

Notes for Remarks
To the Ontario Energy Network Luncheon

“It’s Not Easy Being Green”

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Thank you very much Gord. As you mentioned, it has become somewhat of a tradition for the IESO to kick off the OEN speaking engagements each year. And as I address this audience once again, I am reminded of the advice from author Dan Kennedy who said "It's easier to find a new audience than it is to write a new speech."

Since finding a new audience wasn't an option, I do have a new speech for you today ... one that touches on some of the challenges that we will face ... not just in 2009 but over the next few years. And while the start of the year is often a time for predictions, I happen to agree with Casey Stengel's advice to never make predictions, especially about the future.

In my remarks today, I want to focus on what is driving this industry. Climate change, or more importantly, the need to reduce our sector's impact on climate change is our biggest challenge and one that we need to address.

It underscores our focus on conservation, our shutdown of coal and the increasing contribution from renewables to meet demand. And while we may know what those challenges are, meeting them is going to take a lot of dedicated effort. To quote the immortal words of Kermit the Frog: "It's not easy being green."

At his speech to this forum last month, Jim Hankinson stressed the need to avoid the temptation to hunker down and stop investing during these tough economic times. I couldn't agree more. Even though the economy is a major concern now, it doesn't mean we can take our eyes off the environmental agenda.

Environmental objectives are now ... and must continue to be ... part and parcel of every major initiative within our sector. I think that all of us in this industry are anxiously awaiting the introduction of the provincial government's Green Energy Act. Judging from media reports and comments from industry officials, this proposed legislation will be action-oriented and focussed on clearing the path forward for the province and our industry.

Dealing with the environmental goals that are at the heart of provincial policy represents both challenges and opportunities in the areas of reliability, markets and the delivery system of tomorrow. And it is those areas that I will touch on today. Let me start with reliability.

Reliability Outlook

As you may know the IESO recently released its fifth Ontario Reliability Outlook. This ORO is a relatively positive outlook. This reflects the new supply and demand response initiatives that have come on board recently and those that are underway.

From a reliability perspective, our biggest challenge is implementing the phase out of coal by the end of 2014. But we are well positioned for this to happen.

Replacement generation is either on-line or on schedule. The amount of generation available from gas fired generators has already surpassed its coal equivalent. And it will continue to grow over the next few years as projects like Sibley Goreway, Halton Hills and St. Clair are commissioned and brought into service.

Over the last few years our coal use has been decreasing. Last year it was down by five TWH or almost 15 per cent from a year earlier. This is the lowest it has been in over a decade.

This progress might lead some to conclude we should count on ending coal use much earlier. In my view this would be premature.

Our experience with large gas facilities is in the relatively early stages. We will have teething problems to work through as we at the IESO, the gas generators and the supply industry adjust to the increasing demands that we expect to place on this form of supply. Future plans for more generation, transmission and conservation continue to have timing uncertainty around them.

Last year the Provincial Government directed that emissions from the coal plants will decline in stages between now and the eventual phase out in 2014. This plan lets us all work through the transition during the coal reduction period.

Ontario Power Generation has developed a responsible strategy for managing the reduction in emissions and I would like to commend OPG for their efforts. There are a number of components to the OPG approach ... from shutting down some units in non-peak times to adjusting the price for coal units offered into the market. The strategy recognizes the need to reduce emissions from its coal fired facilities, but it also recognizes the very important role coal continues to have in managing reliability.

This strategy is a good example of how our industry can successfully respond to government environmental policy objectives while at the same time meeting our core business mandates. Ending the use of coal-fired generation is a cornerstone of the government's environmental agenda. Removing those megawatts from the supply mix represents the equivalent of taking almost seven million cars off the road. It's an initiative that all of us in the industry have gotten behind. And while not there yet, we are well on our way to meeting the objective.

Nuclear

As we look beyond the coal shutdown, a new challenge is set to emerge ... the need to refurbish or retire and replace our aging nuclear units. It is a challenge that will require early decisions and substantial planning and coordination.

Nuclear accounts for about 50 per cent of the province's power needs and that is expected to continue over the next 20 years. The OPA, in its integrated power supply plan, has outlined the need for new nuclear. However, it's expected to take at least a decade before those new megawatts are available. In the meantime, important decisions need to be made about some of the existing units.

All four Pickering B units and all four Bruce B units are projected to reach the end of their service lives over the next decade. Regardless of whether those units are retired or refurbished, decisions about these large generators will have significant impacts that could all come together between the years 2015 and 2020. That is not that far off, particularly when you consider the major grid-related outage programs and transmission capability that could be required.

Decisions need to be made soon to allow the tremendous amount of coordination and planning required to accommodate units coming out of service, others being reintroduced to the system, and still others being commissioned for the first time.

Wind

One of the big changes in the electricity sector worldwide over the past few years has been the tremendous growth of wind as a generation source. Ontario's wind generators produced more than 1.4 TWH of energy in 2008 ... 34 per cent more than the previous year.

More wind generation is on the way with more than 700 MW's contracted under the OPA's standard offer.

The variability of wind and other intermittent resources is an operational issue that needs to be addressed within the industry.

The Planning and Operating Committees of NERC, or the North American Electric Reliability Corporation, are doing just that. They are looking to identify how to reliably integrate large amounts of variable resources like wind into the bulk power system.

The committee's report is expected to be finalized in the spring. But in their preliminary work, they outline a number of specific conclusions and recommended actions including new tools and enhanced standards. The committee also notes that large amounts of plug in hybrid electric vehicles as well as storage and demand response programs may provide additional resource flexibility to help offset the variability of intermittent generation like wind and solar.

Our own experience with wind variability reflects that of the broader industry. While strong winds resulted in outputs of over 700 MW at times last month ... on the flip side ... only two megawatts were being generated on a hot summer afternoon in July. That is quite a swing and one that the critics of wind are quick to point out.

But the environmental benefit of continuing to develop wind, and the potential it has in Ontario ... given our climate, the good selection of sites across the province, and the improving technology ... has earned wind an important place in Ontario's supply mix. And, we'll be ready to handle it.

Markets

The market represents another area where there are challenges and opportunities related to the government's environmental agenda. I continue to believe the market has served this province well over the past seven years ... ensuring the efficient dispatch of our resources and promoting demand response. It has also brought an unprecedented level of transparency into this sector. Through the click of a mouse we can now see market prices, generator availability, unit output and other market information. This transparency helps increase awareness about the challenges in this sector and helps hold us all accountable to the customers we serve.

As we have seen in the MUSH sector ... municipalities, universities, schools and hospitals ... market-based pricing offers customers more opportunity to better manage their electricity costs. There are more than eight TWH of electricity consumed by the MUSH sector. These customers are scheduled to come off the regulated price plan on May 1, but for many it won't be a switch at all - the majority of the load has already switched to market based pricing because of the savings they can make on their electricity bills.

Customers responsible for more than half of the electricity load in Ontario now have some sort of incentive to respond to market price signals. In a future characterized by new technology, distributed supply and active, involved consumers, price can be the common thread that binds

together all the diverse decisions made by various parties. Providing effective price signals can play an important role in achieving the province's environmental targets.

Our second Ontario Market Outlook, which we have just posted, highlights some of the potential market options to meet the province's environmental objectives.

In preparing this report, the IESO commissioned four independently authored companion papers, all of which can be found on our web site. One of these explores the need to green the market through options such as demand response and proper pricing of environmental aspects. Through the transparency of the market signals, the potential also exists to better track the electricity sector's carbon footprint.

This Outlook has been designed to try to promote discussion of potential future steps for our market. For while I believe that the market has demonstrated its value to Ontario, I also believe that we need to look at how best to increase its value in the future.

Should the market change given the changing supply mix with its increased emphasis on renewable and distributed generation? The Global Adjustment component of price is increasing relative to the spot market price. But we know the market price is still an effective way to promote efficient decisions and stimulate behavioural change, so what does this suggest for our future market?

Now is an opportune time to look at how the market can help achieve policy direction given that the pressure on the demand-supply balance has eased for the time being.

Smart Meters

Let me turn for a moment to smart meters.

Under the government's smart meter initiative, the province has emerged as a front runner in the implementation of smart meter technology. With over two million meters already installed by LDC's, Ontario is well ahead of other jurisdictions in North America.

In the U.S., the use of advanced meter infrastructure is less than five per cent, and even Pennsylvania, the most aggressive state, has only 25 per cent of its meters installed. A recent FERC report also indicated that most applications to date are to improve LDC operations and customer service. There has been very limited implementation of time of use pricing.

In Ontario, about half of the required meters have already been installed and time of use billing is on its way.

As you may know, the IESO has been acting as the interim Smart Meter Entity, managing the procurement and operation of the central database system. We have kept the program on budget. However, given the immature state of this technology worldwide, it should come as no surprise that we have encountered some delay. This has been disappointing and frustrating, both for us and our LDC partners. But I am pleased to report that the testing of the latest software is progressing well.

Newmarket, Tay, Milton and Chatham-Kent Hydro have been supplying hourly meter reads for some time and we are currently testing with Toronto Hydro. We expect to continue to work with the rest of the first 13 LDCs to test and enrol their customers into the metering database in the coming months.

The smart meter is a tool that will help customers better manage their electricity consumption and through that realize savings.

The smart meter can also improve distributor operations through a host of applications such as outage management and elimination of estimated billing. Perhaps most importantly, the smart

meter is an essential first step in laying the ground work for tomorrow's electricity system ... which many are referring to as the smart grid.

Smart Grid

When I first talked about the smart grid in my speech here a year ago, I thought of the smart grid as an opportunity that we could leverage. But now I'm convinced it's a necessity. It's a necessity to achieve the full potential of tomorrow's electricity system.

While much has been made of the aging supply infrastructure, the same needs exist on the delivery side as transmission and distribution equipment nears the end of its service life. But it is essential that as those wires and equipment are replaced, they come with the intelligence that new communications, sensing, automation and computer equipment can add.

That intelligence through a smart grid will enable the grid to become more flexible and resilient by enhancing its ability to anticipate potential problems and enable immediate action to correct those problems.

The smart grid has dominated industry conferences and discussions over the past year. But it's not just the industry talking about the smart grid. Googling Smart Grid and U.S. President-elect Barack Obama, I get 1.1 million references. The smart grid has been a key part of Obama's early plans. It's expected to be an important part of the estimated \$1 Trillion stimulus package he will be pushing congress to pass.

If you were watching the Pittsburgh-San Diego NFL playoff game last weekend, you may have caught IBM's smart grid TV commercial. Nothing indicates arrival on Main Street any better than a nationally televised commercial.

When you look at its potential, you understand why everyone is talking about the smart grid.

Our electricity system is on the cusp of major change as we move from our current grid operation that sees electricity primarily moving from large central generators to consumers.

The smart grid of tomorrow will facilitate two way flows of both electricity and information as new technologies fundamentally change the production, delivery and use of electricity.

The smart grid of tomorrow will enable increased customer participation through in home devices and other services that help them respond to prices or other pre-set parameters.

Tomorrow's smart grid will also better facilitate the integration of distributed generation and new energy resources such as solar, wind and storage.

I am joined here today by a number of my colleagues who have worked together over the past seven months on the Smart Grid Forum. Allow me to introduce them and please stand when I announce your name.

David Collie, President and CEO of Burlington Hydro;

Norm Fraser, Chief Operating Officer, Hydro Ottawa;

Anthony Haines, President, Toronto Hydro Electric System;

David McFadden, Chair of the Ontario Centres of Excellence;

Keith Major, Senior Vice President, Property Management, Bentall LP;

Jatin Nathwani, Professor at the University of Waterloo and Ontario Research Chair in Public Policy for Sustainable Energy Management;

Paul Shervill, Vice President, Conservation and Sector Development at the Ontario Power Authority;

And Wayne Smith, Vice President, Grid Operations, Hydro One.

Micheal Angemeer, President and CEO of Veridian Corporation was on the Forum but could not be here today.

We also had representation from the Ministry of Energy and Infrastructure and the Ontario Energy Board including Aleck Dadson, Chief Operating Officer, of the OEB.

Ladies and Gentlemen, the Smart Grid Forum.

It's been a real honour to chair this group. I should also acknowledge the very capable working group led by Don Tench of the IESO and of course, Joel Singer of Singer and Watts who has facilitated our work.

Over the past seven months, the Forum heard from a number of experts on various aspects of the smart grid, and in turn looked at the implications for Ontario.

We are in the final stages of our work and we expect to issue our Smart Grid Forum report soon. It will summarize our work and outline a number of recommendations aimed at advancing the smart grid in Ontario. However, with the Forum's permission, I'd like to mention a couple of highlights.

First and foremost is the Forum's central belief that Ontario should develop a smart grid to improve the prosperity of its citizens, the performance of its electricity system and the environment ... and that the co-ordinated development should become the policy of the provincial government and be enabled through legislation.

That recommendation is at the core of the Forum's work. But there are other recommendations aimed at consumers, distributors, and transmitters. The recommendations also cover distributed generation, storage, demand response, communications, and of course electric vehicles.

Nothing underscores the need for a smart grid more than the emergence of electric cars as a viable transportation source. GM will introduce the Chevy Volt in 2010 and Ford and Magna

announced just last weekend that they will have an all electric vehicle in production for 2011. It's hard not to imagine all electric or hybrid cars dominating the automotive sector within a decade.

In addition to turning the automotive sector on its ear, the electric car has the potential to effect fundamental change in our industry. On the consumption side, imagine millions of motorists charging up their cars at night, taking advantage of lower overnight prices from clean energy. And on the supply side, electric cars represent the potential for those same motorists to sell the energy from their car batteries back in to the grid when it is needed most.

You could not do this with the intelligence and capability of today's grid which is why this became a critical issue for the Forum. Our recommendations include a call for government, the automotive industry, the electricity sector and universities to work together to develop a comprehensive plan for enabling plug in electric vehicles in Ontario.

While the smart grid has tremendous potential, let me just add a few cautionary words. The smart grid is not a silver bullet that will allow endless amounts of distributed renewable energy to be effortlessly connected to the grid. There will still be a real need for additional transmission and distribution wires. Even with the smart grid, transforming the electricity system to be more distributed and greener will still be hard work. And it won't happen overnight.

A smart grid is something that will require targeted and sustained investment, aligned with a future vision so that it can emerge intelligently over the next decade.

The Forum's report, which is expected to be released in the coming days, is a good first step.

Conclusion

It's been said that if Alexander Graham Bell came back and looked at today's telecommunications industry, he wouldn't recognize it. But that if Thomas Edison were to come back and look at the power grid, it would be pretty much where he left off.

That may be a bit of an overstatement. But there is no question that the telecommunications industry has gone through significant innovation that consumers have benefited from.

I myself witnessed that on a recent outing with my youngest daughter.

She had asked me to go shopping with her for school clothes. I was thrilled that she would even consider seeking my advice on her wardrobe. She came out of a change room with a new outfit on but instead of asking my opinion she handed me her cell phone and said "Dad, take my picture". After she told me how to do it, I took her picture. She promptly sent it to her older sister who was working at a resort in the Canadian Rockies. A few moments later she got a response on her phone from her sister. It said "Looks great. Ask Dad to get me one too."

I learned several important things from this little experience. First, there are things that can be done with technology today that were not possible even a few short years ago; and advances continue at an incredible pace. Second, the next generation of electricity consumers will embrace technology in ways that we never imagined; it is second nature to them. The third thing I learned was that my children will be glad to include me as long as I have a credit card!

That same type of innovation is coming to the electricity sector. And it is being driven in large part by the needs of the environment:

- the coal shutdown;
- unprecedented levels of distributed renewable generation;
- increased demand response and conservation; and
- a smart grid that will integrate electric vehicles and enhance the ability of consumers to become involved in this sector.

Those are some of the challenges we face as we address the government's environmental objectives.

Meeting those challenges won't be easy. But it will help make our electricity system greener. And green is not only where we need to go, it should also be where we want to go.

Or, as Kermit the frog concluded in his song:

"I think green is what I want to be."

Thank you very much.