



**“Power Market Renewal – What are the
Opportunities and Challenges?”**

**Keynote address to
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Thank you for your kind introduction. It's truly an honour to be here today.

And thank you for the opportunity to speak about this important project.

Market renewal

Not since Canada won the men's and women's gold medal in hockey in the Salt Lake City Winter Olympics, the average sale price of a home in Toronto was \$275,000, and gas for your car was half the price it is today has the IESO considered making changes to Ontario's wholesale electricity market on the scale contemplated by our Market Renewal program.

Together with stakeholders, we are creating a marketplace of the future, and I'm very excited about the possibilities this new design will afford consumers, generators and other market participants.

Our vision for the future market is one of clearly defined energy products and services, where all resources are incented to compete to supply what the system needs, when it needs it.

Why is this so important?

As the system operator, I know first-hand the critical role markets play in helping manage the grid reliably. Acquiring, scheduling and dispatching resources through an efficient market means the IESO can maintain reliability at lowest cost to consumers. But managing the grid efficiently requires having a market design that sends the right signals and incents good decision-making. Our current market design did not anticipate the current supply mix and certainly did not consider the one we expect to see in the future.

From my perspective as the grid operator, it is essential that we bring our market design up to date so we can address inefficiencies and establish a solid foundation to enable future change.

The need for change is pressing in light of global trends that are transforming our sector.

Decarbonisation has radically changed our supply mix, assets are being added to the grid in innovative new ways, particularly at the distribution level, and technology is enabling consumers to become far more engaged than they ever were in the past.

Ontario is at the forefront of decarbonizing our grid, something we should be proud of.

In the almost two decades since the market was established, we have retired coal as a generation source. In doing so, we have increased the amount of variable generation on the transmission system and on the distribution system. At the wholesale level alone, wind and solar combined met about seven percent of Ontario's supply needs in 2017. Gas output was down to about four percent, which means our electricity system is now about 95 percent carbon free.

And of course, we can't talk about a carbon-free province without acknowledging the significant contribution of nuclear, which continues to provide around 60 percent of our supply.

But sector changes don't stop there. There is growing interest and adoption of distributed energy resources, increasing use of electric vehicles, emerging storage technologies and growing customer interest in being part of the electricity system.

We now have over 4,300 megawatts of distributed energy resources in service and under development in Ontario, over half of which is solar.

The increase in distributed energy resources, in particular, is leading to a more decentralized yet interconnected system, with more moving parts.

There is a great opportunity to have distributed energy resources be fully integrated into electricity system operations and markets in order to continue to serve customers at established reliability standards.

In order to ensure that a diverse range of resources such as distributed energy resources -- and all other resources -- can provide different services, we need accurate price signals for different energy products such as energy, capacity, and new products such as flexibility.

If we can define the products we need and send accurate price signals that reflect underlying system conditions, it will allow market participants to make informed decisions about when and where to participate.

While we have seen transformative changes in the sector, our core wholesale market design hasn't evolved with it. Our efforts to date have focussed on managing that change and applying band-aid, short-term market design solutions that have proven to be unsustainable.

This means that our current market design does not send accurate price signals for what we need. In some cases, there is no price signal; for example, on the value of capacity or flexibility.

These are just a few examples where our current market design is not in tune with what the system needs and, therefore, not able to unlock the full potential of our fleet.

Together with our stakeholders, we believe that now is the right time to create a marketplace that is responsive and ready to meet the challenges of today and flexible enough to adapt to future changes.

So, making changes is what we're doing.

Today, we are approaching market renewal as a foundational change.

We are creating opportunities for all resources to compete to provide a range of unbundled products and services in as many time periods as the system needs. Our changes are not just focused on the energy market but also evolving how we procure resources. In the past, we would have focused on long-term procurements by technology type to meet the need. This provided reliability but at a higher-than-necessary cost.

We are looking at our redesign of the market in three distinct timeframes.

First, we are examining clear and distinct changes that can be made in the short term. Current near-term initiatives include: improved interim flexibility, allowing capacity exports, operating reserve changes and enhancing our demand response auction.

Our work on improving flexibility is addressing the emerging need to schedule resources capable of responding within a short timeframe in order to manage forecast uncertainty in the real-time energy market.

Allowing capacity exports gives generators the opportunity to trade excess capacity not required for system reliability in Ontario to other jurisdictions.

As you know, it is already happening with our Quebec and New York neighbours.

We are also exploring how to expand participation in the operating reserve market by looking at how resources that haven't traditionally participated can or better leveraging their existing resources.

Finally, to address short-term needs, we are looking at finding ways to enhance the value of demand response resources by increasing use where it is economic.

Let me be clear, we will continuously assess opportunities to make incremental changes that will improve our current market and are also compatible with Market Renewal. We will be working with our stakeholders on those initiatives in parallel with our work on Market Renewal.

Second, even though we are already working on Market Renewal, we see the program as medium-term because it will take a few years for us to implement this suite of changes. Market Renewal is about creating clearly defined energy and capacity products and services that accurately reflect the value they provide to the grid. Allowing all available resources to compete to supply these products will significantly improve how electricity resources are acquired, scheduled and dispatched day-to-day, hour-to-hour and in real time.

Specifically, through the energy work stream, stakeholders are working with us to create a day-ahead market based on a single schedule price and dispatch system, as well as an enhanced real-time unit commitment to improve resource scheduling and commitments in real-time. These are things we currently do and have been doing for a number of years. Our control room operators are looking forward to the new tools of market renewal so that they can operate the power system more efficiently and effectively.

Through the capacity work stream we are introducing an incremental capacity auction to improve the way Ontario acquires supply to meet medium- and long-term needs. The introduction of a competitive auction, in which a wide range of technologies can compete, will help to ensure that the province's reliability needs are met at the lowest possible cost.

And finally, we recognize that market renewal does not end with the implementation of these four key initiatives. The sector is changing very quickly, and we need to make sure that we

continue to evolve the market to ensure we maximize the assets and resources we already have and attract new and innovative resources to Ontario. For example, you heard me mention needing flexibility – this is an important consideration that we will explore with stakeholders.

As we look to the future, we need a market structure that attracts the resources we need and is able to effectively accommodate the emerging technologies when they are economic. Our long-term vision is to create a marketplace that has the ability to adapt to meet the needs of the power system and the evolving capabilities of stakeholders. Creating a marketplace based on clearly defined products and services to ensure system reliability is a foundational first step towards realising this goal.

In fact, the future is closer than we think. We launched North America's largest demand response-specific auction in 2015 and have successfully cleared more megawatts at lower cost and seen new entrants compete with existing players. These outcomes are consistent with the experience of other jurisdictions like PJM and New England, which use an auction to secure resources. This is an encouraging sign that this mechanism can work in Ontario when they are designed with Ontario's needs in mind.

More recently, the IESO issued a procurement for additional regulation services. Regulation services help us balance the grid, correcting for short-term changes in supply and demand. Both successful bids were from storage facilities, very different from our traditional suppliers of regulation service, and represented the lowest per-unit cost of regulation since market opening. Both of these examples show that by creating the right conditions, we have attracted new entrants into the market.

Our vision for a competitive market based on unbundled and distinct products will ultimately present many opportunities for consumers and market participants, but given the depth and breadth of the work ahead of us, there will be some challenges.

So let's first talk about the opportunities.

First, there are the cost savings associated with market renewal. An IESO-commissioned independent study found that all our proposed changes to the electricity market could unlock province-wide efficiency savings of between \$2.2 billion and \$5.2 billion over a 10-year period. However, the benefits are expected to extend beyond the 10-year timeframe of the study.

The single schedule market – a foundational initiative of market renewal – will ensure that we have a pricing system that accurately reflects the cost of producing or consuming electricity at a given place or time, and this will mean more efficient market participation. It will reduce the need for out-of-market payments and decrease the complexity of the market settlement process which will increase transparency for everyone.

As well as addressing current inefficiencies, a single schedule market will enable a day-ahead market, which is a tried-and-tested approach to reducing the risk of producing and consuming electricity in real time. A day-ahead market will also help the IESO schedule resources with more certainty, making managing the grid easier!

Another opportunity comes from that fact that we are in a position to learn from our colleagues in other independent system operators who have gone through similar structural changes or made the same design decisions we are considering. When our market was implemented back in 2002, there was limited experience with electricity markets from which to draw, and our market design was on the cutting edge. Now, Ontario is in a position to benefit from lessons learned in other jurisdictions.

We are also benefiting from the depth and breadth of experience of those who are currently market participants and those who would like to play a more active role in the new marketplace. They bring perspectives to the table that we need to hear.

Engagement of stakeholders is amongst the highest of our market renewal priorities because it's not just about the operation of the new market but also what it means to our stakeholders, those most impacted by the proposed changes.

We will continue to listen to the different perspectives and concerns brought to us by those who will be – or want to be - operating in the new market. By openly engaging with stakeholders, we can ensure that we create the marketplace of the future, addressing the needs of participants and customers.

A great example is our work with the non-emitting resources sector. Representatives identified a need for additional input on their role in the new wholesale electricity marketplace. In response, we created a subcommittee to help inform how non-emitting resources will participate in our future market design and explore how these resources might impact market outcomes, in light of Ontario's clean energy supply mix.

To better understand the role of non-emitting resources, we are also issuing a Request for Information in mid-March. The RFI will be issued in two phases with the first focusing on the technical and operational characteristics of non-emitting resources. The second phase will centre on commercial and regulatory considerations and is targeted to be released toward the end of the summer.

I know that the findings of the RFI and the work of this subcommittee will play an important role in shaping Market Renewal and the future of our electricity marketplace.

The bottom line is that market renewal initiatives present the IESO with a unique opportunity to work with stakeholders to ensure that the future market will be resilient and flexible. It will be more competitive but one that also provides increased certainty for market participants.

It will be a market that is better able to respond to current and future system needs and able to withstand and adapt to changes. It will be one that supports innovation, is more efficient and open to more participants. It will ensure we are using our assets more efficiently, supporting reliable operations with our existing and new resources.

While the market renewal plan will unquestionably provide benefits for both market participants and consumers, that doesn't mean there are not challenges ahead.

First, it's a big project with many moving parts.

Right now, as I mentioned, there are four major initiatives guided by stakeholders who have volunteered to help us create the new marketplace.

And, as I mentioned, one of the four initiatives under development is the implementation of a single schedule market, a new market design feature on which many other initiatives hinge. Working since the spring of last year, the stakeholders helping the IESO shepherd this project from concept to reality have had to consider 19 different design elements comprising 44 options.

Each option must be thoroughly researched and carefully reviewed. Each option has to be looked at in how it impacts other single schedule market design elements and how it impacts every other market renewal initiative as well.

Like a giant puzzle, the pieces all have to fit together.

Because in addition to the information about all the new opportunities afforded by the more flexible marketplace, stakeholders have to understand that market renewal is more than just a set of mechanical changes to systems and processes. It is about them being able to and comfortable with managing varying levels of risk in order to effectively price different products and services.

We also need to engage stakeholders, benefit from their input but avoid burnout.

I want you to know that, even though I've been in my role at the helm of the market renewal project for only a short while, I've already heard loud and clear about ensuring we avoid "stakeholder burnout." We appreciate that the market renewal project has some very ambitious timelines and appreciate even more the time and commitment of the stakeholders who have stepped forward to help shepherd in this change. Their input has been – and continues to be – invaluable.

We also have to work to manage stakeholder expectations.

Each stakeholder comes to the table with a different role in the sector, different experiences and certainly different expectations. There are some stakeholders who are anxious for change -- those who see the opportunities that this new market provides. For them, the change can't come soon enough.

And then there are participants who have concerns about the way the new market will change the way they do business. Despite the many opportunities, the predictable – and familiar – way of doing business is more comfortable.

Another challenge is ensuring that the clear vision we have for the new market remains flexible enough to adapt to changing and evolving circumstances all while maintaining a commitment to the goals and objectives of the project.

I can assure you that the market renewal team at the IESO is more than ably managing all these challenges and is ready for any more that may arise. They are focussed on the goals and the plan to achieve the objectives.

So, those are our plans and the challenges and opportunities ahead. We've made significant progress towards our goals.

At the beginning of market renewal, the IESO and market stakeholders established that there would be three phases in the design process. All four market renewal initiatives have completed the first phase – the fundamentals phase – where stakeholders got up to speed on the underlying principles and issues.

All four initiatives have made significant in-roads into phase 2. This is the phase that involves an in-depth review of the design options and the recommendations of the IESO. In fact, stakeholders looking at all four of the market renewal initiatives have provided important feedback on more than half the design elements under consideration.

What this really means is that we are well on our way towards our goals.

The high-level design documents should be ready for stakeholder review by the end of this year. At that time, we will be looking for stakeholder feedback that all our individual design decisions integrate effectively together. From that point, we can move into detailed design and implementation in 2019.

Before I finish, I'd like to ask you to consider what these changes will mean for you, your organization and your sector.

You will be impacted. You will be a part of a new market that will have increased competition and more opportunities for participants. It will allow us to manage better in an increasingly complex and diverse sector.

So, if you have something to say about what we're doing – say it. Now's the time.

There are many ways to take an active role in market renewal and have your say on how the new electricity market evolves.

If you haven't already provided it, your input would be most welcome.

You are most welcome to participate in an engagement or join one of the groups that are reviewing the four market renewal initiatives I've described.

You can send us your thoughts on our near-term priorities, market renewal or our future vision.

You can follow our engagements by subscribing to the IESO Bulletin.

You can also invite an IESO representative to come and speak to your company, group or association about market renewal. We can also provide you articles to include in employee, customer or member communications.

I would encourage anyone to reach out to our engagement team for more information or to review your engagement options. The information is all on IESO.ca.

In conclusion, it's such an exciting time to be a part of the energy industry in this province. We are taking clear and concrete steps to reform our market and address an existing design that is out of synch with what the system needs. The changes will establish accurate prices for energy and capacity and be the foundation for what's to come.

We are creating a marketplace where we can more easily manage an increasingly complicated sector more effectively and efficiently.

We are creating the marketplace of the future.

When it comes right down to it, we have a \$17-billion electricity marketplace that plays a central role in coordinating the supply of electricity between suppliers and consumers, so it's important to get these changes right.

The market renewal work we have begun with stakeholders will create a marketplace that reduces waste; lowers costs; creates more opportunities and certainty for participants; and ensures that the province is prepared to meet future electricity needs as the sector evolves.

I'm excited by the possibilities!

Thank you for having me here this morning. I appreciate your time and attention.