Notes for Remarks:

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Michael Lyle

Vice-President, Planning, Legal, Indigenous Relations and Regulatory Affairs

Independent Electricity System Operator

Check Against Delivery

Thanks for that kind introduction. It's always a pleasure to visit Thunder Bay and see the grandeur of Ontario'sNorthwest. The Northwest is a unique part of Ontario. That is particularly so when it comes to its electricity system and that is why so much of the focus of our IESO planners is on meeting the ele4ctricity needs of the people of the Northwest.

I would also like to thank Declan for acknowledging that we are in Robinson Superior Treaty territory and the traditional lands of Fort William First Nation.

We're grateful to all of you here today for joining us in an important dialogue about energy. Although the IESO is full of expert planners and operators, it's essential for us to consider the local perspective and work closely with communities and consumers like yourselves to develop viable solutions to provincial, regional and local electricity challenges.

Transformation of the sector and growing opportunity for the consumer

Ontario's energy landscape has been transformed in the last 10 years or so. More than six gigawatts of installed coal-fired capacity, which at one point made up one-quarter of our installed capacity, was retired and replaced with renewable generation, natural gas units and demand-side resources.

Since 2006, Ontarians have also saved more than 68 billion kilowatt -hours through conservation and energy efficiency. This represents about the same amount of energy that Hydro One delivers to its entire service territory over almost two years, or the amount of energy that Toronto Hydro delivers to its customers over almost three years. Conservation and energy efficiency help to lower peak demand and defer or avoid the need to build costly new generation, transmission or distribution infrastructure. It is the most cost-effective supply resource available, at less than four cents per kilowatt-hour. It provides considerable value to the broader system while also helping consumers manage their own electricity costs.

Through the Conservation First Framework, the IESO is working closely with local distribution companies like Thunder Bay Hydro and Hydro One to foster a culture of conservation by enabling access to new and enhanced conservation programs that are designed to have an enduring impact on consumer behaviour. By working closely with their customers and delivering conservation programs under the Save on Energy banner, since 2015 Ontario's local distribution companies or LDCs have achieved 38% of the 2020 target of 7 TWh.

A growing number of industrial customers are optimizing their operations and controlling their energy costs through conservation programs like our Industrial Accelerator Program, or IAP.

There are 10 companies in Northwest Ontario that are participating in the IAP at this time. They include some of the largest employers in the region…and generally represent mining and

forestry operations. Participation in the IAP falls under three main categories: Retrofit, Energy Manager, and Process and Systems. Collectively, these companies have dozens of projects underway or under development. For example, participating mines are using the Process and Systems and Retrofit streams to implement lighting upgrades, ventilation-on-demand projects, pumping improvement projects, and compressed air system optimization.

Results to date are very promising. In general incented Energy Managers save – at a minimum – 2 GWh per energy manager per site. In addition, the promotion of conservation at these sites has helped drive behavioural changes as well as other non-incented capital projects that persist longer than purely behavioural changes.

In addition to the transition away from coal-fired generation and increased conservation measures, over the past 10 years we have also seen a significant increase in renewable resources. Today we have more than 4,200 megawatts of wind connected to the bulk transmission system that the IESO operates, or about 11 percent of total system capacity, about 500 MW of biofuel and almost 400 MW of solar. We've also seen an increase in hydro resources. These numbers don't include the renewable generation that is connected to local distribution systems across the province, which I will address shortly. This has resulted in a much cleaner system than Ontario has ever seen.

A lot of this renewable generation is the result of the FIT and microFIT programs that were introduced in 2009. The IESO announced the results of the final FIT procurement just last month, FIT 5, the results for which had more than 80 percent of the projects with Indigenous, municipal or community participation.

The microFIT Program, which has seen more than 25,000 Ontarians participate, will stop accepting applications by the end of this year, so if you are interested in participating, I encourage you to do so soon. These programs were developed to encourage and promote greater use of renewable energy through a standardized long-term contract with stable prices, and there can be no doubt that they have achieved their objective.

Among all of these other changes, we are also in the midst of a shift from a centralized model of operations to an increasingly decentralized one. Although our focus has traditionally been on large generators connected to the high-voltage transmission system, we're seeing more and more generation being developed and connected at the low-voltage, distribution level. There are a few reasons for this shift, but in general consumers are taking advantage of the opportunities coming from technology and policy changes that incentivize small, local solutions.

For example, some large consumers are using on-site generation to reduce their reliance on grid-supplied electricity and to protect against unplanned outages.

Take Resolute Forest Products. The company has two active biomass generating units at its Thunder Bay facility, with installed capacities of 78 MW and 38 MW. What makes these projects interesting is they use a renewable fuel source (biomass) that's a by-product of Resolute's primary business, which is pulp production.

On a related note, we will hear later today from Norm Jaehrling, the CEO of the Pic Mobert First Nation, about their partnership in the Gitchi Animki hydro project and the additional benefit of the project to the community.

Expansion of distributed energy resources

Like other jurisdictions across North America, Ontario is experiencing the rapid expansion of distributed energy resources – small-scale physical or virtual assets on the supply side or the demand side, including generation and storage. We now have about 2,000 MW of solar generation embedded within LDC territories, some in the form of rooftop solar panels and the remainder as ground-mounted units.

That number continues to grow – and is expected to reach nearly 3,000 MW by 2020. While it makes important contributions to Ontario's supply mix, distribution-connected generation poses some unique operational challenges for us. For example, the IESO has limited visibility into the behavior of these resources. By "visibility" I mean we generally cannot "see" what these resources are doing at any given time as we don't have telemetry that sends real-time information to our control centre.

When you've got several thousand MW of embedded generation, plus a growing amount of distribution-connected energy storage and demand-side resources, that's a fairly significant blind spot. That's why we're working with LDCs to establish better ways of working together to maximize the benefits of these resources. Improving our situational awareness is an important step on the journey towards a more decentralized model that lives up to its full potential and delivers value to ratepayers.

Across the province, LDCs are expanding their roles, pursuing new business models and finding new ways to engage their customers. A great example of innovation is the POWER.HOUSE project, which the IESO supported through our Conservation Fund. A utility north of Toronto called PowerStream, now known as Alectra, developed and implemented an aggregated fleet of 20 residential solar and storage systems that can be controlled through intelligent software to simulate a single facility capable of supporting certain electricity system needs. Although it's a small project when judged purely by MW standards, if those 20 homes were to become 30,000 homes – all equipped with solar and storage systems – you would have

the equivalent of a very flexible 140 MW generating unit with the capability to respond to changing grid conditions very quickly.

Late last year, Thunder Bay Hydro signed an agreement with Alectra to deploy the POWER.HOUSE technology. This partnership has enabled Thunder Bay Hydro to establish an initial installation with a view to determining how to offer the technology to its customers and gain insights into how the technology might work in a different geographical area with different weather systems, different consumption patterns, and different levels of sunlight availability.

For another local example of innovation, we will hear later today from Goldcorp about how it has incorporated some innovative technologies into its mining operations.

Consumers are engaging differently with energy today than they did five years ago. With the introduction of the Government of Ontario's Climate Change Action Plan, initiatives such as the Green Ontario Fund, and the suite of programs available through Save on Energy, customers in Ontario are taking a more active role in managing their energy consumption. They're demanding more choice…and more control.

Engaging with energy

But it's not just individuals, institutions and organizations that are looking carefully at their energy use. Communities are also taking a long, hard look at how they use energy. Community energy planning is a powerful concept. Through the development of an energy plan, communities are coming to understand how they use energy; identify ways to reduce their consumption (and their costs); set long-term priorities, objectives and targets; explore opportunities for renewable generation, microgrids, net metering and other local alternatives; and make informed decisions that will enhance local resilience and prosperity. There is substantial support for the development of community energy plans from the Ministry of Energy. Close to 100 First Nation communities have received support from the IESO to develop their own community energy plans, and we have developed further support for communities to begin to implement those plans.

To a greater and greater extent, energy decisions are being made on a local and regional basis. Consumers and communities alike are seeking greater self-sufficiency and a larger role in these decisions – making the discussions that happen at this session so important.

Whether you install rooftop solar panels…participate in energy conservation through the IESO's Save on Energy programs…attend a local advisory committee meeting…join one of our many engagement sessions…contribute to a community energy plan…or engage in some other way…this is your opportunity to play a part in shaping Ontario's energy future.

I've spent a fair bit of time describing the supply and demand sides of the energy equation. I'd like to take a moment to focus on the wholesale electricity market that brings supply and demand together. Ontario's electricity market was designed in the late 1990s and opened in 2002, when the electricity landscape looked very different from today. As I've noted, the elimination of coal, the integration of distributed resources like wind and solar, and the increased role of the consumer have dramatically changed the dynamics of Ontario's electricity system. We have new resources, new technologies, new players, new business models and new operational requirements to consider.

The Market Renewal Project is a collaborative effort between the IESO and its stakeholders to pursue enhancements to Ontario's electricity market that will address existing inefficiencies and lay a foundation that will prepare us for the electricity sector of tomorrow, in all its complexity.

Market Renewal is about rebuilding the foundations of Ontario's wholesale electricity markets to provide greater transparency, promote competition and deliver more efficient outcomes. The project has a broad reach, addressing the way we schedule energy, procure resources and meet operability needs in the province.

Perhaps more importantly, Market Renewal will also deliver significant financial results. When fully implemented, the project has the potential to provide net benefits to consumers and generators of approximately $3.4 billion over a 10-year period.

Evolution of the IESO's stakeholder base

Our stakeholders are a varied lot. They include generators, transmitters, local distribution companies, large-scale industrial consumers, energy traders, aggregators that help enable demand-side participation in our markets, academic institutions and many others.

We also engage with communities, because a reliable supply of electricity is essential to supporting community growth – powering homes, schools, businesses, hospitals and transportation. Engaging with communities is an important part of maintaining a reliable electricity supply, now and in the future.

It is also important that we engage with each and every one of you here today.

As the sector continues to evolve, the IESO's approach to r engagement is also evolving. We're reaching out to new and different audiences as a way to ensure everyone's voice is heard, and everyone's opinion is considered.

For example, we will soon be launching a new public engagement focused on ways to leverage the energy consumption data held within the Meter Data Management/Repository or MDM/R, which the IESO oversees in its capacity as Ontario's Smart Metering Entity. The MDM/R is one of the largest transaction systems in North America, adding up to 120 million records every day. Working with the stakeholder community, we look forward to identifying opportunities to extract value from this data, while ensuring that all applicable privacy and confidentiality requirements are met. You can find more information about this on the stakeholder engagement section of our website.

Working with, communities, customers, First Nations and Métis and our stakeholders…working with all of you in this room…is a high priority for us. The IESO has a broad range of engagement channels and processes to ensure that our initiatives are guided by collective engagement, and reflect our evolving mandate in the sector.

In addition to a formal, industry-focused Stakeholder Advisory Committee and Technical Panel, we have established standing committees, working groups, local advisory committees, and engagements focused on specific programs or initiatives. This is in addition to our continued commitment to our relationships with First Nations and Métis which are strengthened through engagement and capacity building. In so doing, our objective is to provide individuals, communities and organizations with the information they require and an opportunity to provide input and feedback about proposed decisions that may affect them.

We are working with customers, communities, stakeholders and Indigenous peoples to collectively plan for the grid of tomorrow. We will continue to provide sound technical advice to policy makers. And we will continue to evolve our operations in ways that support the long-term reliability of the power system and efficiency of the wholesale markets.

But we can't do that in isolation. We will continue to seek ideas and input from the ones who are most affected by our decisions and our recommendations – people like you. This will be an ongoing dialogue, and I cannot overstate the importance of sharing your views with us, with your LDC, with your municipal officials, and with other groups. We invite you to continue the conversation.

Thank you for your time. I look forward to all the discussions that ensue over the course of the day and to working with you to identify practical, cost-effective solutions that work for Northwestern Ontario.