

Introduction

The Ministry of Energy’s 2017 Long-Term Energy Plan (LTEP), Delivering Fairness and Choice, released in October 2017, sets the high-level policy direction for Ontario’s electricity future. The LTEP’s planning horizon is 20 years, but its focus is mainly on initiatives and policies that will be implemented within the next 3 years.

The clear priority in the LTEP is lowering near-term electricity prices, ignoring the transformation that will be needed in Ontario’s energy sector in the next 10-20 years. Should the LTEP’s projection of no significant increase in overall electricity use (including low levels of fuel switching away from fossil fuels to electricity) in the next 20 years come to pass, it will almost certainly mean that Ontario will break its climate law (the

Climate Change Mitigation and Low-carbon Economy Act, 2016) and miss its 2030 greenhouse gas (GHG) emissions reduction target.

No commitments to new electricity supplies.

No new electricity supply commitments

The most notable aspect of the 2017 Long-Term Energy Plan is that, unlike both previous LTEPs, it makes no commitments to new electricity supplies. The ministry defers decisions on new electricity resources, concluding that Ontario will not face a gap between supply and peak demand until roughly 2023, after several units at Pickering nuclear station are retired.

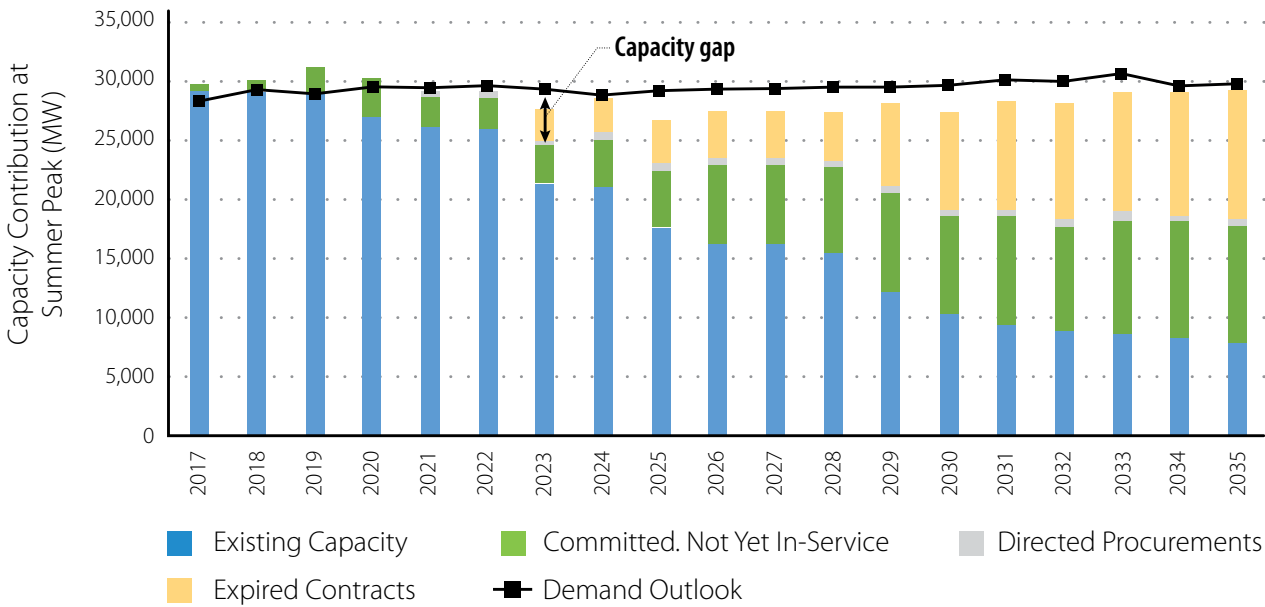


Figure 13.1. Long-Term Energy Plan electricity supply and demand outlook.

Source: Ontario Ministry of Energy, Ontario’s Long-Term Energy Plan 2017: Delivering Fairness and Choice (Ontario: Queen’s Printer, 2017) at 37.

The LTEP’s supply forecast includes generation facilities contracted for but not yet in service (these are shown as “Committed, Not Yet In-Service” in Figure 13.1).¹

The 2017 LTEP’s prescriptions for each type of electricity resource are as follows:

- **Nuclear:** Nuclear refurbishment will be completed at both the Darlington and Bruce nuclear stations (10 nuclear units in total, representing 9,800 MW) to extend the working lives of these stations by nearly 40 more years.² The Pickering nuclear station, previously scheduled to close in 2020, will keep all six active reactors running until 2022, and four of these six until 2024. As all three of these stations were in service in 2016, these decisions preserve, but do not expand, the role of nuclear in Ontario’s electricity supply. The government announced these decisions prior to the LTEP. They have significant implications for Ontario’s future supply mix and are examined in [Q14](#).
- **Renewables:** Renewable electricity projects that have already been awarded contracts but are not yet in-service (1,911 MW as of mid-2017) will proceed to completion.³ No additional renewable electricity contracts will be awarded until further notice. The government will permit electricity customers to install small renewable energy projects (most likely solar) for their own use to offset part of their own electricity costs (“net metering”). No target for net metering is set (or included in supply forecasts). [Q18](#) explores the implications of the new net metering policies.
- **Conservation and demand response:** The long-term conservation target remains at 30 TWh of conservation by 2032. This suggests that conservation program activity and funding would remain at roughly current levels throughout that time. However, the current budget and framework go only to the end of 2020, and no decision on conservation spending beyond 2020 has yet been made. “Conservation” in the current conservation

framework has been redefined to include infrastructure improvements by electric utilities that reduce electricity losses, and to exclude gas-fired combined heat and power projects installed by electricity customers that reduce consumption from the grid.⁴

- For demand response, (an important subcategory of conservation that is used to reduce peak electricity demand), the LTEP states that “demand response capacity realized each year will depend on system needs and the competitiveness of demand response with other resources.”⁵ This is a change from the 2013 LTEP, which had an explicit goal of using demand response to meet 10% of peak demand by 2025 (approximately 2,500 MW of demand response).⁶ [Q19](#) examines the future of conservation, and [Q17](#) looks at demand response as part of the Market Renewal initiative.

“Conservation” has been redefined.

- **Natural gas:** Natural gas projects (including combined heat and power) that have already been awarded contracts but are not yet in-service (roughly 1,300 MW in total) will proceed to completion, but no additional contracts will be awarded until further notice.⁷

Market mechanisms will meet future electricity needs

The 2017 LTEP states that future electricity capacity needs will be met through market-based auction mechanisms, under the banner “Market Renewal”. This may result in yearly auctions to procure additional supply, in contrast to the province’s previous approach of long-term fixed-price contracts. The government

hopes that this approach will achieve significant cost savings and enable system flexibility. How the Market Renewal model might work, and its implications for Ontario's electricity supply and GHG emissions, are examined in **Q17**.

Lower electricity bills

The 2017 LTEP forecasts lower electricity bills, both in comparison to 2016 bills, and to forecasts in previous LTEPs (Figure 13.2).

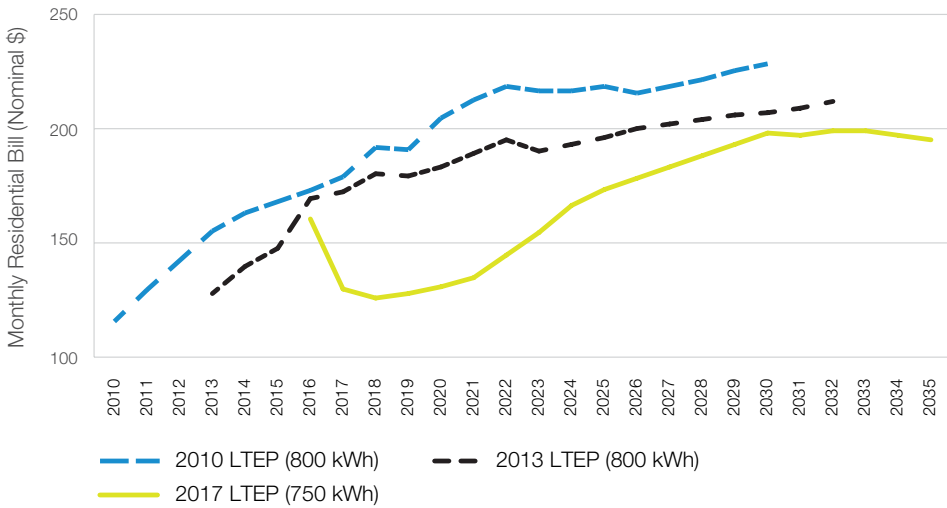


Figure 13.2. Long-Term Energy Plan residential electricity bill forecast.

Note: Part of the reason for the lower bill forecast is that the 2017 LTEP assumes less electricity consumption (750 kWh) to calculate the monthly cost of an Ontarian's bill; the previous LTEPs used 800 kWh.

Source: Ontario Ministry of Energy, Ontario's Long-Term Energy Plan 2017: Delivering Fairness and Choice (Ontario: Queen's Printer, 2017) at 27.

Lower predicted electricity bills are due to lower consumer electricity use, combined with some real cost savings and large cost transfers from current electricity ratepayers to either taxpayers or future ratepayers.

These lower predicted electricity bills are due to lower consumer electricity use, combined with some real cost savings and large cost transfers from current electricity ratepayers to either taxpayers or future ratepayers.

The first reason for the predicted lower residential power bills is that the 2017 LTEP assumes that an average Ontario household will buy only 750 kWh/month of electricity, the amount that the Ontario Energy Board (OEB) now considers to represent current average household use. The previous two LTEPs assumed that each household would buy 800 kWh/month, the OEB's previous household average. This difference likely explains much of the longer-term difference in bill forecasts between the 2013 and 2017 LTEPs.

The sharp temporary drop in residential bills over the next five years is almost entirely due to cost transfers, not real savings.

The sharp temporary drop in residential bills over the next five years, prominently noted in the 2017 LTEP and shown in Figure 13.2, is almost entirely due to cost transfers, not real savings. It is the result of decisions in the province's Fair Hydro Plan to:

1. pay some of the current costs of the electricity system with borrowed money (to be recovered with interest from future electricity ratepayers), and
2. use taxes (instead of electricity rates) to pay for a rebate on electricity bills equal to the provincial portion of the Harmonized Sales Tax, and to provide targeted relief for some groups of electricity customers.⁸

These measures move about 20% of the cost of operating the electricity system off the bills of current electricity ratepayers, but they do not reduce these costs.⁹ Instead, as the Financial Accountability Office reported, between now and 2045 (by which time all of the borrowed funds will have been repaid), the Fair Hydro Plan will add roughly \$21 billion in extra interest charges to the cost of Ontario electricity.¹⁰

To separate the cost impact of the LTEP's supply and demand projections from the Fair Hydro Plan's policy choices regarding how Ontario pays these costs, the real projected cost of operating the electricity system, per unit of electricity, is shown in Figure 13.3. This cost is not affected by the Fair Hydro Plan's decisions to move some costs to taxpayers, or to future ratepayers, and also does not include the \$21 billion in interest on borrowed money that will have to be paid because of the Fair Hydro Plan.

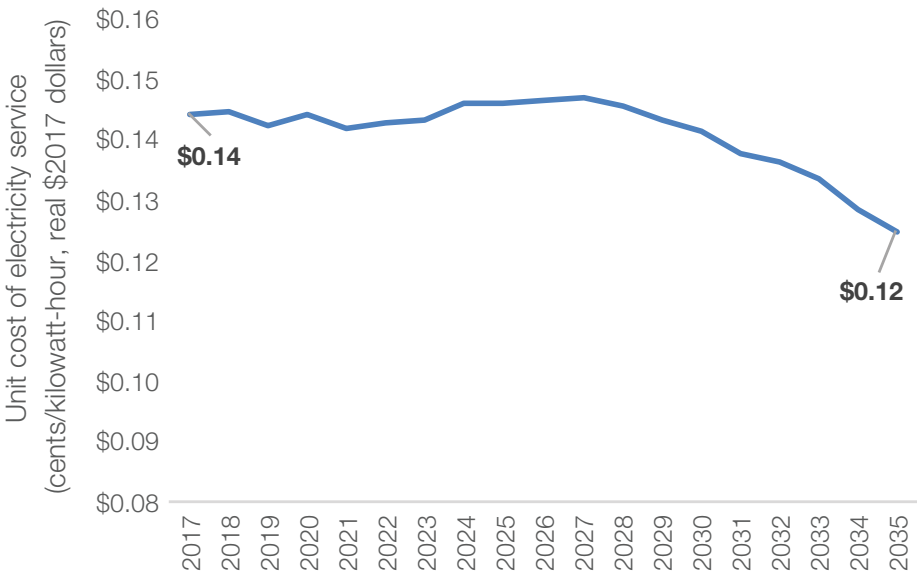


Figure 13.3. Projected unit cost of Ontario's electricity (2017-2035, real \$2017, ¢/kWh), without interest charges.

Source: Ontario Ministry of Energy, information provided to the ECO in response to ECO inquiry (March 2018).



What does the 2017 Long-Term Energy Plan propose for Ontario’s electricity future?

As shown in Figure 13.3, the LTEP predicts a drop of 13% in average cost of service, in contrast to the increase experienced between 2006 and 2016 (💰 Q8), assuming that little new supply will be needed because of low electricity demand, and also that current solar, wind and natural gas generation units will provide much cheaper power after their current contracts expire.

The 2017 LTEP claims that it will save about \$28 billion in real system costs (on a net present value basis over the 20-year planning horizon) by cancelling or deferring planned electricity supply projects that were identified in previous LTEPs but have not been needed due to the drop in demand. Examples include cancelling the second round of the Large Renewable Procurement, and delaying the Bruce nuclear refurbishment.¹¹ Delaying this refurbishment does not reduce its total costs, but does reduce the percentage of those costs that will have to be paid in the next 20 years.

The LTEP also assumes that existing projects whose contracts will expire before 2035 will continue to deliver electricity, but at lower prices. These resources are shown as “Expired Contracts” in Figure 13.1. This seems like a reasonable assumption. As existing electricity contracts for natural gas and renewables expire, the owners of these facilities should be willing to bid into the Market Renewal auctions to supply electricity at a much lower price, since some or all of the capital costs of their assets will have been paid. Solar and wind, in particular, will have very low operating costs, and may be able to provide cheap power.

The LTEP’s electricity cost projections are closely linked to its assumption that electricity demand will remain flat. The LTEP projects annual Ontario electricity demand of 145 TWh in 2030, almost unchanged from 2016 (143 TWh).¹² The LTEP does not assess how system costs would change if demand rises and new electricity supply resources are needed.¹³

The LTEP predicts a drop of 13% in average cost of service, assuming that little new supply will be needed and that current solar, wind and natural gas generation units will provide much cheaper power after their current contracts expire.

Not a comprehensive energy plan

The LTEP does not consider Ontario’s use, or GHG emissions from, energy sources other than electricity. It notes only that “the outlook for the supply and demand of [other] fuels will depend on policy and program decisions over the next 20 years, as well as on technological innovation and adoption”.¹⁴

The LTEP’s electricity demand forecast assumes that only a modest degree of electrification of other energy uses such as transportation and heating will occur in the next 20 years.¹⁵ The LTEP takes only very limited steps to make a higher-electrification future possible (e.g., incentives for electric heat pumps, and a commitment to better integrate electric vehicles on the distribution grid),¹⁶ and sets no quantitative goals for electrification. 🦋 Q15 demonstrates that much greater electrification (on the order of an increase of 1/3 in overall electricity use by 2030) will be needed for Ontario to meet its GHG emission reduction obligations.

Encouraging steps towards balancing the grid

A strength of the 2017 LTEP is its recognition that more needs to be done to balance the fluctuations in electricity supply and demand that occur each day. The LTEP makes commitments to tackle this problem from multiple avenues, including:

- A pilot to use surplus electricity to produce hydrogen, which can be converted back to electricity at times of high demand
- Removing regulatory barriers to electricity storage
- Doing more to match the price of electricity to supply, i.e. to strongly encourage electricity use when supply is plentiful, and discourage use when supply is scarce, and
- Facilitating utility investment in smart electric vehicle charging, to shift charging to off-peak times of day for the benefit of both customers and utilities.

These policies, and other ways to balance supply and demand, are discussed in 🦋 Q16.

ECO comment

The 2017 LTEP’s choice to largely ignore Ontario’s use or GHG emissions from energy sources other than electricity is a critical failure that ignores the essential role of electrification in reducing emissions from the energy sector as a whole. In the ECO’s view, it is also a clear breach of the legal requirement that the LTEP cover Ontario’s energy needs, not just the 20% of that energy that comes from electricity.

What does the 2017 Long-Term Energy Plan propose for Ontario’s electricity future?

RECOMMENDATION: The Ministry of Energy should amend the Electricity Act, 1998 (section 25.29(2)(e)), to require the Long-Term Energy Plan to align greenhouse gas emissions from the energy sector (all energy sources) with the government’s climate obligations under the Climate Change Mitigation and Low-carbon Economy Act, 2016.

RECOMMENDATION: Ontario’s Long-Term Energy Plan should comply with the Electricity Act, 2017 and plan Ontario’s entire energy system, not merely electricity.

The 2017 LTEP’s choice to largely ignore energy sources other than electricity is a critical failure.

In 2016, the ECO’s special report, Developing the 2017 Long-Term Energy Plan, made 14 recommendations, emphasizing: integrating the energy plan with Ontario’s climate targets, assessing the environmental impacts of energy use, putting conservation first, applying evidence-based decision-making, and providing opportunities for meaningful public participation. In general, the ECO’s recommendations were not well addressed in the 2017 LTEP, as shown in Table 13.1, and the government has provided no rationale for failing to address these recommendations.





Table 13.1. Summary of ECO recommendations for the 2017 Long-Term Energy Plan and how they were addressed.

ECO Recommendation	Addressed in 2017 LTEP?	Details
Enable Ontario to meet its climate change targets.		
Plan for an energy supply mix that enables Ontario to achieve its greenhouse gas targets.	No	The LTEP focuses on electricity, and omits energy and greenhouse gas emissions forecasts for other energy sources. Action on reducing emissions from fuels will be dependent on other policies – as the LTEP notes that “the outlook for the supply and demand of fuels will depend on policy and program decisions over the next 20 years, as well as on technological innovation and adoption.” (p. 42)
Address the risk of increased greenhouse gas emissions from customers choosing natural gas over electricity for cost reasons.	No	This ECO recommendation was primarily aimed at overcoming the cost barrier to electrifying space heating. The LTEP notes that Ontario will aim to increase the use of heat pumps for heating and cooling, through the Green Ontario Fund (p. 115). However, the “deep electrification” scenarios (outlooks C, D, E, F) found in the technical planning reports, and the consequences on electricity demand and cost, are not mentioned in the final LTEP, and no roadmap is laid out to get a higher-electrification future.
Consider the environmental impacts of energy resources on our air, water, and land.		
Minimize the environmental impacts of Ontario’s energy system.	No	The LTEP makes no commitment to examine the environmental impacts of energy supply resources on land, air, and water in an integrated fashion.
Commit the government of Ontario to meaningfully participate in the federal approvals process for energy projects with a significant impact on Ontario’s environment.	Partially	The LTEP notes that “to ensure its strategic interests in pipeline projects are represented, the government will continue to participate in regulatory proceedings at the NEB [National Energy Board] and at intergovernmental forums that discuss the delivery of energy in a safe and environmentally sustainable manner. Ontario is also working with the federal government on regulatory initiatives such as modernizing the NEB to ensure major energy projects are reviewed in a predictable manner that increases public confidence.” (p. 147) However, the ECO recommendation was also intended to apply to Ontario participation in federal oversight of nuclear projects. The only LTEP reference is that “the CNSC [Canadian Nuclear Safety Commission] will ensure that Pickering operates safely” (until 2024) (p. 51).



Put conservation first.		
Demonstrate to the public that all feasible conservation opportunities are exhausted before building new energy infrastructure.	Not explicitly	The LTEP makes no explicit commitments to new supply infrastructure. In theory, this could be addressed in the future as part of the Independent Electricity System Operator’s (IESO’s) Market Renewal initiative, if conservation is given a “fair chance” to compete with generation in Market Renewal.
Improve the methodology for comparing energy conservation with energy supply.	No	The LTEP does not go into this level of detail, however, work is being done through the Conservation Mid-Term Review, including adjusting the value assigned to greenhouse gas emissions reductions and other non-energy benefits.
Set conservation targets for all energy sources.	No	Conservation targets for other fuels are not mentioned.
Ensure that regional planning puts conservation first and is effectively integrated with other levels of energy planning.	Yes	The LTEP recognizes that “in order to increase the range of cost-effective solutions [in regional planning], barriers to non-wires solutions such as conservation, demand response and other distributed energy resources must be reduced” (p. 139). A subsequent LTEP 2017 implementation directive requests the IESO to “identify barriers to the implementation of cost effective non-wires solutions such as conservation and demand management and distributed energy resources, and provide options to address any such barriers, including potential legislative or regulatory changes, as well as options to address local distribution company capacity; and propose approaches for improving the integration of regional planning with bulk system, distribution and community energy planning, and approaches to ensure alignment with market-based approaches”. ¹⁷
Apply evidence-based decision-making.		
Provide detailed plans to hedge against energy supply risks associated with nuclear refurbishment and license extension.	No	The LTEP notes the province’s ability to apply “off-ramps” for nuclear refurbishment due to cost or scheduling (pp. 50-51), but does not discuss implications for how alternative supply would be sourced if the province exercises these off-ramps. It is fair to assume that the IESO would rely on its future energy auction system to respond to any future gaps in supply.

Compare all options to balance supply and demand in the electricity system, not just natural gas.	Yes	The LTEP commits to further exploring the role of using surplus electricity to produce hydrogen to inject and reduce the carbon emissions of Ontario's natural gas grid (p. 75). It also looks at other ways of balancing electricity supply and demand, including: • removing regulatory barriers for companies providing electricity storage (p. 61) (one barrier, the application of the Global Adjustment charge for storage facilities, has already been removed through regulation) • working with the Ontario Energy Board (OEB) to enable smart timing of charging of electric vehicles (p. 61) and • supporting the OEB's actions to test different time-of-use price structures, including a commitment to look at some equivalent of time-of-use pricing for larger customers (p. 56)
Before subsidizing expansion of the natural gas distribution system, publicly compare costs and benefits of alternatives such as conservation and clean energy technologies.	No	The LTEP renews the government’s commitment to natural gas system expansion, including its Natural Gas Grant program to pay some of the infrastructure costs (p. 135).
Provide opportunities for meaningful public participation.		
Consult the public on a detailed draft Long-Term Energy Plan.	No	No draft LTEP was released.
Consult the public on implementation directives/plans.	Partial	Implementation directives to the IESO and the OEB were released without public consultation, with a request for implementation plans to be submitted by these agencies by January 31, 2018. The IESO conducted public consultations as it developed its implementation plan; the OEB did not. The Ministry of Energy has approved both plans without any additional consultation.
Do not override the Long-Term Energy Plan and its approved implementation plans in between the three-year review cycle.	TBD	

Endnotes

1. However, projected savings from future conservation programs show up as a drop in the demand outlook, not as “committed” supply.

2. Ontario Ministry of Energy, Ontario's Long-Term Energy Plan 2017: Delivering Fairness and Choice (Ontario: Queen's Printer, 2017) at 45.

3. Independent Electricity System Operator, A Progress Report on Contracted Electricity Supply, Second Quarter 2017 (Ontario: IESO, 18 September 2017) at 11, online: <www.ieso.ca/-/media/files/ieso/document-library/contracted-electricity-supply/progress-report-contracted-supply-q22017.pdf?la=en>.

4. Ontario Ministry of Energy, Ontario's Long-Term Energy Plan 2017: Delivering Fairness and Choice (Ontario: Queen's Printer, 2017) at 104.

5. Ibid at 114.

6. Ontario Ministry of Energy, Achieving Balance: Ontario's Long-Term Energy Plan (Ontario: Queen's Printer, 2013) at 23.

7. Two large gas plants (1,214 MW), plus 14 combined heat and power projects (85 MW), had been awarded contracts but were not yet in commercial operation, as of mid-2017 (Independent Electricity System Operator, A Progress Report on Contracted Electricity Supply, Second Quarter 2017 (Ontario: Independent Electricity System Operator, 18 September 2017) at 11, online: <www.ieso.ca/-/media/files/ieso/document-library/contracted-electricity-supply/progress-report-contracted-supply-q22017.pdf?la=en>). This is in addition to an unknown number of combined heat and power projects that will not be contracted but could receive capital incentives through conservation programs, if applied for before July 1, 2018.

8. A full assessment of the fiscal impact of the Fair Hydro Plan on taxpayers and ratepayers has been conducted by the Financial Accountability Office of Ontario. Financial Accountability Office of Ontario, An Assessment of the Fiscal Impact of the Province's Fair Hydro Plan (Toronto: FAO, Spring 2017).

9. In 2020, the Ministry of Energy estimates the total cost of electricity service at \$20.5 billion, \$4.1 billion of which will be funded by taxes or deferred, instead of paid for by current ratepayers, due to the Fair Hydro Plan. (Ontario Ministry of Energy, information provided to the ECO in response to ECO inquiry (1 March 2018)).

10. Financial Accountability Office of Ontario, An Assessment of the Fiscal Impact of the Province's Fair Hydro Plan (Toronto: FAO, Spring 2017) at 1. However, the Fair Hydro Plan will provide savings to electricity ratepayers of \$24 billion over the life of the Plan. This is because of the cost transfers from ratepayers to taxpayers of \$45 billion over the Plan's 29-year life, particularly the rebate on the provincial portion of the HST, which is assumed to be permanent, and represents a \$42 billion transfer.

11. The government estimates \$15 billion in savings from avoiding new nuclear construction, at least \$3 billion in savings from reductions in renewable energy prices and a return to competitive procurement for large renewables, up to \$3.8 billion in savings from cancelling the second round of Large Renewable Procurement, \$3.7 billion in savings from renegotiating renewable energy contracts with Samsung, \$1.7 billion in savings from delaying the Bruce refurbishment until 2020, and as much as \$600 million in savings from continued operation of Pickering station until 2024. Ontario Ministry of Energy, Ontario's Long-Term Energy Plan 2017: Delivering Fairness and Choice (Ontario: Queen's Printer, 2017) at 20.
12. Ontario Ministry of Energy, information provided to the ECO in response to ECO inquiry (1 March 2018).

13. The IESO had previously modeled the cost impact of scenarios with different levels of electricity demand. Independent Electricity System Operator, “Module 7: Electricity System Cost Outlook” (presentation, August 2016).

14. Ontario Ministry of Energy, Ontario's Long-Term Energy Plan 2017: Delivering Fairness and Choice (Ontario: Queen's Printer, 2017) at 40.

15. Ibid at 37.

16. Ontario Ministry of Energy, Ontario's Long-Term Energy Plan 2017: Delivering Fairness and Choice (Ontario: Queen's Printer, 2017) at 61-62 (electric vehicles) and 115 (heat pumps).

17. Directive from Ontario Minister of Energy to the Independent Electricity System Operator, (untitled) (26 October 2017), online: <www.ieso.ca/-/media/files/ieso/document-library/ministerial-directives/2017/directive-2017-ltep-20171026.pdf?la=en>.