

A Presentation by

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**Ontario's Energy Infrastructure: Transmission and Pipelines
for the Green Economy and Beyond**

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CHECK AGAINST DELIVERY

It's my role as keynote speaker to set some context for today's sessions. So I will talk about the landmark events that have taken place over the past year or so – in fact, the last five years. We've really come a long way in a short period of time.

But first, for our out-of-province visitors, I should start with an overview of who the Ontario Power Authority is.

The OPA was created about five years ago, in the midst of some very significant challenges. We had spent too many summers with our fingers crossed—hoping we could keep the air conditioners running. Our electricity system was aging and investments in infrastructure had not kept up.

It's our job to ensure that Ontario has a sustainable and reliable electricity supply for the future.

We don't own generation stations or transmit electricity. We plan Ontario's electricity system for the long term – and that entails planning for new sources of supply, including conservation, and planning for new transmission and upgrades.

We also coordinate conservation initiatives across the province.

In fact, conservation is always first on our list.

Ontario has an ambitious conservation target – a reduction of 6,300 megawatts in peak demand by 2025. It's the equivalent of taking one in five households off the grid. And we're already one-third of the way to hitting the target. We believe we'll hit it ahead of schedule.

We're also responsible for contracting for new supply. More about this part of our role in a moment.

As many of you know, because you're living it--the Ontario electricity sector is currently undergoing a major transformation.

That's in large part because of the Green Energy and Green Economy Act, passed last May 14 – almost a year ago – by the Ontario government.

The Green Energy Act is a new and ambitious clean energy program that positions Ontario as a global leader in both conservation and renewable energy. And it's expected to encourage billions of dollars of investment in Ontario's electricity sector.

It's also expected to create 50,000 green collar jobs in the first three years. And serve as a catalyst for the greening of other parts of the economy, such as transit and vehicles.

And we're getting kudos from some notable people.

Al Gore recently called Ontario's new plan "the single best green energy program on the North American continent."

The cornerstone of the Green Energy Act is the Feed-in Tariff Program—the first and most comprehensive of its kind in North America. We launched the FIT Program last fall, and the response has been amazing.

We have received nearly 10,500 applications, representing about 9,800 megawatts of potential renewable energy.

- Roughly 9,000 of those applications are for our microFIT program—many of them very small rooftop projects.
 - And more than 3,000 microFIT applicants have already been given conditional offers and processing continues day-by-day
- We hit the second milestone in our renewable energy program last month, awarding contracts to 510 medium-sized projects
 - with a total capacity of 112 megawatts, enough to power more than 13,000 homes
- And just two weeks ago, we awarded 184 large-scale contracts under our FIT program.
 - The contracts represent 2,500 megawatts of renewable energy—enough to power 600,000 homes.

The program has attracted attention from both developers and manufacturers here in Canada and around the world.

Over the next few years, we're expecting to add about three to four thousand megawatts of renewable energy to our supply. Some of this is already in the pipeline and some of it we are contracting under our Feed-in Tariff

Program.

To give you some perspective, that's on a 35,000 MW installed system.

FIT is our primary vehicle for building Ontario's supply of clean energy—and it's enabling us to eliminate coal from our supply mix. Until recently, we've said that this is the single largest climate change initiative in all of North America. However, those pesky Californians are about to overtake us with their tailpipe emission changes.

We can still say that we are leading the charge because we've got our initiative underway. So, we're duking it out for first and second place. The main thing is that we're both very ambitious.

And Ontario is the first in the world to eliminate coal from its supply mix. We expect to be completely off coal by 2014.

That's a significant part of our efforts to meet greenhouse gas emissions and carbon footprint targets and ambitions. The electricity sector itself is going to reduce its carbon footprint by 75 percent.

The FIT Program offers developers and entrepreneurs guaranteed incentives to invest in projects—roughly an 11 per cent return on investment and an 11-year payback depending on the type of project. Our prices are designed to cover capital, operating, maintenance and connection costs and a reasonable rate of return. It covers on- and off-shore wind, solar PV, biogas, water and landfill gas.

It's an open-ended program. Projects have the “right-to-connect”—if a project is economic to connect, it will be connected once transmission and distribution is built-out to accommodate it.

Also, it will be easier for developers to build their projects – the upstream approvals process has been streamlined, including environmental approvals.

FIT offers ownership opportunities not just for the private sector, but many other groups, recognizing their important roles. Special funding is available to encourage municipalities, Aboriginal groups, LDCs and community groups to become involved in renewable energy.

So that's an overview of developments related to the Green Energy Act and the FIT Program.

But procuring renewable energy through the FIT Program is only part of the story of our role in contracting for new supply.

The OPA currently has more than 13,000 megawatts of electricity resources under contract and at various stages of development – from the permitting stage to commercial operation. Approximately 50 per cent comes from nuclear and 25 per cent from hydro. A starting point that is already green and clean – and enviable.

Within a few years we will double the number of megawatts and triple the value to \$44-billion worth of activity we have under contract. Again, that's 26,000 megawatts on a 35,000 megawatt system. We've come a long way in a short period of time.

Speaking of clean energy, many of you are probably wondering about the status of our initiatives in this area. You may recall that at one point we were preparing to launch a clean energy standard offer program. But it didn't get out of the gate. Also, we have directives to procure 1,000 megawatts of high efficiency CHP and 100 megawatts of renewable CHP. To date, we've procured 414 megawatts of the high efficiency CHP and 15 megawatts of renewable CHP. So these are still to be completed.

We have a number of challenges in this area. One of these is coordinating with our other procurements, especially FIT. Also, there's the fact that much of this capacity will be baseload generation and we now have some hours of surplus supply on the system, especially in shoulder months.

We need to monitor FIT uptake and make sure that these clean energy projects will integrate well. We've been working to determine where best to site this generation, and initial analysis shows that dense, urban areas would derive the most benefit.

So we continue to work internally and with our industry partners to determine how best to secure both large and small clean energy projects.

I can tell you that there is definitely a place for CHP and other clean sources in the province's supply mix, and we hope to be able to provide an update soon.

Despite our success over this past year, we recognize there are challenges ahead.

Of course, we desperately need to rejuvenate our transmission system. Last October, the government announced a \$2.3-billion injection in the provincial transmission network over the next three years. This is primarily to unlock significant potential for clean electricity all over the province.

Where there is critical mass, we will be building out the transmission system in every new phase of our renewables program.

We're working closely with Hydro One, the Independent Electricity System Operator and local distribution companies on priorities. This is a paradigm shift—never have we all worked so closely on transmission and generation before.

And our Aboriginal partners also play a key role in our electricity planning and transmission systems. In fact, five of the top eight transmission projects highlighted as priorities for development by Hydro One are in the north and involve our First Nation and Métis partners.

We also require much more flexibility from the system. Here's an example: Last Halloween, at 4 p.m., wind generation was at a record level: Nearly 1,000 MW. Twenty-four hours later, it had dropped to 7 MW. That's a big swing but manageable. Our system operated as it should.

The Independent Electricity System Operator, or IESO, was able to dispatch other flexible resources as wind supply was falling. And we were able to maintain reliability.

IESO is also developing new tools to help them balance supply and demand. They are working on a sophisticated centralized wind forecasting system, as well as other mechanisms like load control and meaningful price signals. Our FIT contracts are designed to take fluctuations into account. In periods of provincial surplus baseload—a new challenge for us—FIT contractors will

continue to get paid even if the system isn't using their electricity. In other words, it's a "take or pay" system.

With geographic diversity, centralized forecasting and a diversified supply mix, this is very manageable.

We're now seeing that we need to align operations and economics via market rules and contracts so one doesn't cancel out the other. For example, we should consider paying for dispatch ability—not just energy and capacity.

Eventually we will have to incorporate whatever carbon regime comes along—federally, provincially. Or whether it's with the United States or regionally. We are part of the Western Climate Initiative, for example. We do take ownership of the environmental attributes. The premise is that the Ontario ratepayer is paying premium prices for the renewable energy and therefore should get the benefit. Whether it's in a compliance market or perhaps a voluntary one, we're looking at what may come.

Another important development over the past few years is the progress we're seeing in making our grid smarter. More than three-and-a-half million smart meters have already been installed and the entire province will be on time-of-use pricing by the middle of next year. That gives consumers more information and the opportunity to better manage their bills.

The smart grid will also help LDCs operate more efficiently and will enable them to accommodate more distributed generation.

Of course, the smart grid is a work in progress – and we'll continue to participate in discussions and developments over the next several years.

A major priority this year will be implementing our Feed-in Tariff Program and other aspects of the Green Energy Act, such as working with LDCs as their role in conservation continues to evolve.

And, of course, our focus on planning will continue.

While our path is largely set to 2015, when coal is gone and our nuclear plants begin to age out, there will be more decision-making to do. We'll be looking to maximize the value we get out of our existing assets. We'll be thinking more about import and export opportunities as well as the

electrification of cars and our transit system. We will continue to look under every rock for cost effective electricity because that's our job at the OPA.

The good news is that we've got some flexibility and we're already working with the government to solve those questions. We've got some breathing room and lead time for a change.

Many of you know the history of the Integrated Power System Plan – the long-term plan that the OPA submitted for regulatory review in August of 2007.

In September of 2008, we were in the early stages of that review at the Ontario Energy Board when the Minister of Energy and Infrastructure at the time asked us to have another go at it to increase the roles of renewable energy and distributed generation while accelerating conservation targets.

We were also asked to increase transmission capacity in certain parts of the province to enable the delivery of renewable energy and to enhance our engagement with First Nation and Métis communities.

Ontario has since made progress on all those issues and we continue to revise the IPSP to capture these achievements.

The outlook for Ontario's electricity supply is in good shape for today and the next four years at least.

Of course, there is a price tag associated with this activity. Costs are going up. That's the costs of replacing an aging infrastructure and making it cleaner and greener. We stand behind the need for a long-term plan because it is needed to address the period beyond coal replacement. It is the period when we expect nuclear refurbishments to be taking place, and most of the FIT facilities to be in service. The state of Ontario's industry and the electrification of transit will affect demand.

And the Minister of Energy and Infrastructure agrees with us about the value of a long-term-plan.

For now, our discussions with him are focusing on the content of that plan. We will also discuss the form or process for reviewing the plan but we're not

there yet. Of course, we will continue to support Hydro One, transmitters and LDCs in their appearances at the OEB.

It's important to note, however, that the plan that we submitted nearly three years ago has guided the resource choices and much of it has been implemented or is in the process of being implemented.

So that's where we are today. A great deal has been accomplished and there's clearly much more that needs to be done.

- Lots of new clean and distributed energy is coming onstream in the next few years – some \$44 billion worth of investment.
- Natural gas-fired and nuclear facilities will continue to play a key role
- Significant transmission build out is being undertaken to enable new renewable supply
- Changes are needed in how the grid operates to accommodate the new resources and as a result of an ongoing effort to make the grid smarter
- We need to plan for supply post 2014, when coal will be completely phased out, much of the nuclear fleet will be nearing the end of their service lives, and demand will be affected by developments such as electrification of vehicles and transit.

I think you can see why I say Ontario has a very good story to tell.

Two weeks ago I was asked to tell our story at CERA, which is North America's largest oil, gas and electricity conference. After I was finished, my fellow panelist, the chair of the California IESO said: "Well now, we should all move to Ontario." Not bad when you can get someone from California interested in moving to Ontario in the month of March.

To our guests that are in the room, I also want to extend the welcome. And I'm looking forward to hearing the stories that you have to tell.