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STANDING COMMITTEE ON PUBLIC ACCOUNTS

ELECTRICITY POWER SYSTEM PLANNING (Section 3.05, 2015 Annual Report of the Office of the Auditor General of Ontario)

2nd Session, 41st Parliament
66 Elizabeth II

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The Honourable Dave Levac, MPP
Speaker of the Legislative Assembly

Sir,

Your Standing Committee on Public Accounts has the honour to present its Report and commends it to the House.

Ernie Hardeman, MPP
Chair of the Committee

Queen's Park
March 2017

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2nd Session, 41st Parliament

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PREAMBLE

On November 16, 2016 the Standing Committee on Public Accounts (the Committee) held public hearings on the audit (section 3.05 of the 2015 Annual Report of the Auditor General of Ontario) of Electricity Power System Planning. Senior officials from the Ministry of Energy and the Independent Electricity System Operator participated in the hearings. (For a transcript of the Committee proceedings, please see Committee Hansard.)

The Committee endorses the Auditor's findings and recommendations and presents its own findings, views, and recommendations in this report. The Committee requests that the Ministry of Energy provide the Committee Clerk with written responses to the recommendations within 120 calendar days of the tabling of this report with the Speaker of the Legislative Assembly, unless otherwise specified.

Acknowledgments

The Standing Committee on Public Accounts extends its appreciation to officials from the Ministry of Energy and the Independent Electricity System Operator for their attendance at the hearings. The Committee also acknowledges the assistance provided during the hearings and report writing deliberations by the Office of the Auditor General of Ontario, the Clerk of the Committee, and staff in the Legislative Research Service.

OVERVIEW

Audit Objective and Scope

The objective of the audit was to assess whether effective processes and procedures were in place to

- ensure the transparency, accountability, and efficiency of Ontario's electricity power system planning process in order to provide for reliable, cost-effective, and sustainable power to meet provincial electricity demands within the context of applicable legislation and government policy; and
- measure and report periodically on the progress and results of Ontario's electricity system plans.

The Auditor reviewed applicable legislation, regulations, policies, and studies; analyzed planning documents, including the Integrated Power System Plans and Long-Term Energy Plans; and interviewed appropriate staff from the key entities involved in power system planning. The Auditor also met with representatives from stakeholder groups, including the Ontario Society of Professional Engineers, the Canadian Electricity Association, the Electricity Distributors Association, the Association of Municipalities of Ontario, and several local utilities.

Background

Electricity planning is the management of long-term electricity demand, and the determination of how best to meet that demand through generation, transmission, distribution, exporting, importing, and conserving electricity.

Entities involved in Ontario's power system planning include the Ministry of Energy (Ministry), the Independent Electricity System Operator (IESO), the Ontario Energy Board (OEB), Ontario Power Generation (OPG), Hydro One, four other small licensed transmitters, and approximately 70 local distribution companies (LDCs).

The *Electricity Act, 1998* required the Ontario Power Authority (OPA), now merged with IESO, to prepare and submit an Integrated Power System Plan (a technical plan) to the OEB for review and approval every three years. Since the 2015 merger the new IESO is responsible for power system planning.

ISSUES RAISED IN THE AUDIT AND BEFORE THE COMMITTEE

Planning Process

The Auditor found that the Province's power system planning process had essentially broken down and Ontario's energy system had been without a technical plan in place for the past ten years. As a result, the Auditor recommended that the Ministry

- review its planning process and clarify roles of the Ministry, the IESO, and the OEB; and
- require detailed technical plans to be prepared and independently reviewed.

In its response, the Ministry stated its commitment to implementing the Auditor's recommendation through two pieces of legislation: the *Energy Statute Law Amendment Act, 2016* (Bill 135) and the *Strengthening Consumer Protection and Electricity System Oversight Act, 2015* (Bill 112). Bill 135 amends the *Electricity Act, 1998* and the *Ontario Energy Board Act, 1998* to replace the former electricity planning process (Integrated Power System Plan or IPSP) with an enhanced Long-Term Energy Plan (LTEP) process. The amendments clarify the roles of the Ministry of Energy and the IESO in developing future LTEPs, including requiring the IESO to develop a technical report. This technical report is the first step in the LTEP process and is designed to help inform the engagement process.

Committee Recommendations

The Standing Committee on Public Accounts recommends that:

- 1. The Ministry of Energy provide the Committee with details on how it will include in its future Long-Term Energy Plans justification for all power decisions made, detailed technical plans and cost benefit analyses of alternatives in a transparent manner.**

- 2. The Ministry of Energy provide the Committee with details on how future Long-Term Energy Plans will be independently reviewed to ensure that they are prudent and cost effective in order to protect the interest of electricity consumers.**

Ministerial Directives

The Auditor found that the Ministry issued 93 directives and directions to the OPA between 2004 and 2014. These sometimes resulted in decisions being made about power generation that went against the OPA's technical advice. As a result, the Auditor recommended that the Ministry make the decision-making process more transparent by informing the public about its directives and the rationale for its decisions.

In its response, the Ministry stated that the enhanced LTEP process enshrines extensive engagement with consumers, stakeholders, and indigenous groups that includes in-person sessions and postings on the Environmental Registry. Additionally, as per the legislative requirements, the LTEP and other key information used in its development will be published on a government website.

Further, the Ministry stated that in addition to the enhanced LTEP framework, all directives and directions sent to the IESO have been and will continue to be publicly posted on the IESO website. These directives and directions include key background information and rationales on policy objectives. Additionally, when the IESO implements directives and directions, the IESO consults with stakeholders and the public to ensure that the program objectives, rationales, and processes are transparent.

Following the passage of Bill 135, the Ministry sent a letter to the IESO per the legislation to start the LTEP process. On September 1, 2016, the IESO, as outlined in the legislation, provided the Ministry with a report that outlines supply, demand, reliability, and other information on the electricity system that will be considered in the development of the LTEP. This report has been posted publicly to initiate the public consultation process set out in the legislation.

To ensure LTEP engagement and developments proceed with a common set of technical and economic considerations, the Ministry released a Fuels Technical Report (FTR) on September 30, 2016. Prepared by Navigant Consulting for the Ministry of Energy, the FTR aimed to establish 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. While not a legislated requirement, the Ministry developed the FTR and established a Fuels Sector Working Group to expand its assessment of the fuels sector. The engagement for the LTEP process began on October 13, 2016. The Ministry has stated that feedback from these sessions will be used to inform the development of the next LTEP. An overview of feedback received during these sessions will be included in future updates to the Committee.

Committee Recommendation

The Standing Committee on Public Accounts recommends that:

- 3. The Ministry of Energy provide the Committee with details on how it will be transparent about the cost impact of power decisions to the ratepayers, in addition to informing the public about the rationale for its directives.**

Generation Procurement

It is the Auditor's view that the Ministry did not fully consider the state of the electricity market or the long-term effects that different supply mix scenarios would have on Ontario's power system when making certain decisions on power generation. Also, the Auditor noted that Ontario currently has an oversupply of electricity. From 2009 to 2014 the Province's available electricity supply exceeded its maximum hourly consumption by 5,160 MW per year, on average. As a result, the Auditor recommended that the Ministry

- work with technical experts and others to determine the optimal supply mix for Ontario;
- engage technical experts and others to evaluate the cost-effectiveness of different scenarios when considering new projects;
- conduct cost-benefit analyses during the planning process; and
- monitor and publicly report on the extent and impact of the electricity surplus.

In its response, the Ministry stated that the enhanced LTEP process enshrines extensive engagement with consumers, stakeholders, and indigenous groups that includes in-person sessions and postings on the Environmental Registry. The planning process allows for technical experts, including agencies, to provide input to the planning process.

The Ministry added that the enhanced LTEP process enshrines the principle of cost-effectiveness when considering energy supply and capacity, transmission, and distribution.

Also, the Ministry explained that following the 2013 LTEP, the Ministry initiated the Ontario Energy Report, a website updated quarterly that ensures reliable and up-to-date data on energy supply, demand, and costs. However, this website does not show the amount of surplus power and its associated cost.

Committee Recommendation

The Standing Committee on Public Accounts recommends that:

- 4. The Ministry of Energy provide the Committee with details of how it will make sure future power generation decisions are supported by IESO's technical expert advisors and how it will inform the public about the rationale for any power decisions made that deviate from IESO's recommendations.**

Conservation and Demand Management

Conservation aims to reduce overall electricity usage while demand management aims to reduce or shift consumption away from peak demand periods. The IESO oversees the Province's electricity conservation and demand response programs, including those delivered by local distribution companies (LDCs) and programs offered directly to transmission-connected customers. However, the IESO is not authorized to evaluate peak demand programs funded and managed by other entities, such as the federal government and gas utilities, to confirm peak demand reductions achieved.

The Auditor noted that the Province spent approximately \$2.3 billion in conservation programs and initiatives from 2006 to 2014 and has committed to spending another \$2.6 billion from 2015 to 2020. The Auditor added that investing in conservation does not necessarily mean saving money during periods of surplus because energy savings from conservation efforts can add to Ontario's surplus, contributing to an oversupply of electricity that requires increasing exports and/or curtailing production.

The Auditor highlighted an 8% decrease in electricity consumption in Ontario over the past decade (from 153 million MWh in 2004 to 140 million MWh in 2014) coinciding with a 56% increase in the overall electricity cost (from \$12.2 billion in 2004 to \$18.9 billion in 2014).

The Auditor recommended that the Ministry work with the IESO to

- assess the effects of conservation and its impact on electricity costs during surplus generation periods;
- evaluate programs, such as various conservation initiatives and the Industrial Electricity Incentive Program, to ensure that they support the Ministry's goals and objectives; and
- set appropriate and reasonable peak consumption reduction targets, and regularly monitor, track, and publicly report on the progress made in meeting them.

In its response, the Ministry stated that with the IESO, it is committed to the ongoing evaluation of programs to ensure they support provincial needs. The Ministry explained that the new 2015 Conservation First Framework (CFF) increases the rigour of program cost-effectiveness requirements. Consistent with requirements of the new Framework, all LDCs have submitted Conservation and Demand Management Plans to the IESO. The programs within the plans are individually subject to cost-effectiveness tests with certain exceptions (e.g., low-income programs) and to a high degree of oversight with ongoing evaluation,

measurement, and verification by the IESO. The Ministry added that the new Framework encourages collaboration among LDCs and between CFF and natural gas demand side management framework programs, to achieve efficiencies and convenient integrated programs for customers. The Ministry also stated that the new Framework recognizes the value of measures that result in peak demand reductions by accounting for cost-effectiveness tests for the higher value of savings achieved during peak periods.

The Ministry indicated that public reporting of energy savings and peak demand reduction will continue through quarterly Ontario Energy Reports as well as annual conservation results reports released separately by the IESO and the Environmental Commissioner of Ontario.

The Ministry noted that conservation requires a sustained commitment to ensure persistent savings and a reduction of demand for electricity over the long-term. 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. The Ministry stated that—with the IESO—it will continue to review Ontario's supply-demand balance as part of the LTEP planning process, adjusting targets as required.

Committee Recommendation

The Standing Committee on Public Accounts recommends that:

5. The Ministry of Energy, or the IESO, as applicable

(a) provide the Committee with details on how it evaluates proposals for investing in generation facilities compared to investing in conservation initiatives (e.g., business case, cost benefit analysis); and

(b) provide the Committee with an assessment of the anticipated impacts conservation initiatives will have on electricity costs during surplus generation periods over the long-term.

Transmission System Planning

The Auditor found that the lack of a structured, coordinated planning process has had ongoing negative effects on the performance of the transmission system. As a result, the Auditor recommended that the Ministry work with the IESO, Hydro One, and other LDCs to

- address current capacity and reliability issues, and identify requirements for future electricity demand;
- investigate the root causes of the increasing volume of generator constraints; and
- perform adequate planning and analysis prior to undertaking any major initiatives that would impact transmission.

In its response, the Ministry stated that the enhanced LTEP process, as enacted in legislation, ensures that the goals and objectives of the LTEP include respecting the reliability of energy supply and capacity, transmission, and

distribution. The enhanced LTEP process will consider impacts on generators, transmitters, distributors, and ratepayers. The Ministry added that it will work with the IESO and technical experts, as well as stakeholders, when creating the LTEP.

The Ministry stated that Bill 135 creates an enhanced LTEP framework to address system planning needs. The Ministry added that the enhanced LTEP process will be informed by a formalized regional planning process governed by the OEB and led by the IESO. The IESO works with LDCs and transmitters to ensure regional issues and requirements are effectively integrated into electricity planning.

Regarding the volume of generator constraints, the Ministry noted that in May 2015 the IESO completed a review of Ontario's wholesale energy market pricing system, sometimes referred to as the two-schedule price setting system, which is used to determine prices and dispatch generators in the IESO-administered market. The review found that opportunities likely exist to reduce electricity market costs through changes to the current system. In March 2016 the IESO launched a stakeholder engagement on market renewal.

Committee Recommendations

The Standing Committee on Public Accounts recommends that:

- 6. The IESO provide the Committee with a progress update on the regional capacity and reliability issues identified in the Auditor General's report.**
- 7. The IESO provide the Committee with the results of the March 2016 stakeholder engagement on market renewal and next steps.**

Nuclear Refurbishment

The Ministry has projected a decrease in nuclear production—as a percentage of overall energy production—from 57% in 2013 to 44% by 2032. Currently, there are three nuclear power generating stations in Ontario: Pickering Nuclear Generating Station ("Pickering," six operating nuclear-reactor units); Darlington Nuclear Generating Station ("Darlington," four operating nuclear-reactor units); and Bruce Nuclear Generating Station ("Bruce," eight operating nuclear-reactor units).

In December 2015 the Ministry announced that the Province had updated its contract with Bruce Power and was proceeding with the refurbishment of six nuclear units at Bruce. The updated agreement delayed the start of the refurbishment project until 2020, rather than the previously estimated start date of 2016. An initial price for Bruce Power's generation was set at \$65.73/MWh starting January 1, 2016. The average price over the life of the contract is estimated to be \$77/MWh, or 7.7 cents per kilowatt hour (kWh). Both prices are within the range assumed in the 2013 LTEP for refurbished nuclear energy.

Shortly thereafter, in January 2016, the Ministry announced that the refurbishment of Darlington would begin in October 2016 and the refurbishment

of all four units would be completed by 2026 at a cost of \$12.8 billion (including interest and escalation). The average cost of power from Darlington post-refurbishment was estimated in 2016 to range between \$72 and \$81 per MWh (or between 7 and 8 cents per kWh). This was within the range assumed in the 2013 LTEP for refurbished nuclear energy.

The average price of electricity generation in Ontario was \$92/MWh in 2015.

Provincial approval of OPG's plan to pursue continued operation of the Pickering Generating Station beyond 2020 up to 2024 was also announced in January 2016.

Committee Recommendations

The Standing Committee on Public Accounts recommends that:

- 8. The Ministry of Energy, or the IESO as applicable, provide the Committee with its most recent short- and long-term estimates of the average cost of power (per kWh) from Darlington during refurbishment and also post-refurbishment.**
- 9. The Ministry of Energy provide the Committee with the impact the delayed refurbishment of nuclear units at Bruce and continued operation of Pickering Generation Station have on surplus power and its associated cost to the ratepayers.**
- 10. The Ministry of Energy provide the Committee with quarterly progress updates on the current Darlington refurbishment.**

CONSOLIDATED LIST OF COMMITTEE RECOMMENDATIONS

1. The Ministry of Energy provide the Committee with details on how it will include in its future Long-Term Energy Plans justification for all power decisions made, detailed technical plans and cost benefit analyses of alternatives in a transparent manner.
2. The Ministry of Energy provide the Committee with details on how future Long-Term Energy Plans will be independently reviewed to ensure that they are prudent and cost effective in order to protect the interest of electricity consumers.
3. The Ministry of Energy provide the Committee with details on how it will be transparent about the cost impact of power decisions to the ratepayers, in addition to informing the public about the rationale for its directives.
4. The Ministry of Energy provide the Committee with details of how it will make sure future power generation decisions are supported by IESO's technical expert advisors and how it will inform the public about the rationale for any power decisions made that deviate from IESO's recommendations.
5. The Ministry of Energy, or the IESO, as applicable
 - (a) provide the Committee with details on how it evaluates proposals for investing in generation facilities compared to investing in conservation initiatives (e.g., business case, cost benefit analysis); and
 - (b) provide the Committee with an assessment of the anticipated impacts conservation initiatives will have on electricity costs during surplus generation periods over the long-term.
6. The IESO provide the Committee with a progress update on the regional capacity and reliability issues identified in the Auditor General's report.
7. The IESO provide the Committee with the results of the March 2016 stakeholder engagement on market renewal and next steps.
8. The Ministry of Energy, or the IESO as applicable, provide the Committee with its most recent short- and long-term estimates of the average cost of power (per kWh) from Darlington during refurbishment and also post-refurbishment.
9. The Ministry of Energy provide the Committee with the impact the delayed refurbishment of nuclear units at Bruce and continued operation of Pickering Generation Station have on surplus power and its associated cost to the ratepayers.

10. The Ministry of Energy provide the Committee with quarterly progress updates on the current Darlington refurbishment.