



Notes for Remarks:
Ontario Energy Network
January 31, 2017

Bruce Campbell,
President and CEO,
Independent Electricity System Operator

Check Against Delivery



It is again an honour to be here today, kicking off the OEN's 2017 speaker series. It's a tradition for the IESO President to be the first OEN speaker of the year – a tradition first started with Dave Goulding, passed on to Paul Murphy, and that I've been pleased to be able to maintain. I hope my successor will be able to carry this on in 2018.

I remember the first time I spoke here ... it was January 2014, just after the major ice storm and outages over the holidays. My January 2015 remarks marked the launch of the merged company and outlined some of our goals in addressing the full scope of the new business. Last year, our Chair, Tim O'Neill, filled in for me – and provided an update on the merger, while noting the new leaders at OPG and at Hydro One, the completion of the negotiations and contracting for the refurbishment of the remaining six units at Bruce Power, and the success of the IESO's first demand response auction.

Of course those brief touch points don't even begin to convey the sweep of change that is continuing across our sector. But as I have said before, the turning of the year is a time to take stock – to look back at what we've learned; to think about how to apply those lessons going forward; and to check the horizon for potential surprises.

If I struggle, I can conjure up memories of when our business was labelled as a utility business – by which people meant stable, predictable and run by serious-minded people who thought of change in terms of decades.

Transitioning Sector

But that certainly hasn't been my experience since joining the IESO in 2000. Policy initiatives and technology advances have driven accelerating change across the sector.

One example: cleaner air has been a policy objective of this provincial government since it was first elected almost 14 years ago. And working with a number of you in this room, together we finalized the transition away from coal and successfully integrated increased amounts of renewable wind and solar into our system. The result is that today we have a cleaner, increasingly distributed system, reliably providing electricity service across the province.

On the distribution side, the consolidation of LDCs was another policy objective. From the more than 300 utilities two decades ago, we have transitioned to just over 70 LDCs now. And tomorrow marks the formation of the largest municipally owned LDC in the province – Alectra – congratulations to Brian, Max and Peter on their new leadership roles.

Across the province, LDCs are expanding their roles, pursuing new business models and finding new ways to engage their customers. At the IESO, we're supporting the LDCs in delivering conservation programs to their customers ... preliminary results indicate that the LDCs are about a third of the way to meeting their six-year, 7 TWh conservation target. That 7 TWh is just about the equivalent of the Enersource Mississauga load for one entire year.

We are seeing increasing amounts of generation being embedded in the distribution system. We now have about 2,000 MW of solar embedded within LDC territories, and that number is continuing to grow. But it's **how** some of that solar is being incorporated that provides insight into tomorrow's power system.

The example I like to point to is PowerStream's POWER.HOUSE project that the IESO helped to fund. We invested \$500,000 into this project for PowerStream to develop and implement an aggregated fleet of 20 residential solar and storage systems that PowerStream can control through intelligent software to simulate a single facility capable of meeting system needs. Now 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.

Last month, Thunder Bay Hydro signed a partnership agreement with PowerStream to enable access to the POWER.HOUSE technology. This partnership will enable Thunder Bay Hydro to establish an initial installation and then determine how to offer the technology to their local customers and gain insights into how the technology might work in a different geographical area.

Also in December, Michael Angemeer announced Veridian's project for the deployment of residential microgrids involving homebuilders – managed and operated by Veridian's 24/7 System Control Centre and controlled by Opus One's energy management system. The pilot project supports widespread deployment of renewable generation, microgrids and electric vehicle technology – and will exhibit how the growing deployment of such systems will benefit the environment through reduced air pollution and GHG emissions.

And Ray Tracey at Essex Power is assessing the development of solar PV and storage sustainability cells in 500 kW to 1 MW sizes. These community-based projects could be built throughout municipalities to help manage the anticipated higher penetrations of electric vehicles and electric heating – creating efficiencies through scale but manageable in size to be integrated within a community.

Ray believes these cells could be community-owned – allowing local residents to become “green shareholders” where credits are directly offsetting the local hydro bill – creating avenues for residents to participate in the green economy.

DR Auction

These aren't those old-style utilities – in fact they are recognizing and acting on the realization that some of the biggest changes we've seen over the past few years are on the demand side.

One example from the IESO – our demand response capabilities have expanded to the point where we've reduced peak demand by as much as 1,200 MW on summer days.

And we expect that demand response will have a growing role in the years ahead. The expansion of the Industrial Conservation Initiative, or ICI, to include those who have peaks of 1 MW or higher across all sectors is just one example.

We're also fostering a greater role for demand response through our annual demand response auctions.

This is an initiative that I'm proud of ... We worked with demand response providers to transition them into the market to help drive down costs and better integrate demand response into our resource mix.

The first auction took place in 2015 and was a very successful, with great participation and low-cost results.

After the first auction, we went back to work, consulted with our stakeholders, applied lessons learned and prepared for the second auction. And again we got some great results.

We saw increased participation and prices for demand response capacity that are 12 to 17 percent lower than those achieved in 2015.

Proponents included high-volume, transmission-connected industrial, commercial and institutional users, as well as local distribution companies and consumers whose facilities are connected to low-voltage distribution systems and whose contributions are managed by an aggregator.

For the first time, residential homeowners, participating through an aggregator were eligible to take part in the auction and were successful in being selected.

This last point is a perfect example of how the sector is expanding to include opportunities for all consumers of electricity. And we expect to see continuing pick up from the residential community.

Changing Customer Needs

Our experience with the DR auction is just one example of increased customer participation and engagement.

And I'm convinced that trend will continue, giving customers more choices and more control over their consumption, the generating sources that meet those consumption needs and their subsequent bill.

Some large customers will want renewable supply to meet their corporate sustainability goals. Residential customers will want to understand and better manage their electricity use, and those services will be available via their smart phones or other connected devices. And some customers will want to limit their dependence on their LDC, including through self-generation with an ability to sell back to the grid.

With all this happening, the utility-customer relationship is becoming complicated as the customer increasingly has the ability to look beyond the utility for products and services.

And as customers, our service expectations may change as well. While a high standard of reliability has long been a selling point on the merits of being connected to the integrated power system, a recent paper by A. J. Goulding suggests that premise may need rethinking.

A.J.'s paper is titled *Railroads, Utilities and Free Parking: What the evolution of transport monopolies tells us about the power network of the future*. In the paper A. J. suggests that customers may be willing to accept lower levels of reliability if there is a price advantage in doing so. He argues that the planner's "one day in 10 years" target may be a level of reliability that few customers, particularly residential customers, need or desire – especially if they can find other ways (think Tesla Powerwall) to deal with most outages that affect them.

A.J. also suggests that our cost-based ratemaking may be equally vulnerable – pointing out that the price of self-service or community generation will effectively impose a cap on customer rates, regardless of traditional cost of service rate regulation.

This issue of ratemaking in a world of distributed energy resources is also addressed in the recent Mowat Energy paper on *Emerging Energy Trends* – one takeaway being that the regulatory and rate-making world will only get more complex as distributed energy resources and customer engagement proliferates.

I've mentioned a few of the change drivers – and when we consider the full suite and potential impacts of policy initiatives, technology advancements and increasing customer capability, it should be no surprise that we need to refurbish our markets to support those futures.

How best to prepare for and deal with the future of the sector brings me to my next topic – the IESO's Market Renewal project.

Market Renewal

To declare myself, I am a believer in markets – and that's one of the reasons I joined the Independent Market Operator or IMO in 2000. And I believe Ontario's energy market can play

an increasing role in enhancing reliability and efficiency in this sector and provide real public value.

Market renewal will be a major undertaking both for the IESO and for Ontario's electricity sector. This program represents the most significant enhancement of our market since it first opened in 2002. Our goal is to redesign our current market and prepare it to better serve the very different future that we see before us.

One sidebar on the role I see for markets – I am not talking about some sort of laissez-faire world, unconstrained by policy. I am talking about a market that is able, and left able, to operate to deliver the most efficient outcomes within a clearly defined policy framework.

Within that context, properly designed energy markets are the most efficient tool to organize our evolving sector. Effective markets provide clear signals for the value of needed services and they allow all resources – whether new or existing – to compete to meet those needs. Effective markets also enable individual resources and consumers to make informed decisions, capturing innovation and better managing their costs and risks.

For us, market renewal is about redoing 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 capacity and meet operability needs in the province. Most importantly, it will position us to more efficiently meet demand – both today and in the future.

As you may know, in September the IESO published an Ontario Planning Outlook, a 20-year outlook for Ontario's electricity system. It helped set up the consultations for the next Long-Term Energy Plan – which is expected to be published in the coming months.

With four different demand outlooks, the OPO considers a range for electricity demand over the next 20 years ... from as high as 197 TWh to as low as 133 TWh. For context, our bulk system demand in 2016 was 137 TWh – unchanged from 2015.

The OPO also indicates that while there may be regional requirements that need to be addressed, the need for new resources at the system level is not expected to emerge until the mid-twenties.

But while we are currently in a strong supply situation, capacity needs will emerge as:

- the Pickering nuclear station retires
- existing supply contracts reach their end of life, and
- nuclear units at Bruce and Darlington are taken offline for refurbishment.

To that end, through the market renewal project, we want to evolve the way we procure capacity in the province. The IESO is already working with stakeholders to increase participation in, and enhance the design of, Ontario's demand response auction. We are also facilitating opportunities to export capacity from Ontario into other jurisdictions.

Ultimately, we see an incremental capacity auction working alongside our contracted and regulated resources.

A capacity auction would provide a stable and transparent mechanism for meeting capacity needs as they arise – with new and existing resources, technologies and business models competing on an equal footing to provide capacity. This mechanism would encourage innovation and accommodate future change. And while future capacity auctions won't address today's price concerns, our DR experience convinces us that they will provide real value for consumers going forward.

To continue to deliver on cost and reliability goals, our market design needs to evolve – learning from past experience in Ontario and elsewhere – and responding to the changing needs across our province.

Since Ontario's electricity market opened in 2002, the sector has worked together to address some of the issues with the initial design. But the work of the Market Surveillance Panel, the Electricity Market Forum, past IESO studies and stakeholder input has made it clear that more band-aids aren't the answer – it's time to address the fundamentals.

Today, with strong resource and stable demand outlooks, we have a unique opportunity to act on past findings and prepare for future opportunities.

We can benefit from almost 15 years of experience with Ontario's electricity market and draw upon best practices in other jurisdictions. We are also assessing the policy and technology trends that will shape the energy landscape of the future. From this vantage point we can reset our market in a way that both addresses existing challenges and unlocks those future opportunities.

We're in the process of completing a benefits case that we are discussing with stakeholders. The initial findings show significant potential for cost savings that will be realized by both consumers and suppliers.

I have asked JoAnne Butler to head up this project. JoAnne and the team we are assembling will be working with our stakeholders, considering a set of market design changes that can be implemented over the coming years and defining target timelines for completing that work.

Engagement

Working with our stakeholders, our communities, our customers ... working with all of you in this room will remain a priority for the IESO going forward. That commitment is central to the corporate strategy that we developed with our Board of Directors last year.

We have a very diverse group of stakeholders that we need to continue to engage in a transparent manner. While I believe we have put in place best-in-class stakeholder engagement vehicles and processes, I agree with Dave Butters that we need to continuously look to improve on these. And we will do so.

As our electricity system becomes more regionally focussed, our traditional stakeholder base will expand as new generators, customers, communities and Indigenous peoples become involved.

We have started to work more closely with LDCs, municipal governments and communities across this province to help those communities both identify and address their future electricity needs. A total of 16 Integrated Regional Resource Plans have been completed in the first round of regional planning. As I look out over the next few years, there will be more opportunities for these communities to better influence how their own needs are met, and our goal is to help them do just that.

We are committed to meeting the needs of that expanding stakeholder base and ensuring that they are integrated into the decision-making process.

Over the holidays I had a chance to catch up on some of the reports and literature that has been published recently, including the A.J. Goulding and Mowat reports I've mentioned already. Another one that particularly caught my attention was prepared for the University of Ottawa and the Canada West Foundation. Michael Cleland was the principal author and the report is entitled *A Matter of Trust, the Role of Communities in Energy Decision-Making*. It was designed to understand what drives community confidence in energy project decision-making processes.

Lots of relevance for our regional planning work. But without trying to summarize the whole report – one point I found particularly interesting was the discussion around values. The author concluded that “Interests, while important, play a secondary role to values”.

In most cases, I think we as an industry are very much mesmerized by interests as the focal point for people's involvement in energy matters.

This work really upsets that premise – and suggests that as we expand our regional planning work, we need to take the time to understand community values and suspend our preconceptions as to what would best serve local interests.

The author also suggests we need a rethink of how information affects the decision process ... and asserts that with respect to energy information, Canada is somewhat poverty stricken.

Educating, informing customers, stakeholders and the broader public is something that many of us struggle with in this industry. And it's something we are all committed to doing better.

From the IESO's perspective, we are introducing a new web site in the next few months that will improve access to the vast amounts of information and data that are housed on our site.

And with the OEB having settled the scope of information flowing into the smart meter data repository, we're now moving to define the rules for how third parties can gain access to the electricity data in the provincial MDM/R while protecting privacy and confidentiality.

We are also recognizing the need to reach out beyond our traditional stakeholder base. We have just launched a five-year sponsorship of the Energy Show at the Ontario Science Centre. The Science Centre gets one million visitors a year, and with this show we are able to help the Centre bring energy knowledge and understanding to residents across the province. We want this information to be easily accessible and educational for all, and the Energy Show provides a point of engagement for all Ontarians.

The Energy Show at the Science Centre has been an iconic part of school visits – especially the Van De Graff generator – even my limited hair stands to attention. And it's great that it will still have a place in the new Energy Show.

There is a lot more I could talk about before I close. After all, 2017 will be a busy year. The IESO will be developing an implementation plan in response to the upcoming Long-Term Energy Plan, and we are embarking on a mid-term review of the Conservation First Framework ... all work that is aimed at better preparing the IESO, our respective customers and communities, and the sector generally for the future challenges and opportunities coming our way.

Closing

But I know Gord runs a tight schedule – so I'll close by again thanking Gord, Gunnars, David Reid and the Ontario Energy Network for giving me a chance once again to kick off the year for the OEN ... and thanks to all of you for your attention today.

And while I haven't passed the baton off just yet, I would like to take this opportunity to say what a privilege it has been for me to be part of this sector. I continue to enjoy working with each and every one of you.

