Notes from the Utility and Municipal Engagements on Distribution System Readiness for Decarbonization Webinar
October 11th, 2024

Webinar Summary

The objective of this webinar was to better understand the efforts being undertaken by electrical utilities to understand the readiness of the distribution system to enable the needed scale of electrification to achieve community greenhouse gas reduction targets. It also covered how municipalities and local distribution companies (LDCs) are working together to increase distribution system readiness for electrification.

Presenters:

- Nalin Sahni, Toronto Hydro
- David MacMillan, City of Toronto
- Jennifer Smith, Burlington Hydro
- Sarah Simmons, Power Advisory
- Lyn Robichaud, City of Burlington

Key Findings:

- Toronto Hydro and Power Advisory anticipate that there will be a shift from summer peak to winter peak sometime in the mid-2030s. This is because most of the electrification taking place will be for electric building heating (via air or ground source heat pumps) and will be required in the winter. Cooling via heat pumps (rather than air conditioners) will also be more efficient that air conditioners and present a summer peaking reduction opportunity.
- Ontario is a summer peaking jurisdiction because our electricity system has been designed to meet summer cooling demand. Because the electrification of building heating will not be required during summer peak times, there isn't a peak electricity increase that building heating electrification places on the electricity system. Therefore, there is ample room between the increase in electricity needed for building heating before to comes up against the summer peak supply limitation.
- Climate change and electrification will not only impact the grid, but it is also critical to understand how it will affect the workforce and when consumers use their electricity (whether it is at peak times or at other times). Peak electricity use is of

much greater concern than nonpeak electricity use. Peak electricity is expensive to accommodate, and it is harder to plan for.

- Distribution grid investments were highlighted in both presentations as crucial for accommodating future demand.
- Moving forward, it will be important for LDC's to continue collaborating with municipalities to understand community needs and ensure better informed investments.
- There is a bias in Ontario's energy system to focus on increasing generation and transmission over reducing energy use. This was spoken to in the Assessment of the IESO's Pathways to Decarbonization Study: From the Perspective of Municipal Climate Action Plans. There is no doubt that increased generation and transmission/distribution will be required, however, leveling the playing field between generation and efficiency and DERs will be critical for reducing electricity costs in the overall system and affordability of electricity for Ontarians and decarbonization efforts.

Presentation Summary:

Nalin Sahni, Toronto Hydro and David MacMillan, City of Toronto.

- Transform TO's initial emissions reduction target was net-zero by 2050, but that has since changed to net-zero by 2040.
- 56% of Toronto's greenhouse gas emissions are from Buildings. Primarily from natural gas combustion for space heating and hot water. The second largest source is transportation. Achieving net-zero requires electrification in buildings and transportation.
- In 2021, Toronto City Council directed Toronto Hydro to develop a Toronto Hydro Climate Action Plan. In 2023, City Council requested an MOU setting out how Toronto Hydo and the City will coordinate customer-facing climate action.
- The Climate Action Plan outlines two major parts: Development of a climate action team, and grid expansion.
    - The role of LDC's is to ensure grid readiness and reliability. In general, there is currently more than enough electricity to connect EV chargers, building electrification for heating, etc. There are locally constrained areas and challenges for larger buildings, but these are the exception and not the rule for the distribution systems readiness.
- There is the need for targeted investments into the future to prepare for the expected electrification occurring into the 2030's, and to reduce customer cost impacts related to increased electricity needs.

Jennifer Smith, Burlington Hydro and Sarah Simmons, Power Advisory.

- Burlington Hydro sits on City of Burlington's Climate Action Committee, and City of Burlington is the sole shareholder of Burlington Hydro. The two organizations seek to be aligned and work closely with one another.
- Burlington Hydro's Sustainability Plan is comprised of strategies to continue evolving the distribution system to meet electrification needs.
- Housing demand is intensifying, and there is the need to avoid fossil fuel lock in and increase the uptake of electrification of building heating in new developments.
- As such, grid expansion to accommodate load growth, increased renewable energy installations, and grid modernization to maintain reliability are critical.
- The first step to developing the Sustainability Plan was to develop a Climate Action Scenario to understand key impacts on the demand forecast, distribution system needs, and climate resilience.
    - Peak consumption and energy consumption within the service territory are what drive investment considerations. Electricity consumption varies throughout the day, and therefore distributors should focus on meeting peak demands as efficiently as possible, since peak electricity is the most expansive and challenging to address.
    - Peak consumption is shifting from summer to winter in the mid 2030s, primarily driven by increased electrification of building heating, EV adoption and growth.
- Power Advisory identified two key areas within Burlington where investments are needed in the short term. Long-term planning considerations include enhancing data analytics for improved forecasting.
- High winds, flooding, and increased snow load threaten the resilience of the distribution system. Therefore, considering the frequency of severe weather events was identified as a best practice.
- The Ontario Energy Board recommends climate adaptation measures to improve resilience including, but not limited to: Asset design and grid hardening; Resilient distribution planning; Grid modernization; Modifying operations; Climate informed planning; and community engagement.
- Jennifer Smith highlighted the following key areas for investment: Distribution grid expansion; Distribution grid modernization; and Workforce planning and renewal.
- Burlington Hydro plans on continuing to leverage partnerships collaborate with external groups. This includes:
    - Increased stakeholder engagement
    - Collaboration with academic institutions

    - GridSmartCity collaborative working on pilot projects regarding electrification
    - Continued collaboration with City of Burlington
    - Learning from partners and academia.

Next Steps:

- Some questions the municipality and utility should dig into include:
    - Where is new development occurring, what is the capability of the distribution system to accommodate the electrification of those new developments for home heating and water heating?
    - Where is the distribution system able to accommodate PV connections and where isn't it? How can that be made more transparent? The focus should be on promoting renewable installation in areas that can connect. Thereby reducing customer frustration regarding lack of connection capability.
    - What is the LDC doing to bring in distribution system investments for electrification into their investment plans?

Contact information:

Please reach out to us at any time with additional information, questions, or input.

- Lauren Patterson: lpatterson@cleanairpartnership.org