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Delivered to the Society of United Professionals
November 5, 2018
(Check against delivery)

Good afternoon.

It's great to be here and to see you all today …and thanks for inviting me to speak to you. It's an honour.

Scott and I go back a few years; he was a doing market training at the IESO when I started at APPrO and helped me a lot. He must have done a good job because I'm still here…and so is he.

APPrO and the Society have a lot in common.

We share a crucial role in our province.

Simply put—we keep the lights on.

We keep the factories humming, the smart phones charging and the subways running.

More and more we're also powering electric cars, developing new and clean methods of generating and storing power—and leading the way towards a lower-carbon future to help protect our planet.

We have an awesome responsibility and I think the people of Ontario are grateful that we have so many brilliant and committed people who are dedicated to running, planning and preserving our power system.

Now we all know that customers' gratitude towards workers in the energy field is sometimes muted—like when they get their power bills.

But that comes with the territory.

I know your conference is all about "An Eye to the Future".

For people in the energy field, that's a topic that challenges, invigorates and puzzles us all.

So-called "long term energy plans" tend to have a short shelf life—they're up for regular amendment when the unexpected happens…or when governments change.

But, if we're going to talk about the future, it's good to start with a look into the past.

Think about the statue of Sir Adam Beck in the centre of University Avenue, and think about how this one man played such a powerful role in shaping our electricity system for both this, and the last centuries.

It's hard to conceive of any single person today who could have such influence.

And think about the gleaming, curved glass building just up the street at the southwest corner of College and University.

Officially it now carries the title of the "Ontario Power Building", but most of us still think of it as the headquarters of Ontario Hydro—the organization that Beck helped found.

That name, Ontario Hydro, passed into history 20 years ago.

And so did the concept of one single entity, a colossus really, running everything related to electricity in this province.

A utility that was a power unto itself, which successive provincial governments struggled to control.

As we know, its former home still houses Ontario Power Generation, an APPrO member since 2005, but OPG now shares the building with a raft of other tenants.

And in the same way, power planning, generation and delivery is also becoming much broader with many more players. APPrO for example now has 20 large generator members.

Distributed energy means thinking smaller, more local and closer to customers.

That's the trend. And it seems to me unstoppable.

From manufacturers running their own co-generation plants, …to farmers with windmills selling power into the grid…to homeowners with solar panels on their roofs to heat their water—power generation is moving away from the centralized, big-plant model to something much more dispersed.

What we don't know is where this trend will lead us, over what time, and what it will mean for long term planning.

Every jurisdiction in North America…and the world…is grappling with these questions and no one is quite sure of the answers.

I sure don't have them. But in my job I get to listen to some brilliant people who have developed provocative ideas.

One of them is Jan Vrins, the Global Energy Practice Leader at Navigant.

At last year's APPrO conference, he was a keynote speaker--and he challenged us all to look at the world in a whole new way.

Jan spoke about a concept called the “energy cloud”.

He said the energy cloud is emerging in a world where old infrastructure is being replaced with cleaner, more distributed, more intelligent systems.

Given that we’re seeing the rise of microgrids and consumers who are feeling more engaged and empowered, Jan predicted utilities might evolve into what he called “energy cloud platform orchestrators”.

That’s quite a mouthful. Hopefully, not a new acronym either. But quite a leap from the old, all-powerful vertically-integrated Ontario Hydro.

But it may be where we’re headed.

We need to get ready.

Jan advised that we must think about new business models to match the new reality. Think “blockchain” for example.

Other speakers at the conference agreed: the idea of a top-down grid has been turned on its head.

Consumers are increasingly becoming producers. They are participants in the market. They want a say in how it’s run.

Large-scale generation plants will continue on, especially nuclear and hydro, maybe even combustion turbines powered by hydrogen or natural gas, but we’ll also see more and more smaller generators or other DERs, closer to the customers.

And some of those customers might become their own generators.

They might be “behind the fence” …and we’re already seeing this with businesses putting solar panels on their roofs to offset the higher prices that they’re paying from the grid, as well as storage.

If this happens on a large scale, there may be some seriously stranded assets, which raises some big questions about what to do with them.

We are already looking at new models for system operation and procurement, and local system operators who want to become mini-IESOs. They might have their own control systems that interface with the province wide system run by IESO.

Local players could be bidding into a capacity market.

All of this decentralization could help reinforce the resilience of our system. Which is a big deal given climate change.

With so many different and varied generators scattered throughout Ontario, we would probably be less vulnerable to large-scale events, like blackouts, ice storms or tornadoes.

But it might also bring unanticipated risks. If each of those local operators is connected to the broader grid, it potentially offers more pathways for cyberattacks.

IESO, we know, takes cybersecurity very seriously. But a player in small-town Ontario might not have the same resources to protect themselves and could offer a backdoor entry into the broader system.

Another relentless force for change is technological innovation. It's disrupting so many aspects of our lives, and our sector is certainly not immune.

You may have read that the folks at Tesla are marketing a "solar roof"—effectively solar panels that look like shingles.

They're already installing them in the US and taking advance orders for Canada.

There's also work being done on so-called "solar paint", which could turn any surface—your car, your porch, your doghouse, into a hydrogen-fuelled power plant.

There are also new twists on old technology.

I was intrigued to read about smaller, modular reactors, or "SMRs".

The US Nuclear Regulator Commission recently gave phase one approval to a project in Oregon—which would the first SMR in the States.

Here in Canada, Natural Resources Canada has engaged stakeholders on the future of SMRs in Canada. Through a series of expert working groups, and workshops held across Canada, NRCan has gathered feedback on the direction for the possible development and deployment of SMRs in Canada.

The final roadmap report will be released very shortly.

Some SMR designs could be deployed in the near term with most available within the next 7 to 15 years, but there's more work to be done. Still, if it pans out, it could give a lift to the nuclear industry while solving some really big issues like energy for remote communities, or greener oil sands extraction

The SMRs will need to show that they can produce power at a price that's competitive with other technologies, which could be challenging—especially if we see cities dotted with solar-painted doghouses generating electricity while Fido sleeps inside….

Between the increasing pace of energy distribution and the unstoppable forces of technological innovation, utilities and regulators are struggling to keep up.

The ground is shifting beneath their feet, the rules constantly changing and long term energy plans are now projections or best guesses – certainly not predictions.

The people and organizations who run things can no longer rely on old, established models.

The Sir Adam Beck methods won't work any more.

The regulators will have to manage based on some generic principles and become nimbler and more responsive rather than hoping to micromanage. Here in Ontario, the OEB Modernization Panel will shortly opine on this.

Keeping up with, and regulating, each new technological development would be like drinking from the fire hose. We aren't alone on this. It's challenging regulators everywhere.

Looming over all of our talk about the future is climate change. It is already having a profound impact on the energy sector, and there's much more to come.

The world is moving away from carbon, probably not fast enough to slow global warming and certainly not fast enough for many environmentalists. But it is happening.

What de-carbonization looks like depends on where you live.

Up until last June, Ontario's plan centred on cap and trade.

With the change of government, that idea has now disappeared.

The bill abolishing it just passed last week.

Instead, we're looking at a federally-imposed carbon tax.

As we know, Premier Ford in collaboration with some other provinces, is fighting tooth and nail and there are court battles ahead.

Meanwhile, his government's climate change plan has yet to be unveiled.

Whatever they choose to do, it seems inevitable that we'll be relying much, much more on electricity for our energy needs.

The Ontario electricity sector has already done more than its share in this province to slash greenhouse gases. We are now about 96% carbon free.

The closure of the coal plants was a huge step.

Our air is now much cleaner, even if our power is more expensive.

We have played our part, but a new role is coming.

The big remaining targets for greenhouse gas emissions are transportation, industry and housing.

And the most logical approach to cutting GHGs for those sectors is electrification.

That's us.

We could be looking at a doubling or a tripling of our electricity infrastructure to meet this coming demand.

It is huge.

We all know we can do this, but we're not ready yet.

In fact, we still need to figure out how to fill a potential capacity gap in supply when Pickering begins to shut down in about five years.

Coincidentally, a raft of contracts will be coming to an end around the same time, adding an extra level of uncertainty.

That is, of course, presuming that the IESO has correctly predicted the capacity shortfall.

Energy consumption forecasting is an inexact science, which is a real problem in a field where the projects are all long term propositions.

We need to be ready to meet the demand, without overbuilding.

Remember back in the early part of the 2000s we were dealing with shortages. Now we have surpluses.

Who knew in 2000 that our manufacturing sector would be decimated, or that a new government would shut coal plants, or that there would be an economic crash in 2008?

In those days we were more worried about the so-called millennium bug, which turned out to be nothing.

Now we've got climate change, which is most certainly something.

Added to the blender of uncertainty is politics.

In the last 18 years we've had premiers Harris, Eves, McGuinty, Wynne and now Ford.

Five very different personalities, who have all wrestled with energy policy, a file that has been a political hot potato for generations. The third rail of Ontario politics you might say.

It has meant that those of us in the sector have always had to deal with policy changes that send shock waves through the system, as politicians struggle to contain customer anger over power bills.

It crosses party lines.

Ernie Eves froze prices…and last year Kathleen Wynne cut them through the Fair Hydro Plan—a plan that will be costing billions in the decades to come.

Dalton McGuinty's Green Energy Act was a game-changer in 2009.

But now Doug Ford is repealing it and one of his first acts as premier was to cancel more than 700 renewable contracts.

Who knows what's next?

At APPrO, we pride ourselves on being positive contributors to the energy planning conversation, no matter the political stripe of the government.

Our challenge is that these are complex matters, not easily understood by the general public.

For example, if you talk about market renewal, there are many us who work in the energy field, so-called experts, who struggle to grasp the concepts, let alone the details.

We can't blame the average Ontarian if his eyes glaze over when we speak about "SSM", "DAM", ERUC", "LMP" or "LDCs". Most have no clue what an LTEP is, or what the OEB or IESO do.

Many likely think it's just a load of BS, when all they really care about is the bottom line number on their hydro bill, and that the lights stay on.

But just because it's hard to explain doesn't mean we should stop trying.

Governments need good advice and APPrO and a group of other key players like your Society in the sector are determined to give it.

Last year a group of concerned electricity sector organizations formed the "Ontario Electricity Stakeholders Alliance". The Society is part of that coalition.

Our goal was to set out some broad principles for energy planning, which could and should be adopted by any government.

They're in four broad categories.

Transparency—which means planning should be openly discussed and debated.

Competition—whenever possible competitive processes should be followed for new procurement. It helps keep prices down for governments and consumers.

Objectivity—making smart electricity decisions means using cost-benefit analyses to ensure ratepayers are getting the best deal. We need to consider the broader economic implications of big decisions.

And finally: Independence. The independent agencies like the IESO, OEB and the Ontario Electricity Safety Authority should be allowed to do their jobs, which is to implement government policies…while still being accountable to the legislature.

To us, these principles all seem like plain common sense and we hope the new Ford government will take them into consideration as they approach energy planning.

It is a wickedly complicated and complex process, with many moving pieces and constantly-changing landscapes.

But it is crucial to our economy, our environment and our way of life.

We need to work together, with the best advice and the maximum input from everyone.

It would be hopelessly naïve to think we can keep politics completely out of the process, but if we can all agree on a basic, practical blueprint for decision-making, we have a better chance of making smart choices.

Here's hoping.

While you're talking about the future at your conference, Jan Vrins said at the APPrO conference last year that the future is already here.

Change is churning at an ever-increasing pace.

We all need to understand what it looks like and find a way to ride our way through it.

I started by speaking about the statue of Sir Adam Beck on University Avenue.

Well…even Sir Adam's venerable image was recently swept up by the forces of change.

If you passed by the statue a few weeks ago, you might have noticed something different.

There was a tall stack of wacky, diverse objects plopped on top of his head: a desk, a tire, even a small boat.

It was an installation by a Japanese artist, which he called "Life's Little Worries of Sir Adam Beck".

I don't pretend to understand the message of it and I suspect that Sir Adam, if he were alive to see it, might not have been amused.

But anyone who witnessed it would have certainly looked upon the father of Ontario's energy system in a new light.

Our grid is vast, complicated and crucial. I don't think anyone has ever described it as a work of art. But it's a pretty cool piece of machinery.

In conclusion, we do need to remain constantly alert to change, adaptable to unexpected challenges and open to new opportunities.

I believe we will.

Thank you.

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