



Notes for Remarks

APPrO Annual Conference:
Innovation and Disruption: Solving for X

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Check against delivery

Thank you for inviting me here today.

I would like to extend special congratulations to APPrO on the 30th anniversary of this much-anticipated annual gathering. This milestone is quite a testament to you, Dave and your organization – and it's terrific that you continue to fill the room and create such important and relevant agendas.

Clearly, APPrO has heeded the warning, “evolve or die” – attributed to a business self-help book published a few years ago of the same name – “Evolve or Die: Seven steps to rethink the way you do business.”

To be honest, I never read that tome from which that expression came and think that for us here today – it's not quite as easy as seven steps.

I do know that there are many famous examples of organizations that chose not to – or were too slow to – rethink how they did business.

Blackberry *just* managed to make it by essentially abandoning the smartphone market and focussing on security and services related to mobile products.

Then there's Polaroid.

Tower Records ... the first to create the concept of a retail music mega store. .

MySpace.

Blockbuster.

Hummer.

The examples are endless.

But the message is simple: we have to adapt and evolve. It's just not possible to do otherwise. .

We don't have the option of folding up our tents and walking away.

Together, we are one of the engines that helps drive the province's economy
Simply put, we power Ontario's businesses and communities 24 hours a day, 365 days a year.

That's a huge responsibility, particularly at a time when change, as they say, is the only constant. So this morning, I'd like to talk about the three things we should consider as we move forward:

- What we already know about our sector and its evolution;
- What the sector needs to know more about; and
- How to make this evolution more seamless, ensuring that the IESO stays focussed on the core mandate of the organization – the reliability and cost-effectiveness of the electricity grid.

While I hesitate to borrow from Donald Rumsfeld, former U.S. secretary of state, let's talk for a moment about the "known knowns" impacting how we do business.

First, I want to know how many of you use your virtual assistant.

How many of you have asked Alexa, Google, or Siri for information that you once had to check in the morning paper? Think of the weather, for example.

Now, I want you to think about how much cash you have in your pocket right now.

If you're like me, it's probably little to nothing.

That's because today, we can pay for anything with our cards and even our phones. Cash is no longer as necessary or as important as it once was in our day-to-day lives.

No one thinks twice if they have enough cash in their pocket to get groceries or buy their morning coffee.

Just as no one thinks twice about the solar panels on the roof of a local business.

However, only 18 years ago the total global installed PV capacity was approximately point six gigawatts. That was the same year the first hybrid electric car was released.

Our world – and our industry – has evolved dramatically in less than 20 years, never mind the last five. The scale and pace of change we have experienced is like nothing seen in generations.

It's a similar story when it comes to energy storage.

According to Bloomberg New Energy Finance, the global energy storage market will double six times between 2016 and 2030, rising to 125 gigawatts.

Just over five years ago, the global energy storage capacity was less than 1 gigawatt.

At the same time, consumers became empowered to take more of a role in where, when and how they consume electricity. They are no longer simply passive participants just taking what is given (or needed). Today, practically anyone can produce their own energy and anyone who has a smart thermostat can monitor and control electricity use from half way around the world.

And as a part of this change, there has been a seismic shift in the conversation about how much consumers are willing to pay. In fact, today "affordability" is as much a part of conversations about electricity as "reliability" and "sustainability."

At a recent OEA event, Greg Lyle from Innovative Research Group presented some very interesting results from some recent public opinion polling that supports this notion.

He found that 44 per cent of those polled identified the price of electricity as the highest priority, while reliability was a close second at 40 per cent.

Results also showed that Ontarians feel less protected on price than any other province. Only one in five polled felt that consumers are okay on this issue.

And the issues of affordability, reliability and sustainability all come together in the transmission issues experienced in the Leamington area.

The regional electricity plan for the area was completed *only* three years ago. However, in that short time, demand has increased far beyond reasonable expectations, driven by increases in the number of greenhouses in the area, and even the growth in cannabis production.

So now, there is a clear and present need to develop solutions, including the expansion of transmission capacity in the area.

We are working on a plan for Leamington – and other communities in a similar situation – to ensure that transmission and other supply needs that arise are addressed with the lowest cost solution by leveraging competitive forces, driving innovative solutions and providing new opportunities for transmitters and other solution providers to participate in Ontario’s electricity market.

And while affordability is – and always should be – front and centre, we need to keep in mind that the dialogue will also have to include issues of reliability. Like addressing the capacity need that may arise as early as 2023, as highlighted in the

IESO's recent technical planning conference. But I'll speak more about that in a moment.

The bottom line is in a very short amount of time three significant developments have required a shift in how we think about our business.

First, renewable energy and distributed energy resources like energy storage – that weren't even on our collective radar 20 years ago – are requiring us to fundamentally rethink how we manage the electricity grid.

Second, the conversation about electricity has changed with consumers becoming active – and I might add, welcome – participants in the conversation.

Finally, while advanced technologies are a good thing, particularly when it comes to the potential to reduce costs and support reliability and sustainability, the sheer speed with which they are becoming available has the potential to cause a great deal of uncertainty.

So, given all this, we have to approach our business with a different mindset and be prepared to understand better how the “rules of the game” have changed and what this means for our sector.

We have to talk about the “known unknowns.”

As you know well, the IESO produces detailed forecasts and plans that assess system requirements associated with capacity, reliability, market and system operations, transmission and distribution.

In early September, we hosted a technical conference on planning, discussing all these issues and providing updates on where we planned to be and where we are in terms of longer-term planning.

We know now that we are energy adequate for the next 20 years or more, but capacity issues could start to arise in 2023. A bit of the still unknown is that out a lot can change to impact the supply and demand gap in five years.

To that end, we commit to holding this planning conference annually. We're committed to sharing the most up-to-date information we have so market participants and sector players can make the most informed decisions for their businesses. And starting in December, our 18-month Outlook will evolve to include a five-year forecast every six months.

We also know that the growing frequency and complexity of cyberattacks – which know no borders or jurisdictions – has presented the sector with some challenges.

In recent years, cyberattacks targeting critical infrastructure, and financial, telecom and public institutions have disrupted major services and made big headlines across the globe – they've become part of the new operating reality.

And since launching the province's first cybersecurity forum in 2015, the IESO has been collaborating on cyber defence by building and strengthening partnerships in the sector and bringing together the world's leading experts to stay up to date on the cyber-threat landscape.

That's why the IESO has established a new Security Operations Center, which will go live at the end of this year. The centre will provide near real-time cybersecurity situational awareness capabilities and the 24/7 cybersecurity monitoring required to improve incident detection and response to the threats that face our electricity infrastructure and the organizations that operate it.

We're also the first system operator in North America to have accountability for providing cybersecurity related services to the broader electricity sector.

Under a new mandate from the Ontario Energy Board, the IESO will play a leadership role in delivering value-added cybersecurity services to increase the resilience of the sector.

In light of the new role, we have established a direct relationship with the Communications Security Establishment to give the IESO a near real-time understanding of the attacks directed at our sector. Last year, the IESO and CSE partnered to develop Project Lighthouse, with the goal of analyzing Internet-based data from our generation, transmission and distribution companies to both predict and identify cybersecurity attacks.

We are looking to bridge the capabilities of our nation's signal intelligence agency to support our efforts to defend our electricity infrastructure. This is truly groundbreaking work and something that we can point to with justifiable pride.

So, how are we adapting to this level of transformation?

It's all about taking definitive and concrete action.

First, we know we need to break down some barriers for technologies that will not only help ensure the reliability of the grid but also do it cost-effectively.

As many of you may know, the IESO established the Energy Storage Advisory Group earlier this year. At the first meeting in May, the group mapped out its work to identify obstacles that are preventing energy storage from competing on a level playing field with other resources in the marketplace.

The Energy Storage Advisory Group has already created and made public a list of roadblocks and recommended mitigating strategies.

I am pleased to advise you that we'll be taking action on the barriers that are within the jurisdiction of the IESO. Watch for the report which is due to be released shortly.

We also know that the foundations of the current market need to be strengthened to manage a range of potential energy futures driven by an evolving sector. And that's what we're doing.

The plan to renew the market will improve the way electricity is priced, scheduled and acquired to meet current and future energy needs reliably, competitively, transparently, efficiently and at lowest cost.

I'm sure you're all aware that the project recently passed a significant milestone. At the end of September, we released the high-level design for the single-schedule market. This document, which is the result of extensive collaboration by many, some of whom are in the room today, lays out a pricing system that more accurately reflects the costs of producing and consuming electricity.

Though market renewal represents a significant piece of the work being done by the IESO, I won't spend too long on it here and now because I know you have a panel on this very topic tomorrow.

I will say, however, that, in the end, we will have markets that foster more innovative approaches to providing electricity to Ontarians. They will more flexibly accommodate more engaged consumers, drive innovation through increased competition and respond to changes in demand.

This will be due in part to the plan to create an incremental capacity auction in this province which will achieve efficiency benefits by:

- creating a competitive market for resources;
- increasing the system's ability to adjust to changing supply and demand dynamics; and,

- attracting low-cost, non-traditional capacity resources that are unlikely to be identified in the absence of a competitive auction.

This move is a long time in coming.

Over time, resources coming off contract will have the opportunity to compete with other supply sources to provide capacity in this auction.

They will also have the opportunity to competitively provide other electricity services we need to run the power system reliably.

This approach will provide flexibility as supply and demand changes and the needs of the power system evolve – requiring more or different reliability services. In doing so, we expect we will be better able to match the capabilities of supply resources with the needs of the power system, driving increased value for ratepayers.

But, I know at this point you're asking what's the plan for procuring resources before the incremental capacity auction is up and running, specifically given the capacity gap that *could* happen as early as 2023?

First of all, there is no immediate need to act to fill the gap. The province is, in fact, energy adequate for the next two decades. The potential gap that *may* emerge in the next five years is proportionally very small and is best filled with resources that do not require long lead times and long-term commitments.

Also, there are enough lower-cost resources that can be competitively procured and developed with a three-year lead time to meet a resource gap.

So, should action be required, decisions will be made by the end of 2019. Until then, it's business as usual, with the IESO continuing to monitor the situation, and adjust forecasts as required.

The other thing we know is that one of the best ways to manage change, risk, and uncertainty is through thoughtful, meaningful and purposeful stakeholder engagement. We need the right dialogues *and* questions for the right audiences.

Reaching out to our stakeholders ... gathering input ... listening to different viewpoints ... and depending on the issue, driving for consensus ... this is all a critical aspect of how we do business.

It's partly about relationship building.

But mostly, we do this because in situations where the issues are highly complex, there is truth to the adage that two heads are better than one. No one can make the types of decisions that need to be made about the energy sector's transformation on their own.

It's just not possible.

We know that stakeholders agree.

Last year, the IESO held more than 115 engagement meetings across the province that over 5,300 people attended ... either in person at regional meetings, conferences or committee meetings ... or online, in webinars.

I know many of you can count yourselves among those 5,300 who attended an IESO event – especially around the development of our market renewal initiatives. I want to thank you for sharing your thoughts with us. Your time and effort is greatly appreciated.

Finally, I sometimes think – in a sector more used to slow and steady change – what would happen if we didn't embrace change.

What if we tried to ride out the storm, so to speak?

What I do *know* is that doing nothing will only add to the uncertainty... And to the costs.

If we chose not to explore the potential that some new technologies represent, engage with stakeholders to seek new perspectives, or change the way we acquire resources to meet our system needs, we could end up spending more than we need to.

But most important, it would – in the end – undermine the reliability and affordability of our energy system.

And that is just unacceptable.

So, we must embrace the uncertainty, get used to managing risk and move to a place where we manage innovation rather than letting it manage us.

If you take one thing away from my remarks today, I hope it will be that the IESO has people and plans in place to move forward with confidence, knowing that you will continue to have opportunities to help us provide a reliable and affordable electricity grid.

As we adapt to our ever-evolving sector, I'm going to be ever mindful of what Sir Harold Wilson – at the time prime minister of the United Kingdom – said about transformation.

“He who rejects change is the architect of decay. The only human institution which rejects progress is the cemetery.”

Thank you again for the kind invitation to be here today.