

EB-2018-0143
ONTARIO ENERGY BOARD

IN THE MATTER OF subsection 25 (1) of the *Electricity Act, 1998*;

AND IN THE MATTER OF a Submission by the Independent Electricity System Operator to the Ontario Energy Board for the review of its proposed expenditure and revenue requirements for the fiscal year 2018 and the fees it proposes to charge during the fiscal year 2018.

SUBMISSION FOR REVIEW

1. The Independent Electricity System Operator ("IESO") submitted its 2018-2020 Business Plan to the Minister of Energy ("Minister") for approval pursuant to section 24 (1) of the *Electricity Act, 1998* as amended ("Act") and the IESO received a letter from the Minister approving the Business Plan.
2. The IESO hereby submits to the Ontario Energy Board ("OEB") its proposed 2018 expenditure and revenue requirements and the fees it proposes to charge in 2018 (the "2018 Revenue Requirement Submission" or "Submission") for review and approval pursuant to subsection 25 (1) of the Act.
3. The IESO proposes a 2018 net revenue requirement of \$190.8 million. The IESO is forecasting negligible revenues through registration fees in 2018.
4. The current IESO usage fees of \$1.2187/MWh for domestic customers and \$0.9872/MWh for export customers were made interim effective January 1, 2018 by a December 14, 2017 OEB Decision and Order (EB-2017-0150). The IESO proposes usage fees for the same customer classes approved by the OEB in EB-2017-0150, of \$1.2402/MWh for domestic customers and \$1.0115/MWh for export customers effective

January 1, 2018. Domestic customers include all withdrawals for consumption in Ontario and embedded generation.

5. Pursuant to subsection 25 (1) of the Act, the IESO is seeking the following approvals from the OEB:

- a) Approval of the proposed IESO usage fees of \$1.2402/MWh for domestic customers (including embedded generation) and \$1.0115/MWh for export customers to be paid commencing January 1, 2018.
- b) Approval of its proposed 2018 capital expenditure envelope of \$26.6 million for capital projects.
- c) Approval to charge (or rebate) market participants the difference between the 2018 IESO usage fees approved by the OEB and the interim usage fee they paid, if any, based on their proportionate quantity of energy withdrawn until the end of the month in which OEB approval is received for the 2018 usage fees. Any such charges (or rebates) will be provided in the next billing cycle following the month in which OEB approval is received.
- d) Approval to rely on and use the information provided to the IESO by LDCs on the amount of embedded generation in their service territory under O. Reg. 429/04 in calculating the total usage fee to be billed to each LDC each billing period.
- e) Approval of the proposed 2018 net revenue requirement of \$190.8 million.
- f) Approval to continue to retain \$6 million as an operating reserve in the Forecast Variance Deferral Account ("FVDA").

- g) Approval to rebate \$1.4 million, which is the year-end balance in the FVDA above the \$6 million operating reserve, based on the IESO's audited 2017 financial statements as approved by the IESO Board of Directors. The IESO will rebate the \$1.4 million surplus to market participants proportionate to the fees collected in 2017. The rebates will be provided in the next billing cycle following the month in which OEB approval is received.
 - h) Approval to continue to charge registration fees of up to \$10,000 per proposal for electricity supply and capacity procurements, including conservation and load management procurements.
 - i) Approval to continue charging \$1,000 for the IESO's market participation application fee.
 - j) All necessary interim orders, orders and directions, pursuant to the *Ontario Energy OEB Act, 1998* and the OEB's Rules of Practice and Procedure, as may be necessary in relation to this Submission and execution of the approvals requested in the IESO's 2018-2020 Business Plan.
6. The IESO proposes that the OEB review of the Submission proceed by way of a written hearing.
7. The IESO may amend its pre-filed evidence from time to time, prior to and during the course of the OEB proceeding. Furthermore, the IESO may seek to have additional meetings with OEB Staff and intervenors in order to identify and address any further issues arising from this Submission, with a view to an early settlement and disposition of this proceeding.

8. The IESO requests that a copy of all documents filed with the OEB by each party to this proceeding, be served on the IESO and the IESO's counsel in this proceeding as follows:

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DATED at Toronto, Ontario, this April 30, 2018

INDEPENDENT ELECTRICITY SYSTEM OPERATOR



by its counsel in this proceeding
Fred D. Cass

**INDEPENDENT ELECTRICITY SYSTEM OPERATOR
2018 REVENUE REQUIREMENT SUBMISSION (EB-2018-0143)**

EXHIBIT LIST

Exhibit	Tab	Schedule	<u>Description</u>
A – ADMINISTRATION			
A	1	1	Submission
A	1	2	Exhibit List
A	2	1	IESO's Letter to the Minister Requesting Approval of the 2018-2020 Business Plan – December 18, 2017
A	2	2	2018-2020 Business Plan – December 18, 2017
A	2	3	Minister's Letter Approving the IESO 2018-2020 Business Plan – March 19, 2018
A	3	1	2017 Annual Report and audited financial statements
B – REVENUE REQUIREMENT, FEES AND DEFERRAL AND VARIANCE ACCOUNTS			
B	1	1	2018 Revenue Requirement and Usage Fee Methodology
B	2	1	2018 Registration and Application Fees, Forecast Variance Deferral Account and Capital Expenses
B	3	1	2017 Year-End Financials, Surplus and Staffing <u>Attachment 1</u> - Appendix 2-AA (capital projects) <u>Attachment 2</u> - Appendix 2-JB (OM&A cost drivers) <u>Attachment 3</u> - Appendix 2-JC (OM&A programs) <u>Attachment 4</u> - Appendix 2-K (employee costs)
C – EVIDENCE RESPONDING TO OEB DECISIONS AND SETTLEMENT PROPOSAL			
C	1	1	IESO Regulatory Scorecard <u>Attachment 1</u> – IESO's 2018 Regulatory Scorecard (xls version only)
C	2	1	Market Renewal Program Cost Report

Exhibit	Tab	Schedule	<u>Description</u>
C	3	1	Cost Allocation Study <u>Attachment 1</u> – Corporate Cost Allocation Study - BDR North America



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December 18, 2017

The Honourable Glenn Thibeault
Minister of Energy
900 Bay Street, 4th Floor
Hearst Block
Toronto, ON M7A 2E1

Dear Minister Thibeault,

Re: IESO Proposed 2018-2020 Business Plan

I am pleased to submit the Independent Electricity System Operator's (IESO) proposed 2018-2020 Business Plan. This document is to supplement the information provided to you by letter on September 1, 2017. This plan provides an overview of the near-term activities the IESO will undertake to achieve its core mandate and strategic objectives.

The environment in which the IESO is planning its activities for the 2018 - 2020 business planning period is quickly evolving. Some of these changes include rapid technological advancement, increasing consumer engagement, growth in both renewable and distributed energy resources, and climate change policies. This evolving environment is changing the dynamics of today's electricity system and how the IESO plans to meet the future needs of Ontarians.

The IESO will continue to focus on its core mandate of maintaining the reliable operation of Ontario's electricity system, which includes cybersecurity, informing the development and implementation of electricity policy and enabling innovation. In addition, our priority initiatives for 2018 - 2020 will include the advancement of the Market Renewal Program, developing the IESO's Implementation Plan for the Long-Term Energy Plan and implementing those initiatives, and completing the Conservation First Framework (CFF) mid-term review.

As was indicated in my letter of September 1, we are holding our revenue requirement for 2018 at 2017 budget levels. This means the organization will continue its efforts to find efficiencies and opportunities for expense reductions. For 2018, the IESO's proposed core operating expenses are \$190.8 million, which will be funded by usage fee revenues. Capital projects in 2018 to facilitate the

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delivery of core business functions and priority initiatives are expected to be \$22.6 million, which includes \$4 million for the next stage of the Market Renewal Program.

The IESO is also undertaking additional initiatives that will not impact its core operating resource requirements, as these initiatives are funded from other sources. This includes the IESO's continuing support for the Ontario Climate Change Solutions Deployment Corporation as a service provider and efforts to enhance the value of smart meter data. These costs are being recovered by the Ministry of the Environment and Climate Change and Smart Meter Entity fees, respectively. The IESO is also working to design and deliver province-wide distributor conservation programs in support of achieving CFF targets, to be funded from CFF budgets.

Please do not hesitate to contact me should you wish to discuss any aspect of the IESO'S proposed 2017-2019 Business Plan.

Sincerely,

A handwritten signature in black ink, appearing to read 'Peter Gregg', with a stylized, cursive script.

Peter Gregg

Attach.

c: Serge Imbrogno, Deputy Minister of Energy
Andrew Teliszewsky, Chief of Staff, Minister's Office
Tim O'Neill, Chair, IESO

Business Plan 2018–2020

Independent Electricity System Operator

DECEMBER 18, 2017

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Introduction

The Independent Electricity System Operator (IESO) is responsible for maintaining a reliable and efficient province-wide power system, today and into the future. This includes directing the flow of electricity across the province's transmission system, planning for the province's future energy needs and acquiring resources needed to maintain reliability.

Another part of the IESO's core mandate involves the development and implementation of effective policy that reflects the needs of Ontario and its consumers, while continuing to foster innovation. The IESO is a trusted source of transparent, accessible and timely information, providing independent advice to government and industry. It also stimulates innovation within the energy sector with a core focus on reliability, resiliency and market-based solutions that can benefit Ontario. As Ontario's electricity sector continues to evolve, the IESO will enable innovative ideas that help open up new opportunities for consumers and stakeholders, drive down costs, and lead to a more efficient and effective electricity grid.

Changing environment for business planning

The environment in which the IESO is planning its activities for the 2018–2020 business planning period is quickly evolving. Some of these changes include rapid technological advancement, increasing consumer engagement, growth in both renewable and distributed energy resources, and climate change policies. This evolving environment is changing the dynamics of today's electricity system and how the IESO plans to meet the future needs of Ontarians. These changes are creating new operating challenges in managing the bulk power system, but they are also creating new opportunities for consumers, communities and sector participants to get more actively involved.

With respect to energy demand, forecasts indicate it is expected to increase in 2018 as a result of projected stronger economic growth in the industrial sector. Ontario's peak demand is expected to remain relatively flat. Conservation savings, growing embedded generation output and the Industrial Conservation Initiative have offset increased demand from population growth and economic expansion. This trend is expected to continue over the business planning period. However, given the uncertainty in any demand forecast, the IESO's planning considers a range of outlooks for electricity demand in Ontario, from below current levels to significantly higher demands driven by different levels of electrification.

The IESO is also leading fundamental changes to Ontario's electricity landscape, including a Market Renewal Program that will address current inefficiencies, put downward pressure on costs for consumers and stakeholders, and design a market that can better meet future needs. The IESO is also developing an Implementation Plan associated with initiatives in the Ministry of Energy's 2017 Long-Term Energy Plan (LTEP).

Market Renewal is about improving the way electricity is priced, scheduled and procured in order to meet Ontario's current and future energy needs reliably, transparently, efficiently and at the lowest cost.

In the face of this change, delivering reliability now and in the future remains a priority for the IESO. In addition, the IESO recognizes that stakeholder and community engagement is critical to the success of its initiatives. The IESO values the diversity of its stakeholders and the communities with which it engages, as they assist the organization in making informed decisions. To support its efforts, the IESO applies engagement principles to its wide-ranging initiatives to ensure stakeholders and communities have the opportunity to provide input on matters that impact them. The principles help ensure inclusiveness, sincerity, respect and fairness in its engagements.

Organizational focus

In early 2017, the IESO's Board of Directors appointed Peter Gregg as the IESO's new President and Chief Executive Officer. Under Mr. Gregg's leadership, the IESO will fulfill its broad mandate in Ontario's electricity sector, with a focus on two of its most important responsibilities: ensuring a reliable and efficient province-wide power system today and into the future, and informing and implementing policy while fostering innovation.

Ensuring a reliable and efficient power system includes coordinated reliability, leveraging expertise and utilizing changing technologies and becoming a leader in cybersecurity for the electricity sector. The IESO will prioritize the least-cost procurement of energy and resources in the interests of ratepayers, and enhance the use of a range of market tools to acquire system needs and to make decisions in the context of the government's broader policy goals.

Informing policy development and implementation includes enhancing the IESO's trusted advisor status by being more proactive, forward looking and broader in scope, and engaging stakeholders in a more targeted and purposeful manner. The IESO anticipates that the change the electricity sector is undergoing will continue to accelerate. Innovation will play a key role in helping to navigate through that change, and the IESO will play a key role in enabling it.

Another focus will be on the efficient and cost-effective delivery of corporate services within the organization. This includes building a customer service mindset into the IESO's work with internal customers and adopting an enterprise-wide view in support of the IESO's business. The IESO will re-engineer business processes where needed to address inefficiencies, consolidate and enhance project management capabilities and re-examine its approach to risk.

The expected outcomes of these efforts are:

- sustained reliability and resiliency for Ontario
- the cost-effective acquisition of the right mix of energy
- customer-focused internal support and greater productivity with higher efficiencies.

It is within this context that the IESO has planned its business activities and initiatives for the 2018-2020 period.

Summary of priority initiatives and resource requirements

The IESO's Business Plan provides an overview of the organization's priority initiatives and associated resourcing requirements needed to maintain the high level of performance required to deliver its core electricity system responsibilities as well as to deliver on additional initiatives that the IESO is undertaking. These additional initiatives include:

- progressing the Market Renewal Program (see page 5)
- developing the IESO Implementation Plan for initiatives in the 2017 Long-Term Energy Plan, as well as the implementation of these initiatives (see page 7).

The work associated with these initiatives leverages the most efficient deployment of IESO's current resources and requires additional resources in some areas.

Other priorities for the IESO for this business planning period include:

- a focus on cybersecurity (see page 9)
- completing the Conservation First Framework (CFF) Mid-Term Review (see page 10).

Even with these additional initiatives, the IESO intends to hold its revenue requirement for 2018 at 2017 approved budget levels. This means the organization will continue its efforts to find efficiencies and opportunities for expense reductions. Challenges are presented in managing the budget in 2018 and beyond as increases in compensation and benefits begin to outpace opportunities to reduce costs.

Even with its additional initiatives, the IESO intends to hold its revenue requirement for 2018 at 2017 approved budget levels.

For 2018, the IESO's proposed core operating expenses are \$190.8 million. The IESO expects these expenses to be funded by usage fee revenues.

In 2018, the IESO is planning a capital envelope of \$22.6 million to facilitate the delivery of corporate priorities associated with its core business. An investment of \$4.0 million in capital costs is required for the next stage of the Market Renewal Program. Further details on the overall capital program are included in Appendix 3.

For 2018, the IESO anticipates an average headcount of 688 full-time equivalents (FTEs) for core operations, including implementation of LTEP initiatives and an incremental headcount of 43 FTEs, for a total of 731 FTEs. The incremental headcount will be required for the Market Renewal Program.

More detailed information about the IESO's proposed budgets for the planning period is available in the Financial Overview section (see page 13).

The IESO is also undertaking additional initiatives that will not impact its core operating resource requirements, as these initiatives are funded from other sources.

The IESO is providing support for the Ontario Climate Change Solutions Deployment Corporation as a service provider; costs for this work are being charged back to the Ministry of the Environment and Climate Change (see page 11). The IESO is supporting the effort to enhance the value of smart meter data; the Smart Meter Entity fees and revenues are the subject of a separate revenue requirement submission to the Ontario Energy Board (OEB) (see page 12).

The IESO is also working to design and deliver province-wide distributor CDM programs in support of achieving Conservation First Framework targets, to be funded from CFF budgets.

The IESO has established corporate performance measures (CPMs) for its key initiatives across the organization, which assess progress toward the achievement of its core mandate and strategic objectives. The targets for 2018 have evolved to be more specific, measureable, achievable, relevant and time-bound. The IESO continually strives to achieve higher outcome levels. In 2018, the business will further align performance measures to provide enhanced focus on organizational efforts within the context of its strategic direction, associated key risks and mitigation plans in support of the IESO's mandate to meet the changing needs of the business and wider electricity sector. More information on the IESO's CPMs for the planning period is found in Appendix 1.

The IESO has also assessed its key areas of risk in relation to strategic areas of focus, developed mitigation plans to support the organization to deliver on its mandate and put in place a robust risk framework to continue to identify and manage risk, which includes monitoring and reporting. More information on the IESO's key risks and how they will be addressed during the planning period is available in Appendix 2.

Market Renewal

Market Renewal is a collaborative effort by the IESO and industry stakeholders to make fundamental and substantive changes to the design of the Ontario electricity market.

The changes are much needed and long-awaited. Since the market opened in 2002, the market's design has changed only to address incremental and pressing needs. While these measured modifications were being made, the electricity sector was experiencing significant changes: coal was eliminated from Ontario's supply mix, distributed energy resources increased, new technologies emerged, consumers became more engaged and renewables were integrated into the market.

Ontario is now in a stable supply situation that is expected to continue into the 2020s, making this an opportune time to consider and implement needed market design changes that would realize significant benefits for the province. Market Renewal is an investment in the future.

The Market Renewal work that the IESO and industry stakeholders have begun will create a marketplace with lower costs, more opportunities, reduced waste and more certainty for market participants. It will help ensure the province is prepared to meet its future electricity needs, even as the sector and technology continue to evolve.

The successful implementation of the Market Renewal initiatives will provide the IESO with the flexibility to manage unexpected short-term changes in the system, such as those caused by variable generation. It will improve the way that Ontario acquires electricity to meet medium- and long-term needs, as well hour-to-hour and minute-to-minute time frames, meeting consumers' need for a reliable source of energy.

The benefits from Market Renewal are likely to grow over time as Ontario's electricity sector continues to decarbonize, as contracts expire, and as the sector becomes more distributed in nature.

More efficiently and effectively acquiring and dispatching electricity will save consumers and sector participants money. An independent study commissioned by the IESO and published in April 2017 showed the benefits of Market Renewal. The analysis found that starting in the early 2020s, the proposed Market Renewal initiatives could result in an estimated benefit of up to \$5.2 billion over 10 years, the majority of which will be realized by consumers.

Significant progress has been achieved to date. Stakeholders are integral to the market renewal process because their perspective on the new design is critical. Those focused on the single schedule market and the incremental capacity auction streams are on track to make high-level design decisions by mid-2018. Additional stakeholder engagement has begun on the day-ahead market and the enhanced real-time unit commitment initiatives. Stakeholder engagement efforts on capacity

exports and enabling system flexibility were added to the Market Renewal Program as well; near-term solutions for these work streams are expected in early 2018.

The Market Renewal Working Group has created a subcommittee to answer some core questions about the role of non-emitting resources in the new electricity marketplace. The Non-emitting Resources Subcommittee is focussing on:

- removing any barriers to market participation by non-emitting resource generators
- implications to the market of a high penetration of low- or zero-cost resources
- exploring incentive mechanisms for non-emitting resources.

A report from the subcommittee is expected in 2018.

The Market Renewal Working Group has also been exploring issues of governance as they relate to stakeholder involvement in the proposed new market structures and stakeholders' need for confidence in the process. Results of a scan of dispute resolution processes and how demand curves are established in other jurisdictions are expected in early 2018.

Implementation Plan for Long-Term Energy Plan Initiatives

The Ministry of Energy released its 2017 Long-Term Energy Plan (LTEP) on October 26. Since the passing of Bill 135, the *Energy Statute Law Amendment Act, 2016*, upon receiving a directive on the initiatives included in the LTEP, the IESO will be responsible for the development of an Implementation Plan containing an outline of the steps the IESO intends to take to meet the requirements set out in the directive.

The IESO informed the development of the Long-Term Energy Plan in 2016 with the development of a technical report, the Ontario Planning Outlook (OPO), which included assessments on the adequacy and reliability of electricity resources for capacity, reliability, market and system operations, transmission and distribution. The LTEP forecasts were based on IESO data but also include inputs determined by the Ministry of Energy to reflect government policy. The LTEP concludes that Ontario is well-positioned to meet provincial needs until the mid-2020s, consistent with the findings of the OPO.

The LTEP references nine initiatives the IESO is directed to undertake. To accomplish them, the IESO is engaging stakeholders, communities, and First Nations and Métis from the beginning to ensure that initiatives are developed collectively by all affected parties. This includes engagement on the development of the Implementation Plan to seek input on the overall approach (e.g., will the proposed activities effectively respond to the directive or are other activities required). In addition, separate engagement initiatives will be launched post-Implementation Plan to develop and deliver on each initiative. The IESO will also coordinate with the OEB on the Implementation Plan as well as on implementation of the directive items.

The LTEP initiatives will be implemented within the context of other IESO priorities, including engaging stakeholders in a targeted and purposeful manner, the conservation mid-term review, market renewal, sustained reliability and enabling innovation.

Following are the nine directed initiatives that the IESO will be responsible to deliver:

- The IESO will review and propose options to improve energy support programs to First Nations and Métis, with the objective of better aligning programs with community needs and interests.
- The IESO will prepare a report on options to improve conservation programs, and access to programs, for First Nations and Métis. The report timing will be aligned with the Mid-Term Review of the Conservation First Framework.
- The IESO will develop a program for innovative renewable distributed generation projects to demonstrate enhanced system integration and deployment potential, including projects demonstrating virtual net metering models that would inform potential future net metering policy updates.

- In coordination with the OEB, the IESO will review market rules, industry codes and regulations to identify potential obstacles to fair competition for energy storage with other technologies in the delivery of services, and where appropriate, propose mitigation strategies.
- The IESO will identify options for pilot projects that evaluate the electricity system benefits, costs and GHG emission reductions of using electricity to create hydrogen.
- The IESO will develop a formal integrated bulk system planning process that ensures solutions are identified transparently as needs materialize. The process shall also include a coordinated, cost-effective, long-term approach to replacing transmission assets at end-of-life.
- The IESO will develop a competitive transmitter selection or transmission procurement process that is transparent, efficient and able to respond to changing policy, market and system needs.
- The IESO will review and report on the regional planning process, taking into account lessons learned, and provide options and recommendations.
- The IESO will review and report on technical criteria used to assess customer reliability in order to identify and evaluate options for local area enhancements.

Cybersecurity

A key focus for the IESO will continue to be cybersecurity. These threats continue to exploit the increased complexity and connectivity of critical infrastructure systems on which Ontario depends. As information sharing systems are challenged by more frequent and often more creative and sophisticated attacks, the need for robust and integrated cybersecurity management becomes vital.

Today, the IESO's role as a reliability coordinator goes beyond the flow of electrons. In an increasingly interconnected, distributed and widespread sector, maintaining the safe and sustainable operation of the power grid extends to being best-in-class in cybersecurity. The IESO complies with all cybersecurity standards set forth by the North American Electric Reliability Corporation and, in 2016, began operating under an even more robust security governance framework, based on the National Institute of Standards and Technology Framework for Improving Critical Infrastructure Cybersecurity. This framework is considered absolute best practice on cybersecurity across all industries.

The IESO operates under a framework that is considered absolute best practice on cybersecurity across all industries.

In addition to enforcing North American standards and rigorous internal practices, the IESO has taken a leadership role in cross-sector cybersecurity awareness through industry capacity building sessions, the promotion of leading security standards and best practices, and collaboration with organizations and experts in cyber- and IT security policy from across North America. For example, the IESO regularly hosts an executive cybersecurity briefing that is attended by industry executives and cybersecurity experts representing a broad cross-section of industries in both the private and public sectors, as well as multiple levels of governments.

The IESO also works to inform policy and regulation, which includes working with the OEB to ensure there is appropriate regulatory oversight to mitigate cybersecurity risks and threats at the distribution level for Ontario's local distribution companies (LDCs). The IESO has been supporting the development of the OEB's proposed regulatory framework for cybersecurity.

The IESO also works toward additional information exchange throughout Ontario's energy sector and for broadening its cybersecurity framework model to other sectors to reflect the interconnected nature of cybersecurity management.

Conservation Mid-Term Review

Costs are lower today because of the conservation efforts of the last 10 years, which have helped avoid investments in more expensive electricity infrastructure and new generation. Over the business planning period, the IESO will continue to oversee the implementation of the Conservation First Framework. Covering the period from 2015 to 2020, the framework aims to achieve 7 terawatt-hours (TWh) of electricity savings through programs and initiatives offered to all customer segments. The framework also includes delivering 1.7 TWh of energy savings through the Industrial Accelerator Program, which has been designed to help transmission-connected customers achieve energy savings.

Based on preliminary unverified results, as of Q3 2017, LDCs have collectively achieved 49 percent of the 2020 provincial Conservation First Framework target, or 3.44 TWh of the 7 TWh target. Additionally, the Industrial Accelerator Program has achieved 0.28 TWh of the 1.7 TWh target, or about 17% percent of the 2020 target. This number is expected to increase as more projects are verified and implemented.

A mid-term review began in 2016 and is expected to be completed in 2018. The focus of the review is the cost-effective delivery of both LDC and transmission-connected customer conservation programs, and assurance that LDC and directly connected customer program progress is in line to achieve the 2020 energy-savings targets. It is specifically looking at how conservation and energy-efficiency programs are meeting customer needs, distributor budgets and targets for conservation savings, and coordination with the province's climate change objectives, including Green Ontario Fund programs. The IESO is also using the mid-term review to identify how conservation programs can better meet the needs of local and regional electricity planning. Multiple feedback opportunities have been built into the review process to ensure the views of stakeholders are heard.

In conjunction with this review, the IESO will give the province options for improving conservation programs and their availability for First Nations and Métis people, including the 10 communities served by unlicensed LDCs in northwestern Ontario known as the Independent Power Authorities.

Specifically, it will deliver a report, including recommendations, on energy conservation initiatives designed to align with the specific needs and challenges of Ontario's First Nation and Métis communities, and provide options for improved access to these programs. The report will be informed by an analysis of community energy plans funded through the IESO's Aboriginal Community Energy Plan program, and by extensive engagement with First Nation and Métis communities province-wide. Included will be an assessment of existing programs offered under the Conservation First Framework and the Demand Side Management Framework for natural gas distributors, as well as strategies for supporting energy education and capacity building, the integration of small-scale renewable energy projects, net metering and other solutions. The report will form the basis for new programs that are expected to launch in 2018.

Work with Ministry of Environment and Climate Change

The IESO is collaborating as a service provider with the Ministry of Environment and Climate Change (MoECC) to support the Green Ontario Fund, by assisting with the design and operation of a website, the management of a call center and the design and delivery of programs. The IESO has valuable experience in delivering electricity conservation programs to customers of all types and is helping develop greenhouse gas savings programs that will complement and build on the success of its existing conservation and energy-efficiency programs.

Programs are intended to focus on reducing greenhouse gas emissions associated with energy usage and energy sources from Ontario residences and businesses. Leveraging the IESO's experience in designing and implementing customer-focused conservation programs will result in efficiencies for the province.

A call centre and website serve as a one-window approach for Ontarians seeking information and access to all related programs in the province that reduce or support greenhouse gas reductions and promote energy conservation. This includes Save on Energy and gas utility programs.

All funding for Green Ontario Fund programs, with the exception of the province-wide Smart Thermostat Rebate Program, will be recovered through the Greenhouse Gas Reduction Account. Funding for the Smart Thermostat Rebate Program will be jointly funded from the Conservation First Framework budget and GreenON.

The incremental resource requirement in support of MoECC will be in line with the expanding scope of this work; efforts are already underway to design and implement other Green Ontario Fund programs that will help reduce greenhouse gas emissions while building on the province's existing suite of conservation and energy-efficiency programs.

Enhancing the Value of Smart Meter Data

The almost five million smart meters installed across the province have enabled the collection of vast amounts of data that can be leveraged to create innovative products and services. The IESO, as the Smart Metering Entity (SME) for Ontario, is responsible for the implementation, integration and operation of the Meter Data Management/Repository (MDM/R), the data repository that processes, stores and protects the electricity consumption data of residential and small business customers used for consumer billing by Ontario's LDCs.

The IESO has begun to work with stakeholders to define the rules for how third-parties can gain access to that data while protecting privacy and confidentiality. A Data Strategy Advisory Council has been established with representatives of various sectors across the province to provide expert advice and to help design the Third-Party Access Implementation Plan.

While it's difficult to predict all innovative uses for the data at this time, the IESO expects third-parties to seek access to the MDM/R data set for a range of purposes; these may include the design, development and implementation of conservation and demand response programs; electricity system planning; policy development; academic research; outage management; predictive billing; and development of new products and services that support the potential of big data. In this way, the full value of this data may be leveraged for years to come.

The IESO expects the Third-Party Access Implementation Plan to be complete in 2018. This includes the processes, procedures and tools to enable the SME to accept and process third-party data requests.

While the work of the SME is reflected in a separate rate case from the IESO's core business, these efforts have sector-wide implications, including for the future development of conservation programs.

Financial Overview

The IESO's Business Plan provides an overview of resourcing requirements to maintain high levels of performance required to deliver its core electricity system responsibilities as well as to execute key initiatives, including implementation of initiatives in the Long-Term Energy Plan, cybersecurity leadership and continued progress of the Market Renewal Program. The IESO intends to hold its revenue requirement for 2018 at 2017 approved budget levels. The organization continues work to identify potential operating efficiencies within the planning period.

The revenue requirement for 2018 is \$190.8 million, which is at the same level as 2017. The revenue requirement will be funded by the IESO usage fees, with no further registration fee revenue expected in 2018.

The Long-Term Energy Plan was released by the Ministry of Energy on October 26, 2017. The IESO will be responsible for the development of an Implementation Plan to be completed by January 31, 2018. To deliver on the initiatives in the Implementation Plan, the IESO will require a combination of its core as well as incremental resources over the course of the business plan.

A key focus for the IESO will continue to be cybersecurity. Over the past two years the IESO has made significant investment in its cybersecurity technology. The current business plan includes resources to implement a Security Operations Centre for 24-hour monitoring of cybersecurity threats and for the addition of advanced malware protection software.

Increases in compensation and benefits costs are a key expense component that is closely managed. Annual compensation escalations due to collective agreements and expected estimates of annual pension and post-retirement benefits are putting upward pressure on the current business plan. This is partially mitigated by increased staff pension contributions resulting from pension plan redesign.

Within the IESO's mandate, it operates several programs that are funded from other sources and are not included in this business plan; the smart metering entity, market rule enforcement, conservation programs related to the Conservation First Framework and the Green Ontario Fund.

The proposed 2018 budgeted expenses include the IESO's core and strategic activities, including Market Renewal and LTEP implementation, but no allowance has been made for other policy initiatives.

For 2018, the IESO anticipates an average headcount of 688 to deliver its core electricity system responsibilities, begin implementation of the initiatives in the Long-Term Energy Plan and cybersecurity initiatives. The Market Renewal Program will require an additional average headcount of 43, bringing the total headcount requirement for the IESO to 731 in 2018.

Detailed Financials

The following table outlines the operating revenues and expenses over the business planning period.

Pro Forma Statement of Operations
For the Year Ended December 31
(in Millions of Canadian Dollars)

Budget (\$ Millions)	2017	2018	2019	2020
Revenue				
IESO Usage Fee	190.8	190.8	190.8	189.6
Registration Fees	0.6	-	-	-
Total Revenue	191.4	190.8	190.8	189.6
Expenses				
Compensation & Benefits	109.2	110.3	117.1	118.7
Professional & Consulting Fees	17.8	16.9	17.6	17.9
Operating & Administration	35.5	36.6	37.1	37.3
Operating Expenses	162.5	163.8	171.8	173.9
Amortization	18.3	17.7	17.4	16.9
Net Interest	(1.4)	(3.4)	(5.3)	(6.7)
Total Core Operations	179.4	178.1	183.9	184.1
Market Renewal	12.0	12.7	6.9	5.5
Total Expenses	191.4	190.8	190.8	189.6
Operating Surplus/(Deficit)	-	-	-	-
Accumulated Operating Surplus	10.0	10.0	10.0	10.0

Capital

The IESO regularly prioritizes capital initiatives. The business planning process establishes an appropriate capital envelope for core operating initiatives with commitments approved individually on an ongoing basis. This practice is consistent with prior years. The Market Renewal Program will begin its capital implementation stage at the end of 2018. The table below provides a summary of the total capital spending required in this plan. Project details and associated descriptions are included within Appendix 3.

Capital (\$ Millions)	2017	2018	2019	2020
Core Operations Initiatives	25.0	22.6	24.1	17.5
Market Renewal	-	4.0	34.0	48.0
Total Capital Envelope	25.0	26.6	58.1	65.5

Staffing

Total average FTEs are expected to increase in the 2018-2020 planning period due to temporary resourcing required to support the Market Renewal Program. Additional resources in core operations to support the LTEP implementation and cybersecurity initiatives have been offset by the reclassification of resources to market rule enforcement, conservation programs related to the Conservation First Framework and the Green Ontario Fund, which do not impact this business plan.

Full Time Equivalents	2017	2018	2019	2020
Core Operations	687	688	695	692
Market Renewal	25	43	86	92
Total FTEs	712	731	781	784

Market Renewal Program Financials

The Market Renewal Program is progressing on track with current total program budget estimated at \$200 million, with further budget refinement expected with the completion of the Business Case at the end of 2018.

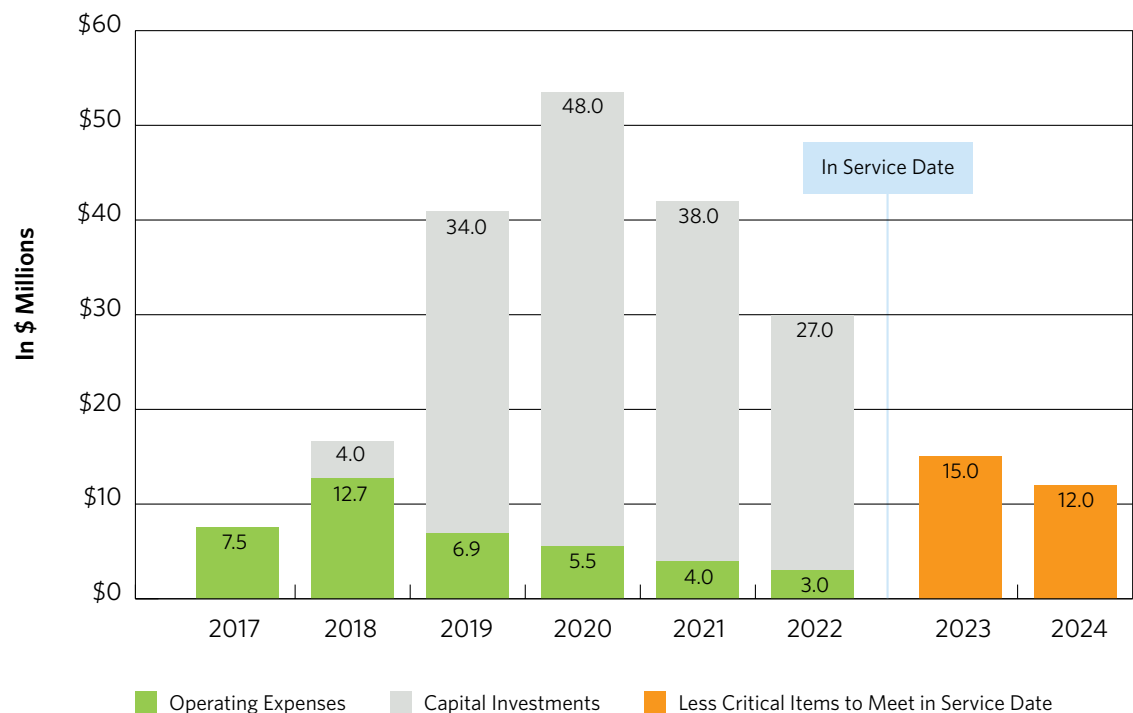
The projected spending related to Market Renewal in 2017 is \$7.5 million, compared to a budget of \$12.0 million. Spending in 2017, consistent with projections developed in Q3, is expected to be lower than planned due to slower ramp up of internal program resources and budgeted contingency amounts not required.

In 2018, Market Renewal costs continue to be predominantly classified as operating expenses, as the program plans to complete the high-level designs related to energy and capacity while balancing emerging operability challenges. The operating budget for the program in 2018 is \$12.7 million.

In late 2018, Market Renewal is expected to start the implementation phase of the program, at which time many costs will be classified as capital. The capital budget for the program in 2018 is \$4.0 million.

The program will draw support from additional internal and external resources as well as from other IESO corporate support functions.

Projected Market Renewal Costing



Green Ontario Fund

In early 2017, the IESO was directed by the Ministry of Energy to collaborate with the Ministry of Environment and Climate Change (MoECC) to support the Green Ontario Fund by assisting with the design and operation of a website, the management of a call center, and the design and delivery of programs that will help reduce greenhouse gas emissions while building on the province's existing suite of conservation and energy-efficiency programs. All funding for Green Ontario Fund programs, with the exception of the province-wide Smart Thermostat Rebate Program, will be recovered through the Greenhouse Gas Reduction Account. Funding for the Smart Thermostat Rebate Program will be jointly funded from the Conservation First Framework budget and GreenON.

Since the August 30, 2017, launch of GreenON.ca, the IESO has been actively negotiating contracts with three vendors to undertake the installation of smart thermostats and the supporting expert energy advice program for residential customers. Collectively, these contracts are valued at up to \$55 million.

Since late April, the IESO has undertaken a significant amount of work focused on website development and marketing, provision of a contact centre and client relations management services, program design and project management. Given the IESO's continued and expanded scope of work with the MoECC, a dedicated project team has been established for the Green Ontario Fund, a team that continues to grow.

As of October 31, 2017, the IESO has spent \$1.3 million of the \$3.4 million budget, which includes IESO and third-party costs that have been incurred and invoiced to the MoECC. Projected costs to the end of 2017 are under \$2 million.

Furthermore, approximately 72 percent of the total budget has already been committed.

The IESO remains uniquely positioned to effectively deliver on the design and implementation of Green Ontario Fund programming and integration with existing energy conservation programs delivered through the Conservation First Framework.

Appendix 1: Corporate Performance Measures (CPMs)

The IESO's work is focused on achieving the outcomes of this Business Plan. The 12 corporate performance measures (CPMs) defined for 2018 are intended to help drive organizational performance towards the achievement of key initiatives within the focus areas of energy utilization, resource acquisition as well as policy, business innovation and engagement and finally, corporate resources.

The 2018 CPMs consider input from the IESO's Stakeholder Advisory Committee, representing the voices of the sector as well as IESO subject matter experts. The CPMs were developed to be results and outcome-oriented, externally focused while seeking to meet the SMART criteria (specific, measureable, achievable, relevant and timely) of measurement.

Focus Areas	Corporate Performance Measure	2018 Corporate Performance Target
Energy Utilization	1. Ontario's electricity service is reliable.	<ul style="list-style-type: none"> 100% compliance to North American Electricity Reliability Corporation high violation risk factor standard requirements (including audit requirements).
	2. Robust cybersecurity leadership and practices are demonstrated across the sector.	<ul style="list-style-type: none"> By end of 2018, the IESO establishes itself as a cybersecurity thought leader in Ontario and North America by expanding the executive Cybersecurity briefings to more fully engage industry executives, work with the OEB to meet the needs of the Cybersecurity Framework by formally expanding the scope of the Cybersecurity Forum and develop a relevant metrics model to share with industry and establish a common mode of measuring security effectiveness.
	3. Conservation is an effective resource to produce efficiencies in the electricity system, drive industry innovation and support the achievement of climate change policy goals.	<ul style="list-style-type: none"> Cost-effective delivery of conservation programs undertaken within 4 cents/kWh. LDC and direct-connect customer program progress is in line with achieving the 2020 energy savings target of 8.7 TWh, with 66% (5.7 TWh) of 8.7 TWh target forecasted to be contracted by the end of 2018.
Resource Acquisition	4. The electricity market evolves, enabling the province to have the appropriate sources of electricity at a more competitive market price.	<ul style="list-style-type: none"> Draft, high-level designs are complete for the Market Renewal Program (MRP) energy and capacity work streams by the end of 2018.
	5. Broader participation in the electricity market is enabled by enhancing and expanding the value of Smart Meter Data.	<ul style="list-style-type: none"> By end of 2018, the Third-Party Access Implementation Plan will be completed.

Policy, Business Innovation and Engagement	6. Public confidence is enhanced by the IESO's excellence in implementing the effective execution of policy.	<ul style="list-style-type: none"> 2017 LTEP Implementation is tracking on schedule based on the Minister-approved Implementation Plan.
	7. Enhanced reliability and efficiency through co-ordination of resources with sector partners is fostered.	<ul style="list-style-type: none"> The mid-term review (MTR) of the Conservation First Framework and Industrial Accelerator Program is completed no later than June 1, 2018, with the IESO implementing any outcomes of the MTR starting in Q3.
	8. Energy system innovation advances future grid modernization and supports interoperability.	<ul style="list-style-type: none"> By Q4, the IESO will develop an Innovation Roadmap that engages a broad range of industry partners and customers to drive innovation across all aspects of IESO business. The Roadmap will indicate how the IESO will aim to do the following with respect to innovation: <ul style="list-style-type: none"> foster or try to initiate facilitate and collaborate adapt.
	9. Stakeholders and communities are confident with the engagement process for making informed decisions.	<ul style="list-style-type: none"> A 2% improvement in satisfaction with the stakeholder engagement process is achieved from the 2017 customer satisfaction survey baseline of 67%.
Corporate Support	10. IESO resources are utilized effectively and efficiently.	<ul style="list-style-type: none"> 2018 priorities are achieved within the IESO's approved budget.
	11. Employees are engaged towards delivering the IESO's mandate.	<ul style="list-style-type: none"> A 4% increase in employee engagement is achieved from the baseline of 71% set in 2016.
	12. IESO effectively executes enterprise-wide change to enable a consistent, focused and common purpose for the business.	<ul style="list-style-type: none"> By the end of 2018, IESO's organizational realignment is progressing on track and key milestones identified for 2018 are met, including the establishment of the new enterprise change mandate by end of Q1 to centralize and enhance IESO project delivery capability.

Appendix 2: Key 2018 Risks

The IESO's established enterprise risk management (ERM) framework is in place to identify and mitigate risks that the IESO faces in achieving the organization's strategic objectives as demonstrated through the effective execution of its 2018-2020 Business Plan.

The IESO assesses risks to the business semi-annually and has identified six key risks in relation to the areas of strategic focus. Mitigation plans have been defined and are in place for the 2018 key risks. The IESO's Corporate Risk Team, representing members from each of the organization's business units, is leveraged for their subject matter expertise to support the effective assessment of risks and to report on the execution of mitigation plans. Reporting of key risks is provided to IESO's Board of Directors quarterly to monitor and report on the progress of mitigation plans.

In 2018, the IESO will look to re-define and reassess risk for further alignment with its focus areas and direction of the IESO, in order to support these key areas of focus within the business, as well as to continuously scan its operating environment for early identification of emerging risks.

Focus Areas	Key Risks
Energy Utilization	A significant cybersecurity event occurs that disrupts the operation of the IESO for extended periods of time.
Resource Acquisition Policy, Business Innovation and Engagement	Stakeholder actions and a lack of attainable capabilities have an adverse effect on the Market Renewal Program.
Energy Utilization	The breadth and pace of change of Ontario's evolving energy environment challenges the IESO's ability to maintain grid reliability and efficiently integrate new entrants and technologies into the operation of the grid.
Corporate Resources	Lower than desired employee engagement impedes the efficient and effective execution of initiatives and priorities.
Corporate Resources	Current workforce capacity and allocation does not support the IESO's ability to effectively execute its new mission, strategy and expanding mandate.
Energy Utilization	Failure of critical control room tools challenges the IESO's ability to effectively manage grid reliability and market operations.

Appendix 3: IESO Capital Spending

Summary of 2018–2020 Capital Spending

Change Initiatives/Projects (\$ Millions)	2018 Plan	2019 Plan	2020 Plan
Operations Readiness Initiatives	1.8	-	-
Wallboard Refresh	1.5	-	-
Unified Communications	3.0	2.0	-
Enterprise Cyber Security Management Refresh (Advanced Malware)	1.0	-	-
Infrastructure Refresh (building services, software licenses & computer hardware)	2.5	2.5	2.5
CRS Replacement & Migration	2.0	2.0	-
On-Line Limit Derivation (OLLD) Roll-out To Real-time Operations	1.0	1.0	-
Financial Systems Upgrade	1.0	0.5	-
FIT, microFIT and other upgrades	1.0	1.5	-
Aspen Refresh	1.0	0.2	-
IESO Portal	1.0	0.5	-
IESO Simulator Project - Phase 2	1.1	0.2	-
Meter Data Management (Upgrade)	0.5	1.0	-
Wide Area View Phase 2	0.2	0.2	3.0
PMU Integration Phase 2	-	-	3.0
Oracle Archetype Expansion, Oracle batch and Oracle Exadata Refresh	-	1.5	-
Tier 1 Storage Refresh	-	2.0	-
ETP Refresh	-	1.0	-
SCADA/EMS Replacement	-	5.0	5.0
Control Room Refresh	1.0	-	-
IT Service	-	-	1.0
Capital (\$1M & above)	19.6	21.1	14.5
Other Capital Initiatives/Projects	3.0	3.0	3.0
Core Operations Capital	22.6	24.1	17.5
Market Renewal	4.0	34.0	48.0
Total Capital including Market Renewal	26.6	58.1	65.5

Capital Change Initiatives/Project Descriptions

2018-2020 Capital Plan Details

Project	Description
Operations Readiness Initiatives	A holistic review of all the processes and tools in Market and System Operations with the intent to sustain the level of services to meet reliability standards with the efficient use of resources.
Wallboard Refresh	This project proposes to replace all wallboard projector components in the control room with a unified vendor solution that can be managed efficiently by the IESO and reduce costs associated with wallboard display changes. Wallboard projectors have exceeded their intended supported service life and must therefore be refreshed to sustain the wallboard service.
Unified Communications	<p>The IESO currently has limited video-conferencing capabilities for interactive communication for its employees situated at its multiple locations.</p> <p>This project will research, analyze, select and implement improved video- and audio-conferencing facilities for use within and between the IESO's three staffed locations, Clarkson, Adelaide and UMR.</p> <p>Consideration will be given to meeting room-to-meeting-room, laptop-to meeting-room, and laptop-to-laptop conferencing.</p> <p>These new facilities will enhance meeting communication (audio and video) between sites and result in travel-related savings.</p>
Market Information System (MIS) Refresh	The MIS, which calculates the market clearing price for settlement purposes, is used by the IESO to meet its primary obligations to determine dispatch schedules in both real-time and pre-dispatch timeframes, while satisfying operating reserve requirements and respecting transmission and security limits. This project will update both the application and underlying infrastructure to support future years while taking advantage of improvements in the most recent product.
Enterprise Cybersecurity Management Refresh	This project will include enhancements to cybersecurity analytical capabilities, procurement of new technology to address advanced malware and sourcing of additional cybersecurity intelligence. This project also includes a refresh of cybersecurity technologies.
Infrastructure refresh (building services, software licenses & computer hardware)	To procure racks and enclosures to expand the IESO's blade server rack and enclosure infrastructure to support the requirements of emerging projects. This project also includes miscellaneous building services and software license renewals.
CRS Replacement & Migration	The existing settlements system is an internally developed calculation engine of charge types to settle the electricity market. The IESO plans to review and replace this system with a standard software application.

Project	Description
On-Line Limit Derivation (OLLD) Roll-out To Real-time Operations	<p>As the power system continues to evolve, the capabilities of Operations staff, process and tools must also evolve to ensure the IESO can meet the needs of system, now and into the future, both efficiently and reliably. The enhanced working environment developed through the Operations Readiness Initiative (ORI) Program will continue to build flexible and sustainable skills, tools and processes to support further evolution of IESO operations. By reducing manual effort and increasing productivity, the IESO will be better able to manage new operational challenges of tomorrow.</p> <p>The OLLD Roll-out to Real-time Operations is one of several interrelated projects that form part of the ORI Program and contributes to the achievement of the program objectives.</p> <p>This project will deploy the DSA Tools (a power system analysis software suite) into the control room and examine the need to staff the control room with competencies of a power system analyst and modelling data analyst. As a result of changing the operating security limit support in the control room, the process and content of the SCO's will be reviewed to seek out efficiencies and suitability of on- and off-shift staff needing operating instructions.</p> <p>This project is expected to result in a reduction of approximately five minutes of effort per hour (0.5 FTE) for existing control room staff.</p>
Implementing GTL Obligations under proposed IDC Changes	<p>The Interchange Distribution Calculator (IDC) is being changed in 2018 to require Generation to Load (GTL) relief during Transmission Loading Relief (TLR) procedures, and the IESO's current method of manually constraining generation to meet TLR obligations will no longer be sufficient. This puts the IESO at a higher risk of being non-compliant with NERC Interconnection Reliability Operations and Coordination (IRO) Standards. In order to comply with the GTL relief obligations under the IDC changes, a different methodology will need to be developed to ensure the IESO can demonstrate its compliance with the IRO standards.</p>
Financial Systems Upgrade	<p>Payroll process and tools upgrade and separation of corporate and market financial transactions.</p>
FIT, microFIT and other upgrades	<p>A replacement/re-platforming of the existing FIT and microFIT systems based on program requirements and business needs and an upgrade to the existing CRM platform to the latest version of the Microsoft Dynamics CRM platform.</p>
Aspen Refresh	<p>Netapp NAS Storage System was deployed under 2012 Aspen Refresh Project with five years of fixed support costs. Storage vendors usually charge a premium price for renewing support after five years. This refresh project will upgrade the Netapp storage system with minimum five years of vendor support.</p>
IESO Portal	<p>Upgrade existing and enable new business capabilities through the IESO portal to enable the delivery of efficient services to IESO staff and external customers. An enhanced and more reliable portal will provide new IT enterprise tools that will enable the IESO to improve its business efficiency, provide more sophisticated yet user-friendly screens, and permit IT to deliver services such as online forms and collaboration features in a more flexible and timely manner.</p>
IESO Simulator Project – Phase 2	<p>The IESO simulator is an essential part of the control room operator's training to ensure the IESO delivers superior reliability performance in a changing environment. The new IESO Simulator Project – Phase 2 initiative will address outstanding items to include custom EMS security applications and allow IESO to fully integrate the EMS security applications into the simulation environment.</p>
Meter Data Management (Upgrade)	<p>The revenue metering and meter data management system (MDMS) application is required to store, transform and deliver the revenue meter information. This project is to refresh MDMS application and supporting hardware to sustain required services.</p>

Project	Description
Wide Area View Phase 2	<p>To meet industry best practices and to maintain compliance with evolving NERC Interconnection Reliability Operations (IRO) standards and audit expectations, the IESO must improve its awareness of critical elements in adjacent Reliability Coordinator (RC) areas. Improved monitoring will include power flows, voltages and equipment status within MISO in phase 1.</p> <p>This project seeks to complete the following to achieve improved situational awareness and maintain compliance with NERC IRO standards:</p> <ol style="list-style-type: none"> 1. Expand the IESO's power system detailed network model to include the neighbouring RC areas 2. Conduct a wide-area view study to identify and monitor critical elements impacting the IESO-controlled grid that reside in neighbouring RC areas 3. Enable the appropriate contingency monitoring in these external areas to ensure that the IESO monitors elements outside of Ontario that impact operating limits within Ontario 4. Provide control room operators with timely information and instructions to respond to monitored external events.
PMU Integration Phase 2	<p>The electricity industry has embraced the move towards the incorporation of Phasor Measurement Unit (PMU) telemetry into its real-time, power system modelling and post-event analysis practices. In leading the industry, NERC has identified PMUs as an emerging need in the industry to support more these advanced operations activities.</p> <p>PMUs calculate the phase angle that is fundamentally linked to power transfer and system topology. The phase angle will change drastically for major topology changes; hence, phase angle difference is a key indicator of changing system topology and switching events. Having phase angle and related information in real time will greatly improve the IESO's situational awareness with access to new PMUs in Ontario and existing PMUs beyond Ontario's borders in NYISO, PJM, MISO and ISO-NE.</p> <p>This project, in support of the IESO's 2016-2020 Strategic Plan, will integrate PMU information into the IESO's power system monitoring and analysis systems. Objectives are to develop capabilities for efficient operation of the power system and to demonstrate compliance with a number of real-time monitoring-related NERC standards. For post-event review, there is a requirement for PMU information to support NERC MOD-033-1 compliance when it comes into effect (July 1, 2019).</p>
Oracle Archetype Expansion, Oracle batch and Oracle Exadata Refresh	Upgrade Oracle 11 g to Oracle 12 C.
Tier 1 Storage Refresh	This project proposes to procure Tier 1 storage and the fiber channel SAN infrastructure for the IESO's critical applications to meet the IESO needs for the next four years. It includes the purchase and installation of additional storage and fibre channel ports at each of Clarkson and Backup Operations Centre site and migration of all servers.
Enterprise Threat Prevention Refresh	The IESO uses HP's Tipping Point solution to detect and block network-borne malicious code and cyber-attacks. This project proposes to refresh the software and hardware applications to ensure that the organization continues to be protected from threats and risks that may impact its business operations.
SCADA/EMS Replacement	The primary goal of the project is to transition daily power system operations to a robust and modern EMS platform that is expected to be effective until 2020. The project also provides the opportunity to take advantage of enhancements incorporated within VENTYX's most recent product offering.

Project	Description
Control Room Refresh	The control room layout, which remains largely unchanged since the control centre was commissioned in 1990, was not designed to meet the needs of today's operations. Since the early 1990s, there have been significant changes in power system and market operations that necessitate a revisit of the IESO's control room design. The control room upgrade project will address a number of issues related to layout, effective interaction and situational awareness to enable efficient and reliable market and system operations now and into the future.
IT Service (HP Service Manager)	This project is to refresh an existing HP Service Center tool to improve customer service.
Market Renewal	<p>Market Renewal involves initiatives to evolve the wholesale energy market and introduce capacity auctions to competitively and efficiently procure resources, while continuing to meet emerging operability challenges. Market Renewal is expected to provide value for Ontario's ratepayers by putting downward pressure on costs while fostering an open and competitive marketplace with broad participation. Market Renewal will include:</p> <ul style="list-style-type: none"> ▪ a single-schedule market ▪ a financially binding Day-ahead Market ▪ enhanced real-time unit commitment ▪ a capacity auction including the import and export of capacity ▪ more frequent intertie scheduling ▪ other operability enhancements as identified by the IESO and its stakeholders.

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System Operator

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MAR 19 2018

MC-2018-289

Mr. Peter Gregg
President and CEO
Independent Electricity System Operator (IESO)
1600–120 Adelaide Street West
Toronto ON M5H 1T1

Dear Mr. Gregg:

Thank you for submitting the revised IESO proposed 2018–20 Business Plan (Plan) for my approval.

The Ministry has reviewed the revised Plan. I am satisfied that the Plan has taken into account the 2017 Long-Term Energy Plan (LTEP) and the business plan requirements set out in our Memorandum of Understanding. I am also satisfied that the 2018 budget and related activities set out in the Plan reflect the appropriate scope and resourcing to advance the Market Renewal Project as well as meeting the responsibilities of the IESO's core mandate.

I expect future Market Renewal Project resourcing beyond 2018 will be further reassessed in future business plans and in the IESO's proposed expenditure and revenue requirements submitted to the Ontario Energy Board.

I acknowledge that the Plan aligns with the IESO's LTEP Implementation Plan, which I approved on February 15, 2018. The clarity you have provided with regard to costs and obligations associated with the IESO's support to the Ministry of the Environment and Climate Change and the Green Ontario Fund is responsive to my earlier request.

This letter constitutes my approval of the Plan in accordance with my authority under subsection 24(2) of the *Electricity Act, 1998*.

I look forward to working with the IESO on the opportunities that lie ahead.

Sincerely,

A handwritten signature in black ink, appearing to read 'Glenn Thibeault', written over a horizontal line.

Glenn Thibeault
Minister

c: Tim O'Neill, Chair, IESO
Serge Imbrogno, Deputy Minister of Energy
Carolyn Calwell, Assistant Deputy Minister, Strategic Network and Agency Policy,
Ministry of Energy

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INDEPENDENT ELECTRICITY SYSTEM OPERATOR

2017 Annual Report

2017: Ontario's Electricity Sector at a Glance

Generation

36,853 MW

Installed generation capacity
(transmission-connected)

3,800 MW

Installed generation capacity
(distribution-connected)

Demand

132.1 TWh

Total demand

21,786 MW

Highest recorded
2017 peak demand,
on September 25

Imports/Exports

6,627 GWh

Total imports

19,098 GWh

Total exports

Customers

524

Total number of
market participants

5 million

Residential and small
business customers
served by 67 local
distribution companies

Price

1.58¢/kWh

Weighted average
wholesale price of
electricity (Hourly
Ontario Energy Price)

9.97¢/kWh

Average Global
Adjustment
Class B rate

Market Transactions

\$17 billion

Financial transactions
settled by the IESO
wholesale market*

Conservation

950,000 MWh**

Net energy savings
from conservation
programs delivered
by local distribution
companies and
the IESO

* Includes a combination of commodity charges (Hourly Ontario Energy Price and Global Adjustment),
wholesale market service charges, wholesale transmission charges and other associated charges
** Unverified incremental first year

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Note from the President & CEO and the Chair



Peter Gregg



Tim O'Neill

The transformation in the energy sector is reshaping the landscape, not only in Ontario but beyond our borders too. System planners and operators in Canada, the United States and other jurisdictions around the globe are adapting to new supply mixes and new operating environments. The rapid growth in distributed energy resources has resulted in power flows between the distribution and transmission systems that are becoming more variable and less predictable. At the same time, new relationships are emerging between electricity consumers and the grid that supplies their homes, businesses and institutions.

The pace of change continues to accelerate as well. To support reliability despite the changing environment, the IESO is seeking ways to find – and deliver – continuous improvement. Whether externally focused, like the Market Renewal Program or the Conservation First Framework Mid-Term Review, or internally focused, like the corporate reorganization initiated in 2017, the IESO is taking steps to enhance the way it does business.

The IESO continues to examine its systems and processes to assess how effectively they are meeting current needs – and the extent to which they will support future ones. We're seeking new ways to find efficiencies, contain costs, optimize outcomes and results, and deliver value.

This focus on improvement is not happening in isolation. Throughout 2017, the IESO worked closely with market participants, stakeholders, communities, the public and government to identify innovative, optimal solutions to the challenges that face the organization – and the sector. In this way, all parties affected by the IESO's policies, programs and processes can help define the path forward.

This path will see the IESO working with existing partners as well as new ones. In 2017, for example, the IESO launched a public engagement related to the smart meter data held within the Meter Data Management/Repository (MDM/R). With nearly five million smart meters sending hourly data to the MDM/R, and more than 60 local distribution companies integrated into the system, Ontario's MDM/R is one of the largest shared systems in the world. By including new voices in the conversation, the IESO will ensure the full value of Ontario's energy consumption data can be leveraged while respecting privacy obligations.

The integrated nature of North America's power system means that operationally, what happens in Ontario has ripple effects in other parts of the continent – and vice versa. Cyber threats are growing in volume, velocity and variety, and the impact goes beyond just Ontario. To an increasing extent, they are intended to exploit the complexity and connectivity of critical infrastructure systems on which Ontario and its neighbours depend. As online systems are exposed to more frequent and more sophisticated attacks, there's a growing need for a robust, integrated and flexible approach to cybersecurity management. As a result, the IESO is working with partners inside and outside the electricity industry to identify new cybersecurity risks and develop shared strategies to mitigate their impact.

Amidst all these changes, the IESO's relationships – with stakeholders, customers, Indigenous and other communities, government and other system operators – are also evolving. We are building on these relationships and on the engagements that inform our decision making to ensure they continue to provide a solid foundation for the organization. We will leverage them both to meet our corporate objectives and maintain the operation of a reliable, sustainable and cost-effective electricity system.

Peter Gregg
President & CEO

Tim O'Neill
Chair, Board of Directors

2017 Year in Review

Building on a Solid Foundation: Future-Proofing Ontario's Power System and Wholesale Electricity Markets through Collaboration, Innovation and Vision

A decade and a half after Ontario's wholesale electricity markets opened in May 2002, the landscape today looks very different. Coal-fired generation has been replaced by renewable resources like wind and solar, natural gas and refurbished nuclear. Conservation and demand response are playing a growing role in meeting Ontario's energy needs. Consumers are taking a more active role in monitoring and managing their consumption. Generation is becoming increasingly decentralized. And policy changes and emerging technologies, including energy storage, are transforming the way the electricity sector impacts individuals and organizations – including the IESO.

For all that has changed, one thing hasn't: the IESO's focus on reliability. In an increasingly connected world, where power-consuming devices are found in virtually every home and workplace across the province, customers expect a reliable supply of electricity.

As a result, the IESO is accelerating its efforts to support reliability in a changing world. In practical terms, that work requires the organization to manage what exists today and plan for what needs to exist tomorrow.

Delivering Reliability in a Changing Environment

When it comes to managing a highly complex network like a power system, new resources, policies and technologies call for new systems, processes and tools on the part of the system operator. While the IESO's commitment to maintaining reliability remains unchanged over the past 15 years, the manner in which it achieves this outcome continues to evolve.

The composition of Ontario's resource mix is changing. The increasing amount of variable generation, the integration of distributed energy resources (DERs), and the growing sophistication and interconnectedness of the grid are creating new challenges. There are now more than 4,300 MW of DERs in service and under development. The IESO needs to ensure it has visibility of their operation, is able to forecast their output over different timeframes, can study their impact on the system and can coordinate their operation to ensure reliability.

DERs offer greater customer choice and present opportunities to optimize overall system investments and provide grid reliability services. The IESO is assessing these opportunities, working with stakeholders to understand the impact on the transmission/distribution interface and exploring areas for further collaboration and data sharing.

Market Renewal

Underpinning the IESO's efforts to plan and prepare for the future is the Market Renewal project, which was formally launched in 2017. The market design that was appropriate for 2002 is showing its age, necessitating improvements that will enable it to better meet the needs of today and tomorrow. Fundamental changes are required to address known inefficiencies and lay the foundations for a robust, flexible and efficient market that will serve Ontarians well.

The province is currently enjoying a strong, stable supply position, though planned nuclear refurbishments and the retirement of the Pickering nuclear facility will create needs in the early to mid-2020s. This period of stability is an ideal time for the IESO to push ahead with the most significant changes to the structure of Ontario's wholesale electricity markets since their creation nearly 16 years ago.

At a high level, Market Renewal is intended to refine the way in which the IESO procures, schedules, dispatches and compensates providers of energy, capacity and other essential grid services, which will reduce overall system costs. When fully implemented, Market Renewal is expected to result in up to \$5.2 billion in efficiency improvements over a 10-year period.

Engagement activities for Market Renewal are well underway. Stakeholder groups reviewing the first two Market Renewal initiatives – conversion of the current two-schedule market to a single-schedule market and implementation of an incremental capacity auction – met often throughout 2017. High-level design work is underway and will conclude in 2018, while detailed design and implementation will begin later in the year.

Engagement

Engagement with stakeholders and communities is a priority for all aspects of the IESO's business. It can take many forms. Historically, the IESO's engagement has focused on traditional sector partners like generators, transmitters, distributors and large-volume consumers. Today, however, it frequently involves Indigenous communities and organizations, municipalities, tech companies and app developers, as well as academic institutions and research networks.

The IESO has a number of formal and informal channels through which to seek input. These include established groups like the Stakeholder Advisory Committee and the Technical Panel, as well as other content- and audience-specific working groups, committees and forums. By seeking input prior to making decisions, and by acting on the feedback that's provided, the IESO makes sound decisions in a way that considers all parties' needs and interests.

The IESO's approach to engagement broadened in 2017, bringing a fresh set of ideas and opinions into consideration. New in-person engagement mechanisms – including, for example, five regional forums and an Indigenous Community Energy Symposium co-hosted with the Ministry of Energy – complemented existing mechanisms and initiative-specific engagements. On the digital front, the corporate website, www.ieso.ca, underwent a complete redesign and now includes a new section for content related to energy innovation known as "Powering Tomorrow."

Seeking Cost Efficiencies

The IESO is leading efforts to create a more competitive and cost-efficient electricity system through Market Renewal, consumer opportunities and new approaches to transmission development. A more competitive and cost-efficient system will drive down costs for Ontario ratepayers, create opportunities for stakeholders and stimulate innovation. Increased efficiency is a priority for the organization and can take many forms. For example, the 2017 demand response (DR) auction completed in December resulted in increased consumer participation and lower prices. Thirty-five organizations were registered as auction participants, more than double the number of participants in the first DR auction, which was held in 2015. The average annual clearing price set through the 2017 auction was 16.6 percent lower than in 2015.

In addition to changes on the demand side, the Feed-in Tariff (FIT) and microFIT procurements of renewable generation came to an end in 2017. These programs have contributed thousands of megawatts to the province's supply of clean, renewable generation, but the conclusion of these procurements is an important milestone in the evolution of the IESO's resource acquisition model.

New competition in the IESO's reliability services markets is also helping to drive costs down. In November 2017, the IESO announced that two new energy storage facilities had been selected through a competitive process to help support the reliability, flexibility and efficiency of the province's electricity grid. The successful parties will provide a combined 55 megawatts of regulation service, an important grid-balancing function that corrects for short-term changes in electricity use that might affect the reliability of the power system. These projects represent one of the largest reductions in per-unit regulation costs since Ontario's electricity market opened.

Enabling Conservation

Ontario continues to make steady progress towards its 2020 conservation target of 8.7 terawatt-hours (TWh) of energy savings through the Conservation First Framework (CFF) programs and the Industrial Accelerator Program (IAP). The CFF is on target and under budget at the halfway mark, having achieved 3.85 TWh (55% of the CFF target¹) of energy savings in the first half of the framework. When combined with an additional 0.640 TWh achieved through the IAP, a total of about 4.5 TWh of energy savings has been achieved – the equivalent of powering close to half a million homes for a year. While 2017 conservation numbers are still preliminary, total demand from grid-connected resources was about nine percent lower in 2016 than it was 10 years earlier – due in large part to conservation programs, innovation, new technologies and ongoing changes in energy-use behaviour.

Conservation remains the most cost-effective supply resource available, at just over two cents per kWh, providing value to the broader system while helping consumers to manage their costs. The conservation efforts of the last 10 years have helped avoid investments in more expensive electricity infrastructure and new generation. A priority in 2017 was the mid-term review of the current Conservation First Framework, which began in 2016 and will be completed in 2018. The focus of the review is the cost-effective delivery of both local distribution company (LDC) and transmission-connected customer conservation programs, and assurance that LDC and directly connected customer program progress is in line to achieve the 2020 energy-savings targets.

The IESO's expertise in developing and delivering customer-focused electricity conservation programs is well established. The company is now collaborating with the Ministry of the Environment and Climate Change to support the design and delivery of Green Ontario Fund (GreenON) programs. GreenON's focus is on developing greenhouse gas saving programs and initiatives. Through a collaboration agreement, GreenON and the IESO are working to design and deliver new programs that complement and build on the success of existing energy-efficiency programs.

Organizational Alignment

Policy and innovation can open up new opportunities for consumers and stakeholders, drive down costs and lead to a more efficient and effective electricity grid. Together with its stakeholders, the IESO informs and implements policy while creating an environment where innovation can thrive.

To support its efforts in this area, the IESO underwent an organizational realignment in the fourth quarter of 2017. The new Policy, Engagement and Innovation group aligns the various IESO resources to more effectively develop policy that reflects the broader objectives of the IESO and Ontario's electricity sector, including the need to foster innovation. This group is also responsible for leading the IESO's engagement efforts with customers and stakeholders, the energy regulator, the government and others to ensure their input is actively sought and considered as new initiatives are advanced.

The new Planning, Acquisition and Operations group brings together functions that are responsible for a reliable and efficient province-wide power system both today and in the future. This includes planning, Market Renewal, resource and transmission procurement, and real-time operations and engineering.

Other changes to the IESO's structure include a new standalone business unit and senior executive leading the Human Resources function and a group called Legal Resources and Corporate Governance that includes contract management. The new vice-president of Information & Technology Services will also serve as Chief Information Officer and lead the company's efforts in the area of cybersecurity. As part of its efforts to increase efficiency, provide better service to internal and external customers, and deliver greater value to ratepayers, the IESO is adopting an enterprise-wide view of its operations. Consistent with that shift, a centralized team responsible for the prioritization, governance and delivery of enterprise change at the IESO has been created and reports through the Vice-President of Corporate Services and Chief Financial Officer. This new organizational structure sets a clear corporate direction that will enable the IESO to deliver on its mandate while managing the changes that are reshaping Ontario's energy sector.

1. Preliminary unverified results for the first half of the framework (2015-2017), which includes verified results for 2015 and 2016 in the amount of 2.81 TWh for CFF.

Looking Ahead

Although activities to support the ongoing sector-wide changes are underway across the organization, some initiatives are more visible than others. Consulting with stakeholders to establish the processes and safeguards required to leverage the full value of Ontario's smart meter data was another priority in 2017. The province has nearly five million smart meters sending vast amounts of data to the IESO's Meter Data Management/Repository. This central hub processes, stores and protects the electricity consumption data of residential and small business customers used for consumer billing by Ontario's LDCs.

The IESO has begun to work with stakeholders to define the rules for how third parties can gain access to that data while protecting privacy and confidentiality. This work includes the creation of a Data Strategy Advisory Council with representatives from various sectors to help design the Third-Party Access Implementation Plan and help realize the potential of big data.

In today's increasingly connected world, protecting online assets is essential. Cybersecurity is a fundamental component of the IESO's role in maintaining the safe and sustainable operation of Ontario's power grid. The IESO ensures it is compliant with North American industry standards and invests in new technology, techniques and training to ensure that the organization is equipped with the best resources to combat cyber threats. The organization also incorporates a "cybersecurity by design" approach into IT program development.

In 2017, the IESO continued to play a leadership role in the field of cybersecurity by leading collaborative forums to share best practices and by hosting executive level cybersecurity briefings to share lessons from experts around the world. The IESO implemented new detection technology in 2017 to further protect confidential information and is currently expanding its cybersecurity governance framework over the next two to three years to meet the National Institute of Standards and Technology Cybersecurity Framework, which will establish effective security governance around external vendors.

Drawing heavily on the models, data and analysis contained within the IESO's *Ontario Planning Outlook*, published in 2016, the Minister of Energy released the government's *Long-Term Energy Plan* (LTEP) in October 2017. The IESO has since worked with stakeholders and communities to develop an implementation plan - *Putting Ontario's Long-Term Energy Plan Into Action* - that supports many of the initiatives identified in the LTEP, which touch on many of the IESO's core functions. The work described in this plan will take place over several years, requiring regular engagement and collaboration by the IESO and its partners.

Management Report

Management's Responsibility for Financial Reporting

The accompanying financial statements of the Independent Electricity System Operator are the responsibility of management and have been prepared in accordance with Canadian public sector accounting standards. The significant accounting policies followed by the Independent Electricity System Operator are described in the Summary of Significant Accounting Policies contained in Note 2 in the financial statements. The preparation of financial statements necessarily involves the use of estimates based on management's judgement, particularly when transactions affecting the current accounting period cannot be finalized with certainty until future periods. The financial statements have been prepared within reasonable limits of materiality and in light of information available up to March 27, 2018.

Management maintained a system of internal controls designed to provide reasonable assurance that the assets were safeguarded and that reliable information was available on a timely basis. The system included formal policies and procedures and an organizational structure that provided for the appropriate delegation of authority and segregation of responsibilities.

These financial statements have been examined by KPMG LLP, a firm of independent external auditors appointed by the Board of Directors. The external auditors' responsibility is to express their opinion on whether the financial statements are fairly presented in accordance with generally accepted accounting principles in Canada. The Auditors' Report, which follows, outlines the scope of their examination and their opinion.

INDEPENDENT ELECTRICITY SYSTEM OPERATOR

On behalf of management,



Peter Gregg
President and Chief Executive Officer
Toronto, Canada
March 27, 2018



Kimberly Marshall
Vice-President, Corporate Services
and Chief Financial Officer
Toronto, Canada
March 27, 2018

Independent Auditors' Report

To the Board of Directors of the Independent Electricity System Operator (IESO)

We have audited the accompanying financial statements of IESO, which comprise the statement of financial position as at December 31, 2017, the statements of operations and accumulated surplus, remeasurement gains and losses, change in net debt and cash flows for the year then ended, and notes, comprising a summary of significant accounting policies and other explanatory information.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with Canadian public sector accounting standards, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on our judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, we consider internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements present fairly, in all material respects, the financial position of IESO as at December 31, 2017, and its results of operations and the changes in its net debt and its cash flows for the year then ended in accordance with Canadian public sector accounting standards.



Chartered Professional Accountants, Licensed Public Accountants

March 27, 2018
Waterloo, Canada

Statement of Financial Position

As at (in thousands of Canadian dollars)

December 31, 2017

December 31, 2016

	\$	\$
FINANCIAL ASSETS		
Cash	64,214	38,914
Accounts receivable	41,429	25,194
Regulated assets (Note 3)	39,529	65,064
Long-term investments (Note 4)	45,276	40,355
Market accounts – assets (Note 5)	2,005,167	1,692,752
TOTAL FINANCIAL ASSETS	2,195,615	1,862,279
LIABILITIES		
Accounts payable and accrued liabilities (Note 6)	37,264	38,963
Accrued interest on debt	-	315
Rebates due to market participants (Note 7)	1,422	12,551
Debt (Note 8)	120,000	90,000
Accrued pension liability (Note 9)	29,229	34,620
Accrued liability for employee future benefits other than pension (Note 9)	96,216	90,251
Market accounts – liabilities (Note 5)	2,005,167	1,692,752
TOTAL LIABILITIES	2,289,298	1,959,452
NET DEBT	(93,683)	(97,173)
NON-FINANCIAL ASSETS		
Net tangible capital assets (Note 10)	100,794	105,047
Prepaid expenses	6,809	6,614
TOTAL NON-FINANCIAL ASSETS	107,603	111,661
ACCUMULATED SURPLUS		
Accumulated surplus from operations	3,436	6,582
Accumulated remeasurement gains	10,484	7,906
ACCUMULATED SURPLUS (Note 7)	13,920	14,488

Contingencies (Note 16)

See accompanying notes to financial statements

On behalf of the Board:



Tim O'Neill
Chair
Toronto, Canada



Carole Workman
Director
Toronto, Canada

Statement of Operations and Accumulated Surplus

For the year ended December 31 (in thousands of Canadian dollars)	2017	2017	2016
	Budget \$	Actual \$	Actual \$
IESO CORE OPERATIONS			
System fees	190,790	180,102	185,531
Other revenue (Note 11)	574	4,145	2,531
Interest and investment income	2,100	2,312	2,157
Core operation revenues	193,464	186,559	190,219
Core operating expenses (Note 12)	(193,464)	(185,137)	(177,668)
Core operations surplus/(deficit) before rebates	-	1,422	12,551
Rebates due to market participants	-	(5,422)	(12,551)
Core operations deficit	-	(4,000)	-
OTHER GOVERNMENT PROGRAMS			
Government transfer (Note 12)	-	2,696	-
Government transfer expenses (Note 12)	-	(2,696)	-
Government transfer surplus	-	-	-
SMART METERING ENTITY			
Smart metering charge	31,536	25,655	27,426
Smart metering expenses (Note 12)	(31,536)	(24,716)	(27,426)
Smart metering entity surplus	-	939	-
MARKET SANCTIONS AND PAYMENT ADJUSTMENTS			
Market sanctions and payment adjustments	4,219	3,176	3,889
Customer education and market enforcement expenses (Note 12)	(4,513)	(3,261)	(3,655)
Market sanctions and payment adjustments surplus/(deficit)	(294)	(85)	234
(DEFICIT)/SURPLUS	(294)	(3,146)	234
ACCUMULATED SURPLUS FROM OPERATIONS, BEGINNING OF PERIOD	6,582	6,582	6,348
ACCUMULATED SURPLUS FROM OPERATIONS, END OF PERIOD	6,288	3,436	6,582

See accompanying notes to financial statements

Statement of Remeasurement Gains and Losses

For the year ended December 31 (in thousands of Canadian dollars)	2017	2016
	Actual \$	Actual \$
ACCUMULATED REMEASUREMENT GAINS, BEGINNING OF PERIOD	7,906	7,658
UNREALIZED GAINS ATTRIBUTABLE TO:		
Foreign exchange – other	456	477
Portfolio investments (Note 4)	2,599	286
AMOUNTS RECLASSIFIED TO THE STATEMENT OF OPERATIONS:		
Foreign exchange – other	(477)	(515)
NET REMEASUREMENT GAINS FOR THE PERIOD	2,578	248
ACCUMULATED REMEASUREMENT GAINS, END OF PERIOD	10,484	7,906
See accompanying notes to financial statements		

Statement of Change in Net Debt

For the year ended December 31 (in thousands of Canadian dollars)	2017	2017	2016
	Budget	Actual	Actual
	\$	\$	\$
SURPLUS/(DEFICIT)	(294)	(3,146)	234
CHANGE IN NON-FINANCIAL ASSETS			
Acquisition of tangible capital assets	(27,500)	(16,774)	(24,769)
Amortization of tangible capital assets	23,126	21,027	23,438
Change in prepaid expenses	-	(195)	(417)
TOTAL CHANGE IN NON-FINANCIAL ASSETS	(4,374)	4,058	(1,748)
NET REMEASUREMENT GAINS FOR THE PERIOD	-	2,578	248
CHANGE IN NET DEBT	(4,668)	3,490	(1,266)
NET DEBT, BEGINNING OF PERIOD	(97,173)	(97,173)	(95,907)
NET DEBT, END OF PERIOD	(101,841)	(93,683)	(97,173)

See accompanying notes to financial statements

Statement of Cash Flows

For the year ended December 31 (in thousands of Canadian dollars)	2017	2016
	\$	\$
OPERATING TRANSACTIONS		
Change in accumulated surplus/(deficit):		
(Deficit)/surplus	(3,146)	234
	(3,146)	234
Changes in non-cash items:		
Amortization	21,027	23,438
Pension expense	8,111	11,610
Other employee future benefits expense	8,601	8,127
	37,739	43,175
Changes in non-cash balances related to operations:		
Change in accounts payable and accrued liabilities	(202)	(7,495)
Change in accounts receivable	(16,235)	8,005
Change in rebates due to market participants	(11,129)	2,956
Change in regulated assets	25,535	23,138
Change in prepaid expenses	(195)	(417)
	(2,226)	26,187
Other:		
Contribution to pension fund	(13,502)	(13,052)
Payment of employee future benefits	(2,636)	(2,377)
	(16,138)	(15,429)
Cash provided by operating transactions	16,229	54,167
CAPITAL TRANSACTIONS		
Acquisition of tangible capital assets	(16,774)	(24,769)
Change in accounts payable and accrued liabilities	(1,812)	(2,410)
Cash applied to capital transactions	(18,586)	(27,179)
INVESTING TRANSACTIONS		
Purchase of long-term investments	(2,322)	(2,751)
Cash applied to investing transactions	(2,322)	(2,751)
FINANCING TRANSACTIONS		
Issuance of debt	30,000	-
Cash provided by financing transactions	30,000	-
INCREASE IN CASH	25,321	24,237
CASH - BEGINNING OF PERIOD	38,914	14,715
Unrealized foreign exchange (losses) for the period	(21)	(38)
CASH - END OF PERIOD	64,214	38,914
See accompanying notes to financial statements		

Notes to Financial Statements

1. NATURE OF OPERATIONS

a) The Independent Electricity System Operator (IESO) is a not-for-profit, non-taxable corporation established pursuant to Part II of the *Electricity Act, 1998*. The predecessor IESO and the Ontario Power Authority (OPA) were amalgamated by statute effective January 1, 2015, and continues as the Independent Electricity System Operator. As set out in the *Electricity Act, 1998*, the IESO operates pursuant to a licence granted by the Ontario Energy Board (OEB). The amalgamation was effected pursuant to Bill 14, *Building Opportunity and Securing Our Future Act (Budget Measures), 2014*, which received Royal Assent on July 24, 2014. IESO's services and the market IESO operates are subject to regulation by the OEB, under the authority granted by the *Ontario Energy Board Act, 1998*. The OEB has regulatory oversight of electricity matters in Ontario. The objects of the IESO as contained in the *Electricity Act, 1998*, and Ontario Regulation 288/14 are as follows:

- to exercise the powers and perform the duties assigned to it under this Act, the regulations, directions, the market rules and its licence
- to enter into agreements with transmitters to give it authority to direct the operation of their transmission systems
- to direct the operation and maintain the reliability of the IESO-controlled grid to promote the purposes of this Act
- to participate in the development by any standards authority of criteria and standards relating to the reliability of the integrated power system
- to establish and enforce criteria and standards relating to the reliability of the integrated power system
- to work with the responsible authorities outside of Ontario to co-ordinate the IESO's activities with the activities of those authorities
- to operate the IESO-administered markets (IAM) to promote the purposes of this Act
- to engage in activities related to contracting for the procurement of electricity supply, electricity capacity and conservation resources
- to engage in activities related to settlements, payments under a contract entered into under the authority of this Act and payments provided for under this Act or the *Ontario Energy Board Act, 1998*
- to engage in activities in support of the goal of ensuring adequate, reliable and secure electricity supply and resources in Ontario
- to forecast electricity demand and the adequacy and reliability of electricity resources for Ontario for the short term, medium term and long term
- to conduct independent planning for electricity generation, demand management, conservation and transmission
- to engage in activities to facilitate the diversification of sources of electricity supply by promoting the use of cleaner energy sources and technologies, including alternative energy sources and renewable energy sources
- to engage in activities in support of system-wide goals for the amount of electricity to be produced from different energy sources
- to engage in activities that facilitate load management
- to engage in activities that promote electricity conservation and the efficient use of electricity
- to assist the Board by facilitating stability in rates for certain types of consumers
- to collect and make public information relating to the short-term, medium-term and long-term electricity needs of Ontario and the adequacy and reliability of the integrated power system to meet those needs
- to engage in such other objects as may be prescribed by the regulations.

b) The IESO was designated the Smart Metering Entity (SME) by Ontario Regulation 393/07 under the *Electricity Act, 1998*, on March 28, 2007. The regulation came into effect on July 26, 2007.

The objects of the SME, as contained in the *Electricity Act, 1998*, are as follows:

- to plan and implement and, on an ongoing basis, oversee, administer and deliver any part of the smart metering initiative as required by regulation under this or any Act or directive made pursuant to sections 28.3 or 28.4 of the *Ontario Energy Board Act, 1998*, and, if so authorized, to have the exclusive authority to conduct these activities
- to collect and manage and to facilitate the collection and management of information and data and to store the information and data related to the metering of consumers' consumption or use of electricity in Ontario, including data collected from distributors and, if so authorized, to have the exclusive authority to collect, manage and store the data
- to establish, to own or lease and to operate one or more databases to facilitate collecting, managing, storing and retrieving smart metering data
- to provide and promote non-discriminatory access, on appropriate terms and subject to any conditions in its licence relating to the protection of privacy, by distributors, retailers and other persons,
 - i. to the information and data referred to above, and
 - ii. to the telecommunication system that permits the SME to transfer data about the consumption or use of electricity to and from its databases, including access to its telecommunication equipment, systems and technology and associated equipment, systems and technologies.
- to own or to lease and to operate equipment, systems and technology, including telecommunication equipment, systems and technology that permit the SME to transfer data about the consumption or use of electricity to and from its databases, including owning, leasing or operating such equipment, systems and technology and associated equipment, systems and technologies, directly or indirectly, including through one or more subsidiaries, if the SME is a corporation
- to engage in such competitive procurement activities as are necessary to fulfill its objects or business activities
- to procure, as and when necessary, meters, metering equipment, systems and technology and any associated equipment, systems and technologies on behalf of distributors, as an agent or otherwise, directly or indirectly, including through one or more subsidiaries, if the SME is a corporation
- to recover, through just and reasonable rates, the costs and an appropriate return approved by the OEB associated with the conduct of its activities
- to undertake any other objects that are prescribed by associated regulation.

c) The IESO is required to exercise the powers and rights and to perform the duties and obligations assigned to it under the *Ontario Fair Hydro Plan Act, 2017* (FHP) and to engage in activities to facilitate the implementation of FHP, including,

- i. entering into agreements or arrangements with any person for the purposes of the FHP
- ii. engaging in activities related to making payments to and receiving payments as contemplated under the FHP and related settlement activities
- iii. engaging in activities related to the transfer and administration of the regulatory asset created under the FHP, which activities may include:
 - a) incurring liabilities in relation to the regulatory asset
 - b) transferring the regulatory asset under section 26 of the FHP for consideration
 - c) acting as a recovery agent under the FHP.

d) The IESO is required to submit its proposed expenditures, revenue requirements and fees for the coming year to the OEB for review and approval. The submission may be made only with the approval or deemed approval of the IESO business plan by the Minister of Energy (Minister).

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

a) Basis of financial statement preparation

The accompanying financial statements have been prepared on a going-concern basis and in accordance with Canadian public sector accounting standards (PSAB) and reflect the following significant accounting policies.

b) Revenue recognition

System fees earned by the IESO are based on approved rates for each megawatt of electricity withdrawn from the IESO-controlled grid (including scheduled exports) and embedded generation. System fees are recognized as revenue at the time the electricity is withdrawn. Rebates are recognized in the year in which the regulatory deferral account, before such rebates, exceeds regulated limits.

The Smart Metering Charge that is earned by the IESO is based on a rate approved by the OEB for each installed smart meter in the province. Revenue is recognized in the year as it is earned.

These financial statements reflect the revenue and expenses of the financial transactions of market participants within the IAM on a net basis.

Other revenue represents amounts that accrue to the IESO relating to investment income on funds passing through market settlement accounts, as well as application fees. Such revenue is recognized as it is earned.

Interest and investment income represents realized interest income and investment gains or losses on cash, cash equivalents, short-term investments and long-term investments.

Government transfers are recognized as revenues in the financial statements in the period in which the events giving rise to the transfer occur, providing the transfers are authorized, any eligibility criteria have been met and reasonable estimates of the amounts can be made.

Market sanctions represent funds received to offset payments disbursed related to penalties, damages, fines and payment adjustments arising from resolved settlement disputes. Such revenue is recognized as it is earned.

c) Financial instruments

The IESO records cash and cash equivalents, long-term investments and foreign currency exchange forward contracts at fair value. The cumulative change in fair value of these financial instruments is recorded in accumulated surplus as remeasurement gains and losses and is included in the value of the respective financial instrument shown in the statement of financial position and the statement of remeasurement gains and losses. Upon disposition of the financial instruments, the cumulative remeasurement gains and losses are reclassified to the statement of operations, and all other gains and losses associated with the disposition of the financial instrument are recorded in the statement of operations. Transaction costs are charged to operations as incurred.

Cash and cash equivalents comprise cash, term deposits and other short-term, highly rated investments with original maturity dates of less than 90 days.

The IESO records accounts receivable amounts due to and from market participants, accounts payable and debt at amortized cost.

d) Regulated assets and liabilities

As a rate-regulated entity, the IESO, in appropriate circumstances, establishes regulated assets or liabilities and thereby defers the impact on the statement of operations of certain expenses or revenues because they are probable to be collected or refunded to market participants through future billings. The IESO has applied guidance from United States Generally Accepted Accounting Principles (US GAAP) Topic 980, *Regulated Operations*, in this policy.

e) Market accounts – assets and liabilities

The IESO records the market accounts, assets, liabilities and amounts due to and from market participants held on behalf of the IAM in its statements of financial position. The IESO-administered markets are a balancing system and, as such, the net position of market accounts will settle to a \$nil balance in accordance with market rules.

f) Tangible capital assets

Tangible capital assets are recorded at cost, which includes all amounts directly attributable to the acquisition, construction, development or betterment of the asset. The IESO capitalizes applicable interest as part of the cost of tangible capital assets.

g) Assets under construction

Assets under construction generally relates to the costs of physical facilities, hardware and software, and includes costs paid to vendors, internal and external labour, consultants and interest related to funds borrowed to finance the project. Costs relating to assets under construction are transferred to tangible capital assets when the asset under construction is deemed to be ready for use.

h) Amortization

The capital cost of tangible capital assets in service is amortized on a straight-line basis over their estimated service lives.

The estimated service lives, in years, from the date the assets were acquired are:

Class	Estimated Average Service Life 2017	Estimated Average Service Life 2016
Facilities	5 to 50	5 to 50
Market systems and applications	4 to 12	4 to 12
Infrastructure and other assets	4 to 10	4 to 10
Meter data management/repository	10	10

Gains and losses on sales or premature retirements of tangible capital assets are charged to operations.

The estimated service lives of tangible capital assets are subject to periodic review. The effects of changes in the estimated lives are amortized on a prospective basis. The most recent review was completed in fiscal 2017.

i) Pension, other post-employment benefits and compensated absences

The IESO's post-employment benefit programs include pension, group life insurance, health care, long-term disability and workers' compensation benefits.

The IESO accrues obligations under pension and other post-employment benefit (OPEB) plans and the related costs, net of plan assets. Pension and OPEB expenses and obligations are determined annually by independent actuaries using the projected benefit method and management's best estimate of expected return on plan assets, salary escalation, retirement ages of employees, mortality and expected health-care costs. The discount rate used to value liabilities is based on the expected rate of return on plan assets as at the measurement date of September 30.

The expected return on plan assets is based on management's long-term best estimate using a market-related value of plan assets. The market-related value of plan assets is determined using the average value of assets over three years as at the measurement date of September 30.

Pension and OPEB expenses are recorded during the year in which employees render services. Pension and OPEB expenses consist of current service costs, interest expense on liabilities, expected return on plan assets and the cost of plan amendments in the period. Actuarial gains/(losses) arise from, among other things, the difference between the actual rate of return on plan assets for a period and the expected long-term rate of return on plan assets for that period or from changes in actuarial assumptions used to determine the accrued benefit obligations.

Actuarial gains/(losses) are amortized over the expected average remaining service life of the employees covered by the plan. The expected average remaining service life of employees covered by the pension plans is 15 years (2016 – 15 years) and OPEB plan is 16.2 years (2016 – 16.2 years).

The IESO sick pay benefits accumulate but do not vest. The IESO accrues sick pay benefits based on the expectation of future utilization and records the accrual within accounts payable and accrued liabilities.

j) Foreign currency exchange

Transactions denominated in foreign currencies are converted into Canadian dollars at the rate of exchange prevailing on the date of the transaction. Items on the statement of financial position denominated in foreign currency are converted to Canadian dollars at the rate of exchange as of the date of the financial statements. The cumulative unrealized foreign currency exchange gains and losses of items continuing to be recognized on the statement of financial position are recorded in accumulated surplus as remeasurement gains and losses and shown in the statement of financial position and the statement of remeasurement gains and losses. Upon settlement of the item denominated in a foreign currency, the cumulative remeasurement gains and losses are reclassified to the statement of operations, and all other gains and losses associated with the disposition of the financial instrument are recorded in the statement of operations.

k) Use of estimates

The preparation of the financial statements in conformity with Canadian public sector accounting standards requires management to make estimates and assumptions that affect the reported amounts of revenues, expenses, assets and liabilities, and the disclosure of contingent assets and liabilities as at the date of the financial statements. The IESO's accounts that involve a greater degree of uncertainty include the carrying values of tangible capital assets, accrued pension liability and accrual for employee future benefits other than pensions. Actual results could differ from those estimates.

3. REGULATED ASSETS

The IESO recognizes two regulated assets: 1) unrecovered smart metering expenses and 2) unrecovered PSAB transition items.

The smart metering expenses result from the IESO's role as the SME. As such, the IESO funds its SME operating costs and capital investment in the meter data management/repository (MDM/R) through fees from users of smart meters in Ontario. The OEB approves the SME Charge, which is intended to cover the costs of developing and operating the MDM/R.

In 2017, the smart metering expenses were fully recovered, resulting in a \$nil balance in the regulated asset account.

The unrecovered PSAB transition items result from the IESO's adoption of Canadian public sector accounting standards effective January 1, 2011. The adoption of PSAB was accounted for by retroactive application with restatement of prior periods subject to the requirements in Section PS 2125, *First-time Adoption by Government Organizations*. The corresponding change to pension and other post-employment benefits resulted in previously unrecognized actuarial losses and past service costs of \$80,617 thousand at the date of transition.

Regulated assets consist of the following:

As of December 31 (in thousands of Canadian dollars)	2017	2016
	\$	\$
Unrecovered smart metering expenses	-	21,623
Unrecovered PSAB transition items	39,529	43,441
Closing balance	39,529	65,064

The IESO also records regulated assets/liabilities within its market accounts (Note 5).

4. LONG-TERM INVESTMENTS

Long-term investments in a balanced portfolio of pooled funds are valued by the pooled funds manager based on published price quotations and amount to \$44,811 thousand (2016 - \$39,972 thousand). As at December 31, the market value allocation of these long-term investments was 62.8% equity securities and 37.2% debt securities (2016 - 62.3% and 37.7%, respectively).

Balanced portfolio of pooled funds

As at December 31 (in thousands of Canadian dollars)	2017	2016
	\$	\$
Opening balance	39,972	37,019
Net purchase of investments	2,240	2,667
Change in fair value	2,599	286
Closing balance	44,811	39,972

In addition to the balanced portfolio of pooled funds, the IESO has a long-term deposit with Canada Revenue Agency in the amount of \$465 thousand (2016 - \$383 thousand) pertaining to the Retirement Compensation Arrangements Trust (Note 8).

5. MARKET ACCOUNTS

a) In 2017, the Government of Ontario announced its Fair Hydro Plan (FHP), which was implemented through the *Fair Hydro Act, 2017*. Under the FHP, the IESO continues to settle the market and recover Global Adjustment from customers, but as a result of the fair adjustment applicable to specified consumers (defined in the Ontario *Fair Hydro Plan Act, 2017*), the IESO collects less than the full amount of the Global Adjustment. The IESO records the shortfall together with the costs of financing the shortfall, the amounts charged to the IESO by the Fair Hydro Trust in respect of the carrying costs of the Fair Hydro Trust, when applicable, and certain other amounts in a Deferred Global Adjustment Variance account. The Regulated Price Plan Variance account balance as of July 1, 2017, was included in the Deferred Global Adjustment Variance. The FHP also shifted the cost of the Ontario Electricity Support Program (OESP) and most of the Rural or Remote Rate Protection (RRRP) program costs from ratepayer- to taxpayer-funded programs. These accounts comprise the market-regulated assets.

The cumulative amount recorded in the Deferred Global Adjustment Variance account to the end of December 2017 was \$1,378,000 thousand. On December 21, 2017, a regulatory asset in the amount of \$1,179,000 thousand was transferred to the Fair Hydro Trust. As a result, as at December 31, the Deferred Global Adjustment Variance account balance was \$199,475 thousand, including interest and carrying charges.

In consideration of the implementation of the FHP, on May 1, 2017, the OEB rescinded the OESP charge and determined to fund the program through the credit balance in the Ontario Electricity Support Program Variance account. Therefore only payments to OESP-eligible customers are currently being made, and the balance in the Ontario Electricity Support Program Variance account at December 31, 2017, was in a credit position of \$24,892 thousand, net of interest.

A new rate for the RRRP program under the FHP was effective July 1, 2017. The balance in the RRRP variance account to June 30, 2017, was \$6,626 thousand. The new rate has resulted in a further under-collection of \$5,994 thousand (net of interest) in the second half of the year, resulting in a cumulative balance in the variance of \$12,620 thousand as at December 31, 2017.

Components of the market accounts are as follows:

As of December 31 (in thousands of Canadian dollars)	2017	2016
	\$	\$
Cash, restricted for market activities	454,174	244,755
Amounts due from market participants	1,253,417	1,384,407
Interest receivable	217	186
HST receivable	110,156	25,531
Regulated assets/liabilities	187,203	37,873
Total Market Assets	2,005,167	1,692,752
Market debt	(13,252)	(150,501)
Amounts due to market participants	(1,855,206)	(1,385,790)
Other net liabilities	(136,709)	(156,461)
Total Market Liabilities	(2,005,167)	(1,692,752)
Closing balance	-	-

Regulated assets/liabilities consist of the following:

As of December 31 (in thousands of Canadian dollars)	2017	2016
	\$	\$
Deferred Global Adjustment Variance	199,475	-
Regulated Price Plan Variance	-	134,988
Ontario Electricity Support Program Variance	(24,892)	(92,443)
Rural or Remote Rate Protection Variance	12,620	(4,672)
Closing balance	187,203	37,873

b) Market Debt

\$475 Million Credit Facility with OFA

The IESO has an unsecured credit facility agreement with the Ontario Financing Authority (OFA), which will make available to the IESO an amount up to \$475,000 thousand. Advances are payable at a variable interest rate equal to the Province of Ontario's cost of borrowing plus 0.25% per annum. The credit facility expires December 31, 2019. As at December 31, 2017, \$12,281 thousand was outstanding (2016 - \$150,501 thousand).

\$2 Billion Credit Facility with OFA

During 2017, the IESO entered into a new unsecured credit facility agreement with the OFA, which will make available to the IESO an amount up to \$2,000,000 thousand for the purpose of supporting the IESO's role in the Ontario FHP. Advances are payable at a variable interest rate equal to the Province of Ontario's cost of borrowing plus 0.25% per annum. The credit facility expires September 30, 2022. As at December 31, 2017, \$971 thousand was outstanding.

\$150 Million Credit Facility with TD Bank

The IESO has an unsecured credit facility agreement with TD Bank, which will make available to the IESO an amount up to \$150,000 thousand. Advances are payable at a variable interest rate equal to that of banker's acceptance plus a margin per annum. The credit facility expires April 30, 2020. As at December 31, 2017, no amount was drawn on the credit facility (2016 – \$nil).

c) Related Party Transactions

The IESO records the market accounts, assets, liabilities and amounts due to and from market participants held on behalf of the IAM in its statement of financial position. Included in these accounts are amounts due to and from related parties.

The Province of Ontario is a related party as it is the controlling entity of the IESO. The Ontario Electricity Financial Corporation (OEFC), OEB, Hydro One, Ontario Power Generation Inc. (OPG), Fair Hydro Trust and Ministry of Energy are related parties of the IESO, through the common control of the Province of Ontario. Transactions between these parties and the IAM were as follows:

As of December 31, 2017, the IAM had a payable balance due to the OEFC for \$31,025 thousand (2016 – \$65,711 thousand).

As of December 31, 2017, the IAM had a payable balance with the OEB for \$57 thousand (2016 – \$ nil).

As of December 31, 2017, the IAM had a receivable balance with Hydro One of \$25,018 thousand (2016 – \$75,610 thousand).

As of December 31, 2017, the IAM had a payable balance with OPG for \$356,611 thousand (2016 – \$430,432 thousand).

In 2017 the Fair Hydro Trust paid \$1,179,000 thousand and received \$6,000 thousand. As at December 31, 2017, the IAM had a payable balance of \$3,620 thousand (2016 – \$nil).

As of December 31, 2017, the IAM had a receivable balance with Ministry of Energy for \$93,854 thousand (2016 – \$153 thousand).

6. ACCOUNTS PAYABLE AND ACCRUED LIABILITIES

As at December 31 (in thousands of Canadian dollars)	2017	2016
	\$	\$
Relating to operations	35,743	35,630
Relating to tangible capital assets	1,521	3,333
Closing balance	37,264	38,963

7. REBATES DUE TO MARKET PARTICIPANTS AND ACCUMULATED SURPLUS

In 2017, the IESO recognized \$5,422 thousand in rebates due to market participants of system fees (2016 - \$12,551 thousand). As at December 31, 2017, rebates due to market participants were \$1,422 thousand (2016 - \$12,551 thousand).

The IESO's approved regulatory deferral account balance has been historically maintained at a maximum of \$10,000 thousand. However, in 2017 the IESO received a decision and order by the OEB to reduce the regulatory deferral account to \$6,000 thousand. The 2017 approved regulatory deferral account balance at \$6,000 thousand was approved by the OEB on October 31, 2017. In December 2017, the IESO rebated \$4,000 thousand to market participants.

Prior to 2014, unrealized gains and losses from portfolio investments and foreign exchange were included in the balance of the regulatory deferral account (life-to-date total: \$4,144 thousand). As of January 1, 2014, only realized gains and losses are included in this balance.

As at December 31, the components of the accumulated surplus were as follows:

Accumulated Surplus

As at December 31 (in thousands of Canadian dollars)	2017	2016
	\$	\$
Regulatory deferral account (a)	6,000	10,000
Smart Metering Entity (b)	939	-
Accumulated market sanctions and payment adjustments (c)	641	726
Remeasurement gains	6,340	3,762
Accumulated surplus - end of year	13,920	14,488

a) Regulatory Deferral Account

As at December 31 (in thousands of Canadian dollars)	2017	2016
	\$	\$
Accumulated surplus - beginning of year	10,000	10,000
OEB decision and order	(4,000)	-
Revenues (before rebates due to market participants)	186,559	190,219
Rebates due to market participants	(1,422)	(12,551)
Core operation expenses	(185,137)	(177,668)
Accumulated surplus - end of year	6,000	10,000

b) Smart Metering Entity - Accumulated Surplus

As at December 31 (in thousands of Canadian dollars)	2017	2016
	\$	\$
Accumulated surplus - beginning of year	-	-
Smart metering charge	25,655	-
Smart metering expenses	(24,716)	-
Accumulated surplus - end of year	939	-

c) Accumulated Market Sanctions and Payment Adjustments

As at December 31 (in thousands of Canadian dollars)	2017	2016
	\$	\$
Accumulated surplus – beginning of year	726	492
Market sanctions and payment adjustments	3,176	3,889
Customer education and market enforcement expenses	(3,261)	(3,655)
Accumulated surplus – end of year	641	726

8. DEBT

Note payable to Ontario Electricity Financial Corporation (OEFC)

In April 2017, the IESO entered into a note payable with the OEFC. The note payable is unsecured, bears interest at a fixed rate of 1.767% per annum and is repayable in full on June 30, 2020. Interest accrues daily and is payable in arrears semi-annually in June and December of each year. As at December 31, 2017, the note payable to the OEFC was \$120,000 thousand (2016 – \$90,000 thousand).

For the year ended December 31, 2017, the interest expense on the note payable was \$2,018 thousand (2016 – \$1,841 thousand).

Credit facility with OEFC

The IESO has an unsecured credit facility agreement with the OEFC, which will make available to the IESO an amount up to \$160,000 thousand. Advances are payable at a variable interest rate equal to the Province of Ontario's cost of borrowing for a 30-day term plus 0.50% per annum, with draws, repayments and interest payments due monthly. The credit facility expires June 30, 2020. As at December 31, 2017, no amount was drawn on the credit facility (December 31, 2016 – \$nil).

For the year ended December 31, 2017, the interest expense on the credit facility was \$nil (2016 – \$nil).

Retirement Compensation Arrangements Trust

In July 2013, the IESO established a Retirement Compensation Arrangements (RCA) Trust to provide security for the IESO's obligations under the terms of the supplemental employee retirement plan for its employees. As at December 31, 2017, the IESO has provided the RCA trustee with a bank letter of credit of \$33,141 thousand (2016 – \$30,466 thousand) the trustee can draw upon if the IESO is in default under the terms of this plan.

9. POST-EMPLOYMENT BENEFIT PLANS

The IESO provides pension and other employee post-employment benefits, comprising group life insurance, long-term disability and group medical and dental plans, for the benefit of current and retired employees.

Pension plans

The IESO provides a contributory defined benefit, indexed, registered pension plan. In addition to the funded, registered pension plan, the IESO provides certain non-registered defined benefit pensions through an unfunded, indexed, non-registered plan.

Other employee future benefits

The group life insurance, long-term disability and group medical and dental benefits are provided through unfunded, non-registered defined benefit plans.

Summary of accrued benefit obligations and plan assets

(in thousands of Canadian dollars)	2017 Pension Benefits	2016 Pension Benefits	2017 Other Benefits	2016 Other Benefits
	\$	\$	\$	\$
Accrued benefit obligation	547,410	507,724	97,358	91,014
Fair value of plan assets	545,400	523,756	-	-
Funded status as of measurement date	(2,010)	16,032	(97,358)	(91,014)
Employer contribution/other benefits payments after measurement date	2,418	2,416	753	588
Unrecognized actuarial (gain)/loss	(29,637)	(53,068)	389	175
Accrued liability recognized in the statement of financial position	(29,229)	(34,620)	(96,216)	(90,251)
Market-related value of plan assets (as at September 30, 2017)	537,587	506,791	-	-

Registered pension plan assets

As at the measurement date of September 30, the proportion of the fair value of registered pension plan assets held in each asset class was as follows:

	2017	2016
Canadian equity securities	20.6%	20.2%
Foreign equity securities	38.0%	39.9%
Canadian debt securities	34.7%	39.8%
Global infrastructure	4.8%	0.0%
Canadian real estate	1.3%	0.0%
Cash equivalents	0.1%	0.4%
Forward foreign exchange contracts	0.5%	(0.3%)
	100.0%	100.0%

Principal assumptions used to calculate benefit obligations at the end of the year are determined at that time and are as follows:

	2017 Pension Benefits	2016 Pension Benefits	2017 Other Benefits	2016 Other Benefits
Discount rate at the end of the period	5.50%	5.75%	5.50%	5.75%
Rate of compensation increase	3.50%	3.50%	3.50%	3.50%
Rate of indexing	2.00%	2.00%	2.00%	2.00%

The assumed prescription drug inflation was 8.00% for 2016, grading down to an ultimate rate 4.50% per year in 2030. Dental costs are assumed to increase by 4.00% per year.

Benefit costs and plan contributions for pension and other plans are summarized as follows:

(in thousands of Canadian dollars)	2017 Pension Benefits	2016 Pension Benefits	2017 Other Benefits	2016 Other Benefits
	\$	\$	\$	\$
Current service cost (employer)	10,089	11,117	3,247	3,107
Interest cost	29,487	29,292	5,343	5,120
Expected return on plan assets	(29,058)	(27,626)	-	-
Amortization of net actuarial loss/(gain)	(2,407)	(1,173)	11	(100)
Benefit cost	8,111	11,610	8,601	8,127

(in thousands of Canadian dollars)	2017 Pension Benefits	2016 Pension Benefits	2017 Other Benefits	2015 Other Benefits
	\$	\$	\$	\$
Employer contribution/other benefit payments	13,502	13,052	2,636	2,377
Plan participants' contributions	6,253	5,811	-	-
Benefits paid	25,457	23,317	2,636	2,377

The most recent actuarial valuation of the registered pension plan for accounting purposes was at September 30, 2017.

Principal assumptions used to calculate benefit costs for the year are determined at the beginning of the period and are as follows:

	2017 Pension Benefits	2016 Pension Benefits	2017 Other Benefits	2016 Other Benefits
Discount rate at the beginning of the period	5.75%	6.00%	5.75%	6.00%
Rate of compensation increase	3.50%	3.75%	3.50%	3.75%
Rate of indexing	2.00%	2.25%	2.00%	2.25%

10. TANGIBLE CAPITAL ASSETS

Net tangible capital assets consist of the following:

Cost of Tangible Capital Assets

(in thousands of Canadian dollars)	As at December 31, 2016	Additions	Disposals	As at December 31, 2017
	\$	\$	\$	\$
Facilities	55,973	631	(39)	56,565
Market systems and applications	306,993	3,825	-	310,818
Infrastructure and other assets	63,355	1,294	(32)	64,617
Meter data management/repository	36,911	906	-	37,817
Total cost	463,232	6,656	(71)	469,817

Accumulated Amortization

(in thousands of Canadian dollars)	As at December 31, 2016	Amortization Expense	Disposals	As at December 31, 2017
	\$	\$	\$	\$
Facilities	(24,301)	(1,694)	39	(25,956)
Market systems and applications	(263,546)	(12,134)	-	(275,680)
Infrastructure and other assets	(52,772)	(4,375)	32	(57,115)
Meter data management/repository	(29,190)	(2,824)	-	(32,014)
Total accumulated amortization	(369,809)	(21,027)	71	(390,765)

Net Book Value

(in thousands of Canadian dollars)	As at December 31, 2016	As at December 31, 2017
	\$	\$
Facilities	31,672	30,609
Market systems and applications	43,447	35,138
Infrastructure and other assets	10,583	7,502
Meter data management/repository	7,721	5,803
Total net book value	93,423	79,052
Assets under construction	11,624	21,742
Net tangible capital assets	105,047	100,794

In 2017, there were no adjustments to management's estimates of remaining asset service lives (2016 - \$nil). Interest capitalized to assets under construction during 2017 was \$170 thousand (2016 - \$260 thousand).

11. OTHER REVENUE

In its administration of the IAM, the IESO directs the investment of market funds in highly rated, short-term investments throughout the settlement cycle. The IESO is entitled to receive the investment interest and investment gains, net of investment losses earned on funds passing through the real-time market settlement accounts. The IESO is not entitled to the principal on real-time market investments.

The IESO recognized investment income earned in the market settlement accounts of \$3,441 thousand in 2017 (2016 - \$ 2,508 thousand).

12. SEGMENT EXPENSES

Expenses by object for 2017 are comprised of the following:

(in thousands of Canadian dollars)	2017 Core Operations	2017 Other Government Programs	2017 Smart Metering Entity	2017 Market Sanctions & Payment Adjustments	2017 Total
	\$	\$	\$	\$	\$
Compensation & benefits	114,502	212	2,803	2,151	119,668
Professional & consulting	19,516	2,445	14,209	407	36,577
Operating & administration	34,890	39	4,641	703	40,273
Amortization	18,204	-	2,825	-	21,029
Interest	1,801	-	238	-	2,039
Less: Recoveries	(3,776)	-	-	-	(3,776)
Total Expenses	185,137	2,696	24,716	3,261	215,810

In 2017, the IESO signed an agreement with the Minister of the Environment and Climate Change (MOECC) to deliver conservation and energy-efficiency programs. The IESO recognized government transfers revenue of \$2,696 thousand in 2017 (2016 - \$nil).

Expenses by object for 2016 are comprised of the following:

(in thousands of Canadian dollars)	2016 Core Operations	2016 Other Government Programs	2016 Smart Metering Entity	2016 Market Sanctions & Payment Adjustments	2016 Total
	\$	\$	\$	\$	\$
Compensation & benefits	107,402	-	2,661	2,180	112,243
Professional & consulting	18,810	-	14,659	770	34,239
Operating & administration	34,386	-	5,705	705	40,796
Amortization	19,577	-	3,861	-	23,438
Interest	1,341	-	540	-	1,881
Less: Recoveries	(3,848)	-	-	-	(3,848)
Total Expenses	177,668	-	27,426	3,655	208,749

13. RELATED PARTY TRANSACTIONS

The Province of Ontario is a related party as it is the controlling entity of the IESO. The OEFC, OEB, Hydro One, OPG and the MOECC are related parties of the IESO, through the common control of the Province of Ontario. Transactions between these parties and the IESO were as follows:

The IESO holds a note payable and an unsecured credit facility agreement with the OEFC (Note 8). Interest payments made by the IESO in 2017 for the note payable were \$2,018 thousand (2016 - \$1,841 thousand) and for the credit facility were \$nil (2016 - \$nil). As of December 31, 2017, the IESO had an accrued interest payable balance with the OEFC of \$nil (2016 - \$315 thousand).

Under the *Ontario Energy Board Act, 1998*, the IESO incurs registration and license fees. The total of the transactions with the OEB was \$3,146 thousand in 2017 (2016 - \$1,747 thousand).

The IESO performed connection and bulk electric system exception assessments for Hydro One in 2017. In 2017, the IESO invoiced Hydro One \$694 thousand (2016 - \$610 thousand).

The IESO procures short circuit studies and protection impact assessments as part of connection assessments, approvals and meter services on IESO-owned interconnected revenue meters from Hydro One. In 2017, the IESO incurred costs of \$184 thousand (2016 - \$188 thousand) for these services. As of December 31, 2017, the IESO had a net receivable balance with Hydro One of \$137 thousand (2016 - \$4 thousand).

The IESO performs connection assessment and approvals for OPG, delivers telecommunication services to market participants to connect to the real-time market systems and provides market-related training courses. In 2017, OPG was invoiced \$92 thousand (2016 - \$124 thousand). As of December 31, 2017, the IESO had a net receivable balance with OPG of \$61 thousand (2016 - \$5 thousand).

For 2017, the IESO invoiced MOECC \$2,257 thousand (2016 - \$nil). As of December 31, 2017, the IESO had a net receivable balance with MOECC of \$4,101 thousand (2016 - \$nil).

14. FINANCIAL RISK MANAGEMENT

The IESO is exposed to financial risks in the normal course of its business operations, including market risks resulting from volatilities in equity, debt and foreign currency exchange markets, as well as credit risk and liquidity risk. The nature of the financial risks and the IESO's strategy for managing these risks has not changed significantly from the prior year.

a) Market Risk

Market risk refers to the risk that the fair value or future cash flows of a financial instrument will fluctuate to cause changes in market prices. The IESO is primarily exposed to three types of market risk: currency risk, interest rate risk and equity risk. The IESO monitors its exposure to market risk fluctuations and may use financial instruments to manage these risks as it considers appropriate. The IESO does not use derivative instruments for trading or speculative purposes.

i) Currency Risk

The IESO conducts certain transactions in U.S. dollars, primarily related to vendors' payments, and maintains a U.S. dollar-denominated bank account. From time to time, the IESO may utilize forward purchase contracts to purchase U.S. dollars for delivery at a specified date in the future at a fixed exchange rate. In addition, the IESO utilizes U.S. dollar spot rate purchases in order to satisfy any current accounts. As at December 31, 2017, the IESO did not have any outstanding forward purchase contracts.

ii) Interest Rate Risk

The IESO is exposed to movements or changes in interest rates primarily through its short-term variable rate credit facility, cash equivalents' securities and long-term investments. Long-term investments include investments in a pooled Canadian bond fund. The potential impact to the securities' value had the prevailing interest rates changed by 25 basis points, assuming a parallel shift in the yield curve with all other variables held constant, is estimated at \$659 thousand as at December 31, 2017 (2016 - \$602 thousand).

iii) Equity Risk

The IESO is exposed to changes in equity prices through its long-term investments. Long-term investments include investments in pooled equity funds. A 30% change in the valuation of equities as at December 31, 2017, would have resulted in a change for the year of approximately \$8,440 thousand (2016 - \$7,468 thousand). The fair values of all financial instruments measured at fair value are derived from quoted prices (unadjusted) in active markets for identical assets.

b) Credit Risk

Credit risk refers to the risk that one party to a financial instrument may cause a financial loss for the other party by failing to meet its obligations under the terms of the financial instrument. The IESO is exposed directly to credit risk related to cash equivalents' securities and accounts receivable, and indirectly through its exposure to the long-term investments in a Canadian bond pooled fund. The IESO manages credit risk associated with cash equivalents' securities through an approved management policy that limits investments to primarily investment-grade investments with counterparty-specific limits. The accounts receivable balance as at December 31, 2017, included no material items past due and substantially all of the balance was collected within 30 days from December 31, 2017. The long-term Canadian bond pooled fund is comprised of primarily investment-grade securities.

Market participants are required to provide non-voluntary pre-payments to reduce their electricity financial exposures as determined by the IESO. If collateral is not sufficient to remedy a default amount, the IESO undertakes a default allocation process that recovers the default amount from all remaining non-defaulting market participants.

c) Liquidity Risk

Liquidity risk refers to the risk that the IESO will encounter financial difficulty in meeting obligations associated with its financial liabilities when due. The IESO manages liquidity risk by forecasting cash flows to identify cash flows and financing requirements. Cash flows from operations, short-term investments, long-term investments and maintaining appropriate credit facilities help to reduce liquidity risk. The IESO's long-term investments are normally able to be redeemed within two business days; however, the investment manager of the pooled funds has the authority to require a redemption in-kind rather than cash and has the ability to suspend redemptions if deemed necessary.

i) Market Settlements

In cases where a market participant fails to pay, the IESO will utilize credit facilities to settle the market. If the IESO has exhausted the availability of its credit facilities, then the IESO will pay market creditors on a pro rata basis in proportion to the amounts owed to each market creditor.

ii) Fair Hydro - regulatory asset

In accordance with the *Ontario Fair Hydro Plan Act, 2017*,

- the IESO will establish a regulatory asset as it continues to settle the market and recover Global Adjustment from customers, but as a result of the fair adjustment applicable to specified consumers the IESO collects less than the full amount of the Global Adjustment. The IESO records the shortfall together with the costs of financing the shortfall, the amounts charged to the IESO by the Fair Hydro Trust in respect of the carrying costs of the Fair Hydro Trust, when applicable, and certain other amounts, in a Deferred Global Adjustment Variance account (such amount a regulatory asset)
- the IESO utilizes its credit facilities to fund the amounts recorded in the Deferred Global Adjustment variance account, and
- the IESO is permitted to: a) transfer all or a portion of the regulatory asset to a financing entity, and b) after May 2021 fully recover any non-transferred asset from specified consumers.

As a result of the Fair Hydro Plan, the IESO will be required to borrow the amounts to be recorded in the Deferred Global Adjustment Variance Account (see the bulletin above). The IESO has a current \$2 billion line of credit with the OFA (see Debt Note 5) with a maturity date of September 30, 2022, to fund these amounts. The IESO expects to continue to transfer the regulatory asset to the financing entity and use the funds of such transfer to reduce the amounts borrowed. However, the financing entity is not obligated to purchase any transfer(s) offered by the IESO, and therefore the IESO is potentially subject to liquidity risk.

Pursuant to regulation the IESO will pay carrying costs to the Fair Hydro Trust monthly during the period beginning on December 1, 2017 and ending on July 31, 2021.

The IESO has provided security for the IESO's current monthly obligation to pay these carrying costs. The security provides the Fair Hydro Trust first priority over IESO receivables due from LDCs and electricity retailers.

15. COMMITMENTS

Operating commitments

The obligations of the IESO with respect to non-cancellable operating leases over the next five years are as follows:

As at December 31 (thousands of Canadian dollars)

	\$
2018	5,942
2019	4,972
2020	4,202
2021	718
2022	649

16. CONTINGENCIES

The IESO is subject to various claims, legal actions and investigations that arise in the normal course of business. While the final outcome of such matters cannot be predicted with certainty, management believes that the resolution of such claims, actions and investigations will not have a material impact on the IESO's financial position or results of operations.

17. COMPARATIVE FIGURES

Certain of the comparative figures have been amended to reflect adjustments made in the current year. As a result, cash has increased and accounts receivable has decreased by \$5,909 thousand. There was no impact to the annual surplus for the year ended December 31, 2016, or the net liabilities and accumulated deficit at December 31, 2016. Other figures have been reclassified to conform with the current year's presentation.

Executive Compensation at the IESO

Program Objectives

The IESO compensation program for executives was designed to attract, retain and motivate the calibre of executives required to support the achievement of the IESO's statutory mandate, business objectives and corporate vision. Accordingly, the compensation philosophy and programs were built on the following objectives:

- to focus executives on meeting the IESO's business objectives
- to attract and retain qualified employees needed to carry out the IESO's mandate
- to have the flexibility to reward results and demonstrated competencies
- to have compensation levels that are reasonable, responsible and in compliance with provincial regulations.

The philosophy underlying these objectives is that total compensation for executives should be adequate enough to attract and retain the skills and competencies necessary to carry out the IESO's mandate.

Program Governance

The IESO Board establishes the compensation objectives for the following year's program. It delegates the responsibility to thoroughly review the compensation objectives, policies and programs to the Human Resources and Governance Committee of the Board (HRGC), which makes recommendations to the full Board for approval.

The Board is comprised of 10 independent, external Directors, appointed by the Minister of Energy, with broad experience in the electricity industry and public sector organizations, and the President and Chief Executive Officer of the IESO. Their experience includes many years of dealing with human resource matters including the setting and implementation of compensation policies and programs.

In carrying out their mandate the Board members have access to the Management's analysis and recommendations as well as those of expert consultants in the compensation field. These programs are reviewed annually with regard to business needs, program objectives and design, industry compensation trends, internal compensation relativities and external market relativities.

The Board also assesses risks associated with the establishment and implementation of compensation policies and programs. Annually the Board presides over and approves the IESO's Business Plan. An important component of this process is consideration of, and the implementation of mitigating actions associated with, Enterprise Risk Management. This latter overarching process includes the assessment of all significant risks to the IESO, including risks associated with its compensation policies and programs.

In addition to the formal governance and oversight structure in place for compensation matters, the IESO discloses compensation levels annually for staff earning \$100,000 or more as part of its public sector salary disclosure. For the IESO, a further level of public review and assurance is provided through a statutorily required annual review of the IESO's expenditures, revenue requirements and fees. Information related to compensation matters, including Executive/Management compensation and market relativities, is subject to the Ontario Energy Board review. A range of small and large consumers, assisted by their legal and professional advisors, are represented in these public proceedings.

Market Comparisons

The IESO reviews the competitiveness of the executive compensation levels in relation to a peer group of Canadian organizations and general industry companies every other year at a minimum. The objective is to compare IESO executive compensation levels to those in the marketplace particularly in relation to the median of the market.

Prior to the amalgamation of the IESO with the OPA, the Ministry of Energy had retained the Korn Ferry Hay Group, a global management consulting firm, to evaluate and market price the CEO position for the new organization. Subsequent to the CEO's appointment on January 1, 2015, the decision was made to adopt a similar approach to evaluate and market price all other executive roles using the Hay point system.

As part of this process, the comparator group was redefined consistent with the recommendations of the Agency Review Panel (the Arnett report) and is currently comprised of 13 public sector and 11 private sector organizations, with the comparator data weighted on a 50/50 public/private sector basis. The comparator group represents a range of industries, core business activities and roles that are similar to IESO: electricity, energy, asset management, financial services, infrastructure procurement, engineering and large-scale, complex IT functions. The list of organizations can be viewed in the 2015 Annual Report. As part of the 2016 Executive Compensation Framework Regulation, the IESO completed a review of its executive compensation against public sector organizations. The document is available on the IESO website and will replace the current compensation plan for executives in 2018.

The job evaluation was independently conducted by the Hay Group using its point system and the following executive positions were covered by this review:

- President & CEO;
- VP Corporate Services & CFO;
- VP Market & Resource Development;
- VP Market & System Operations & COO;
- VP Conservation & Corporate Relations;
- VP Information and Technology Services and CIO;
- VP Planning, Legal, Indigenous Relations and Regulatory Affairs.

The Hay Group evaluated the Vice-President positions based on the job documents and additional information gathered from the CEO. Based on the evaluation points, a new salary structure was developed. The executive positions were then mapped into the new structure based upon their evaluated points.

Using the market information from the above peer group, the mid-point of the range of points for each executive salary grade was determined as the market price point for comparison purposes.

The mid-points of the new salary ranges were defined as the total direct cash compensation (annual base salaries plus annual short-term and long-term target incentive awards) of the hybrid market's price point at the 50th percentile for each salary grade.

The minimums and maximums of each salary range were calculated using typical salary range spreads at executive levels. In accordance with the *Broader Public Sector Accountability Act (2010)*, executive compensation rates have remained the same in 2017 and will be reviewed with the Executive Compensation Framework legislated effective 2018.

Program Description

The IESO program includes fixed and variable compensation, core and flex benefit plans, and pension provisions. IESO Human Resources staff participates in and reviews results from various compensation surveys and monitors economic trends such as inflation and unemployment rates, which impact on compensation, as well as internal compensation relativities. Based on this data and the IESO business priorities, Human Resources staff develops recommendations on compensation programs. External specialized compensation, benefit and pension consultants are utilized to ensure accurate, representative market compensation data is obtained, that current industry compensation trends are being utilized, as well as provide insight and recommended adjustments to current programs.

Program Description – Fixed Compensation

Within the IESO salary ranges, individuals are assessed relative to an established competency model. This model consists of behavioural competencies such as strategic agility, building effective teams, command skills, sizing up people, political savvy and managing vision and purpose. Assessments are based upon demonstrated competency. Each individual is awarded a fixed compensation level within his or her band based upon his or her assessed competency.

Program Description – Variable Compensation

In order to promote a results orientation in the executive team, the variable pay plan forms part of the total compensation of executives. The IESO Board annually establishes a robust set of performance measures that are evaluated each year.

The IESO Board assesses the corporate performance results and the CEO's individual performance results. Under the plan, having assessed the results against target, the Board does have the ability to use some discretion in determining the final performance rating – however in the past, the Board has relied upon the directly assessed results to award variable compensation.

The variable compensation award for the CEO and Vice-Presidents is capped at 10% of fixed compensation. The plan provides for awards below the capped amount depending on the performance results achieved. The 2017 annual award was paid on December 29, 2017.

Program Description – Group Benefits

The group benefit plan provides a core level of health and dental benefits, life insurance, disability coverage and vacation, which can be adjusted by individual employees through a flexible component within the plan. The flexible element provides all non-represented employees including executives the option of adjusting their benefits to meet their individual/family needs including vacation above core amounts, levels of life insurance, health coverage and other components.

Program Description – Pension Plan

A defined benefit pension plan provides annual retirement income calculated as 2% of pensionable earnings during the highest paid 60 consecutive months of service multiplied by years of service (36 months for the pension earned prior to January 1, 2017, by the former IESO executives), to a maximum of 35 years. The pension formula is integrated with the Canada Pension Plan (CPP) to provide a level income stream before and after age 65, when the IESO pension is reduced to reflect benefits from CPP. The plan also has early retirement provisions as well as commuted value, pension deferral and reciprocal transfer options.

The plan provides a maximum benefit of 70% of highest paid, pre-retirement pensionable earnings. As the Canadian Revenue Agency limits the amount of pension payable from a registered plan, the IESO has a secured supplemental employee retirement plan to provide required pension income to meet the commitments of the plan above that payable from the registered plan.

The plan also provides several options including member's life only or joint and survivor pensions, as well as pre-retirement death benefits to provide benefits to surviving spouses or beneficiaries.

Performance Measures & Impact on Compensation

The IESO annually establishes corporate performance measures relating to its business priorities during the business planning process. These are approved, monitored and assessed by the IESO Board of Directors each year. Individual performance measures supporting one or more corporate performance measures are also developed for each executive. As outlined above the corporate results achieved each year impact on each executive's variable pay.

For 2017, the Board assessed the corporate results and determined that the IESO substantially met expectations. In addition to the corporate measures, each executive also had an individual set of measures and targets for the year that aligned with the corporate performance objectives and IESO's business priorities, and these were similarly assessed. The Board assessed the results of the CEO's performance and the CEO assessed the performance of the Vice-Presidents, which were also reviewed with the Board.

Other Considerations

Compensation decisions may at times be impacted by market factors – such as the recruitment of an executive with specialized skills/competencies or possessing unique talents within the industry. To this end individual arrangements are sometimes established relating to terms of employment and the possibility of future termination.

Bruce Campbell, the CEO, retired in 2017 and was replaced by an external candidate after an extensive search was completed. Peter Gregg, the new CEO, began his tenure with the IESO on June 20, 2017.

Compensation Restraints

The IESO executive compensation has been significantly impacted by the compensation restraint legislation in Ontario since 2010. The *Broader Public Sector Accountability Act* (BPSAA) imposes a general freeze on designated executives' salary, variable pay, benefits and perquisites subject to very limited exceptions.

Following the amalgamation of the two former organizations (IESO and OPA) on January 1, 2015, the total 2015 variable performance pay amount awarded to all employees and office holders became the cap for total variable performance pay to be paid out in future years as long as the BPSAA remains in effect. The total variable compensation paid in 2017 was within this maximum.

Executive Compensation Structure Alignment

With the appointment on January 1, 2015 of Mr. Campbell as the CEO of the merged organization, the IESO aligned the compensation plan for its Vice-Presidents with the structure established for the new CEO. Accordingly, in both cases, the variable pay component was capped at 10% of fixed compensation with no deferral. There were no salary adjustments for executives in 2017.

The figures reported as 2017 "Salary Paid" in the 2017 Public Sector Salary Disclosure for the executives include the 2017 earned variable compensation that was paid on December 29, 2017.

Executive Compensation Statement

The table below details the annual compensation for the year ended December 29, 2017, for the executives listed.

2017 Summary Compensation Table

Name & Position	Base Salary	Variable Pay ²	Other Annual Compensation ³	Total Cash Compensation ⁴
Bruce Campbell ¹ Retired President & CEO	\$438,890	\$279,734	\$31,239	\$749,863
Peter Gregg ⁵ New President & CEO	\$319,846	\$33,233	\$5,389	\$358,468
Kimberly Marshall VP Corporate Services & CFO	\$268,460	\$18,792	\$433	\$287,685
Terence Young VP Conservation & Corporate Relations	\$307,037	\$27,633	\$19,783	\$354,454
Leonard Kula VP Market & System Operations & COO	\$313,705	\$31,288	\$7,315	\$352,307
Michael Lyle VP Planning, Legal, Indigenous Relations & Regulatory Affairs	\$269,562	\$21,565	\$5,830	\$296,957

1. Bruce Campbell retired in September 2017. Base salary and variable pay have been pro-rated to reflect time in job. Variable pay also includes a final payment in January 2017 from a closed deferred compensation plan.

2. 2017 earned variable compensation is calculated on annualized base pay and was paid in December 2017 (excluding the deferred payment described in (1)).

3. Represents remaining flex credits paid out at year end as taxable income.

4. These amounts will be reported as "Salary Paid" under the Annual Public Sector Salary Disclosure.

5. Peter Gregg hired June 20, 2017, as new CEO. Base salary and variable pay have been pro-rated to reflect time in job.

Executive Leadership Team, Board of Directors and Advisory Committees to the Board*

Executive Leadership Team

Peter Gregg
President and Chief Executive Officer

Sorana Ionescu
Acting Vice-President, Information and Technology Services

Leonard Kula
Vice-President, Planning, Acquisition and Operations, and Chief Operating Officer

Michael Lyle
Vice-President, Legal Resources and Corporate Governance

Kimberly Marshall
Vice-President, Corporate Services, and Chief Financial Officer

Terry Young
Vice-President, Policy, Engagement and Innovation

Board of Directors

Timothy O'Neill
Chairman of the Board
Retired from BMO Financial Group, where he served as Executive Vice-President and Chief Economist; President of O'Neill Strategic Economics

Peter Gregg
President and Chief Executive Officer, Independent Electricity System Operator

Cynthia Chaplin
Director
Former Vice-Chair of the Ontario Energy Board

Murray Elston
Director
Former Chair of the Electricity Distribution Panel; former President of the Canadian Nuclear Association; former Ontario Minister of Health

Susanna Han
Director
Chief Financial Officer, LiUNA Local 183

Christopher Henderson
Director
President of Lumos Clean Energy Advisors; Executive Director of the Indigenous Clean Energy (ICE) Social Enterprise; author of Aboriginal Power (2013)

Margaret Kelch
Director and Chair, Human Resources and Governance Committee
Director of the Board, DST Engineering Group, Chair of the Human Resources and Governance Committee; former Board member Nature Conservancy of Canada, Chair of the Conservation Committee; former Board member Electrical Safety Authority, Chair of the Regulatory and Human Resources and Governance Committees; former Board member Guelph Hydro; other various board assignments

Glenn Rainbird
Director
Member, Board of Governors of the Royal Military College of Canada and the Board of Directors of VIA Rail Canada Inc.; RCAF Honorary Colonel; Officer of the Order of Canada; recipient of the Queen Elizabeth II Diamond Jubilee Medal

Ersilia Serafini
Director
President and CEO of Summerhill; former Executive Director of the Clean Air Foundation; former Vice-Chair of the IESO's Stakeholder Advisory Committee

Deborah S. Whale
Director
Vice-President, Clovermead Farms Inc.; Past Vice-President, Ontario Farm Products Marketing Commission; Vice-President, Grand River Raceway; Livestock Research and Innovation Corporation, Emerging and Critical Issues Committee

Carole Workman
Director and Chair, Audit Committee
Former Chair of the Ottawa Hospital Board of Directors; Board member of Allstate Insurance of Canada; former Director of Hydro Ottawa and several other organizations

* As of December 31, 2017

Stakeholder Advisory Committee

Brian Bentz (Chair)

President & Chief Executive Officer
Alectra
Representing: Distributors & Transmitters

Steve Baker

President
Union Gas Limited
Representing: Energy-related Businesses and Services

John Beaucage

Principal
Counsel Public Affairs Inc.
Representing: Ontario Communities

Darlene Bradley

Vice-President, Planning
Hydro One Networks Inc.
Representing: Distributors & Transmitters

David Butters

President & Chief Executive Officer
Association of Power Producers of Ontario
Representing: Generators

Brandy Giannetta

Regional Director
The Canadian Wind Energy Association
Representing: Generators

Julie Girvan

Consumers Council of Canada
Representing: Consumers

Jim Hogan

President & Chief Executive Officer
Entegris
Representing: Distributors and Transmitters

Rachel Ingram

Vice-President & General Counsel
Rodan Energy Solutions
Representing: Energy Related Businesses and Services

Frank Kallonen

President & Chief Executive Officer
Greater Sudbury Hydro
Representing: Transmitters and Distributors

Ted Leonard

Vice-President &
Chief Financial Officer
NRStor Inc.
Representing: Energy-related Businesses and Services

Paul Norris

President
Ontario Waterpower Association
Representing: Generators

Mark Passi

Manager, Energy
Glencore
Representing: Consumers

Mark Schembri

Vice-President
Supermarket Systems & Store Maintenance
Loblaw Properties Limited
Representing: Consumers

James Scongack (Vice-Chair)

Vice-President, Corporate Affairs
Bruce Power
Representing: Generators

John Sherin

Representing: Ontario Communities

Terry Young

Vice-President, Policy,
Engagement and Innovation
Independent Electricity System Operator
Representing: IESO

Technical Panel

Chuck Farmer (Chair)

Director, Stakeholder & Public Affairs
Independent Electricity System Operator

Robert Bieler

Representing: Consumers

Ron Collins

President & Chief Executive Officer
Sinopa Energy Inc.
Representing: Energy-related Businesses and Services

David Dent

Manager, Strategic and Power Markets
Union Gas Limited
Representing: Natural Gas

Barbara Ellard

Director, Markets
Independent Electricity System Operator
Representing: IESO

Sarah Griffiths

Director, Regulatory Affairs
EnerNOC Ltd.
Representing: Other Market Participants

Robert Lake

Representing: Residential Consumers

Phil Lasek

Shell Canada Products
Representing: Market Participant Consumers

Sushil Samant

Director, Gas and Electricity Marketing
Northland Power
Representing: Market Participant Generators

Joe Saunders

Vice-President, Regulatory Compliance & Asset Management
Burlington Hydro
Representing: Distributors

Bill Wilbur

Director, Generation and Revenue Planning
Ontario Power Generation
Representing: Generators

Julien Wu

Manager, Regulatory Affairs,
Quebec-Ontario
Brookfield Energy Marketing
Representing: Wholesalers

Bing Young

Director, System Planning and Transmission System Development
Hydro One Networks Inc.
Representing: Transmitters

Technical Panel Secretariat

Jason Grbavac

John Rattray

Ontario Energy Board Liaison

David Brown

Senior Policy Advisor
Wholesale Power Policy,
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2018 REVENUE REQUIREMENT AND USAGE FEE METHODOLOGY

Methodology for Calculating the IESO's 2018 Usage Fee

2018 Net Revenue Requirement

The first step required to calculate the IESO's 2018 proposed usage fee is to determine the net revenue required. As the IESO is forecasting negligible revenues through registration fees in 2018, the net revenue requirement will equal the IESO's operating costs of \$190.8 million as provided in Table 1 below.

Table 1: IESO's 2018 Revenue Requirement (\$ millions)

Revenue Requirement Calculation for IESO Usage Fee	
(\$ million)	2018
Operating costs	190.8
2018 Net Revenue Requirement	190.8

Operating Costs

The IESO's proposed 2018 operating costs of \$190.8 million are described more fully in the 2018-2020 Business Plan (Exhibit A-2-2). On March 19, 2018, the President & CEO of the IESO received a letter from the Minister of Energy approving the Business Plan, which is included in this application at Exhibit A-2-3.

IESO Revenue Adjustments

In addition to the usage fees, the OEB approved the following registration fees in the IESO's 2017 revenue requirement submission:

- Registration fees of up to \$10,000 per proposal for electricity supply and capacity procurements, including conservation and load management,

- The Feed-in Tariff (“FIT”) program application fee of \$0.50/kW of proposed Contract Capacity, having a minimum of \$500 and to a maximum of \$5,000, and
- The application fee of \$1,000 per application for market participants.

The IESO intends to continue with these registration fees unchanged in 2018 except for the FIT program application fee. With the suspension of FIT program¹, the IESO is not seeking to continue the FIT program fee in 2018. The IESO forecasts it will receive negligible revenues through registration fees in 2018.

Charge Determinants

The domestic usage fee will be calculated using the most recent IESO 18-month forecast of withdrawals in 2018 for use in Ontario, less estimated losses, plus generation embedded in local distribution networks; which is a proxy for the Allocated Quantity of Energy Withdrawn (“AQEW”). The export usage fee will be calculated using the most recent IESO 18-month forecast of exports in 2018; which is a proxy for the Scheduled Quantity of Energy Withdrawn (“SQEW”). Line losses will be split between export and domestic customers based on their proportion of the total 2018 forecast energy volumes. The calculation is shown in Table 2 below. The domestic forecast for this calculation does not include generation from embedded generation as energy from embedded generation is not transmitted through the IESO controlled grid and, as such, does not yield transmission losses.

¹ <http://www.ieso.ca/corporate-ieso/ministerial-directives>, December 16, 2016 Ministerial direction to the IESO to cease accepting applications under the FIT Program

Table 2: Forecast Losses per Customer Class

	Demand, not including losses (TWh)	Total energy volumes, not including losses (TWh)	Proportion of total energy volumes	Total losses (TWh)	Resulting associated losses (TWh)
Domestic	133.5	153.3	87.1%	2.9	2.5
Export	19.8		12.9%		0.4

Total 2018 transmission losses are forecast at 2.9 TWh. Domestic customers will be allocated 87.1% of these losses, which amounts to 2.5 TWh, and export customers will be allocated 12.9%, which amounts to 0.4 TWh.

The IESO therefore proposes to calculate the two usage fees using the energy volumes as shown in Table 3 below.

Table 3: Calculation of Associated Energy Volumes for 2018 IESO Usage Fees

	2018 – Domestic (TWh)	2018 – Export (TWh)
18 Month Outlook demand forecast	133.5	19.8
Embedded generation	7.1	
Domestic transmission losses	-2.5	
Exports transmission losses		-0.4
Energy Volumes	138.1	19.4
Total Energy Volumes	157.5	

Calculation of the Usage Fees

The next step is the calculation of the domestic and export usage fees. The IESO's OEB-approved fees for domestic and export customers in each of 2016 and 2017 were calculated for the IESO by Elenchus using a model they developed to allocate costs between these two customer classes. To calculate the 2018 usage fees, the IESO requested Elenchus to rerun its model using 2018 business unit budgets and energy as described above. With these inputs, the Elenchus model calculated the domestic and export usage fees as shown in Table 4 below:

Table 4: IESO domestic and export usage fees as calculated by Elenchus

	2018 Usage Fee
Domestic	\$1.2402/MWh
Export	\$1.0115/MWh

Implementation of the 2018 Usage Fees

On December 14, 2017, the OEB issued its decision approving the IESO's 2017 domestic and export usage fees of \$1.2187/MWh for domestic customers and \$0.9872/MWh for export customers, and made these interim effective January 1, 2018. The IESO proposes to continue to charge both interim usage fees to the same pools of market participants the OEB approved in EB-2017-0150 until the end of the month in which OEB approval is received for the 2018 usage fees. Once OEB approval of the IESO's 2018 domestic and export fees is received, the IESO proposes to charge (or rebate) market participants the difference between the 2018 IESO usage fees approved by the OEB and the interim usage fees they paid, if any, based on their proportionate quantity of energy withdrawn until the end of the month in which OEB approval is received for the 2018 usage fees. Any such charges (or rebates) will be provided in the next billing cycle following the month in which OEB approval is received.

Work performed by IESO but not funded through its fees

The IESO will be supporting the Green Ontario Fund, which was referred to as the Ontario Climate Change Solutions Deployment Corporation (OCCSDC) in the IESO's 2017 Revenue Requirement Submission, a provincial crown corporation, by providing staff to perform work on behalf of the Green Ontario Fund. IESO staff will utilize IESO office space and infrastructure while performing this work. All IESO staff time spent on Green Ontario Fund related work will be tracked, and the IESO will charge a fully allocated cost for this staff time; the IESO will not bear the cost of any expenses of the work performed by its staff on behalf of the Green Ontario Fund. In the spring of 2018, a Green Ontario Fund website was launched and through the remainder of 2018 the IESO will be performing the following functions:

- An upgrade to the Green Ontario Fund website in the fall of 2018,
- Providing customer call centre support, and
- Program design and development.

As occurred in 2017, the IESO will be charging fully allocated costs for work performed on behalf of the Green Ontario Fund; no amounts for the IESO's support of the Green Ontario Fund are included in the IESO's 2018 Revenue Requirement Submission.

The IESO's 2018 Operating Reserve

In EB-2017-0150, through the approved Settlement Proposal, the IESO agreed to an Operating Reserve of \$6 million for 2017². As the scope and complexity of the IESO's mandate continues to expand, the IESO recognizes the potential for additional unplanned work activities that may be material in scope and are beyond the control of management.

² EB-2017-0150, OEB Decision and Procedural Order No. 5, October 31, 2017

1 This potential work is described below under the heading, Risks. In response to this
2 potential volatility in spending driven by changes in the volume of activities and the
3 external environment, the IESO seeks approval to continue to retain an Operating Reserve
4 of \$6 million in 2018. The Operating Reserve will be retained in the Forecast Variance
5 Deferral Account ("FVDA").

6 The proposed \$6 million Operating Reserve is approximately 3% of the IESO's proposed
7 2018 net revenue requirement and, as previously noted, is lower than the operating reserve
8 amounts previously retained. Historically, the IESO had an Operating Reserve of
9 \$10 million, which represents approximately 5% of its revenue requirement and which the
10 IESO considers a reasonable operating reserve. For comparison, the Ontario Energy Board
11 had an operating reserve of \$8 million in 2017 which equaled 20% of the OEB's then current
12 annual funding requirement³. As the IESO looks forward to the remainder of 2018, the
13 IESO believes that \$6 million will be an adequate reserve against the uncertainties referred
14 to below, but the IESO does not necessarily believe that this is an appropriate amount for
15 the reserve going forward. The IESO will continue to assess the risks and uncertainties
16 associated with its activities to determine the appropriateness of this reduced amount and
17 may seek approval to increase the operating reserve in the future.

18 **Risks**

19 The IESO forecasts of its revenues and operating expenses include inherent risks associated
20 with forecasting uncertainty. The IESO's expenses and revenues are forecast based on both
21 the experience of IESO staff and the best information available when the Business Plan was
22 being developed. The 2018-2020 Business Plan was re-submitted to the Minister of Energy
23 on December 18, 2017 and approved by the Minister on March 19, 2018. The IESO strives to

³ OEB 2016-2017 Annual Report https://www.oeb.ca/sites/default/files/OEB_AnnualReport_2016-17.pdf

1 reduce uncertainty in the inputs in order to make the resulting Business Plan as robust as
2 possible. However, all forecasts are inherently uncertain: they take the best information
3 available at the time and attempt to predict the future. At the time of business planning,
4 some of the potential risks the IESO faces in a given year may be anticipated but not
5 quantifiable, while others are simply not known.

6 A number of risks to the IESO's forecasts have been identified and these include:

- 7 • The US-Canada exchange rate, which has, and will potentially further impact the
8 IESO's operating expenses including NERC and NPCC membership and through
9 invoices billed in US dollars.
- 10 • Fluctuations in total demand as compared to the IESO's forecast, which impacts the
11 revenue recovered through the IESO's two usage fees.
- 12 • Current workforce capabilities, capacity and allocation may not consistently support
13 the IESO's ability to effectively execute its mission, strategy and expanding
14 responsibilities. Specific examples of this risk include:
 - 15 ○ New programs and ministerial directives requiring additional work to be
16 performed by the IESO may require additional resources.
 - 17 ○ The potential impacts of fulfilling new directives from the Minister and
18 managing the work associated with new contracts, whether for new supply,
19 conservation or the import and export of power.
- 20 • Market Renewal Program:
 - 21 ○ Stakeholder and resourcing risks are key risks that may impact the
22 implementation of the project.
 - 23 ○ Integration risk includes integrating new processes, systems and tools into
24 existing frameworks. Implementation risks includes managing project scope,
25 costs and schedules.

26 Key risks the IESO faces in achieving the organization's strategic objectives are further
27 described in Appendix 2 of the IESO's 2018-2020 Business Plan at Exhibit A-2-2.

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**2018 REGISTRATION AND APPLICATION FEES,
FORECAST VARIANCE DEFERRAL ACCOUNT AND CAPITAL EXPENSES**

2018 Registration and Application Fees

The OEB approved the following registration fees in the IESO's 2017 Revenue Requirement Submission:

- Registration fees of up to \$10,000 per proposal for electricity supply and capacity procurements, including conservation and load management,
- The Feed-in Tariff ("FIT") program application fee of \$0.50/kW of proposed Contract Capacity, having a minimum of \$500 and to a maximum of \$5,000, and
- The application fee of \$1,000 per application for market participants.

The IESO does not intend to continue with the FIT program fee in 2018. With the suspension of FIT program¹, the IESO is not seeking to continue the FIT program fee in 2018. The IESO is therefore seeking approval of the following registration fees:

- Registration fees of up to \$10,000 per proposal for electricity supply, capacity procurements, including conservation and load management, and
- The application fee of \$1,000 per application for market participants.

The IESO forecasts it will receive negligible revenues through registration fees in 2018.

The Forecast Variance Deferral Account

In its 2017 Revenue Requirement Submission, the IESO sought, and the Board approved, the continuation of the Forecast Variance Deferral Account ("FVDA").

The IESO requests approval to continue to use the FVDA. The IESO's revenue requirement is a fixed amount approved by the OEB with the IESO usage fees

¹ <http://www.ieso.ca/corporate-ieso/ministerial-directives>, December 16, 2016 Ministerial direction to the IESO to cease accepting applications under the FIT Program

determined based on a forecast of withdrawals from the IESO controlled grid, embedded generation and exports. While the IESO provides a forecast of these withdrawals, there is inherently a variance between the forecast withdrawals and actual withdrawals. Similarly, it is to be expected that there will generally be some variance between actual revenues and expenses and the OEB-approved revenue requirement. The IESO proposes to continue to track these variances through the FVDA.

Operating Reserve

As part of the Package Settlement, and subject to the settlement terms agreed to by the IESO set out under Issue 4.1, the Operating Reserve amount has been reduced from \$10 million to \$6.0 million as approved in the EB-2017-0150 OEB Decision and Procedural Order No. 5 dated October 31, 2017. In accordance with this decision, the IESO rebated \$4.0 million of the \$10.0 million operating reserve to the market in December 2017 and now maintains an operating reserve of \$6.0 million.

Capital Expenses

The IESO is seeking approval of its proposed 2018 capital expenditure envelope of \$26.6 million for capital projects, inclusive of \$4.0 million for the Market Renewal Program. A summary of capital spending and associated project descriptions is included in Appendix 4 of the IESO's approved 2018–2020 Business Plan at Exhibit A-2-2 and the forecast 2018 capital envelope compared to 2016 and 2017 is shown in Table 4 below:

Table 4: 2018 Capital Envelope compared to 2016 and 2017

Planned Projects (\$ millions)	2016 Envelope	2016 Actuals	2017 Envelope	2017 Actuals	2018 Envelope
Total Capital Projects	28.4	23.8	25.0	15.6	26.6

The IESO regularly prioritizes capital initiatives. The business planning process establishes an appropriate capital envelope for core operating initiatives with commitments approved individually based on business cases on an ongoing basis. This practice is consistent with prior years. The Market Renewal Program will begin its capital implementation stage at the end of 2018.

2016 and 2017 capital spending levels were \$4.6 million and \$9.4 million lower than planned, respectively. The lower spending was primarily due to changes in timing of the initial stages of development which are treated as expense, and a number of minor projects that were not undertaken in year as planned.

The IESO utilizes the four strategic goals described in its 2016–2020 Strategic Plan² to determine capital project priorities. The IESO's four strategic goals are:

- Deliver superior reliability performance in a changing environment
- Drive to a more efficient and sustainable marketplace
- Be recognized as a trusted advisor, informed by engagement
- Invest in our people and processes to meet the needs of the sector

² <http://www.ieso.ca/sector-participants/ieso-news/2016/06/ieso-releases-its-2016-2020-strategic-plan>.

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2017 YEAR-END FINANCIALS, SURPLUS AND STAFFING

Actual 2017 Financial Results

Table 1 below outlines the IESO's 2017 operating results and variances against its approved 2017 budget.

Table 1: 2017 Actual Operating Expenses compared to 2017 Budget

	2017		
(\$ millions)	Actual	Budget	Variance
Revenues	184.7	191.4	(6.7)
Costs			
Operating Costs	169.0	174.4	(5.3)
Amortization	18.2	18.4	(0.2)
Net Interest	(3.9)	(1.4)	(2.6)
Total Costs	183.3	191.4	(8.1)
Operating Surplus	1.4	-	1.4
Accumulated Operating Surplus (opening balance)	10.0	10.0	0.0
Proposed Rebates to Market Participants	(1.4)	-	(1.4)
OEB Decision and Ordered Rebate	(4.0)	-	(4.0)
Accumulated Operating Surplus (closing balance)	6.0	10.0	(4.0)

Surplus Rebated to Usage Fee Payers

The accumulated surplus proposed to be rebated to usage fee payers is \$1.4 million.

The \$1.4 million accumulated surplus is due to actual revenue being \$6.7 million lower than planned and total costs being \$8.1 million lower than planned.

Table 2: 2017 Actual Operating Expenses compared to 2017 Budget (with MRP as separate expense item)

	2017		
(\$ millions)	Actual	Budget	Variance
Revenues	184.7	191.4	(6.7)
Costs			
Operating Costs	161.1	162.4	(1.2)
Amortization	18.2	18.4	(0.2)
Net Interest	(3.9)	(1.4)	(2.6)
Total Costs	175.4	179.4	(4.0)
Market Renewal Program (MRP)	7.9	12.0	(4.1)
Operating Surplus	1.4	-	1.4
Accumulated Operating Surplus (opening balance)	10.0	10.0	0.0
Proposed Rebates to Market Participants	(1.4)	-	(1.4)
OEB Decision and Ordered Rebate	(4.0)	-	(4.0)
Accumulated Operating Surplus (closing balance)	6.0	10.0	(4.0)

Total costs (excluding MRP) were \$4.0 million lower than planned, primarily due to higher than planned net interest and operating cost savings. Net interest was \$2.6 million higher than planned as a result of additional interest earned on funds passing through the IESO wholesale market.

Operating costs were \$1.2 million lower than planned as a result of fewer contracted resources in core operations due to redirection of resources to the Ministry of the Environment and Climate Change (MOECC) activities in 2017, as well as reduced general administration expenses. These savings were partially offset by increased compensation expenses resulting from slower than anticipated start of capital projects and as a result there were also lower capital costs in the year.

Staff	2017 Average Actual	2017 Average Budget	Variance	2017 Dec 31st Actual	2017 Dec 31st Budget	Variance
Market Renewal Headcount						
Regular	18	25	(7)	27	33	(6)
Temporary	3	0	3	6	0	6
Market Renewal Total*	21	25	(4)	33	33	0
IESO Total	701	712	(11)	711	720	(9)

*Note: "The Market Renewal Total" represents incremental MRP headcount, while partial and shared MRP headcounts are counted in their home business unit totals that make up the "Operating Headcount Total".

Market Renewal

The spending in 2017 for the Market Renewal Program was focused on identifying and acquiring resources to support the high-level design activities and planning at the program level.

Table 4 below outlines the Market Renewal Program's 2017 actual results and variances against the 2017 budget. The program was \$4.1 million under budget due to unused contingency and slower internal ramp up of program resources. The variance is in line with the October 3, 2017 updated MRP forecast costs¹ that supported the OEB-approved Settlement Agreement in the IESO's 2017 Revenue Requirement Submission. In the OEB-approved Settlement Agreement, parties agreed to reduce the Operating Reserve to \$6.0 million from \$10 million and refund this \$4.0 million to ratepayers.

¹ EB-2017-0150, Exhibit I, Tab 1.6, Schedule 6.02

Table 4: 2017 Market Renewal Results

(\$ millions)	Actual	Budget	Variance
Compensation & Benefits	4.6	8.3	(3.7)
Professional & Consulting	2.9	3.2	(0.3)
Operating & Administration	0.4	0.5	(0.1)
Total	7.9	12.0	(4.1)

Four Standard Financial Reporting Forms

In the OEB-approved Settlement Proposal for the IESO's 2017 Revenue Requirement Submission (EB-2017-0150), under Issue 5.2: Are the four Standard Financial Reporting Forms appropriate?

Appendix 2-AA (Capital Projects)
Appendix 2-JB (Operations and Administration Cost Drivers)
Appendix 2-JC (Operations and Administration Programs)
Appendix 2-K (Employee Costs)

Parties agreed that in future Revenue Requirement Submissions, the IESO will file these forms modified as described below:

a) Appendix 2-AA will be in the format filed in this Revenue Requirement Submission as shown in Attachment 1.

b) Appendix 2-JB will include opening and closing balances allowing parties to see year-over-year variances as shown in Attachment 2.

c) Appendix 2-JC will be formatted in the same manner as the table provided in response to VECC Interrogatory 26 at Exhibit I, Tab 1.0, Schedule 9.26 and which is shown in Attachment 3.

d) Appendix 2-K will be formatted in the same manner as the table provided in response to AMPCO Interrogatory 27 at Exhibit I, Tab 5.2, Schedule 10.27 and which is shown in Attachment 4.

1 The four standard financial reporting forms have been modified as described above and
2 filed as attachments to this exhibit as follows:

- 3 • Attachment 1 - Appendix 2-AA (Capital Projects)
- 4 • Attachment 2 - Appendix 2-JB (Operations and Administration Cost Drivers)
- 5 • Attachment 3 - Appendix 2-JC (Operations and Administration Programs)
- 6 • Attachment 4 - Appendix 2-K (Employee Costs)

Appendix 2-AA
Capital Projects Table (Note 1)

Change Initiatives/Projects (in millions)	2017 Actuals	2018 Plan	2019 Plan	2020 Plan
Operations Readiness Initiatives	1.0	1.8	-	-
Wallboard Refresh	-	1.5	-	-
Unified Communications	0.6	3.0	2.0	-
Enterprise Cyber Security Management Refresh (Advanced Malware)	2.8	1.0	-	-
Infrastructure Refresh (building services, software licenses & computer hardware)	1.5	2.5	2.5	2.5
CRS Replacement & Migration	-	2.0	2.0	-
On-Line Limit Derivation (OLLD) Roll-out To Real-time Operations	-	1.0	1.0	-
Financial Systems Upgrade	0.3	1.0	0.5	-
FIT, microFIT and other upgrades	1.1	1.0	1.5	-
Aspen Refresh	-	1.0	0.2	-
IESO Portal	-	1.0	0.5	-
IESO Simulator Project – Phase 2	-	1.1	0.2	-
Meter Data Management (Upgrade)	-	0.5	1.0	-
Wide Area View Phase 2	0.1	0.2	0.2	3.0
PMU Integration Phase 2	-	-	-	3.0
Oracle Archetype Expansion, Oracle batch and Oracle Exadata Refresh	-	-	1.5	-
Tier 1 Storage Refresh	-	-	2.0	-
ETP Refresh	-	-	1.0	-
SCADA/EMS Replacement	-	-	5.0	5.0
Control Room Refresh	-	1.0	-	-
IT Service	-	-	-	1.0
Market Information System Refresh	2.7	-	-	-
Identity Access Management	2.1	-	-	-
Capital (\$1M & above)	12.4	19.6	21.1	14.5
Other Capital Initiatives/Projects	3.1	3.0	3.0	3.0
Core Operations Capital	15.4	22.6	24.1	17.5
Market Renewal	0.2	4.0	34.0	48.0
Total Capital including Market Renewal	15.6	26.6	58.1	65.5

Note 1: The capital table replicates the IESO 2018-2020 Business Plan, see Exhibit A-2-2

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APPENDIX 2-JB COST DRIVERS

Appendix 2-JB			
Cost Driver Table			
(in millions)	2017 Actual	2017 Budget	2018 Budget
Previous Year Actual	176.9	176.9	183.3
Compensation & Benefits	116.2	117.5	117.7
Professional & Consulting Fees	18.0	21.0	21.1
Operating & Administration	34.9	36.0	37.7
Amortization	18.2	18.4	17.7
Interest	- 4.0	- 1.4	- 3.4
Total Actual/Application Year Budget	183.3	191.4	190.8

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Appendix 2-JC
Operating Programs Table

(in millions)		2017 Actual	2017 Budget	2018 Budget
CEO		8.4	7.3	7.7
	CEO Office	6.9	5.7	6.0
	Internal Audit	1.5	1.6	1.6
Planning, Acquisition and Operations		39.9	43.7	46.2
	VP Office	1.7	1.7	1.8
	Power System Assessments	13.8	14.5	14.9
	Resource Planning	3.4	3.5	4.3
	Transmission Planning	2.9	2.9	4.2
	Market Operations	14.4	15.8	16.1
	Markets & Procurement	3.7	5.4	5.0
Policy, Engagement and Innovation		24.3	26.3	22.1
	VP Office	0.7	0.7	0.5
	Energy Efficiency	8.2	6.8	4.1
	Alliances and Marketing	3.2	3.3	2.9
	Corporate & Indigenous Relations	7.0	7.7	8.0
	Policy Innovation	2.7	5.1	3.9
	Regulatory Affairs	2.4	2.6	2.8
Information and Technology Services		36.1	35.2	39.7
	VP Office	1.0	1.0	0.8
	Organizational Governance Support	3.7	3.5	5.4
	Business Solutions	14.5	13.6	15.3
	Technology Services	16.8	17.3	18.2
Legal Resources and Corporate Governance		16.3	15.7	15.3
	VP Office	1.2	1.4	1.1
	General Counsel	6.5	4.5	5.3
	Board	0.7	0.7	0.7
	Contract Management	8.0	9.1	8.2
Corporate Services		24.0	23.7	23.8
	VP Office	0.5	0.4	0.4
	Corporate Controller	3.7	3.3	3.2
	Financial Planning and Analysis	1.4	1.5	1.5
	Treasury and Pension Operations	1.7	1.8	1.9
	Settlements	5.1	5.5	5.4
	Enterprise Change	3.0	2.6	2.7
	Facilities	8.6	8.7	8.7
Human Resources		5.1	4.4	5.1
Market Assessment and Compliance Division		3.2	3.8	1.9
Market Renewal		7.9	12.0	12.7
Corporate Adjustments		18.2	19.3	16.3
	General	3.9	2.3	2.0
	Amortization	18.2	18.4	17.7
	Interest	- 4.0	- 1.4	- 3.4
Total		183.3	191.4	190.8

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Appendix 2-K				
Employee Costs				
(in millions)	2016 Actual	2017 Actual	2017 Budget	2018 Budget
Number of Employees (FTEs)				
Management	109	114	117	124
All Non-Management	556	587	595	607
Total	665	701	712	731
Total Salary and Wages				
Management	18.8	17.6	21.4	20.8
All Non-Management	60.0	68.8	68.5	67.8
Total	78.9	86.3	89.8	88.5
Total Benefits				
Management	7.7	6.4	6.7	6.8
All Non-Management	22.9	23.4	21.0	22.4
Total	30.6	29.9	27.6	29.2
Total Compensation (Salary, Wages & Benefits)				
Management	26.6	24.0	28.0	27.6
All Non-Management	82.9	92.2	89.4	90.1
Total	109.5	116.2	117.5	117.7
Notes:				
Non-Management represents employees represented under collective bargaining units;				
Management includes executive.				

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IESO REGULATORY SCORECARD

In the OEB's December 14, 2017 Decision and Order for the IESO's 2017 Revenue Requirement Submission ("EB-2017-0150 Decision"), the OEB stated with respect to Issue 5.1: Is the IESO's proposed Scorecard appropriate?:

The OEB agrees with the IESO that the purpose of the scorecard is to assess the IESO's revenue and expenditure requirements and not to assess the overall performance of IESO in its oversight role of the electricity system.

The OEB concludes that the proposed scorecard is appropriate and the reporting of all measures in the proposed scorecard will be helpful in assessing future IESO expenditures, revenue requirement and fees applications. The OEB recognizes that the scorecard measures and targets will evolve with time as interested parties gain further experience with it. The OEB itself may also update the scorecard as part of its performance monitoring of the electricity sector.

The OEB makes the following specific recommendations to the IESO with regards to the proposed scorecard:

- 1. As suggested by several intervenors, the IESO needs to establish appropriate targets for each of the measures as soon as possible and ensure these are included with its 2018 expenditures, revenue requirement and fees application.*
- 2. The OEB agrees with AMPCO that for assessing whether the MRP is proceeding according to schedule and budget, the specific quantitative project performance measures of Cost Project Index (CPI) and Schedule Performance Index (SPI) for each year should be included rather than simply a qualitative Yes/No report.*
- 3. For the scorecard measure, "Conservation – Achievement of 2020 energy savings target milestones (TWh)," the IESO should include a target that is aligned with the OEB's scorecard for electricity distributors. The IESO, by Directive from the Minister of Energy, is required to coordinate, support and fund the delivery of CDM programs through distributors to achieve its 2020 conservation target. It is therefore reasonable for the IESO scorecard measure on conservation to be the same as the distributors'.*

IESO's 2018 Regulatory Scorecard

The IESO's 2018 Regulatory Scorecard ("Scorecard") is included as Attachment 1 to this exhibit. As per the EB-2017-0150 Decision, the Scorecard has been updated to reflect 2017 actual values for each of the measures, as well as 2018 targets.

The IESO continues to be supportive of a Scorecard to assist the OEB in its decision - making process when reviewing the IESO's proposed expenditure and revenue requirements. As experience with the Scorecard is gained, the IESO would seek direction from the OEB on which measures the OEB finds useful for its decision-making process. If there are measures in the IESO's Scorecard that the OEB does not find useful in its review of the IESO's proposed revenue requirements and expenditure, the IESO respectfully submits that these measures be removed from the IESO's Scorecard and that no further reporting on these measures be required.

Targets

As specified in the EB-2017-0150 Decision, the IESO has made an effort to set 2018 targets that are realistic and attainable. As the IESO gains a history on these measures, the IESO will continue to refine the targets in future years.

Market Renewal Program Measures

As described in Exhibit C-2-1 "Market Renewal Program Cost Report", the IESO will be in a position to start tracking performance measures such as Schedule Performance Index ("SPI") and Cost Performance Index ("CPI") on a going-forward basis starting January 1, 2019.

In the interim, for 2018, the IESO will report on the status of the high-level design for each of the four MRP projects against the following stakeholder review schedule:

- Single Schedule Market – end of Q3 2018
- Day Ahead Market – end of Q4 2018
- Enhanced Real-time Unit Commitment – end of Q4 2018
- Incremental Capacity Auction – end of Q2 2019

In addition, for 2018, the IESO will report on actual operating and capital costs against budget, by project, with a target variance of +/- 5%. While the IESO has made an effort to set this variance target at a reasonable and attainable value, the IESO will continue to gain experience through collecting history on actual performance with respect to this measure. This variance target is consistent with the cost control measure for the IESO's variance from the OEB-approved revenue requirement.

Transmission Losses in the Regulatory Scorecard

In the OEB's October 31, 2017 Decision and Procedural Order No. 5, the OEB determined that:

...it is premature to consider the IESO's 2017 revenue requirement submission whether transmission losses should be included in the IESO's Regulatory Scorecard given the recent OEB decision in Hydro One's Transmission rates.¹ The decision requires Hydro One to work jointly with the IESO to "explore cost effective opportunities for line loss reduction". The OEB expects the IESO to work with Hydro One and to report on initiatives for economically reducing transmission line losses in the first revenue requirement submission following the completion of the joint work with Hydro One. It would be more appropriate to determine whether transmission losses should be included in the IESO's Regulatory Scorecard once this report has been reviewed.

The IESO has been working jointly with Hydro One to explore cost effective opportunities for line loss reduction. The IESO will report to the OEB on these efforts in its first revenue requirement submission following the completion of this joint work.

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MARKET RENEWAL PROGRAM COST REPORT

In the OEB's December 14, 2017 Decision and Order for the IESO's 2017 Revenue Requirement Submission ("EB-2017-0150 Decision"), the OEB stated with respect to Issue 4.4: Should the IESO establish a separate Market Renewal Program Deferral Account?:

The OEB agrees with the IESO and OEB staff that a separate MRP deferral / variance account is not required.

The OEB supports the establishment of a separate cost centre related specifically to the MRP, as proposed by the IESO. The IESO should develop this cost centre in a manner that allows for:

- Detailed and transparent reporting and monitoring of all MRP spending on a sub-program (initiative) level*
- OEB staff and intervenors to adequately scrutinize the costs and review any variances for prudence*

As proposed by the IESO, the OEB expects the IESO to submit an MRP cost report as part of its annual revenue requirement application. This report should provide in detail MRP-related actual and budgeted capital and operating costs for each of the core MRP initiatives.

For each of these core MRP initiatives, the IESO should report on:

- Annual and projected final project cost*
- Staffing levels and associated costs*
- External resources*
- Actual and projected cost savings annually and cumulative*
- Actual annual achievement against planned*

A variance explanation for each of the items above should also be provided between actual and forecast costs for the relevant period.

The OEB agrees with OEB staff that the use of variance accounts should be minimized to the extent possible. With the establishment of an MRP-specific cost centre and cost report, there will be sufficient information for the appropriate regulatory oversight without the need for additional accounting steps for managing a separate deferral or variance account.

The OEB also expects the IESO to track specific performance measures for the MRP to monitor how effectively the IESO is achieving the key objectives of the project. The OEB has included two quantitative measures on the scorecard discussed in the next section; however, for a project of the magnitude of the MRP, the OEB expects that the IESO will also develop other measures of performance and will undertake an assessment of outcomes / benefits of the project compared with planned.

The Market Renewal Program

The IESO's Market Renewal Program ("MRP") represents the most ambitious set of enhancements to Ontario's electricity market design since market opening in 2002. The MRP will address known issues with the existing market design and will deliver ratepayer value by meeting system needs more cost-effectively. Market renewal is about improving the way electricity is priced, scheduled and procured in order to meet Ontario's current and future electricity needs reliably, transparently, efficiently and at lowest cost.

The MRP was formalized as a project in the IESO's 2017-2019 Business Plan. The MRP is planned to continue in 2018 and beyond, as outlined in the IESO's 2018-2020 Business Plan. At the time of the 2018-2020 Business Plan development, the MRP included the following work streams and associated initiatives:

Table 1: MRP Work Streams and Initiatives as per the IESO's 2018-2020 Business Plan

MRP Work Stream	Initiatives
Energy	<ul style="list-style-type: none">• Single Schedule Market• Day-Ahead Market

MRP Work Stream	Initiatives
	<ul style="list-style-type: none"> Enhanced Real-time Unit Commitment
Capacity	<ul style="list-style-type: none"> Incremental Capacity Auction
Operability	<ul style="list-style-type: none"> More Frequent Intertie Scheduling

1

2 In 2018, the scope of the MRP has been focused on the Energy and Capacity work streams.

3 The Operability work stream, including the More Frequent Intertie Scheduling (“MFIS”)

4 initiative, will be explored as part of a broader conversation on the future of Ontario’s

5 electricity market, rather than explicitly in the MRP. While the MRP scope has been focused

6 on the Energy and Capacity work streams, there is no corresponding material change to the

7 MRP budget as a direct result of this change, due to the relatively small portion of the total

8 MRP budget that this work represents.

9 The IESO’s evidence has been developed on the basis of the 2018-2020 Business Plan and,

10 as such, includes the following five MRP initiatives:

11

- **Single Schedule Market**

12 The IESO is working with stakeholders to design and develop a single schedule

13 market (“SSM”) to replace the existing two schedule system. This initiative is a key

14 foundational element of the IESO’s MRP and will help ensure that the system will

15 send transparent price signals to meet different system needs.

16

- **Day Ahead Market**

17 The IESO is working with stakeholders to design and develop a financially-binding

18 Day-Ahead Market (“DAM”). A Day-Ahead Market will provide market

1 participants with price certainty ahead of real-time, increase operational certainty
2 for both market participants and the IESO, and reduce out of market payments.

3 • **Enhanced Real-time Unit Commitment**

4 The IESO is working with stakeholders to design and develop an Enhanced Real-
5 Time Unit Commitment ("ERUC") program. An ERUC program will improve the
6 efficiency of unit commitments in the intra-day timeframe by considering all
7 resource costs in commitment decisions. An ERUC program will also improve
8 commitment decisions overall by optimizing over multiple hours rather than solving
9 for each hour independently.

10 • **Incremental Capacity Auction**

11 The IESO is working with stakeholders to design and develop an Incremental
12 Capacity Auction ("ICA"). The ICA initiative will develop an enduring market-
13 based mechanism that will secure incremental capacity to help ensure Ontario's
14 reliability needs are met cost effectively. Developing an ICA is a key element of the
15 IESO's Market Renewal Program.

16 • **More Frequent Intertie Scheduling**

17 As noted, this initiative will be pursued as part of broader conversations on the
18 future of Ontario's electricity market. This initiative would have explored increased
19 intertie scheduling frequency of imports and exports of energy to better align the
20 IESO-administered market with those of its neighbours and to study associated
21 potential flexibility benefits to Ontario.

22 MRP reporting will be provided on the basis of the realignment to four MRP initiatives
23 (i.e., SSM, DAM, ERUC, and ICA).

1 In 2017, a key focus of the MRP was stakeholder engagement and education on elements of
2 market design under each of the initiatives, in order to prepare stakeholders for detailed
3 design discussions and consultations on specific design choices in the latter of 2017 and
4 throughout 2018. It is expected that high-level designs for each of the initiatives will be
5 available for stakeholder review as per the following timeframes:

- 6 • Single Schedule Market – end of Q3 2018
- 7 • Day Ahead Market – end of Q4 2018
- 8 • Enhanced Real-time Unit Commitment – end of Q4 2018
- 9 • Incremental Capacity Auction – end of Q2 2019
- 10 • More Frequent Intertie Scheduling – N/A (as noted above)

11 Prior to the start of detailed design for each of the initiatives, and commencing any
12 significant capital spending, the IESO will develop a business case for the MRP, which will
13 be provided to the IESO Board of Directors for approval, and to stakeholders thereafter.

14 At the program level, the focus in 2017 was identifying and acquiring resources to support
15 the high-level design activities and planning at the program level. The focus in 2018
16 includes more detailed planning at the project/initiative level, as well as implementing
17 processes and measures to manage and control the execution of the high-level design
18 activities, as further described below.

19 **Engaging Stakeholders**

20 The IESO began initial work on the Market Renewal Program in 2016 with a stakeholder
21 meeting on April 19, 2016 and the formation of a Market Renewal Working Group
22 (“MRWG”) in July 2016. The MRWG is a representative stakeholder forum created to
23 guide, advise and inform the IESO on important strategic, policy and design issues that

1 will impact the overall success of the MRP. Since inception, the MRWG has continued to
2 meet regularly, typically on a monthly basis.

3 The stakeholder engagements on MRP have continued to evolve with the program's phase
4 of work. Specifically, in 2017, the IESO started engaging stakeholders within specific
5 engagements focused on each of the initiatives (e.g., SSM, ICA etc.). These consultations are
6 the primary vehicle for design discussions that will support each of the MRP initiatives.
7 The MRWG will remain open in 2018 and will continue to meet in parallel to the initiative-
8 specific engagements on an as-needed basis.

9 In addition to the MRWG and stakeholder engagements specific to each of the MRP
10 initiatives, the IESO also engages stakeholders through the following channels:

- 11 • Technical Sub-committees to support technical deep dives in support of design
12 work and/or to explore strategic issues at the MRWG. The Non-Emitting Resource
13 Sub-Committee (NERSC) is an example of a technical subcommittee that was
14 initiated in 2017 to ensure that the MRP addresses the unique characteristics of non-
15 emitting resources.
- 16 • CEO Roundtable and the Stakeholder Advisory Committee. While these forums are
17 not directly part of the design process, they provide an opportunity for senior level
18 executives to offer strategic and policy advice to the IESO on the program and the
19 engagements.

1 A schedule of all activities, engagement and work with stakeholders, including the
2 activities of the Market Renewal Working Group, is available on the IESO's website¹.

3 **Cost and Performance Reporting**

4 The IESO respects the requirements of the MRP cost and performance reporting described
5 by the OEB in its EB-2017-0150 Decision. To support this, the IESO is in the process of
6 conducting the necessary groundwork to enable detailed reporting and monitoring of MRP
7 spending on an initiative level.

8 In this context, for 2017, the comparison of budget and actual operating and capital costs
9 can only be made at the program level. In 2017, the IESO segregated costs associated with
10 the MRP from the ongoing core of IESO business, for tracking and reporting purposes. The
11 2017 cost estimates were developed at the program level and actual costs were tracked
12 accordingly.

13 For 2018, the MRP budget has been provided in more detail based on planning work that
14 began in 2017. In 2018, costs are being tracked and allocated at the overall program level, as
15 well as at the initiative level (e.g. SSM, DAM, ERUC and ICA). This will enable comparison
16 of budget and actual operating and capital costs for 2018 at both a program and initiative
17 level; however, such variance analysis will not be fully enabled until the IESO's
18 2019 Revenue Requirement Submission once actual costs for 2018 are available.

¹ <http://www.ieso.ca/en/sector-participants/market-renewal/overview-of-market-renewal>

Budget and Actual Operating and Capital Costs by Initiative

2017 budget and actual operating and capital costs for the MRP are described at a program level. The 2018 budget operating and capital costs for the MRP are described at an initiative level.

A. 2017 MRP Budget and Actual Operating and Capital Costs

Table 2 below outlines the Market Renewal Program's 2017 actual results and variances against the 2017 budget. The program spending was \$4.1 million lower than budget due to unused contingency and slower than planned internal ramp up of program resources.

The variance is in line with the projected program spend presented as part of the OEB-approved Settlement Proposal in the 2017 Revenue Requirement Submission (EB-2017-0150). The OEB approved the reduction of the IESO's Operating Reserve by \$4.0 million (and rebate to customers) due to anticipated underspending in the program.

Table 2: 2017 Market Renewal Program Operating Results

(in \$millions)	Actual	Budget	Variance
Compensation & Benefits	4.6	8.3	(3.7)
Professional & Consulting	2.9	3.2	(0.3)
Operating & Administration	0.4	0.5	(0.1)
Total	7.9	12.0	(4.1)

Capital spending in 2017 for the MRP was \$0.2 million; these costs were related to the MRP relocation, which includes the cost of additional office space required for the Market Renewal team.

B. 2018 MRP Budget Operating and Capital Costs by Initiative

The total budget for the MRP in 2018 is \$12.7 million in operating expenses, and \$4.0 million in capital expenses, as per Table 3 below.

Table 3: 2018 Market Renewal Program Operating and Capital Budget

(In \$millions)	Operating	Capital	Total
Compensation & Benefits	7.4	1.8	9.4
Professional & Consulting	4.1	1.5	5.6
Operating & Administration	1.2	0.7	1.7
Total	12.7	4.0	16.7

The 2018 MRP operating budget by initiative is described in Table 4 below.

Table 4: 2018 MRP Operating Budget by Initiative

(In \$ millions)	Compensation & Benefits	Professional & Consulting	Operating & Administration	Total
Market Renewal General	2.2	0.9	1.0	4.1
Single Schedule Market	1.1	1.0	0.1	2.2
Day Ahead Market	1.0	0.5	-	1.5
More Frequent Intertie Scheduling	0.3	0.4	-	0.7
Enhanced Real Time Unit Commitment	0.8	0.5	-	1.3
Incremental Capacity Auction	2.0	0.8	0.1	2.9
Total Market Renewal Program	7.4	4.1	1.2	12.7

1 The 2018 MRP capital budget by initiative is described in Table 5 below.

2 **Table 5: 2018 MRP Capital Budget by Initiative**

(in \$ millions)	Compensation & Benefits	Professional & Consulting	Operating & Administration	Total
Market Renewal General	-	-	-	-
Single Schedule Market	0.4	0.3	-	0.7
Day Ahead Market	0.4	0.1	-	0.5
More Frequent Intertie Scheduling	0.1	0.1	-	0.2
Enhanced Real Time Unit Commitment	0.4	0.1	-	0.5
Incremental Capacity Auction	0.6	0.9	-	1.5
Market Renewal Relocation			0.7	0.7
Total Market Renewal Program	1.8	1.5	0.7	4.0

3
4 As noted, variance analysis between 2018 MRP budget and actual spending at an initiative
5 level will be completed in the IESO's 2019 Revenue Requirement Submission. In 2018, costs
6 are being tracked and allocated at the both the overall program and initiative levels.

7 **Annual and Projected Final Project Costs**

8 The budgeted annual operating and capital costs for 2018 by initiative are shown in Tables
9 4 and 5 respectively. The IESO does not have projected final costs by initiative at this time.
10 As per the IESO's 2018-2020 Business Plan, the current total program budget is estimated at
11 \$200 million, with further budget refinement expected with completion of the business
12 case. The completion of the business case, and approval by the IESO Board of Directors,
13 will also enable the IESO to report on projected final costs by initiative.

Staffing Levels

The MRP staffing requirements include both incremental resources as well as partial and support resources from the IESO's core operations. A description of each of these resources is provided below.

- MRP Incremental Resources are resources assigned directly to the MRP, either through rotations from the IESO's core operations or external hires on temporary contracts.
- MRP Partial and Support resources are resources within the IESO's core operations whose roles include supporting various market development initiatives corporate wide, or are support function resources within core operations that are supporting the MRP, such as finance, HR, legal, IT and various other subject matter experts.

In 2017, the Market Renewal resources for the program are shown in Table 6 below. Resources were anticipated to be added to the program faster than actually resulted, causing the staffing variance.

Table 6: 2017 MRP Staffing

	Actual	Budget	Variance
MRP Incremental Resources			
Regular	18.0	25.0	(7.0)
Temporary	3.0	0.0	3.0
MRP Incremental Resources Total	21.0	25.0	(4.0)
MRP Partial Resources Total	7.5	11.0	(3.5)
MRP Resources Total	28.5	36.0	(7.5)

In 2018, the Market Renewal Program is continuing its staffing efforts. Incremental staffing in 2018 is shown at the program level in Table 7, and by initiative in Table 8.

Table 7: 2018 MRP Incremental Staffing

	Budget
Regular	40.0
Temporary	3.0
Total	43.0

Table 8: 2018 MRP Budgeted Resources by Initiative

	Incremental Resources	MRP Partial Resources	Total
Market Renewal General	13.0	5.0	18.0
Single Schedule Market	6.0	2.0	8.0
Day Ahead Market	6.0	2.0	8.0
More Frequent Intertie Scheduling	2.0	1.0	3.0
Enhanced Real Time Unit Commitment	4.5	2.0	6.5
Incremental Capacity Auction	11.5	4.0	15.5
Total Market Renewal Program	43.0	16.0	59.0

Actual and Projected Cost Savings – on an Annual and Cumulative Basis

In April 2017, a report by the Brattle Group hired to assist with the MRP, titled “The Future of Ontario’s Electricity Market, A Benefits Case Assessment of the Market Renewal Program” was posted on the IESO’s website. In its report, the Brattle Group described some of the benefits that will result from the Market Renewal Program, including:

... quantifiable impacts of Market Renewal’s energy, operability, and capacity reforms would yield expected gross efficiency benefits of hundreds of millions of dollars per year. Furthermore, the benefits of Market Renewal would pay back its implementation cost in just over a year. Benefits would continue to increase and accrue in subsequent years².

² **The Future of Ontario’s Electricity Market**, A Benefits Case Assessment of the Market Renewal Program, April 20, 2018, Prepared by the Brattle Group, Page 97

1 With the development of the business case, and approval by the IESO Board of Directors,
2 the IESO will be better able to discuss the MRP's actual and projected cost savings,
3 annually and cumulatively, by initiative.

4 **Actual Annual Achievement Against Plan**

5 Comparison of actual annual achievement against plan will be fully enabled in the IESO's
6 2020 Revenue Requirement Submission through:

- 7 • Comparison of budget and actual operating and capital costs by initiative (available
8 in the 2019 Revenue Requirement Submission filing for 2018); and
- 9 • Quantification of the project performance measures of Cost Performance Index
10 ("CPI") and Schedule Performance Index ("SPI") (available in the 2020 Revenue
11 Requirement Submission for 2019). CPI and SPI are described further in the
12 following section.

13 **Project Performance Measures of CPI and SPI**

14 As described in Exhibit C-1-1, the OEB's Decision and Order for the IESO's 2017 Revenue
15 Requirement Submission (EB-2017-0150) stated, with respect to Issue 5.1: Is the IESO's
16 proposed Scorecard appropriate?:

17 *The OEB agrees with AMPCO that for assessing whether the MRP is proceeding*
18 *according to schedule and budget, the specific quantitative project performance*
19 *measures of Cost Project Index (CPI) and Schedule Performance Index (SPI) for each*
20 *year should be included rather than simply a qualitative Yes/No report.*

21 In order to compute CPI and SPI performance measures, a project baseline must first be
22 developed. The baseline represents the planned cost and schedule of the project and is used
23 as a standard against which actual performance is measured.

1 In 2018, the MRP is further planning the detailed design and implementation phases of the
2 program and will be establishing baselines for schedule and cost for the MRP. This work
3 will form the foundation that will enable the MRP to begin tracking performance measures
4 such as CPI and SPI on a go-forward basis, starting January 1, 2019. Therefore, the IESO
5 will be able to report on annual CPI and SPI for the MRP work performed in 2019, in the
6 2020 Revenue Requirement Submission.

7 As described in C-1-1, while the IESO conducts the groundwork to enable reporting on CPI
8 and SPI, for 2018 the IESO will report on the status of the high-level design for each of the
9 four MRP initiatives, against schedule targets for timing of high-level design completion
10 and publish for stakeholder review. In addition, for 2018 the IESO will report on actual
11 operating and capital costs against budget, by initiative, against a target variance of +/- 5%.

COST ALLOCATION STUDY

In the OEB-approved Settlement Proposal for the IESO's 2017 Revenue Requirement Submission (EB-2017-0150), under Issue 1.0: Revenue Requirement, Operating Costs and Capital Spending, the IESO agreed to:

- Conduct a corporate cost allocation study on the charges associated with staff and services the IESO provides to third parties, such as the Ontario Climate Change Solutions Deployment Corporation ("OCCSCD") and the Smart Metering Entity; and
- File this corporate cost allocation study with its next Revenue Requirement Submission.

BDR North America was the successful proponent, procured through a competitive Request for Proposal process, to undertake this work. This work is underway but has not yet been completed. The cost allocation study will be filed by the IESO as soon as possible after it is completed.

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