated consumption data for EWRB compliance.

- LDCs can provide their support through:

- Internal communications on the requirements to provide data to building owners and the role for EWRB in achieving energy savings that can count toward utility conservation and energy efficiency programs;
- Seeking ways to minimize the cost and complexity for building owners to report utility data related to their buildings; and
- Supporting the delivery of building level data, at no additional cost to building owners, that results in effective benchmarking to help LDCs identify and achieve energy savings.

- ENERGY will continue to seek the EDA's support in arranging future webinars for LDCs encouraging them to:
  - Promote participation in utility conservation and energy efficiency programs; and
  - Provide consumption data to building owners at no cost.

APPENDIX A – *The Power to Connect*

Vision Paper Premise

- The report begins with the premise that the electricity grid is undergoing a significant transformation, aspects of which include:
    - Shifting from a centralized one-way flow of power to a clean, decentralized and intelligent system that enables two-way power flow;
    - Integration of new technology and innovation, changing market demands, and regulatory, and policy shifts; and,
    - Declining costs of distributed energy resources (DER), digitization, data analytics, rising customer empowerment, and climate change policies.
- Principally, the EDA believes that LDCs are uniquely positioned to lead the transition to a cleaner, decentralized and more intelligent grid through becoming enablers, integrators, and orchestrators of DER.
    - DERs refer to small-scale power sources (usually in the range of 3kW to 50 kW) located close to where electricity is used. They can include solar, wind, energy storage, EV charging infrastructure, CHP, fuel cells, demand response, and conservation and demand management.

Ontario's LDC of the Future

- The EDA sees the future role of an LDC as transitioning across three different variables of providing a DER enabled platform, owning DER assets, and controlling and operating DERs and ultimately evolving to a Fully Integrated Network Orchestrator (FINO).
- *DER Enabling Platform* – refers to the extent to which LDCs provide an intelligent network where DER 3rd party providers and customers can 'plug and play'.
    - LDCs will have to ensure their systems can accommodate DER connections while maintaining the stability and reliability of the grid.
    - Foundational investments to update the system such as distribution network control and automation, smart inverters, two-way communication and an Advanced Distribution Management System (ADMS) will need to be deployed. Ontario's smart meter rollout gives LDCs an advantage.
    - LDCs will have insight for optimal DER siting and must be the provider of DER enabling technologies due to operational and planning practicalities.
- *DER Integration* – refers to the degree to which LDCs expand their scope of business beyond possessing traditional poles and wires to broader DER asset ownership.
    - LDCs are well positioned to stimulate DER market development although integration will vary by LDC depending on size, location, etc.

- LDC ownership would not prevent activity from other market players and would provide more predictability in planning, and certainty in achieving public policy goals when compared to an exclusive market based structure.

- *DER Control and Operation* – refers to the degree to which LDCs control and operate DERs that are connected to their distribution network i.e. LDCs as a local Independent Electricity System Operator (IESO), or 'mini IESO'.
    - DER Management Systems (DERMS) will be required to provide real-time network visibility, asset monitoring and control, scheduling and dispatch, active and reactive power import and export control, voltage control, forecasting, resource valuation, and optimal demand response from DERs.
    - Appropriate price signals are also needed so that investments behind-the-meter are economic for consumers and achieve maximum value for the system.
    - DERMS and DER price signals permit LDCs to ensure efficient use of both centralized and distributed resources.
    - Coordination between IESO and LDCs would need to be clarified to utilize resources efficiently.
        - Acting as "mini-IESOs" presents a challenge on coordinating grid operability and balancing loads between the local and provincial grid. F
        - Currently, the IESO is in the midst of developing a grid-LDC interoperability framework to identify future collaboration opportunities to enhance the reliability and efficiency of the grid.

<u>Fully Integrated Network Orchestrator (FINO)</u>

- The EDA sees LDCs evolving along these three dimensions to ultimately become a *Fully Integrated Network Orchestrator (FINO)* whose objective is to increase customer choice and value, enable diverse DER integration, maintain and improve grid reliability, improve overall efficiency, and facilitate a DER market (See Appendix B for FINO roles and responsibilities and development timeframe).
    - Each LDC will evolve to a FINO at a different pace and to a different degree depending on market conditions and an LDC's unique circumstances.
    - A challenge in implementing a FINO is balancing the role of LDCs in owning, operating, and controlling DERs as regulated entities with the possibility of a competitive marketplace.
        - The EDA nevertheless maintains that LDCs are the most effective means to bring DERs to the market by leveraging their existing assets and customer relationships, while providing resources to private market participants, such as data analysis and billing services.

<u>Key Barriers to the 'LDC of the Future'</u>

Regulatory Framework

- LDCs have cited the regulatory framework as a barrier to expansion of business scope. The current framework also doesn't consider the wider system benefits when assessing LDC investments. The regulatory system needs to be flexible to allow LDCs to adapt.
- Specifically, the EDA argues that the current cost-of-service framework relies too heavily on load growth and asset investments, leading to a risk of stranded assets into the future. Finding balance between capital and operational expenditures among Ontario LDCs should be addressed by the OEB through their LTEP implementation plan.

Customer Expectations and Coordination with Stakeholders

- A key challenge for LDCs will be balancing the need for investment with increasing electricity rates and customer needs. LDCs will need to prioritize opportunities and gain and understanding of what capabilities are vital to maximize customer value.
- With more DERs on the system, seamless coordination will be required between the distribution and transmission system. The IESO's role and responsibilities will have to evolve as LDCs move towards coordinating both DER control and operations.

Technology – Maturity and Lack of Interoperability

- The relative immaturity of the enabling technologies leads to high capital costs, evolving functionality, and performance risks. LDCs must balance reliability and safety requirements with the challenges of integrating new technologies.
- The lack of interoperability standards across new equipment and between new and existing LDC systems may lead to additional system integration costs, extended timelines, and risk of vendor or technology lock-in. Standardization is increasingly necessary for efficient development of the future energy grid. Information and operational systems can be an area of investigation for a shared services model amongst LDCs.

Operations – Business Processes & Cultural Adaptation and Workforce Constraints

- Introducing new technologies into an organization presents challenges to business processes, cultural adaptation and workforce constraints.
- Strategies to address these challenges include: new policies and procedures, sharing operational knowledge and best practices among LDCs, leadership and support for innovation and new competencies and skills in data analytics, communications, cyber security, and digital asset management.

Business Models – Financial Constraints and Risk

- LDCs are financially constrained which makes it difficult to expand the scale of business and invest in an enabling platform. Further, building an enabling platform

will require significant economies of scale. Shared services, joint R&D and pilot projects amongst LDCs, particularly for small LDCs, may help with this challenge.

- LDCs will need to manage the inherent financial risk linked to non-regulated or competitive activities. Pilot projects will help provide: a test bed for technology evaluation, opportunities to evaluate changes to business processes, test new business models, build their capabilities and evaluate an alternative regulatory framework.

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