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Q #1 Division: ESPD

Topic: Nuclear

Question: Could you provide the rationale behind the Government's decision to proceed with nuclear refurbishment? How is nuclear energy helping Ontario meet its climate change targets?

DEPUTY MINISTER'S RESPONSE

Ontario has been safely operating nuclear power plants for over 40 years starting with the launch of Canada's first full-scale nuclear reactor, Douglas Point, back in 1968.

There are currently 18 operational reactor units in Ontario, spread across 3 sites (Darlington, Pickering and Bruce), for a combined capacity of about 13,000 MW. Another 2 units at Pickering have been shut down and undergoing decommissioning.

Ontario's nuclear reactors are designed to provide electricity generation for approximately 25 – 30 years. Refurbishment and replacement of key reactor and station components is necessary to allow for continued operation for approximately 30 additional years.

Nuclear refurbishment received strong, province-wide support during the 2013 Long-Term Energy Plan (2013 LTEP) consultation process.

The merits of proceeding with nuclear refurbishment are clear.

Refurbished nuclear is expected to be the most cost-effective and emissions-free generation available to Ontario for meeting its round-the-clock power requirements.

Existing nuclear generating stations are located in supportive communities and have access to high-voltage transmission.

The refurbishments at Bruce and Darlington will support Ontario's globally recognized nuclear supply chain, with more than 180 companies, and a highly-skilled workforce of approximately 60,000 people in plant operation and support, nuclear refurbishment, and manufacturing supply chain.

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Ontario's commitment to refurbish its nuclear fleet will also create a strong foundation for Ontario's nuclear suppliers to export their products and services to a global nuclear industry.

Steen Hume, Assistant Deputy Minister of the Energy Supply Policy, will discuss in more detail about the specific benefits of the Darlington and Bruce refurbishments.

ADM RESPONSE

On December 3, 2015, government announced that Ontario has updated its contract with Bruce Power and will proceed with the refurbishment of six nuclear units at the Tiverton-based nuclear generation station. The first Bruce refurbishment is scheduled for 2020.

Then, on January 11, 2016, the government announced its decision for OPG to proceed with the refurbishment of four units at Darlington, securing 3,500 MW of power. Refurbishment of the first unit (i.e., Unit 2) has commenced as scheduled on October 15, 2016, when Unit 2 was taken offline, so that Ontario Power Generation (OPG) could begin work to remove, replace and repair the critical components in each reactor.

Together with the 2 Bruce units that were refurbished in 2012, these refurbishments will secure over 9,800 MW of affordable, reliable and GHG-free baseload generation capacity, and support GHG-reduction targets set by Ontario's Climate Change Action Plan.

The updated Bruce agreement secures 6,300 MW of emissions-free, baseload generating capacity from the Bruce site over the long-term. The updated agreement has achieved \$1.7 billion in savings for electricity customers when compared to the forecast in the 2013 LTEP. This means a reduction in forecast household electricity bills by about \$66 each year over the next decade.

Bruce Power is expected to invest approximately \$13 billion of its own funds and will take full risk of cost overruns on refurbishments of the six nuclear units.

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The Bruce site is estimated to maintain 18,000 direct and indirect jobs annually, with \$4 billion in annual Ontario economic benefits through spending on operational equipment, supplies, materials and labour income.

During the Bruce refurbishments, the Bruce site will provide an additional estimated 5,000 direct and indirect jobs annually, with \$2.3 billion in annual economic benefits.

For Darlington refurbishments, OPG's budget for the project is \$12.8 billion, about \$1.2 billion less than originally projected by OPG, and all four units are scheduled for completion by 2026.

The refurbishment of Darlington is critical to Ontario's energy future. Darlington refurbishment will boost economic activity across Ontario, create jobs, and secure 3,500 MW of affordable, reliable and emission-free power.

Refurbishment and continued operation of Darlington up to 2055 will contribute a total of \$90 billion to Ontario's GDP and increase employment across the province by an average of 14,200 jobs annually. This investment will also preserve about 3,000 jobs at Darlington as it provides 30-plus years of cost-effective, clean and reliable base load power.

The average cost of power from Darlington nuclear units post-refurbishment is estimated to range between \$72/MWh and \$81 MWh, or 7 and 8 cents per kilowatt hour.

The starting price of the Bruce output under the updated refurbishment contract is \$65.73/MWh and estimated to be \$77/MWh over the life of the contract.

Both Darlington and Bruce prices are within the range assumed in the 2013 LTEP for refurbished nuclear energy and are lower than the average price of electricity generation in Ontario, which in 2015 was \$92/MWh.

Pickering, our first commercial nuclear plant facility, will not be refurbished once it reaches the end of its safe operating period. The Government has approved a plan for OPG to complete confirmatory work and seek the necessary regulatory approvals from the Ontario Energy Board (OEB) and Canadian Nuclear Safety Commission (CNSC) to enable ongoing operation of the Pickering Generating Station up to 2024.

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At that point, all Pickering units would be shut down and decommissioned. Operating Pickering up to 2024 would ensure that the province has a reliable, affordable and emission-free source of “round the clock” power during the Darlington and initial Bruce refurbishments.

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Q #2 Division: ESPD

Topic: Fuels Technical Report

The 2017 Long-Term Energy Plan (2017 LTEP) process includes, for the first time, a Fuels Technical Report (FTR). Can you explain the role of the FTR in the LTEP process?

DEPUTY MINISTER'S RESPONSE

For the 2017 LTEP, the Ministry of Energy intends to expand the discussion of Ontario's energy future by including a comprehensive review of the province's fuels sector and the supply of fuels such as oil, gasoline and natural gas.

To inform and assist the consultation process for the 2017 LTEP, the Ministry released the Fuels Technical Report (FTR), a report that examines the supply and demand for fuels such as oil, gasoline, propane and natural gas in Ontario.

I will now ask Assistant Deputy Minister Hume to elaborate on the role of the FTR.

ADM RESPONSE

Thank you, Deputy Minister.

An important element of the Fuels Technical Report (FTR) is that it is a companion document to the Independent Electricity System Operator's (IESO's) Ontario Planning Outlook (OPO).

Legislative changes to the Electricity Act, 1998; requires a technical report the government must consider when it develops a plan. The OPO fulfills the requirement for a technical report and examines the province's future electricity needs, and how they might be met.

Beyond the legislative requirements for a report on electricity, the Ministry also released the FTR. This report was completed by Navigant Consulting, with advice from a Fuels Sector Working Group.

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The Fuels Sector Working Group was comprised of key stakeholders in the fuels sector – such as industry associations and natural gas distributors – as well as representatives from consumer groups and government ministries. The role of the Fuels Sector Working Group was to improve the accuracy and effectiveness of the FTR.

While the fuels-sector technical report is not a requirement of the legislative process, it is complementary to the Independent Electricity System Operator's (IESO) Ontario Planning Outlook (OPO) and provides stakeholders with a more holistic view of the energy sector.

The facts and analysis in the OPO and FTR mark the starting point for the development of the 2017 LTEP and will help guide the consultation process. Both reports take into account other government commitments made in the Climate Change Action Plan, the Climate Change Mitigation and Low-Carbon Economy Act, 2006 and the Vancouver Declaration.

The FTR establishes a comprehensive view of the current state of the fuels sector in Ontario, including a review of fuels consumption and a set of outlooks for the 2016 through 2035 period. The FTR is meant to be complementary to the IESO's OPO. The reports share a set of common assumptions, economic activity and demographic data, as well as the uptake of electric equipment and transportation options.

This alignment with the OPO is important. Ontario's fuels and electricity sectors are closely linked. Both electricity and fuels can be a source of energy for space heating equipment in homes and businesses. In the future it is likely that a growing number of transportation options will offer electric alternatives to fuel-based options. Choices made around these products and services will influence the demand for both electricity and fuel energy in parallel.

Ontario's fuels sector is multifaceted and dynamic. Fuels are an important component of the province's economy, critical for households, businesses and industry.

Fuels are necessary for two main uses, as a source of energy and as feedstock in the manufacture of consumer products. Within the province, an array of fuels is used by Ontario consumers for various energy and non-energy purposes, ranging from space and water heating and cooking, to transportation, industrial processes and electricity generation.

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Ontario's fuels sector is a key component of the provincial energy sector. The FTR provides important, valuable and relevant information regarding the current and potential future uses of fuels in Ontario.

The importance of fuels is highlighted by the fact that Ontario consumed approximately 2,700 Petajoules of combustible fuels in 2015 - nearly 4.7 times the demand in the electricity sector of 576 PJ (or 160 Terawatt-hours). Given that fuels touch the lives of every Ontarian, the FTR is a timely resource for those interested in the province's energy sector.

The FTR begins with an overview of the current state of Ontario's fuels sector, including a summary of the fuel types and demand profile across each sector of the economy and a discussion of the end uses for the various fuels.

The FTR also examines the outlook for demand under a set of scenarios – aligned with scenarios examined in the IESO's OPO – and explores the effects on the systems which produce and deliver those fuels over the next two decades.

As the government moves to address key challenges, such as climate change, the Ministry believes that the FTR will be an important tool for Ontarians and stakeholders in assessing and evaluating the energy sector as the 2017 LTEP is developed.

In the fall of 2016, the Ministry is holding 17 local community sessions and 16 Indigenous communities sessions (comprised of 12 First Nation and 4 Métis sessions) across Ontario to gather input from energy stakeholders, Indigenous groups and the general public about Ontario's future energy planning.

Following LTEP consultations, the Ministry of Energy will develop the Long-Term Energy Plan taking into account feedback obtained during the LTEP engagement process.

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**Q #3 Division: ESPD
Topic: Electricity Trade**

Question: What are we doing to pursue importing electricity from other jurisdictions such as Quebec?

DEPUTY MINISTER'S RESPONSE

Electricity imports and exports are an important aspect of Ontario's supply mix and help maintain a reliable, cost-effective and competitive electricity system.

Ontario will consider opportunities for import agreements with other jurisdictions where they provide benefits to the electricity system and are cost-effective for Ontario ratepayers.

Ontario and Quebec are already significant electricity trading partners. Since the Ontario electricity market opened in 2002, this trade has occurred through the sale of energy in the wholesale market.

On October 21, 2016, we signed a historic agreement with Quebec for trading electricity, capacity and energy storage to help make electricity more affordable and reliable while continuing to reduce greenhouse gas emissions.

It is expected that the finalized agreement will reduce Ontario's electricity system costs by about \$70 million over the course of the agreement and will reduce electricity sector GHG emissions by approximately 1 million tonnes per year.

This agreement builds on the Seasonal Capacity Exchange agreement between Ontario and Quebec, which was signed in 2015.

Ontario's focus remains on mitigating costs for Ontario ratepayers. Any deal would only go forward if it provided a savings to Ontario ratepayers.

Our government is committed to continuing to pursue opportunities with Quebec and other neighbouring jurisdictions, to increase the flexibility and reliability of our electricity system and reduce costs for Ontario consumers.

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I'll pass it over to the Assistant Deputy Minister of Energy Supply Policy, Steen Hume, who will discuss Ontario's interties in more detail and speak more specifically to the progress Ontario has made with Quebec.

ADM RESPONSE

Inter-Jurisdictional Electricity Trade

Ontario is connected to a large, stable network of electricity systems across North America, which supports system reliability and economic efficiency. Ontario's electricity system has 26 interties with five neighbouring jurisdictions.

Ontario exports electricity to our neighbours when we have available power and we are able to rely on imports of power from our neighbours when it is cost effective. Exports generate revenue for the province.

The Independent Electricity System Operator (IESO) estimates that the benefit to Ontario from electricity trading in 2015 was approximately \$228 million.

Electricity exports reflect the prevailing market price and are scheduled when it is economic for both Ontario and the associated importing jurisdiction. Exports compete with resources in other jurisdictions and are scheduled on an hourly basis when they are more economic than their domestic alternatives. Since 2006, Ontario has been a net electricity exporter.

In 2015, Ontario imported 5.8 terawatt hours (TWh) of electricity and exported 22.6 TWh.

Ontario and Quebec

As the Deputy Minister mentioned, Ontario and Quebec have historically engaged in extensive, mutually beneficial electricity trade. Since 2002, trade has occurred through the sale of energy in the wholesale market.

In 2015, Ontario imported and wheeled approximately 4.8 TWh of electricity from Quebec – which is enough to power the Kitchener-Waterloo region for a year. Quebec also imported 2.9 TWh from Ontario – which is enough to power a city the size of Longueuil for a year.

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In September 2014, Ontario and Quebec established an energy working group which explored, among other key energy initiatives, opportunities to enhance electricity trade between the two provinces. Since the group's inception, the two provinces have engaged in detailed and on-going negotiations regarding trade opportunities.

The working group has made significant progress to date enhancing electricity trade. In May 2015, the two provinces finalized a seasonal electricity capacity sharing agreement.

At the September 11, 2015 Joint Cabinet Meeting in Quebec City, the provinces signed a Memorandum of Understanding (MOU) which indicated their mutual interest in exploring the potential for electricity trade agreements.

And on October 21, 2016, Ontario and Quebec signed a historic agreement for trading electricity, capacity, and energy storage to help make electricity more affordable and reliable while continuing to reduce greenhouse gas (GHG) emissions.

Quebec's Electricity System

Allow me to take a step back and discuss Quebec's electricity system. Quebec benefits from abundant, legacy, low-cost hydroelectric power, which has kept consumer electricity prices low and stable over the past 20 years.

In 2015, HQ's generating capacity was 36,912 MW and total annual generation was 176 TWh. By comparison, Ontario had an installed capacity of over 35,591 MW and generated 153.7 TWh in 2015.

HQ exports significant amounts of electricity to neighbouring jurisdictions in Canada (including Ontario) and the U.S. under long-term contracts and through the short-term wholesale electricity market. In 2015, HQ net electricity exports totalled 29.9 TWh and generated approximately \$1.6 billion in revenue; approximately 12% was exported to Ontario.

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HQ is well-positioned to export electricity to neighbouring jurisdictions for the following reasons:

- Quebec electricity generation costs are not affected by fossil fuel prices;
- HQ has flexibility in matching supply and demand (i.e., it can sell electricity at high prices during the day and replenish reservoirs at night when wholesale prices are lower); and
- Quebec experiences its highest electricity demand days during the winter due to electric heating, unlike most neighbouring jurisdictions who experience peak demand during the summer (i.e., due to air-conditioning load).

2015 Medium-Term MOU

The September 11, 2015 MOU specified that Ontario and Quebec would mandate their energy ministers to direct their energy agencies to engage in discussions and make necessary efforts to conclude a medium-term electricity trade agreement.

The MOU said that such an agreement would have to mitigate anticipated increases in electricity sector greenhouse gas (GHG) emissions. This would occur if the agreement resulted in a net increase in electricity imported from Quebec and a net decrease in domestic natural gas generation compared to what would have naturally transacted in the wholesale electricity market.

An agreement would also have to provide value to Ontario ratepayers, meaning that overall costs to operate the electricity system must be lower than what the market would have otherwise provided.

Finally, an agreement must complement other electricity policy initiatives, such as Ontario's cap and trade program, ongoing conservation and demand management programs, and IESO's proposed capacity auction.

It is expected that the finalized agreement will reduce Ontario's electricity system costs by about \$70 million over the course of the agreement and will

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reduce electricity sector GHG emissions by approximately 1 million tonnes per year.

The agreement's term will be from January 1, 2017 to December 31, 2023. Under the agreement, Ontario will import up to 2 terawatt hours annually of clean hydro power from Quebec at targeted times when natural gas would otherwise be used.

For the capacity component, Ontario will continue to provide 500 MW of capacity from December to March to help fill Québec's winter shortfall, similar to the Seasonal Capacity Sharing Agreement.

The cycling/storage portion of this agreement will allow Ontario to send energy to Québec during off-peak periods, and withdraw a portion of that energy back in on-peak periods to offset the use of GHG emitting resources. The remaining portion of this energy would be retained by Québec.

The agreement between IESO and HQ will ensure that Québec's abundant and renewable electricity supply is made available to Ontario. Working together makes the best possible use of Ontario and Québec's existing electricity systems without additional costs to either province, delivering savings for consumers in the long term.

The agreement is expected to be finalized before the end of the year.

Ontario will continue to consider opportunities for import agreements with other jurisdictions where they provide benefits to the electricity system and are cost-effective for Ontario ratepayers.

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Q #4 Division: ESPD

Topic: Electricity Rate Mitigation

Question: In the Throne speech, the government announced a series of measures that provide rate relief for Ontarians. Can the Minister provide more detail on these new as well as existing measures that make energy more affordable for Ontario's residences and businesses?

DEPUTY RESPONSE

Ontario's electricity system is clean and reliable. We recognize prices have increased because of the transformations related to modernizing our system and in replacing coal-fired electricity generation.

To mitigate increasing prices, the government has introduced a number of programs for electricity consumers.

Residential Electricity Prices

Ontario has a number of programs in place that help residential consumers manage rising electricity prices, including:

- Northern Ontario Energy Credit;
- Ontario Energy and Property Tax Credit; and
- Ontario Electricity Support Program.

Industrial Rate Mitigation

Measures in place to mitigate industrial electricity prices include:

- Industrial Conservation Initiative (ICI);

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- Northern Industrial Electricity Rate Program (NIERP);
- Industrial Accelerator Program (IAP);
- saveONenergy for Business Program; and
- Demand Response.

I'll pass it over to Assistant Deputy Minister Steen Hume, who will discuss the outlook for Ontario's prices, and both existing and new initiatives in more detail.

ADM RESPONSE

Ontario has a number of programs in place that help residential consumers manage rising electricity prices, including:

- Northern Ontario Energy Credit;
- Ontario Energy and Property Tax Credit; and
- Ontario Electricity Support Program.

Industrial Rate Mitigation

Measures in place to mitigate industrial electricity prices include:

- Industrial Conservation Initiative (ICI);
- Northern Industrial Electricity Rate Program (NIERP);
- Industrial Accelerator Program (IAP);

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- saveONenergy for Business Program; and
- Demand Response.

Residential Electricity Prices

The 2013 Long Term Energy Plan (2013 LTEP) forecasted a typical monthly residential bill of \$167 in 2016. A typical monthly residential bill is now expected to be about \$165, based on 800 kWh per month. On a 750 kilowatt hours (kWh) per month basis, actual and forecast monthly bills are \$157 and \$159 respectively.

2013 LTEP forecast for residential bills indicates an annual average increase of 3.2% per year from 2016 to 2020 inclusive. From 2016 to 2032 inclusive, the forecast for residential bills indicates an annual average increase of 1.7%.

Over the forecast period, the average annual increase in consumers' costs is generally in-line with expected inflation, which averaged about 1.7% over the last ten years (2006-2015).

According to the National Energy Board's Energy Futures 2016 publication, residential electricity prices are expected to increase in most Canadian provinces until 2032.

Regulated Price Plan Rates

The Ontario Energy Board is the independent energy regulator for Ontario and is responsible for setting Regulated Price Plan prices twice a year so Ontarians know what to expect.

The Ontario Energy Board sets Regulated Prices Plan prices based on the balance of costs and consumption.

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The Regulated Price Plan prices are based on a projection of the cost to supply electricity over the upcoming 12-month period and a forecast of electricity consumption. Actual costs and consumption are often different than forecast, so the Ontario Energy Board Regulated Price Plan prices include an adjustment to make up for any shortfall or excess from the previous period.

For example, last winter was milder than forecast, which meant Regulated Price Plan consumption was lower than expected, leading to a shortfall between what was collected from electricity consumers and the true cost of electricity. The Ontario Energy adjusted made to Regulated Price Plan prices to account for this shortfall has the effect of increasing RPP prices.

Over the years, there have been instances where the difference between forecast and actual costs has had the effect of decreasing RPP prices. For example, in November 2011, OEB reported that prices were decreasing because electricity demand was higher than expected during the summer.

The increases announced by the OEB are required to fund investments in electricity infrastructure that support a reliable, clean and modern electricity system. Our government will continue to work with the sector, including agencies and distributors, to find efficiencies, and reduce costs to benefit ratepayers.

Existing Residential Rate Mitigation

Under the Northern Ontario Energy Credit (NOEC), provide assistance to low to moderate income individuals and families living in northern Ontario who can be exposed to higher energy costs due to more severe winters and heavier reliance on more expensive home heating fuels. Qualifying individuals can receive up to \$146 annually and families (including single parents) can receive up to \$224 annually.

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The Ontario Energy and Property Tax Credit (OEPTC) provides low to moderate income Ontarians, including seniors, who own or rent a home with help paying both their energy costs and property tax. Qualifying individuals can receive up to \$1,008 in tax relief annually, and seniors can receive up to \$1,148 annually.

The Ontario Electricity Support Program (OESP) developed and implemented by the Ontario Energy Board (OEB) provides an ongoing rate reduction directly on the bills of low income electricity consumers who have applied and meet the eligibility requirements began January 1, 2016, when the OCEB ended. The OESP provides a fixed monthly credit directly on eligible customers' bills, the amount of which will be based on a consumer's household income and household size. This allows the program to provide the greatest benefit to low-income consumers in need of assistance.

The Ontario Energy Board has also implemented a province-wide strategy through the Low-Income Energy Assistance Program (LEAP) that includes access to financial assistance, special rules and conservation programs to help qualifying low-income consumers in critical financial need. This strategy includes:

- Emergency financial assistance in the form of grants, applied directly to qualified consumers' electricity and/or natural gas bills. Low income customer can get up to \$500 in emergency assistance for electricity bills (\$600 if your home is heated electrically) and \$500 for gas bills.
- Special, more flexible customer service rules implemented by electricity and gas utilities to help qualified low-income consumers through difficult situations.
- Energy conservation programs to help qualified Ontario homeowners, tenants and social housing providers improve energy efficiency.

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To determine eligibility for LEAP's emergency financial assistance and customer service components, the OEB takes the Statistics Canada determination of low-income levels, Low Income Measure.

Emergency financial assistance is available once annually to low-income consumers who are behind on their bills and/or in arrears and facing disconnection. This funding is for emergency situations only.

To help ease pressure on ratepayers, the government has also removed the Debt Retirement Charge (DRC) from residential electricity bills as of January 1, 2016. This is saving a typical residential electricity ratepayer who consumes 750 kilowatt hours (kWh) per month about \$65 per year.

For all consumers, conserving electricity is the best and easiest way to manage electricity bills.

New Residential Rate Mitigation

As the Minister mentioned, we have introduced the *Ontario Rebate for Electricity Consumers Act*, which will lower electricity bills for people and businesses in Ontario if passed.

This legislation, if passed, will rebate an amount equal to the provincial portion of the HST directly on electricity bill for millions of families, farms and small businesses — an 8% rebate every month.

We're able to take action now because years of careful management is leading to a balanced budget in 2017-18; and we believe that Ontarians should be the first to benefit from the province's fiscal discipline.

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Recognizing this, we are introducing new measures that would take effect January 1, 2017, including:

- Rebating provincial portion of the HST to reduce bills by 8% (\$130 annually);
- Cutting delivery charges for the most rural customers by 20% (\$540 annually); and
- Empowering industrial businesses to reduce bills by one third through the Industrial Conservation Initiative.

Taken together, this plan represents one of the single largest actions to reduce costs for electricity consumers in the province's history. It will provide needed assistance to consumers of all sizes, and it targets support to those that need it most.

Industrial Electricity Prices

Indicative industrial electricity prices in northern and southern Ontario are less than the United States average as reported by the U.S. Energy Information Administration.

The typical industrial electricity price is projected to increase on average by 2.0% per year in the short-term from 2016 to 2020 inclusive, and by 1.6% per year from 2016 to the end of 2032.

Over the forecast period, the average annual increase in consumers' costs is generally in-line with expected inflation, which averaged about 1.7% over the last ten years (2006-2015).

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The National Energy Board's Energy Futures 2016 report projects that industrial electricity prices are expected to increase in most provinces through 2032.

Initiatives in the U.S. such as the Environmental Protection Agency's Clean Power Plan state-level renewable portfolio standards are expected to put sustained upward pressure on industrial electricity prices in many states.

Existing Industrial Rate Mitigation

The Independent Electricity System Operator (IESO) has awarded 22 contracts to energy-intensive companies starting or expanding operations across the province through the IEI program.

On average, industrial electricity prices can be reduced by over 20% through NIERP. In 2015, the Ontario government announced the commitment to an ongoing NIERP beyond March 2016.

IAP program provides financial incentives to encourage investment in innovative process changes and equipment retrofits to reduce electricity consumption on the provincial system and to help companies become more competitive by positively impacting their bottom line.

saveONenergy for Business electricity conservation program offered by local distribution companies – offers distribution-connected customers financial incentives for audits, retrofits and process and systems improvements to help businesses better manage their electricity use.

The IESO holds annual demand response auctions which provide availability and utilization payments to successful participants that commit to reducing their consumption when called upon to do so.

New Industrial Rate Mitigation

The Industrial Conservation Initiative (ICI) lowers costs for eligible large electricity consumers (i.e., those with monthly peak demand exceeding 3 MW)

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that reduce consumption during peak periods. ICI consumers reduce their electricity rates by one-third on average.

By reducing the province's peak demand, ICI has the added benefit of deferring the need to build peaking generation. Currently, eligible ICI participants include those consumers with monthly peak demand exceeding three megawatts, subject to eligibility requirements. Under ICI, these consumers are charged Global Adjustment (GA) on the basis of their share of the total system demand during the highest five peak hours of the year. There are now about 300 participating consumers who collectively reduced Ontario's peak demand by an estimated 1,000 MW in 2015.

Ontario is proposing to expand the ICI program to include more than one thousand (1000) newly eligible customers with monthly peak demand greater than one megawatt, down from the current threshold of three megawatts. In addition, sector restrictions would be removed and smaller institutional and commercial businesses would be eligible to participate.

Expanding participation in the ICI program would:

- Reduce cost pressures on the electricity system by empowering more consumers to lower their electricity demand during peak periods; and
- Reduce electricity bills for new ICI participants who are able to reduce their electricity demand during peak demand periods.

Newly eligible customers would have the opportunity to opt-in to the ICI program.

Bill 144, the Budget Measures Act, 2015, sets a fixed date for removing the Debt Retirement Charge (DRC) from all other electricity users' bills (commercial, industrial and other electricity users) on April 1, 2018, nine months earlier than previously estimated.

Ending the DRC on a legislated fixed date provides certainty to commercial, industrial and other users to help them plan their investments more effectively.

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Q #5 Division: SNAP

Topic: Long-Term Energy Plan

Preamble: The Long Term Energy Plan sets the direction for Ontario's energy future. The Ministry of Energy has released two Long-Term Energy plans, one in 2010, *Building Our Clean Energy Future*, and one in 2013, *Achieving Balance*. The process for developing the next LTEP is enshrined in legislation and includes an even more extensive consultation process.

Question: Could the Minister explain how recent changes to the Electricity Act, 1998 will improve the energy planning process?

DEPUTY RESPONSE

Our government recognizes that sound, prudent long-term energy planning is essential to a clean, reliable and affordable energy future. We're achieving that goal and these key objectives through the implementation of the 2013 Long-Term Energy Plan, or more commonly known as LTEP.

The Ministry of Energy has produced two Long Term Energy Plans in 2010 and 2013 to guide energy planning and advance energy policy initiatives. The 2013 LTEP was the biggest, most open and comprehensive consultation in ministry history and an early leading example of the principles of Open Government.

In October 2015, the Minister of Energy introduced the Energy Statute Law Amendment Act (Bill 135) that enshrines in legislation a long term energy planning framework that is transparent, efficient and responsive to changing technology, policy and program needs. This legislation was passed and came into effect on July 1, 2016.

The legislated LTEP process builds on the planning principles used by the Ministry to develop the 2010 and 2013 LTEPs. The LTEPs identified the need for various investments over the shorter term while broadly mapping out the direction of the sector over a 20 year timeframe.

The 2013 LTEP had a robust consultation process that allowed for transparency in the decisions being made by government in energy planning, including the

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costs associated with various planning scenarios, as well as a more robust consultation process than the former IPSP process.

This legislation specifies that energy planning takes a transparent and pragmatic approach, and that future LTEPs are developed consistent with the following principles:

- Cost-effectiveness;
- Reliability;
- Clean energy;
- Community and Indigenous engagement; and
- Emphasis on conservation and demand management before building new generation.

My ADM will walk you through the LTEP development process outlined in the Energy Statute Law Amendment Act.

ADM RESPONSE

The Ministry is developing its next Long-Term Energy Plan that will follow the process outlined in the Energy Statute Law Amendment Act.

This legislation was passed by the legislature, received Royal Assent in June 2016, and came into effect on July 1, 2016.

The legislation amended the *Electricity Act, 1998* and the *Ontario Energy Board Act, 1998* to replace the former electricity planning process, known as the Integrated Power System Plan (IPSP) process with a Long Term Energy Plan (LTEP) process.

The process for developing a Long-Term Energy Plan will be as follows:

Technical Report

The first step will be for the Minister of Energy to request that the Independent Electricity System Operator (IESO) prepare a technical report on the adequacy and reliability of electricity resources with respect to anticipated electricity supply, capacity, storage, reliability, demand, and any other matters identified by the Minister.

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The IESO's technical report is a 'starting point' information for the next LTEP that will help inform the consultation process. This document will be made available to the public to inform the consultation process.

The electricity technical report was released by the Independent Electricity Systems Operator on September 1, 2016. The report, entitled the Ontario Planning Outlook, a ten-year review and a twenty-year outlook (to 2035) for electricity demand, supply, system costs, conservation and emissions.

As requested by the Minister, the OPO considers other government commitments, including the Climate Change Action Plan, the *Climate Change Mitigation and Low-Carbon Economy Act, 2016* and the *Vancouver Declaration*.

Alongside the OPO, the IESO posted seven modules with underlying data and assumptions.

Beyond the legislative requirements, the Ministry also released a technical report on the fuels sector. This report was prepared by Navigant Consulting, with advice from a Fuels Sector Working Group. While the fuels-sector technical report is not a requirement of the legislative process, it will be complementary to the IESO's Ontario Planning Outlook and provide stakeholders with a more holistic view of the energy sector.

LTEP Consultations

The next step in the Long-Term Energy Plan process is for the Ministry to conduct comprehensive consultation and engagement.

Developing the LTEP is a highly collaborative process. The Ministry works closely with its agencies and stakeholders during LTEP consultations and development.

The consultation process outlined in the *Energy Statute Law Amendment Act* builds off the 2013 LTEP consultation process which was the most comprehensive consultation and engagement process ever undertaken by the Ministry of Energy. It included:

- 13 public open houses in 12 different communities
- 10 sessions with First Nations and Métis communities

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- Over 1000 submissions via the Environmental Registry & directly
- Nearly 8000 responses to an online questionnaire

Consultations and engagement for the next LTEP began on October 13, 2016. This engagement will expand on the lessons-learned in the 2013 LTEP by increasing the number of in-person engagement sessions and the use of online and other consultation tools.

In support of Open Government, the Ministry of Energy is required to engage with relevant distributors, consumers, generators, transmitters, Indigenous communities and other stakeholders

The Ministry is required to promote the participation of the public and stakeholders in the consultation process by:

- posting information on the Environmental Registry;
- having in-person sessions; and
- making use of online and other consultation tools.

There are opportunities for Ontarians to have their say about the LTEP online. This includes providing a formal submission through the Environmental Registry website or completing an online survey, which includes an open comment section.

This fall the Ministry will travel to 17 communities across Ontario to gather input from energy stakeholders, Indigenous groups and the general public about Ontario's future energy planning. The details for these sessions can be found on ontario.ca/energytalks.

Feedback received from consultations will be considered by the Minister in developing the LTEP.

Indigenous Community Engagement:

A critical part of the LTEP development process will be Indigenous community engagement.

It is important to ensure that the perspectives and input of First Nation and Métis communities are considered in our updated plan and related policy priorities.

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The Ministry of Energy will be hosting First Nation and Métis engagement sessions across the province.

Information about the dates and locations for these sessions is forthcoming.

LTEP Development

Following LTEP consultations, the Ministry of Energy will develop the Long-Term Energy Plan taking into account feedback obtained during the LTEP engagement and consultation process.

The LTEP and other information used in the development of the LTEP will be posted on a Government of Ontario website, supporting the Open Data initiative. The LTEP will be approved by Cabinet.

IESO and OEB Implementation Directives and Plans

To ensure that the government's goals and expectations outlined in the LTEP are implemented, the legislated LTEP process includes authority for Minister's directives, approved by Cabinet, to be sent to the IESO and the Ontario Energy Board (OEB) setting out the government's requirements for LTEP implementation and directing each agency to develop respective implementation plans.

Upon receiving an implementation directive, the two agencies will develop respective implementation plans outlining frameworks on how best to implement the government's objectives and requirements.

- IESO's implementation plan may also include, if required, the development of processes for entering into procurement contracts and/or selecting transmitters.
- Both implementation plans would be submitted to the Minister for approval.
- Once implementation plans have been approved by the Minister, the IESO and OEB will move forward with procurements and the development of programs or policies as identified in their implementation plans.

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**Q #6 Division: CRED
Topic: Conservation**

In her “Electricity Power System Planning” report, the Auditor General (AG) recommended that the Ministry of Energy work with the Independent Electricity System Operator (IESO) to evaluate the cost effectiveness of electricity conservation programs and set appropriate targets for peak electricity reduction. Could you speak to the actions the Ministry is undertaking to address the AG’s recommendations?

DEPUTY RESPONSE

The Ministry and the IESO acknowledge the AG’s recommendations and are committed to the on-going evaluation of programs to ensure they support provincial needs.

The IESO has reported that for every \$1 invested in electricity conservation, Ontario has avoided about \$2 in costs to the electricity system. As we plan for Ontario’s energy needs for the next 20 years, conservation will be the first resource considered, wherever cost-effective. It is the cleanest and most cost-effective energy resource, offers consumers a way to reduce their energy bills and reduces the need to build new generation, transmission and distribution infrastructure.

Ontario has made progress in building a culture of conservation. From 2005 to 2014 Ontarians conserved 9.9. TWh of electricity savings – enough to power the cities of Ottawa and Windsor in 2014.

In terms of peak electricity reduction, Ontario reduced 3,268 MW between 2005 and 2014- equivalent to more than the peak demand of Mississauga, Brampton and Ottawa combined in 2014.

The 2013 LTEP set a conservation target of 30 TWh by 2032 which is expected to result in 5,868 MW of peak demand reduction and a goal to use demand response to meet 10% of peak demand by 2025.

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Programs are subject to a high degree of oversight with ongoing Evaluation, Measurement and Verification by the IESO. Energy savings and peak demand reduction results are reported publically through quarterly Ontario Energy Reports, as well as annual conservation results reports released separately by the IESO and Environmental Commissioner of Ontario.

Kaili Sermat-Harding, Assistant Deputy Minister of the Conservation and Renewable Energy Division, will elaborate on the cost effectiveness mechanisms in place to evaluate conservation programs and Ontario's approach to peak electricity demand reduction.

ADM RESPONSE

Cost-effectiveness screening is a critical part of the conservation program planning process. Since 2007, over 50 independent evaluation reports for electricity conservation programs have been published and are all available on IESO's website.

Cost-effectiveness requirements have been increasingly strengthened over the past decade as Ontario built up its program delivery capacity and worked to create a culture of conservation in the province.

All conservation programs delivered through the 2015-2020 Conservation First Framework undergo an Evaluation, Measurement and Verification process and are required to pass cost-effectiveness tests, with the exception of low-income, First Nation and educational programs.

Through this process, the IESO conducts rigorous independent third-party audits of the conservation programs it funds to ensure the programs meet their goals.

In fact, the evaluation reports for the first year of the 2015-2020 Conservation First Framework were just recently made public in early October and are

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available on the IESO's website. A total of 6 evaluation reports were published covering over 10 conservation programs.

Evaluated conservation programs include the Residential Coupon Initiative, HVAC Incentive Initiative, Appliance Retirement Initiative, Retrofit Program, Small Business Lighting Program, Building Commissioning Program, Industrial Accelerator Program, New Construction Program, Home Assistance Program and the Aboriginal Conservation Program.

The evaluation reports include field surveys to measure actual program results, in addition to modelling expected results. For the residential initiatives, the evaluation team surveyed 59 retailer store managers, 134 HVAC contractors and up to 3,000 consumers.

The evaluation reports generally adopt a three phase approach to their evaluation; firstly, they conduct an impact evaluation to determine energy savings as well as demand savings for each of the relevant initiatives.

Second they conduct a process evaluation to review and assess the delivery of each initiative and to identify potential improvements that could enhance program delivery. The final phase is to review initiatives from a cost effectiveness perspective and outline results from the cost effectiveness tests.

Generally, two kinds of cost effectiveness tests are carried out; the Total Resource Cost Test and the Program Administrator Cost Test

The Total Resource Cost Test measures program benefits and costs from a societal perspective. This test looks at whether the costs of administering a program and the incremental cost of the measure, outweigh the avoided energy costs resulting from the program.

The Program Administrator Cost Test measures benefits and costs from the perspective of a program administrator. This test looks only at whether the costs of administering a program outweigh the avoided energy costs resulting from the program.

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The evaluation reports make specific recommendations on how future programs can be enhanced. For example the 2015 consumer programs evaluation report notes that a substantial portion of consumers use inefficient thermostat settings with their new cooling and heating systems. The report recommended that IESO provide contractor training as well as educational materials to program participants on the benefits of non-continuous thermostat settings.

The 2015 consumer programs evaluation report also notes that contractors are the driving force for many residential conservation programs and are responsible for virtually every aspect of the participation process, as they alert consumers of the IESO incentive opportunity and convince them to purchase qualifying equipment

The report also recommends the IESO to monitor incentives for lighting measures as the general market place evolves and efficient lighting become increasingly prevalent.

As the Deputy mentioned, the Ministry and the IESO are committed to the ongoing evaluation of conservation programs to ensure they support provincial needs.

Electricity conservation and energy efficiency provide persisting, long lasting savings which decrease the demand for electricity over the long-term.

Conservation and energy efficiency are the cleanest and most cost-effective energy resource, providing multiple benefits to Ontarians:

- Helping families and businesses manage their energy bills and improve their home comfort and quality of life.
- Reducing strain on our electricity system and the need to build expensive energy infrastructure, mitigating upward pressure on electricity prices.
- Reducing greenhouse gas (GHG) emissions and air pollution, contributing to a cleaner future for our children and grandchildren.

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Conservation requires a long-term planning commitment and uninterrupted delivery to be effective. Much like building new generation, you can't wait until the demand has materialized to start planning to meet it.

Ontario's electric utilities are expected to achieve a combined 7 TWh of electricity savings in 2020 under the new Conservation First Framework to assist the province in achieving its long-term conservation target of 30 TWh in 2032.

The electricity conservation target was established based on an achievable potential study conducted by the IESO in 2014. In June 2016, the IESO completed an updated achievable potential study under the Conservation First Framework.

The purpose of the 2016 study was twofold; to provide an updated estimate of the short-term electricity conservation potential for the whole province and for each electricity distributor and to estimate the long-term electricity conservation potential over a 20-year horizon, i.e. 2015 to 2035.

The study's results help provide LDCs with additional insights to further optimize their performance and address any challenges they may have. Many LDCs have already exercised this flexibility through actions such as collaboration with other LDCs and the development of innovative new local programs and pilot programs. It is important to note that the achievable potential forecast is in addition to conservation expected to be achieved through codes and standards activities.

A key aspect in the development of the achievable potential study was the Stakeholder Working Group that supervised the execution of the study in collaboration with the IESO.

The working group consisted of over 10 LDC representatives who provided valuable input into the scope, methodology, and execution of the study. Participating LDCs included Thunder Bay Hydro, Peterborough Utilities, Hydro One, Hydro Ottawa, Toronto Hydro, Guelph Hydro, London Hydro, Enersource

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Mississauga, Utilities Kingston and Veridian Connections. Other LDCs also had an opportunity to participate through individual meetings and webinars.

The working group also included observer representatives from the Ministry of Energy, the Ontario Energy Board, the Electricity Distributors Association, Union Gas, Enbridge Gas Distribution, and the Environmental Commissioner's Office.

The study was developed from the bottom-up for each LDC, using data provided in large part by LDCs themselves - allowing for results with a greater level of local resolution than has been available in previous studies of achievable potential in Ontario. While Ontario's electricity market is unique, best practices outside of Ontario used to model electricity savings were considered and incorporated, accomplishing a balance of meeting industry-wide standards while accommodating distinct features and data found in Ontario.

Results from the achievable potential study identified that a potential of 7.4 TWh of electricity savings by 2020 is achievable within the existing framework budget.

The study will inform the formal mid-term review of the Conservation First Framework as well as regional planning and long term energy planning efforts. The Mid-term review will assess conservation targets and their allocation, program budgets and lessons learned, among other items. The mid-term review is to be completed no later than June 1, 2018.

Targets may be adjusted, if needed, based on system projections and updated achievable potential study results.

The 2013 LTEP set a goal to use demand response to meet 10% of Ontario's peak demand by 2025. Achieving this goal is supported by a number of demand response initiatives aimed at reducing peak demand, including IESO's Demand Response (DR) Auction, the Industrial Conservation Initiative, time-of-use pricing, and dispatchable customer loads under contract in the IESO administered market.

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The IESO has transitioned DR from a program approach to a market based auction approach.

Participation in the DR Auction is open to new and existing DR participants in Ontario. DR auction participation is open to resources with peak load greater than 1 MW, including industrial consumers and aggregators.

In December, 2015, the IESO held its first DR auction. About 390 MW were procured for the summer commitment period (May 2016 to October 2016) and about 400 MW for the winter commitment period (November 2016 to April 2017).

Successful participants of the 2015 DR auction pulp and paper mills operated by Resolute Forest Products and Tembec Inc., and a steel mill operated by Gerdau Ameristeel. Successful participants also included a number of third party aggregators including EnerNoc, Rodan and Energy Curtailment Specialists.

The next DR auction is expected to be held at the end of this early in early December.

Further, through a competitive procurement process, the IESO secured up to 70 MW of DR from three companies representing 10 pilot projects ranging from 1 MW to 35 MW. The pilot projects are being used to assess the ability of the companies to follow changes in electricity consumption and help balance supply and demand.

The Industrial Conservation Initiative (ICI) continues to provide a strong incentive for large electricity consumers to decrease their electricity consumption during peak periods to reduce their bills by about one-third. In 2015, the ICI program is estimated to have decrease peak demand by over 1,000 MW.

Recently, Ontario announced a proposal to expand the ICI program to include more than one thousand newly eligible customers with monthly peak demand greater than one megawatt, down from the current threshold of three

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megawatts. In addition, sector restrictions would be removed and smaller institutional and commercial businesses would be eligible to participate.

Expanding participation in the ICI program is expected to provide a number of benefits. It would reduce cost pressures on the electricity system by empowering more consumers to lower their electricity demand during peak periods. It would also reduce electricity bills for new ICI participants who are able to reduce their electricity demand during peak demand periods.

With more than a thousand new businesses eligible for ICI under the proposed expansion, cost impact across sectors and industries would vary. As an illustrative example of the impact, a plastics manufacturer with an average peak demand of 2 MW that participates in the ICI program could see its electricity price reduced from \$154 per MWh to as low as \$102 per MWh. This would result in energy cost savings of up to \$42,000 per month.

Peak electricity demand savings resulting from time-of-use pricing will also help contribute towards provincial targets.

Smart meters have enabled time-of-use (TOU) pricing – the price we pay for electricity now better reflects the cost of producing it at peak and off-peak times.

With TOU, customers have the ability to better manage their costs by reducing or shifting their consumption to off-peak times when electricity is less expensive to produce. Doing this reduces Ontario's overall peak demand, deferring or avoiding the costs related to new generation and grid infrastructure.

TOU rates are designed to reflect the fact that the cost of producing electricity varies throughout the day. Prices are lower when demand can be satisfied with lower cost sources of generation (e.g. nuclear) and rise as demand increases and more expensive forms of generation (e.g. natural gas) are called upon.

TOU pricing provides a financial incentive for consumers to reduce or shift their consumption from peak-hours to off-peak hours. At the system-level, reducing

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peak demand can translate into avoiding or deferring the need for new generation investments.

The OEB is undertaking a comprehensive review of the Regulated Price Plan (RPP), which includes TOU pricing. As part of its review, the Ontario Energy Board (OEB) plans to conduct pilot programs from 2017 to 2018 to assess the impact of alternative pricing structures. Results from these pilots will help inform any future decision on changes to TOU rates.

Over the past decade, Ontario has made significant progress in building a culture of conservation. In collaboration with its agencies and partners, the Ministry has worked on new conservation initiatives and significantly increased demand response capability

Going forward, the Ministry will continue to work with its partners to review conservation programs on an ongoing basis to ensure they support provincial needs.