

Notes for Remarks  
to the Ontario Energy Network

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## Introduction

Happy New Year. It's nice to see everyone back for 2012.

Today marks the sixth time that I have kicked off the OEN luncheon speaker series for the year. Over that time, I have been able to reference a number of icons in my remarks including Dorothy and Toto from the Wizard of Oz and Kermit the Frog from the Muppets. And I think it's safe to say, we are still not in Kansas and it's still not easy being green!

Today I want to preface my remarks by saying Happy Birthday to another icon and fellow Timmins native Frank Mahovlich who turns 74 today.

For those of you that don't remember Mahovlich, he was the big left winger who was a star for the Toronto Maple Leafs in the 60's when they not only made the playoffs but won the Stanley Cup. Sportscasters referred to him as the Big M and he always held a special place for me, probably because for a while as a kid my Dad had me convinced that the Big M stood for Murphy! So Happy Birthday to Frank.

As we all know, Ontario's electricity sector is in the midst of significant change. The way we generate electricity is changing as is the way we deliver it, charge for it and even consume it.

Given the magnitude of the change, it shouldn't come as a surprise that we are seeing some challenges. Particularly in the short term.

And while we need to ensure we can manage those challenges in the short term, and I believe that there are ways we can do that, we shouldn't lose sight of what those changes will bring - a transition to a cleaner supply mix and an intelligent delivery system that serves a more engaged consumer.

Today I am going to:

- Recap some of the highlights in Ontario's electricity sector over the past 12 months;
- Discuss some of the impacts we are experiencing and are expecting to see as the change ramps up over the next few years
- And talk about what we need to do to successfully manage this transition.

## **The past 12 Months**

Late last week, the IESO released the annual supply, demand and price data for the year 2011. When you look at the data, there are a few things that jump out at you.

First of all, is the continued change in supply mix and in particular the growing contribution of wind and the declining role of coal. It's now at the point where the output of both are pretty similar.

Now I am not suggesting that we are ready to shut down the remaining coal units right now. They continue to play a vital role in meeting demand, as evidenced last week when increased coal production helped meet demand during the cold spell, but the declining output does indicate that the phase out of coal is moving ahead as planned.

While the outputs of wind and coal may be similar in 2011, their characteristics are not. The coal production is predictable and can follow the consumption pattern, whereas the wind cannot.

And while wind alone can't replace coal, the growing wind production is certainly helping to meet overall energy needs. With over 1,700 megawatts (MW), and climbing, of installed wind capacity, it seems like we are setting records for wind output almost every month.

While peak demand for electricity in 2011 was the highest it has been in four years, it's still well short of the 2006 record. What I think is significant about that peak day last July is that although overall energy demand for the day was the third highest in history, the peak demand didn't crack the top 10, which points to demand shifting.

This was an indication that Demand Response programs and pricing incentives such as the Global Adjustment allocation for large customers and time-of-use (TOU) pricing for residential customers, are starting to have the intended effect of shaving the peaks.

In terms of having the tools available to respond more effectively, 2011 saw a significant increase in the number of customers who are now on TOU pricing. More than 3.5 million Ontario customers now have TOU rates, more than twice as many as a year ago, and more than any other jurisdiction in North America.

While peak demand increased, annual energy declined slightly to just under 142 terawatt hours (TWh) in 2011, about 10 per cent less than it was five years ago.

While we have seen a lot of change over the last 12 months, there is much more on the horizon and the impacts of that change will have to be carefully managed.

### **Next Five Years**

The supply mix will continue to change. Over the next few years, nuclear capacity will increase with two nuclear units returning to service, flexible coal will be phased out and an additional 6,000 MW of wind and solar is expected to come on line by 2015.

The variability of the supply will increase substantially while at the same time our ability to follow load will decrease.

Our reliance on interprovincial and international trade to balance the system will also increase. A few years ago we were reliant on our neighbours to help meet demands during peak days, now we count on the export market to help balance the system during surplus conditions.

Ontario is part of a very large interconnected market and trade plays a significant part in the day-to-day operations of that market.

Like our neighbours, we've built a system to meet our own needs and our system is doing just that. In fact, the reliability standards that Ontario and each of our neighbours abide by require us to have reserve capacity above our peak hour demand requirements. This effectively guarantees that in most hours there will be generation that doesn't need to run; and the energy from this generation can be traded to mutual advantage.

Exports don't always cover the full costs of building and operating associated with the generators of that power but they do help to reduce the costs that Ontarians ultimately have to bear.

So while we do see some reaction over the price of exports, particularly when they're negative, we should be mindful of the benefits they provide today and the flexibility they can provide tomorrow to better manage system conditions.

The surplus baseload generation conditions (or SBG for short) we have experienced over the past three years are expected to continue to challenge us over the next few years. The two refurbished Bruce Power units are expected back soon and more variable renewable generation will be brought on line.

We have largely been able to avoid nuclear shutdowns to deal with the SBG conditions but this may not be the case in the near future.

We need to find alternative ways to address SBG to avoid using a multi-day nuclear shutdown to address surplus conditions that could last for only a few short hours. Given the potential of quick swings from surplus to shortage, those actions could have greater consequences in the future if the shutdown nuclear unit is not available by the time we need it again.

So where does this leave us?

Over its more than 100 year history, Ontario's electricity system has certainly gone through its cycles of shortages and surpluses.

Through 2002 to 2005, we were very concerned about being short of supply on very high demand days. We were reliant on our neighbours. In 2005 we also asked Ontario customers on 13 different occasions to reduce their electricity use to help relieve the strain on the system. That was an extreme cycle. The summers of 2002 and 2005 had more than their share of tense moments that I have no interest in reliving.

But in five years, we went from worrying about shortages to worrying about surpluses and SBG became the acronym of the day.

But in the past, as we went through these cycles, we typically knew where we stood on any given day. So in 2005, we were talking regularly to our generators in Ontario about their ability to produce during those peak hours, rescheduling outages if needed, and talking to neighbouring operators about what help they could provide.

And as we prepared we were able to rely on historic trends and patterns to better plan our actions. But today with all of the change that is now upon us and continuing to occur, we are less able to rely on those trends or patterns. We've never had the levels of variable generation we are experiencing now so history is not repeating itself.

And rather than having lengthy periods of time where we are in a certain situation that we can plan for, for example an entire summer of shortages, we are moving into a period of time where we will go from surplus to shortage over a short period of time given the increase in variable and inflexible supply.

June 8 last year was an example of that. In the early hours of that June morning, we were exporting everything we could to keep supply on line only to declare an Energy

Emergency Alert just 12 hours later. Demand climbed to the point where we were using every available megawatt in Ontario to meet that demand.

### **Successfully managing the transition**

So how do we successfully manage this transition period to cleaner supply, an intelligent delivery system and a more engaged customer?

First, it's important to note the expected temporary nature of the SBG concerns. While the supply situation may give us extra challenges now we'll be thankful that we have that new supply on hand as the nuclear units begin to be refurbished.

So let me start with supply.

From a system operators perspective, flexibility in all our resources will be key to efficiently managing the system in the future, including our SBG concerns.

You have heard me talk about the need for flexibility in the past and I am going to repeat that need again today.

At just over 1,700 MW of installed capacity, we are already starting to feel the impact of not dispatching wind, particularly given the characteristics of the supply mix we have. At 5,000 MW of wind, and no coal, which is where we are headed, those impacts will be even greater as we try to manage those times when the variable resources are not there when we need them or are there when we don't.

We need to consider if more flexibility can be built into the contracts, tariffs or regulated prices of generators and the dispatch of that generation.

The need to dispatch all resources is one of the main drivers of one of our stakeholder engagement initiatives that is currently underway. This initiative will help us to reliably and efficiently integrate the significant amount of renewables over the next few years. It is also focused on the need for better forecasting and increased visibility on the distribution system, which will house much of the solar and some of the wind expected.

Delivering that renewable power to customers will also mean investing in new transmission and distribution infrastructure. Hydro One's Bruce to Milton line, scheduled to come into service later this year, will help deliver not only the renewable energy but the additional generation from Bruce Power.

We need to consider the loss of Nanticoke and Lambton - perhaps replacing some of that flexible supply with natural gas. Gas has certainly picked up for the reduction in coal production, accounting for more than 20 per cent of Ontario's supply in 2011. The Enhanced Day Ahead Commitment process that we implemented in the market last fall is helping make gas more efficient through the advanced scheduling and commitment of resources.

Continued world-wide development of storage and smart grid technologies are also a necessary ingredient for Ontario's electricity sector in the not too distant future.

### **Smart Grids**

Three years ago at this event I identified the need for us to work together to maximize the potential benefits that a smart grid presents. Since that time, a lot of progress has been made in Ontario and across North America.

Smart Grids are moving past the visionary stage. The first wave of pilot programs are wrapping up – and are informing the development of broader programs and services.

We don't have to look very far to see that the benefits are being realized right here at home. Powerstream has been testing smart grid technologies in the Richmond Hill area, which detects faults and moves to correct them. This system is already delivering real improvements to reliability and customer service. I heard of one instance where a PowerStream operator noticed an outage affecting a small number of houses. He asked a nearby repair crew that was performing regular maintenance to check it out. One of the affected customers, who called to report that outage, was still on the phone with PowerStream when he looked out of his window and saw the crew already at work. This couldn't have happened a few years ago.

Throughout North America, indeed around the world, there is a desire to better harness the power of wind and solar. And we can't do that with the system as it is. In my view, one of the important keys to unlock that future potential is storage. I know it's expensive; I am reminded of that regularly. But that has to change.

The US Department of Energy has targeted a 30 per cent reduction in storage costs by 2015, and is investing \$200 million in support of that goal. Here, at home, the IESO tested Hydrogenic's storage technologies to demonstrate how hydrogen equipment can follow regulation signals in a real-world scenario and the results were very encouraging.

The OEB has launched a review of its regulatory framework which incorporates smart grid considerations. They are, in effect, picking up on the work of the Ontario Smart Grid Forum to develop regulations that will guide the further evolution of smart grids.

Once that is established, the smart grid can build on the LDC-only investments to date and Ontario can move forward on its current path toward a more efficient and effective electricity system.

## **Market Forum**

Before I conclude, let me talk about the third part of the transition and that is the transition to a more engaged customer.

A number of stakeholders, including some who are in this room today, invested a good part of their time in 2011 to identify next steps in the development of Ontario's wholesale electricity market.

The market will be 10 years old this year and over the past decade we have seen a number of changes and impacts.

At the urging of our stakeholder advisory committee, the market forum was struck to identify the principal market issues that exist or are expected to arise and they developed an actionable set of recommendations to address those issues

The resulting roadmap and recommendations lay out a path forward for the IESO and others. They cover three broad areas: integrating the changing supply mix; engaging and empowering consumers; and improving efficiency

The process was lead by George Vegh of McCarthy-Tetrault. George's final report includes a valuable perspective on the situation we are facing and I was particularly encouraged by the report's recognition of the importance of the price signal

As George notes, a competitive market that offers a transparent price reflecting real supply and demand conditions can help Ontario address its electricity challenges and opportunities in a way that is consistent with broad energy policy goals.

An effective price signal will help us tap the potential that the demand side represents.

We have started to see the impact that customers can have in helping manage reliability. As I mentioned, this summer our peak – or lack of a peak - was influenced by

customer response. And we are starting to see a slight shift in the off-peak use of electricity. Most of the 2.5 TWh increase in demand over the past two years has occurred off peak. While these are baby steps, they are steps in the right direction.

The market forum road map contains a number of initiatives aimed at pursuing demand side opportunities.

First up will be a consultation process we will launch soon to identify barriers that currently exist to demand side participation. We'll be consulting with consumers, LDCs, retailers and aggregators. Then we want to see how they can better engage in our market in areas such as peak management and load shifting, regulation and operating reserve, and to provide services or products that can benefit system operability.

## **Conclusion**

So as I look at the year ahead, I try not to think of the Leafs' fortunes for the playoffs.

Instead, I look to a system that is radically changing. One that is challenging many of us in this room. A system that suggests that there is, indeed, a better and more sustainable way of providing energy.

We have come an incredibly long distance in just 10 years. The system's operating characteristics are already markedly different. And the transparency with which we manage it – is unprecedented.

I see more adaptation happening. I see more innovation. And I see the industry having to work even more closely together to ensure that our efforts are integrated and efficient.

This isn't going to be easy.

We are on the cusp of some tough decisions – around dispatch, around prices, around efficiency, and around reliability. All within the context of uncertain economic times.

We all know that famous curse or proverb “may you live in interesting times.” And I suppose that this applies to our current situation. It's supposedly the first of three curses of increasing severity, the next one being:

"May you come to the attention of those in authority" ... now that's a curse!

The third proverb, may actually be the most appropriate.

"May you find what you are looking for."

And, that is precisely, what we in our industry are after. By creating new solutions to manage the system, by shedding some of the old ways of doing things, and charting a new path ahead.

Thank you very much and all the best for 2012.