



Notes for Remarks

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Check against delivery

Thank you for inviting me to speak. The IESO has participated in this event for a number of years now and I am happy to continue the tradition, albeit now representing a “new” IESO.

I'll be discussing three themes. First, what we are focussed on at the new IESO; second, how we view hydropower; and third, how technology may reshape the sector.

I'm sure it's not a surprise that 2015 has been a year where we've had a strong focus on our own organization – to ensure the merger realized the intended benefits. This inward-looking effort also drove externally focused results. While there is still integration work to be done, we have brought together two organizations of highly skilled people with considerable expertise and experience. The result? We're delivering greater public value, both in our business and across the entire electricity sector.

The activities of the new IESO now extend all across Ontario's electricity sector. Because of this, we are better positioned to support change in the sector; improve our markets and how those markets and contracts work together; create efficiencies for the benefit of Ontarians and, of course, promote more efficient use of electricity consistent with the growing culture of conservation in the province.

At the same time, the merging of the two organizations will see us achieve savings of \$5 million in our first year alone. And these merger savings will be sustained over the 2016-2018 planning period. This effort, along with additional cost-saving initiatives, will result in a reduction in the IESO's usage fee that is charged to all customers.

And we are focussed on three strategic themes for the company:

- Providing Public Value
- Building Corporate Resilience
- Respecting and Valuing Our Stakeholders

Providing Public Value means establishing goals within the IESO mandate that identify and create public value, goals such as efficient system and market operations and cost-effective conservation, as well as working with stakeholders and government to inform public discussion of issues and opportunities in the electricity sector.

Building Corporate Resilience is about operational and administrative flexibility and adaptability – ensuring that the IESO has the employee resources and skills, technologies, and financial and organizational capabilities to achieve the public value outcomes on which it is focused.

Respecting and Valuing Our Stakeholders is about earning stakeholder and government support and building on the organization’s commitment to its stakeholder engagement processes.

Within these strategic themes, and building on the financial savings embedded in our plans, we’ll be focusing on some key deliverables. These include:

- Working with our stakeholders, government and communities across the province to continue to enhance reliability and efficiency across the sector;
- Enabling Ontario’s culture of conservation through collaborative partnerships that deliver cost-effective programs and solutions;
- Planning and preparing for Ontario’s future electricity needs, both in the short term and 20 years out;
- Ensuring a supply of generation and other resources to meet the demand for electricity; and
- Ensuring superior operation of the grid in real time, matching supply and demand 24 hours a day, seven days a week, while at the same time integrating new resources, participants and technologies.

The new IESO has entered the stage at a moment where the energy landscape is undergoing remarkable change and a greater degree of interconnectedness than ever before. This is especially important for an organization that has to stitch together many responsibilities, ranging from planning to system operations, to markets and resource development, and to promoting energy conservation.

So let me describe to you how we see the environment unfolding around us.

Over the last 10 years, there have been significant changes on the supply side with the phase out of coal-fired generation. And with that change, more natural gas, wind, solar and hydraulic generation is joining the provincial supply mix, helping to meet the province's demand for electricity. We will continue to see shifts in our supply mix as the province proceeds with refurbishments at Darlington and Bruce.

By 2025, 20,000 megawatts (MW) of renewable energy is expected to be online, representing about half of Ontario's installed capacity.

We have also already begun to integrate emerging storage technologies into Ontario's electricity market. This year, we will complete the process of procuring about 50 MW of storage, focusing on facilities that can provide long-term benefits while enabling suppliers to demonstrate their technologies.

So how does the IESO see waterpower figuring into this changing energy landscape?

Waterpower is a critical part of the electricity mix worldwide, producing nearly one-fifth of the world's total electricity output and accounting for about 80 percent of the world's electricity production from non-fossil and non-nuclear sources. Since 1971, three countries have been responsible for more than half of the worldwide growth in hydroelectric power: China, Brazil and Canada.

In Canada, there is approximately 74 gigawatts of installed hydroelectric power capacity. About 11 percent – or more than 8,000 MW – of this is located here in Ontario with about 700 MW added just within the last 10 years. Waterpower is the province's second largest source of electricity production and third largest source of installed capacity.

In Ontario, waterpower is a big part of the renewable energy supply mix. While waterpower represents 24 percent of Ontario's capacity, it represents nearly 70 percent of the province's renewable energy capacity.

Waterpower is also an important source for Ontario's flexibility in supply as much of its output can be controlled to follow changes in demand. In addition, waterpower provides operating reserve that can be called on with short notice to deal with an unexpected mismatch between generation and load. In 2014, waterpower resources supplied 53 percent of Ontario's operating reserve.

The IESO currently has contracts for 82 waterpower projects that are in commercial operation, representing more than 2,200 MW. Another 40 projects are currently under development, representing an additional 218 MW.

So waterpower is and will continue to be an important contributor to renewable energy in the province. And while the 2013 Long-Term-Energy Plan sees only modest growth in waterpower over the coming years, it will remain Ontario's largest source of renewable energy.

There are many considerations that need to be taken into account, however, for future development of water resources in Ontario. The reality is that, at least for now, we are in a period of adequate supply. Of course, we will not be in this position forever. And while the average unit cost for waterpower can be lower than other generation sources, a considerable range of costs exists across the hydro fleet. As you know, factors like project geographical siting, site-specific costs and costs relative to alternative sources of power, are considered in any decision for developing new waterpower projects. These factors also have to be considered within the broader process of electricity resource planning.

In a relatively flat or low growth period, tailoring smaller projects to fit incremental opportunities may well be an attractive option.

And both the 2010 and 2013 Long Term Energy Plans acknowledged that connecting the 25 remote First Nation communities in the Far North to the grid is a priority. While our analysis indicates that transmission connection is the most economic solution for these communities, this does not preclude the potential for integrating waterpower, or other types of renewable energy, following the connection of these communities to the grid. And I'd note that connecting remote communities can potentially enable opportunities for waterpower to meet both regional and provincial needs.

The fact is that waterpower is an important part of the energy mix and is very much part of a broader conversation about what a more efficient, advanced electricity system will look like in Ontario.

As I mentioned at the start of my remarks, the energy landscape is undergoing remarkable change and a greater degree of interconnectedness than ever before.

Consumers are in the early stages of adopting smart homes, interoperability is expanding and we see growing data-driven applications, as just a few examples. Smart grids, with powerful monitoring and automation tools, are increasing the capability for

energy companies to effectively respond to the changing daily environment. This is empowering consumers and businesses to use energy more wisely and efficiently.

And all of this is happening faster than anticipated. One of the early products of the Smart Grid Forum, which the IESO helped sponsor in 2008, was the Ontario Smart Home Roadmap. This roadmap looked out 20 years – providing an estimated timeline for new technologies and services that would enable residential consumers to use electricity in ways that better suited their needs.

Not surprisingly, what had been predicted to occur by 2015 was quickly realized: smart meters for residential customers, Time-of-Use rates and home automation systems. But what is more remarkable is that some of the technologies we anticipated to see by 2020 and 2030 in the Roadmap are already here and many others are not too far off.

For example, the 2008 Roadmap also predicted the development, by 2030, of community-level networks, or microgrids, that allowed neighbours to share power, protect themselves from system outages and provide energy to the broader power grid. By then, home batteries and vehicle-to-home technology would be in place as alternate sources of power for homeowners during a power outage.

Well – the future is now. PowerStream already has a microgrid under construction in Penetanguishene that will provide up to 11 hours of backup power supply for approximately 400 of the utility's customers in that community. The Penetanguishene microgrid will be able to operate either connected or disconnected from the grid, providing power to customers even when there is a loss of supply from the provincial grid. In addition, last month, PowerStream announced their Virtual Power Plant, a pilot project funded by the IESO's Conservation Fund, that integrates solar and storage technology for 20 of their residential customers.

My point here is that – as energy efficiency and distributed generation trends continue to evolve – we will all be increasingly challenged to innovate and provide value in a world where customers may be less reliant on the traditional system. This creates a lot of uncertainty for all of us in the electricity business – uncertainty around how fast changes in the sector will be implemented, how quickly technologies are adapted and how this will affect demand.

The good news for many of you in this room is that waterpower is still one of the best bets to adapt to this uncertainty. It is there when you need it and can respond quickly to change – both the predictable and not so predictable.

For the work of the IESO in planning, procurement, conservation and operations, it means that we need to be informed by the best intelligence available on emerging trends and technologies, how they will change the sector and how this influences the types of resources required. We will continue to work with our partners, like the Ontario Waterpower Association, to stay informed on developments as we navigate through this uncertainty.

So in closing - one thing we know for sure is that Ontario's electricity sector will continue to evolve – whether that is on the supply side, the smart grid front, or with the organizations that directly serve Ontario's electricity customers. And waterpower will continue to be a major renewable energy resource, carefully considered in the long-term planning of the province's electricity needs.

Thank you.