

EXHIBIT LIST

Exhibit	Tab	Schedule	DESCRIPTION
A – ADMINISTRATION & APPLICATION SUMMARY			
A	1	1	Exhibit List
A	1	2	2023 Submission
A	1	3	2024 Submission
A	1	4	2025 Submission
A	1	5	Executive Summary
A	2	1	Stakeholder Engagement
A	2	2	Performance Measures and Targets <u>Attachment 1</u> - 2023-2025 Performance Measures <u>Attachment 2</u> - 2022 Performance Measures Results
B – BUSINESS PLAN & FINANCIAL INFORMATION			
B	1	1	IESO's Letter to the Minister Requesting Approval of 2023-2025 Business Plan
B	1	2	2023-2025 Business Plan
B	1	3	Minister's Letter Approving the IESO's 2023-2025 Business Plan
B	2	1	2022 Annual Report and Audited Financial Statements (To be filed at a later date)
C – REVENUE REQUIREMENT AND USAGE FEES			
C	1	1	Revenue Requirement and Usage Fee Methodology
C	2	1	2023-2025 Revenue Requirements and Usage Fees Attachment 1 – Actual Load and Forecast Volumes (xlsx)
C	3	1	Funding Sources <u>Attachment 1</u> - Funding Sources (xlsx)

D – OPERATING EXPENDITURES			
D	1	1	OM&A Overview Attachment 1 - Summary of OM&A Expenses (Appendix 2-JA) (xlsx) Attachment 2 - OM&A Cost Driver Table (Appendix 2-JB) (xlsx)
D	1	2	OM&A Business Unit Detail Attachment 1 - OM&A Business Unit Table (Appendix 2-JC) (xlsx) Attachment 2 - Organizational Chart
D	1	3	Staffing and Compensation Attachment 1 - Employee Costs (Appendix 2-K) (xlsx) Attachment 2 - IESO Compensation Guidelines Attachment 3 - Non-Executive Total Remuneration Review
D	1	4	Corporate Policy on Procurement Attachment 1 – IESO Procurement Policy
D	2	1	Interest Expense and Investment Income
E – CAPITAL EXPENDITURES, FIXED ASSETS AND AMORTIZATION			
E	1	1	Asset Management Process Overview
E	1	2	Capital Expenditure Planning Process Overview
E	2	1	Capital Budget Overview and Progress on Capital Projects Attachment 1 - Capital Projects (Appendix 2-AA) (xlsx) Attachment 2 - Project Charter - Core Network Refresh Attachment 3 - Project Charter - Enabling Resources Program Attachment 4 - Project Summary - Space Needs Program Attachment 5 - Project Summary - Lawson Refresh Attachment 6 - Project Summary - Backup Operating Centre and Backup Data Centre Relocation Attachment 7 - Project Summary - Meter Data Management System Replacement

			Attachment 8 - Project Summary - Enabling Grid Transformation Program Attachment 9 - Material Capital Project Progress Updates Attachment 10 - \$1 Million - \$4 Million Capital Project Updates
E	3	1	Gross Assets and Amortization Attachment 1 - Service Life Comparison and Amortization Expense (xlsx)
F – DEFERRAL AND VARIANCE ACCOUNTS			
F	1	1	Forecast Variance Deferral Account
G – EVIDENCE RESPONDING TO PREVIOUS OEB DECISIONS			
G	1	1	Summary of Responses to OEB Decisions Attachment 1 – Progress on Implementing Recommendations from Third Party Evaluation of the Grid Innovation Fund Attachment 2 – Internal Audit Recommendations & Management Response Attachment 3 – Annual OEB Update on Market Surveillance Panel Recommendations Attachment 4 - Detail of Internal Audit Reports
G	2	1	Market Renewal Program Cost Report
G	2	2	Annual Status Report on 2017 Auditor General Report Recommendations
G	2	3	IESO 2023-2025 Regulatory Scorecard (xlsx)

2023 SUBMISSION

EB-2022-0318

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 2023 and the fees it proposes to charge during the fiscal year 2023.

2023 SUBMISSION FOR REVIEW

1. The Independent Electricity System Operator (IESO) submitted its 2023-2025 Business Plan to the Minister of Energy (Minister) for approval pursuant to subsection 24 (1) of the *Electricity Act, 1998* as amended (Act) and the IESO received a letter from the Minister approving the 2023-2025 Business Plan and budget for 2023.
2. The IESO hereby submits to the Ontario Energy Board (OEB) its proposed 2023 expenditure and revenue requirements and the fees it proposes to charge in 2023 pursuant to subsection 25 (1) of the Act (2023 Revenue Requirement Submission).
3. The IESO proposes a 2023 revenue requirement of \$208.4 million.
4. The current IESO interim usage fees of \$1.3329/MWh for domestic customers and \$1.0126/MWh for export customers were made effective January 1, 2023 by a December 13, 2022 OEB Decision on Interim Fees (EB-2022-0318), and remain interim until final fees are approved by the OEB.
5. Pursuant to subsection 25 (1) of the Act, the IESO is seeking the following approvals from the OEB:
 - a. Approval of the proposed 2023 revenue requirement of \$208.4 million.

- b. Approval of the proposed IESO usage fees of \$1.3857/MWh for domestic customers and \$1.0885/MWh for export customers to be paid effective January 1, 2023.
 - c. Approval of the proposed 2023 capital expenditure envelope of \$86 million for capital projects.
 - d. Approval to retain \$15 million as an operating reserve in the Forecast Variance Deferral Account (FVDA).
 - e. Approval to rebate \$8.7 million, which is the year-end balance in the FVDA, above the requested \$15 million operating reserve, to market participants. The IESO will rebate the surplus to market participants proportionate to the fees collected in 2022. The rebates will be provided in the next billing cycle following the month in which OEB approval is received.
 - f. Approval to charge (or rebate) market participants the difference between the 2023 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 2023 usage fees. Any such charges (or rebates) will be provided in the next billing cycle following the month in which OEB approval is received.
 - g. Approval to rely on and use the information provided to the IESO by Local Distribution Companies (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.
 - h. All necessary interim orders, orders and directions, pursuant to the *Ontario Energy Board Act, 1998* and the OEB's Rules of Practice and Procedure, as may be necessary in relation to this 2023 Revenue Requirement Submission.
6. The IESO proposes that the OEB review of the 2023 Revenue Requirement Submission proceed by way of a written hearing.

- 1 7. The IESO intends to submit its 2022 Audited Financial Statements, as well as any
2 supplementary evidence, to the OEB and all intervenors once they become available.
- 3 8. The IESO may amend its pre-filed evidence from time to time, prior to and during the
4 course of the OEB proceeding. Furthermore, the IESO may seek to have additional
5 meetings with OEB Staff and intervenors in order to identify and address any further
6 issues arising from this 2023 Revenue Requirement Submission, with a view to an early
7 settlement and disposition of this proceeding.
- 8 9. The IESO requests a copy of all documents filed with the OEB by each party to this
9 proceeding, be served on the IESO and the IESO's counsel in this proceeding as follows:

Independent Electricity System Operator	Mr. George Dimitropoulos Senior Advisor, Regulatory Affairs T: (647) 528-8654 E: regulatoryaffairs@ieso.ca
Stikeman Elliott LLP	Mr. Patrick Duffy Stikeman Elliott LLP 5300 Commerce Court West 199 Bay Street Toronto Ontario M5L 1B9 Canada T: (416) 869-5257 E: pduffy@stikeman.com

10 DATED at Toronto, Ontario, this 29th day of March 2023

11 INDEPENDENT ELECTRICITY SYSTEM OPERATOR

12 

13 By its counsel in this proceeding

14 Patrick Duffy

2024 SUBMISSION

EB-2022-0318

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 2024 and the fees it proposes to charge during the fiscal year 2024.

2024 SUBMISSION FOR REVIEW

1. The Independent Electricity System Operator (IESO) submitted its 2023-2025 Business Plan to the Minister of Energy (Minister) for approval pursuant to subsection 24 (1) of the *Electricity Act, 1998* as amended (Act) and the IESO received a letter from the Minister approving the 2023-2025 Business Plan and budget for 2024.
2. The IESO hereby submits to the Ontario Energy Board (OEB) its proposed 2024 expenditure and revenue requirements and the fees it proposes to charge in 2024 pursuant to subsection 25 (1) of the Act (2024 Revenue Requirement Submission).
3. The IESO proposes a 2024 revenue requirement of \$218.4 million.
4. Pursuant to subsection 25 (1) of the Act, the IESO is seeking the following approvals from the OEB:
 - a. Approval of the proposed 2024 revenue requirement of \$218.4 million.
 - b. Approval of the proposed IESO usage fees of \$1.4212/MWh for domestic customers and \$1.2455/MWh for export customers to be paid effective January 1, 2024.
 - c. Approval of the proposed 2024 capital expenditure envelope of \$75.9 million for capital projects.

d. Approval to retain \$15 million as an operating reserve in the Forecast Variance Deferral Account (FVDA).

e. Approval to rely on and use the information provided to the IESO by Local Distribution Companies (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.

f. All necessary interim orders, orders and directions, pursuant to the *Ontario Energy Board Act, 1998* and the OEB's Rules of Practice and Procedure, as may be necessary in relation to this 2024 Revenue Requirement Submission.

5. The IESO proposes that the OEB review of the 2024 Revenue Requirement Submission proceed by way of a written hearing.

6. 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 2024 Revenue Requirement Submission, with a view to an early settlement and disposition of this proceeding.

DATED at Toronto, Ontario, this 29th day of March 2023

INDEPENDENT ELECTRICITY SYSTEM OPERATOR



By its counsel in this proceeding

Patrick Duffy

2025 SUBMISSION

EB-2022-0318

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 2025 and the fees it proposes to charge during the fiscal year 2025.

2025 SUBMISSION FOR REVIEW

1. The Independent Electricity System Operator (IESO) submitted its 2023-2025 Business Plan to the Minister of Energy (Minister) for approval pursuant to subsection 24 (1) of the *Electricity Act, 1998* as amended (Act) and the IESO received a letter from the Minister approving the 2023-2025 Business Plan and budget for 2025.
2. The IESO hereby submits to the Ontario Energy Board (OEB) its proposed 2025 expenditure and revenue requirements and the fees it proposes to charge in 2025 pursuant to subsection 25 (1) of the Act (2025 Revenue Requirement Submission).
3. The IESO proposes a 2025 revenue requirement of \$229.7 million.
4. Pursuant to subsection 25 (1) of the Act, the IESO is seeking the following approvals from the OEB:
 - a. Approval of the proposed 2025 revenue requirement of \$229.7 million.
 - b. Approval of the proposed IESO usage fees of \$1.4499/MWh for domestic customers and \$1.4276/MWh for export customers to be paid effective January 1, 2025.
 - c. Approval of the proposed 2025 capital expenditure envelope of \$58.2 million for capital projects.

d. Approval to retain \$15 million as an operating reserve in the Forecast Variance Deferral Account (FVDA).

e. Approval to rely on and use the information provided to the IESO by Local Distribution Companies (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.

f. All necessary interim orders, orders and directions, pursuant to the *Ontario Energy Board Act, 1998* and the OEB's Rules of Practice and Procedure, as may be necessary in relation to this 2025 Revenue Requirement Submission.

5. The IESO proposes that the OEB review of the 2025 Revenue Requirement Submission proceed by way of a written hearing.

6. 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 2025 Revenue Requirement Submission, with a view to an early settlement and disposition of this proceeding.

DATED at Toronto, Ontario, this 29th day of March 2023

INDEPENDENT ELECTRICITY SYSTEM OPERATOR



By its counsel in this proceeding

Patrick Duffy

EXECUTIVE SUMMARY

Introduction

The Independent Electricity System Operator (IESO) is a not-for-profit, non-taxable corporation established pursuant to Part II of the *Electricity Act, 1998* (Act). As set out in the Act, the IESO operates pursuant to a licence (EI-2013-0066) granted by the Ontario Energy Board (OEB).

The IESO's mandate is contained in the Act and associated Ontario regulations.

The IESO ensures the reliability of the province's power system on behalf of all Ontarians, leveraging its expertise and purposeful engagement to advance energy policy that cost effectively achieves this goal. As part of its mandate, the IESO operates Ontario's electricity grid in real-time, governs electricity markets, prepares for the future to ensure electricity will be available when and where it is needed, and helps inform the decisions that will be critical to shaping the future of the sector.

The revenue requirements and capital spending to carry out the IESO's mandate are included in the IESO's 2023-2025 Business Plan (Business Plan), which was submitted to the Minister of Energy (Minister) for approval on September 1, 2022 (see Exhibit B-1-1 – IESO's Letter to the Minister Requesting Approval of 2023-2025 Business Plan, and Exhibit B-1-2 – 2023-2025 Business Plan). The Minister approved the Business Plan and the IESO's proposed revenue requirements and expenditures for 2023, 2024 and 2025 on February 15, 2023 (See Exhibit B-1-3 Minister's Letter Approving the IESO's 2023-2025 Business Plan). The 2023-2025 Business Plan is the first business plan to be approved following the establishment of a three-year approval cycle with the Minister.

Three-Year Revenue Requirement Submission

With the Minister's approval of the IESO's Business Plan, the IESO has filed its revenue requirement, expenditures and fees submission for each fiscal year covered by the Business Plan, i.e., 2023, 2024 and 2025, as part of a three-year filing to the OEB. A separate submission for each fiscal year has been filed for review by the OEB pursuant to Section 25(1) of the Act, which provides that:

1 *The IESO shall, at least 60 days before the beginning of each fiscal year, submit its*
2 *proposed expenditure and revenue requirements for the fiscal year and the fees it*
3 *proposes to charge during the fiscal year to the Board for review, but shall not do so*
4 *until after the Minister approves the IESO's proposed business plan for the fiscal year.*

5 A three-year approval cycle was supported by intervenors in the settlement agreement included
6 in the OEB's Decision on the IESO's 2022 Revenue Requirement Submission (EB-2022-0002).
7 The IESO's three-year filing lays the groundwork for increased regulatory efficiency and reduced
8 regulatory burden on the OEB and intervenors, compared to a single-year filing submitted each
9 fiscal year.

10 As part of its three-year filing, the IESO has provided historical OEB-approved data dating back
11 to 2019 to support its three-years of revenue requirements with variance explanations that
12 identify causal factors that drove material differences from approved expenditures. The
13 evidence submitted as part of the submission includes material and relevant facts pertaining to
14 operations and capital projects to facilitate the assessment of the IESO's expenditures, revenue
15 requirements and usage fees as appropriate. This also includes discussion of specific programs,
16 initiatives and results that would be helpful to the OEB and intervenors in their review of the
17 application.

18 **Revenue Requirements and Usage Fees**

19 The IESO's 2023-2025 Business Plan sets out the IESO's revenue requirements and associated
20 operations, maintenance and administration and capital spending needed to maintain its critical
21 responsibilities in 2023, 2024 and 2025 and deliver on its refreshed Corporate Strategy¹. To
22 fully prepare the sector for the future and ensure Ontarians' electricity needs are met, the IESO
23 must invest in people and systems. As a result, the IESO is proposing increases to its budget to
24 ensure it can continue to meet Ontarians' expectations of an affordable, sustainable, resilient
25 and reliable power system. To deliver on this plan, the IESO has a revenue requirement of

¹ The IESO refreshed its Corporate Strategy in 2022 as a result of the increasing pace and scope of change in the sector to ensure that the organization is well positioned to meet Ontarian's needs and expectations.

1 \$208.4 million in 2023, \$218.4 million in 2024, and \$229.7 million in 2025. These figures
2 represent increases of 5.0%², 4.8%³, and 5.2%⁴ year over year.

3 The IESO has identified and leveraged efficiencies in several areas to mitigate impacts of its
4 revenue requirements to Ontario ratepayers. The IESO anticipates an increase in new
5 contracted facilities over the next three years to meet electricity system needs. Through the
6 Reliable Integration fee, IESO expenses associated with activities undertaken to connect new
7 facilities are offset by fees paid by the project proponent and thus impacts to Ontario
8 ratepayers are reduced. Further development of systems to track contracts, automate contract
9 settlements, and introduce processes for streamlining energy efficiency contract approvals have
10 also yielded operational efficiencies. Furthermore, the IESO continues to realize efficiencies by
11 examining its long-term office space needs.

12 The IESO's revenue requirements translate into the following proposed usage fees for domestic
13 and export customers in 2023, 2024 and 2025 respectively:

- 14 • Proposed 2023 usage fees of \$1.3857/MWh for domestic customers (including
15 embedded generation) and \$1.0885/MWh for export customers effective January 1,
16 2023;
- 17 • Proposed 2024 usage fees of \$1.4212/MWh for domestic customers (including
18 embedded generation) and \$1.2455/MWh for export customers effective January 1,
19 2024; and,
- 20 • Proposed 2025 usage fees of \$1.4499/MWh for domestic customers (including
21 embedded generation) and \$1.4276/MWh for export customers effective January 1,
22 2025.

23 For more information, please see Exhibit C-1-1 Revenue Requirement and Usage Fee
24 Methodology, and Exhibit C-2-1 2023-2025 Revenue Requirements and Usage Fees.

² 2023 revenue requirement compared to 2022 actual revenue requirement

³ 2024 revenue requirement compared to 2023 revenue requirement

⁴ 2025 revenue requirement compared to 2024 revenue requirement

Operations, Maintenance and Administration (OM&A) Expenditures

The IESO's OM&A budget funds business units and initiatives that ensure the reliability of Ontario's power system through operating the electricity grid, governing electricity markets, ensuring the future availability of electricity when and where it is needed, and helping inform decisions that will be critical to shape the future of the sector.

In 2023, OM&A expenses are budgeted to increase by \$10.3 million from 2022 actual results to a total of \$197.3 million, primarily driven by incremental expenses for initiatives necessary to enable the IESO to play a critical role in driving and guiding the energy transformation.

In 2024, OM&A expenses are budgeted to increase by \$9.3 million from the 2023 budget to a total of \$206.6 million, primarily driven by the transition to post-Market Renewal Program (MRP) integration functions and services, and to ensure resource acquisition to meet system needs by 2026.

In 2025, OM&A expenses are budgeted to increase by \$5.3 million from the 2024 budget, to a total of \$211.9 million, primarily driven by actuarial projected pension and Other Post-Employment Benefits liability costs and additional investments mainly to support the transition to post-MRP (see Exhibit D-1-1 OM&A Overview, and Exhibit D-1-2 OM&A Business Unit Detail).

Staffing and Compensation

As an organization of knowledge workers, the IESO's staff are critical to carrying out the IESO's Business Plan. For 2023, the IESO has budgeted an average of 914 full-time equivalents (FTEs) to deliver on key initiatives that are critical to maintaining its core operations, to support the transformation of the electricity sector, and to support the MRP. For 2024, the IESO has a budget of an average of 926 FTEs due to additional staff required to support energy procurements and prepare for the new market functions and services resulting from the MRP. Finally, for 2025, the budget is planned to decline to an average of 900 FTEs as MRP staff conclude their temporary employments.

The IESO will continue to build a robust candidate pool to support recruitment of new employees by demonstrating IESO's reputation as an employer of choice by promoting IESO

1 awards (e.g., the IESO GTA Top Employer Award), using LinkedIn to profile employees and
2 their stories and to share job postings, workforce planning initiatives, recruiting from top
3 academic institutions, expanding partnerships with educational institutions and leveraging
4 search firms where appropriate. In 2022, the IESO's recruitment efforts resulted in an increase
5 of 25 FTEs compared to 2021, representing the highest single-year staffing increase over the
6 past three years. The IESO will continue to build on its capabilities through the actions
7 identified above as it hires new staff over the planning period as per the Business Plan.

8 The IESO continues to implement initiatives and safeguards to ensure compensation, benefits
9 and pension plans are cost effective. At the same time the IESO strives to offer a competitive
10 employee value proposition for recruitment and retention of employees with the skills and
11 competencies needed to deliver on the IESO's unique mandate.

12 Budgeted compensation expenses are based on Bill 124, a provincial law affecting wages for
13 Society and Power Worker Union employees by limiting economic salary increases over the
14 corresponding moderation periods. Bill 124 was struck down by the Ontario Superior Court of
15 Justice on November 29, 2022; however, the Ontario government filed an appeal in response
16 and Bill 124 remains in effect (See Exhibit D-1-3 Staffing and Compensation for additional
17 information).

18 **Capital Expenditures**

19 The IESO's business planning process establishes an appropriate capital envelope for capital
20 projects (See Exhibit E-1-2 – Capital Expenditure Planning Process Overview). Many of the
21 projects span multiple years, and the IESO works within the OEB-approved capital expenditure
22 envelope and prioritizes projects to support IESO's core strategies and to maintain the current
23 capabilities of the business.

24 For 2023-2025, in addition to delivering a number of core business projects which will allow the
25 IESO to maintain critical services, improve efficiency and meet regulatory compliance
26 obligations the IESO is continuing to deliver a significant number of strategic initiatives with the
27 aim of: driving business transformation (with projects such as the Replacement of Settlement
28 Systems, Data Excellence Program, Enabling Grid Transformation Program, Space Needs
29 Program, and Human Resource Workforce Planning and Analytics Project); ensuring system

1 reliability (with projects such as the Resource Adequacy Program, Enabling Resources Program,
2 and Dynamic Limits in Real-Time Project) and enabling competition and advancing sector
3 leadership through addressing Market Surveillance Panel recommendations. Through its core
4 business projects, the IESO will continue to ensure reliability by upgrading and replacing core
5 applications, infrastructure and cybersecurity tools.

6 For 2023, the IESO's capital budget is \$86 million, including \$35 million for the IESO core
7 project portfolio and \$51 million for the MRP. In 2024, the IESO's capital budget is \$75.9
8 million, including an IESO core project portfolio of \$43.6 million and an MRP budget of \$32.3
9 million. For 2025, the IESO's capital budget is \$58.2 million, made up of a core IESO capital
10 portfolio of \$43.6 million, and an MRP budget of \$14.6 million (See Exhibit E-2-1 – Capital
11 Budget Overview and Progress on Capital Projects and Exhibit E-2-1 Attachment 1 – Capital
12 Projects (Appendix 2-AA)).

13 **Market Renewal Program**

14 The MRP is modernizing Ontario's electricity markets to deliver an efficient marketplace that will
15 support the electricity grid of the future. Efficient operation of existing resources and effective
16 integration of new resource types is dependent on the foundational improvements MRP will
17 deliver – including prices that reflect costs in the different regions across the province and
18 significantly improved optimization of resource scheduling and dispatch.

19 In August 2022, the IESO's Board of Directors approved a revised project schedule which
20 included a revised in-service date of May 2025, and a forecast budget of \$233 million. The IESO
21 is confident this schedule is achievable as many of the previous uncertainties have been
22 addressed through completion of business requirements and vendor validation of timelines to
23 complete system development and testing. Further, the revised schedule provides stakeholders
24 with additional time to complete their own readiness activities. To enhance transparency on the
25 project's status, the IESO now posts a quarterly update tracking progress to the forecast
26 schedule and budget. The project is on track to meet the revised schedule.

27 Operating activities reflected in the 2023-2025 planning period include the drafting of Market
28 Rules, Market Manuals and Internal Manuals, change management activities, and training and

documentation. Capital activities reflected in the planning period include the completion of business requirements, vendor costs for the dispatch scheduling and optimization tool (See Exhibit G-2-1 – Market Renewal Program Cost Report).

Forecast Variance and Deferral Account

In the OEB's Decision (EB-2019-0002) on the IESO's 2019 Revenue Requirement Submission, the IESO received approval to retain an operating reserve of \$10 million. The balance of the operating reserve is recorded in the Forecast Variance Deferral Account (FVDA). The IESO is requesting an increase of \$5 million to retain an operating reserve of \$15 million over the three-year planning and approval period. This proposed increase recognizes the potential for additional unplanned events that may be material in scope and cost, given the scope and complexity of IESO's mandate, and the expected transformation of the sector over the 2023-2025 Business Plan. As the IESO looks forward to the 2023-2025 planning period, the IESO believes that a \$15 million FVDA balance will be a reasonable and adequate reserve against the uncertainties and impacts referred to above (See Exhibit F-1-1 – Forecast Variance Deferral Account).

IESO STAKEHOLDER ENGAGEMENT

Stakeholder Engagement

Stakeholder engagement is facilitated in accordance with the IESO's engagement principles¹ and the IESO's Stakeholder Engagement Framework (Framework) which is available publicly on the IESO website². Stakeholder groups are encouraged to be part of the stakeholder engagement process, including but not limited to transmitters, distributors, generators, consumers, energy related businesses and emerging technologies. Representatives from First Nation and Métis communities, as well as regional and local municipalities, are also encouraged to participate.

The Framework is aimed at enhancing the IESO's engagement process by:

- Providing greater certainty on the timing of engagement meetings allowing for enhanced preparedness and participation from stakeholders
- Supporting an understanding of linkages between initiatives
- Addressing concerns about stakeholder fatigue with fewer overall engagement meetings
- Supporting a foundation for more comprehensive and integrated updates for the Stakeholder Advisory Committee (SAC) and the IESO Board of Directors

The Framework is built upon a meeting schedule of monthly designated engagement days with time to review materials in advance (typically two weeks), along with feedback windows (typically three weeks). During the engagement days, topics are grouped together where possible to clarify linkages between initiatives and support information sharing.

To help facilitate the broad scope of the IESO's engagements, engagements are grouped into four categories: forecasting and planning, resource acquisition, operations, and sector evolution. Each of these categories have a specific area of focus and can be seen as being linked as a cycle to recognize how they all work together, as shown in Figure 1 below.

¹ IESO Engagement Principles: <https://www.ieso.ca/en/Sector-Participants/Engagement-Initiatives/Overview/Engagement-Principles>

² IESO Stakeholder Engagement Framework: <https://www.ieso.ca/Sector-Participants/Engagement-Initiatives/Overview/Stakeholder-Engagement-Framework>

1 **Figure 1 – Engagement Framework Categories**



2

3 Monthly engagement updates are also used to share the current status and next steps on the

4 IESO's active engagements. The updates include a section on new and upcoming engagements

5 to inform stakeholders of new engagement initiatives as early as possible.

6 The 2022 IESO Stakeholder and Community engagement survey indicated that the majority of

7 stakeholders (74%) report that their experience with IESO engagement has met or exceeded

8 expectations.

9 **Engagement Process**

10 The IESO has established a standard process across all of its active engagements so that

11 stakeholders are aware of what they can expect as part of the process and how and when their

12 feedback will be considered. Steps included in this process are:

- 13 • Launching a new engagement stream with a dedicated engagement page on the IESO
- 14 website;
- 15 • Posting a draft engagement plan and schedule for stakeholder feedback;
- 16 • Posting meeting materials in advance of an engagement meeting (typically two weeks);

- Providing notification of the meeting in the IESO's weekly Bulletin;
- Hosting the engagement meeting, and posting archives of online meetings;
- Providing sufficient time (typically three weeks) for the submission of stakeholder feedback; and
- Posting the submitted stakeholder feedback along with the IESO's response to the feedback.

This process is documented for the 25 active IESO engagements listed below (as of February 2023) on their dedicated engagement webpage. In 2022, the IESO held over 90 engagement sessions and events involving over 6,400 participants. Links are available to all the IESO's active engagements on the active engagement's webpage³.

- Forecasting and Planning: 2023 Annual Acquisition Report
- Regional Planning – Burlington to Nanticoke
- Regional Planning – North & East of Sudbury
- Regional Planning – Ottawa Area Sub-Region
- Regional Planning – Toronto
- Transmission Losses

Resource Acquisition:

- Capacity Auction Enhancements
- Development of an IESO Competitive Transmission Procurement Process
- Distributed Energy Resources Market Vision and Design Project
- Distributed Energy Resources Potential Study
- Distributed Energy Resources Roadmap
- Hybrid Integration Project
- Long-Term Request for Proposals
- Resource Adequacy

Operations:

- Adjustment to Intertie Flow Limits

³ IESO Active Engagements Webpage: <https://www.ieso.ca/en/Sector-Participants/Engagement-Initiatives/Engagements>

- Cost Recovery for Integrating System Changes
- Improving Accessibility of the Operating Reserve
- Market Renewal Program (MRP) - Implementation
- Registration Timelines

Sector Evolution:

- Clean Energy Credits
- Innovation and Sector Evolution White Papers
- IESO York Region Non-Wires Alternatives Demonstration Project
- Interruptible Rate Pilot
- Low-Carbon Hydrogen Strategy
- Pathways to Decarbonization

Other Stakeholder Engagement Initiatives

In addition to collecting feedback through the individual active engagements, feedback is also sought through a variety of other mechanisms including the SAC, Technical Panel, the Transmission-Distribution Coordination Working Group, the MRP Implementation Working Group, the IESO Regional Electricity Networks, Summit Events and outreach at trade shows and conferences.

The SAC⁴ consists of representatives from distributors, generators, consumers, transmitters, energy related businesses and services and Ontario communities. Three SAC meetings were held in 2022 to collect feedback on key initiatives and the IESO's plans and priorities, including the IESO's Business Plan. At the September 28, 2022, SAC meeting⁵ members were taken through an update on the 2023 – 2025 Business Plan, where discussion included how the Business Plan builds upon the IESO's refreshed Corporate Strategy released in August 2022 and outlines the IESO's plan to ensure Ontario is prepared to support its energy and economic transition. It was noted that the 2023 – 2025 Business Plan further builds upon this foundation

⁴ IESO Stakeholder Advisory Committee Webpage: <https://www.ieso.ca/en/Sector-Participants/Engagement-Initiatives/Stakeholder-Advisory-Committee/Meetings-and-Materials>

⁵ Meeting notes of the September 28, 2022 SAC meeting: <https://www.ieso.ca/en/Sector-Participants/Engagement-Initiatives/Stakeholder-Advisory-Committee/Meetings-and-Materials>

1 and outlines the resources required for the IESO to deliver on the first three years of the
2 refreshed strategy, setting out the IESO's priorities in a number of key areas.

3 Further, as part of the SAC discussion, the IESO also pointed out its key priorities and
4 highlighted the engagements⁶ underway and the process for collecting feedback:

- 5 • Continue work started in 2022 under Resource Adequacy, Transmission Adequacy and
6 Enabling Resources, furthering incremental investments to secure additional supply and
7 expansions needed to address electricity needs emerging and the unprecedented
8 transformation of the electricity system over the next decade.
- 9 • Deliver on government initiative work related to Class B and Interruptible Rate Pilots,
10 potential program to provide new contracts for existing small hydroelectric generation
11 facilities, enhanced energy efficiency conservation and demand management programs,
12 along with other smaller initiatives.
- 13 • Complete the MRP, at which time the new market will begin to generate significant
14 ratepayer savings building on the benefits that the market has delivered to consumers
15 over the past 20 years.
- 16 • Strengthen IESO's preparedness to support Ontario's electricity transformation through
17 enhancing cybersecurity posture⁷, reinforcing the resilience and integrity of the
18 electricity grid, sustaining critical IT systems and enabling the grid transformation
19 program.

20 Overall, this engagement follows the IESO's standard practice of having an annual discussion
21 with SAC members, and the general public, about the IESO Business Plan and other strategic
22 initiatives.

23 **Municipal Engagement**

24 Trade shows, conferences and outreach are other tools utilized by the IESO to connect with key
25 audiences, build awareness of the IESO and encourage membership in the regional networks
26 and regional planning activities. In 2022, the IESO took part in close to 75 engagements with
27 municipal representatives and new educational materials were introduced to continue the

⁶ The IESO engagement initiatives: <https://ieso.ca/en/Sector-Participants/Engagement-Initiatives/Engagements>

⁷ <https://www.ieso.ca/en/Learn/Ontario-Electricity-Grid/Cyber-Security>

1 IESO's efforts to build foundational knowledge of the electricity sector. The IESO also
2 introduced a customized engagement stream for municipalities for the Long-Term Request for
3 Proposal (LT RFP) and Expedited LT RFP to ensure they had the information and tools required
4 to participate in this discussion on electricity procurement.

5 **Indigenous Relations**

6 The IESO routinely undertakes extensive work with Indigenous communities to promote
7 meaningful outcomes and to implement the Corporate Indigenous Policy⁸ to affirm this work
8 and commit the organization to further actions. The IESO Corporate Indigenous Policy also
9 commits the IESO to moving towards a culture and workforce shift by incorporating company-
10 wide cultural and awareness training, increasing opportunities for Indigenous youth and better
11 integrating Indigenous businesses in IESO procurement opportunities. The policy aligns with the
12 IESO's core strategy of advancing sector leadership and its commitment to an affordable and
13 reliable supply of electricity, by demonstrating IESO's leadership in community-led capacity
14 building in the Indigenous energy space.

15 The sixth annual IESO First Nations Energy Symposium in 2022 returned to an in-person event
16 with over 185 participants representing 75 Indigenous communities. The "Planning for Success:
17 Energy Solutions for First Nation Communities" event provided a forum for learning,
18 engagement, capacity building and celebration of energy-related success stories from First
19 Nation communities and organizations across the province. In 2022, the IESO also held a series
20 of training sessions for 18 new and/or existing Community Energy Champions (CECs) funded
21 under the IESO Indigenous Energy Support Programs and hosted eight webinars to assist CECs
22 in the implementation of energy-related initiatives in their communities. As with municipal
23 audiences, the IESO introduced a customized engagement stream for Indigenous communities
24 for the Long-Term Request for Proposal (LT RFP) and Expedited LT RFP to ensure they had the
25 information and tools required to participate in this discussion on electricity procurement.

⁸ IESO Corporate Indigenous Policy: <https://www.ieso.ca/en/Get-Involved/Indigenous-Relations/Corporate-Indigenous-Policy>

Stakeholder Feedback

Stakeholder and community engagement is integral to the IESO's decision-making process and the goal of the process is to provide individuals and organizations with the opportunity to provide input to proposed decisions or changes that affect them. As such, the IESO uses the perspectives brought forward in this process to inform its decision making.

In order to inform stakeholders as early as possible in the engagement process, the IESO provides a forward-looking schedule for upcoming engagements through the SAC engagement updates, and the monthly engagement updates⁹ posted as part of the monthly engagement days. Information is provided on the anticipated launch and timing for new and upcoming engagements so that early input from stakeholders can help plan for and prioritize participation in the IESO's engagements.

The IESO's standard engagement process is to post submitted stakeholder feedback along with the IESO's response to the feedback and how it will be used to inform decision-making. This is done throughout an engagement process, as well as at the conclusion of an engagement. This information is shared in the "IESO Response to Feedback" and the "IESO Final Engagement Summary Report" documents found on the individual engagement webpages.

The IESO completed nine individual engagements in 2022¹⁰. For each of the completed engagements, a Final Engagement Summary Report was posted to the individual engagement page summarizing the engagement activities and how feedback was considered throughout the process. For each of the closed regional planning engagements, the posted Integrated Regional Resource Plans include a summary of the engagements undertaken and how feedback was incorporated into the development of the plan.

⁹ IESO February 2022 Engagement Update: <https://www.ieso.ca/-/media/Files/IESO/Document-Library/engage/Engagement-Updates/ieso-engagement-updates-february-2023.ashx>

¹⁰ IESO Completed Engagements Webpage: <https://www.ieso.ca/en/Sector-Participants/Engagement-Initiatives/Engagements/Completed/List>

PERFORMANCE MEASURES AND TARGETS

Performance Measurement Framework

Corporate performance measures are a tool used by the IESO Board of Directors to assess the organization and management's performance as they are designed to align management's objectives and incentives to the achievement of IESO's strategic objectives and priorities.

The IESO has implemented a new balanced scorecard for 2023-2025 with performance measures that are aligned with the refreshed Corporate Strategy (see Exhibit A-2-2 - Attachment 1 for 2023-2025 Performance Measures). The Corporate Strategy describes how the IESO plans to work with stakeholders and communities to drive and guide the sector's future, ensure system reliability while supporting cost effectiveness, and drive business transformation for the benefit of all Ontarians.

The IESO's new balanced scorecard includes measures that are more closely aligned with key initiatives within the organization such as the Market Renewal Program, Resource Adequacy and the Enabling Resources Program. The scorecard also includes three new discrete measures related to cybersecurity as well as retaining the stakeholder satisfaction and employee engagement measures. The performance measures and targets allow for measurement of the IESO's performance with regard to strategic priorities, key strategic enablers and key risk.

The IESO tracks annual performance against targets, and periodically assesses the measures to ensure they drive performance towards the strategic objectives. As part of ongoing monitoring of the effectiveness of performance measures and targets, the IESO may revisit and revise measures to remain aligned with the key strategies of the IESO.

The 2022 performance measure results are included in Exhibit A-2-2 Attachment 2 - 2022 Performance Measures Results.

2023–2025 Performance Measures

Strategic Alignment		Measure	Target			Measure Weight
			2023	2024	2025	
Outcomes	<ul style="list-style-type: none"> Drive and guide the evolution of the system to ensure long-term reliability Maintain affordability via competition and other mechanisms Effectively respond to changes in policy and customer choices 	1. Market Renewal Program delivery: Percentage of key milestones complete according to implementation plan	80%	90%	100%	20%
		2. Maintaining Resource Adequacy: plans in place to ensure that resource adequacy reliability standards are met for the next 5 years	100%	100%	100%	10%
		3. Resource Adequacy procurement: number of supply offers in open and competitive mechanisms exceed the target capacity	20%	22%	24%	10%
		4. Enabling Resources Program delivery: Percentage complete of program plan	33%	44%	65%	10%
Enablers	<ul style="list-style-type: none"> Evolve the IESO's culture enabled by people, tools, and processes to promote a high-performing organization Effectively tell the IESO's story to strengthen stakeholders and community connections 	5. Employee pulse survey results for specific annual engagement areas of focus	4% average increase	4% average increase	4% average increase	15%
		6. Effectiveness of stakeholder engagement actions through positive survey results (within -2% tolerance range)	80%	81%	82%	15%
Key Risk	<ul style="list-style-type: none"> Maintain vigilance on cyber security threats to the IESO and the system, and adapt as required <p>*Measure and targets will be further developed in 2023. Execution against cyber risk mitigation measure will occur in 2024-2025.</p>	7. Cyber threat intelligence technology implementation	90%	92%	94%	10%
		8. Phishing Metrics Trend	<5%	<4%	<3%	5%
		9. Determine pathway for assessment of appropriate regulatory instrument for system cyber risk mitigation*	Substantial Completion	TBD	TBD	5%

2022 Performance Measures Results

Measure	Strategic Target	2022 Target	2022 Actual
1. Employee engagement - Commitment to the execution of enterprise priorities	Annual employee pulse survey results for specific engagement areas sustain 4% average increased performance.	4%	3%
2. Organizational Agility - Openness to change	Annual employee survey results improve each year to a result of 70%.	70%	68%
3. Operational Efficiency - Strategic Initiatives schedule adherence	No more than two Strategic Initiatives deviate from their approved Project Plans	≤ 2	2

2022 Performance Measures Results

2022 Measure	Strategic Outcome	2022 Target	Year-to-Date
4. Stakeholder Satisfaction – Engagement process	A 5-year target of 84%.	80%	74%
5. Cost Effectiveness – Short Term (Day ahead) Forecast accuracy	Have annual forecast error within +/- 2.5% (actual vs. forecast).	+/- 2.25%	2.10%
6. Cost Effectiveness – Resource balance: Energy Curtailments Index	10% reduction (2% annually) from 2020 base year index value (of 1.81%) to achieve five-year target of 1.63% and represents the amount of energy curtailments to total energy production annually.	1.74%	0.68%
7. Cost Effectiveness – Resource balance: Energy Shortage Index	10% reduction (2% annually) from 2020 base year index value (of 0.067%) achieve five-year target of 0.060% representing the instances of energy and/or operating reserve shortfall annually.	0.064%	0.139%



September 1, 2022

The Honourable Todd Smith
Minister of Energy
77 Grenville St., 10th Floor
Toronto, ON M7A 2C1

Independent Electricity System Operator

1600-120 Adelaide Street West
Toronto, ON M5H 1T1
t 416.967.7474
www.ieso.ca

Dear Minister Smith:

Ontario's electricity system is undergoing unprecedented transformation. Demand for electricity is forecast to grow substantially over the next two decades, driven by strong economic growth in the industrial, mining and agricultural sectors, as well as electrification of transportation. At the same time, supply conditions are tightening, with nuclear units being refurbished, the Pickering nuclear facility soon retiring, and generation contracts expiring. Governments at all levels are moving forward with decarbonization policies, driven by community and customer preferences. The IESO's recently refreshed Corporate Strategy outlines our plan to ensure the IESO is prepared to support Ontario's energy and economic transition. It is within this context that we present the IESO's 2023-2025 Business Plan.

This Plan outlines the revenue requirements and capital spending that is necessary for the IESO to ensure Ontario has a reliable, affordable, and sustainable electricity system. A priority for the IESO in achieving these objectives is the critical work on resource and transmission adequacy as well as the Enabling Resources Program. The Business Plan also includes the necessary resources for the IESO to complete the Market Renewal Program, which will evolve and enhance Ontario's electricity market. Finally, it ensures the IESO is positioned to continue to support the government's policy objectives.

I look forward to continuing our work with your office and the Ministry of Energy as we implement the initiatives outlined in our business plan.

Sincerely,

Lesley Gallinger
President and Chief Executive Officer

cc: Stephen Rhodes, Deputy Minister of Energy
David Donovan, Chief of Staff to the Minister of Energy
Barbara Anderson, Chief Financial Officer and Vice-President Corporate Services

Business Plan 2023-2025

Independent Electricity System Operator
September 1, 2022

Table of Contents

Letter from the President & CEO	2
2023-2025 Business Plan – IESO Priorities	4
Introduction	4
IESO Corporate Strategy at a Glance	5
Drive and Guide the Sector’s Future	6
Ensure System Reliability While Supporting Cost-Effectiveness	9
Drive Business Transformation	12
Financial Overview	15
Detailed Financials	17
Capital	17
Full Time Equivalent (FTE) Staffing	18
Market Renewal Financials	19
Market Renewal Program Baseline Schedule, Budget Update and Funding	19
Appendix 1 – IESO Performance Management – Measures and Targets	20
Appendix 2 – Enterprise Risk Management	22
Appendix 3 – Capital Spending	26

Letter from the President & CEO

Ontario's electricity system is undergoing unprecedented transformation. Demand for electricity is forecast to grow substantially over the next two decades, driven by strong economic growth in the industrial, mining and agricultural sectors, as well as electrification of transportation. At the same time, supply conditions are tightening, with nuclear units being refurbished, the Pickering nuclear facility soon retiring, and generation contracts expiring.

Governments at all levels are moving forward with decarbonization policies, driven by community and customer preferences. While Ontario's electricity grid is well positioned to support decarbonization of the broader economy, being one of the cleanest in the world, we will need to be prepared for electrification to potentially double or triple demand over the next 20 years.

Like many jurisdictions around the world, new non-emitting resources are increasingly being integrated into the province's electricity grid. While energy storage and distributed energy resources are already playing a role in Ontario, the stage is set for these resources to take a big leap forward in the coming years.

With the increasing pace and scope of change, we felt it was time to refine and recalibrate our corporate strategy for the next five years to ensure we are well positioned to meet Ontarians' needs and expectations. For this reason, we undertook a thorough visioning process in late 2021 and early 2022 to imagine the sustainable future-state energy system that Ontario will require, and identify a series of concrete steps to deliver on future needs.

The 2023-2025 Business Plan sets out the IESO's revenue requirement and capital spending needed to maintain our critical responsibilities and deliver on our refreshed strategy.

As the system integrator, the IESO is being asked to do more with every passing year. The job of ensuring a reliable and affordable supply of electricity for Ontario's businesses, communities, residents and Indigenous peoples is becoming increasingly complex. Yet it remains crucial to power economic development and support decarbonization of the economy.

Despite the significant change underway, our electricity system is prepared for future growth, and the IESO is continuing to implement a comprehensive plan to procure new generation capacity. In parallel, we are also assessing the technical and human resource requirements to fully integrate these new resources and the energy they will eventually produce. At the same time, the IESO is actively studying how to reduce reliance on gas generation over the long term and transition to a more decarbonized electricity system.

The IESO is also continuing to integrate new non-emitting resources like energy storage and distributed energy resources, learning lessons that we can build on as we transition to a more sustainable electricity grid of the future. In addition, our energy efficiency programs continue to reduce grid demand while helping businesses save on costs, and we are looking at expanding opportunities.

Many of our initiatives are designed to drive down costs for Ontario ratepayers, and one of our integral initiatives to fulfil that goal is our Market Renewal Program (MRP). This project will bring

significant ratepayer benefits and ensure continued reliable operations as the system becomes more diversified, distributed and digitalized.

As we take proactive steps to ensure a reliable and affordable system, we must also remain vigilant to potential cybersecurity threats. Uptake of our cybersecurity services is increasing and cascading across the sector, helping to ensure local distribution companies and generation owners have access to the latest cyber intelligence. These efforts are critical as cyber threats have been identified as our primary risk.

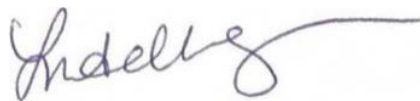
To support our efforts, we are enhancing our engagement efforts and strengthening our outreach to municipalities, Indigenous communities and electricity consumers.

While we continue to carefully review all expenditures and seek out new efficiencies, new investments are needed. To fully prepare the sector for the future and ensure Ontarians' electricity needs are met, we must invest in our people and our systems. As a result, the IESO is proposing increases to its budget to ensure we can continue to meet Ontarians' expectations of an affordable, sustainable, resilient and reliable power system.

To deliver on this plan, the IESO has a revenue requirement of \$208.4 million in 2023, \$218.4 million in 2024, and \$229.7 million in 2025. These figures represent increases of 5.8%, 4.8%, and 5.2% year over year. For the average residential electricity bill, this translates into an increase of 8.3 cents per month over the 2023-2025 planning period.

There are currently many exciting developments taking place across Ontario. The province is attracting new businesses, communities are developing ambitious energy plans, emerging technologies are providing more choice, and the transportation and industrial sectors are undergoing electrification.

The IESO is committed to supporting the future prosperity of the province by driving and guiding the sector's future, ensuring system reliability while supporting cost effectiveness, and driving business transformation. While this job is becoming increasingly challenging, with new investment we are confident that our comprehensive business plan and skilled workforce can continue to deliver.

A handwritten signature in blue ink, appearing to read 'Lesley Gallinger', with a long horizontal flourish extending to the right.

Lesley Gallinger

President and CEO

2023-2025 Business Plan – IESO Priorities

Introduction

A reliable, affordable and sustainable supply of electricity is fundamental to the prosperity and well-being of Ontario's residents, businesses, institutions and communities. Each and every day, they count on the Independent Electricity System Operator (IESO) to ensure electricity is available where and when it's needed.

The IESO is here to ensure the province's power system can deliver this essential resource. By working collaboratively and purposefully with market participants, municipal officials, Indigenous communities, government bodies and a vast range of other partners in the energy sector and beyond, we operate for today, plan for tomorrow and prepare for the future.

Positioned at the heart of Ontario's electricity sector, the IESO's work impacts how electricity is produced and consumed, how it is transmitted and distributed, and how it is managed and planned for in real-time and over the longer term to ensure the province's needs are met at all times.

We play a unique and critical role in Ontario's energy ecosystem – and in the province as a whole. For more than a decade now, the electricity landscape has been experiencing an unprecedented transformation, and the pace of change shows no signs of slowing.

Facing these changes head-on, we are setting a course for a future state that is decarbonized, decentralized and digitalized. Although some aspects of this journey cannot be foreseen with certainty, the IESO is resolute in our commitment to support Ontario's energy transition – leading change when required, but also facilitating our partners' leadership.

In responding to sector transformation, the IESO refined and recalibrated its five-year corporate strategy in early 2022. This business plan is anchored in our refreshed strategy, and adds more specificity and detail to demonstrate how we plan to deliver value for Ontarians in the coming years.

IESO Corporate Strategy at a Glance



Drive & Guide the Sector's Future

- 1.1** Strengthen Stakeholder and Indigenous Communities Engagement & Relationships via Purposeful, Transparent Outreach
- 1.2** Identify, Anticipate and Respond to Changes in Customer Choice and Policy
- 1.3** Advise on and Actively Participate in Dialogue on the Configuration of the Future-State Sustainable Energy System



Ensure System Reliability while Supporting Cost-Effectiveness

- 2.1** Renew the Real-Time Markets to Advance Energy Transformation
- 2.2** Adapt the IESO's Short- and Long-term Planning to Meet Evolving System Needs
- 2.3** Cost-Effectively Acquire Services to Maintain Reliability in the Evolving Sector
- 2.4** Champion Cyber Security, Situational Awareness and Best Practices within the Sector



Drive Business Transformation

- 3.1** Define and Enhance our Desired Culture and Employee Experience
- 3.2** Identify and Build Next-Generation Skills and Competencies
- 3.3** Evolve the IESO's Business Processes, Technologies and Tools

Drive and Guide the Sector's Future

We will drive and guide the sector's future by strengthening relationships with stakeholders and Indigenous communities and effectively responding to changes in customer choice and policy, while acting as an advisor and participant in discussions on how to create a sustainable, future-state energy system.

Strengthen stakeholder and Indigenous community engagement via purposeful, transparent outreach

The essential link connecting all of the IESO's current and future activities is engagement. This includes traditional sector stakeholders, as well as a vast and varied array of other parties who influence our planning and decisions, including Indigenous communities and organizations, business and industry leaders, trade associations, academic institutions and various levels of government. Each group has a unique role to play in the system, with its own specific needs, interests and priorities.

At all times the IESO must work to understand the nature of these forces driving transformation and make informed decisions that strike an appropriate balance. In planning for the future, we must carefully weigh diverse interests and plot a course that considers the interplay among them.

To do so requires honest and open dialogue with the parties affected by our decisions. Given the scope and impact of our mandate, we must work closely with a large number of affected interests, often with competing priorities and varying perspectives. For this reason, engagement activities are absolutely essential to informing the IESO's work.

With every passing year, more voices are joining the energy conversation. Through our engagement processes, we strive to make balanced decisions – decisions that are effective and appropriate, and that will stand the test of time. Over the next five years, we will continue to engage in a targeted and transparent manner, consulting and collaborating with different groups through thoughtful means and mechanisms.

Our engagement with Indigenous communities and organizations, for example, is deepening. Our work in this area is focused on powering change – and changing lives.

Now more than ever before, many Indigenous leaders across Ontario are pursuing projects that support greater energy independence and provide new opportunities to create local revenue and jobs. By developing generation and storage systems, becoming equity partners and leaders in major infrastructure projects, prioritizing energy efficiency as a way to demonstrate environmental stewardship, and engaging in important conversations about system planning, Indigenous communities are seeking greater autonomy and becoming catalysts for change.

The IESO is proud to stand beside them on this journey to greater self-determination. While there is still work to be done, developing Indigenous capacity is an important step towards a longer-term goal of achieving economic reconciliation and driving fair, equitable and inclusive participation in the energy sector.

As our electricity system becomes more decentralized, with more choice at the consumer and community level, the IESO is also strengthening its engagement with municipalities. These efforts will ensure municipal input is integrated into IESO decision making, and that municipalities are aware of opportunities available to them to use electricity to achieve economic development and sustainability goals.

Given the scope and volume of new infrastructure that will be required to ensure the province's capacity needs are met, as are the energy needs that emerge later, the IESO will continue to work with transmitters, distributors, generators, consumers, municipalities and Indigenous communities to ensure all voices are heard and all perspectives are considered.

Identify, anticipate and respond to changes in customer choice and policy

Consumer preferences and choices are some of the key drivers behind the energy transition that is underway. As our reliance on electricity increases through economic growth and the transition to non-emitting energy sources, the IESO is supporting this shift while maintaining reliability and affordability.

As a result, our development activities are focused on meeting consumer demand while respecting customer preferences, including new supply options to meet our growing needs. This includes testing concepts such as residential microgrids, local energy markets, aggregated electric vehicle charging solutions, strategic energy management and artificial intelligence, to name a few.

In the meantime, we are accelerating our efforts to integrate distributed energy resources into Ontario's electricity grid and market. These small-scale community-based resources have the potential to deliver flexible and affordable solutions to local supply issues while also meeting regional and provincial needs.

We will continue to prioritize energy efficiency, the cheapest and most sustainable resource available. The IESO's Save on Energy programs have reached homes and businesses in all sectors across Ontario, saving enough energy over the last decade to power 1.7 million homes for a year. Looking ahead, conservation and demand management will play a growing role in meeting our reliability needs with targeted programs that help address provincial and local reliability concerns.

Advise on and actively participate in dialogue on the configuration of the future-state sustainable energy system

Ontario's energy future will be shaped by the conversations and insights shared through our engagement framework. What our electricity system looks like in the years to come will be influenced by our sector's ability to collaborate and contribute to an understanding of what is needed to evolve the system further.

We are actively working to integrate emerging technologies and enable new resources to participate in the IESO markets. Pairing energy storage with wind or solar generation can improve operational efficiency and help meet the province's emerging electricity needs. For this reason, the integration of hybrid storage/generation resources has been designated a priority project within the IESO's Enabling Resources initiative.

Through active engagement with stakeholders and communities, we have already made great strides, as we build a participation model for implementation. We are also working with sector partners to reduce the barriers to storage resources and evolve the relevant policies, rules, processes and tools to better enable the integration of storage resources within the current structure of our market. Enabling more resources to participate in our markets will increase competition, drive down costs, and provide sustainable options.

Looking ahead, we will strive to support the transformation of Ontario's electricity system by driving and guiding the future of the sector. While at times it is best to lead from the front, charting a path for others to follow, it is also important to create opportunities for others to lead and pave the way when appropriate.

While efforts to reduce emissions across all sectors continue to accelerate, the coming decade will see a rapidly-changing electricity landscape in Ontario. As the first jurisdiction in North America to completely eliminate coal-fired electricity generation, today, Ontario's electricity system is among the cleanest in the world, accounting for less than three per cent of the province's GHG emissions.

The IESO has been engaging with stakeholders, technical experts and others to develop a view of Ontario's decarbonized future. Our Pathways to Decarbonization project provides a focus for concrete conversations about how to eliminate greenhouse gas (GHG) emissions from our system while balancing the need to maintain reliability as other sectors of the economy also decarbonize through electrification.

The move towards greater decarbonization is driving Ontario residents, businesses, institutions and communities to seek new opportunities to further reduce GHG emissions. A growing number of consumers are looking for ways to reduce their carbon footprint by investing in technologies that include electric vehicles, heat pumps, induction stoves, smart thermostats and other devices.

Many industrial and commercial customers are exploring ways to electrify their operations and reduce their reliance on natural gas and other fossil fuels, not only to achieve cost savings but also to meet environmental, social and governance-related objectives. At the same time, a number of municipalities across Ontario have established their own emission reduction targets. Many are implementing major energy-efficiency projects and testing electric transit systems as part of their own climate-change mitigation strategies.

The IESO will continue to share its expertise as part of this dialogue, encouraging a common understanding of the issues at hand and bringing a variety of perspectives to the table. Given our role as system integrator, we must ensure all voices are heard and all ideas are considered. Plotting a viable, sustainable and financially responsible course for Ontario's energy future is a shared responsibility. The IESO will remain steadfast in our efforts to bring the right parties together to explore options to meet changing needs and priorities.

Ensure System Reliability While Supporting Cost-Effectiveness

To ensure system reliability while supporting cost effectiveness, we will transform the real-time markets and adapt our planning processes, cost-effectively acquire services and champion cybersecurity.

Renew the real-time markets to advance energy transformation

As the landscape has changed, so too have our markets. The opening of the wholesale market in 2002 introduced an important new force: competition. By establishing a model where electricity suppliers compete to meet the province's electricity needs, the IESO has ensured Ontarians benefit from a more dynamic and cost-effective system.

Competition is a thread that connects many of the IESO's activities – and is expected to play an even greater role in future operations. The IESO's Market Renewal Program (MRP) is introducing fundamental reforms to the province's electricity markets to improve how we supply, schedule and price electricity to meet Ontario's future needs at the lowest cost.

The market of the future must also accommodate a range of new resource types, often with different strengths and operating characteristics than our existing fleet. Given the ongoing transformation of the system, the market must be flexible enough to support the integration of new sources of supply, accommodate changing policy imperatives and consumer preferences, stimulate investments in new supply as required, and deliver the most economically efficient outcomes. Market Renewal is building the foundation to enable our future needs, decarbonization goals, demand-side participation and new innovations entering the market.

Beyond the wholesale market, competition is expected to dominate other aspects of our business in the years to come, including the procurement of existing and new resources to meet Ontario's rapidly increasing demand for electricity. We are securing resources, testing new integration models and re-examining our systems and processes to reduce barriers to entry to ensure we derive the greatest value from new and emerging technologies.

This essential work will play out over several years, resulting in a system that is more flexible, resilient and diversified. In addition to meeting the IESO's operational requirements, the system must satisfy the needs of ratepayers and communities, as well as asset owners and investors.

In lockstep with the planned implementation of MRP, we are also making great progress on a multi-year initiative to replace our legacy settlement systems to ensure they can support the complex needs of the project. Settling the market is a critical function that requires sophisticated software. Over \$22 billion in transactions occur each year through IESO's administered markets and programs so it is imperative that these transactions be settled accurately.

We will continue to take the necessary steps to ensure reliability by upgrading and replacing core applications, infrastructure and cybersecurity tools. For example, core projects include a refresh of the Transmission Rights Auction platform and the completion of the Supervisory Control and Data Acquisition (SCADA) / Energy Management System (EMS) upgrade. We are also investing in a Market Analysis and Simulation Toolset, a tool to monitor, correct, improve or alter market design or operations over the multiple timeframes once MRP goes live.

Adapt short- and long-term planning to meet evolving system needs

One operational challenge the IESO must manage is that electricity needs are not static. Rather, they are subject to a broad range of forces and variables. The dynamic nature of Ontario's electricity requirements means the IESO must take a flexible and responsive approach to planning the system. We must have the ability to identify, react, and adapt to changing realities.

When it comes to electricity planning, understanding what's important to consumers, communities and businesses at the regional level is critical. Every region of the province has unique characteristics and energy needs, which the IESO must understand, consider and plan for.

Over the next three years, we will continue to adapt our short- and long-term planning processes to meet evolving system needs – not just for the province as a whole, but for its many regions and individual communities. We will identify system needs and opportunities, monitor evolving technologies and supply options, and effectively plan transmission so that electricity is available where and when it is needed. To achieve these objectives, we will update our demand forecasting tools and our energy modelling system to ensure we have access to state-of-the-art technologies.

We are also taking steps to improve how we identify and assess distributed energy resources and other non-wires alternatives as these technologies will undoubtedly become more important as Ontario transitions to a cleaner energy supply mix. There will, however, continue to be situations when transmission solutions (poles, wires and stations) will be the only viable option.

We will focus on increasing the transparency of our transmission planning processes to ensure all affected stakeholders, communities, utilities, residents and businesses know what we are contemplating – and why. Every region has its own specific needs and interests so providing opportunities to gain insight from stakeholders and communities is also of paramount importance to inform our decision-making. To ensure electricity infrastructure gets built in a timely manner, we need all of our partners to understand the big picture and the need to expand the system.

By working closely with our partners, we will proactively identify where in the province new, large customers are likely to connect and then develop transmission plans to supply those sites. This foundational work is critical to enable economic development and ensure the necessary supply chains exist to support the energy transition.

To meet future system needs, the IESO will be recommending a relatively large number of transmission projects in the coming years. Transmission projects can take at least seven to 10 years to build, and for reliability purposes it is imperative that these projects be completed on time. For this reason, we will put more emphasis on monitoring the implementation of our plans, understanding any potential implementation risks, and preparing to take action to ensure long-term reliability, if needed.

Cost-effectively acquire services to maintain reliability in the evolving sector

The IESO has worked with sector stakeholders to develop a Resource Adequacy Framework to address evolving reliability needs in a cost-effective and flexible manner while balancing ratepayer and supplier risk.

We remain committed to the using competitive mechanisms to meet Ontario's resource adequacy needs and are working with stakeholders, communities and others to deliver on the Resource Adequacy Framework.

To facilitate competition and provide business planning certainty, our efforts have been structured around three timeframes: short, medium and long-term. In the short term, capacity auctions will be the primary mechanism to meet needs, while existing resources capable of expansions or upgrades are the focus of our medium-term procurements. For new projects with longer lead times, we will conduct longer term procurements to respect developers' need for certainty and a reasonable return on their investments.

In addition to procuring more capacity from existing and new resources, the IESO is also actively exploring the requirements to fully integrate these assets into grid operations and leverage the critical services they can provide – including, most importantly, energy.

Champion cybersecurity, situational awareness and best practices within the sector

Protecting the IESO grid against threats and vulnerabilities remains a high priority, both in the physical and cyber realms. Cyberattacks are becoming more common and more complex with every passing year. For this reason, the IESO continues to work closely with sector partners to share information and deepen situational awareness. The safe and reliable operation of Ontario's power system is built upon a large, decentralized supply chain – and we are already taking steps to reinforce the weakest links.

Given the rate at which cyber risks are increasing, this work will continue for the foreseeable future. Ransomware, malware, social engineering and phishing are the most common ways that bad actors try to access the grid – but this is not unique to Ontario. In fact, it's a global phenomenon and a broadly shared concern. We will remain vigilant and continue to collaborate with experts from around the world to identify, mitigate and minimize the collective risks to reliability.

In 2019, the IESO became the first system operator in North America to be accountable for providing cybersecurity-related services to the broader electricity sector. Lighthouse, the cornerstone of our cyber offerings, provides a near real-time view into threats and incidents that can impact the power grid. Designed to improve the security and resilience of the system, this detection, assessment and information-sharing service is the result of a one-of-a-kind partnership with the Canadian Centre for Cyber Security, a trusted federal source of cybersecurity information, advice and guidance that builds on the IESO's existing leadership and capabilities.

We will continue to expand the reach and effectiveness of our flagship Lighthouse program to ensure we enroll as many members as possible. A holistic view and understanding of market participants' cybersecurity postures and program objectives is required to develop an informed and coordinated approach to cyber resilience for Ontario's electricity sector.

As cybersecurity events, and ransomware attacks in particular, continue to increase across the sector, the IESO is also focused on bolstering its cyber incident response capability. These initiatives include developing cyber incident response playbooks and conducting regular tabletop exercises to practice response execution in an effort to reduce the potential impact and accelerate resolution timelines.

Drive Business Transformation

To drive business transformation, we will evolve our internal processes, technologies and tools, identifying and building next-generation skills and competencies while defining and enhancing the IESO culture and employee experience.

Define and enhance our desired culture and employee experience

The IESO's organizational success is underpinned by our employees. For this reason, we are taking concrete steps to modernize our corporate culture and enhance the employee experience. The IESO is on a journey to establish a more inclusive culture where our people can realize their full potential.

Our vision is to create a sense of belonging, where diverse expertise and perspectives are valued. We must operate in a fair and consistent manner, make employees feel safe challenging the status quo, and ensure corporate values are reflected in the attitudes and behaviours of our workforce. IESO employees have a strong sense of purpose, and we are making the necessary investments in our people and our workplace to enable them to deliver results that support it.

We have already taken a number of actions, with more to follow. The IESO is working to support its employees by promoting a clear understanding of our purpose, strategic priorities, and key activities. Leaders must create an environment of inclusivity, enhance their team's connection to support IESO's priorities and encourage diverse perspectives while investing in each other's success.

This evolution requires ongoing organizational focus and change in a number of areas. We must fully align our workforce to common goals and priorities. This shared understanding will help to build a united, cohesive team with a common commitment to achieving our goals.

We are also proceeding with an organizational alignment review that will be implemented in 2023. This review will ensure we have the right organizational structure in place to provide clarity for decision-making through well-defined leadership roles with clear accountabilities. This will support the delivery of our strategy and mandate moving forward.

The review will enable the IESO to identify existing strengths and opportunities for enhancements to our current organizational structure; align roles and accountabilities to the refreshed corporate strategy; clarify accountabilities and decision-making both vertically and horizontally; empower leaders within their scope of authority; and better enable our leaders to successfully guide their teams in implementing the strategic plan and delivering our core mandate.

Before the pandemic, we also launched a program to assess our broader space needs and explore the benefits offered by co-locating more employees at a single location. These benefits included advancing our culture, offering employees more flexibility and choice in how and where they work within the office, and optimizing our real estate footprint with savings realized outside of this business plan's time horizon. While the strategies to achieve our goals have evolved over time, many of our objectives remain the same: a more flexible, inviting and cost-effective workspace that responds to emerging workplace trends and employee feedback, supporting a culture based on teamwork and collaboration, and an improved employee experience overall.

Although the pandemic has provided an opportunity for us to reconsider and reevaluate our space needs, especially in the context of a proposed hybrid work model, we will continue to prioritize employee wellbeing, business productivity and cost containment.

Identify and build next-generation skills and competencies

Ensuring our employees have the skills they need to excel in a changing environment is a high priority. Learning needs change over the course of every career. For this reason, we offer learning and development opportunities for staff at different points in the employee lifecycle. Although some training content is tailored to meet the needs of employees at specific levels in the organization, we firmly believe leadership can be found across the IESO. It is a skill we plan to nurture, as all employees play a key role in helping the IESO achieve its strategic objectives.

Internal capacity building will be even more critical in the years to come. By making strategic investments in learning and development, we are taking steps towards aligning program offerings with corporate priorities and employee interests, which is essential to driving engagement, commitment and loyalty.

We are proactively working to build the necessary capabilities for the future to deliver on our mandate. For example, forecasting demand and ensuring resource availability is a complex task that requires expertise across the organization, including planning, operations, contract management, information technology and market development, among others.

We are also developing plans to attract, engage and retain top-level talent in certain key areas, including cybersecurity, data science, artificial intelligence and machine learning, stakeholder and community relations, contract management, and economics. We will also focus to a greater degree on succession planning and strengthening inclusive leadership capabilities.

As is the case with many of our sector partners, the IESO is experiencing a demographic shift with the planned retirement of some long-term employees. We are actively recruiting from top academic institutions to attract staff with the optimal combination of skills, experience and passion to drive the organization forward.

To deliver the best results, employees need to be future-oriented, solutions-driven and capable of responding positively and effectively to changes in the environment. They also need the right tools and technologies to do their work.

Evolve business processes, technologies and tools

Driving business transformation involves optimizing our workforce as well as the systems and processes that support them. As with every aspect of Ontario's electricity sector, the changes required to make this happen are significant and wide reaching. Today, we are making the necessary investments to facilitate this transformation and deliver long-term value to residents, communities, businesses and institutions across Ontario.

Complex information technology (IT) programs and tools enable us to perform essential tasks that include forecasting demand, dispatching resources and monitoring the grid for cyber threats. After years of deferring investments in a risk-informed way, many of the IESO's IT systems require

renewal as they approach their end of life. Some of these upgrades will be made to control room systems to support the integration of emerging resources, and to improve situational awareness. In the coming years, we will continue to update or replace many of these key IT systems that help us maintain the reliability of the grid.

Good decisions require good data. Given our central role in managing the power system and the scope of our IT tools and systems, the IESO has access to a wealth of operational electricity data stretching back to the opening of Ontario's electricity market in 2002. When fully utilized, this data can provide unique insights into the complex inner-workings of electricity production, usage, planning, forecasting and much more.

Earlier this decade, the IESO embarked on a program of work to evolve our data and analytics maturity level and capabilities. By developing a data strategy and enterprise data catalogue, the IESO is treating organizational data as an invaluable business asset. We continue our work to leverage this data to identify additional market efficiencies, support reliable grid operations and improve our risk management practices.

We are also evolving and enhancing many of the IT systems that support our operations staff to ensure they have maximum visibility into different grid assets.

Financial Overview

The 2023-2025 Business Plan provides an overview of the resources required to maintain the high levels of performance necessary for the IESO to deliver on its core responsibilities, as well as deliver on the first three years of a refreshed strategy, committed to helping drive and guide a transition to ensure a reliable, affordable and sustainable energy future.

The IESO is moving forward on key initiatives that are critical to maintaining its core operations and to support the significant growth in the industrial, mining and agricultural sectors, as well as major expansion in transportation electrification, which will collectively drive higher electricity demand than Ontario has seen in many years; demand is expected to increase by nearly two per cent per year during the next 10 years. These demand increases are being compounded by nuclear retirements and refurbishments as well as the expiration of a large number of generator contracts, which impacts available supply. Energy needs are emerging as early as 2025.

To achieve this outcome, the IESO is proposing increases to its revenue requirement of 5.8%, 4.8%, and 5.2% over the three year planning period. The rapid increase in the interest rate is forecasted to add \$5.4 million of surplus through interest income to the IESO in 2022 by year-end. This rate of increase was not budgeted thus the surplus is deemed an uncontrollable variance that is excluded from the percentage year over year increase between 2022 and 2023 funding requirements. Over the 2023-2025 planning period, for the average residential electricity bill, this translates to an 8.3 cents per month increase. The IESO has taken steps to manage our exposure to macroeconomic trends and will continue to do so in support of value for ratepayers. The IESO has and will continue to carefully review all expenditures and find efficiencies, where possible, to minimize the impact to ratepayers of Ontario while we invest to support the significant transformation of the sector.

We have identified and leveraged efficiencies in several areas. As noted above, we anticipate a large increase in new generation and other contracts over the next three years and have overhauled some of our contract management and associated registration activities. By introducing contract procurement and registration fees that are paid by the project proponents, IESO expenses are offset and impacts to Ontario ratepayers are reduced. At the same time, further development of systems to track these contracts (Beacon system), automation of contract settlements and energy efficiency processes to streamline approvals have yielded operational efficiencies. Furthermore, we continue to realize efficiencies by examining our long-term office space needs.

In the 2023-2025 Business Plan, the IESO is proposing to:

- Continue work started in 2022 under Resource and Transmission Adequacy and Enabling Resources, furthering incremental investments to secure additional supply and expansions needed to address electricity needs emerging and the unprecedented transformation of the electricity system over the next decade.
- Deliver on government initiative work related to Class B and Interruptible rate pilots, potential program to provide new contracts for existing small hydroelectric generation facilities, enhanced energy efficiency conservation and demand management programs, along with other smaller initiatives.

- Complete the \$233 million Market Renewal Program (MRP) investment, at which time the new market will begin to generate significant ratepayer savings building on the benefits that the market has delivered to consumers over the past 20 years. The program investment will be amortized over a 20-year period. The new market will introduce new features and tools that require additional resources for market operations, monitoring and ongoing maintenance and support. As such, the business plan includes resources for additional staff, technical consultants and support & maintenance to operate the renewed market.
- Strengthen IESO's preparedness to support Ontario's electricity transformation through enhancing cybersecurity posture, reinforcing the resilience and integrity of the electricity grid, sustaining our critical IT systems and enabling the grid transformation program. It will also include strengthening stakeholder and community connections, and continuing to build out workforce capacity and capabilities to promote a high-performing organization.

These investments are necessary to enable the IESO to play a critical role in driving and guiding the energy transformation underway.

The 2022 forecast is below approved budget due to significantly higher interest income, increased electricity demand thus higher revenue and lower expenses driven by project and staff hiring delays. The 2023 higher expenses are driven by incremental initiatives and amortization impacts of assets placed into service in late 2022. In 2024 and 2025, expenses are impacted by transition to post MRP integration functions and services including amortization impacts, and further investments most notably in initiatives to ensure resource acquisition to meet system needs by 2026. The 2023-2025 business plan has significantly higher interest income and revenue from registration fees used to offset the revenue requirement.

After rigorous review, staffing levels will increase in 2023 as a number of strategic positions are added to support key initiatives (including the MRP). For 2023, the IESO anticipates an average of 914 full-time equivalent employees to deliver on core electricity system responsibilities and initiatives, as well as to support the MRP. Staffing levels will remain relatively flat in 2024 as the MRP begins to wind-down, with certain staff returning to core functions, concluding the transition in 2025 when the average full-time equivalent number of employees will be reduced to 900.

As part of its mandate, the IESO operates several programs that are funded from other sources and are not included in this business plan, including: the smart metering entity, market rule enforcement and education, and energy-efficiency programs.

The IESO has approval from the Ontario Energy Board to maintain an operating reserve of \$10 million to manage cost or revenue variances from budgets caused by changes to the external environment that impact the IESO and may not be within its control or reasonably foreseeable. This practice is adopted by similar sector organizations. As the IESO enters into its first three-year business plan, and given the complexity and uncertainty around the transformation of the sector, there is potential for additional unplanned needs that may be material in scope. The IESO will be recommending to the OEB an increase to the operating reserve to a balance of \$15 million, to be funded through its forecasted 2022 surplus, to address these potential needs.

Detailed Financials

The following table outlines 2023-2025 business plan operating revenues and expenses:

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

(\$ Millions)	2022 Budget	2022 Forecast	2023 Budget	2024 Budget	2025 Budget
Revenue					
IESO Usage Fee	201.5	204.1	208.4	218.4	229.7
Expenses					
Baseline Expenses	172.8	171.4	175.4	181.4	187.7
Resource and Transmission Adequacy	1.7	1.4	6.0	8.8	7.3
Enabling Resources	0.4	0.6	0.8	0.9	0.9
Pathway to Decarbonization	1.3	0.9	-	-	-
Other Government Priorities	4.6	4.3	2.9	2.5	2.5
MRP – ongoing operation of new functions	0.5	0.2	1.9	3.0	4.2
Cybersecurity	-	0.9	1.6	1.6	2.1
Strengthening Engagement	-	-	0.7	1.1	1.6
Culture, Employees and Capabilities	-	-	0.8	0.8	1.0
Sustaining Technology, Evolving Processes and Tools	-	-	1.9	2.3	2.2
Operating Expenses sub-total	181.3	179.7	192.0	202.2	209.4
Amortization	20.0	18.5	23.1	22.0	27.0
Net Interest	(5.0)	(10.4)	(11.5)	(9.7)	(9.2)
Registration Fee	-	(0.8)	(0.5)	(0.5)	-
Market Renewal Program	5.2	4.3	5.3	4.4	2.5
Total Expenses	201.5	191.3	208.4	218.4	229.7
<i>Uncontrollable Interest Variance</i>		<i>5.4</i>			
<i>Adjusted Total Expenses</i>	<i>201.5</i>	<i>196.7</i>	<i>208.4</i>	<i>218.4</i>	<i>229.7</i>
<i>Year over year variance</i>		<i>-</i>	<i>5.8%</i>	<i>4.8%</i>	<i>5.2%</i>
Operating Surplus/(Deficit)	-	12.8	-	-	-
Accumulated Operating Surplus	8.7	15.0	15.0	15.0	15.0
Potential Rebate to Market Participants	-	6.5	-	-	-

Capital

As with previous years, the business planning process establishes an appropriate capital envelope for core operating initiatives over the business planning timeframe, with commitments approved individually, on an ongoing basis.

There will be increased capital investments over the period of the business plan in order to make significant investments in the IESO's facilities (\$30 million) and backup operating and data centres

(\$10.4 million) that are required to maintain our facilities, drive business transformation and maintain reliable system and business operations.

In addition to these major investments, a number of other capital projects will be undertaken to fulfill our mandate and advance our refreshed strategy. Details for the larger initiatives are outlined in Appendix 3.

The Market Renewal Program capital costs for 2023-2025 in the table below are the latest estimate of program spending and are in alignment with the revised schedule and in-service date approved by the IESO board.

Project details and associated descriptions are included in Appendix 3.

Capital (\$ Millions)	2022 Budget	2022 Forecast	2023 Budget	2024 Budget	2025 Budget
Core Operations Initiatives	30.0	30.0	23.0	28.6	30.6
Space Needs Program & Facility Investment	-	-	7.0	10.0	13.0
Back Up Operating and Data Centre Relocation	-	-	5.0	5.0	-
Market Renewal Program	41.2	37.1	51.0	32.3	14.6
Total Capital Envelope	71.2	67.1	86.0	75.9	58.2

Full Time Equivalent (FTE) Staffing

In 2023, the average core operations FTEs of 805 is higher than 2022 levels by 91 FTEs due to delayed hiring of resources in 2022 and additional resources to support the IESO's initiatives on-boarded throughout 2023. Core operations FTE levels in 2024 increase to 838, mainly due to ramp-up of staff required to support additional energy procurements and prepare for the new market functions/services. In 2025, as Market Renewal Program (MRP) is completed, some resources will be returning to core operations as others conclude their temporary employments, thus the increase to 856 FTEs.

Staffing levels required to support the MRP implementation will reach 109 FTE in 2023, and are expected to decrease slightly in 2024 as the project moves to operations testing activities. In 2025 some staff are retained to provide market participants and internal staff with training, complete internal documentation, make tool changes post go-live and ensure that a framework is in place to measure the benefits.

Average FTEs	2022 Budget	2022 Forecast	2023 Budget	2024 Budget	2025 Budget
Full Time Equivalents (FTEs)					
Core Operations	730	714	805	838	856
Market Renewal Program	97	92	109	88	44
Total FTEs	827	806	914	926	900

Market Renewal Financials

As of 2021, the Market Renewal Program (MRP) has entered the final phase of the initiative: implementation. This phase of work will ensure both the IESO and market participants are prepared for the launch of the renewed market.

Market Renewal Program Baseline Schedule, Budget Update and Funding

The IESO has been working with vendors and stakeholders to refine and translate the design into system requirements and rules needed to finalize the delivery schedule for MRP. In August 2022, the IESO Board approved revised program funding and a refreshed schedule, including an in-service date of May 2025. The updated cost estimate for the delivery of MRP is \$233 million, including contingency, and is outweighed by the significant ratepayer benefits from project implementation. A recent review of the MRP business case determined the renewed market will deliver substantial net financial benefits of over \$700 million to Ontario consumers over the first 10 years of operation.

The capital activities for MRP include solution development deliverables and testing, which requires contracting external vendors as well as broad support from across the organization, including a significant complement of IT resources. MRP activities funded through operating costs include the development of market rules and related stakeholder activities, change management planning and coordination, and updates to internal and external manuals.

In 2025, the IESO will require funding post go-live to deliver market participant support and training, complete internal document updates, and start project closure activities while maintaining a capital budget for additional vendor support and internal IT costs for tool changes identified after the in-service date.

The annual MRP project costs from 2023-2025 are consistent with the Board-approved refreshed schedule and funding.

Appendix 1 – IESO Performance Management – Measures and Targets

The IESO's performance management program provides an important level of oversight for the organization and its stakeholders, and helps to ensure accountability and course correction, as needed.

Measures and targets have been revised to align with the IESO's refreshed strategy and the 2023-2025 Business Plan. Since the strategy update this spring, Directors and ELT members have been engaged in an iterative process to contribute refreshed measures and identify annual targets. This set of measures is intended to help improve engagement and provide clear identification with how work efforts contribute to the IESO's overall strategy success.

Strategic Alignment		Measure	Target			Measure Weight
			2023	2024	2025	
Outcomes	<ul style="list-style-type: none"> • Drive and guide the evolution of the system to ensure long-term reliability • Maintain affordability via competition and other mechanisms • Effectively respond to changes in policy and customer choices 	1. Market Renewal Program delivery: Total actual schedule complete percentage is within planned completion	80%	90%	100%	20%
		2. Maintaining Resource Adequacy: plans in place to ensure that resource adequacy reliability standards are met for the next 5 years	100%	100%	100%	10%
		3. Resource Adequacy procurement: number of supply offers in open and competitive mechanisms exceed the target capacity	20%	22%	24%	10%
		4. Enabling Resources Program delivery: Percentage complete according to program plan	33%	44%	65%	10%

Strategic Alignment		Measure	Target			Measure Weight
			2023	2024	2025	
Enablers	<ul style="list-style-type: none"> • Evolve the IESO's culture enabled by people, tools, and processes to promote a high-performing organization • Effectively tell the IESO's story to strengthen stakeholder and community connections 	5. Employee pulse survey results for specific annual engagement areas of focus	4% average increase	4% average increase	4% average increase	15%
		6. Effectiveness of stakeholder engagement actions through positive survey results (within -2% tolerance range)	80%	81%	82%	15%
Key Risk	<ul style="list-style-type: none"> • Maintain vigilance on cyber security threats to the IESO and the system, and adapt as required 	7. Cyber threat intelligence technology implementation	90%	92%	94%	10%
		8. Phishing Metrics Trend	<5%	<4%	<3%	5%
		9. Determine pathway for assessment of appropriate regulatory instrument for system cyber risk mitigation*	Substantial Completion	TBD	TBD	5%

* 2023 is to develop a measure. Execution against cyber risk mitigation measure will occur in 2024 - 2025.

Appendix 2 – Enterprise Risk Management

At the IESO, risk management is an integrated discipline that supports informed decision-making throughout the organization. We recognize the pivotal role it plays in balancing strategic planning with business execution and compliance. This facilitates informed decision-making and a conscious evaluation of the upside opportunity and downside aspect of risk.

Our integrated approach to managing risk recognizes the need for clear, timely direction and support from our Board of Directors and senior, business unit and functional management.

Our starting point for managing risk is our strategic planning process, where key risks are identified from the internal and external threats and opportunities. Risks and opportunities are identified by observing, analyzing and anticipating trends along with macroeconomic, industry-specific, regional and local developments. Senior management assesses the risks to achieving our strategic objectives, and incorporates measures into corporate and operating plans to mitigate these risks if they exceed our target risk levels.

The IESO uses a risk management ranking methodology to assess the key risks specific to our achieving our strategic and business plan objectives. Our top strategic risks, aligned with the IESO's strategic objectives and their associated residual risk assessment, are as follows:

Risk	Risk Assessment: Critical
	Mitigating Actions
<p>Material undersupply of energy at a provincial and regional level</p> <p>Medium-term timelines are becoming more critical within our strategic planning time horizon. As the province's reliability coordinator, the IESO must comply with, oversee and enforce reliability standards and processes that are set by several regulatory bodies within and outside of Ontario. The concern about undersupply arises from not having sufficient time to address the long lead times needed to build infrastructure or the ability to respond to changes in demand.</p>	<ul style="list-style-type: none"> Advancing initiatives under the Resource Adequacy framework to design and execute procurements to acquire committed and contracted resources Expanding transmission planning programs to ensure new capacity can be connected Enhancing planning and forecasting tools for medium- and long-term energy supply Delivering annual acquisition report and annual planning outlook to provide stakeholders with much-needed insights into opportunities for existing and new resources Building alignment with government on how potential barriers to procurements and challenges to new facility development will be overcome

Risk	Risk Assessment: Critical Mitigating Actions
<p>IESO actions to identify and address supply shortfalls not seen as credible by the stakeholder community</p> <p>The stakeholder community authorizes the IESO to take action and provide the resources necessary to create value towards the achievement of cost-effective reliability. Not having credibility with the stakeholder community can impede the IESO's ability to deliver results.</p>	<ul style="list-style-type: none"> • Advancing initiatives under the Resource Adequacy Framework to design and execute procurements to acquire new supply • Consistently delivering on the Enabling Resources Program to introduce new grid-connected resources • Developing and executing a purposeful approach to stakeholder and community engagement • Enhancing external information sharing and reporting processes
Risk	Risk Assessment: High Mitigating Actions
<p>The IESO's information technology systems and data are disrupted by cybersecurity threats</p> <p>Cyber attacks on the IESO's information technology systems and data could be highly disruptive to reliability, business systems and data protection through exploiting vulnerabilities across people, processes, and technology. These threats from domestic and foreign threat actors may arise from malicious intent, financial motivation, ignorance and/or complacency. This risk needs to be monitored to protect the business, employees, and safeguard critical data, systems, and facilities from being compromised.</p>	<ul style="list-style-type: none"> • Promoting a culture of cybersecurity awareness through policies and training • Improving incident response capabilities and communications • Implementing targeted solutions to help better identify and mitigate malicious threat actors from launching a successful attack • Enhancing threat intelligence capabilities and upgrade network architecture, data management and security controls

Risk	Risk Assessment: High Mitigating Actions
<p>Cyberattack impacting non-IESO owned assets required for operating the IESO-controlled grid</p> <p>As cyberattacks targeting critical infrastructure are on the rise, a sector-wide, concerted cyber response is required from government, regulatory bodies, market participants and the IESO to augment response efforts. A holistic view and understanding of market participants' cybersecurity postures and program objectives is required to develop an informed and coordinated approach to cyber resiliency for the Ontario electricity sector.</p>	<ul style="list-style-type: none"> • Maintain robust reliability practices and contingency plans to respond to significant disruptions • Deliver Lighthouse services under OEB license to promote cyber information sharing and situational awareness across the sector • Conduct sector-wide threat assessments to identify vulnerabilities • Support external activities by developing playbooks and participating in broader groups and forums
Risk	Risk Assessment: High Mitigating Actions
<p>Competitive mechanisms not working as intended impairs the IESO's efficiency mandate</p> <p>The IESO is investing considerable time and resources to renew the wholesale electricity markets and operate the grid to drive reliability outcomes. The IESO's strategic priorities could be impacted if competition and supporting market mechanisms are impaired. If competition does not materialize as expected, the loss of stakeholder confidence could drive an emerging narrative that markets don't work thereby frustrating the IESO's efficiency mandate.</p>	<ul style="list-style-type: none"> • Design, development and testing of mechanisms as such as Market Power Mitigation under the Market Renewal Program • General Conduct Rule enforcement guidelines • Next phase of resource adequacy initiatives that involve competitive procurements and capacity auction as acquisition mechanisms

Risk	Risk Assessment: High
	Mitigating Actions
<p>Readiness of our culture, people, processes and tools to rapidly adapt and pivot to address transformation</p> <p>To deliver on the organization’s goals and meet the demands of sector transformation, the IESO will need to transform. Meeting the demands of transformation is a complex process involving alignment of leadership, practices and culture. Evolving the maturity of the IESO’s culture, people, processes and tools will require some necessary pre- and co-requisite change readiness supports.</p>	<ul style="list-style-type: none"> • Acquisition of business and grid control tools to support transformation • Resource planning and utilization: roles and accountabilities and workforce planning initiatives • Development of future capability: employee, leadership, technical, and business learning; succession planning • Culture transformation: Equity, diversity and inclusion (ED&I) Annual Plan and employee experience annual areas of focus • Evolve data and information governance practices

Appendix 3 – Capital Spending

Summary of 2023 - 2025 Capital Spending

Change Initiatives/Projects (\$ Millions)	2023 Budget	2024 Budget	2025 Budget
Replacement of the Settlement Systems	4.4	0.8	0.1
Data Excellence Program	0.5	0.8	0.5
Wide Area Visualization Environment (WAVE) - Phase 2	0.5	0.3	
Enabling Resources Program	0.3	0.6	3.3
Addressing Market Surveillance Panel (MSP) Recommendations	1.2	0.4	0.5
Dynamic Limits in Real-Time	2.8	0.2	
Enterprise Antivirus Replacement	0.3		
Resource Adequacy Program	1.0	1.2	1.3
Market Analysis and Simulation Toolset (MAST)	0.5	2.4	1.0
Long Term Demand Forecast Tool Replacement	1.0	0.8	
Core Network Refresh	2.0	0.6	
PMU Integration - Phase 3	1.0	1.0	1.0
Space Needs Program	7.0	10.0	13.0
Backup Operating and Data Centres Relocation Project	5.0	5.4	
Meter Data Management System Replacement (MDMS)	0.3	2.0	3.5
Enabling Grid Transformation Program	0.1	1.1	7.0
Lawson Refresh		0.2	1.9
Firewall Refresh	0.2	2.8	
Data Loss Prevention (DLP) Phase 2		1.5	1.0
Windows Infrastructure Refresh	1.9	0.1	
MIM Technical Refresh	1.1		
LogRhythm SIEM Refresh		2.9	0.1
Network WAN Infrastructure		1.6	0.1
Cybertec Refresh		0.9	0.1
Aspen File Server Refresh			2.1
Intrusion Prevention System (IPS) Refresh			1.4
Capital (1 million and above)	31.1	37.6	37.9
Other Initiatives/Projects (Less than a 1 million)	3.9	6.0	5.7
Total Without Market Renewal Program	35.0	43.6	43.6
Market Renewal Program	51.0	32.3	14.6
Total Including Market Renewal Program	86.0	75.9	58.2

2023-2025 Capital Plan Details

Project Name	Project Description
Replacement of the Settlement Systems	In replacing settlement systems that have been in operation since market opening in 2002, this project will address market re-design needs associated with implementation of the Market Renewal Program and enable systems to meet current and future business needs. In 2021, the IESO settled approximately \$22B in the IESO-Administered Markets, Ministry of Energy supported programs, and Global Adjustment through the settlement systems.
Data Excellence Program	To help harness the full value of IESO data, this program establishes an evolved data management and analytics framework to support the IESO's complex business needs. Data governance policies and tools (data catalogue), an updated data warehouse strategy and supporting applications for high-value use cases and a centre of excellence for advanced machine learning applications are in the scope of the program roadmap.
Wide Area Visualization Environment (WAVE) - Phase 2	This project will improve situational awareness and maintain ongoing compliance with NERC IRO standards by expanding modelling to neighbouring power systems (NYISO, PJM and Hydro-Quebec), improving the IESO's ability to monitor and respond to real-time conditions that may affect the IESO controlled grid.
Enabling Resources Program	Through the Program the IESO will prioritize and undertake the work to increase the number of resource types (e.g. hybrids, storage) that can participate in the IESO markets to deliver energy, capacity and ancillary services in order to increase options for reliability and competition to drive affordability.
Addressing Market Surveillance Panel (MSP) Recommendations	A portfolio of initiatives to develop, evolve and address inefficiencies in the electricity market in response to observations by the MSP and other stakeholders.
Dynamic Limits in Real-Time	In enabling the continuous assessment of real-time grid conditions, the Dynamic Limits in Real-Time (DLRT) Project will significantly improve the utilization of Ontario's transmission system, resulting in market and system operations efficiencies, and increased system security and resilience.
Enterprise Antivirus Replacement	The current antivirus solution which was commissioned in 2018 has approached end of support by the vendor on the solution lifecycle. The current vendor is moving to a cloud based service offering only, which will not meet the current NERC Critical Infrastructure Protection (CIP) standards. This project will replace the current antivirus solution with a new on-premise solution that will maintain the IESO's security posture and continue to meet the NERC CIP requirements.
Resource Adequacy Program	As part of its commitment to competitive mechanisms to meet Ontario's resource adequacy needs, the IESO is working with stakeholders to implement the Resource Adequacy framework to develop and execute multiple mechanisms, such as the Capacity Auction and Requests for Proposals to acquire products and services needed to maintain reliability cost-effectively.
Market Analysis and Simulation Toolset (MAST)	As the Market Renewal Program (MRP) is introducing wholesale market changes, current tools to monitor, assess and analyze the new market will be insufficient. MAST will deploy a common assessment tool environment that can be utilized in multiple business processes that will monitor, correct, improve or alter market design or operations over the day-ahead, pre-dispatch and real-time periods. The new tools are required after MRP go-live.

Long Term Demand Forecast Tool Replacement	This project will replace the existing Long-Term Demand Forecast tools which have reached end of life and update the end-use load profiles used to develop the long-term forecasts. These tools are essential to support the planning processes that forecast system needs and provide infrastructure investment advice for the next 20 years.
Core Network Refresh	The IESO's Core and Data Centre networks provide the backbone of the IESO's network infrastructure, connecting all systems and locations in a robust and reliable high-performance network. The existing core and data centre infrastructure needs to be refreshed as it is approaching the end of manufacturer support.
PMU Integration - Phase 3	Phasor Measurement Units (PMUs) can continuously deliver high-quality, time synchronized real-time power system data at a high frequency (30-60 samples per second). Obtaining PMU data from across Ontario will improve real-time monitoring of the IESO-controlled grid; obtaining PMU data from other jurisdictions will improve wide-area view; and both will improve the IESO's overall situational awareness. PMUs also provide the IESO the ability to diagnose incidents and to more efficiently comply with several NERC reliability standards. Building on the earlier phases of this work, Phase 3 will integrate PMU data into the IESO's operations support tools and services, as well as live information into the Control Room. The Market Rules to support this change have been implemented and will become enforceable at the end of 2024 to give participants and the IESO sufficient time to implement these changes.
Space Needs Program	IESO owns and leases three office facilities in the Greater Toronto Area. Our primary location in Mississauga, which the IESO owns and operates, was built in 1989 and requires significant investments in its electrical, mechanical and structural systems over the next 4-5 years. Building on the experience from an office pilot project being undertaken in 2022, the results will define the path forward with respect to the IESO's overall office footprint and the modernization of the workspace. The modernization of the workspace will be critical to meet the needs of today's workforce and supports the attraction and retention of IESO staff
Backup Operating and Data Centres Relocation Project	As part of its system operator mandate, the IESO operates a Backup Operating Centre (BOC) and Backup Data Centre (BDC) to ensure continuous operation of Ontario's power system and IESO's business operations in event of an emergency affecting the power system or IESO's control centre. These facilities are also required in order to comply with North American Electric Reliability Corporation (NERC) reliability and critical infrastructure protection standards. The current BOC and BDC are reaching the end of their current lease terms and no longer meet the evolving needs of the IESO. This project will determine and secure a new location for these two critical facilities and make the necessary investments in order to meet both regulatory compliance and reliability needs.
Meter Data Management System Replacement (MDMS)	The current Meter Data Management solution that supports the IESO settlement processes is currently deployed on an application that cannot be upgraded. The business capabilities that the application supports will be delivered as part of an alternative solution through the Meter Data Management System Replacement project.

Enabling Grid Transformation Program	In conjunction with the PMU Phase 3, Wide Area Visualization - Phase 2 and Dynamic Limits In Real-Time projects, this program will implement new technologies, processes, and more dynamic tools to support the operation of the transforming grid with more diverse resource types and a more complex transmission system. This work is critical to support resource retirements/replacements, meet incremental system demand by adding supply resources to the system, as well as provide future options for de-carbonization.
Lawson Refresh	Lawson Financials, the current financial and accounting application that supports both the Market and Corporate accounts has been used at the IESO since 1998. The last Lawson refresh project was completed in 2020 and is approaching end of life. This project will refresh our current financial system to ensure that it continues to meet our future financial accounting needs with a vendor supported tool.
Firewall Refresh	The existing IESO firewalls which provide access control to critical parts of the network such as the DMZ and internal corporate network are nearing the end of vendor support and need to be upgraded. This project seeks to build on the strengths of the existing security architecture by upgrading the key security controls at the firewall perimeter of IESO's data network and allow the IESO to take advantage of features which are used to reduce the risk of evolving cyber attacks and ensure mitigation of security concerns related to the industry.
Data Loss Prevention (DLP) Phase 2	Data loss prevention (DLP) is an approach that seeks to improve information security and protect business information from data breaches. This project will implement a technological DLP solution that will provide features and benefits in a variety of situations, all of which will allow the IESO to better understand how high-value data is handled within the network and will automate the prevention of data sharing with unauthorized personnel.
Windows Infrastructure Refresh	The current version of Microsoft Windows Server operating system is nearing end-of-life at which time Microsoft no longer provides support for the product, including critical security patches. This project will move us to the latest supported version of the Windows operating system and refresh the underlying hardware.
MIM Technical Refresh	The Market Information Management (MIM) system is the IESO solution that receives Dispatch Information (bids/offers) from Market Participants and is the repository for the results of the Day Ahead Optimization System and Market Information System. This project will update the solution to use supported hardware and supported technology components.
LogRhythm SIEM Refresh	LogRhythm is IESO's Security Information and Event Monitoring (SIEM) solution which monitors security events by gathering log data across all IT connected systems. This project will refresh the LogRhythm solution to provide more computing capacity to accommodate the growth of IESO's IT systems.
Network WAN Infrastructure	The IESO Wide-Area Network (WAN) infrastructure is a collection of networks that communicate with one another between all IESO locations, and with Market Participants through a WAN provider. This project will replace all WAN infrastructure which is reaching end of life.
Cybertec Refresh	The IESO collects over 100,000 telemetry data points every two (2) seconds and pushes that data into IESO's Supervisory Control and Data Acquisition (SCADA) systems. The Cybertec gateways support this critical function. This project will refresh the existing Cybertec gateways that have reached the end of their useful life.

Aspen File Server Refresh	Aspen is IESO's corporate fileserver which stores much of IESO's business information. This project will replace the underlying hardware and software with new hardware and software and migrate data to the new platform.
Intrusion Prevention System (IPS) Refresh	The Intrusion Prevention System (IPS) prevents network security attacks such as brute force attacks, Denial of Service (DoS) attacks and vulnerability exploits. IPS continuously monitors network traffic to detect/prevent against known and unknown vulnerability. This project will refresh the current IPS as it reaches end of life.

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Ministry of Energy

Office of the Minister

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MC-994-2023-124

February 15, 2023

Ms Lesley Gallinger
President and Chief Executive Officer
Independent Electricity System Operator
1600—120 Adelaide Street West
Toronto ON M5H 1P1

Dear Ms Gallinger:

I am writing to provide my concurrent approval of the Independent Electricity System Operator's (IESO) Business Plan for the years 2023, 2024 and 2025 ("Business Plan 2023-2025"), submitted on September 1, 2022, and to outline my expectations for the IESO's next business plan.

I want to thank you and the team at the IESO for effectively managing Ontario's electricity system and planning for future supply conditions in a context of technological transformation, high economic growth, and increased electricity demand. I would also like to congratulate you on your work on the IESO's updated Corporate Strategy, which will help guide the organization in delivering its mandate.

The government continues to focus on reliability and affordability for energy consumers, including Ontario families and businesses. These priorities overlap with the IESO's critical role in ensuring the province has a reliable and affordable supply of electricity. This is why I want to congratulate you on the progress that the IESO has made on key initiatives such as Resource Adequacy, the Market Renewal Program, and the Enabling Resources Initiative. In particular, the IESO should be very proud of the progress it has made this year towards charting a long-term path forward and achieving value for ratepayers through the application of competitive procurements and cooperation with the Canada Infrastructure Bank.

Furthermore, I note the plan identifies reasonable revenue requirements for 2023-2025. These financials will allow the IESO to fund the organization's core operations and to deliver on critical initiatives outlined in the business plan and government priorities, and also balances affordability for consumers.

Government Expectations for the IESO's Business Outlook

In April 2022, the IESO and the Ministry signed a refreshed Memorandum of Understanding, which established a new three-year approval cycle for the IESO's Business Plan. In September 2023, in lieu of a new business plan, I expect the IESO will submit a Business Outlook covering the next three fiscal years.

.../cont'd

As established in section 8.2.4 of the MOU, the Business Outlook should identify any changes to the 2023-2025 business plan without altering the total revenue requirement and capital budget.

Additionally, the IESO must always act in the best interests of Ontarians by being efficient, effective, and providing value for money to electricity customers. I expect the IESO to continue to adhere to the following government-wide priorities:

- a. Competitiveness, Sustainability and Expenditure Management
- b. Transparency and Accountability
- c. Risk Management
- d. Workforce Management
- e. Diversity and Inclusion
- f. Data Collection
- g. Digital Delivery and Customer Service

Ministry staff will provide details of the expectations in this regard.

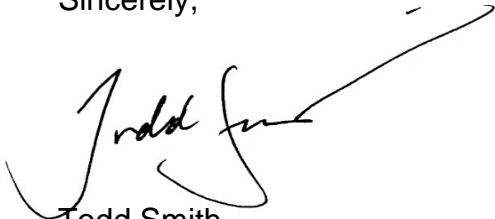
In addition to these government-wide priorities, I expect the IESO to continue to advance the below priorities throughout the 3-year business planning period:

1. Progress with market renewal, enabling resources, electricity planning, the development of competitive procurements for electricity resources (i.e., meeting resource adequacy), and the development of a competitive transmission procurement process.
2. Progress on ensuring that electricity sector planning, procurement, and grid operations are ready for electrification and the energy transition and informed by leading approaches in other jurisdictions.
3. Support implementing key electricity-related actions in Ontario's Low-Carbon Hydrogen Strategy.
4. For the 2021-2024 electricity conservation and demand management (CDM) framework, progress with implementation of new CDM programs and CDM program enhancements, based on the IESO's Mid-Term Review Report and Recommendations, as well as work on the next Achievable Potential Study and the next CDM framework.
5. Cybersecurity, climate resilience, and the integrity of the grid.
6. Collective bargaining and alignment with broader government priorities on broader public sector compensation.
7. Progress with execution of government priority initiatives discussed in the Business Plan.

This letter constitutes my concurrent approval of the Business Plan and the budgets for 2023, 2024 and 2025 in accordance with my authority under subsection 24(2) of the *Electricity Act, 1998*, and as provided under the MOU between the IESO and the Ministry dated April 27, 2022.

Thank you for the Business Plan and the good work of the IESO and its staff. Please accept my best wishes.

Sincerely,

A handwritten signature in black ink, appearing to read 'Todd Smith', with a long, sweeping horizontal stroke extending to the right.

Todd Smith
Minister

c: Hon. Joe Oliver, PC, Board Chair, IESO
David Donovan, Chief of Staff to the Minister of Energy
Jason Fitzsimmons, Deputy Minister of Energy
Karen Moore, Assistant Deputy Minister, Strategic Network and Agency Policy
Division, Ministry of Energy
Steen Hume, Assistant Deputy Minister, Energy Supply Policy Division
Assistant Deputy Minister (Acting), Conservation and Renewable Energy
Division, Ministry of Energy

1 **2022 ANNUAL REPORT AND AUDITED FINANCIAL STATEMENTS**

2 **TO BE FILED AT A LATER DATE**

REVENUE REQUIREMENT AND USAGE FEE METHODOLOGY

The IESO's revenue requirement is a fixed amount approved by the OEB which enables the IESO to fulfill the initiatives set out in its business plan and the associated operations, maintenance, administration and capital spending needed to maintain its critical responsibilities. The IESO usage fees are established using the revenue requirement and a forecast of withdrawals from the IESO-Controlled Grid, embedded generation, losses and exports. The IESO develops its proposed revenue requirement and calculates its usage fees for both domestic and export customer classes, by following the steps below.

Business Planning Cycle to Establish Revenue Requirements

The IESO utilizes an enterprise planning framework to guide its budgeting process, which begins with an operating environment assessment that identifies key business drivers and industry trends. The IESO takes these inputs and then moves into the strategic planning phase. The strategic planning phase involves a review and validation of existing mission, vision and strategy to confirm relevance within the operating environment, or to identify the need for a refresh to consider changes in the business or industry environment. The strategic planning phase has a five-year outlook that establishes the IESO's core strategies, and the imperatives which set out how the IESO will achieve the core strategies. The IESO's core strategies and imperatives are both included in the 2023-2025 Business Plan (Business Plan).

Once the strategy has been confirmed or refreshed, the IESO then moves into the divisional planning phase. Divisional planning incorporates both ongoing core requirements, as well as new and incremental initiatives or projects that will support the execution of the strategy. Divisional planning considers staffing requirements and other ongoing operational expenses for each division, funding for capital projects, interdependencies between initiatives and projects, efficiencies and prioritization of work or resources over the three-year planning horizon. Following divisional planning, the IESO develops the three-year operating and capital budgets which are included in the Business Plan and submitted to the Minister of Energy for approval. Accordingly, the Business Plan establishes the proposed revenue requirements.

Cost Allocation Model Used to Calculate the Usage Fees

The IESO's usage fees for domestic and export customers are calculated for the IESO by Elenchus Research Associates Inc. (Elenchus) using a model developed in 2016, reviewed in by Elenchus in 2021, and approved as part of the IESO's 2022 Revenue Requirement Submission proceeding (EB-2022-0002), to allocate costs between the two customer classes. This allocation assigns the costs to the appropriate customer class based on functional categories (business unit and department). To calculate the 2023, 2024 and 2025 usage fees, the IESO requested Elenchus to rerun its model using the Business Plan and the charge determinants discussed in the sections that follow.

2021 Review of the Cost Allocation Model

In 2021, Elenchus conducted a review of the cost allocation model to ensure continued alignment with regulatory principles and practices, and to evaluate the alignment of the IESO's current organizational structure with the charge allocators used in the model. The primary consideration in developing the methodology was adhering to the cost allocation principle of assigning costs on the basis of cost causality. Elenchus' review concluded that the IESO's cost allocation and usage fee methodology remained reasonable.

Charge Determinants Used to Calculate the Usage Fees

The charge determinants used to calculate domestic usage fees are the most recent forecast of withdrawals for 2023, 2024 and 2025 for use in Ontario, less estimated losses, plus generation embedded in local distribution networks. The charge determinants used to calculate export usage fees are the most recent forecast of exports in 2023, 2024 and 2025, less estimated losses. The calculation of line losses is split between export and domestic customers based on their proportion of the total 2023, 2024 and 2025 forecast energy volumes, respectively. See Exhibit C-2-1 2023-2025 Revenue Requirement and Usage Fees, for additional information on the IESO's 2023-2025 usage fees, and Exhibit C-2-1 Attachment 1 – Actual Load and Forecast Volumes, for the charge determinants used to calculate usage fees.

2023-2025 REVENUE REQUIREMENTS AND USAGE FEES

This exhibit presents the 2023-2025 Revenue Requirements and domestic and export usage fees that were determined using the methodology outlined in Exhibit C-1-1 Revenue Requirement and Usage Fee Methodology.

2023-2025 Revenue Requirements

The IESO is requesting a 2023 revenue requirement of \$208.4 million, compared to \$201.5 million in 2022. In 2024 and 2025, the IESO is requesting a revenue requirement of \$218.4 million and \$229.7 million, respectively. The IESO's revenue requirements will allow the IESO to invest in the people, tools and processes that underpin the reliable and cost-effective provision of electricity in the province and will ensure that Ontarians' expectations of an efficient and resilient electricity system continue to be met. The IESO's revenue requirements are provided in Table 1 below, and are further described in Exhibit B-1-2 2023-2025 Business Plan, Exhibit D-1-1 OM&A Overview and Exhibit D-1-2 Business Unit Detail, and attachments.

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

	2019 OEB Approved	2020 OEB Approved	2021 OEB Approved	2022 OEB Approved	2023 Budget	2024 Budget	2025 Budget
Revenue Requirement	190.8	188.6	191.8	201.5	208.4	218.4	229.7

The IESO has identified and leveraged efficiencies in several areas to mitigate impacts of its revenue requirements to Ontario ratepayers. The IESO anticipates an increase in new contracted facilities over the next three years to meet electricity system needs. Through the Reliable Integration fee, IESO expenses associated with activities undertaken to connect new facilities are offset by fees paid by the project proponent and thus impacts to Ontario ratepayers are reduced (see Exhibit C-3-1 Funding Sources for more details). Further development of systems to track contracts, automate contract settlements, and introduce processes for streamlining energy efficiency contract approvals have also yielded operational efficiencies. Furthermore, the IESO continues to realize efficiencies by examining its long-term office space needs.

Revenue Requirement Risks

The IESO's revenue requirements (and thus its revenues and operating expenses) are forecast based on the best information available when the Business Plan is developed and the experience of IESO staff. The IESO's revenue requirements include risks associated with forecast uncertainty (e.g., exchange rate, interest rates, change in total demand, etc.) and the IESO strives to reduce uncertainty in the inputs to make the resulting Business Plan as robust as possible. As the Business Plan is developed, some of the potential risks to the IESO may be anticipated but not quantifiable, while others are simply not known.

Along with the risks to the revenue requirement noted above, the IESO also faces several key strategic and operational risks in achieving the organization's strategic objectives. For a list of these key risks, see Appendix 2 of Exhibit B-1-2 2023-2025 Business Plan.

Charge Determinants Used to Calculate the Usage Fees

The charge determinants used to calculate domestic usage fees are the most recent forecast of withdrawals in 2023, 2024 and 2025 for use in Ontario, less estimated losses, plus generation embedded in local distribution networks. These values are shown in Exhibit C-2-1 Attachment 1 – Actual Load and Forecast Volumes.

Allocation of Line Losses to Domestic and Export Customer Classes

In Tables 2-4 below, the IESO presents the line losses allocated to the domestic and export customer classes in 2023, 2024 and 2025 based on their proportion of the total forecast energy withdrawals respectively. Energy from embedded generation is not transmitted through the IESO-Controlled Grid and, as such, does not yield transmission losses. For this reason, energy from embedded generation is not factored into the allocation of line losses to domestic customers.

Table 2: Forecast of 2023 Losses per Customer Class

Customer Class	Demand, not including losses (TWh)	Total energy volume, not including losses (TWh)	Proportion of total energy volume, not including losses	Total losses (TWh)	Resulting associated losses (TWh)
Domestic	132.8	146.2	90.8%	3.0	2.7
Export	13.3		9.2%		0.3

Total 2023 transmission losses are forecast to be 3.0 TWh. Domestic customers are allocated 90.8% of these losses, which amounts to 2.7 TWh, and export customers are allocated 9.2%, which amounts to 0.3 TWh.

Table 3: Forecast of 2024 Losses per Customer Class

Customer Class	Demand, not including losses (TWh)	Total energy volume, not including losses (TWh)	Proportion of total energy volume, not including losses	Total losses (TWh)	Resulting associated losses (TWh)
Domestic	137.0	147.2	93%	3.1	2.9
Export	10.2		7%		0.2

Total 2024 transmission losses are forecast to be 3.1 TWh. Domestic customers are allocated 93% of these losses, which amounts to 2.9 TWh, and export customers are allocated 7%, which amounts to 0.2 TWh.

Table 4: Forecast of 2025 Losses per Customer Class

Customer Class	Demand, not including losses (TWh)	Total energy volume, not including losses (TWh)	Proportion of total energy volume, not including losses	Total losses (TWh)	Resulting associated losses (TWh)
Domestic	142.2	150.8	94%	3.2	3.0
Export	8.6		6%		0.2

Total 2025 transmission losses are forecast to be 3.2 TWh. Domestic customers are allocated 94% of these losses, which amounts to 3.0 TWh, and export customers are allocated 6%, which amounts to 0.2 TWh.

Allocation of Energy Volumes to Domestic and Export Customer Classes

In Tables 5-7 below, the IESO presents the energy volumes allocated to the domestic and export customer classes in 2023, 2024 and 2025, respectively, factoring in embedded generation and allocated line losses as appropriate.

Table 5: Calculation of Associated Energy Volumes for 2023 Usage Fees

	Domestic (TWh)	Export (TWh)
Demand forecast	135.8	13.3
Embedded generation	7.0	
Domestic transmission losses	-2.7	
Exports transmission losses		-0.3
Energy Volumes	140.1	13
Total Energy Volume	153.2¹	

Table 6: Calculation of Associated Energy Volumes for 2024 Usage Fees

	Domestic (TWh)	Export (TWh)
Demand forecast	140.1	10.2
Embedded generation	7.7	
Domestic transmission losses	-2.9	
Exports transmission losses		-0.2
Energy Volumes	144.9	10
Total Energy Volume	154.9	

Table 7: Calculation of Associated Energy Volumes for 2025 Usage Fees

	Domestic (TWh)	Export (TWh)
Demand forecast	145.4	8.6
Embedded generation	7.7	
Domestic transmission losses	-3.0	
Exports transmission losses		-0.2
Energy Volumes	150.1	8.4
Total Energy Volume	158.6	

¹ All total energy volumes are rounded to the nearest tenth decimal place.

Usage Fees

The domestic and export usage fees for 2023, 2024 and 2025, respectively, are presented in Tables 8-10 below. These usage fees were calculated for the IESO by Elenchus Research Associates Inc. (Elenchus) using a model that allocates costs in the Business Plan between the domestic and export customer classes and uses the charge determinants described in the previous sections. See also Exhibit C-1-1 Revenue Requirement and Usage Fee Methodology for additional details on the Elenchus model.

Table 8: 2023 IESO Domestic and Export Usage Fees as Calculated by Elenchus

	Usage Fee
Domestic	\$1.3857/MWh
Export	\$1.0885/MWh

Table 9: 2024 IESO Domestic and Export Usage Fees as Calculated by Elenchus

	Usage Fee
Domestic	\$1.4212/MWh
Export	\$1.2455/MWh

Table 10: 2025 IESO Domestic and Export Usage Fees as Calculated by Elenchus

	Usage Fee
Domestic	\$1.4499/MWh
Export	\$1.4276/MWh

Implementation of the 2023 Usage Fees

On December 5, 2022, the IESO filed a letter with the OEB to request that the IESO's 2022 usage fees be made interim from January 1, 2023, until the end of the month in which the IESO receives OEB approval of its 2023 usage fees. On December 13, 2022, the IESO received OEB approval that the 2022 usage fees will be in effect as interim fees until final 2023 usage fees are approved by the OEB.

1 The IESO requests approval of a domestic usage fee of \$1.3857/MWh and export usage fee of
2 \$1.0885/MWh to be paid commencing January 1, 2023. Once OEB has approved the IESO's
3 2023 usage fees, the IESO proposes to charge (or rebate) market participants the difference
4 between the 2023 IESO usage fees approved by the OEB and the interim usage fees they paid
5 on the approved effective date, if any, based on their proportionate quantity of energy
6 withdrawn until the end of the month in which OEB approval is received for the 2023 usage
7 fees. Any such charges (or rebates) will be provided in the next billing cycle following the
8 month in which OEB approval is received.

FUNDING SOURCES

Usage Fees

The IESO's main funding source is the revenue resulting from its usage fees, for domestic and export customers, approved by the Ontario Energy Board (OEB) and applied on electricity withdrawals from the IESO-Controlled Grid. This revenue is reported under Usage and Application Fees in the attachment to this exhibit (C-3-1 Attachment 1 – Funding Sources).

Other Fees and Cost Recovery

In addition to the IESO's usage fees, the IESO charges fees and recovers the following costs previously approved by the OEB.

The IESO charges registration fees of up to \$10,000 per proposal for electricity supply and capacity procurements, including ancillary services. In past years, these fees have not been material and thus have not been part of IESO's budget. However, in 2022 the IESO received \$0.8 million from participants registering to participate in the mid- and long-term procurements. The IESO anticipates additional procurement processes in 2023 and 2024 and has included \$0.5 million in each year's budget to offset the associated costs to run these procurement processes.

The revenues received from \$1,000 applications to become a market participant are not material and are therefore not included in budget projections. These revenues are included in the actual results for Usage and Application Fees in Exhibit C-3-1 Attachment 1 - Funding Sources.

The IESO recovers costs to perform assessments of the potential impact of a new or modified facility through System Impact Assessments (SIA) and optional Technical Feasibility Studies (TFS). The IESO currently undertakes this work for a connection applicant on a cost recovery basis as outlined in the Market Rules using the IESO's recovery rate of a \$145 per hour for work performed. These assessments and studies are variable in volume and effort and dictated by the scope and number of connection applicant requests. The IESO anticipates that the costs recovered in the 2023-2025 Business Plan to be \$1.7 million per year, which is aligned with 2022.

The IESO also recovers costs to undertake Reliable Integration Activities for a connection applicant, charged at \$145 per hour, determined by using the IESO's labour plus overhead recovery rate. These activities were recently approved as part of the IESO's 2022 Revenue Requirement Submission (EB-2022-0002) and are calculated based on the number of hours taken to perform work to ensure that facilities meet prescribed requirements and updates are made to the IESO's systems, processes and procedures to reliably integrate those new or modified facilities. Similar to SIAs and TFSs, the work for reliable integration is dependent on the number of connection applicant requests. The IESO is projecting a recovery of \$0.8 million in 2023, \$1.7 million in 2024 and \$2.2 million in 2025.

Overhead Cost Recovery

In accordance with the recommendations of the cost allocation study submitted as part of IESO's 2018 Revenue Requirement Submission (EB-2018-0143), any work conducted by the IESO in support of its function as the Smart Metering Entity ("SME") is fully allocated to the SME.

Through the 2018 Settlement Agreement, the IESO agreed to apply the same cost allocation principles used for the SME to the market rule enforcement and education ("MACD Enforcement") activities. While these activities were not included in the cost allocation study, it was agreed that these activities are of a similar type that the cost allocation principles apply. Since the settlement agreement, the costs the IESO incurs for work and staff time in support of MACD Enforcement are charged to MACD Enforcement in the same manner as such work done to support the SME is charged to the SME.

Similarly, this cost allocation applies to Other Programs listed in the Annual Report, which include the conservation programs, and programs that the IESO delivers in partnership with other organizations within the energy sector.

Interest and Investment Income

The IESO oversees and reconciles more than \$18 billion in funds from the IESO-administered markets, related services, programs and electricity charges, and, as a result, earns short-term income in accordance with the Market Rules. Also, through long-term investments the IESO

- 1 supports the supplemental employee retirement plan and other IESO general solvency needs.
- 2 Further details can be found in Exhibit D-2-1 Interest Expense and Investment Income.

OM&A OVERVIEW

Operating, Maintenance and Administration (OM&A) Overview

The IESO's OM&A budget funds business units and initiatives that ensure the reliability of Ontario's power system through operating the electricity grid, governing electricity markets, ensuring the future availability of electricity when and where it is needed, and helping inform decisions that will be critical to shape the future of the sector.

While the IESO continues to carefully review all expenditures and seek new efficiencies, new investments in the IESO's people and systems are needed to prepare the sector for the energy transition and ensure Ontarian's electricity needs are met. As a result, the OM&A budgets in the 2023-2025 Business Plan have increased compared to 2022, to ensure the IESO can continue to meet Ontarians' electricity needs through the delivery of the first three years of the IESO's refreshed Corporate Strategy. The historical and budgeted OM&A amounts for 2019-2025 are provided in Table 1 below.

Table 1: OM&A Costs 2019-2025 (\$ Millions)

Historical							Budget		
2019 OEB Approved	2019 Actual	2020 OEB Approved/ Actual	2021 OEB Approved	2021 Actual	2022 OEB Approved	2022 Actual	2023	2024	2025
178.3	177.2	171.3	175.2	174.3	186.5	187.0	197.3	206.6	211.9

A summary of the OM&A costs are included in Exhibit D-1-1 Attachment 1 - Summary of OM&A Expenses (Appendix 2-JA). The main drivers for the year over year variances in OM&A are discussed below and included in Exhibit D-1-1 Attachment 2 – OM&A Cost Driver Table (Appendix 2-JB).

IESO business unit OM&A budgets and their associated work are set out in Exhibit D-1-2 OM&A Business Unit Detail and D-1-2 Attachment 1 – OM&A Business Unit Table.

2019 – 2021 OEB Approved Budget vs Actual

For 2019-2021, the OM&A actual expenses have aligned to the approved budget with less than 1% variance. In 2020, the IESO's requested funding was as per its actual financial results since

the approval of the 2020-2022 Business Plan was delayed until after the close of the fiscal year due to the COVID-19 pandemic.

The IESO's actual 2019 results were impacted by the cancellation of the Incremental Capacity Auction (ICA), halted as a result of stakeholder feedback, and 2020 was impacted by delays in the Market Renewal Program (MRP). Both years were also affected by increased costs of employee benefits. In 2021, the spending increased compared to 2020 primarily due to collective agreement escalations but remained below budget driven by various net cost savings and delays in the MRP. Please see Exhibit D-1-1 Attachment 2 –OM&A Cost Driver Table for further details.

2021 Actual vs 2022 OEB Approved Budget

The 2022 approved OM&A expenses of \$186.5 million, included \$7.2 million incremental expenses for initiatives critical to drive the transformation of Ontario's electricity sector, and to address various government initiatives including a pathway to decarbonization in the electricity sector; \$3.0 million in collective agreement escalations; \$2.2 million for various consulting and stakeholder engagement activities; an additional \$1.9 million in support of MRP work to enable a more competitive electricity marketplace and market rule and manual amendments; higher technology related expenses of \$1.4 million mostly related to contract price escalations; and \$1.8 million of various other items including foreign exchange impact and overhead cost recovery. Additionally, the approved budget included \$4.0 million reduction of employee benefits costs, mostly driven by an actuarial update of pension liability; and a \$1.3 million reduction of 2021 non-repeatable expenses. Please see Exhibit D-1-1 Attachment 2 –OM&A Cost Driver Table for further details.

2022 OEB Approved Budget vs 2022 Actual

OM&A expenses in 2022 were \$0.5 million (or 0.3%) above the OEB approved budget, driven by \$6.2 million higher employee benefits costs (mostly \$4.4 million one-time adjustment for other post-employment benefits (OPEB) to recognize the liability from negotiated and arbitrated collective agreement settlements awarded in 2022), and \$2.0 million of non-repeatable employee related costs (severance and overtime). These unbudgeted expenses were partially offset by \$4.1 million savings from vacancies and higher than planned capitalization of labour,

\$2.2 million lower than planned expenses in support of key initiatives, particularly for unsolicited proposals and Clean Energy Credits, \$0.5 million delayed MRP spending, \$0.5 million savings from telecommunications, and various other \$0.4 million lower than planned expenses.

Table 2: 2022 OM&A Expenses

(\$ Millions)	2022
2022 OEB Approved OM&A Expenses	186.5
Higher employee benefits costs and one-time OPEB adjustment	6.2
Non-repeatable severance and overtime	2.0
Vacancies (non-key initiative related) and higher than planned capitalized labour	(4.1)
Incremental costs to support key initiatives:	(2.2)
<i>MRP post-go-live support</i>	<i>(0.5)</i>
<i>Resource Adequacy</i>	<i>0.1</i>
<i>Enabling Resources</i>	<i>0.5</i>
<i>Pathways to Decarbonization</i>	<i>0.2</i>
<i>Other initiatives</i>	<i>(2.5)</i>
MRP support for market rules amendments, manuals and change management	(0.5)
Telecommunications, computer services/hardware/software savings	(0.5)
Various other	(0.4)
2022 Actual OM&A Expenses	187.0

2023 Budget vs 2022 Actual

The 2023 budgeted OM&A expenses of \$197.3 million, represent an increase of \$10.3 million from the 2022 actual results, mainly driven by \$11.5 million of incremental expenses for initiatives necessary to enable the IESO to play a critical role in driving and guiding the energy transformation; \$2.6 million in collective agreement escalations; technology-related expenses increasing by \$1.6 million partly due to contract price escalations; \$0.7 million one-time expenses to transition the IESO's Backup Operating Center (BOC) to a new facility; \$0.7 million for regulatory fees; an additional \$0.6 million in support of MRP work to enable a more

competitive electricity marketplace; and \$0.9 million of various expenses returning to higher pre-pandemic levels. These increases are expected to be partially offset through \$4.9 million non-repeatable employee benefits adjustments, \$2.0 million of other one-time employee costs in 2022 not included in the 2023 budget, and \$1.4 million lower pension and OPEB expense projection.

Table 3: 2023 OM&A Expenses

(\$ Millions)	2023
2022 Actual OM&A Expenses	187.0
Incremental costs to support key initiatives:	11.5
<i>MRP - ongoing operations of new functions</i>	<i>1.9</i>
<i>Resource and Transmission Adequacy</i>	<i>4.0</i>
<i>Cybersecurity</i>	<i>1.6</i>
<i>Strengthening Engagement</i>	<i>0.7</i>
<i>Culture, Employees and Capabilities</i>	<i>0.8</i>
<i>Sustaining Technology, Evolving Processes and Tools</i>	<i>1.9</i>
<i>Pathways to Decarbonization</i>	<i>(0.9)</i>
<i>Other initiatives</i>	<i>1.5</i>
Collective agreements/escalations	2.6
Telecommunications, computer services/hardware/software costs escalations	1.6
BOC transition to new location	0.7
Regulatory fees	0.7
MRP support for market rules amendments, manuals and change management	0.6
Non-repeatable employee benefit adjustments	(4.9)
Other non-repeatable employee costs (severance, overtime)	(2.0)
Lower pension and OPEB expenses	(1.4)
Various other	0.9
2023 Budget OM&A Expenses	197.3

2024 Budget vs 2023 Budget

In 2024, expenses are budgeted to increase by \$9.3 million to a total OM&A of \$206.6 million, primarily driven by \$4.8 million in further investments, most notably to transition to post-MRP integration functions and services and to ensure resource and transmission adequacy to meet system needs by 2026; collective agreement escalations of \$2.8 million; actuarial projected \$1.8 million increase of pension and OPEB liability; and \$0.8 million of other expenses, primarily due to increases in NERC/NPCC membership costs. These incremental expenses are planned to be partially offset by \$0.9 million from MRP savings as the program begins to wind-down.

Table 4: 2024 OM&A Expenses

(\$ Millions)	2024
2023 Budget OM&A Expenses	197.3
Incremental costs to support key initiatives:	4.8
<i>MRP - ongoing operations of new functions</i>	<i>1.1</i>
<i>Resource and Transmission Adequacy</i>	<i>2.4</i>
<i>Enabling Resources</i>	<i>0.1</i>
<i>Strengthening Engagement</i>	<i>0.4</i>
<i>Sustaining Technology, Evolving Processes and Tools</i>	<i>0.4</i>
<i>Other initiatives</i>	<i>0.4</i>
Collective agreements/escalations	2.8
Higher employee pension and OPEB benefits expenses	1.8
MRP support for market rules amendments, manuals and change management	(0.9)
Various other	0.8
2024 Budget OM&A Expenses	206.6

2025 Budget vs 2024 Budget

The 2025 budgeted OM&A expenses of \$211.9 million, represent an increase of \$5.3 million from 2024, mainly driven by \$3.7 million in actuarial projected pension and OPEB liability; \$3.0 million of collective agreement escalations; and \$0.9 million additional investments, mainly to

support the transition to post-MRP. These increases are projected to be offset through \$2.1 million reduction of expenses as MRP comes to a conclusion.

Table 5: 2025 OM&A Expenses

(\$ Millions)	2025
2024 Budget OM&A Expenses	206.6
Higher employee pension and OPEB benefits expenses	3.7
Collective agreements/escalations	3.0
Incremental costs to support key initiatives:	0.9
<i>MRP - ongoing operations of new functions</i>	<i>1.2</i>
<i>Resource and Transmission Adequacy</i>	<i>(1.4)</i>
<i>Cybersecurity</i>	<i>0.4</i>
<i>Strengthening Engagement</i>	<i>0.6</i>
<i>Culture, Employees and Capabilities</i>	<i>0.2</i>
<i>Sustaining Technology, Evolving Processes and Tools</i>	<i>(0.1)</i>
MRP support for market rules amendments, manuals and change management	(2.1)
Various other	(0.2)
2025 Budget OM&A Expenses	211.9

2023-2025 Key Initiatives

The key initiatives described below involve effort from multiple business units across the IESO. Business units that are primarily responsible for key initiatives are identified in Exhibit D-1-2 – OM&A Business Unit Detail.

Market Renewal Program (MRP) - ongoing operations of new functions

In 2023, the IESO will start preparing for the new functions and services that will be added when the MRP is completed and placed into service. These new functions will require additional resources for market operations, monitoring and ongoing maintenance and support, as well as oversight, enforcement activities, and the development of new tools and processes. The budget

for 2023-2025 includes additional headcount to support the new functions and services as these resources need to be onboarded for training ahead of the implementation of the renewed markets. Additionally, expenses have been included for the maintenance of the new systems to be implemented.

Resource and Transmission Adequacy

The Resource Adequacy framework includes a series of Minister of Energy (Minister) directed procurement initiatives¹ designed to maximize competition, secure resources based on system needs, and introduce more flexibility. The IESO has concluded the first medium-term RFP, and has entered into Master Terms & Conditions I Contracts, each with a five-year term, with one wind and four natural gas facilities. Together these facilities contribute more than 700 MW of capacity to the system, ensuring ongoing value from previous investments in supply. This supply will be available between 2024 – 2026, at a lower cost than previous contracts. This procurement complements other IESO supply acquisition activities to meet reliability targets over the same timeframe.

The budget for 2023-2025 includes resources for additional staff, legal and technical consultants, as well as for undertaking the design and execution of procurement mechanisms.

Enabling Resources

The Enabling Resources program is an integrated set of projects to enable more resources to provide electricity system services within the current market architecture. This work will establish market participation models for hybrids, storage and Distributed Energy Resources to meet future reliability needs and enable strong competition in Resource Adequacy procurements.

Cybersecurity

Protecting the IESO grid against threats and vulnerabilities remains a high priority, both in the physical and cyber realms. Cyberattacks are becoming more common and more complex with

¹ Minister of Energy January 28, 2022 Directive, "Minister Issues Directive on Procurement of Electricity Resources": <https://www.ieso.ca/-/media/Files/IESO/Document-Library/corporate/ministerial-directives/Letter-from-the-Minister-of-Energy-20220128.ashx>.

every passing year. For this reason, the IESO has included investments in the 2023-2025 budget to expand the reach and effectiveness of its Lighthouse program to ensure as many members as possible are enrolled; to support a holistic view and understanding of market participants' cybersecurity postures and program objectives and to develop an informed and coordinated approach to cyber resilience for Ontario's electricity sector; and to bolster its cyber incident response capability.

Strengthening Engagement

The essential link connecting all of the IESO's current and future activities is engagement. In planning for the future, the IESO must carefully weigh diverse interests and plot a course that considers the interplay among the various stakeholders. Given the scope and volume of new infrastructure that will be required to ensure the province's capacity needs are met, the IESO will continue to work with transmitters, distributors, generators, consumers, municipalities and Indigenous communities to ensure all voices are heard and all perspectives are considered. For this reason, additional resources have been added to the 2023-2025 budget to support a targeted and transparent engagement framework.

Culture, Employees and Capabilities

The IESO's organizational success is underpinned by its employees. For this reason, the IESO is taking concrete steps to modernize its corporate culture and enhance the employee experience. The IESO has taken a number of actions, including an organizational alignment review that will be implemented in 2023, with more to follow over the 2023-2025 business plan timeframe. The organizational alignment review will ensure the IESO supports clarity for decision-making through well-defined leadership roles with clear accountabilities. Ensuring the IESO's employees have the skills they need to excel in a changing environment is a high priority. Internal capacity building will be even more critical in the years to come. By making strategic investments in learning and development in the 2023-2025 business plan, the IESO is taking steps towards aligning program offerings with corporate priorities and employee interests, which is essential to driving engagement, commitment and loyalty.

1 Sustaining Technology, Evolving Processes and Tools

2 Driving business transformation involves optimizing the IESO's workforce as well as the systems
3 and processes that support them. As with every aspect of Ontario's electricity sector, the
4 changes required to make this happen are significant and wide reaching. In the 2023-2025
5 budget the IESO is making the necessary investments to facilitate this transformation and
6 deliver long-term value to residents, communities, businesses and institutions across Ontario.

7 Other Initiatives

8 The Minister has asked the IESO to undertake several new initiatives to ensure reliability and
9 government policy priorities are met, including: the approach for re-contracting with Unsolicited
10 Project Proposal Framework². The budget for 2023-2025 includes resources for additional staff,
11 technical consultants and legal services necessary to support the reviews, design,
12 stakeholdering and contracting activities for these initiatives.

² Minister of Energy November 10, 2021 letter "Minister of Energy Outlines Further IESO Actions to Address Resource Adequacy":
<https://www.ieso.ca/-/media/Files/IESO/Document-Library/corporate/ministerial-directives/Letter-from-the-Minister-of-Energy-MC-994-2021-717.ashx>

OM&A BUSINESS UNIT DETAIL

The IESO is expected to deliver its mandate through work conducted by the business units described below in this exhibit (see also Exhibit D-1-2 Attachment 1 – OM&A Business Unit Table (Appendix 2-JC)).

Table 1: Summary of OM&A for Business Units

IESO Business Unit (\$ millions)	Historical							Budget		
	2019 OEB Approved	2019 Actual	2020 Actual	2021 OEB Approved	2021 Actual	2022 OEB Approved	2022 Actual	2023	2024	2025
Markets and Reliability	32.9	31.1	35.7	36.2	36.0	35.9	34.5	37.4	39.1	40.7
Planning, Conservation and Resource Adequacy	15.7	15.1	14.8	18.5	18.9	21.8	21.7	24.4	26.2	24.9
Corporate Relations, Stakeholder Engagement and Innovation	17.3	15.9	15.6	12.7	12.9	15.0	14.6	15.1	15.8	16.9
Information and Technology Services	41.8	40.6	40.0	43.1	40.9	43.3	43.0	46.8	49.4	51.6
Legal Resources and Corporate Governance	21.9	24.6	24.5	24.3	25.6	28.2	25.9	28.2	30.5	32.2
Market Assessment and Compliance Division	2.0	1.8	1.4	1.3	1.3	1.3	1.3	2.4	2.5	3.7
CEO	1.3	1.8	1.6	1.9	1.8	1.8	2.2	1.5	1.5	1.6
Corporate Services	25.9	26.5	27.6	27.5	27.7	27.8	27.7	29.3	30.2	31.5
Human Resources	5.0	4.2	4.3	4.5	4.9	5.0	5.5	6.2	6.4	6.4
Corporate Adjustment	2.8	7.0	3.7	1.6	1.5	1.2	6.0	0.7	0.6	(0.1)
Market Renewal	11.7	8.6	2.1	3.6	3.0	5.2	4.6	5.3	4.4	2.5
Total OM&A Expenses	\$178.3	\$177.2	\$171.3	\$175.2	\$174.3	\$186.5	\$187.0	\$197.3	\$206.6	\$211.9

Markets & Reliability (M&R)

M&R is responsible for the reliable and efficient operation of the Ontario power system and the administration of Ontario's real-time wholesale electricity market including near-term planning, market development, assessments of connections to the grid, leading sector emergency preparedness and response, and identifying resource acquisition needs.

IESO Business Unit (\$ millions)	Historical							Budget		
	2019 OEB Approved	2019 Actual	2020 Actual	2021 OEB Approved	2021 Actual	2022 OEB Approved	2022 Actual	2023	2024	2025
Markets & Reliability	32.9	31.1	35.7	36.2	36.0	35.9	34.5	37.4	39.1	40.7

2022 actual results were \$1.4 million lower than budget primarily because of vacancies experienced throughout the year. The 2023 budgeted costs of \$37.4 million are higher than 2022 actual results by \$2.9 million due to hiring to fill previous year vacancies and for additional resources to support key initiatives, as well as due to the impact of collective agreement escalations. 2024 and 2025 budgeted costs of \$39.1 million and \$40.7 million reflect annual increases of \$1.7 million and \$1.6 million respectively, driven mostly by the collective agreement escalations and additional resources on-boarded in support of key initiatives.

Planning, Conservation and Resource Adequacy (PCRA)

PCRA is responsible for the IESO's forward looking reliability efforts, including power system planning, development of the Annual Planning Outlook, resource procurement, and energy efficiency programs.

IESO Business Unit (\$ millions)	Historical							Budget		
	2019 OEB Approved	2019 Actual	2020 Actual	2021 OEB Approved	2021 Actual	2022 OEB Approved	2022 Actual	2023	2024	2025
Planning, Conservation and Resource Adequacy	15.7	15.1	14.8	18.5	18.9	21.8	21.7	24.4	26.2	24.9

PCRA's 2022 actual expenses were aligned to the 2022 budget. 2023 budgeted costs are \$24.4 million, this is \$2.7 million higher than 2022 actual results mainly driven by incremental temporary resources in support of the Resource and Transmission Adequacy initiative and the impact of collective agreement escalations. 2024 budgeted costs are \$26.2 million, an increase of \$1.8 million compared to the previous year driven by further incremental resources in support of the Resource and Transmission Adequacy initiative and the impact of collective agreement escalations. In 2025, the budgeted costs of \$24.9 million are \$1.3 million lower than 2024 as the temporary resources added to support the Resource and Transmission Adequacy initiative come to term.

Corporate Relations, Stakeholder Engagement and Innovation (CRSEI)

CRSEI is responsible for stakeholder and community engagement, government affairs, communications, Indigenous relations, innovation, and the implementation of effective energy policy.

Historical								Budget		
IESO Business Unit (\$ millions)	2019 OEB Approved	2019 Actual	2020 Actual	2021 OEB Approved	2021 Actual	2022 OEB Approved	2022 Actual	2023	2024	2025
Corporate Relations, Stakeholder Engagement and Innovation	17.3	15.9	15.6	12.7	12.9	15.0	14.6	15.1	15.8	16.9

In 2022, CRSEI spending was \$0.4 million lower than budget, primarily due to vacancies experienced throughout the year. CRSEI's budgeted costs are \$15.1 million in 2023, which is \$0.5 million higher than 2022 mainly due to hiring to fill vacancies and collective agreement escalations. 2024 budgeted costs of \$15.8 million are \$0.7 million higher than 2023 due to collective agreement escalations and incremental resources being added to strengthen stakeholder engagements. The 2025 budgeted costs of \$16.9 million are \$1.1 million higher than the prior year driven by collective agreement escalations and full year impact of previous year hiring to support IESO's strategy to Drive and Guide the Sector's Future.

Information and Technology Services (I&TS)

The I&TS group provides for information technology solutions and strategies, and cybersecurity management.

IESO Business Unit (\$ millions)	Historical							Budget		
	2019 OEB Approved	2019 Actual	2020 Actual	2021 OEB Approved	2021 Actual	2022 OEB Approved	2022 Actual	2023	2024	2025
Information and Technology Services	41.8	40.6	40.0	43.1	40.9	43.3	43.0	46.8	49.4	51.6

The I&TS 2022 results of \$43.0 million were aligned to the 2022 budget. The 2023 budgeted costs are \$46.8 million, an increase of \$3.8 million compared to 2022 due to incremental telecommunication, support and maintenance costs, and collective agreement escalations. 2024 budgeted costs of \$49.4 million are \$2.6 million higher than 2023, and 2025 budgeted costs of \$51.6 million are \$2.2 million higher than 2024 as a result of the same drivers described above for 2023.

Legal, Resource and Corporate Governance (LRCG)

LRCG is responsible for legal services, support for the IESO Board of Directors, contract management, maintenance of the market rules and regulatory affairs.

IESO Business Unit (\$ millions)	Historical							Budget		
	2019 OEB Approved	2019 Actual	2020 Actual	2021 OEB Approved	2021 Actual	2022 OEB Approved	2022 Actual	2023	2024	2025
Legal Resources and Corporate Governance	21.9	24.6	24.5	24.3	25.6	28.2	25.9	28.2	30.5	32.2

2022 LRCG spending was \$2.3 million lower than budget driven by \$1.0 million lower than planned litigation costs, \$0.6 million from vacancies experienced throughout the year, \$0.4 million from lower than planned support for contract management compliance and negotiations,

in addition to a \$0.3 million higher allocation of regulatory fees to the Smart Metering Entity due to a higher volume of regulatory proceedings.

LRCG's 2023 budgeted costs are \$28.2 million, an increase of \$2.3 million compared to 2022 actual results, driven by \$0.9 million for hiring of vacancies and incremental resources in support of key initiatives, \$0.8 million for potential litigation activity and contract management compliance and negotiations, and \$0.6 million from collective agreement escalations. The 2024 budgeted costs of \$30.5 million represent an increase of \$2.3 million compared to 2023, due to \$1.3 million from collective agreement escalations and incremental resources hires in support of key initiatives, \$0.6 million increase in NERC and NPCC membership fees, \$0.4 million from higher legal services costs in support of the Resource and Transmission Adequacy initiative. 2025 budgeted costs are \$1.7 million higher than 2024 for a total of \$32.2 million, due to \$0.7 million from collective agreement escalations, \$0.6 million from higher NERC and NPCC membership fees, and \$0.4 million from the partial impact of the return of resources that were supporting MRP to core operating activities.

Market Assessment and Compliance Division (MACD)

MACD is accountable for the enforcement of Market Rules and NERC reliability standards, compliance, rule interpretations and enforcement guidelines, and support for the Market Surveillance Panel (MSP).

Historical								Budget		
IESO Business Unit (\$ millions)	2019 OEB Approved	2019 Actual	2020 Actual	2021 OEB Approved	2021 Actual	2022 OEB Approved	2022 Actual	2023	2024	2025
Market Assessment and Compliance Division	2.0	1.8	1.4	1.3	1.3	1.3	1.3	2.4	2.5	3.7

2022 MACD expenses were in line with the 2022 budget. 2023 budgeted costs of \$2.4 million include \$1.1 million additional expenses over 2022, including \$0.7 million for regulatory fees, \$0.3 million incremental professional services to support enhanced market surveillance work in anticipation of MRP implementation, and \$0.1 million from collective agreement escalations.

2024 budgeted costs of \$2.5 million are higher than 2023 due to collective agreement escalations. 2025 budgeted costs of \$3.8 million are \$1.3 million higher than 2024 due to the market power mitigation function returning assignment to MACD as MRP is completed.

Chief Executive Office (CEO)

The CEO is comprised of the President and Chief Executive Officer and staff.

Historical								Budget		
IESO Business Unit (\$ millions)	2019 OEB Approved	2019 Actual	2020 Actual	2021 OEB Approved	2021 Actual	2022 OEB Approved	2022 Actual	2023	2024	2025
CEO	1.3	1.8	1.6	1.9	1.8	1.8	2.2	1.5	1.5	1.6

Actual 2022 CEO results were higher than budgeted due to non-repeatable expenses associated with executive search costs and organizational alignment review. 2023 expenses of \$1.5 million are \$0.7 million lower than 2022 actual results due to one-time expenses in 2022 not projected to repeat in 2023. The 2024 & 2025 budgeted costs are expected to remain stable over the planning horizon.

Corporate Services (CS)

CS is responsible for financial planning and analysis, corporate controllership, treasury and pension operations, market settlements, project management, organizational procurement and facilities management. About one third of the spending of this group is related to IESO's office lease agreements, maintenance, insurance and property taxes.

Historical								Budget		
IESO Business Unit (\$ millions)	2019 OEB Approved	2019 Actual	2020 Actual	2021 OEB Approved	2021 Actual	2022 OEB Approved	2022 Actual	2023	2024	2025
Corporate Services	25.9	26.5	27.6	27.5	27.7	27.8	27.7	29.3	30.2	31.5

2022 expenses were in line with budget. CS's budgeted costs are \$29.3 million in 2023, which is an increase of \$1.6 million compared to 2022 driven by \$0.7 million of higher rental costs for

the Backup Operating Center facilities, \$0.7 million of collective agreement escalations and \$0.2 million for due diligence on IESO's financial system replacement. 2024 budgeted costs of \$30.2 million are higher than 2023 primarily due to \$1.1 million from collective agreement escalations, partially offset by the \$0.2 million of non-repeatable due-diligence costs budgeted in 2023. The increase of \$1.3 million in 2025 budgeted costs of \$31.5 million is also driven by collective agreement escalations and lower capitalization of labour as MRP is placed into service.

Human Resources (HR)

HR is responsible for talent acquisition, learning and development, performance management, succession planning, compensation and benefits, and employee and labour relations.

Historical								Budget		
IESO Business Unit (\$ millions)	2019 OEB Approved	2019 Actual	2020 Actual	2021 OEB Approved	2021 Actual	2022 OEB Approved	2022 Actual	2023	2024	2025
Human Resources	5.0	4.2	4.3	4.5	4.9	5.0	5.5	6.2	6.4	6.4

HR's 2022 results were \$0.5 million higher than budget due to higher spending to enhance IESO's recruitment capabilities. The 2023 budget is \$0.7 million higher than prior year spending, driven by the full year impact of 2022 new hires and additional funds needed to support IESO's cultural transformation and building capabilities. 2024 budgeted costs are \$0.2 million higher than 2023 due to escalations of salaries and professional services costs. 2025 budgeted costs remain aligned to 2024 due to escalations offset by prior year spending on non-repeatable professional services for key initiatives.

Corporate Adjustments

Corporate Adjustments is mainly comprised of the annual amortization of the accumulated deficit resulting from the Public Sector Accounting Standards (PSAS) transition item corresponding to change in pension and other-post employment benefits; partially offset by the overhead cost recovery from other funding sources.

Historical								Budget		
IESO Business Unit (\$ millions)	2019 OEB Approved	2019 Actual	2020 Actual	2021 OEB Approved	2021 Actual	2022 OEB Approved	2022 Actual	2023	2024	2025
Corporate Adjustment	2.8	7.0	3.7	1.6	1.5	1.2	6.0	0.7	0.6	(0.1)

2022 Corporate Adjustments expenses were \$4.8 million higher than 2022 budget due to \$4.4 million one-time adjustment for Other Post-Employment Benefits (OPEB) to reflect recently arbitrated settlement awards and \$0.7 million adjustment for other benefit adjustments not allocated across the organization; this was partially offset by \$0.3 million of higher overhead allocation to other segments not funded through the IESO usage fee.

The 2023 budget is lower than 2022 due to the OPEB and other benefits adjustments not planned to be repeated. 2024 budgeted costs are expected to be in line with 2023. The 2025 negative balance reflects the PSAS amortization being more than offset by a projected increase in the overhead cost allocation rate due to higher IT costs and lower overall FTE count.

Market Renewal Program (MRP)

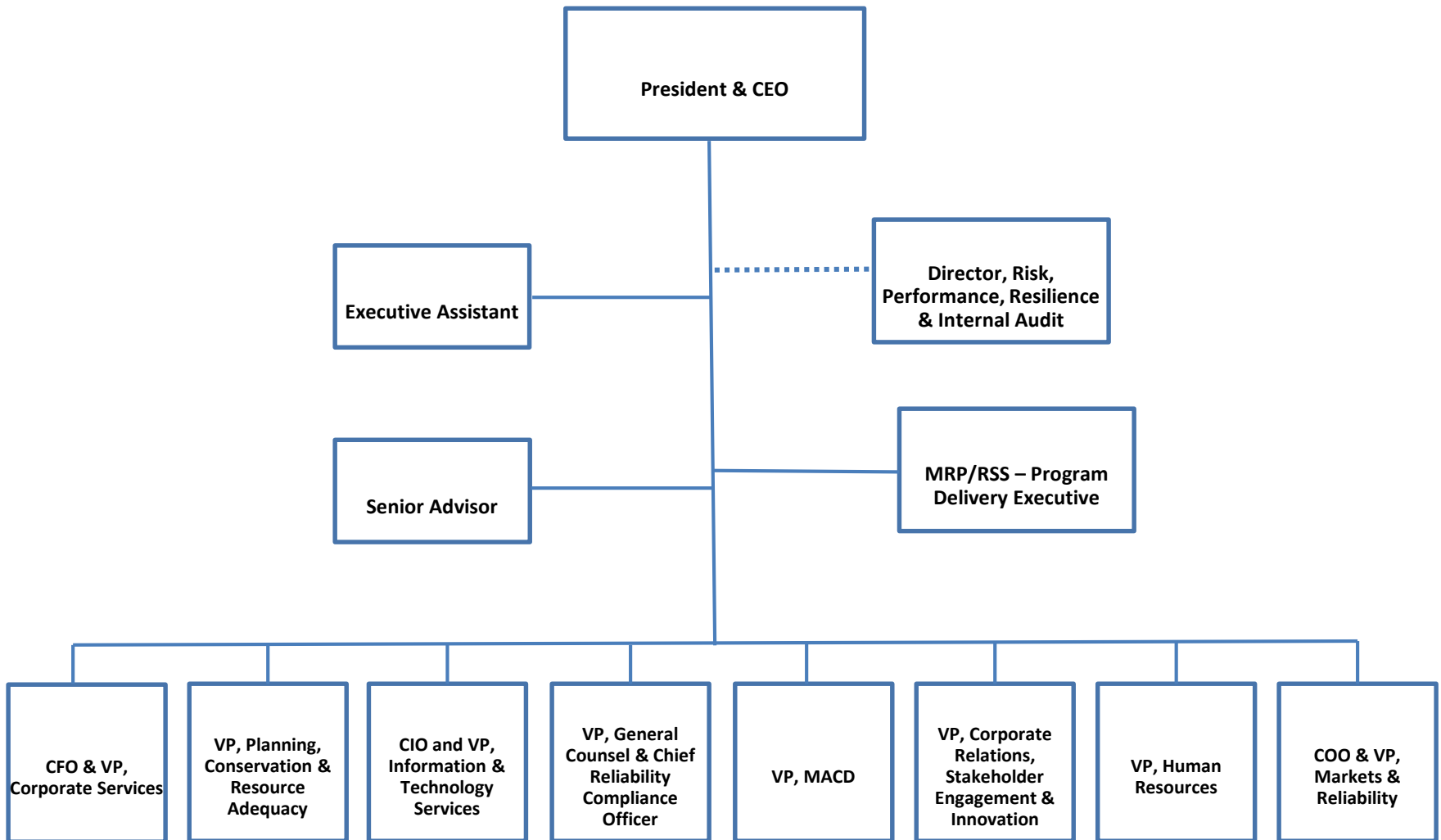
MRP represents a set of enhancements to Ontario's electricity market design, to address known issues with the existing market design and deliver ratepayer value by meeting system needs more cost-effectively. MRP is about improving the way electricity is priced and scheduled in order to meet Ontario's current and future electricity needs reliably, transparently, efficiently and at lowest cost.

Historical								Budget		
IESO Business Unit (\$ millions)	2019 OEB Approved	2019 Actual	2020 Actual	2021 OEB Approved	2021 Actual	2022 OEB Approved	2022 Actual	2023	2024	2025
Market Renewal	11.7	8.6	2.1	3.6	3.0	5.2	4.6	5.3	4.4	2.5

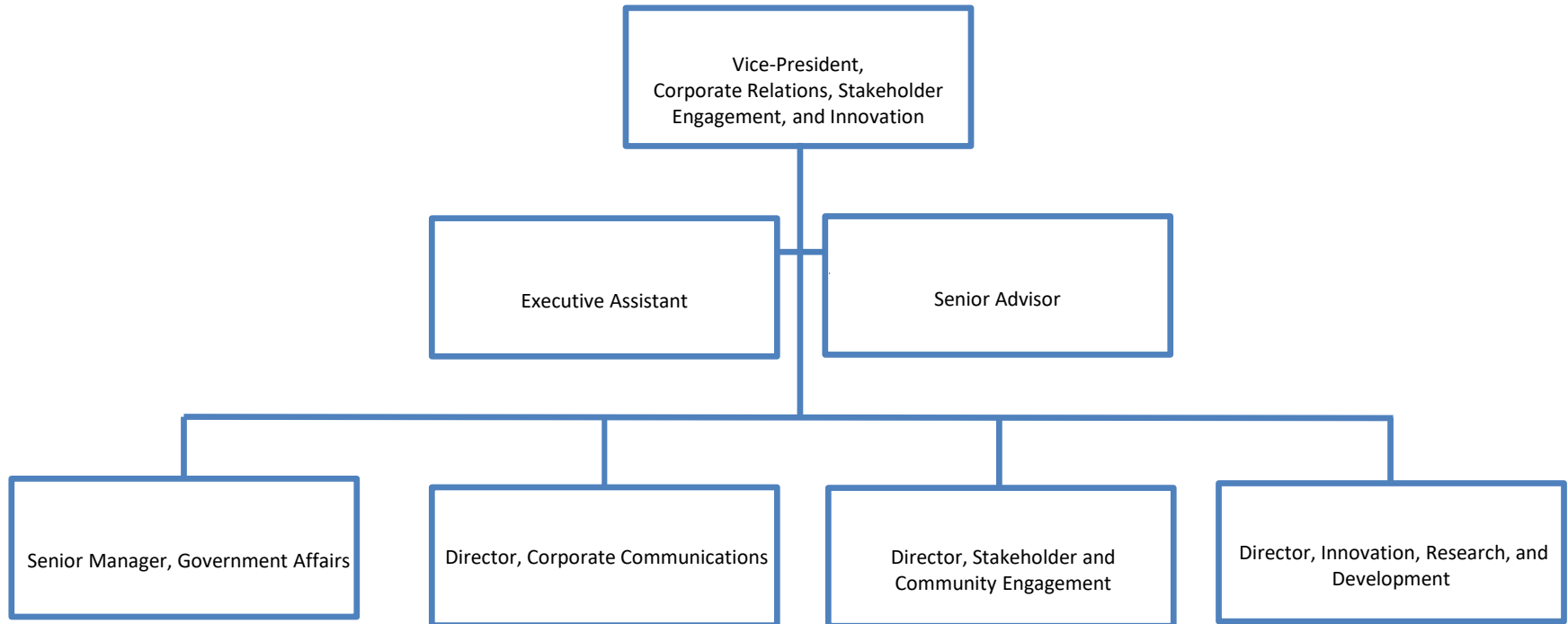
Compared to 2022 budget, MRP results were lower by \$0.6 million due to lower than planned costs for market rules and manuals.

- 1 MRP's budgeted costs are \$5.3 million in 2023, \$4.4 million in 2024, and \$2.5 million in 2025,
- 2 consistent with the approved MRP Business Case. For additional information on MRP spending,
- 3 see Exhibit G-2-1 Market Renewal Program Cost Report.

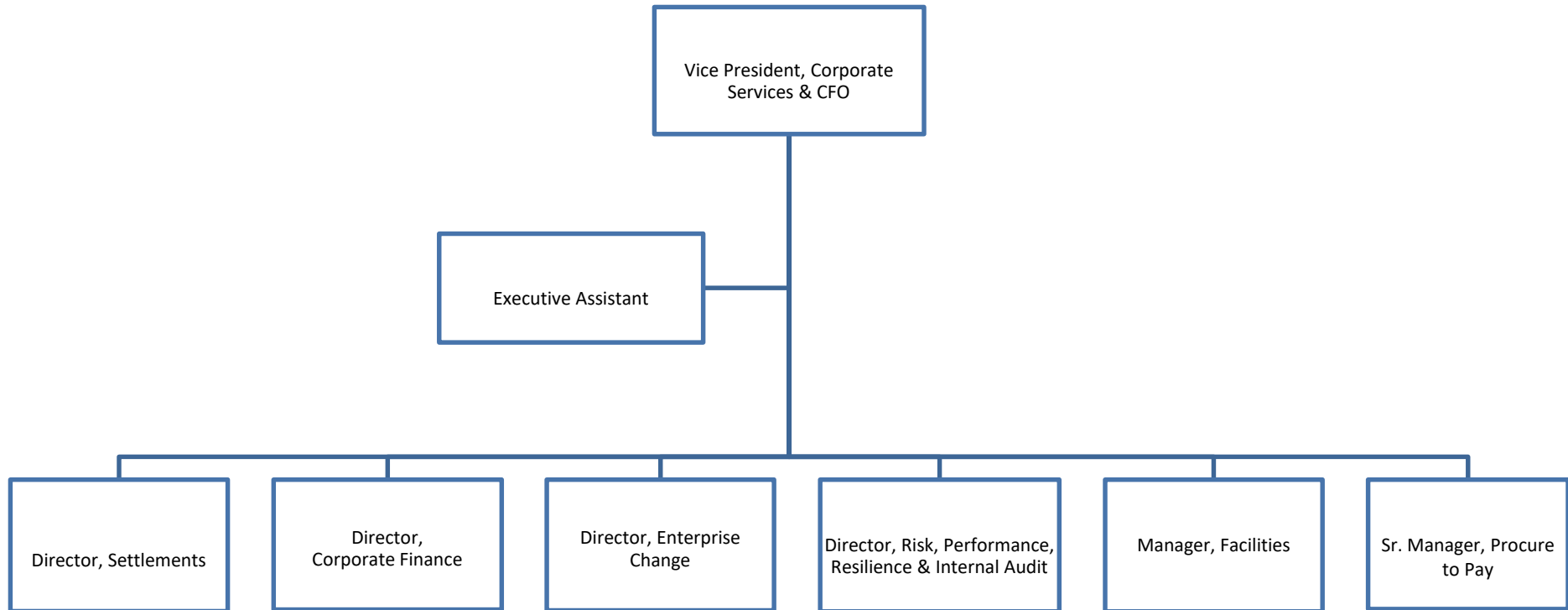
IESO



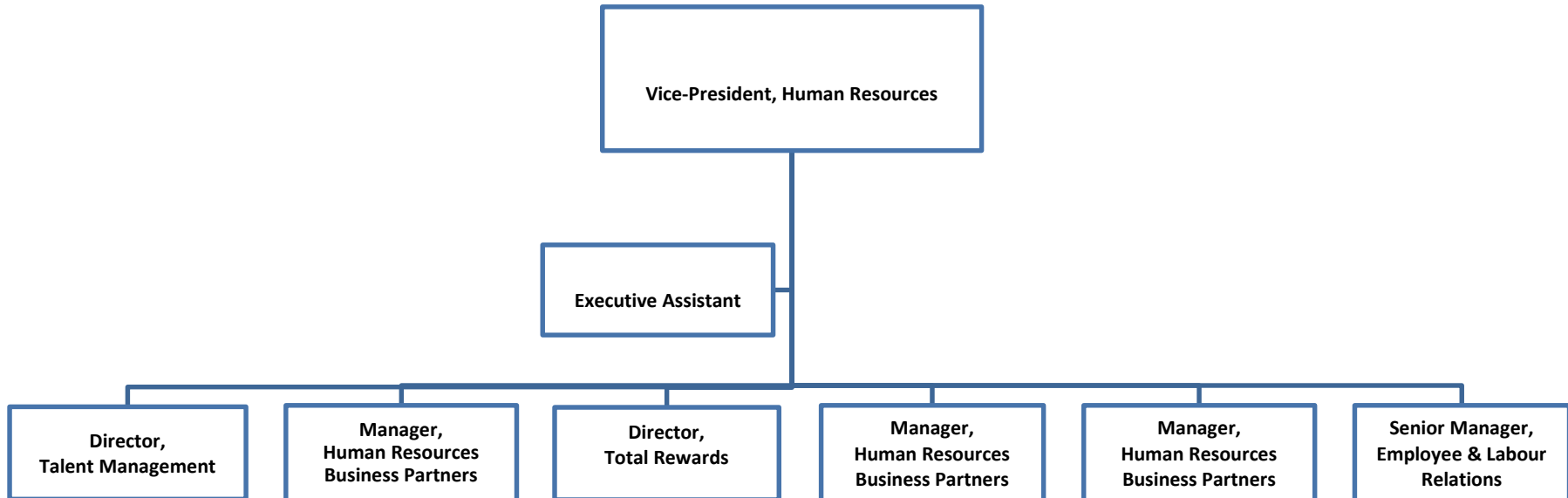
CORPORATE RELATIONS, STAKEHOLDER ENGAGEMENT & INNOVATION



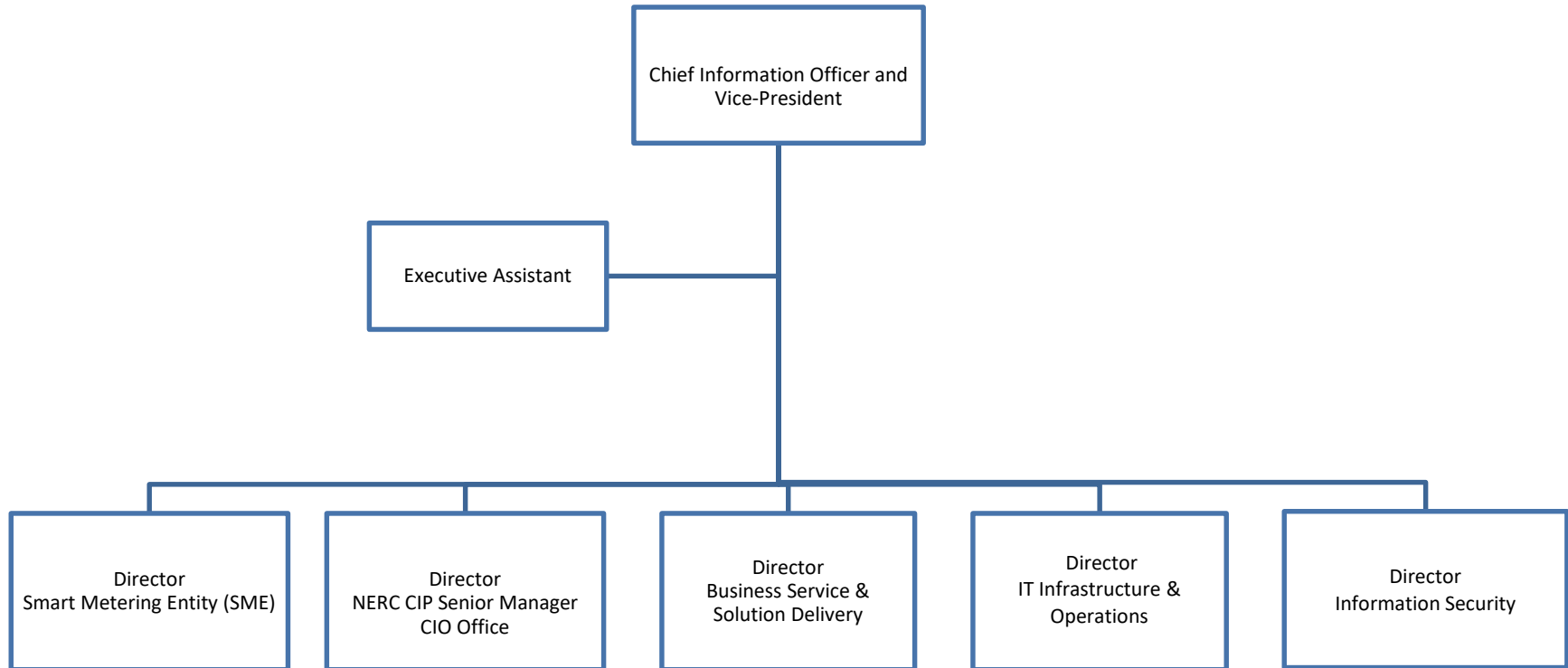
CORPORATE SERVICES



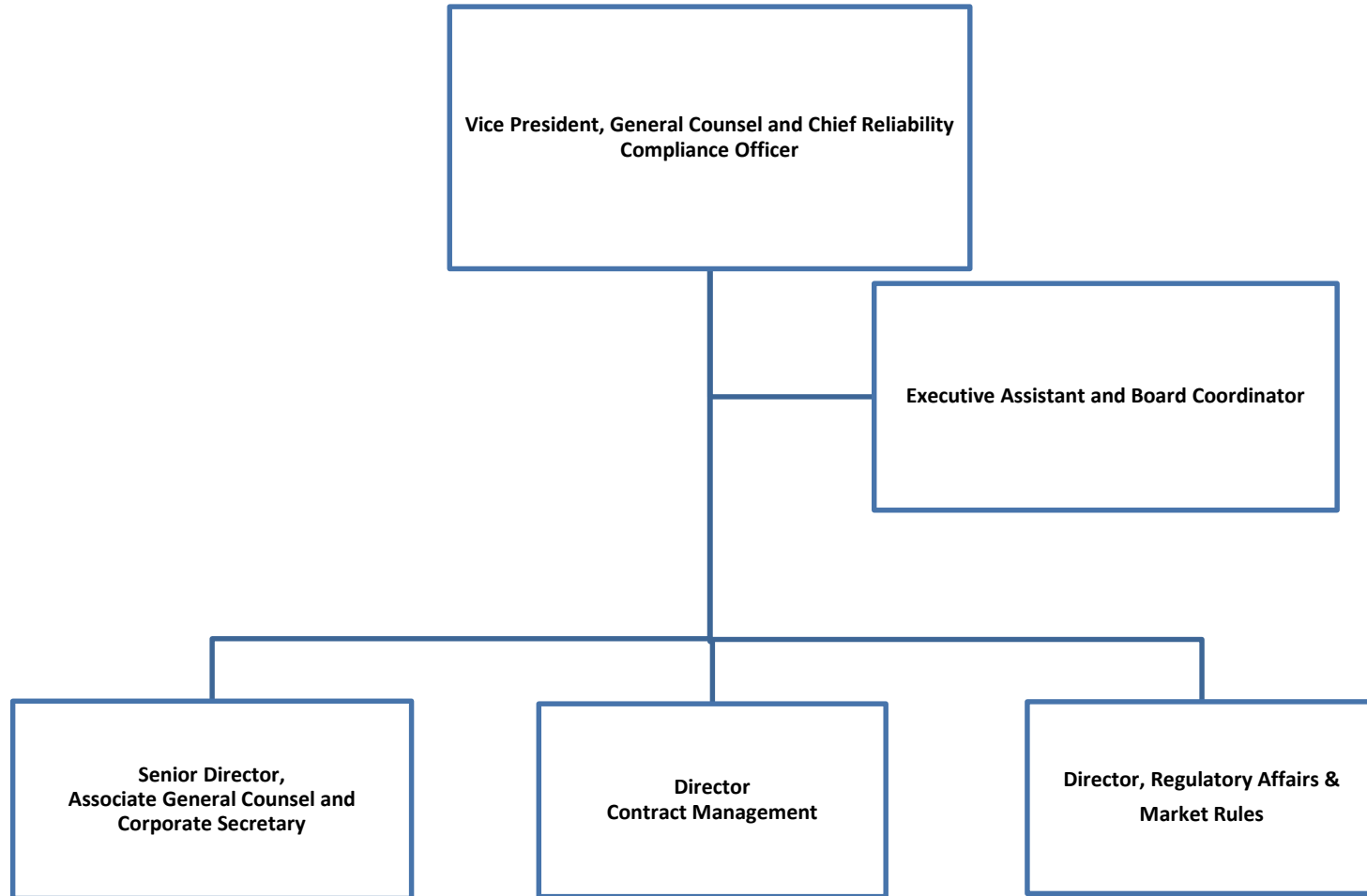
HUMAN RESOURCES



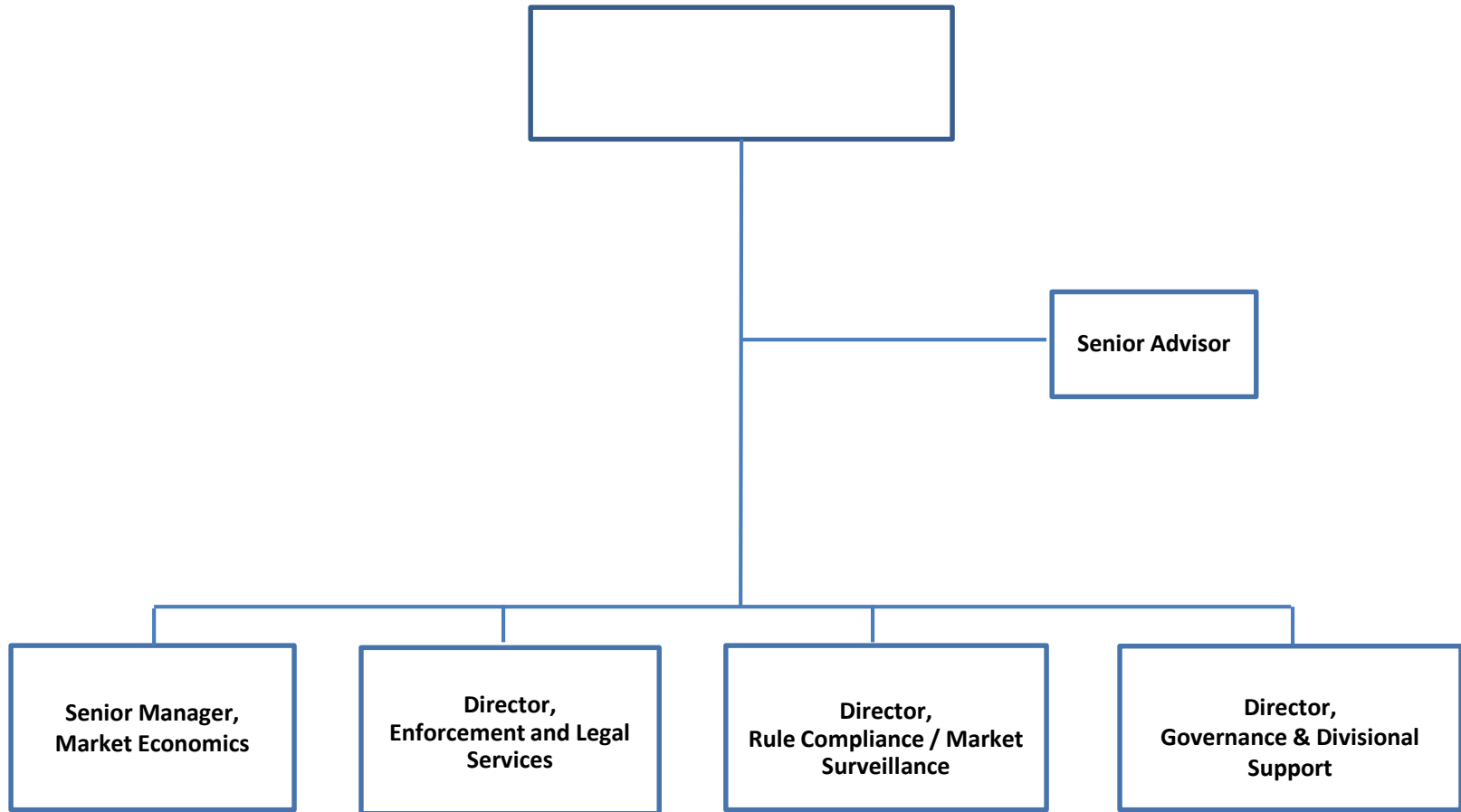
INFORMATION & TECHNOLOGY SERVICES



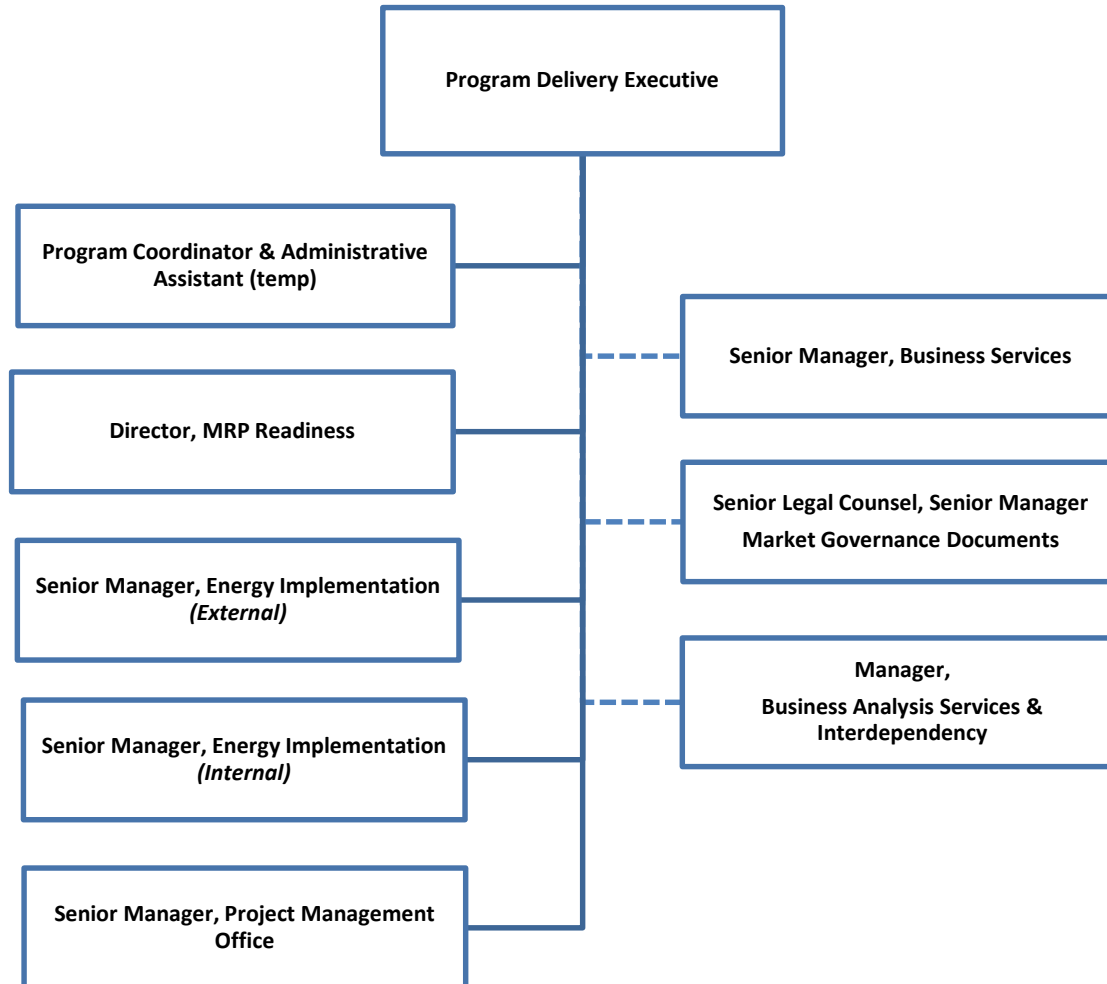
LEGAL RESOURCES AND CORPORATE GOVERNANCE



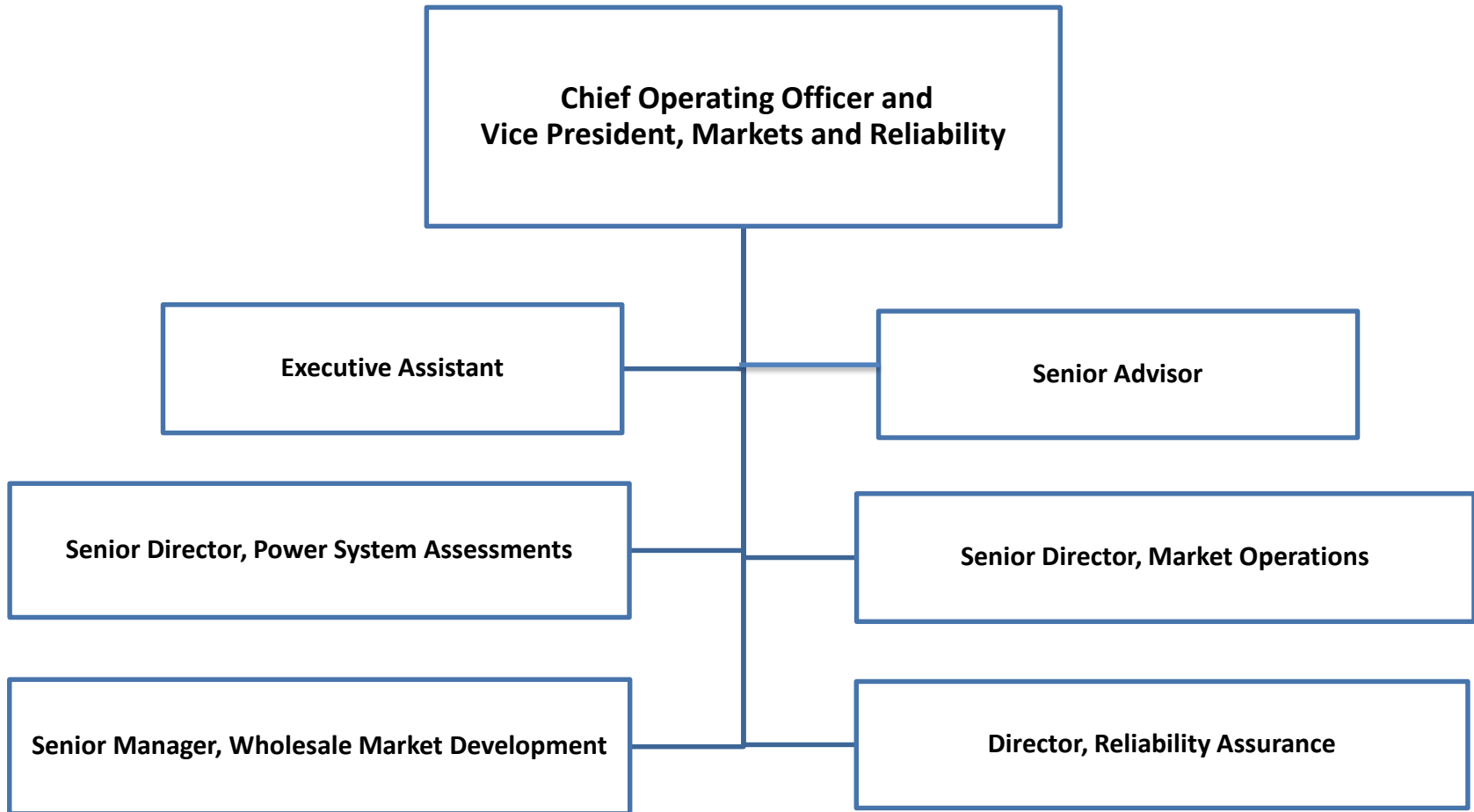
MARKET ASSESSMENT AND COMPLIANCE DIVISION

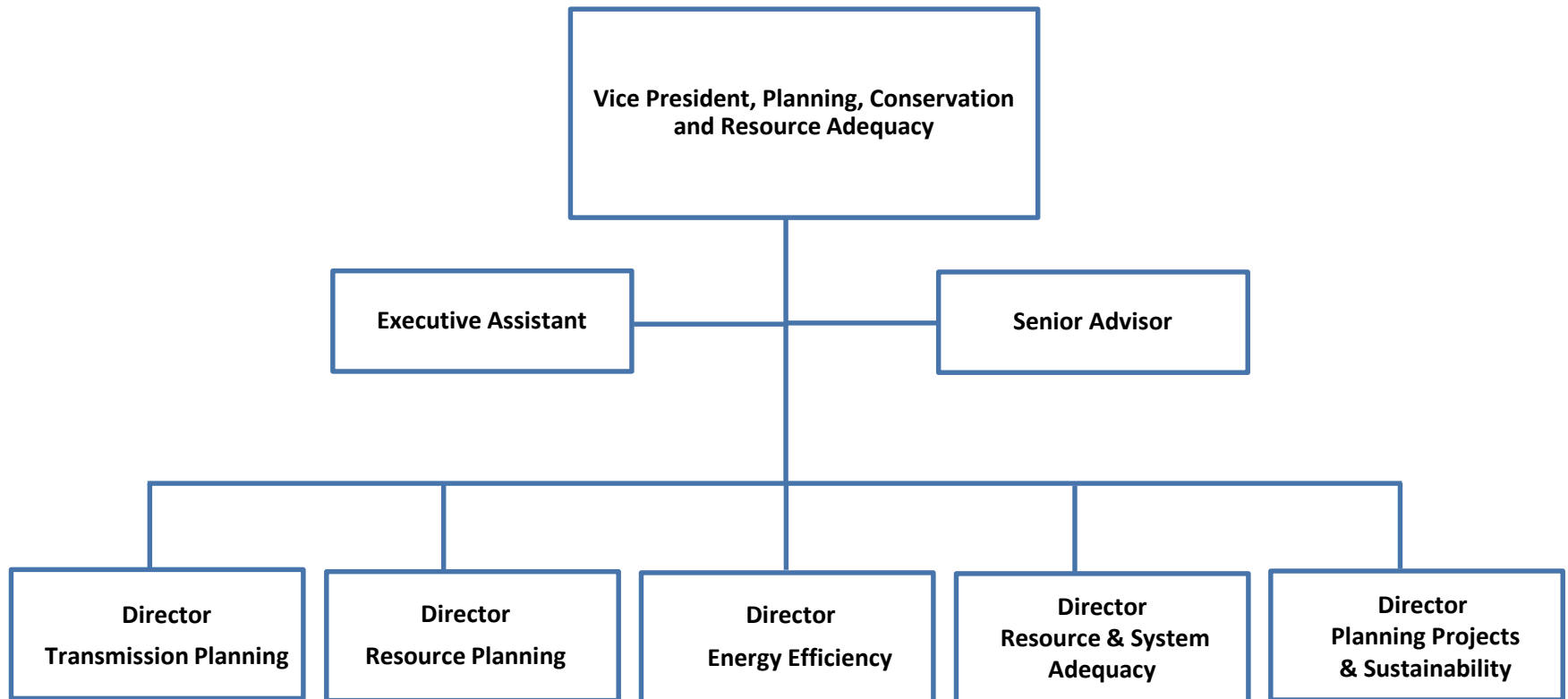


MARKET RENEWAL PROGRAM



MARKETS AND RELIABILITY





STAFFING AND COMPENSATION

Staffing and Compensation

In 2022, the IESO's average full-time equivalent employees (FTEs) was 799, which was 25 average FTEs higher than the 2021 average FTEs of 774; this is the highest single-year staffing increase over the past three years due to IESO's 2022 enhanced recruitment capabilities. The 2022 average FTEs of 799 was below 2022 OEB approved budget levels of 827 average FTEs as a result of labour market conditions which led to an increase in voluntary attrition and retirements beginning in late 2021 and continuing through 2022.

For 2023, the IESO has a budget of 914 FTEs to deliver on key initiatives that are critical to maintaining its core operations, to support the significant transformation of the electricity sector, and to support the Market Renewal Program (MRP). The average FTE levels in 2024 increase by 12, due to additional staff required to support energy procurements and prepare for the new MRP market functions/services, while the staff supporting MRP is expected to decrease slightly as the project moves to operations testing activities. In 2025 FTEs decline by 26 as MRP staff conclude their temporary employments. For further details please see Exhibit D-1-3 Attachment 1 – Employee Costs (Appendix 2-K).

The IESO will continue to build a robust candidate pool to support recruitment of new employees by demonstrating itself as an employer of choice and promoting IESO awards (e.g., the IESO GTA Top Employer Award), using LinkedIn to profile employees and their stories and to share job postings, workforce planning initiatives, recruiting from top academic institutions, expanding partnerships with educational institutions and leveraging search firms where appropriate. The IESO will continue to build on its capabilities through the actions identified above as it hires new staff over the planning period as per the Business Plan.

1 **Table 1: Staffing and Operating Compensation Expenses**

Historical								Budget		
	2019 OEB Approved	2019 Actual	2020 Actual	2021 OEB Approved	2021 Actual	2022 OEB Approved	2022 Actual	2023	2024	2025
Average Number of Employees (Capital and Operating expenses FTEs)										
Executive	7	7	7	7	7	8	8	8	8	8
Management	132	129	134	127	147	144	139	158	155	154
Non- Management Regular	633	545	557	596	570	585	574	640	666	667
Non- Management Temporary	71	88	74	64	51	90	78	108	97	71
Total	842	769	772	794	774	827	799	914	926	900
Operating Compensation Expenses figures below are in \$ millions										
Total Compensation (Salary, Wages & Benefits)										
Executive and Board	4.3	4.3	4.4	4.5	4.4	4.7	4.8	4.7	4.8	4.8
Management	23.2	26.3	27.2	25.6	29.5	28.9	26.9	30.5	31.3	32.4
Non- Management Regular	85.6	83.4	86.7	89.8	88.1	89.2	92.4	91.4	97.4	103.3
Non- Management Temporary	5.9	9.2	7.5	5.4	4.9	6.7	8.2	10.7	11.3	9.3
Total	118.9	123.2	125.8	125.3	126.9	129.5	132.3	137.3	144.8	149.8

2

3 2022 actual operating compensation expenses were \$2.8 million higher than the 2022 OEB
4 approved budget due to \$6.2 million in higher employee benefits associated with an arbitration
5 award adjustment to the Other Post-Employment Benefits (OPEB) actuarial liability and \$2.0
6 million associated with one-time severance and overtime costs. These expenses were partially
7 offset by \$5.4 million in savings related to fewer than budgeted FTEs and higher than planned
8 capitalization of labour.

9 The 2023 budgeted operating compensation expense of \$137.3 million is \$5.0 million higher
10 than 2022 due to \$10.7 million in hiring to support key initiatives, and \$2.6 million in collective
11 agreement escalations. These increases are partially offset by \$6.9 million of 2022 operating
12 compensation expenses not planned to be repeated in 2023 (OPEB adjustment, severance and
13 overtime), and \$1.4 million due to a lower pension and OPEB expense projection.

The 2024 budgeted operating compensation expense of \$144.8 million is \$7.5 million higher than 2023 due to \$3.5 million in hiring to support key initiatives, \$2.8 million in collective agreement escalations, and \$1.8 million due to a higher pension and OPEB expense projection. These increases are partially offset by \$0.6 million in savings from the MRP program winding down and requiring fewer resources.

The 2025 budgeted expense of \$149.8 million is \$5.0 million higher than 2024 due to \$3.7 million higher pension and OPEB expense projection and \$3.0 million in collective agreement escalations, which are partially offset by \$1.7 million in savings from FTE reductions primarily as MRP is concluded.

The budgeted compensation expenses include 1% economic salary increase as per Bill 124 over the corresponding moderation period for represented staff (see Table 2 below), and 2.0% to 2.5% for the non-moderation period for Power Worker's Union and Society of Energy Professionals staff, respectively.

Report on Total Remuneration

As part of the IESO's settlement commitment resulting from the IESO's 2022 Revenue Requirement Submission Settlement Agreement (EB-2022-0002) the IESO agreed to continue to work to make progress towards reaching the 50th percentile for total compensation and include a forward-looking itemized plan identifying how the IESO proposes to continue to make progress towards reaching the 50th percentile for total compensation including incremental steps taken or planned to be taken. The IESO's completed, ongoing and planned efforts to make progress toward the 50th percentile for total remuneration are presented in Table 2, together with their forecast timelines as applicable.

1 **Table 2: Ongoing and Planned Efforts to Make Progress towards the 50th Percentile for Total Remuneration**

Target Area and Initiative	Completed	Ongoing	Planned
Compensation –Cap economic annual increases	<ul style="list-style-type: none"> • Bill 124¹ titled “<i>Protecting a Sustainable Public Sector for Future Generations Act, 2019</i>”, places a 1% cap on across-the-board economic increases upon expiry of any Collective Agreements, for a three-year moderation period. • The Power Worker’s Union (PWU) Collective Agreement expired as of April 1, 2020. Through collective bargaining, the PWU salary increases were set at 1% for the April 1, 2020 to March 31, 2021 period (one-year contract). Subsequently the IESO negotiated the contract for April 1, 2021 to March 31st 2023. This 2-year contract also included a 1% cap on wages for each of the years in the contract. • The Society of United Professionals’ (“Society”) Collective Agreement expired as of December 31, 2021. The IESO and Society engaged in collective bargaining in 2021 which resulted in an arbitrated settlement of a 1% economic salary 		

¹ On November 29, 2022, Bill 124 was overturned by the Ontario Superior Court of Justice (“court”). The Ontario government filed an appeal in response to the court decision, and Bill 124 will stay in effect until the outcome of the appeal is known.

Target Area and Initiative	Completed	Ongoing	Planned
	<p>increase for 2022. Over the course of 2022 the IESO and Society engaged in negotiations for the 2023 contract and beyond. The terms of a new agreement are still being finalized but the Arbitrator has instituted a 1% increase to salary in 2023 and 2024. This has been implemented for 2023 and the future increases will be dependent on the results of an upcoming arbitration on the reopener on wages for the 2022, 2023 and 2024 contracts stemming from the recent Bill 124 ruling and subsequent appeal.</p>		
<p>Compensation – Guidelines and oversight</p>		<ul style="list-style-type: none"> Negotiated salaries follow a predetermined set of guidelines and best practice principles. These guidelines restrict the amount of compensation that can be applied to the various requests for consideration (new hires, promotions). These guidelines are reviewed on an annual basis and updated as needed. Please see Exhibit D-1-3 Attachment 2 – IESO Compensation Guidelines for additional information. 	
<p>Compensation – Benchmarking surveys</p>	<ul style="list-style-type: none"> In this submission and the last submission (EB-2022-0002), the IESO provided a copy of the 2022 Non-Executive Total Remuneration Review (see Exhibit D-1-3 Attachment 3). The 		<ul style="list-style-type: none"> The IESO is committed to continue to conduct compensation benchmarking surveys every 2-3 years to ensure alignment with the energy sector and

Target Area and Initiative	Completed	Ongoing	Planned
	<p>results from the survey showed positive movement towards the 50th percentile since the IESO's last review in 2018.</p> <p>When comparing the IESO roles to the energy sector, the IESO has improved its position as it relates to total remuneration by 2%.</p>		<p>the 50th percentile for non-executive total remuneration.</p> <ul style="list-style-type: none"> The next benchmarking survey on non-Executive Total Remuneration review is planned for 2024.
<p>Pension – Negotiated plan changes, not yet implemented, that will have a positive impact on future cost containment</p>			<ul style="list-style-type: none"> Effective March 31, 2025, the undiscounted early retirement rule for PWU and Society will change to reflect the Rule of 85 (age & service) from the Rule of 82. This will ensure employees contribute to their pensions for a longer period of time, reducing the cost burden on the IESO. Effective March 31, 2025, an averaging period of 60 months, rather than 36 months, will determine pensionable earnings for both PWU and Society.
<p>Pension – The following implemented plan provisions are amendments that continue to have a positive impact on</p>	<ul style="list-style-type: none"> Effective January 1, 2007 plan provisions were amended for non-represented/Management members hired on or after that date to the following: <ul style="list-style-type: none"> Averaging period of 60 months rather than 36 months for pensionable earnings; 		

Target Area and Initiative	Completed	Ongoing	Planned
future cost containment / sharing.	<ul style="list-style-type: none"> ○ Indexation of benefits in payment of 75% of the increase in CPI with no carry forward rather than 100% of CPI with carry forward provisions; ○ Benefits are not indexed in the deferral period for members who terminate employment prior to pension commencement eligibility; ○ Unreduced retirement at 90 age-plus-service points rather than 84 age-plus-service points. This will ensure Management employees have to contribute to their pensions for a longer period of time, reducing the cost burden on the IESO. • Effective January 1, 2017, the plan was amended to extend the changes above (60 month averaging period for earnings, 75% indexation and 90-point unreduced retirement date) to all non-represented/Management members for benefits earned for service on and after January 1, 2017. • Effective September 1, 2017 the non-represented/Management employee pension contributions were increased to the current 9% up to the Year's Maximum Pensionable Earnings (YMPE) covered by the Canadian Pension Plan (CPP) and 11% above the YMPE. This increase in "employee" pension 		

Target Area and Initiative	Completed	Ongoing	Planned
	<p>contributions in turn decreases the required employer contributions.</p> <ul style="list-style-type: none"> Effective Jan 1, 2020 the PWU employee pension contributions increased to 9% up to the Year's Maximum Pensionable Earnings (YMPE) covered by CPP and 11% above the YMPE aligning PWU contributions with non-represented/Management employees' pension contributions. This increase in employee pension contributions in turn decreases the required employer contributions. 		
<p>Pension – Ongoing Collective Agreement negotiation items – These pension items continue to be included as bargaining items in collective bargaining</p>			<ul style="list-style-type: none"> The following negotiating items will be brought into collective bargaining with PWU in 2023 and Society in 2024. Note that in the absence of a negotiated agreement between the Society and IESO, the Parties are bound to an arbitration process. Society employee pension plan contributions equal to 9% up to the Year's Maximum Pensionable Earnings (YMPE) covered by CPP and 11% above the YMPE to align with PWU and non-represented/Management pension contributions. This increase in employee pension contributions

Target Area and Initiative	Completed	Ongoing	Planned
			<p>would in turn decrease the required employer contributions.</p> <ul style="list-style-type: none"> Decrease indexing to 75% on the pension plan for both PWU and Society to align with Management. Integration of new CPP Bridge formula to reflect CPP enhancement that will fully come into effect as of Jan 1, 2025.
Benefits – Recent negotiated benefits changes	<p>Society Collective Agreement – Interest Arbitration Award (Jan 1, 2019 – Dec 31, 2021)</p> <ul style="list-style-type: none"> Eligibility for post-retirement benefits increased from 7 years’ service to 10 years’ service (to align with Management and PWU). Eye exam reduction from annual to biennial coverage. 		
Benefits – Collective Agreement negotiation items		<p>These benefit items continue to be included as bargaining items.</p> <p>Plan Design changes to reduce future benefit costs</p> <ul style="list-style-type: none"> Decrease Long Term Disability (LTD) indexing to 75% for all employees (align with pension indexing). Change the “Own Occupation vs. Any Occupation” definition of disability for LTD. 	
Benefits – Remarketing of the IESO Group		<ul style="list-style-type: none"> Negotiate cost savings strategies through insurance remarketing in 2023 	

Target Area and Initiative	Completed	Ongoing	Planned
Insurance Benefit (2022-2023)			
Benefits – Implementation of Preventative measures in support of employee wellness		<ul style="list-style-type: none"> • Provide employees and leaders with Centre for Addition and Mental Health (CAMH) led training on managing mental health. • Provide Employee and Family Assistance Program (EFAP) services as well as online wellness video library/education/tools that support health and wellness. • Through a dedicated page on the IESO intranet site, provide resources on wellness and mental health. This page is regularly updated and promoted throughout the IESO. 	
Culture and Values - Continue to focus on initiatives that support engagement, productivity and help retain and attract a diverse workforce		<ul style="list-style-type: none"> • Embedding of the IESO Values. • Recognition of employee accomplishments through the Employee Recognition Program. • Embedding of the Learning and Development Framework. • Focus on the action plan in support of the Equity, Diversity and Inclusion Strategy. • Labour Relations Strategy that continues to recognize the principles of aligning total remuneration to the 50th percentile. 	

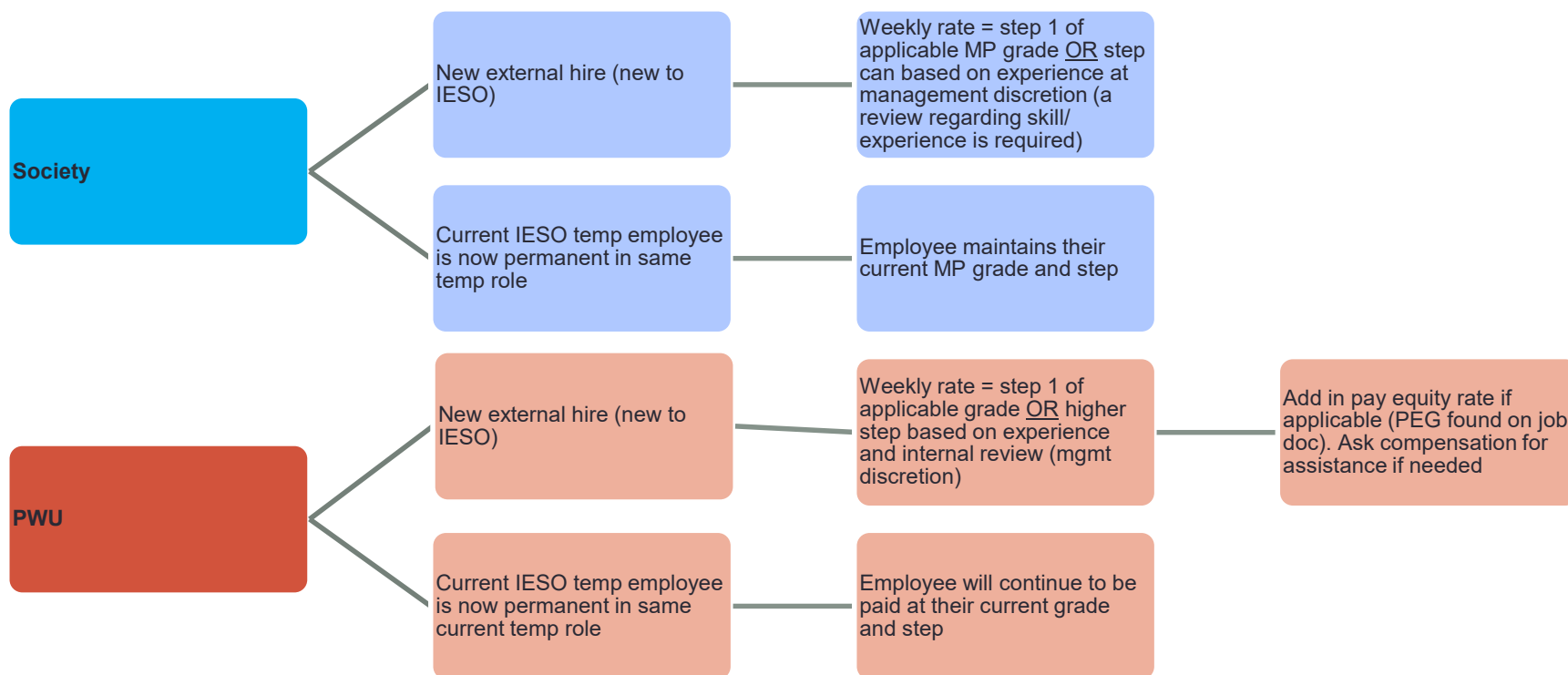
1 **Non-Executive Total Remuneration Review**

2 In addition, as part of the IESO's 2022 Revenue Requirement Submission Settlement
3 Agreement (EB-2022-0002) the IESO agreed to re-file the current total compensation study as
4 evidence. The re-filed study can be found at Exhibit D-1-3 Attachment 3 – Non-Executive Total
5 Remuneration Review.

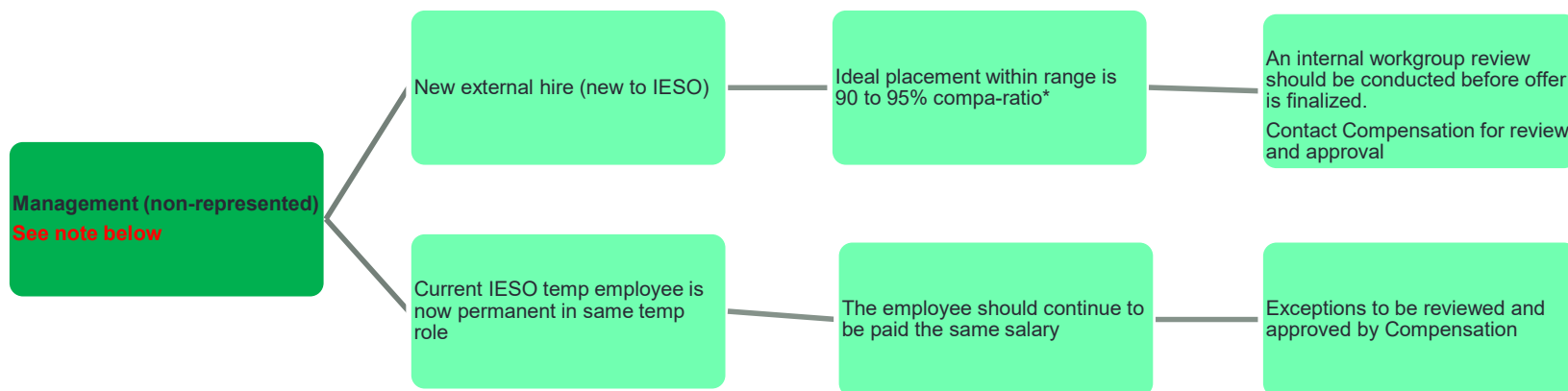
IESO COMPENSATION GUIDELINES

- **Management (non-represented)**
- **Society**
- **PWU**

External New Hires and Conversions from Temp to Permanent (same role) - Society & PWU -



External New Hires and Conversions from Temp to Permanent (same role) - Management -



Important note regarding rounding

Once the weekly rate has been calculated by dividing the annual salary by 52 and rounding to the nearest penny, it is important to multiply that rate once again by 52 to determine if the result is greater or less than the annual salary stated in the offer letter. If the resulting annual salary is less than that stated in the offer letter, a penny should be added to the weekly rate. This will ensure that the annual salary amount is equal or greater than that stated in the offer letter.

Example:

The employee offer letter states that the annual salary = \$125,600. When the salary is divided by 52 to determine the weekly rate it equals \$2415.384. Using rounding rules this would now equal \$2415.38 weekly.

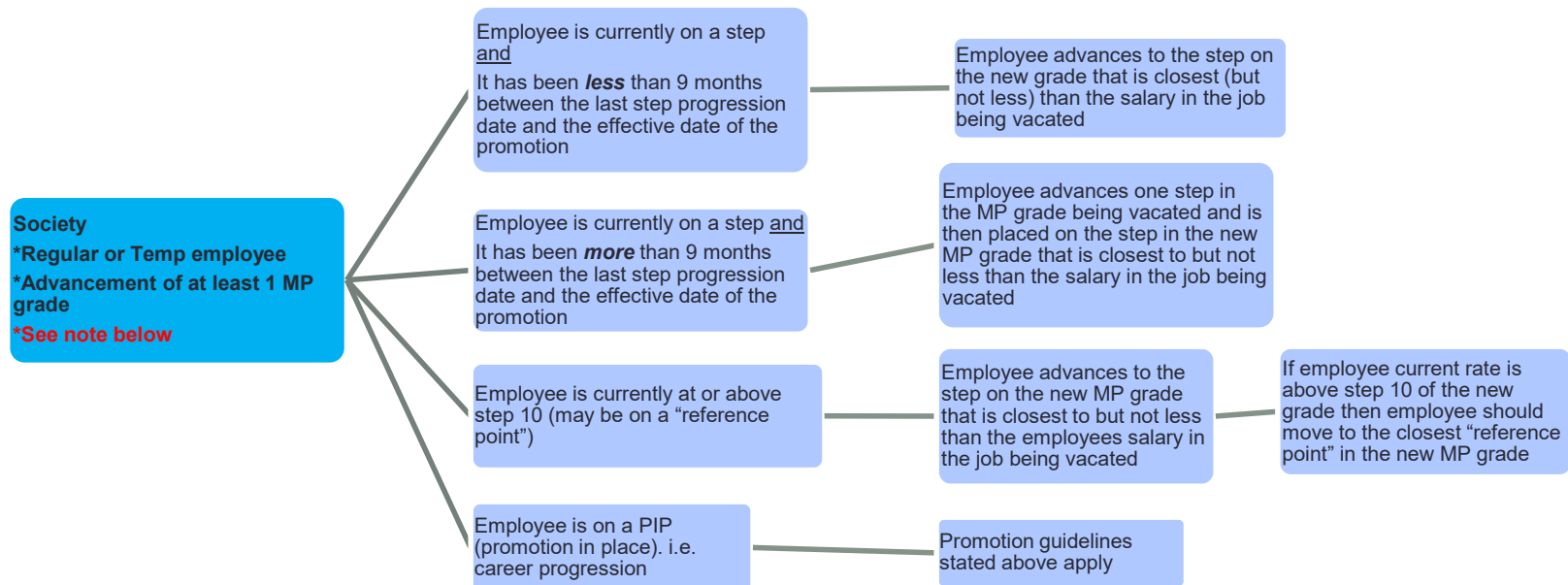
Issue = since the employee's weekly rate is entered in SFs, the annual salary amount may be greater or less than what is stated in the offer. This is a result of rounding.

In the example above - \$2415.38 weekly multiplied by 52 weeks = \$125,599.76. This is now less than the annual salary stated in the offer letter.

Therefore a penny should be added to the weekly rate (\$2415.39) and multiplied by 52. Result is now \$125,600.28.

Promotions

- Society -



NEW! 3% Rule

If the above promotion results in a base salary increase of less than 3.00%, the following shall apply:

(a) Employees on the Step Schedule (steps 1 through 10) at the Time of Promotion

The employee shall receive a 3.00% salary increase and will be placed off-schedule.

On the employee's first progression date following the promotion, the employee will be placed on the step in the new position that is closest to but not less than the employee's off-schedule salary. Where such placement on-schedule results in the employee receiving a salary increase of less than 1.35%, the employee will be advanced to the next highest step.

(b) Employees on a Reference Point (101 to 115) at the Time of Promotion

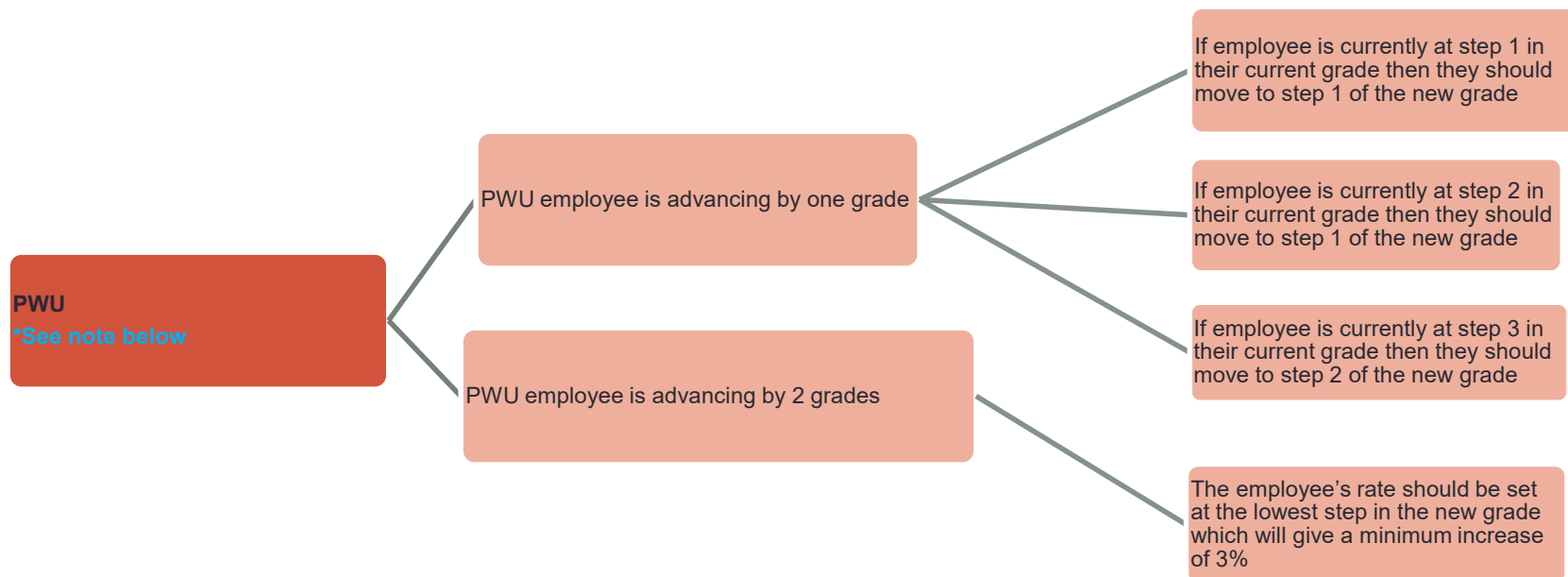
The employee shall receive a 3.00% salary increase to their base rate in the lower-rated position and then placed on the reference point in the higher-rated position that is equal to or greater than the employee's base salary in the lower-rated position plus the 3.00% increase.

Where a 3.00% increase results in the employee being placed on the step schedule, the promotion treatment in (a) applies.

(c) Progression date will change based on anniversary date of new position

Promotions

- PWU -

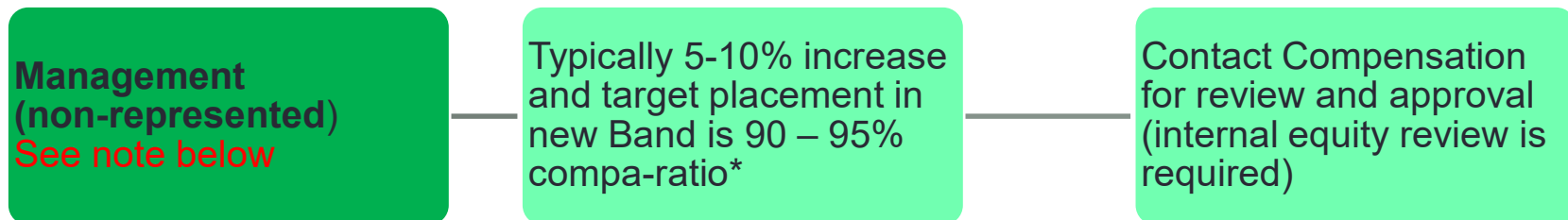


NEW! 3% Rule

The promotional increase should be at least 3% when employee is moving to a higher grade. If not, then they will be paid 3% and step = "off schedule". This interim rate will continue in effect until the next anniversary date at which time the employee will resume their place on the current salary schedule. This rate will be the next step in the salary grade which guarantees an increase of at least one and one half percent (1.5%) from the interim rate

Promotions

- Management -



Important note regarding rounding

Once the weekly rate has been calculated by dividing the annual salary by 52 and rounding to the nearest penny, it is important to multiply that rate once again by 52 to determine if the result is greater or less than the annual salary stated in the offer letter. If the resulting annual salary is less than that stated in the offer letter, a penny should be added to the weekly rate. This will ensure that the annual salary amount is equal or greater than that stated in the offer letter.

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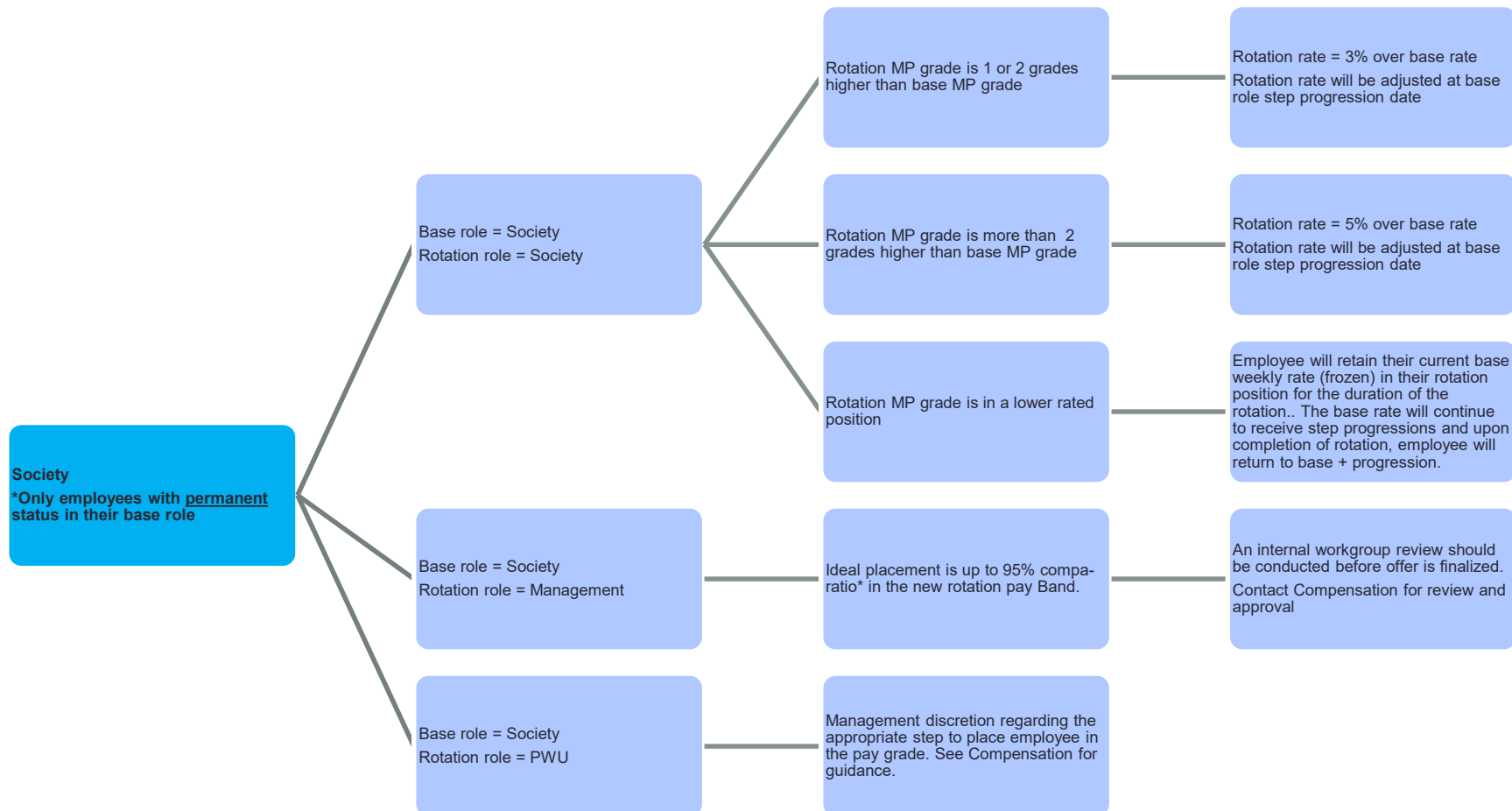
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Therefore a penny should be added to the weekly rate (\$2415.39) and multiplied by 52. Result is now \$125,600.28.

Rotations (temporary assignments)

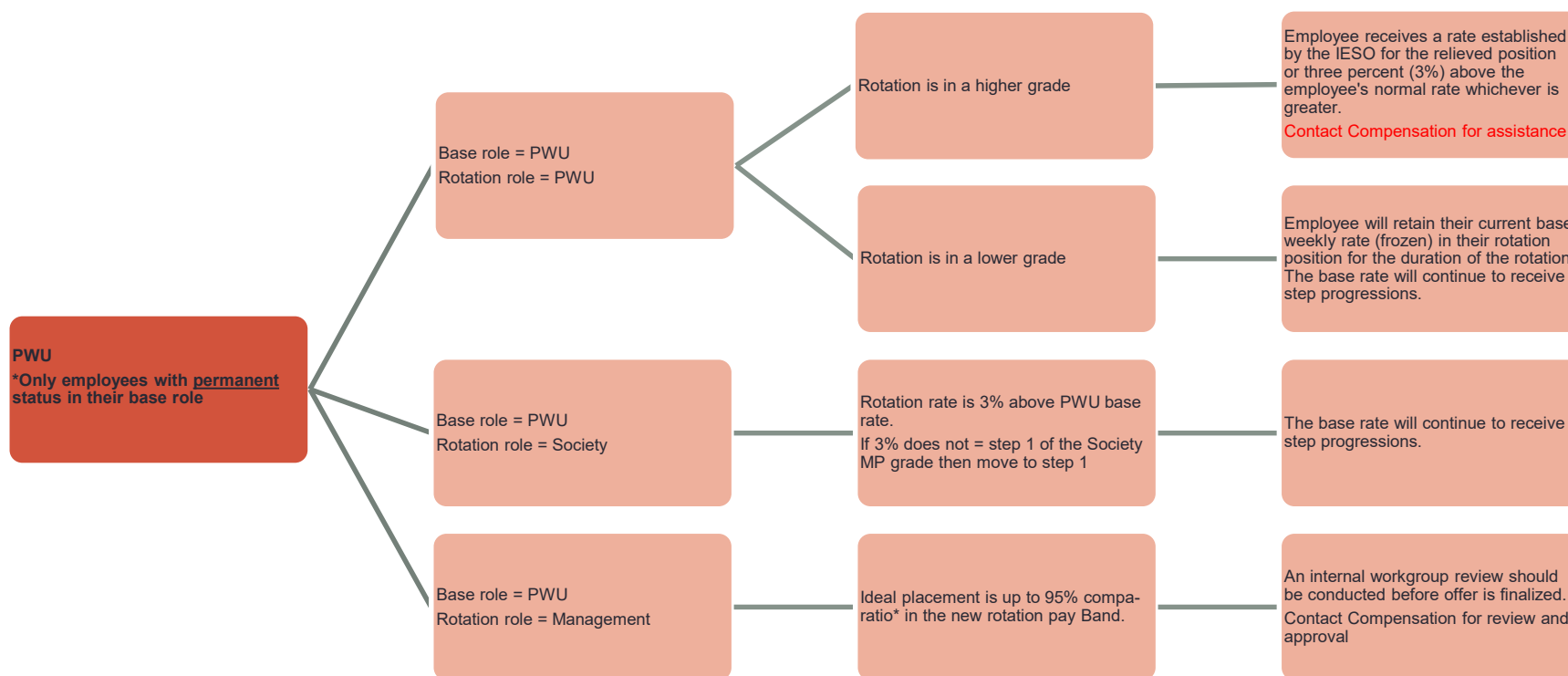
- Society -



*compa-ratio = salary divided by Band midpoint

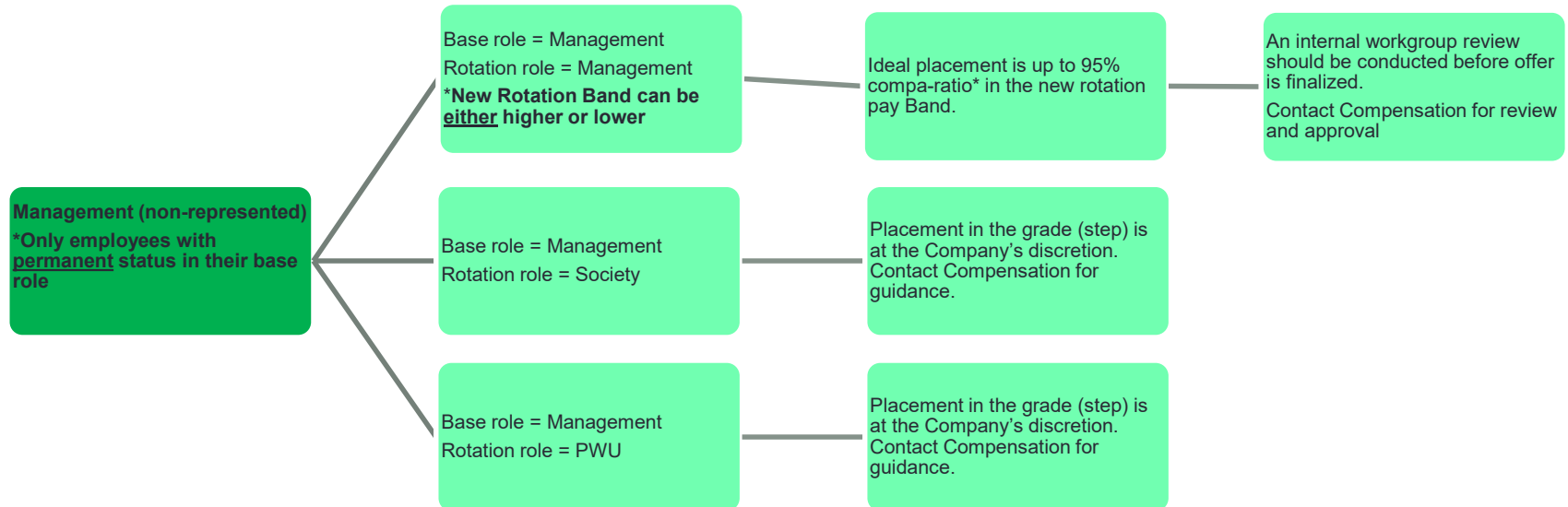
Rotations (temporary assignments)

- PWU -



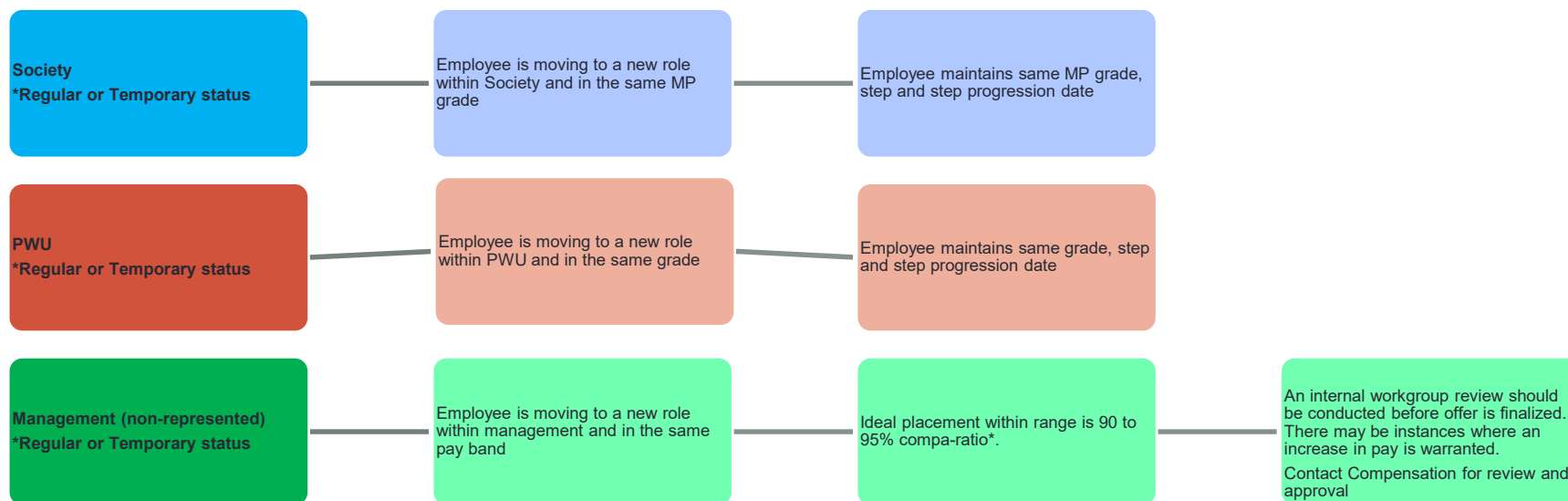
Rotations (temporary assignments)

- Management -



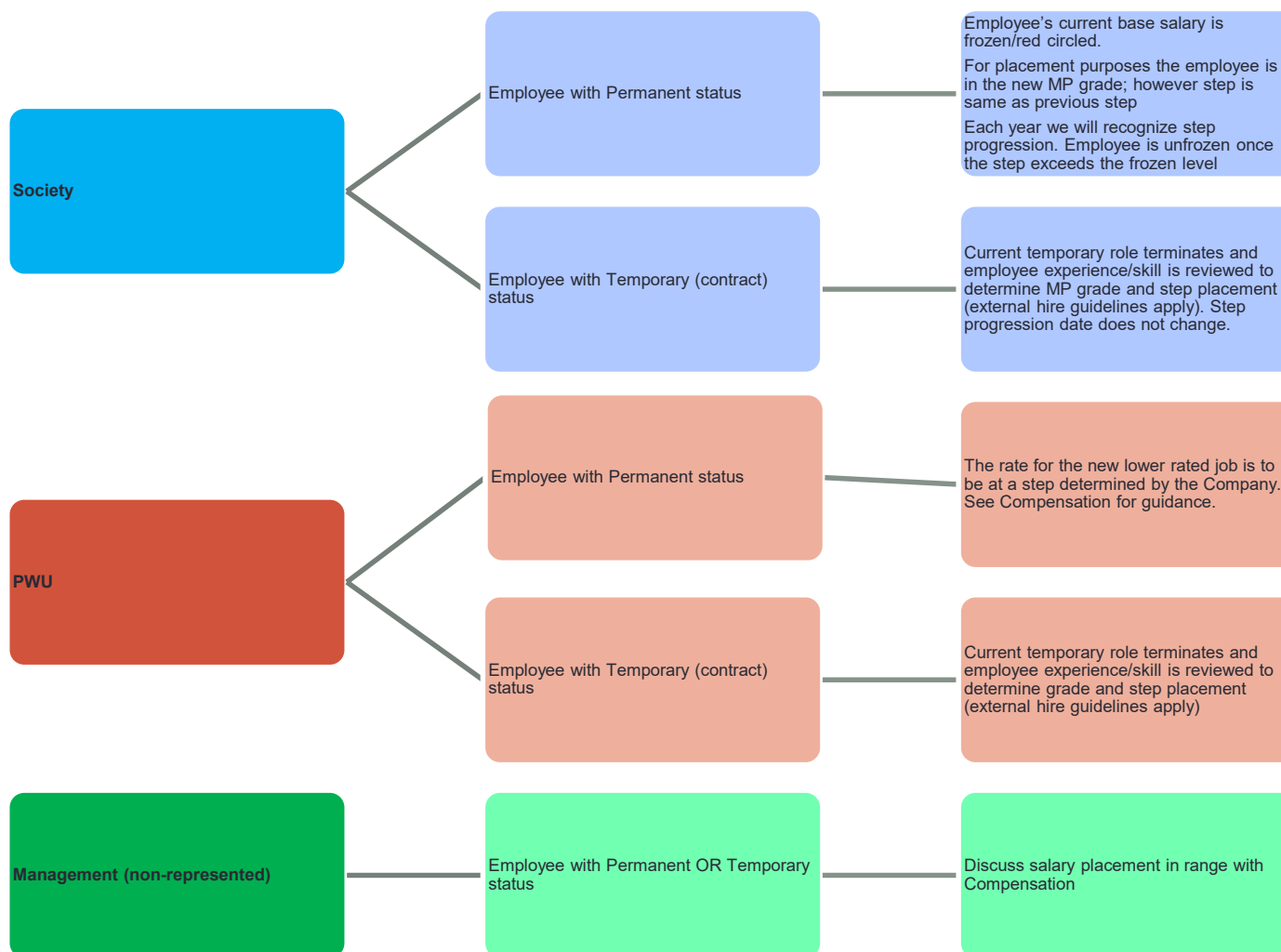
Lateral Move

- All Jurisdictions -



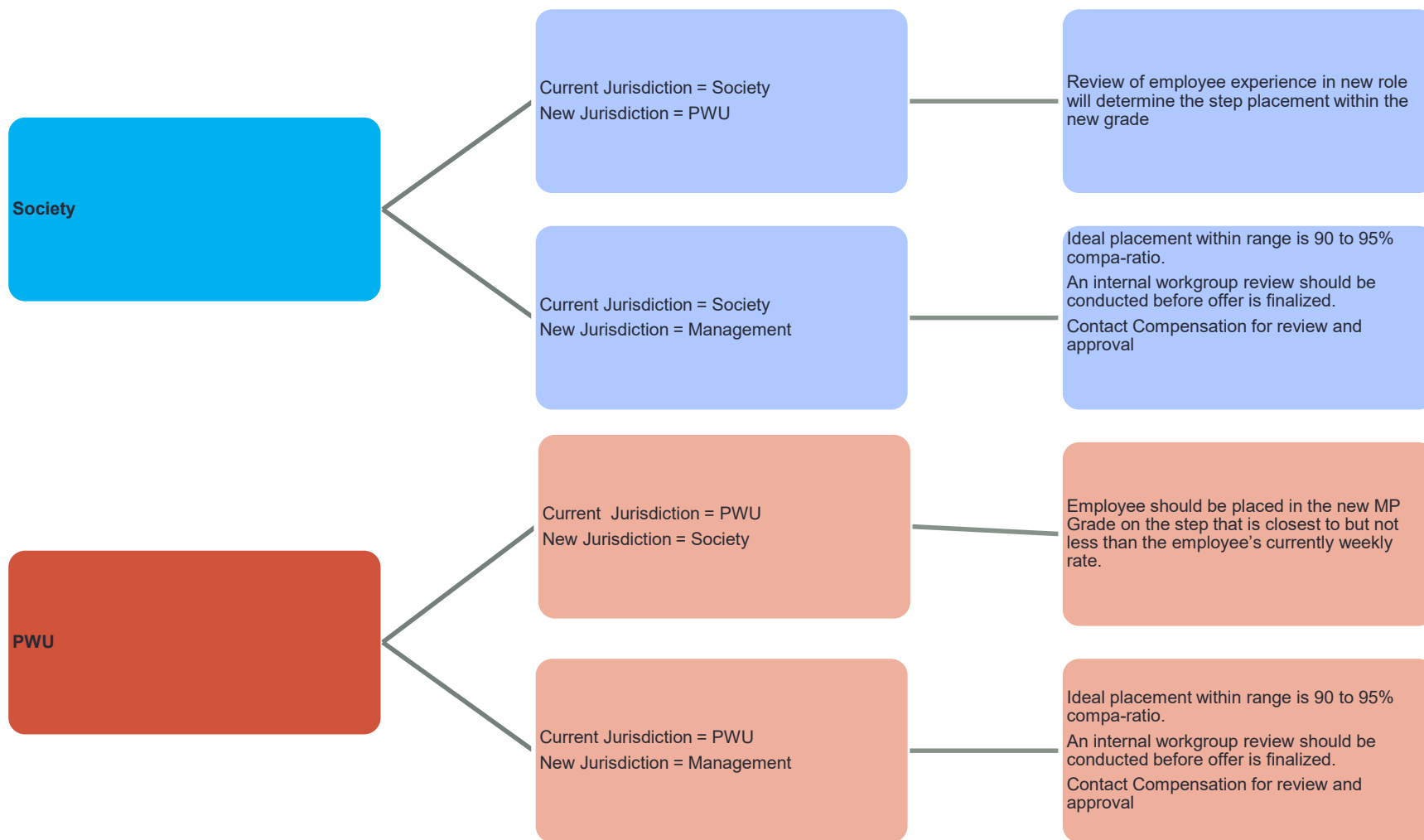
Demotions (moving into a role at a lower grade/band)

- All Jurisdictions -



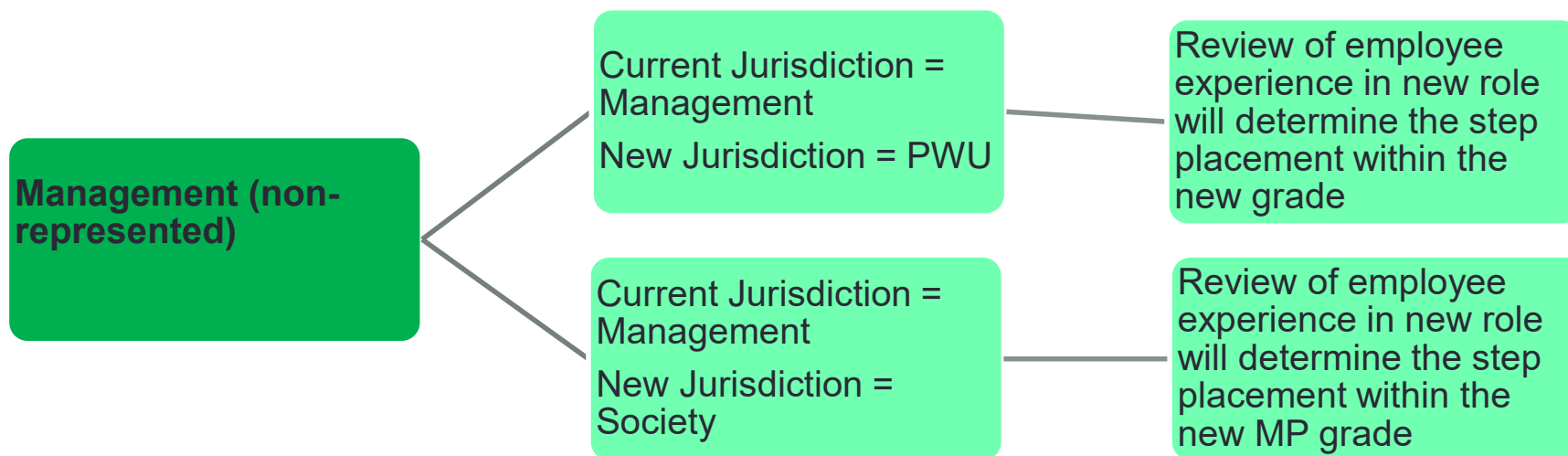
Jurisdictional Moves

- Society & PWU -



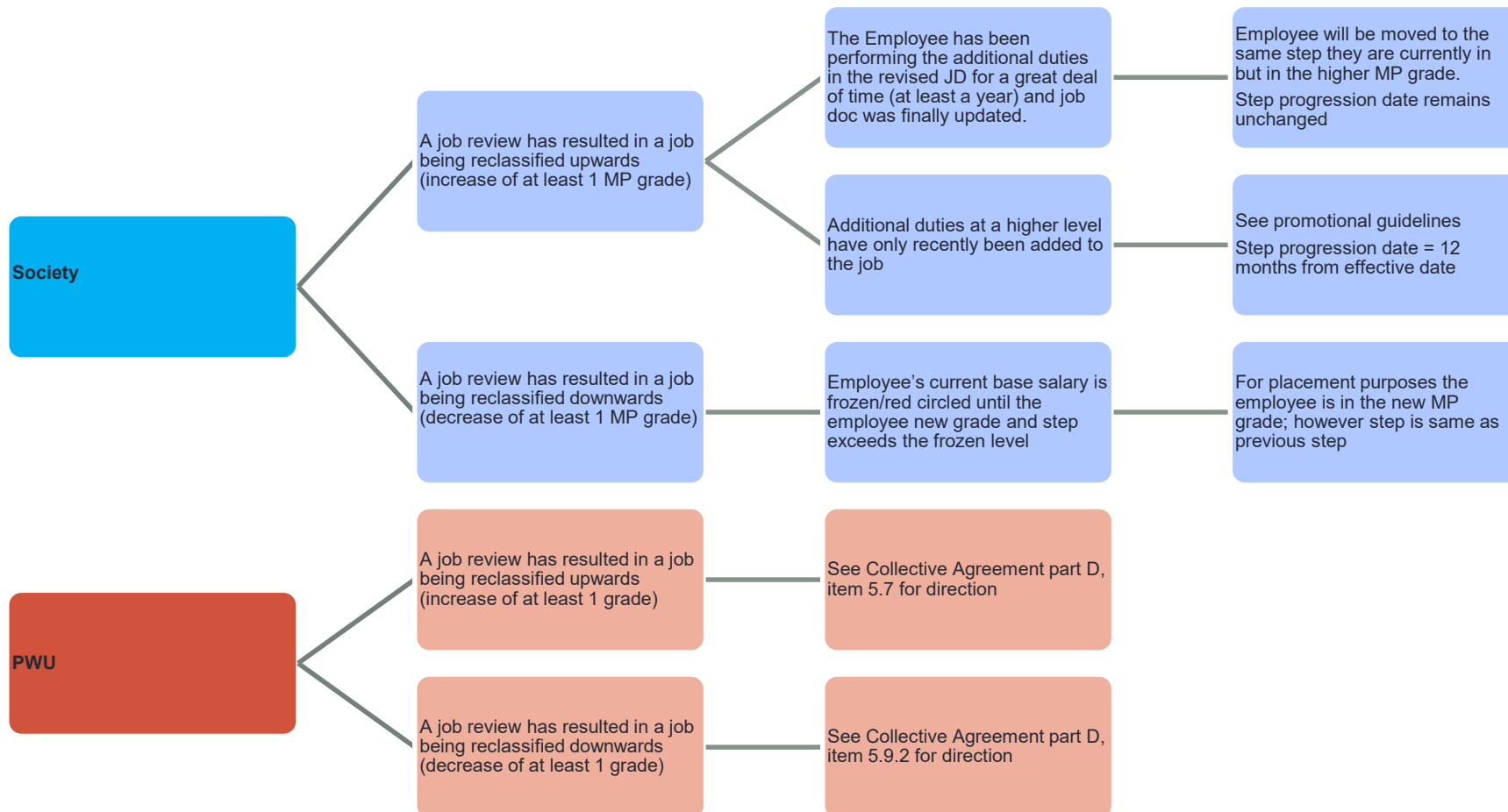
Jurisdictional Moves

- Management -



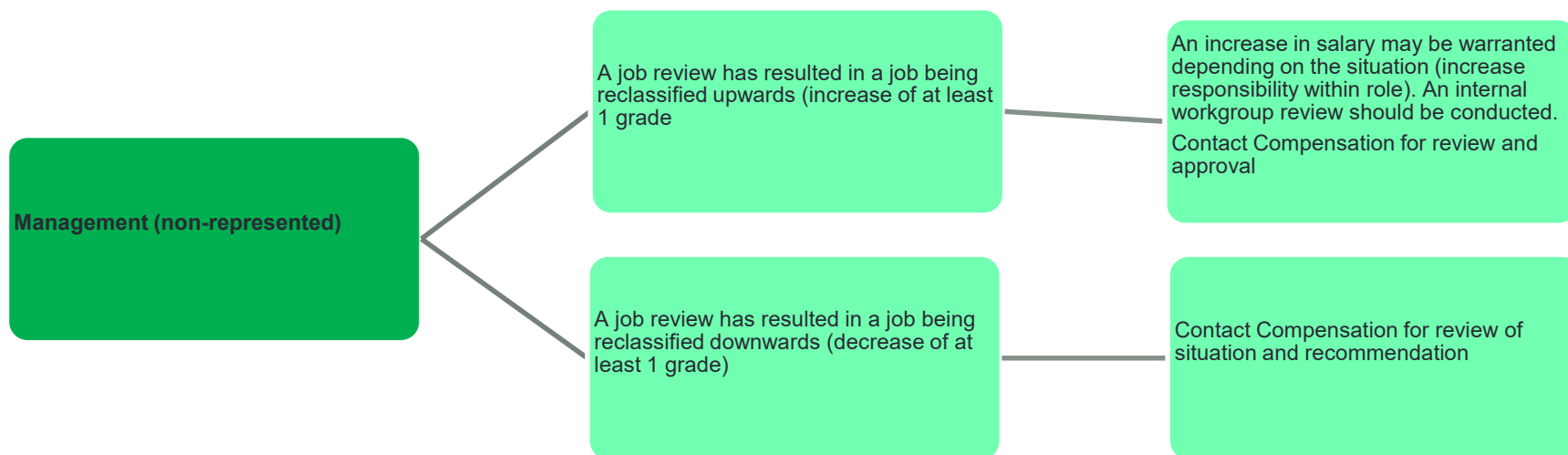
Job Reclassification (due to JE)

- Society -



Job Reclassification (due to JE)

- Management -





welcome to brighter

NON-EXECUTIVE TOTAL REMUNERATION REVIEW

Independent Electricity System Operator

18 February 2022



INTRODUCTION AND EXECUTIVE SUMMARY

Mercer Canada Limited (“Mercer”) has been engaged by the Independent Electricity System Operator (“IESO”) to assist the IESO in conducting a Total Remuneration review for non-executives within the IESO. The purpose of this review is to provide an independent, market-based assessment of the market positioning of the IESO’s non-executive total remuneration that includes base salary, active employee benefits, post-retirement benefits and pensions relative to the markets the IESO competes with for talent. The IESO employee groups considered include non-executive management / non-union, as well as those positions represented by the Power Workers’ Union (“PWU”) and the Society of United Professionals (“the Society”, or “SOC”).

EXECUTIVE SUMMARY

This review approach is consistent with Mercer’s standard market benchmarking methodologies, and relies on compensation, pension and benefits practices information provided by the Independent Electricity System Operator, in addition to Mercer’s proprietary compensation databases and market research. Market comparisons are made to a group of peer organizations, selected by Mercer and confirmed by the IESO, which are representative of the energy, broader public and private sectors the IESO competes with for talent.

In conducting the compensation analysis, Mercer worked with the IESO to identify benchmark positions to compare to market that represent a valid cross sample of the organization’s functions and levels. The breadth of benchmark positions selected is within the range of 50% to 75% of employees considered best practice when benchmarking on an organization basis. The benchmarking includes positions that represent approximately 53% of employees at the IESO.

Mercer considers compensation levels to be within a “competitive range” if they fall within 10% of the target market positioning on a position-by-position basis (where you have a smaller sample size and higher variability in observations) and 5% on an overall organization basis (where you have a larger sample size and smaller variability in observations) when compared to target positioning (e.g., the 50th percentile).

The IESO’s total cash compensation (considering salaries and market short-term incentives), on an aggregate organization basis, is positioned within the market competitive range (i.e. within +/-5% of the market 50th percentile) for the energy and public sectors. The energy sector reflects organizations that are the most similar to the IESO considering the relative roles, responsibilities and required industry knowledge for their positions, and the comparability of the IESO’s operations. The IESO is positioned 10% above the market 50th percentile relative to the private sector peer group and 4% above the public sector peer group. Above-market positioning relative to the private sector peer group is driven by bargaining unit rates; management total cash compensation is within a market competitive range.

On an overall organization basis, the IESO’s total remuneration, including the value of all cash compensation, benefit and pension plans is positioned 9%, 11% and 24% above the



market 50th percentile for the energy, public and private sector peer groups respectively. Positioning above the 50th percentile on a total remuneration basis is primarily a result of the high employer provided value of pension plans in place at the IESO for PWU and the Society represented jobs. Management jobs are positioned within a market competitive range relative to the energy sector, but above a market competitive range relative to the public and private sector.

METHODOLOGY

Mercer worked with the IESO to determine the appropriate markets for comparison given the organizations they compete with for talent (i.e., organizations that the IESO might reasonably recruit employees from or lose employees to). Three specific peer groups were identified for the purposes of the total remuneration review:

- **Energy Sector Peer Group**
 - Reflects select regulated Canadian organizations in the energy sector. Findings reflect data from a proprietary custom survey and Mercer Total Compensation Survey (“MTCS”) that includes energy industry-specific roles, and data from Mercer’s Benchmark Database (“MBD”) that includes general industry roles in the energy sector
 - Organizations were selected considering the comparability of their operations and relative size of revenues when compared to the IESO, resulting in a peer group primarily consisting of other market operators, energy utilities and local distribution companies
- **Broader Public & Public Energy Sector Peer Group (“Public Sector”)**
 - Reflects select Canadian public sector organizations from Mercer’s Benchmark Database that the IESO competes with for talent, with an emphasis on public sector organizations within Ontario. It includes public sector energy organizations from the energy sector peer group.
- **Private & Private Energy Sector Peer Group (“Private Sector”)**
 - Reflects select Canadian private sector organizations from Mercer’s Benchmark Database that the IESO competes with for talent, with an emphasis on private sector organizations within the Greater Toronto Area. It includes private sector energy organizations from the energy sector peer group.
 - Organizations were selected considering the immediate geographical talent market for the IESO (i.e., the Greater Toronto Area) with an emphasis on financial services and engineering organizations that have workforces with a high concentration of IT Roles, cyber-security, data-analytics, business analyst, project managers, electrical engineers, environmental engineers, financial professionals and legal professionals.



A sample of the IESO's jobs across all grades was benchmarked against equivalent roles within organizations from the defined peer groups. Equivalence was determined on the basis of overlaps in responsibilities between the IESO and survey position descriptions.

- A mixture of 32 non-union, including professional and management, and represented jobs at the IESO were matched to equivalent custom survey jobs and levels in the energy sector peer group, as these positions are generally energy industry-specific in their responsibilities
- 87 non-union, including professional and management, and represented jobs at the IESO were matched to equivalent survey jobs and levels in all three peer groups, as these positions are generally non-energy industry specific in their nature and exist across industries

Mercer's benchmarking objective with this review is to map a reasonable sample of the IESO's positions that best represent the total employee population across the different non-executive job levels in the organization. With this approach, our analysis includes 70 of the 158 (44%) management and professional employees and 394 of the 712 (55%) bargaining unit employees to make up 53% of the total population considered in-scope for this review. Mercer believes this to be a statistically reliable and representative sample for assessing the competitive levels of total remuneration for the IESO's employees. Findings are weighted based on the number of IESO incumbents in each benchmark job.

For the retirement and benefits program review, Mercer benchmarked the IESO against the energy, private and public sector peer groups for organizations available in the Mercer Plan Design databases considering their relative **employer provided value** ("EPV"). Relative value analysis focuses only on the plan design as it sets all other cost drivers at a common level and is more consistent when comparing the value of the benefit programs of several organizations.

We note how benchmarking Total Value (TV) compares to Employer Provided Value (EPV) for the benefits analysis:



The relative value benchmarking results are presented as a percentage of base salary using base salary and bonus information. Plans for all comparator organizations have been valued using a set of consistent workforce profiles appropriate for the level of work of the position.

All compensation data are reflective of the most recently available data as of April 1, 2021, and are aged to reflect April 1, 2022 compensation levels, based on sector.

A list of terms referenced in this report and their definitions can be found in Appendix D.



SUMMARY OF FINDINGS

Our commentary describes the competitiveness of the IESO's base salary, short-term incentive, total cash compensation and total remuneration relative to the 50th percentile of the respective market. Based on Mercer's compensation practices and policy research, the majority of organizations target compensation at the 50th percentile of their competitive market, which balances fiduciary and cost considerations with the need to attract and retain talent. Mercer considers the IESO to be within the competitive range if they fall within 10% of the target market positioning on a position-by-position basis and 5% on the overall organization basis.

The table below presents the IESO's **base salaries**, **target total cash compensation ("TTC")** and **total remuneration ("TREM")** at an aggregate level, compared to the market 50th percentile across the three comparator markets:

Above Comparator Market (>5%) **Within Comparator Market (±5%)** **Below Comparator Market (<5%)**

Compensation values are stated in CAD \$000s

Group	Grade	IESO			ENERGY SECTOR			PUBLIC SECTOR			PRIVATE SECTOR		
		Salary ¹	TTC ²	TREM ³	Base Salary	TTC	TREM	Base Salary	TTC	TREM	Base Salary	TTC	TREM
MGT	MANAGEMENT TOTAL	\$162	\$162	\$203	\$146 10%	\$166 -2%	\$199 2%	\$143 13%	\$159 2%	\$191 6%	\$134 20%	\$152 6%	\$181 13%
SOC	SOCIETY TOTAL	\$132	\$132	\$174	\$118 12%	\$129 3%	\$156 11%	\$118 12%	\$126 5%	\$154 13%	\$110 21%	\$119 11%	\$138 26%
PWU	PWU TOTAL	\$92	\$92	\$123	\$80 16%	\$82 12%	\$102 20%	\$73 25%	\$75 23%	\$94 31%	\$67 36%	\$71 30%	\$84 46%
OVERALL		\$134	\$134	\$175	\$120 11%	\$132 1%	\$160 9%	\$120 12%	\$129 4%	\$157 11%	\$111 20%	\$122 10%	\$141 24%

(1) Reflects salary structure job rates, which consider target compensation for a fully competent employee. Typically the midpoint or endpoint of a range.

(2) Reflects IESO salary structure job rates as the IESO does not provide short-term incentives. In the market, it includes salaries plus target short-term incentives, if provided.

(3) Total remuneration ("TREM") reflects target total cash compensation plus the value of long-term incentives (if provided), pensions, active benefits and post-retirement benefits.

*Detailed findings by grade and employee group are presented in **Appendix C**.*

Cash Compensation

The IESO's **base salaries**, on an aggregate organization basis, are above the energy, public and private sectors, across the non-unionized, PWU, and Society jobs.

The IESO **does not provide short-term incentives** to non-executives. However, short-term incentives are commonly offered in the IESO's market for talent. On an aggregate basis, across the three peer groups, **short-term incentive** levels are highest amongst non-unionized jobs in the energy sector and private sector peer groups. Short-term incentives are lower for unionized jobs, though still prevalent across all peer groups.

The IESO's **total cash compensation** levels, on an aggregate organization basis, are within the competitive range for the energy and public sector peer groups. Non-unionized jobs are positioned within a competitive range relative to the 50th percentile against the energy and [A business of Marsh McLennan](#)



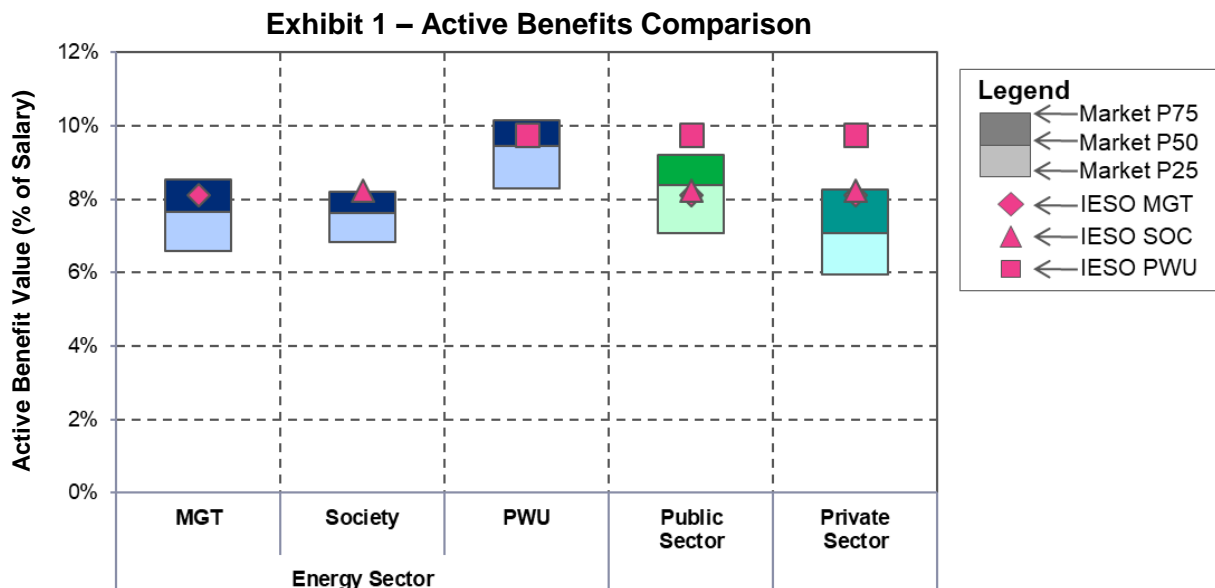
public sector peer groups. Similarly, Society jobs are positioned within the market competitive range for the energy and public sectors, and 11% above the private sector peer group. The PWU group is positioned significantly above a market competitive range across all three markets.

Total Remuneration

Overall, the IESO's compensation program, on a **total remuneration** basis, is positioned 9%, 11% and 24% above the market 50th percentile for the energy, public and private sector peer groups. IESO's positioning above the 50th percentile on a **total remuneration** basis is primarily the result of the higher employer-provided value of pension plans in place at the IESO for PWU and Society represented jobs. The IESO's non-represented jobs are positioned closer to market median, compared to the represented group, at 2%, 6%, and 13% above the energy, public, and private sector peer groups respectively.

Active Benefits

The chart below presents the IESO's **active benefits (Exhibit 1)** value for each employee group considering employer-provided value, compared to the market across the three peer groups. Market results for the private and public sector has been combined to reflect all data due to the absence of the PWU and Society unions in some of these markets.

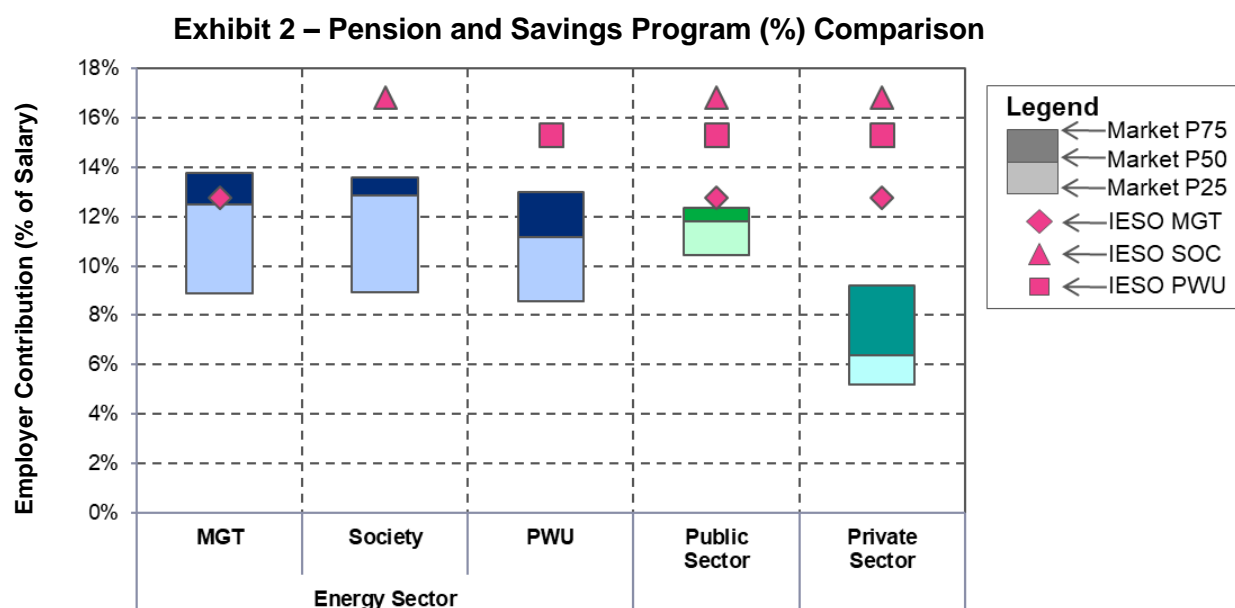


When compared to the energy sector peer group, the IESO is generally within 1% of the market 50th percentile considering the overall value of active benefits (including life insurance, accidental death and dismemberment, short-term disability, long-term disability, health, dental and health-care spending accounts) across all employee groups. The IESO's Society and non-represented jobs are positioned near the median of the public sector peer group, and the upper quartile of the private sector peer group. The PWU group is above the 75th percentile in both the public and private sector peer groups.



Pension and Savings Programs

The following chart shows the IESO's **pension** value for each employee group considering employer-provided value (**Exhibit 2**). The market results for the private and public sectors have been consolidated to reflect all data, due to the lack of union presence (PWU and Society) in some of these markets.



The IESO's pension arrangements for the PWU and Society bargaining units reflect the legacy defined benefits Ontario Hydro plan, with an introduction of cost sharing and increase to employee contributions. The IESO's pension arrangements for the PWU and Society bargaining units are above the market 75th percentile of the **employer provided value** in all three comparator groups.

In comparison, the IESO's pension arrangement for the management group reflects a 50% cost sharing plan. The IESO is positioned near the market 50th percentile in the energy peer group, competitive with the 75th percentile of the public sector and above the 75th percentile of private sector peer groups. Many comparators in the private sector provide a defined contribution plan.



Appendix A

The following companies comprise the **energy peer group** used for the purposes of the review:

Energy Sector Comparator Companies	
1) Alberta Electric System Operator	14) FortisBC
2) Alectra	15) Hydro One
3) Altalink	16) Hydro Ottawa
4) ATCO Ltd.	17) Hydro-Québec
5) BC Hydro	18) London Hydro
6) Bruce Power	19) Nalcor Energy
7) Electrical Safety Authority	20) Oakville Hydro
8) Elexicon	21) Ontario Energy Board
9) Emera, Inc.	22) Ontario Power Generation
10) Enbridge	23) SaskEnergy
11) ENMAX Corporation	24) SaskPower
12) EPCOR Utilities, Inc.	25) Toronto Hydro Corporation
13) FortisAlberta	

The following companies comprise the **Broader Public & Public Energy peer group** used in the review:

Broader Public & Public Energy Sector Comparator Companies	
1) Alberta Electric System Operator^	20) Metrolinx
2) Alectra^	21) Nalcor Energy^
3) BC Hydro^	22) Oakville Hydro^
4) Bruce Power^	23) OMERS Administration Corporation
5) Canada Post Corporation	24) Ontario Energy Board^
6) Canadian Air Transport Security Authority	25) Ontario Hospital Association
7) Canadian Broadcasting Corporation	26) Ontario Lottery and Gaming Corporation
8) Canadian Nuclear Laboratories	27) Ontario Medical Association
9) Electrical Safety Authority^	28) Ontario Power Generation^
10) Elexicon^	29) Ontario Public Service
11) ENMAX Corporation^	30) Ontario Teachers' Pension Plan
12) EPCOR Utilities, Inc.^	31) SaskEnergy^
13) Export Development Canada	32) SaskPower^
14) Greater Toronto Airports Authority	33) Technical Standards and Safety Authority
15) Healthcare of Ontario Pension Plan	34) Toronto Hydro^
16) Hydro Ottawa^	35) Treasury Board of Canada Secretariat
17) Hydro-Québec^	36) Workplace Safety & Insurance Board
18) Infrastructure Health & Safety Association	37) WorkSafeBC
19) London Hydro^	

(^) Supplemental public sector companies from the Energy peer group



The following companies comprise the **Private Sector & Private Energy peer group** used in the review:

Private Sector & Private Energy Sector Comparator Companies	
1) 3M Canada Company	23) Golder Associates Corporation (GAC) - Golder Associates, Ltd. (GAL)
2) Accenture, Inc. Canada	24) Hatch Ltd.
3) Aecon Group, Inc.	25) HH Angus & Associates, Ltd.
4) Aggreko Canada, Inc.	26) Hydro One^
5) Altalink^	27) JMP Solutions, Inc.
6) ATCO Ltd.^	28) Kiewit Construction Services, ULC
7) Bantrel Co.	29) Manulife Financial Corp.
8) Bombardier Transport Canada, Inc.	30) MTE Consultants Inc.
9) Bosch Rexroth Canada Corp.	31) NovAtel, Inc.
10) Canadian Imperial Bank of Commerce	32) Peter Kiewit Sons, ULC
11) Capital Power Corporation	33) Rockwell Automation
12) Electrical & Systems Advanced Control, Inc. (ESAC)	34) RV Anderson Associates Limited
13) Emera, Inc.^	35) Saipem Canada
14) Emerson Automation Solutions	36) Siemens Canada Limited
15) Enbridge Inc.^	37) Smith and Andersen Consulting Engineering
16) Fortis Alberta^	38) Stantec, Inc.
17) Fortis BC^	39) Sun Life Financial, Inc.
18) FundSERV, Inc.	40) Tatham Engineering Limited
19) Ganotec, Inc.	41) TD Bank Group
20) GE Corporate	42) The Bank of Nova Scotia
21) GEI Consultants, Inc.	43) WorleyParsons Canada Services, Ltd.
22) General Motors of Canada	

(^) Supplemental private sector companies from the Energy peer group



Appendix B

Mercer worked closely with the IESO to select jobs that best represent the total employee population across the different job levels in the organization. The following 40 non-represented jobs were included within the scope of the review:

IESO Job Title	Grade	IESO Job Title	Grade
1) Asso Gnrl Counsel Dir Lgl Resources & Corp Scrtry	Band 3A	21) Sr Manager Infrastructure	Band 4
2) Director, Planning	Band 3A	22) Sr Manager IT Operations	Band 4
3) Director Enforcement & Legal	Band 3B	23) Engineering Manager, Power Systems	Band 5A
4) Director Information Security	Band 3B	24) Human Resources Business Partner ("HRBP")	Band 5A
5) Director Internal Audit	Band 3B	25) Legal Counsel 2	Band 5A
6) Director IT Operations	Band 3B	26) Manager Change Management Adoption & Benefits Realization	Band 5A
7) Director Talent Management	Band 3B	27) Manager Finance & Accounting	Band 5A
8) Director Total Rewards	Band 3B	28) Manager Financial Resource Planning & Analysis	Band 5A
9) Director, Contract Management	Band 3B	29) Manager Government Affairs	Band 5A
10) Director, Finance & Corporate Controller	Band 3B	30) Manager HRIS	Band 5A
11) Director, Market Operations	Band 3B	31) Manager Internal Communications	Band 5A
12) Senior Counsel I	Band 4	32) Manager Reporting & Economic Analysis	Band 5A
13) Senior Counsel II Enforcement & Legal Unit MACD	Band 4	33) Manager Talent Acquisition	Band 5A
14) Senior Counsel Legal Group Lead	Band 4	34) Manager, Operations Planning	Band 5A
15) Senior Legal Counsel	Band 4	35) Senior Manager, Transmission	Band 5A
16) Senior Manager Business Services	Band 4	36) Senior Project & Portfolio Manager	Band 5A
17) Senior Manager Engagement and Indigenous Relations	Band 4	37) Legal Counsel 1	Band 5B
18) Sr Counsel Legal & FOI Grp Lead & Pvcy Officer	Band 4	38) HRIS Specialist Talent Management and Analytics	Band 6A
19) Sr Manager Communications	Band 4	39) Human Resources Advisor	Band 6A
20) Sr Manager Employee & Labour Relations	Band 4	40) Talent Acquisition Associate	Band 6B

The following 79 represented jobs were included within the scope of the review:

IESO Job Title	Union	Grade	IESO Job title	Union	Grade
1) Regional Maintainer, Electrical	PWU	1	41) Advisor Financial Planning & Analysis	SOC	MP4
2) Journeyperson, Site Maintainer	PWU	3	42) Advisor Government Affairs	SOC	MP4
3) Administrative Assistant	PWU	58	43) Advisor IT Policy and Compliance	SOC	MP4
4) Security Guard	PWU	59	44) Advisor Market Development	SOC	MP4
5) Training Coordinator	PWU	59	45) Advisor Regulatory Affairs	SOC	MP4
6) Finance Clerk	PWU	60	46) Advisor Stakeholder Engagement	SOC	MP4
7) Senior Computer & LAN Services Technician	PWU	60	47) Advisor Training	SOC	MP4
8) Pay Services Associate	PWU	61	48) Business Analysis Specialist	SOC	MP4
9) Inventory Technician	PWU	62	49) Compliance Officer Conservation	SOC	MP4
10) Facilities Services Coordinator	PWU	63	50) Engineer, Revenue Metering	SOC	MP4
11) Network Administration Technician	PWU	63	51) Planner	SOC	MP4
12) Service & Helpdesk Support Analyst	PWU	63	52) Power System Engineer	SOC	MP4



IESO Job Title	Union	Grade	IESO Job title	Union	Grade
13) Senior Engineering Technologist	PWU	64	53) Procurement Specialist	SOC	MP4
14) Eng. Supervisor, Revenue Metering	SOC	MP6	54) Program Advisor	SOC	MP4
15) Lead Enterprise Architect	SOC	MP6	55) Specialist Information Security	SOC	MP4
16) Lead I&TS	SOC	MP6	56) Specialist Systems	SOC	MP4
17) Supervisor Comms. and Web Strategy	SOC	MP6	57) Specialist Systems Analysis	SOC	MP4
18) Supervisor Contract Management	SOC	MP6	58) Specialist, Project Support	SOC	MP4
19) Supervisor Customer Relations	SOC	MP6	59) Specialist, Solutions	SOC	MP4
20) Supervisor Market Development	SOC	MP6	60) System Operator	SOC	MP4
21) Supervisor Media Rlns and Edit. Svcs	SOC	MP6	61) Project Officer	SOC	MP3
22) Supervisor Project Management	SOC	MP6	62) Project Scheduler	SOC	MP3
23) Supervisor Quality Assurance	SOC	MP6	63) Senior Analyst, Contracts	SOC	MP3
24) Supervisor QA and Data Governance	SOC	MP6	64) Senior Project Analyst	SOC	MP3
25) Supervisor Stakeholder Engagement	SOC	MP6	65) Sr Analyst Applications	SOC	MP3
26) Supervisor, Settlements	SOC	MP6	66) Sr Analyst Contract Management	SOC	MP3
27) Change Mgmt. & Ben. Realization Lead	SOC	MP5	67) Sr Analyst Reporting	SOC	MP3
28) Lead Data Scientist	SOC	MP5	68) Analyst Communication Services	SOC	MP2
29) Senior Analyst, Compliance	SOC	MP5	69) Analyst I&TS Support	SOC	MP2
30) Senior Planner	SOC	MP5	70) Analyst Internal Communications	SOC	MP2
31) Senior Power System Engineer	SOC	MP5	71) Analyst, Settlements	SOC	MP2
32) Senior Project Manager	SOC	MP5	72) Analyst, Solutions	SOC	MP2
33) Senior System Operator	SOC	MP5	73) Assistant System Operator	SOC	MP2
34) Senior Technical Officer Conservation	SOC	MP5	74) Data Scientist	SOC	MP2
35) Sr Advisor Communication	SOC	MP5	75) Financial Analyst Accounts Payable	SOC	MP2
36) Sr Advisor Corp. and Regulatory Affairs	SOC	MP5	76) Financial Analyst Corporate Accounting	SOC	MP2
37) Sr Advisor Internal Engagement	SOC	MP5	77) Financial Analyst Payroll	SOC	MP2
38) Sr Advisor Regulatory Affairs	SOC	MP5	78) Power System Analyst	SOC	MP2
39) Sr Specialist System Analysis	SOC	MP5	79) Procurement Analyst	SOC	MP2
40) Advisor Communications	SOC	MP4			



Appendix C

The table below presents the detailed findings, at an employee group and aggregate level, for the IESO in comparison to the market 50th percentile across the three comparator markets:

Above Comparator Market (>5%) **Within Comparator Market (±5%)** **Below Comparator Market (<5%)**

Compensation values are stated in CAD \$000s

Group	Grade	IESO			ENERGY SECTOR			PUBLIC SECTOR			PRIVATE SECTOR		
		Salary ¹	TTC ²	TREM ³	Base Salary	TTC	TREM	Base Salary	TTC	TREM	Base Salary	TTC	TREM
MGT ⁴	Band 3	\$218	\$218	\$271	\$177 23%	\$219 -1%	\$263 3%	\$165 32%	\$201 9%	\$239 14%	\$174 25%	\$203 8%	\$256 6%
	Band 4	\$169	\$169	\$212	\$153 10%	\$165 3%	\$198 7%	\$150 13%	\$163 4%	\$197 8%	\$141 19%	\$160 6%	\$181 17%
	Band 5	\$144	\$144	\$183	\$142 2%	\$159 -9%	\$190 -4%	\$142 2%	\$153 -6%	\$186 -2%	\$127 13%	\$142 1%	\$169 8%
	Band 6	\$92	\$92	\$120	\$84 9%	\$90 2%	\$110 9%	\$77 20%	\$81 14%	\$101 19%	\$71 30%	\$75 23%	\$88 36%
	MANAGEMENT TOTAL	\$162	\$162	\$203	\$146 10%	\$166 -2%	\$199 2%	\$143 13%	\$159 2%	\$191 6%	\$134 20%	\$152 6%	\$181 13%
SOC	MP6	\$152	\$152	\$198	\$139 9%	\$150 1%	\$181 9%	\$133 14%	\$144 5%	\$175 13%	\$114 34%	\$129 18%	\$154 28%
	MP5	\$142	\$142	\$186	\$132 8%	\$138 3%	\$167 11%	\$122 17%	\$133 7%	\$162 15%	\$126 13%	\$138 3%	\$159 17%
	MP4	\$134	\$134	\$175	\$116 16%	\$126 6%	\$153 15%	\$116 15%	\$123 9%	\$150 17%	\$114 17%	\$125 7%	\$143 22%
	MP3	\$125	\$125	\$165	\$104 20%	\$117 8%	\$141 17%	\$106 18%	\$113 11%	\$138 19%	\$94 33%	\$100 26%	\$115 44%
	MP2	\$118	\$118	\$155	\$108 9%	\$126 -7%	\$153 2%	\$120 -2%	\$126 -6%	\$153 1%	\$87 34%	\$94 25%	\$109 42%
	SOCIETY TOTAL	\$132	\$132	\$174	\$118 12%	\$129 3%	\$156 11%	\$118 12%	\$126 5%	\$154 13%	\$110 21%	\$119 11%	\$138 26%
PWU ⁵	PWU TOTAL	\$92	\$92	\$123	\$80 16%	\$82 12%	\$102 20%	\$73 25%	\$75 23%	\$94 31%	\$67 36%	\$71 30%	\$84 46%
OVERALL		\$134	\$134	\$175	\$120 11%	\$132 1%	\$160 9%	\$120 12%	\$129 4%	\$157 11%	\$111 20%	\$122 10%	\$141 24%

(1) Reflects salary structure job rates, which consider target compensation for a fully competent employee. Typically the midpoint or endpoint of a range.

(2) Reflects IESO salary structure job rates as the IESO does not provide short-term incentives. In the market, it includes salaries plus target short-term incentives, if provided.

(3) Total remuneration "TREM" reflects target total cash compensation plus the value of long-term incentives (if provided), pensions, active benefits and post-retirement benefits.

(4) Band 3 reflects aggregate findings of bands 3A & 3B, Band 5 reflects aggregate findings for bands 5A and 5B. Band 6 reflects aggregate findings for band 6A and 6B.

(5) PWU market findings are shown in aggregate to minimize grade-by-grade variations resulting from a higher number of grades and lower number of jobs.

Note: Figures are rounded to the nearest thousand (dollars) or percent. Percentages represent IESO incumbent weighted averages to better reflect the labour cost basis at the IESO



Appendix D – TERMS AND DEFINITIONS

Definitions for terms used throughout this report are below:

- **Base Salary**
 - Annual rate of fixed compensation (base salary). If an hourly rate was reported, Mercer annualized the value by multiplying the standard number of work hours per week by 52 weeks per year. If a weekly rate was reported, Mercer annualized the value by multiplying by 52 weeks per year
- **Short-Term Incentives**
 - Reflects the value of annual incentive awards (e.g., yearly bonus). Includes the value of performance based lump sum payments or profit sharing plans where provided
- **Target Total Cash Compensation (TTC)**
 - Reflects the combined value of base salaries and short-term incentives (e.g., annual total cash compensation)
- **Long-Term Incentive**
 - Reflects grant-date value of equity and long-term cash plan values, including shares, stock options, etc.
- **Active Benefits**
 - Reflects the employer paid value of benefits offered to employees, including life insurance, accidental death and dismemberment, short-term disability, long-term disability, health, dental and health-care spending accounts
- **Pension**
 - Reflects the employer paid value of retirement programs offered to employees
- **Total Remuneration (TREM)**
 - Reflects the combined value of total cash compensation, long-term incentives, active benefits, post-retirement benefits and pensions
- **25th Percentile (P25)**
 - Twenty-five percent of observations are less than this amount
- **50th Percentile (P50) or Median**
 - Fifty percent of observations are less than this amount, fifty percent are more
- **75th Percentile (P75)**
 - Seventy-five percent of observations are less than this amount

CORPORATE POLICY ON PROCUREMENT

The IESO's procurement policy is provided at Exhibit D-1-4 Attachment 1 – IESO Procurement Policy. This policy provides direction for the purchase of goods and/or services and its objective is to ensure that the IESO acquires the goods and services required to meet its business needs in the most economical and efficient manner. A number of principles inform the policy such as, but not limited to, value for money, vendor access, transparency and fairness, responsible management and an open and competitive procurement process. The IESO confirms that all procurement has been consistent with the stated procurement policy.

All vendors who are engaged to provide goods or services to the IESO are required to comply with the IESO's procurement policy.

Procurement Policy

DocID: PLCY-14

Version: 2.0

Category: Finance

Effective Date: March 18, 2022

Table of Contents

1.0 Purpose.....	3
2.0 Scope.....	4
2.1 Application and Exceptions.....	4
2.2 Out of Scope.....	5
3.0 Policy Statements.....	5
3.1 Governance	5
3.2 Policy Exemptions.....	6
4.0 Responsibilities.....	6
4.1 Policy Owner	6
4.2 Policy Steward.....	7
5.0 Procedures	7
5.1 Planning.....	7
5.2 Obtaining Approvals.....	13
5.3 Conducting a Procurement.....	14
5.4 Evaluation	22
5.5 Entering into a Contract	28
5.6 Contract Management.....	29
5.7 Providing Vendor References.....	29
5.8 Complaint Process	29
6.0 Definitions	29
7.0 Reporting.....	36
7.1 Compliance Reporting.....	36

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

7.2	General Reporting.....	36
8.0	Approval	36
8.1	Policy Owner and Approver	36
9.0	Appendices	38
9.1	Appendix A: Procurement Document Retention Requirements.....	38
9.2	Appendix B: Procurement Methods & Thresholds	40
9.3	Appendix C: Procurement Document Requirements Checklist.....	41
9.4	Appendix D: Additional Procurement Considerations Checklist	43
9.5	Appendix E: Additional Requirements for IT Procurements	48
9.6	Appendix F: Allowable Exceptions to Competitive Procurement.....	50
9.7	Appendix G: Contract Management	52
9.8	Appendix H: Purchase Requisition & Purchase Order Requirements.....	53
9.9	Appendix I: Guidelines for Conducting Market Research.....	55

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

1.0 Purpose

This policy provides direction for the purchase of goods and/or services on behalf of the IESO in accordance with all applicable law, regulation, directives and trade agreements.

The objective of this policy is to ensure that the IESO acquires the goods and/or services required to meet its business needs in the most economical and efficient manner through Procurement processes that conform to the following principles:

(a) Value for money:

- Goods and/or services are to be procured only after consideration of IESO-wide business requirements, alternatives, timing, supply strategy, and Procurement method;
- An Open Competitive Procurement process should be used to the greatest extent possible.

(b) Vendor access, transparency and fairness:

- Access for qualified Vendors to compete for IESO business must be fair and the procurement process must be conducted in a transparent manner, providing equal treatment to Vendors;
- Conflicts of interest, both real and perceived, are to be avoided during the Procurement process and the ensuing contract is managed in accordance with IESO policies; and
- Relationships that result in continuous reliance on a particular Vendor for a particular kind of work must not be created.

(c) Responsible management:

- Goods and/or services procured by the IESO must be responsibly and effectively managed.

(d) Geographic Neutrality and Reciprocal Non-Discrimination:

- Vendors have equal access to compete for IESO business regardless of their location.

Capitalized terms that are not defined under Definitions of this policy are defined in the Master Policy.

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

2.0 Scope

2.1 Application and Exceptions

This policy applies to the planning and acquisition of all goods and/or services procured by the IESO, including the Procurement of goods and/or services in support of Contracts under the *Electricity Act, 1998*, regardless of value, with the following exceptions:

- (a) Services that may, under applicable law, only be provided by licensed lawyers or notaries;
- (b) Services of expert witnesses or factual witnesses used in court or legal proceedings;
- (c) Financial services respecting the management of IESO financial assets and liabilities (i.e. treasury), including ancillary advisory and information services, whether or not delivered by a financial institution¹;
- (d) Advertising space and media buy, except as further outlined in Appendix D: Additional Procurement Considerations Checklist;
- (e) Realty, including acquisition or rental of land, existing buildings, or other immovable property or the rights thereon;
- (f) Utilities;
- (g) Reimbursable employee expenses provided such purchases are made in accordance with the IESO's Business Expense Policy;
- (h) Educational courses that are:
 - Required for maintaining professional designations;
 - Offered by accredited post-secondary institutions; or
 - Industry conferences, courses, and seminars that are not customized, developed, or arranged specifically for IESO staff;
- (i) Contracts for goods and/or services between IESO and another government, government department, agency or Ministry;
- (j) Goods and/or services from philanthropic institutions or non-profit organizations; and
- (k) Services related to employee pension benefits.

¹ Canadian Free Trade Agreement, Chapter Five - Government Procurement.

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

2.2 Out of Scope

This policy does not apply to the following:

- (a) Contracts authorized or required under the *Electricity Act, 1998* or any regulations or directives made thereto, as amended, including without limitation, electricity supply or capacity, including supply or capacity to be generated using alternative energy sources and renewable energy sources; the management of electricity demand, including the reduction or conservation in electricity demand; generation; storage; transmission; distribution; and load-management infrastructure;
- (b) The operation and maintenance of the IESO-controlled grid and operation of the IESO-administered markets, as described in the *Electricity Act, 1998*, including, but not limited to actions taken to amend, administer or enforce the market rules;
- (c) Measures that will manage electricity demand or result in the improved management of electricity demand on an on-going or emergency basis, including:
 - Contracts between the IESO and any standards authorities relating to the reliability of the integrated power system (e.g. NERC, NERP);
 - Enforcing criteria and standards relating to the integrated power system;
 - Settlements and payments under a contract authorized by the *Electricity Act, 1998* and with respect to payments provided for under the *Ontario Energy Board Act, 1998* (including contribution and funding agreements);
 - Ontario Energy Board and other regulatory fees pursuant to the *Electricity Act, 1998*; and
- (d) Contracts authorized and awarded under the IESO Board of Directors Procurement Policy.

3.0 Policy Statements

3.1 Governance

This policy complies with the following, including, as required:

- (a) *Electricity Act, 1998*, S.O. 1998, c. 15 Schedule A and any applicable regulations;
- (b) *Ontario Energy Board Act, 1998*, S.O. 1998, c. 15, Sched. B and any applicable regulations;
- (c) *Freedom of Information and Protection of Privacy Act*, R.S.O. 1990, c. F.31 and any applicable regulations;
- (d) *Accessibility for Ontarians with Disabilities Act, 2005*, S.O. 2005, c. 11 and any applicable regulations;

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

- (e) The Ontario Public Service (OPS) Procurement Directive (December 2014) as an “Other Included Entity”, and associated Interim Measures (September 2020);
- (f) The Canadian Free Trade Agreement (CFTA) as a “procuring entity”; and
- (g) Management Board of Cabinet (MBC) Travel, Meal and Hospitality Expenses Directive.

3.2 Policy Exemptions

The IESO, as an Other Included Entity, must receive prior Management Board of Cabinet (MBC) approval when seeking an Exemption from the mandatory sections of the *Ontario Public Service Procurement Directive* that apply to the IESO. Any such Exemptions must then be reflected in the IESO’s Memorandum of Understanding.

In some cases, the Procurement of goods and/or services that are subject to the *Ontario Public Service Procurement Directive* are exempted from the associated *Interim Measures*, including:

- (a) Goods and/or services valued at less than \$25,000;
- (b) Goods and/or services that are directly related to the delivery of electricity or the delivery of electricity systems;
- (c) Goods and/or services where IESO has specifically requested an Exemption that has been granted by Government; and/or
- (d) Procurements related to construction.

From time to time, the IESO may be directed, in writing, to undertake a Procurement process or enter into a Contract, including non-competitive methods, through a letter of direction from the Government or other written direction or minute endorsed by the Management Board of Cabinet or such other Ministry within the Government having authority to direct IESO. To the extent that those written directions and/or instruments contain specific instructions about the Procurement process or Vendor to be selected, those instructions shall supersede the applicable provisions and operation of this policy.

4.0 Responsibilities

4.1 Policy Owner

The CEO appoints the Chief Financial Officer (CFO) as owner of this policy and as recorded in the Master Policy. The owner is the sole approver of this policy.

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

4.2 Policy Steward

The policy owner may delegate day-to-day responsibility for one or more aspects of a policy, possibly including implementation, periodic review, or compliance to a policy steward.

The policy owner delegates the Senior Manager, Procure-to-Pay as the steward of this policy and as recorded in the Master Policy.

5.0 Procedures

5.1 Planning

Procurement planning is an integral part of the procurement process in identifying potential supply sources, procurement methods, as well as, what and when approvals are needed.

The Business Unit shall ensure that sufficient Procurement planning is conducted to support the IESO's business requirements and ensure that sufficient time is allowed to complete the Procurement process.²

The Business Unit and the Procurement Unit will undertake Procurement planning on an ongoing basis and in line with business planning, in order to:

- (a) Identify goods and/or services needed to meet the IESO's business requirements;
- (b) Gather critical information about the Procurement, including but not limited to: goods and/or service requirements, estimated Total Procurement Value, Contract strategy and Procurement type.
- (c) Identify opportunities to aggregate spending or combine Procurements to support enterprise-wide purchasing; and
- (d) Determine the appropriate resourcing plan, timing and Procurement method.

The Business Unit will engage with the Procurement Unit on no less than a quarterly basis to confirm the status of planned Procurements, and identify Procurements that were not planned during previous planning processes.

² OPS Procurement Directive, Section 8.2.

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

Business Units may be required to reprioritize procurement needs to accommodate unplanned procurement activity.

5.1.1 Conducting Market Research

The IESO may engage in formal and/or informal market research activities prior to initiating a Procurement, as further described in Appendix I: Guidelines for Conducting Market Research.

5.1.2 Establishing Contract Term

The Business Unit, with the guidance of the Procurement Unit, must identify the Contract Term for every Procurement.

Extension options should always be included where there is a real or perceived risk of exceeding the initial term. A Contract Term that is extended beyond the terms set out in the original Procurement Document is considered Non-Competitive and must be supported by an Allowable Exception, as further detailed in [Appendix F: Allowable Exceptions to Competitive Procurement](#)

If the Procurement relates to goods and/or services that fall within the scope of the *Interim Measures*, the Contract Term may not exceed two (2) years, unless the Procurement is issued under a Government VOR Arrangement, in which case the Contract Term may align with that Government VOR Arrangement.

If the Procurement relates to goods and/or services that are exempted from the *Interim Measures*, the Contract Term will be determined at the IESO's discretion.

Where the IESO is establishing its own VOR Agreement, the Contract Term is subject to additional requirements, as described in Section 5.3.3:

5.1.3 Establishing the Total Procurement Value

The Business Unit must prepare an estimate of the Total Procurement Value for every Procurement, with the exception of Requests for Vendors of Record where a Second Stage Competition will establish a Total Procurement Value.

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

The Procurement Unit will use the Total Procurement Value to inform the appropriate Procurement method and Approving Authority under the OAR.

The Total Procurement Value must include all costs associated with entering into a Contract (collectively, the “Costs”), including, but not limited to:

- (a) The price or cost of the goods and/or services;
- (b) One-time costs such as site preparation, delivery, installation and documentation;
- (c) Ongoing operating costs including training, accommodation, licenses, support and maintenance;
- (d) Applicable duties, premiums, fees, commissions, disposition costs, allowable price escalations and interest;
- (e) Options to extend or renew the Contract;
- (f) Direct payments by the IESO to the Vendor(s);
- (g) Indirect payments by third parties to the Vendor(s);
- (h) Any contingency values for unforeseen circumstances, including price impacts resulting from internal or external delays; and
- (i) Any Conferred Value.³

Where an individual Procurement involves multiple related goods and/or services (such as design and build, phased projects, or maintenance and support services), the project’s estimated Total Procurement Value is determined by the cumulative value of all related goods and/or services, including, any potential Contract renewals or extensions.

Business Units are encouraged to include a contingency budget for the purpose of managing Total Procurement Value Increases.

5.1.3.1. No Splitting

A Business Unit undertaking a Procurement at the IESO must not take any action to reduce the estimated Total Procurement Value for the purpose of avoiding any requirements of this policy

³ OPS Procurement Directive, Section 8.3.

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

or the OAR (such as subdividing projects, Procurements, or Contracts and awarding multiple consecutive Contracts to the same Vendor).

The award of multiple consecutive Contracts to the same Vendor may only be made where each project is unique and the Procurement of those projects are awarded a Contract in accordance with this policy. For clarity, subdivision of a single scope of goods and/or services across multiple Procurements or Contracts is only permitted where approval for the Total Procurement Value is disclosed and sought in the first instance.

5.1.3.2. *Increases to the Total Procurement Value*

When the Total Procurement Value increases prior to issuing a Procurement document, the following applies:

- (a) Business Units must ensure they have obtained the Approving Authority in respect of the increased TPV for the Procurement; and
- (b) The Procurement Unit must determine if an alternate Procurement method must be used as a result of the increase in Total Procurement Value.

When the Total Procurement Value increases after a Contract has been entered into, the Procurement Unit will assess the impact and may determine that re-Procurement of the goods and/or services is necessary depending on:

- The amount of the Total Procurement Value increase relative to the original Total Procurement Value;
- The reason for the increase;
- Whether the increase causes the revised Total Procurement Value to exceed the threshold for the original Approving Authority; and
- Whether the increased Total Procurement Value would result in a different Procurement method than the one originally used.

Amendments to the scope of goods and/or services outlined in a Contract may be permissible if the additional scope is related to the services provided for in the Contract and the need for such related additional scope was not reasonably foreseeable at the time of the Procurement.

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

Business Units must ensure that prior to the commencement of any service or delivery of any goods, they have:

- reviewed the increased Total Procurement Value with the Procurement Unit to ensure compliance with this policy; and
- obtained the approval from the Approving Authority for the increased Total Procurement Value.

This is especially important when an increase causes the Total Procurement Value to exceed the threshold of the original Approving Authority or Procurement method. Approved Total Procurement Value increases must be documented and changes in Total Procurement Value must be reflected through a Contract Amendment, if required.

Total Procurement Value increases shall not be permitted where a Vendor under an existing Contract is requested to:

(a) Provide additional goods and/or services that are:

- Entirely unrelated to; or
- Not explicitly contemplated within the original scope of goods and/or services outlined in the Contract.

(b) Retain another third party sub-contractor on behalf of the IESO for a scope of goods and/or services that is:

- Entirely unrelated to; or
- Not explicitly contemplated within the original scope of goods and/or services outlined in the Contract.

5.1.4 Separation of Design and Build in Procurement Process

Additional requirements for Procurements that involve design and build phases are outlined in [Appendix D: Additional Procurement Considerations Checklist](#) of this document. Note that if the 'design' is undertaken without including the 'build' in the Procurement, any Vendor engaged in the design phase may not participate in the subsequent build phase.

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

5.1.5 Drafting Requirements

All Procurements must be in writing and must include sufficient details concerning the Response requirements to enable the fair and transparent comparison of responses. A checklist of requirements is outlined in [Appendix C: Procurement Document Requirements Checklist](#) of this document.

5.1.6 Determining the Type of Procurement Document

The Procurement Unit is responsible for determining the most appropriate type of Procurement document to use based on the needs of the Business Unit.

The types of Procurement documents that IESO generally uses include, but are not limited to:

- (a) Request for Information (RFI) – used for market research only, to elicit industry information on particular products and/or services from the Vendor community, as further described in Appendix I: Guidelines for Conducting Market Research ;
- (b) Request for Proposal (RFP) – used when seeking a solutions-based proposal to meet business needs, usually for the provision of professional services and/or complex goods and/or services;
- (c) Request for Quotation (RFQ) – used when seeking quotations for a fully defined scope of work, or for purchasing goods and/or services where the evaluation criteria is simple and/or only based on price;
- (d) Request for Vendors of Record (RVOR) - used to develop a short-list of qualified Vendors to enter into VOR Agreements for specific categories of work or to provide specific types of goods and/or services;
- (e) Request for Vendor Qualification (RFVQ) – used to request technical information and evidence of financial stability and goods and/or or service in order to pre-qualify or short list Vendors. An RFVQ may also be used to pre-qualify Vendors to respond to a particular RFP or RFQ; and
- (f) Request for Services (RFS) – used during a Second Stage Competition to request submissions from one or more pre-qualified Vendors.

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

5.2 Obtaining Approvals

Business Units are required to seek the guidance of the Procurement Unit before engaging a Vendor in any manner that would result in a binding Contract or that may provide a Vendor with an unfair advantage when responding to a Procurement opportunity. For certainty, Business Units must consult with the Procurement Unit before directly engaging in any Non-Competitive Procurement activity to ensure that it aligns with this policy or any Allowable Exceptions.

The Business Unit will prepare an estimated Total Procurement Value and seek approvals from the Approving Authority in writing before:

- (a) Commencing a Procurement (including any Non-Competitive Procurement or competitive Procurement that establishes or uses a VOR Agreement); and
- (b) Executing a Contract procured pursuant to an IESO Procurement process (including any Contract that was procured pursuant to a Second Stage Competition under a VOR Agreement).

The Approving Authority will be determined by the OAR, as amended from time to time. Agreements that do not commit the IESO to any financial obligations, such as a parent agreement for a VOR Arrangement, may be authorized by the Vice President. For certainty, the Approving Authority for any Statements of Work resulting from a Second Stage Competition will be determined by the OAR.

Amendments made to an existing Contract that are for the extension of term and/or scope, and that do not increase or change the financial obligations made to a Vendor may also be authorized by the Vice President or their delegate, subject to any additional approvals that may be required if the amendment is deemed a Non-Competitive Procurement.

Note that, as per the OAR, the Non-Competitive Procurement of Consulting Services may, depending on the Total Procurement Value, require additional approvals from both the Deputy Minister and Minister; the Management Board of Cabinet and the Treasury Board. Business Units must ensure they consult the OAR and the Procurement Unit to ensure compliance. The Business Unit will work with the Procurement Unit to determine any additional approvals or reviews that are required prior to initiating the Procurement, including, as necessary, Executive Leadership for Procurement Unit and the Business Unit.

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

Additional approvals or reviews may be required in certain instances, including but not limited to:

- (a) When contracting outside of the IESO's collective agreement;
- (b) Where stakeholder committees are in place;
- (c) Where the Procurement relates to legal services. In such cases, the Procurement must also be approved by the Vice President, Legal & Corporate Governance or their delegate; and
- (d) Where the Procurement relates to information systems, IT, information provisioning services, IT Consulting Services, hardware and business equipment. In such cases, the Procurement must also be approved by the Vice President, Information & Technology Services and Chief Information Officer or their delegate;
- (e) Where the Procurement is for the provision of external audit services or for services to be performed by the IESO's External Auditor. In such cases, the Procurement Unit must be consulted. A Procurement for external audit services must be carried out in accordance with Section 6.4.7 of [Appendix D: Additional Procurement Requirements Consideration Checklist](#).

Procurement documents may require review by Legal Services prior to issuance, including but not limited to Procurements where:

- (a) The method for obtaining submissions may create Procurement process obligations on the IESO (for example, Invitations to Tender and non-negotiated formats);
- (b) The IESO may be collecting personal information, to ensure the IESO meets its obligations under the *Freedom of Information and Protection of Privacy Act*, R.S.O. 1990, c. F.31;
- (c) There are deviations requested to previously approved standard terms and conditions contained in Procurement documents and/or Contracts;
- (d) In the opinion of the Procurement Unit, there is a risk or complexity in the Procurement method; or
- (e) In the opinion of the Procurement Unit, the expected Total Procurement Value would substantially increase the inherent risk of the Procurement process.

5.3 Conducting a Procurement

5.3.1 Determining the Procurement Method

The Procurement Unit will determine the appropriate Procurement method(s) and will provide one or more options to the Business Unit, including:

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

- (a) Invitational Competitive Procurement;
- (b) Open Competitive Procurement;
- (c) Vendor of Record Arrangement;
- (d) Vendor qualification;
- (e) Non-Competitive Procurement; or
- (f) Such other Procurement methods, as determined by the Procurement Unit, that are consistent with the provisions of this policy and, for certainty, applicable law.

The Procurement method will depend on the type of service (Consulting, Non-Consulting) or goods and the Total Procurement Value. Together with the Business Unit, the Procurement Unit will determine if the goods and/or services being procured are Consulting or Non-Consulting as defined in this Policy. The minimum Procurement Method thresholds are set out in [Appendix B: Procurement Methods & Thresholds](#).

5.3.2 Competitive Procurements

Competitive Procurement methods are conducted either in an Open Competitive or an Invitational Competitive manner:

- (a) Open Competitive is accomplished through a public posting of the Procurement.
- (b) An Invitational Competitive Procurement may proceed as follows:
 - By way of a direct invitation to identified Vendors; or,
 - By way of a VOR Agreement, in which an Open Competitive pre-qualification or establishment of a source list of Vendors precedes either a Second Stage Competition or a rotational award of Contracts to pre-qualified Vendors.

A Procurement for goods and/or Non-Consulting Services less than \$25,000 procured in accordance with this policy shall, for the purposes of this policy, be treated as if it had been competitively procured.

5.3.3 Using Vendor of Record Arrangements

The IESO must use Government VOR Arrangements where available and appropriate. The Procurement Unit is responsible for reviewing the guidelines for each Government VOR

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

Arrangement to assess the availability, applicability and appropriateness of a Government VOR Arrangement.

Where no Government VOR Arrangement is available or appropriate, the IESO may choose to establish its own VOR Agreement in accordance with the requirements set out below:

- (a) VOR Agreements must be established through an Open Competitive Procurement; should be established considering the potential application of scope of goods and/or services across the IESO; and should not specifically identify any Business Unit. VOR Agreements are encouraged where regular ad-hoc goods and/or services or repeat purchases are required;
- (b) Procurement documents establishing a VOR Agreement must clearly outline:
 - That only Vendors who ultimately enter into a VOR Agreement with the IESO will receive invitations to provide the goods and/or services that are the subject of the VOR Agreement;
 - The length of the Contract Term of the VOR Agreement, if applicable. Where a Contract Term is prescribed, the term is subject to the following additional requirements⁴:
 - For a Contract Term of more than three (3) years, the Request for Vendors of Record (RVOR) or Request for Vendor Qualification (RFVQ) must be posted at least annually to allow for the possibility of new Vendors to qualify;
 - VOR Agreements with a Contract Term of (3) years or less are only required to be posted once and may not be extended.
 - The method for terminating the VOR Agreement where the Contract Term of the VOR Agreement is undefined;
 - Any methods for measuring performance on a VOR Agreement, including any criteria that must be met by a Vendor to maintain its eligibility to participate in Second Stage Competitions. Such criteria may include, but is not limited to:
 - Participation in Second Stage Competitions to which the Vendor has been invited;
 - Performance on awarded Statements of Work; and
 - Requirements for re-certification or re-qualification at specific intervals or for replacement personnel;

⁴ Canadian Free Trade Agreement, Chapter Five - Government Procurement.

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

- The frequency by which new Vendors may be pre-qualified (whether annually or more frequently), if applicable.
 - The process by which Vendors will be qualified, including the criteria that will be used to select Vendors of Record;
 - The process and methodology by which unique assignments will be awarded, usually through a Second Stage Competition or Rostering process;
 - The pricing structure, including any allowable set or negotiable fee increases (e.g. in line with Consumer Price Index, or other).
- (c) IESO must enter into a Contract with each successful Vendor selected through the RVOR or RFVQ Procurement process;
- (d) A Statement of Work must be executed in consultation with the Procurement Unit for each Second Stage Competition or Rostering award and must be filed with the VOR Agreement;
- (e) Second Stage Competition or Rostering requirements are as follows:
- The Business Unit must seek guidance from the Procurement Unit prior to engaging Vendors of Record;
 - For VOR Agreements where there are multiple Vendors, IESO must engage in a further Second Stage Competition or use the established Rostering process to ensure that the best value for money is obtained;
 - The Second Stage Competition must be managed in accordance with the process outlined in the original Procurement document;
 - Approval must be obtained in accordance with the OAR prior to initiating the Second Stage Competition. The Approving Authority is based on the estimated Total Procurement Value of the Procurement being conducted under the Second Stage Competition;
 - The IESO will issue a written Procurement document as a part of a Second Stage Competition. The Procurement document must include appropriate selection criteria, an evaluation process, and the type of Contract to be used, as applicable;
 - When selecting Vendors through Rostering, such selection will be made in accordance with the applicable VOR Guide or in consultation with the Procurement Unit where no VOR Guide exists; and

The Procurement Unit is responsible for verifying that the proposed pricing in the Second Stage Competition does not exceed the maximum price set out in the applicable VOR Agreement.

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

5.3.4 Non-Competitive Procurements⁵

Non-Competitive Procurements occur when:

- (a) IESO directly awards a Contract to a single Vendor with a Total Procurement Value greater than \$0 for Consulting Services and \$25,000 or greater for goods and Non-Consulting Services without a competition; or,
- (b) The terms of a Contract are amended for the addition of scope, time and/or value that is material in nature and that was not contemplated in the original Procurement and Contract.

A competitive process should be the standard method for acquiring goods and/or services. The onus is on the Business Unit to justify any decision to award a Contract outside of a competitive process, and seek the appropriate approvals prior to engaging a Vendor.

Non-Competitive Procurements are only allowed when:

- (a) An Allowable Exception to competition is available, as identified in [Appendix F: Allowable Exceptions to Competitive Procurement](#);
- (b) Pre-approval to proceed with a Non-Competitive Procurement has been obtained from the Procurement Unit and the Approving Authority, prior to and engaging any Vendor(s) and/or making any commitments on behalf of the IESO;
- (c) The Contract is not being awarded to a Vendor who was awarded the original or first instance of the same Contract non-competitively;
- (d) A negotiation strategy has been considered and documented, where appropriate, to ensure value for money; and
- (e) The Vendor has not been previously retained to advise on or to develop the technical specifications of the required goods and/or services that are the subject of the Procurement, as further described in [Appendix D: Additional Procurement Considerations Checklist](#).

The need for compatibility with existing goods and/or services is not sufficient to justify a Non-Competitive Procurement unless it is clear that there is only one Vendor capable of offering compatible goods and/or services. Other potential Vendors should be given the opportunity to meet compatibility requirements through a competitive Procurement.

⁵ OPS Procurement Directive, Sections 4.4.4, 4.4.6 and 8.6.

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

A decision to bypass a competitive Procurement cannot be justified based on a presumption that no other Vendor would be competitive. That presumption needs to be tested through a competitive Procurement.

Non-Competitive Procurements without an approved Allowable Exception are non-compliant with this policy and will be reported to the IESO's Audit Committee and the Ministry through the IESO's annual attestation process, as further detailed in Section 7.0. For certainty, the IESO should not engage in Procurement practices that are not in compliance with this policy.

5.3.5 Establishing Response Times

The IESO must provide sufficient time for Vendors to prepare and submit Responses in view of all relevant factors such as, but not limited to, time needed by the Vendor to properly disseminate the information, complexity, risk, seasonality, and best practices within the relevant industry.⁶

The IESO will use the following Response times:

- (a) For Procurements with a Total Procurement Value of less than \$100,000, or for Procurements that are conducted through a VOR Agreement, the IESO will provide Vendors with sufficient time to respond, as described above;
- (b) A minimum of 15 calendar days will be provided for all Procurements that are not conducted through a VOR Agreement and have a Total Procurement Value between \$100,000 and \$548,699;
- (c) A minimum of 30 calendar days will be provided for all Procurements that are not conducted through a VOR Agreement and have a Total Procurement Value greater than or equal to \$548,700; and
- (d) Additional time to respond should be provided where the Procurement is complex or high profile in nature.

Any exception to the noted Response times must be approved by the CFO, or their delegate.

⁶ OPS Procurement Directive, Section 5.4.

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

5.3.6 Electronic Tendering

Open Competitive Procurements and Requests for Information (RFI) will be posted on a recognized electronic tendering system, as identified by the Procurement Unit.

5.3.7 The Use of Fairness Monitors

The IESO may choose to use external Fairness Monitors on an exceptional basis for Procurements that:

- (a) Are complex in either the scope of the Procurement or the methodology of the Procurement process; and/or
- (b) Are for the renewal or re-Procurement of goods and/or services where the incumbent may have, or may be perceived to have, an unfair advantage.

Where applicable, a Fairness Monitor should be retained before the commencement of the Procurement and the issuance of a Procurement document. Business Units must consult with the Procurement Unit prior to engaging a Fairness Monitor to ensure the appropriate management of such arrangements, in a fair and unbiased manner.

Recommendations and reports from the retained Fairness Monitor should be submitted directly to the IESO's Director of Internal Audit.

5.3.8 The Use of Non-Disclosure Agreements

The IESO may use confidentiality or non-disclosure agreements during a Procurement process, as follows:

- (a) Prior to undertaking any Procurement of goods and/or or services that may result in the disclosure of information that is confidential or personal, the Business Unit will conduct a risk assessment on the disclosure of that information to the general public;
- (b) Any information that is to be disclosed must comply with applicable legislation and IESO's policies, processes, and procedures concerning personal and confidential information;
- (c) Where the disclosure of IESO confidential or personal information is necessary to ensure the success of a Procurement, the IESO will enter into a confidentiality or non-disclosure agreement with any prospective Vendors prior to the disclosure of confidential or personal information; and

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

- (d) Wherever possible, personal or confidential information should be separated from the body of the Procurement document and set out as a separate schedule or if it is embedded in a Procurement document but the confidential or personal information is not needed for the Procurement, it should be redacted.

5.3.9 Communication with Vendors during a Procurement Process

Communications between Vendors and IESO's employees, agents, directors or contractors related to a Procurement process must be avoided at all times. Vendors must be directed to the contact person(s) identified in the Procurement documents in order to:

- (a) Maintain the integrity of the Procurement process;
- (b) Ensure that all Vendors are provided with consistent information; and
- (c) Ensure that the information given does not change the intended meaning of the Procurement document or any part therein.

Failure to comply may result in Vendor disqualification.

5.3.10 Issuing Additional Information during the Procurement Process

Any additional information that clarifies or modifies the Procurement documents must be provided in the same manner as the originally issued Procurement document via an addendum.

Addenda, including responses to question and answer periods, must be issued within a reasonable amount of time prior to the deadline for Response to the Procurement document to allow sufficient time for a Vendor to address the content of the addenda in its Response. Addenda that are issued after the disclosed deadline to issue addenda must also include an appropriate and reasonable extension to the submission deadline as is necessary for the Vendor to address the changes to the Procurement documents.

Procurement documents must make clear that any amendments to the Procurement documents shall only be made by addendum. Information supplied to Vendors through general notices, written responses to questions, requests for information, or other communications that are separate from the Procurement documents shall not constitute part of the Procurement documents.

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

All Procurements should provide sufficient time for Vendors to ask questions for clarification regarding the Procurement documents, evaluation criteria and contractual requirements. During the question and answer period of the Procurement:

- (a) It is presumed that the answer to a question posed by any particular Vendor should be communicated to all Vendors participating in the applicable Procurement process, unless a determination is otherwise made by the IESO that the question posed is commercially confidential to the Vendor;
- (b) Where a Vendor asserts that a question it is posing is commercially confidential in nature, then:
 - Where the IESO agrees that the question is commercially confidential, the response to such question will only be communicated to that Vendor;
 - Where the IESO determines that the question is not commercially confidential, then the Vendor shall be provided the opportunity to withdraw the question and either no response shall be given; or, if in the IESO's determination, the question and response is materially relevant to the Procurement, the IESO shall have the discretion to issue a response or communication to all Vendors on the substance of the question without specifically identifying the Vendor who asked it; or
 - The Vendor may agree to reclassify or revise the question so it is not considered commercially confidential, allowing a response to be given to all Vendors.

The IESO shall retain the discretion to determine whether a question is commercially confidential in nature and requires a commercially confidential response, whether or not the Vendor identified its question as being general or commercially confidential in nature.

5.4 Evaluation

5.4.1 Evaluation Criteria

The IESO will establish evaluation criteria as follows:

- (a) Evaluation criteria should be developed in consideration of the Procurement method and the principles set out in this policy;
- (b) Business Units should consult with the Procurement Unit to ensure that Mandatory Requirements are used only where absolutely necessary and not for the purposes of limiting or restricting the number of qualified submissions to be reviewed;

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

- (c) Evaluation criteria must not be developed in a way that creates hidden evaluation measures and the IESO shall not cause disclosed evaluation criteria to be further divided into undisclosed scoring sub-categories;
- (d) Evaluation criteria should take into account price, quality, quantity, delivery, servicing, experience, financial capacity of the Vendor, and any other criteria directly related to the individual Procurement;
- (e) Evaluation criteria must be reasonable and not overly restrictive. The inclusion of any restrictive evaluation criteria must be supported by a comprehensive business rationale.
- (f) Price submissions must be requested in separate electronic files from all other submission documents, and the evaluation of price must be undertaken by the Procurement Unit after the completion of the evaluation of the Mandatory Requirements and any other rated criteria, unless otherwise specified in the Procurement documents;
- (g) The IESO should not request information from Vendors that will not be evaluated or affect the evaluation process; and
- (h) Where a VOR Arrangement has been established, the IESO should not include evaluation criteria in a Second Stage Competition that was already evaluated during the initial VOR Arrangement evaluation, with the exception of price.

The IESO must fully disclose in the Procurement documents the evaluation criteria to be used in assessing a Vendors' Response. A full disclosure of the evaluation criteria includes, but is not limited to:

- A clear articulation of any Mandatory Requirements;
- A clear articulation of:
 - All rated criteria, including the information or supporting content that Vendors are requested to provide for evaluation;
 - Any minimum experience, skills or qualifications requested; and
 - All weighting and sub-weightings;
- Descriptions of any short-listing processes, including, any required Minimum Thresholds for rated criteria and the tie-breaking mechanism that will be used;
- The role and weighting of reference checks and, if applicable, oral interviews, site visits, demonstrations, alternative strategies or solutions, and value-added services; and

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

- Descriptions of the pricing evaluation methodology, including the use of mathematical formulas that will be used to determine pricing for specific volumes and/or service levels or to calculate scoring.

Where IESO supports the proposal of alternative strategies or solutions, the Procurement document must expressly request alternative solutions and describe how alternatives will be considered in the evaluation process.

5.4.2 Evaluation Process

Responses must be evaluated in accordance with the evaluation process, criteria, rating and methodology set out in the Procurement document.

Where only one Vendor has submitted an eligible Response to a Procurement process, the Evaluation Committee must evaluate that Response in accordance with the evaluation process disclosed in the Procurement document to ensure that the Response meets the requirements of the Procurement.

Working with the Business Unit, the Procurement Unit will establish the evaluation framework for each Procurement in accordance with this policy. The evaluation framework will act as a guideline for how a Procurement will be evaluated and those participating in the evaluation are expected to comply with the evaluation framework. The evaluation framework may be an informal communication with the Evaluation Committee or may be provided in a formal guideline document. The degree to which the contents of an evaluation framework are disclosed, if at all, as part of the Procurement documents, shall remain at IESO's discretion. Evaluation decisions will be reached in accordance with the process outlined in the evaluation framework.

Individuals participating in the evaluation of Responses to a Procurement process must declare any potential or actual Conflict(s) of Interest. If potential or actual Conflicts of Interest are declared, written approval must be obtained from Legal Services to remain on the evaluation team.

Where a Vendor is disqualified for non-compliance with a Mandatory Requirement or fails to meet a Minimum Threshold (if any) as set out in the Procurement document, no further evaluation of that Vendors' Response will take place.

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

Following the evaluation process, the IESO may select only the highest ranked Response(s) that have met all Mandatory Requirements and/or Minimum Thresholds. Unless otherwise specified in the Procurement documents, in the event of a tie, the Response with the highest technical score will be deemed to be the highest ranked Response. Unless expressly stated in the Procurement documents, the IESO must not consider alternative products, specifications or solutions proposed by a Vendor.

5.4.3 Evaluation Committees & Sub-Committees

The responsibility of the Evaluation Committee is to ensure that the evaluation process is conducted in accordance with the evaluation framework, including reviewing and approving the evaluation framework, overseeing the activities of all participants associated with the evaluation process, and ensuring that all required due diligence necessary to carry out the evaluation process has been conducted.

No member of an Evaluation Committee may disclose any contents of the evaluation process except where necessary to escalate above the level of authority granted to an Evaluation Committee. In such cases, confidential information should not be disclosed except:

- (a) Where there is any occurrence of wrongdoing or other actions or omissions, which if not disclosed, could compromise the integrity and fairness of the evaluation process;
- (b) Where information obtained in the course of the evaluation process could represent a material enterprise-wide risk to the IESO outside of the context of the Procurement; or
- (c) In the event that the Evaluation Committee is at an impasse and requires the input or guidance of a higher authority within the IESO in order to resolve such impasse.

In all such cases, communication may only be made through and facilitated by the Procurement Unit.

In some Procurements, the evaluation requirements or contractual requirements may be sufficiently complex to warrant subdividing the Evaluation Committee into sub-committees. Each sub-committee will be responsible for evaluating the relevant information as it relates to their expertise (e.g. project management approach, subject matter experts for technical, financial or other aspects, etc.).

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

5.4.4 Vendor Performance

IESO may, consistent with the principles set out in this policy, including consideration of the public interest, value for money and responsible management, take into consideration a Vendor's past performance in the evaluation of a Procurement process provided that IESO has demonstrated due regard to the following factors:

- (a) the objectivity of the methodology for rating the past performance of a Vendor, and to what degree the past performance is relevant to the scored evaluation criteria in the Procurement;
- (b) the transparency and disclosure of a pre-established Vendor performance monitoring system or program that is fair, well documented, unbiased, free of conflict of interest, and specifically identifies (with supporting details) the failures of performance of a Vendor;
- (c) the ability of the performance monitoring system to maintain a fair process for Vendors who have never contracted with IESO;
- (d) the situations in which the Vendor performance monitoring system or program applies to an individual, as opposed to a firm or team; and
- (e) the general fairness and due process afforded to Vendors in the administration of the Vendor performance monitoring system or program.

The presence or lack thereof of a Vendor performance program does not prevent or preclude IESO from including evaluation criteria in a Procurement that takes into consideration past performance or other reference checking based on past experience, provided that such criteria satisfies the requirements of evaluation criteria generally set out in this policy.

5.4.5 Award Notifications

Vendors must be promptly informed of contract award decisions. Notification to a Vendor whose Response is rejected or disqualified should be made directly to the Vendor within a reasonable time after the decision to reject or disqualify has been made by IESO and must cite the reasons for rejection or disqualification.

Following the execution of a Contract with a Total Procurement Value of \$500,000 or greater, a notice of award must be published on a publicly accessible website (such website to be determined by the Procurement Unit as appropriate to the Procurement method) and must remain readily accessible for a reasonable period of time. The notice must include:

- (a) A description of the goods and/or services procured;
- (b) The name and address of the IESO;

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

- (c) The name and address of the successful Vendor;
- (d) The value of the awarded Contract; and
- (e) The date of the award.

Award notices shall be published no later than 72 days following the execution of the Contract.⁷

In the case of Contracts awarded on a time and material basis, the value of the awarded Contract shall be the approved Total Procurement Value.

A notice of award is not required for goods and/or services acquired through a Non-Competitive Procurement regarding matters of a confidential or privileged nature.

5.4.6 Vendor Debriefings

For all Procurements with an estimated Total Procurement Value greater than \$500,000, the IESO shall offer debriefings upon request from a Vendor and will inform all unsuccessful Vendors who participated in the Procurement of the option to request a debriefing session. Vendor debriefings may be scheduled only after the Contract between the Preferred Vendor(s) and the IESO have been executed, or the shortlisting of Vendors following a Vendor of record Procurement process.⁸

For Procurements valued at \$500,000 or less, debriefings will be held or delivered at IESO's discretion.

In conducting debriefings, the Procurement Unit may only:

- (a) Provide a general overview of the evaluation process as set out in the Procurement document;
- (b) Provide the name of the successful Vendor;
- (c) Discuss the strengths and weaknesses of the Vendor's submission in relation to the specific evaluation criteria and the Vendor's evaluated score. If more than price is evaluated, the IESO may provide the Vendor's evaluation score and their ranking relative to others without disclosing the actual ranking of other Vendors;
- (d) Provide suggestions on how the Vendor may improve future submissions;

⁷ Canadian Free Trade Agreement, Chapter Five - Government Procurement

⁸ Canadian Free Trade Agreement, Chapter Five - Government Procurement

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

- (e) Receive feedback from the Vendor on current Procurement processes/practices;
- (f) Address specific questions and issues raised by the Vendor in relation to its submission; and
- (g) Where a complaint has been filed regarding the award decision and the Vendor is not satisfied with the outcome of the debriefing session, provide the Vendor with information on available next steps to pursue its complaint.

The Procurement Unit may not disclose information concerning any other Vendor, other than as specified above. If a Vendor makes such a request, they must be advised that a formal Freedom of Information (FOI) request can be submitted to the IESO's Privacy Office. During a debriefing, the Procurement Unit must not respond to any questions that are unrelated to the Procurement process and must note such questions as being out of scope in accordance with the debriefing process outlined in the Procurement documents.

The process of debriefing ensures that the Procurement process adheres to the principles of this policy. The purpose of a debriefing session is to give the unsuccessful Vendors an opportunity to receive feedback on the strengths and areas for improvement of their submissions.

5.5 Entering into a Contract

The following steps are required when entering into a Contract:

- (a) A Contract must be signed by all parties before the provision of goods and/or services commences. If only a Purchase Order will be issued, it must be issued before the provision of goods and/or services commences, as further described in Appendix H: Purchase Requisition and Purchase Order Requirements;
- (b) The Contract must be finalized using the form of Contract that was disclosed with the Procurement document, if any;
- (c) The Contract Term, including and any options to extend, must align with the term that was set out in the Procurement document;
- (d) The Contract must clearly state the financial commitments of the engagement, including permitted price increases as set out in the Procurement documents and any contract ceiling price;
- (e) Where a negotiated Contract is not required to be executed at the close of a Procurement process, the Purchase Order will form the binding agreement between the IESO and the Vendor and will be accompanied by the IESO's standard Contract terms and conditions;

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

- (f) All non-standard Contracts must be submitted to Legal Services for review prior to execution, regardless of the dollar value or the length of term of the Contract. This includes third party Contracts and any deviations to previously approved clauses to IESO Contracts and commercial terms; and
- (g) When executing a Contract, the IESO should obtain the Vendor's signature prior to seeking the signature of the Approving Authority.

5.6 Contract Management

The Business Unit is responsible for the management of the Contract, in accordance with [Appendix G: Contract Management](#).

5.7 Providing Vendor References

Employees may provide personal references in respect of Vendors that are factual, accurate, fair, pertinent, and verifiable; however, it must be clear that the comments made are in their personal capacity and are not those of the IESO. Employees cannot give personal references on IESO letterhead or otherwise suggest that they are given on behalf of the IESO.

5.8 Complaint Process

Vendor complaints regarding the IESO's Procurement process(es) must be submitted to the Senior Manager, Procure to Pay, or their delegate, who will review with IESO Legal Services to assess the appropriate actions to respond to the Vendor's complaints.

6.0 Definitions

Unless otherwise defined in this policy, the following definitions have the following meanings:

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

Allowable Exception means specific situations set out in this policy where the use of a Non-Competitive Procurement process is allowable for the Procurement of goods, Consulting, or Non-Consulting Services, provided that prior approval is received in accordance with the Approving Authorities specified in the OAR.⁹

Approving Authority means the individual authorized to approve transactions with financial consequence. The authority is delegated by the IESO Board of Directors through the Organizational Authority Register (OAR) based on both dollar value and the specific nature of the transaction.

Business Unit refers to the department or functional area within the IESO that has requested and initiated a Procurement.

Conferred Value includes, but is not limited to:

- (a) The exchange of goods and/or services by the IESO in return for other goods and/or services.
- (b) Revenue generating opportunities.
- (c) Partnership Agreements with non-profit organizations¹⁰.

Conflict of Interest occurs when personal interests interfere with, or may appear to interfere with, an individuals' primary business loyalty to the IESO, as further described in the IESO Code of Conduct.

Consulting Services means the provision of expertise or strategic advice by specially trained and qualified professionals for the purpose of providing recommendations to the IESO for decision-making, including activities relating to critical and/or commercial analysis, the formulation and/or implementation of recommendations relevant to the IESO's business. This includes:

- (a) Management consulting (e.g., helping management improve their performance, primarily through the analysis of existing problems and development of plans for improvement. This includes organizational change management assistance and strategy development);
- (b) Information Technology consulting (e.g., advisory services that help clients assess different technology strategies, including aligning their technology strategy with their business or process strategy);
- (c) Technical consulting (e.g., activities related to actuarial science, appraisal, community planning, health sciences, interior design, realty, social sciences);
- (d) Research and development (e.g., investigative study for the purpose of increasing the available store of knowledge and/or information on particular subject);

⁹ OPS Procurement Directive, Section 10.

¹⁰ OPS Procurement Directive, Section 8.3.

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

- (e) Policy consulting (e.g., advisory services to provide policy options, analysis and evaluation);
- (f) Communication consulting (e.g., the provision of strategy and advice in conveying information through various channels and media):
 - For clarity, Consulting Services do not include services in which the physical component of an activity would predominate: for example, services for the operation and maintenance of a facility or plant; water-testing services; exploratory drilling services; surveying; temporary help services; training/education instructors; employee placement; auditing services; and aerial photography;
 - Consulting Services also do not include any licensed professional services provided by medical doctors, dentists, nurses, pharmacists, veterinarians, engineers, land surveyors, architects, accountants, lawyers and notaries in their regulated capacities.¹¹

Contract means the formal written document that will be entered into between the IESO and successful Vendor(s) at the end of the Procurement process¹² and includes a Purchase Order.

Contract Amendment means an alteration or change to an existing Contract by way of formal written documentation, which may include a change to the term (including leveraging extension options), value or scope of the Contract, made by mutual agreement between both the Vendor and the IESO.

Contract Term means the total length of time a Contract may be in effect, including any exclusions provided for in the contract.

Contracting Out Notification means a notification provided to the Society of United Professionals that the IESO proposes, or in the case of emergencies, decides, to contract out work within the jurisdiction of the bargaining unit.¹³

Costs has the meaning set out in Section 5.4 of this document.

Evaluation Committee means the group of individuals that are responsible for evaluating Vendor submissions following a competitive Procurement in line with the process set out in the solicitation document.

Exemption means an exclusion from a specific requirement of this policy, provided that prior approval is obtained from the Approving Authority as set out in this policy and the OAR.¹⁴

¹¹ OPS Procurement Directive, Sections 4.1.1 and 10.

¹² OPS Procurement Directive, Section 10.

¹³ Collective Agreement between IESO and the Society of Energy Professionals, January 1, 2013-December 31, 2014, as amended, Article 65.

¹⁴ OPS Procurement Directive, Section 10.

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

External Auditor means an independent third party engaged in a regulated capacity to complete audit services for the IESO.

Fairness Monitor means an independent and impartial third party engaged by the IESO to monitor whether the Procurement process was carried out in accordance with the Procurement documents and to ensure that the Procurement practices are transparent, objective, impartial and fair.

Former Employee means a former employee of the IESO or its predecessor organizations, which for greater certainty, includes the Ontario Power Authority.

Government means the Government of Ontario.

Government Vendor of Record or VOR Arrangement means a Procurement arrangement established by the Ministry of Government & Consumer Services that authorizes one or more qualified Vendors to provide goods and/or services for a defined time period that the IESO may use to source goods and/or services under the terms and conditions established for Provincially Funded Organizations.

Independent Contractor means a self-employed person who provides certain services under a Contract and is not under the control, guidance or influence of the IESO.

Information Technology or IT means the equipment, software, services and processes used to create, store, process, communicate and manage information.¹⁵

Interim Measures means the Interim Measures enacted on March 18, 2019 and amended on September 1, 2020, as related to the “Ontario Public Service Procurement Directive.”

Invitational Competitive Procurement means a Procurement method of inviting a minimum of three (3) Vendors to respond in writing to a request by the IESO for the supply of goods, Non-Consulting or Consulting Services.¹⁶

Legal Services means the team within the IESO that provides corporate legal advice, including legal support to the Procurement Unit.

Mandatory Requirements means evaluation criteria included in a Procurement document that must be met by all Vendors and is verified on a pass or fail basis.

Minimum Threshold means a minimum required score that an evaluated proposal must meet in order to proceed to the next stage(s) of the evaluation process, usually requiring the Vendor to meet a minimum technical score before proceeding to price evaluation.

Non-Competitive Procurement means a Contract awarded outside of a competitive process.

¹⁵ OPS Procurement Directive, Sections 6.1 and 10.

¹⁶ OPS Procurement Directive, Section 10.

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

Non-Consulting Services means the provision of services that do not provide expert or strategic advice for consideration and decision-making, but rather deliver a tangible product/service that results in a tactical or operational outcome.

OAR means the IESO's Organizational Authority Register, as amended from time to time.

Online Financial Management System means the IESO's electronic financial management tool. For the purpose of this policy, the electronic financial management tool specifically relates to the tool used for the management and issuance of Purchase Orders.

Ontario Public Service or OPS Procurement Directive means the Management Board of Cabinet Procurement Directive dated December 2014, and as amended from time to time.

Open Competitive Procurement means a Procurement that is open to all in accordance with its terms and includes publicly posted Procurement document(s) outlining the opportunity.

Other Included Entity means the status accorded to the IESO under the OPS Procurement Directive, as confirmed by the Memorandum of Understanding.

Privacy Office means the IESO's Business Unit responsible for receiving and responding to Freedom of Information requests and can be contacted at:

Independent Electricity System Operator

Attention: Privacy Office

120 Adelaide Street West, Suite 1600

Toronto, ON M5H 1T1

Phone: 416-969-6277

Fax: 416-969-6383

email: privacy@ieso.ca

Procurement means the act of obtaining goods and/or services per this policy.

Procurement Unit refers to the functional business area responsible for providing centralized Procurement services to enable the acquisition of goods and/or services at the IESO.

Purchase Order means an authorized record for the purchase of goods and/or services issued by the IESO to a Vendor issued from the IESO's Online Financial Management system.

Purchase Requisition means a request for approval to initiate a Purchase Order for the purchase of goods and/or services through the IESO's Online Financial Management system.

Purchased Services Agreement means an agreement between the IESO and the Power Workers Union to use purchased services for work which may be within the jurisdiction of the bargaining unit.¹⁷

¹⁷ Collective Agreement between the IESO and Power Workers Union, Canadian Union of Public Employees (CLC), Local 1000, April 1-2014-March 31, 2017, Article 12.

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

Related Party (or Related Parties) means an entity or an individual (person) that is related to the IESO that possesses an element of control (whether complete, common or shared) or influence of the IESO and/or key personnel (including Board Members or close family members of key personnel). Contracts between the IESO and a Related Party, such as a Contract for the board member's company or affiliated company to deliver services to the IESO must be disclosed on the IESO's financial statements.

Request for Information or RFI means a market research Procurement document that is used to elicit industry information on particular goods and/or services from the Vendor community.

Request for Proposal or RFP means a Procurement document that requests Vendors to supply solutions for the delivery of a product or service or to provide alternative options for solutions.

Request for Quotation or RFQ means a Procurement document that requests Vendors to provide goods and/or services where the scope is fully defined and where the selection is typically based on price or simple evaluation criteria.

Request for Services or RFS means a Procurement document used during the Second Stage Competition to request submissions from one or more Vendors listed on a VOR Agreement.

Request for Vendor Qualification or RFVQ means a Procurement document used to request technical information and evidence of financial stability and product or service suitability from Vendors in order to pre-qualify or short list Vendors to enter into a VOR Agreement to provide specific types of goods and/or services.

Request for Vendors of Record or RVOR means a Procurement document used to develop a short-list of qualified Vendors to enter into a VOR Agreement for specific categories of work or to provide specific types of goods and/or services.

Responses means Copies of all responses, submissions, proposals, questions and answers received in response to Procurement documents, including conflict of interest declarations and registration forms.

Rostering means the use of a pre-defined process for selecting a Vendor of Record in connection with a VOR Agreement that does not require a Second Stage Competition. The Rostering method may include, but is not limited to, unit pricing, successive order selection, or rotation.

Second Stage Competition means an Invitational Competitive Procurement issued to qualified Vendors of Record.

Statement of Work means a written document that sets out the scope of work under a Contract or that sets out an agreement to provide goods or services under a VOR Agreement. A Statement of Work must be agreed to by both parties to a Contract.

Total Procurement Value means all costs and conferred value associated with a contractual relationship with a third party. Where a project involves multiple related procurements, the

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

project's Procurement Value would be determined by cumulative value of each related Procurement.

Vendor means a person or company offering goods and/or services for sale.

Vendors of Record means those Vendors that have entered into a VOR Agreement.

VOR Agreement means a Vendor of Record Procurement arrangement that authorizes one or more qualified Vendors to provide goods and/or services for a defined time period on pre-negotiated terms and conditions. These agreements include those entered into with qualified Vendors sourced through a RVOR or through an RFVQ, as defined above.

VOR Guide means a user guide that provides users with information about a VOR Agreement such as Vendor contact information, pricing, specific requirements, details pertaining to the Second Stage Competition or Rostering process, or any other such information as may be necessary for the management of the VOR Agreement.

Volume Licensing Agreement (VLA) means a software licensing program that software publishers provide to large customers, offering significant price discounts and common business and legal terms and conditions. VLAs are not VOR Arrangements and have not been established competitively.

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

7.0 Reporting

7.1 Compliance Reporting

The IESO will report on compliance with the Procurement Policy as follows:

Item	Control	Review By	Reported To	Frequency/Mechanism	Accountability
Non-compliant and Non-Competitive Procurements	Automated controls are built into the IESO's financial workflow system	Supervisor, Procure-to-Pay	The Audit Committee of the Board of Directors	Bi-annual exception report to Audit Committee	Senior Manager, Procure-to-Pay
Compliance with OPS Procurement Directive	Internal audit program	Assigned internal auditor	The Audit Committee of the Board of Directors	Annual reporting to the Treasury Board	Director, Internal Audit
Audit findings	Internal audit program	Assigned internal auditor	The Audit Committee of the Board of Directors	The internal audit cycle includes procurement. This policy is reviewed on a regular basis based on a risk informed planning process	Director, Internal Audit

7.2 General Reporting

On a quarterly and annual basis, the IESO will report to its Executive Leadership Team on performance metrics, planning, and risk management.

8.0 Approval

8.1 Policy Owner and Approver

8.1.1 **Name:** Barbara Anderson

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

8.1.2 **Organizational Position:** Vice President Corporate Services & Chief Financial Officer

8.1.3 **Date Approved:** March 18, 2022

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

9.0 Appendices

9.1 Appendix A: Procurement Document Retention Requirements

The Procurement Unit shall ensure that all Procurement decisions and decision-making processes are recorded to account for and support the reconstruction of facts related to a Procurement, including but not limited to:

- (a) Retaining Procurement records in compliance with the IESO's records management policies and processes;
- (b) Establishing a file naming convention that will permit related Procurement documents to be associated with each other; and
- (c) Managing Procurement documentation to ensure that the IESO is able to respond to any requests for information, Vendor inquiries, debriefing requests, audits and/or legal challenges in a relevant, reliable, comprehensive and timely fashion.

The Procurement Unit shall retain the following documentation related to the Procurement process:

- (a) A copy of the Procurement justification or business case, as applicable;
- (b) Information regarding all relevant Vendor consultations, market research and any RFI's undertaken in the development of the Procurement business case and/or Procurement documents;
- (c) Evidence that all required approvals were obtained;
- (d) Copies of all Procurement documents used to qualify and select a Vendor, including, as applicable, all correspondence received and provided during a Procurement process and all addenda issued with the Procurement documents;
- (e) A VOR Guide describing the terms of use, where applicable;
- (f) Where the Procurement was conducted through a VOR Agreement, information regarding the Second Stage Competition used to select the successful Vendor(s), if applicable;
- (g) Copies of all advertisements of Procurement documents;
- (h) Information relating to compliance with the *Accessibility for Ontarians with Disabilities Act, 2005*, where applicable;
- (i) Copies of all Responses to Procurement documents, including Conflict of Interest declarations and registration forms;

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

- (j) Information regarding any issues that arose during the Procurement process, including all correspondence related to any complaints or disputes;
- (k) All records of evaluation, kept in accordance with applicable law and recordkeeping policies of the Evaluation Committee and its members. The records of evaluation include, but are not limited to:
 - Individual scoring notes and individual evaluator worksheets;
 - Consolidated notes, scores and all other evaluation records, including presentations prepared for the purposes of obtaining approval of evaluation results;
 - Presentations materials prepared by Vendors and notes taken by evaluators where an interview process is included in the evaluation process;
 - All decisions of any Evaluation Committee, as convened in accordance with the evaluation framework for the Procurement;
 - Information regarding all Vendor debriefings, including documentation of the Vendor's request for a debrief, where applicable;
 - Copies of all award letters, notices and posted announcements;
 - Copies of the Contract(s), including executed Contracts and proof of communication of Contracts to the Vendor including where the form of Contract is a Purchase Order;
 - Information regarding all changes or negotiations to the terms and conditions of the Contract;
 - Information regarding any risk assessments performed (such as cybersecurity risk, privacy risks and financial risk) and any resulting recommendations, where applicable;
 - Information regarding all disputes or complaints from Vendors regarding the Procurement; and
 - Contractor security screening decisions, where applicable.
- (l) Any other relevant documentation as identified.

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

9.2 Appendix B: Procurement Methods & Thresholds

The Procurement method will be determined by the Procurement Unit based on several factors, including the minimum requirements as set out below. In the case of an invitational competitive procurement, where the IESO is unable to identify the minimum number of Vendors required to be invited as specified below, an Open Competitive Procurement must take place.

Procurement Type	Total Procurement Value	Procurement Method
Consulting Services	\$0 - \$100,000	Invitational to a minimum of three (3) Vendors.
	\$100,001 and greater	Open Competitive Procurement.
Goods & Non-Consulting Services	\$0 - \$25,000	Invitational to a minimum of one (1) Vendor.
	\$25,001 - \$200,000	Invitational to a minimum of three (3) Vendors.
	\$200,001 and greater	Open Competitive Procurement.
Establishing a VOR Agreement	Any value	Open Competitive Procurement.
Second Stage Competition to a VOR	Less than \$25,000	A minimum of 1 or more Vendors.
	\$25,000 - \$249,999	A minimum of 3 or more Vendors (or all qualified Vendors if there are less than then numbers specified).
	\$250,000 - \$599,999	A minimum of 5 or more Vendors (or all qualified Vendors if there are less than then numbers specified).
	\$600,000 and above	All qualified Vendors.
Requests for Information (RFI)	All RFIs must be posted publically on an electronic tendering site in accordance with this policy.	
Non-competitive	In accordance with this policy and with prior approval from the Procurement Unit and the Approving Authority.	

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

9.3 Appendix C: Procurement Document Requirements Checklist

All Procurement opportunities must be communicated in writing and include sufficient details concerning the Response requirements to enable the fair and transparent comparison of Responses. For clarity, the Procurement of goods and/or services may not be made through verbal requests for quotations or proposals.

The Procurement documents must contain all material information relevant to the Procurement, including the following, where applicable:

- (a) A complete description of the goods and/or services, including the nature, and any optional components that are being priced separately;
- (b) The quantity or estimated quantity where the quantity of goods and/or services is unknown;
- (c) Any requirements to be fulfilled, including any technical specifications, requirements for servicing or warranty, transition costs (if applicable), applicable conformity assessment certification, plans, drawings or instructional materials. For these specifications:
 - Generic and non-brand-specific requirements should always be used when possible. In such cases the specifications should include information with respect to minimum performance requirements; and
 - In any case where references to particular trademarks or trade names, patents, copyrights, designs, type, specific origin, producer or supplier are made, the Procurement documents must allow for equivalents.
- (d) Any conditions for participation, specifically any Mandatory Requirements, including a list of information and documents that Vendors are required to submit in connection with the conditions for participation in any Procurement process;
- (e) A clear description of the evaluation criteria and process to be used in assessing Responses, including the weighting and, if applicable, sub-weighting of all criteria and any Minimum Threshold requirements;
- (f) Clear submission instructions;
- (g) If applicable, a description of the process that will be used to seek clarification and/or allow the correction of unintentional errors in Vendor submissions after the submission deadline;
- (h) The Contract Term (which includes all extension and/or renewal options);
- (i) The framework under which price increases will be permitted, including, without limitation, the frequency of the price increases, allowable amounts of increases and any benchmarks that will be used to confirm the price increases, as applicable;

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

- (j) Any dates for the delivery of goods or the supply of services, which must take into account such factors as the complexity of the Procurement, the extent of subcontracting anticipated and the realistic time required for production, de-stocking and transport of goods from the point of supply or for supply of services;
- (k) The timeline for the Procurement process, including posting date, deadlines for submitting questions and posting Addenda and the closing date; and
- (l) Any other applicable requirements as set out in [Appendix D: Additional Procurement Considerations Checklist](#) and [Appendix E: Additional Requirements for IT Procurements](#).

In the case of a Procurement document to establish a VOR Agreement, the Procurement document will also include:

- (a) A description of how purchases will be made under the VOR Agreement;
- (b) The criteria that will be used to evaluate submissions;
- (c) A statement that only the Vendors engaged in the VOR Agreement will receive further notices of Procurements under the VOR Agreement;
- (d) The Contract Term of the VOR Agreement, including the frequency that the VOR Agreement will be re-opened for new submissions (if applicable). If there is no Contract Term for the VOR Agreement, the Procurement document must also indicate the method by which notice will be given of the termination of the VOR Agreement; and
- (e) If applicable, any limitation on the number of Vendors that will be permitted to participate in the Second Stage Competition and the criteria for selecting the limited number of Vendors.

The Procurement documents will exclude:

- (a) Conditions for participation that are not essential to ensuring that a Vendor has the legal and financial capacities and the commercial and technical abilities to provide the goods and/or services;
- (b) Any criteria designed to favour Vendors from a particular location (province, territory, region) or goods and/or services of a particular geographic location (excluding, where applicable, requirements within Canada);
- (c) Any requirement to have prior experience with the IESO or within Ontario; and
- (d) Any requirement or feature that could unfairly create an advantage for certain Vendors.

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

9.4 Appendix D: Additional Procurement Considerations Checklist

9.4.1 Business Unit Obligations

The Business Unit must communicate the impact of any of the following additional considerations to the Procurement Unit when undertaking a Procurement.

9.4.2 Protection of Personal and Sensitive Information

Prior to undertaking any Procurement of goods and/or services that may result in the collection, use or disclosure of personal information, the Business Unit will obtain legal advice as to whether the collection, use and disclosure is compliant with applicable legislation. The Business Unit may be required to conduct a privacy impact assessment. Any information that is to be collected, used and disclosed must comply with applicable privacy legislation and the applicable IESO privacy policies, processes and procedures.¹⁸

9.4.3 Consulting Services Contracts¹⁹

Effective September 1, 2020 and in accordance with Appendix B of the OPS Procurement Directive, all Consulting services Contracts, regardless of the Total Procurement Value, must provide a cost for each deliverable provided by the Consultant, with the exception of the development of a qualified Vendor of Record list.

New VOR Agreements may use per hour or per diem rates which will be used to determine the costs of deliverables that are defined in a Second Stage Competition.

9.4.4 Design & Build Procurements

For Procurements that involve design and build phases, the IESO should either:

- (a) Conduct a single Procurement with the build phase being subject to the successful completion of the design phase; or
- (b) Conduct separate Procurements for the design and build phases.

Where the Business Unit determines it is appropriate to conduct a single Procurement, whereby the same Vendor would provide both design and build services, the Business Unit must validate

¹⁸ OPS Procurement Directive, Section 8.14 (mandatory).

¹⁹ OPS Procurement Directive, Appendix B, Section 5 (mandatory)

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

the satisfactory completion of the design phase before proceeding with the build phase. The Business Unit must clearly define the criteria by which satisfactory completion will be measured. The Procurement Unit must ensure that the Procurement documents, especially the Agreement, clearly outline the measurement criteria.

Where the Procurement of design and build phases will be conducted separately, the Procurements are subject to the following requirements:

- (a) Any Vendor engaged in the design phase of the Procurement may not participate in the subsequent build phase of the Procurement. This must be clearly disclosed in both Procurement documents; and
- (b) The Business Unit is responsible for informing the Procurement Unit of any subsequent or future Procurements that may involve the design services being procured.

9.4.5 Former Employee Independent Contractors

In addition to any post-employment restrictions provided under the IESO Code of Conduct, Former Employees operating as an Independent Contractor:

- (a) Will not be sourced through a Non-Competitive Procurement; and
- (b) Are not eligible to be awarded a Procurement opportunity for a minimum period of six months following the date of their retirement or termination of employment or final severance payment (whichever comes later) from the IESO.

In either case, the Contract will be subject to a maximum term of eighteen months (including any optional extensions), unless otherwise approved by the Chief Financial Officer or their delegate.

9.4.6 Collective Agreements

Procurements may be subject to specific terms or conditions within the IESO's collective agreements with the Society of Energy Professionals and the Power Workers Union, as are amended from time to time. This may include, but is not limited to Contracting Out Notifications or Purchased Services Agreements. In these cases, Business Units are responsible for consulting with the IESO's Human Resources Department prior to commencing a Procurement.

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

9.4.7 Expense Reimbursement

Contracts must only allow for the reimbursement of expenses in accordance with the *Management Board of Cabinet (MBC) Travel, Meal and Hospitality Expenses Directive*, as amended from time to time. The IESO will not reimburse expenses that are specifically excluded, including but not limited to food (meals, snacks and beverages), hospitality and incidentals.

9.4.8 External Audit Services and the IESO's External Auditor

The Procurement Unit must be consulted when engaging a Vendor to conduct audit services or when engaging the IESO's External Auditor to perform any services, regardless of the Total Procurement Value. All non-audit services to be performed by the IESO's External Auditors must be reviewed and approved by the Audit Committee before such work is commenced.

The independence required of an External Auditor is predicated on three principles: (a) an auditor cannot function in the role of management; (b) an auditor cannot audit their own work; and (c) an auditor cannot serve in an advocacy role for the IESO (the "Auditor Principles"). The IESO's External Auditor may only provide the services listed below:

- (a) Audit and review of financial statements;
- (b) Annual audit of the design and operating effectiveness of internal controls over financial reporting;
- (c) Prospectus work;
- (d) Audit of pension plans;
- (e) Special audits on control procedures;
- (f) Accounting research and advice;
- (g) Due diligence on mergers and acquisitions;
- (h) Tax compliance and Consulting Services; and
- (i) Other services not specifically prohibited in the following sections.

The IESO's External Auditor cannot provide any of the following services:

- (a) Bookkeeping services or other services related to accounting records or financial statements;
- (b) Financial information systems design and implementation;

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

- (c) Appraisal or valuation services, fairness opinions, or contribution-in-kind reports;
- (d) Actuarial services;
- (e) Outsourced internal audit services that conflict with the Auditor Principles of independence listed above;
- (f) Management functions;
- (g) Human resources functions;
- (h) Broker-dealer, investment advisor or investment banking services;
- (i) Legal services;
- (j) Expert witness services unrelated to the audit;
- (k) Consulting Services that conflict with the Auditor Principles listed above;
- (l) Recommend aggressive or confidential tax transactions; and
- (m) Personal tax services to persons in financial reporting oversight roles.

9.4.9 Contractor Security Screening

Contractor security clearance may be required for Vendors selected to provide goods and/or services to the IESO. At the start of any Procurement process, Business Units must complete a contractor security risk assessment to assess the nature of Contract risks involved and determine the need, if any, and level of contractor security screening involved. Where contractor security clearance is required, it is the obligation of the Business Unit to ensure that clearance is received.

9.4.10 Additional Considerations for Advertising, Public and Media Relations and Creative Communication Services

In determining the appropriate Procurement method and approvals for the Procurement of advertising, public and media relations, and creative communication services, Business Units must consult with the Procurement Unit and consideration must be given to the estimated Total Procurement Value of the services, including fees paid to the agency for its creative work and coordination, as well as the costs of production, including third-party costs.

A Contract with a Vendor for such services must include a provision that, when third-party production services are to be acquired by the Vendor, the Vendor must carry out a competitive process that adheres to the requirements of this policy. The provision should outline the

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

expectations and requirements for conducting the competitive process, including but not limited to, value thresholds, record retention, and IESO approval requirements.

9.4.11 IESO Supplier Code of Conduct

When procuring goods and/or services, the Procurement Unit must ensure that a copy of the current Supplier Code of Conduct is made available to Vendors in accordance with the Procurement documents. Compliance with the Supplier Code of Conduct is a condition of engagement with the IESO for its business partners, consultants and contractors.

9.4.12 Related Party Transactions

When procuring goods and/or services, any Contracts and subsequent financial transactions that are awarded to Related Parties must be disclosed on the IESO's financial statements and such awards must be reported by the Procurement Unit to the CFO or his/her delegate prior to the execution of any such Contracts.

9.4.13 Accessibility Obligations

The Procurement Unit must ensure that IESO complies with the *Accessibility for Ontarians with Disabilities Act, 2005, S.O. 2005, c. 11 (AODA)* and its regulations, as well as related IESO policies when procuring goods and/or services.²⁰

The IESO must incorporate accessibility criteria and features into its Procurement processes, except where it is not practicable to do so. Where applicable, Procurement documents must specify the desired accessibility standards to be met and the related submission requirements, and provide guidelines for the evaluation of proposals in respect of those requirements.

9.4.14 Additional Considerations for Legacy Contracts

Additional review and consideration may be required for Procurement activities affecting Contracts that were procured by a predecessor IESO entity using the predecessor entity's procurement policies and processes, and which continue to be administered by the IESO. Examples may include the administration of existing VOR Agreements, and Contract Amendments. Legacy Contracts will be reviewed on a case-by-case basis.

²⁰ OPS Procurement Directive, Section 8.13 (mandatory)

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

9.5 Appendix E: Additional Requirements for IT Procurements

In addition to the requirements outlined in [Appendix C: Procurement Document Requirements Checklist](#) and in [Appendix D: Additional Procurement Considerations Checklist](#), Business Units must also include the following considerations for IT Procurements, where applicable:

9.5.1 Cybersecurity

Prior to undertaking any Procurement of goods and/or services that may involve i) access to IESO systems or data, ii) software or application development services, iii), installation or use of new software or cloud based services; the Business Unit will discuss their requirements with IESO's Information Security team. Information Security may be required to perform a formal evaluation and/or conduct a risk assessment on the requirements in order to determine the impact and necessary requirements related to the Procurement. Procurement activities must adhere to IESO Information Security policies, standards, processes, and procedures.

9.5.2 Quality Assurance

Prior to undertaking any Procurement of IT related goods and/or services; the Business Unit will discuss their requirements with IESO's Quality Assurance Business Unit. The Quality Assurance Business Unit may provide requirements and/or considerations for the Business Unit to include in Procurement activities.

9.5.3 Volume Licensing Agreements²¹

Some Volume Licensing Agreements (VLAs) have been established with certain software Vendors to enable the IESO to take advantage of discounts and the opportunity to license software products under common negotiated terms. Prior to using a VLA, the Procurement Unit must review and follow the VLA guidelines, terms and conditions including, but not limited to, reporting and audit requirements set out by the Government.

VLAs have not been established using an open competition process, and as such, they are not considered a substitute for competition. IESO may be required to seek non-competitive approvals, as appropriate, for Procurements of software and related services using a VLA.

²¹ OPS Procurement Directive, Section 4.3.1

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

9.5.4 Maintenance and Support

The Business Unit must consider the acquisition of maintenance and/or support over the estimated useful life of the IT installation as part of the Total Procurement Value and either include it in the Procurement for the software, or procure it separately, where necessary and appropriate. Splitting or sub-dividing of maintenance and support services for the purposes of avoiding the requirements of this policy is not allowed. IT Contracts must include appropriate contractual provisions for maintenance and support services for the estimated useful life of the IT installation.

For already installed software or hardware, where maintenance and/or support was not included in the Procurement approval or where maintenance and/or support services will expire, IESO must seek the appropriate Procurement approvals for the balance of the intended installation period or next anniversary of the installation when maintenance and/or support will be required.

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

9.6 Appendix F: Allowable Exceptions to Competitive Procurement

The Allowable Exceptions are as follows²²:

- (a) Where there is an absence of Responses to a competitive Procurement process that has been conducted in compliance with this policy, including where:
 - No Responses submitted;
 - No submissions to the Procurement met the Mandatory Requirements or Minimum Thresholds of the Procurement; or
 - The submitted Responses were collusive. Procurements directly awarded under this exception must include the same requirements of the original Procurement.
- (b) Where only one Vendor is able to meet the requirements and no reasonable alternative or substitute goods and/or services exist for one or more of the following reasons:
 - To ensure compatibility with existing products or goods and/or services. Compatibility with existing products or goods and/or services may not be allowable if the reason for compatibility is the result of one or more previous Non-Competitive Procurements;
 - The protection of copyright, patent rights, or other exclusive rights or to maintain specialized products that must be maintained by the manufacturer or its representatives; or
 - The supply of goods and/or services is controlled by a Vendor that is a statutory monopoly.
- (c) For work to be performed on property by a contractor according to provisions of a warranty or guarantee held in respect of the property or original work;
- (d) For work to be performed on or about a leased building or portions thereof that may be performed only by the lessor;
- (e) For the Procurement of (electronic) subscriptions to newspapers, magazines or other periodicals, including, as appropriate, memberships to access published materials or information;
- (f) For the Procurement of original works of art;
- (g) For additional deliveries by the original Vendor of goods and/or services that were not included in the initial Procurement where a change of Vendor:

²² OPS Procurement Directive, Section 4.4.4.2

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

- Cannot be made for economic or technical reasons such as requirements of interchangeability or interoperability with existing equipment, software, services or installations procured under the initial Procurement; and
 - Would cause significant inconvenience or substantial duplication of Costs for the IESO.²³
- (h) Where a situation of urgency exists brought about by events unforeseeable by the IESO and the goods and/or services cannot be obtained by means of a competitive Procurement process. A situation of urgency does not occur where the IESO has failed to allow sufficient time to conduct a competitive process;
- (i) For the purchase of goods and/or services on a commodity market;
- (j) For the Procurement of a prototype or a first goods and/or services to be developed in the course of research, experiment, study or original development but not for any subsequent purchases;
- (k) For purchases made under exceptionally advantageous circumstances that only arise in the very short term in the case of unusual disposals such as liquidation, bankruptcy or receivership, but not for routine purchases from regular Vendors;
- (l) Where goods, Consulting or Non-Consulting Services regarding matters of a confidential or privileged nature are to be purchased and the disclosure of those matters through a competitive Procurement process could reasonably be expected to compromise IESO's confidentiality, result in the waiver of privilege, cause economic disruption or otherwise be contrary to the public interest;
- (m) For a Contract to be awarded to the winner of a design contest provided that (i) the contest has been organized in a manner that is consistent with the principles of this policy; and, (ii) the participants are judged by an independent jury with a view to a design contract being awarded to a winner; and
- (n) Where the Procurement is in support of Indigenous peoples.

²³ Canadian Free Trade Agreement, Chapter Five - Government Procurement

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

9.7 Appendix G: Contract Management

The Business Unit is responsible for the management of the Contract, including but not limited to the following:

- (a) Submitting the Purchase Requisition(s) to the Procurement Unit through the Online Financial Management System within 5 business days of contract execution or within 5 days of notice to Award where the Purchase Order forms the Contract, in accordance with [Appendix H: Purchase Requisition and Purchase Order Requirements](#).

Managing the financial commitments of the Contract, ensuring that:

- (a) Payments are approved in accordance with the provisions of the Contract and are done so in a timely manner through the IESO's financial management tool;
- (b) Payments for applicable expenses are in accordance with the Management Board of Cabinet Travel, Meal and Hospitality Expenses Directive, as amended from time to time; and
- (c) Over-payments are identified to Accounts Payable for recovery.

Ensuring Vendor compliance against the delivery of the goods and/or services in accordance with the terms and conditions set out in the executed Contract, including but not limited to scope of work and milestone management and Vendor performance.

Requesting Contract Amendments in a timely manner, including but not limited to:

- (a) Identifying any change requests to the scope, term or deliverables and working with the Procurement Unit to assess any impacts on Costs, terms, and, if applicable, determining whether such changes require non-competitive justification or re-Procurement;
- (b) Initiating requests for amendments or for the execution of extension options through the Procurement Unit at least one month in advance of expiry;
- (c) Submitting timely revisions to the Purchase Order through the Online Financial Management System to ensure that the Approving Authority is in place prior to the changes taking effect; and
- (d) Ensuring that the delivery of goods and/or services do not continue beyond the expiration date of a Contract without an approved Contract Amendment executed through the Procurement Unit.

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

9.8 Appendix H: Purchase Requisition & Purchase Order Requirements

9.8.1 Purchase Requisition vs. Purchase Order

Purchase Requisition means a request for approval to initiate a Purchase Order for the purchase of goods and/or services through the IESO's Online Financial Management System.

Purchase Order means an authorized record for the purchase of goods and/or services issued by the IESO to a Vendor issued from the IESO's Online Financial Management System.

9.8.2 When you need a Purchase Order:

- (a) A Purchase Order is required for all Consulting Services purchases, regardless of the Total Procurement Value;
- (b) A Purchase Order is required for all goods and Non-Consulting Services with a Total Procurement Value greater than or equal to \$25,000;
- (c) A Purchase Order is required for goods and Non-Consulting Services with a Total Procurement Value less than \$25,000, where:
 - A stand-alone Contract is required;
 - A Contracting Out Notification (CON) or Purchased Services Agreement (PSA) is required; and/or,
 - The goods and/or services are related to software, hardware and business equipment greater than \$10,000 (Purchases of this nature must be initiated by IT Services);
- (d) A Purchase Order will not be issued until all the appropriate approvals have been obtained under the OAR.

9.8.3 Purchase Requisition Requirements:

The Purchase Requisition must include all relevant details of the purchase, including but not limited to:

- (a) A brief description of the goods and/or services to be provided, including whether they are goods, Consulting Services or Non-Consulting Services;
- (b) The Procurement method used (Invitational or Open Competition or Non-Competitive);
- (c) The Contract Term, including any options to extend or renew the Contract;

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

- (d) The Total Procurement Value;
- (e) The amount payable to the Vendor for the delivery of those goods and/or services;
- (f) Any timelines or deadlines for providing the goods and/or services;
- (g) A copy of the proposal, quotation or submission from the Vendor, including, as appropriate, documentation to support adherence to the provisions of this policy;
- (h) Where applicable, a copy of the executed Contract; and
- (i) Any other instructions or information related to the purchase or delivery of the goods and/or services.

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

9.9 Appendix I: Guidelines for Conducting Market Research

9.9.1 What is market research as it relates to Procurement?

Market research is the process of gathering information through independent research and/or Vendor consultation in advance of a Procurement process to:

- (a) Identify potential Vendors that provide or sell the desired goods and/or services;
- (b) Find out if there are products that have the capability or functionality to achieve the business objective;
- (c) Discover characteristics or functions that are available that may be incorporated into a specification; and
- (d) Acquire high-level budget estimates that may be used in establishing a Total Procurement Value, to improve accuracy and secure funding approval, as further described in Section 9.9.5 of this Appendix).

9.9.2 When is market research appropriate?

Market research and/or Vendor consultation is only appropriate prior to the initiation of a competitive Procurement. Once the IESO has initiated a competitive Procurement process, communication with Vendors is only permitted through the Procurement Unit, in line with this policy and with the terms and conditions set out in the Procurement document (i.e. RFP, etc.).

9.9.3 What market research methods are available?

Depending on the goal of the consultation, the IESO may engage in market research activities, which may include but are not limited to: *(a comparison of these activities is presented in Table 1 of this Appendix)*

- (a) Conduct informal market research where high level and generic needs are communicated to Vendors through preliminary discussions for the sole purpose of gathering pricing information or high level information on available goods and/or services to improve planning and budgetary activities. This type of research may also include internet research, generic email enquiries, trade shows, white paper reviews, etc. and does not require the assistance of the Procurement Unit provided that they are conducted in line with the IESO Procurement Policy and this Appendix);
- (b) Issue a Request for Information (RFI) to gather detailed information and feedback from a broad base of Vendors. This may include outlining a potential requirement and requesting feedback on Vendor capabilities and suggestions on how a subsequent Procurement may be

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

structured. These must be written documents that are publically posted on the IESO's e-tendering site via the Procurement Unit, soliciting written Responses from the marketplace;

- (c) Issue a draft Request for Proposal (RFP) when a detailed Procurement document is available and the intention is to gather feedback on the details of a Procurement need, approach and general documentation. These must also be written documents that are publically posted on the IESO's e-tendering site via the Procurement Unit, soliciting written Responses from the marketplace.

9.9.4 What are the “rules of engagement” when it comes to informal market research?

The Business Unit is responsible for ensuring that any market research activities that are undertaken directly, without the Procurement Unit, are conducted in line with the IESO Procurement Policy, maintaining the principles of fairness and transparency and:

- (a) Provides no advantage to any Vendor, by ensuring that:
 - All Vendors are provided with the same information within a similar timeframe;
 - Information provided to Vendors does not unnecessarily reveal IESO's requirements and/or needs to the extent that it could create an advantage to any one Vendor; and,
 - Market research findings do not result in any bias nor the development of any requirements that could perceivably favour any particular potential Vendor or group of Vendors.
- (b) Creates no obligation or commitment between the IESO and any Vendor during the consultation or market research phase;
- (c) Clearly communicates to Vendors that market research is not a substitute for a competitive Procurement and that the engagement is not intended to result in Vendors expending significant cost or effort; and
- (d) Any free trials of software or online subscription services are not to be implemented without first engaging with Information & Technology Services and Legal to the extent there are any associated agreements, including “click-through” agreements.

9.9.5 What information can IESO gather on pricing ahead of a procurement process?

- (a) IESO may obtain high level budget estimates, including:
 - Standard price lists that the Vendor publishes broadly;
 - Discount volume thresholds and rates; and/or,

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

- General hourly rate ranges for specific services or skill sets (i.e. labour rates, etc.).
- (b) When seeking information on volume discount levels, it is important not to reveal the IESO's volume needs; instead, ask "what break-points exist for volume purchases." Note that each Vendor may have their own ranges for discounts (e.g. 0-99, 100-249, 250-999, etc.);
- (c) Encourage Vendors to quote commercial rates that any customer would expect to receive at the specified volume discount levels and dissuade them from simply quoting list prices, which tend to be far higher than real-world commercial prices. This will improve budget accuracy; and
- (d) Market research should not result in formalized quotes or proposals from a Vendor or multiple Vendors. Formal quotations must be sought through a competitive Procurement process.

9.9.6 What to consider before conducting market research?

Before approaching the market for information, Business Units should consider the following:

- (a) The objective of the research – i.e. whether it is to determine what products or services exist, or to aid in developing budget estimates;
- (b) Which market or segment of the market place is being targeted;
- (c) The number of Vendors to be engaged noting that the number should be proportionate to the number of potential Vendors in the market. This will help to ensure that the process is not overburdened by speaking to every conceivable potential Vendor, but is broad enough to capture a wide array of information;
- (d) How much time and effort will be spent on market research, including understanding critical deadlines for sourcing the goods and/or services;
- (e) The method for conducting the market research; and
- (f) Confidentiality – the Business Unit is responsible for ensuring that:
 - The commercial confidentiality of any information received during discussions with Vendors is protected and maintained; and
 - Appropriate Non-Disclosure Agreements are in place to protect the IESO's confidentiality and security (note that these should only be used in circumstances where the disclosure of IESO information is critical to the discussions and must be administered through the Procurement Unit).

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

9.9.7 Comparing market research methods

Table 1: Market Research Methods – General Overview

	RFI/Draft RFP	Informal Market Research
Conducted in line with the principles of this policy.	Yes	Yes
Used to gather information or to test a scope of work or approach.	Yes	No
Used to gather high level pricing information for budgeting purposes.	Yes	Yes
May disclose specific details of the IESO's requirements or specifications.	Yes	No
Issued publically on IESO's e-tendering site.	Yes	No
Vendor Responses must be submitted in writing.	Yes	No
Does not result in an obligation or commitment.	Yes	Yes
Does not create any advantage for any Vendor.	Yes	Yes
May replace a competitive process.	No	No
Used as a condition of participating in a competitive procurement.	No	No

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

Schedule A: Baseline

Revision History

Rev. #	Reason for Revision	Revision Author	Date
01	Initial Release		September 10, 2019
1.1	Revision to incorporate changes to the OPS Procurement Directive Interim Measures	Megan Filey	September 1, 2020
1.2	Revision to approval authority for exceptions to posting timelines	Megan Filey	October 19, 2020
2.0	Revision to update policy to incorporate audit recommendations and to align with industry changes.	Megan Filey	January 30, 2022

References

Document Title	Document ID
Ontario Public Service Procurement Directive	
Canadian Free Trade Agreement	
Electricity Act, 1998	
Ontario Energy Board Act, 1998	
Management Board of Cabinet Travel, Meal and Hospitality Expenses Directive	
IESO Board of Directors Procurement Policy	
IESO Supplier Code of Conduct	
IESO's Delegation of Authority Policy	PLCY_18
IESO's Business Expense Policy	PLCY_26

Procurement Policy

DocID: PLCY-14 Version: 2.0

Effective Date: March 18, 2022

Related Documents

Document Title	Document ID
Procure Goods & Services Process Specification	PRCS-45
Issue Goods & Services Purchase Order	PRCS-46
Amend Goods & Services Purchase Agreement	PRCS-47

INTEREST EXPENSE AND INVESTMENT INCOME

Table 1 below reflects the components that make up net interest expense from 2019 to 2025.

Table 1: Net Interest Expense from 2019 to 2025

Net Interest Expense (In \$ millions)	Historical							Budget		
	2019 OEB Approved	2019 Actual	2020 Actual	2021 OEB Approved	2021 Actual	2022 OEB Approved	2022 Actual	2023	2024	2025
Ontario Electricity Financial Corporation Credit Facility	2.1	2.3	1.7	1.5	1.4	1.8	1.4	2.6	3.7	4.4
Capitalized Interest	(0.9)	(0.5)	(0.7)	(0.8)	(0.9)	(1.4)	(1.3)	(1.3)	(0.6)	(0.5)
Financing Charges	0.3	0.3	0.3	0.3	0.1	0.2	0.1	0.2	0.2	0.2
Short Term Investment Income	(5.9)	(7.9)	(3.5)	(2.2)	(2.1)	(2.2)	(8.7)	(9.2)	(8.5)	(8.5)
Long Term Investment Income	(1.5)	(3.2)	(2.4)	(1.3)	(3.7)	(3.3)	(3.7)	(3.8)	(4.5)	(4.8)
Total	(5.9)	(9.0)	(4.6)	(2.5)	(5.2)	(5.0)	(12.2)	(11.5)	(9.7)	(9.2)

Ontario Electricity Financial Corporation (OEFC) Credit Facility

The IESO has an existing note payable and credit facility with the OEFC which is used to fund capital expenditures approved by the OEB. The interest and debt cost of capital expenditures are then collected through the IESO usage fee once the capital asset is in service and amortized. In 2022, the interest expense on this debt was in line with prior year levels at \$1.4 million, \$0.4 million lower than budget as the need to incur additional debt was delayed given the cash flow during the year. The 2023-2025 budget reflects an increase in interest expense primarily driven by the need to access additional credit facility to fund the projected capital investments.

Capitalized Interest

As per IESO capitalization guidelines, all capital project interest expense is capitalized until the particular project is put in service. Capitalized interest has progressively increased in the last three years in relation to the increase in capital investments, particularly in 2022 as MRP investments increased, in line with the 2022 budget amount. In 2023 capitalized interest is projected to remain at a similar level, however in 2024 and 2025 it begins to decrease as major assets, such as MRP, are completed and placed into service.

Financing Charges

Financing charges are an aggregated cost of all the transaction and account maintenance fees.

Short-Term Investment Income

Short-term investment income is a combination of market interest income and corporate interest income. Market interest income is the amount of interest earned on funds passing through the IESO wholesale market in accordance with the Market Rules and corporate interest income is the amount of interest earned on IESO short-term money market investments.

Fluctuations in overnight interest rate and changes in the volume of funds settled for the market are the key drivers for variances in IESO's investment income levels. In 2022, the IESO earned \$8.7 million in short-term investment income which was \$6.5 million higher than budget due to rate increases because of fiscal policy to fight inflation. In the 2023 budget, the IESO assumes that interest rates will begin to ease in the last quarter of the year, thus the \$0.5 million increase compared to 2022 and subsequent \$0.7 million decrease in 2024 budget compared to 2023. For 2025 budget the IESO assumes interest income will remain at similar levels as in 2024.

Long-Term Investment Income

The long-term investment income is earned on a balanced portfolio of pooled funds. These funds are used to support the IESO's supplemental employee retirement plan and other IESO general solvency needs. Historically the performance of the portfolio has exceeded IESO's expectations, mainly associated to better-than-expected market performance, and in 2022 it exceeded the budget by \$0.4 million. The IESO has assumed modest year-over-year gains over the 2023 to 2025 budget horizon.

ASSET MANAGEMENT PROCESS OVERVIEW

Introduction

The IESO's IT systems must be maintained and updated on a regular basis to sustain reliability, performance, availability requirements, add capacity, and keep pace with information security improvements. The classes of assets and their lifecycle details include:

- **Hardware:** Servers, network switches, desktops, etc. have a specific life expectancy when purchased. After the specified life expectancy of the hardware is reached, vendor support costs increase, failure rates increase, and the availability of spare parts decreases.
- **Software:** Software encompasses everything from specific in-house developed tools to major commercial products, to different operating systems and databases. All new proprietary software is regularly updated by the vendors to address any defects, add new features, and address information security requirements. Eventually, for a variety of commercial reasons, vendors discontinue support for older versions of a product and new releases and "patches" are no longer provided; depending on the software and where it sits within the IESO security architecture, the loss of up-to-date security patches is a major consideration in its replacement. Use of unsupported, yet stable versions of software would require the IESO to mitigate any defects or vulnerabilities identified and to do so without support from the vendor.

Managing Hardware Asset Lifecycle

Hardware lifecycle management is the process of assessing and planning for the overall design, roll-out and maintenance of IT infrastructure. The IESO understands that lifecycle management is important to consider before the first component is ever purchased and as such considers the ongoing maintenance and future replacement of hardware assets early in the process.

Planning of hardware assets and their respective lifecycle timelines drives future project activities and is necessary to maintain IT infrastructure. The approach to this planning includes:

- Forecasting the replacement of hardware at the end of its normal lifecycle (every 4–5 years).

- 1 • Forecasting expansion and/or replacement of hardware based on expected data growth
2 and/or computing power consumption needs.
- 3 • Minimizing impacts to the business and gaining efficiencies in implementation by
4 continuing to assess hardware condition and aligning hardware replacements with key
5 business solution changes.
- 6 • Monitoring operational statistics and third-party support availability to determine what
7 hardware can be taken beyond its normal lifecycle (if required).

8 This approach ensures that the IESO minimizes the potential for technical debt (i.e. the number
9 of aging systems with minimal or no support) and levels of forecast spend for hardware
10 replacements.

11 Hardware assets are typically forecast for replacement after 4–5 years of service life but can be
12 extended based on the following criteria:

- 13 • The business solution that leverages the infrastructure is planned to be
14 upgraded/refreshed/replaced within 1-2 years (and so hardware replacements will
15 coincide with that work for efficiencies).
- 16 • The operational statistics of the hardware are such that minimal outages and/or
17 technical issues have been experienced within the last 12-24 months.
- 18 • Third party support is available for the hardware at a reasonable cost (such as firmware
19 upgrades, security patch releases and part replacements).

20 **Managing Software Asset Lifecycle**

21 Software lifecycle management is the process of assessing and planning for the overall design,
22 roll-out and maintenance of software. The IESO understands that lifecycle management is
23 important to consider when deploying new solutions as the activities associated with lifecycle
24 management of software are a significant factor in the total cost of ownership of the software.

25 Part of this process involves the planning and documenting of software assets and their
26 respective lifecycle timelines. The process also drives future project activities that are necessary
27 to maintain the software. The approach to this planning includes:

- 28 • Planning the appropriate timelines for upgrading the software to the latest software
29 release as well as deciding when it would be appropriate to replace the software.

Timelines are based on many factors including: stability of the software; the speed at which the vendor delivers product enhancements; effort and cost to transition to another vendor and the availability of competitive products. Timing for upgrades can be 1 to 5 years while replacement timing can be 5 to 20 years.

- Alignment with supporting infrastructure software (operating systems, application server software and libraries and database management software) vendor support dates.
- Alignment with supporting hardware lifecycles.
- Alignment with business change. This is particularly appropriate when replacing the software.

This approach ensures that the IESO minimizes the risk to the business, that the software services required to operate the business remain operational and that cyber vulnerabilities can be mitigated in a timely manner.

For valid business reasons, planned upgrades/replacements of software may be deferred beyond optimal timelines. Rationale for deferral includes:

- To accommodate a planned business change which will be making changes to the software.
- Making trade-offs between the technology debt risks and business improvement opportunities within the project portfolio.
- To coordinate hardware and software upgrades, to accomplish both upgrades more effectively.

Prioritization of Asset Investments and Inclusion in the Capital Portfolio

The results of the above assessments are an input into the annual business planning cycle and the development of the capital project portfolio (see Exhibit E-2-1 Capital Budget Overview and Progress on Capital Projects). The asset investments (upgrades or replacements) are considered in conjunction with other proposed initiatives that are required to drive business transformation, meet regulatory requirements or advance the IESO's strategic objectives. Through the prioritization exercise the IESO assesses the resource requirements (capital, operating expense and staff levels) to achieve these investments and makes appropriate risk

1 informed trade-offs to ensure the IESO develops a balanced portfolio that addresses various
2 priorities.

3 For the 2023-2025 Business Plan, the following upgrade or replacement projects have been
4 included in the capital portfolio (see Exhibit E-2-1 – Capital Budget Overview and Progress on
5 Capital Projects):

- 6 • Replacement of the Settlement Systems;
- 7 • Long-Term Demand Forecast Tool replacement;
- 8 • Core Network refresh;
- 9 • Meter Data Management System replacement (MDMS);
- 10 • Lawson refresh;
- 11 • Firewall refresh;
- 12 • Windows Infrastructure refresh;
- 13 • MiM Technical refresh;
- 14 • LogRhythm SIEM refresh;
- 15 • Network WAN Infrastructure replacement;
- 16 • Cybertec refresh;
- 17 • Aspen File Server refresh; and
- 18 • Intrusion Prevention System (IPS) refresh.

19 See Exhibit E-1-2 – Capital Expenditure Planning Process Overview for more details on how the
20 IESO develops its capital plan.

CAPITAL EXPENDITURE PLANNING PROCESS OVERVIEW

Introduction

As part of IESO's business planning cycle, business units identify initiatives that they plan to undertake to maintain service, meet or maintain compliance with regulatory requirements, or advance corporate strategic priorities. This includes initiatives to manage and invest in assets (see Exhibit E-1-1 Asset Management Process Overview).

Project and Portfolio Management Approach

For initiatives requiring capital investments, business units outline the reasons for undertaking the initiative, its alignment with the organization's core strategies, and an estimate of costs, timelines and resource requirements to deliver the initiative. This information is used to assess the project against a set of criteria as well as the associated timing and capital needs of the rest of the business. This information is presented to a cross-functional Project Portfolio Management Team (PPMT) that discusses the merits and relative priority of the new proposed initiatives and recommends a project portfolio which:

- Balances the various needs of the organization and stakeholders.
- Reflects the resource capacity of the organization to support change above day-to-day operational activities.

Most of the IESO's projects are multi-year initiatives and, as such, annual project portfolios are made up of both new initiatives and in-flight projects (see Exhibit E-2-1 Capital Budget Overview and Progress on Capital Projects). The project portfolio establishes the capital envelope and operating expense budget to advance these projects over the business planning timeframe. The project portfolio is managed within the approved capital envelope with commitments approved individually on an ongoing basis. Although some of the projects span multiple years, the IESO works within the approved capital expenditure envelope for the business planning period for each calendar year.

The IESO closely monitors each of the individual projects within the portfolio and uses the PPMT to assess and adjust the specific projects in the portfolio as appropriate to meet

evolving needs. This could include adding and withdrawing projects as well as advancing and deferring projects.

IESO Portfolio and Project Management Lifecycle

The IESO prioritizes, governs and delivers enterprise change through a portfolio and project management lifecycle (PPMLC) approach. This approach ensures that projects are appropriately prioritized, governed, achieve objectives and realize benefits. The PPMLC developed by the IESO aligns with industry best practice and provides a streamlined, scalable set of processes that strike an appropriate balance between control and flexibility.

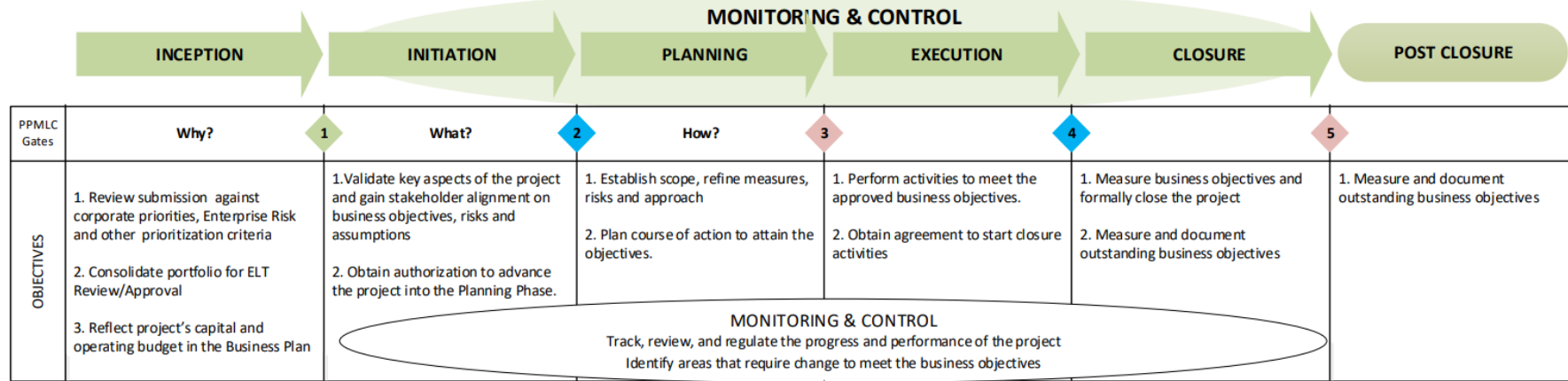
The IESO's PPMLC consists of the following phases:

- Inception
- Initiation
- Planning
- Execution
- Closure
- Post Closure

These phases are also shown in Figure 1, below.

1 **Figure 1: Portfolio and Project Management Life Cycle**

Portfolio & Project Management Life Cycle (PPMLC)



2

1 During the inception phase, the IESO assesses project submissions against a set of criteria,
2 which consider: strategic objectives, mitigation of strategic risk, business value and
3 deliverability. The IESO then scores, ranks and prioritizes the projects accordingly. After
4 assessing the resource needs for each of the projects and considering IESO's resource
5 capacity to support these enterprise projects, the IESO establishes a project portfolio. This
6 exercise is performed as part of business planning and establishes an appropriate capital
7 envelope for each year within the business planning period. Working within the approved
8 capital envelope, the projects portfolio and its budget for each year is trued up annually to
9 reflect any changes in project priority, resource availability and status of current in-flight
10 projects. At this stage of the project lifecycle, project estimates are "order of magnitude"
11 estimates, reflecting a higher level of uncertainty.

12 During the initiation phase of each project, key aspects of the project are validated, including
13 cost and schedule estimates, business objectives, risks and assumptions prior to entering the
14 planning phase. In determining the categorization of the project costs, the IESO adheres to
15 Canadian Public Sector Accounting Standards for Tangible Capital Assets. At this point, cost
16 and time estimates are refined but could still be in the order of +/- 50%. Throughout the
17 project phases, the IESO continues monitoring and control activities to identify areas that may
18 require changes to achieve business objectives. Prior to the execution phase, the IESO further
19 refines the costs and schedule of the project. At this point, cost and schedule estimates are
20 typically in the order of +/- 20%.

21 Actual cost and schedule performance is measured against approved values during the project
22 closure phase along with the reason for variances. Verification that the business objectives
23 have been achieved and lessons learned are also captured during this phase. The post closure
24 phase is utilized whenever business objectives cannot be verified until sometime after project
25 closure. This allows the measurement of business objectives to happen following project
26 completion.

CAPITAL BUDGET OVERVIEW AND PROGRESS ON CAPITAL PROJECTS

The capital expenditure planning process, outlined in Exhibit E-1-2 – Capital Expenditure Planning Process Overview, establishes a capital envelope for capital projects with commitments approved by the IESO individually on an ongoing basis. Although many of the projects span multiple years, the IESO works within the OEB approved capital expenditure envelope for each calendar year and prioritizes projects to support IESO’s core strategies and to maintain the current capabilities of the business.

Table 1: Summary of 2019-2022 Capital Results

Summary of 2019-2022 IESO Capital Portfolio	2019 OEB Approved	2019 Actual	2020 OEB Approved	2020 Actual	2021 OEB Approved	2021 Actual	2022 OEB Approved	2022 Actual
Market Renewal Program Energy Stream (MRP)	\$26.0M	\$10.3M	\$25.9M	\$25.0M	\$36.0M	\$24.0M	\$41.2M	\$34.0M
IESO Core Project Portfolio	\$17.3M	\$20.6M	\$25.6M	\$27.0M	\$32.6M	\$26.3M	\$30.0M	\$28.2M
Total	\$43.3M	\$30.9M	\$51.5M	\$52.0M	\$68.6M	\$50.3M	\$71.2M	\$62.2M

2019-2022 Capital Budgets

In 2019, the IESO received OEB approval for a capital budget of \$43.3 million, which was made up of \$17.3 million for core operations and \$26 million for MRP. Actual 2019 total capital expenditures were \$30.9 million, largely attributable to a deferral of a planned \$10 million MRP software procurement from late 2019 to 2020 (see Exhibit G-2-1 – Market Renewal Program Cost Report) and the cancellation of the Incremental Capacity Auction as described in the IESO’s 2019 Revenue Requirement Submission¹.

Working within the overall approved capital envelope, the IESO allocated available funds to core capital projects in order to accommodate four higher priority projects (Cybersecurity Monitoring,

¹ EB-2019-0002 Exhibit C-2-2 Update on Status of Incremental Capacity Auction

1 Network Performance Monitoring Diagnostic, Corporate PBX Phone Systems Refresh, and
2 Capacity Auction) resulting in an increase in core capital expenditures.

3 In 2020, the IESO received OEB approval for a capital budget of \$51.5 million, which was made
4 up of \$25.6 million for core operations and \$25.9 million for MRP. Core operations capital
5 spending was directed toward projects to replace or upgrade aging systems and infrastructure,
6 including carryover of in-flight projects from 2019 including: Replacement of the Settlement
7 Systems; Supervisory Control and Data Acquisition (SCADA)/Energy Management System (EMS)
8 Upgrade; and the Dispatch Data Management Systems Refresh projects.

9 In 2020, the IESO budgeted a \$25.6 million capital envelope to work on a number of priority
10 projects under the IESO core capital portfolio, however, the required inclusion of the Intrusion
11 Prevention System, a new high priority project, and slightly higher than anticipated spending on
12 other carry-over projects resulted in capital spend of \$27.0 million in 2020 for an overall
13 variance of \$1.4 million. In 2020 MRP capital spend was \$25.0 million, which was \$0.9 million
14 lower than planned. Spending was lower than planned due to the delayed onboarding of
15 implementation resources (including the external vendor for the Dispatch, Scheduling and
16 Optimization (DSO) tool development) and unused contingency.

17 In 2021, the IESO received OEB approval for a capital budget of \$68.6 million, which was made
18 up of \$32.6 million for core operations and \$36.0 million for MRP. Actual 2021 total capital
19 expenditure was \$50.3 million, largely attributable to \$12 million lower MRP spend (see Exhibit
20 G-2-1 – Market Renewal Program Cost Report) and delays in the initiation of a number of larger
21 projects and vendor progress towards milestones. Working within the overall approved capital
22 envelope, the IESO allocated available funds to smaller core capital projects.

23 In 2022, the IESO received OEB approval for a capital budget of \$71.2 million which was made
24 up of \$30.0 million for core operations and \$41.2 million for MRP. Actual 2022 total capital
25 expenditure was \$62.2 million, attributable to \$1.4 million lower MRP spend (see Exhibit G-2-1
26 – Market Renewal Program Cost Report), and \$1.8 million lower capital spending on the core
27 operations projects primarily due to changes in timing of hardware purchases, reductions in
28 vendor pricing on a number of higher value infrastructure projects, extended timelines and
29 delays in vendor's progress toward milestones. Some planned projects have been delayed due

1 to the need to take on unexpected projects such as the Interruptible Rate Pilot requested by
2 the Minister and Business Expense Tool Replacement that had to be advanced due to recent
3 announcement from the vendor that the current solution will be decommissioned in October
4 2023.

5 Projects placed into service in 2022 include: Identity Access Management Phase 2, F5
6 Loadbalancer and NERC Firewall Refresh, Generation to Load Obligations under Proposed
7 Interchange Distribution Calculator Changes, ICI Transition to Ontario Demand, and External
8 Identity Management (Portal). In addition, the IESO has been able to complete the majority of
9 the SCADA/EMS Upgrade, advance the MIM Technical Refresh project and take on several
10 smaller infrastructure, cybersecurity and facilities projects that were not originally identified in
11 2022 project portfolio.

12 **2023-2025 Capital Budget**

13 For 2023-2025, in addition to delivering a number of core business projects which will allow the
14 IESO to maintain critical services, improve efficiency and meet regulatory compliance
15 obligations, the IESO is continuing to deliver a significant number of strategic initiatives with the
16 aim of: driving business transformation (with projects such as the Replacement of Settlement
17 Systems, Data Excellence Program, Enabling Grid Transformation Program, Space Needs
18 Program, and Human Resource Workforce Planning and Analytics Project); ensuring system
19 reliability (with projects such as the Resource Adequacy Program, Enabling Resources Program,
20 and Dynamic Limits in Real-Time Project) and enabling competition and advancing sector
21 leadership through addressing Market Surveillance Panel recommendations.

22 Through its core business projects, the IESO will continue to ensure reliability by upgrading and
23 replacing core applications, infrastructure and cybersecurity tools.

24 For 2023, the IESO's capital budget is \$86 million, including \$35 million for the IESO core
25 project portfolio and \$51 million for the MRP. In 2024, the IESO's capital budget is \$75.9
26 million, including an IESO core project portfolio of \$43.6 million and an MRP budget of \$32.3
27 million. For 2025, the IESO's capital budget is \$58.2 million, made up of a core IESO capital
28 portfolio of \$43.6 million, and an MRP budget of \$14.6 million.

Exhibit E-2-1 Attachment 1 – Capital Projects (Appendix 2-AA) summarizes the IESO’s capital projects in 2022, 2023, 2024 and 2025 and provides an update on the progress of the in-flight projects in the period 2019-2022. See Appendix 3 of Exhibit B-1-2 – IESO Business Plan 2023-2025 for descriptions of the capital projects. Please also see Exhibit E-2-1 Attachment 10 for updates on capital projects with a budget within \$1 million - \$4 million.

Material Capital Projects

The IESO reports business case information on material capital projects, i.e., capital projects with total project costs that exceed \$4 million. The IESO has listed in Table 2 below material capital projects that are planned over the business planning timeframe and whose total capital budget is in excess of the \$4 million materiality threshold.

1 **Table 2: Material Capital Projects**

Material Capital Projects (\$ Millions)	2022 OEB Approved	2022 Actual	2023 Budget	2024 Budget	2025 Budget
MRP	\$41.2M	\$34.0M	\$51.0M	\$32.3M	\$14.6M
Replacement of the Settlement Systems	\$7.0M	\$10.5M	\$4.4M	\$0.8M	\$0.1M
Centralized Alarm Management System Replacement	\$0.8M	\$1.1M	\$0.0M	\$0.0M	\$0.0M
SCADA/Energy Management System (EMS) Upgrade	\$1.4M	\$2.1M	\$0.0M	\$0.0M	\$0.0M
Dynamic Limits in Real-Time	\$2.0M	\$0.5M	\$2.8M	\$0.2M	\$0.0M
Core Network Refresh	\$0.5M	\$0.3M	\$2.0M	\$0.6M	\$0.0M
Market Analysis and Simulation Toolset (MAST)	\$2.0M	\$0.2M	\$0.5M	\$2.4M	\$1.0M
Enabling Resources Program	\$0.0M	\$0.0M	\$0.3M	\$0.6M	\$3.3M
Resource Adequacy Program	\$2.0M	\$1.0M	\$1.0M	\$1.2M	\$1.3M
Space Needs Program	\$0.0M	\$0.0M	\$7.0M	\$10.0M	\$13.0M
Backup Operating Centre and Backup Data Centre Relocation	\$0.0M	\$0.0M	\$5.0M	\$5.4M	\$0.0M
Meter Data Management System Replacement (MDMS)	\$0.0M	\$0.0M	\$0.3M	\$2.0M	\$3.5M
Enabling Grid Transformation Program	\$0.0M	\$0.0M	\$0.1M	\$1.1M	\$7.0M
Lawson Refresh	\$0.0M	\$0.0M	\$0.0M	\$0.2M	\$1.9M
Total Material Capital Projects	\$56.9M	\$49.7M	\$74.4M	\$56.8M	\$45.7M

2

3 As per the IESO's Capital Expenditure Process, material capital projects receive project charter

4 approval at the end of the Initiation Phase. For material capital projects that are not initiated, or

5 are currently still in the Initiation Phase, the IESO has provided a project summary that includes

1 the requisite project charter information. In most cases, cost and schedule estimates are refined
2 and the final version of the project charter is approved at the end of Planning Phase prior to
3 entering the Execution Phase.

4 The IESO has included an update on in-flight material capital projects that had a previously
5 approved project charter in Exhibit E-2-1 – Attachment 9. Project charters, project summaries
6 and progress updates for the 2023-2025 material capital projects can be found in the exhibits
7 referenced below:

- 8 • Core Network Refresh (see Exhibit E-2-1-Attachment 2 - Project Charter - Core Network
9 Refresh)
- 10 • Enabling Resources Program (see Exhibit E-2-1-Attachment 3 - Project Charter -
11 Enabling Resources Program)
- 12 • Space Needs Program (see Exhibit E-2-1-Attachment 4 - Project Summary - Space
13 Needs Program)
- 14 • Lawson Refresh (see Exhibit E-2-1 Attachment 5 - Project Summary – Lawson Refresh)
- 15 • Backup Operating Centre and Backup Data Centre Relocation (see Exhibit E-2-1
16 Attachment 6 - Project Summary - Backup Operating Centre and Backup Data Centre
17 Relocation)
- 18 • Meter Data Management System Replacement (MDMS) (see Exhibit E-2-1 Attachment 7
19 - Project Summary - Meter Data Management System Replacement (MDMS))
- 20 • Enabling Grid Transformation Program (see Exhibit E-2-1 Attachment 8 - Project
21 Summary - Enabling Grid Transformation Program)
- 22 • Replacement of the Settlement Systems (see Exhibit E-2-1 Attachment 9 - Material
23 Capital Project Progress Updates)
- 24 • Centralized Alarm Management System Replacement (see Exhibit E-2-1 Attachment 9 -
25 Material Capital Project Progress Updates)
- 26 • SCADA/Energy Management System (EMS) Upgrade (see Exhibit E-2-1 Attachment 9 -
27 Material Capital Project Progress Updates)

- Dynamic Limits in Real-Time (see Exhibit E-2-1 Attachment 9 - Material Capital Project Progress Updates)
- Market Analysis and Simulation Toolset (MAST) (see Exhibit E-2-1 Attachment 9 - Material Capital Project Progress Updates)
- Resource Adequacy Program (see Exhibit E-2-1 Attachment 9 - Material Capital Project Progress Updates – Resource Adequacy Program)

For additional information on the Market Renewal Program see Exhibit G-2-1 – Market Renewal Program Cost Report.

Performance Measures for 2023-2025

The Performance measures and associated targets will be used to measure performance in delivering on Strategic Initiatives over the Business Plan horizon. The following performance measures fulfill the obligations outlined in the IESO's 2022 Revenue Requirement Submission Settlement Agreement (EB-2022-0002) with respect to capital project execution which stated: "The IESO will include in its next revenue requirement submission a metric (including results) for cost performance of its strategic initiatives that mirrors its current 'Operational Efficiency - Percentage of Strategic Initiatives that are completed on time' measure included in its 5-year Strategic Objectives."

Measure	Measurement criteria	Target		
		2023	2024	2025
Strategic Initiatives are progressing according to their approved schedule	Strategic Initiatives that are in-flight in any particular year are progressing on <i>schedule</i> according to the approved project charter or integrated project plan	75%	80%	85%
Strategic Initiatives are progressing according to their approved budget	Strategic Initiatives that are in-flight in any particular year are progressing on <i>budget</i> according to the approved project charter or integrated project plan	75%	80%	85%

1 The IESO will report on the results of the newly created performance measure in the 2026-2028
2 Revenue Requirement Submission. As with the previous performance measure, the IESO
3 continues to focus measures on the advancement of Strategic Initiatives. These initiatives
4 advance core strategies and imperatives to achieve the benefits as soon as possible as the
5 extent of the benefits can be dependent on timing. The remainder of the IESO's capital portfolio
6 is made up of core business projects which are those that maintain critical business services
7 and compliance with regulatory requirements. Although important and often mandatory, there
8 is often discretion on timing of execution of these core business projects.

Project Charter: Core Network Refresh

Document ID:	██████████	Author(s):	██████████
Issue:	1.0	Sponsor:	██████████
Effective Date:	April 26, 2022	Project ID:	██████████

1 Executive Summary

The Core Network Refresh project aligns with our core strategy of Ensuring System Reliability and directly supports the reliable operation of Ontario's bulk electricity system by providing the backbone for IESO Network infrastructure that connects the IT systems and locations in a robust and reliable high-performance network which is the foundation for the organization's operations.

The existing core network infrastructure was commissioned in 2015 ██████████. This project will replace the core network infrastructure to maintain resiliency, availability and performance of IESO operations supported by the corporate network infrastructure.

This project will modernize network technologies by leveraging Software-Defined Networking (SDN) and improve network management efficiency through automation.

Applications are continuously demanding higher network bandwidth capacity. This project will expand the bandwidth of our core infrastructure in order to support the future expansion of applications and services requiring large data transfers.

The Core Network Refresh was included in the 2022 approved project portfolio with an allocated capital cost of \$2.9M.

Requested Approval:

The project is expected to be completed by June 30, 2025 which includes 8 months of contingency and requires a total investment of \$4.9M including \$4.8M of capital and a total

contingency of \$1M. The level of uncertainty around these cost and time estimates is in the order of +/- 25%.

The project objectives will be delivered in two stages:

- Stage one to refresh IESO Core Network infrastructure hardware and software; and
- Stage two to implement Software-Defined Networking (SDN).

2 Business Objectives and Measures

1. Sustain the availability and performance of IESO operations supported by the corporate network infrastructure.
2. Increase network bandwidth and throughput capacity to support large volume of data transfers and video streaming growth for the next 5 years.
3. Improve network asset management by centralizing and automating network provisioning via Software-Defined Networking (SDN).

Ref #	Business Objective	Procedure for Measures (Identify how the performance will be measured)	Measured when and by whom?
1	Sustain availability and performance of IESO operations supported by the corporate network infrastructure	Validate and test that new devices are operational and preserve reliable network communications between critical applications according to test plans.	By Whom: Solution Steward When: At project closure
2	Increase network bandwidth and throughput capacity to support large volume of data transfers and video streaming growth for the next 5 years.	Validate that new infrastructure has increased backbone bandwidth capacity [REDACTED] and scalability to expand in the future.	By Whom: Solution Steward When: At project closure

Ref #	Business Objective	Procedure for Measures (Identify how the performance will be measured)	Measured when and by whom?
3	Improve network asset management by centralizing and automating network provisioning via Software-Defined Networking (SDN)	Validate central management of network assets by being able to upgrade all network assets automatically from one location.	By Whom: Solution Steward When: At project closure

2.1 Benefits Expected

This initiative directly supports multiple core corporate strategies, including:

Ensuring System Reliability- The advancement of our core business strategy to ensure long term system reliability of Ontario's electricity grid through systems and technology by:

1. The new vendor supported core infrastructure will provide a resilient backbone infrastructure to maintain the availability and performance of critical applications.
2. The increased capacity provides better scalability for streamlined future growth of applications requiring large data transfers.

Driving Business Transformation - This refresh aligns with driving business transformation;

1. Modernize network technology by leveraging Software-Defined Networking (SDN) and improve network management efficiency through automation.
2. Automation will improve operational efficiency and reduce potential for errors

3 Project Overview

3.1 Project Scope

The Core Network refresh project will replace the Core routers and Data Center networking devices in preparation of Software-Defined Networking (SDN). This ensures the network environments will be consistent at our Primary and the Backup Operations Centers (BOC).

The project has two major deliverables (delivered in two stages):

A) Network Switches

- Procurement of new hardware, software licenses and support and maintenance services;
- Review of core network design;
- Install, configure and test network devices;
- Cutover core network infrastructure; and
- Preparation of documentation – IT Operations Guide, Disaster Recovery Document, Network Diagrams.

B) Software-Defined Networking (SDN)

- Procurement of SDN software and equipment;
- Review of SDN infrastructure design;
- Install, configure and test the SDN solution; and
- Preparation of documentation – IT Operations Guide, Disaster Recovery Document, Network Diagrams.

3.2 High Level Assessment of Impacted Business Processes, Systems and Governing Documents

3.2.1 Processes

- No change to existing processes.

3.2.2 Systems



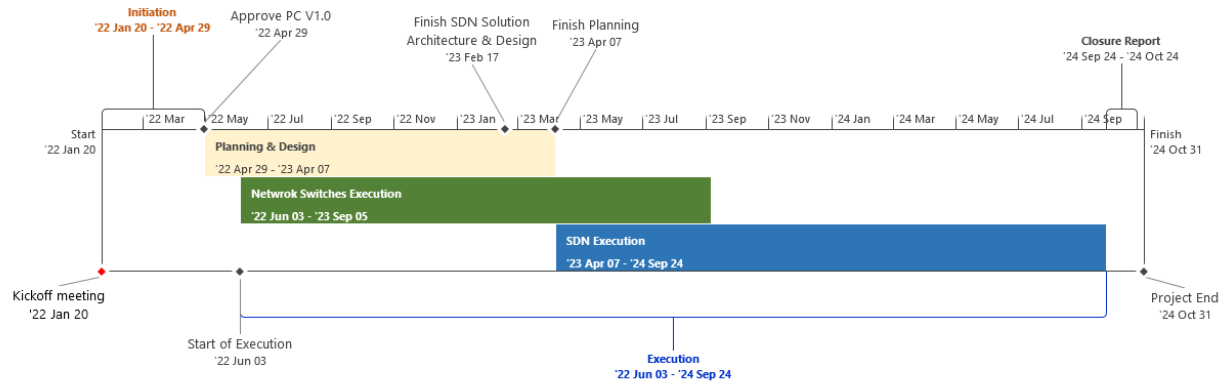
3.3 Out of Scope

N/A

3.4 Project Overall Schedule

The overall project is expected to be completed by June 30, 2025 which includes 8 months of contingency to account for scheduling uncertainties.

The overall schedule below shows the anticipated delivery timeline for both delivery stages.



3.5 Project Overall Cost

The overall project budget is \$4.9M includes a contingency of \$1M which reflects an estimation accuracy of +/- 25%.

The table below shows the anticipated expenditure over the period of the project.

Year	2022	2023	2024	Total
Capital	\$46,000	\$1,980,000	\$1,800,000	\$3,826,000
Capital (Contingency)				\$939,000
Total Capital (Including Contingency)				\$4,765,000
Operating	\$17,000	\$23,000	\$40,000	\$80,000
Operating (Contingency)				\$24,000
Total Operating (Including Contingency)				\$104,000
Total (Including Contingency)				\$4,869,000

3.5 Resources

High level resources required for this project are listed below:

Key Resources	
Role	Name
Project Manager	[REDACTED]
Project Support	[REDACTED]
Project Sponsor/Contract Manager	[REDACTED]
Business Lead	[REDACTED]
Network SME	[REDACTED]
Quality Assurance Lead	[REDACTED]
Procurement Specialist	[REDACTED]
Network SME	[REDACTED]

3.6 Planning Phase

The Planning Phase includes the following activities:

- Integrated Project Plan
- Stage 1 delivery (Core Network):
 - Core Network design and approval
 - Core Network procurements
- Stage 2 delivery (SDN) planning activities:
 - SDN design and approval
 - Stage 2 (SDN) delivery procurements

3.6 Execution Phase

The execution phase includes the following activities for both stages:

- Delivery
- Installation & configuration
- QA Test

- Transition to production
- Documentation
- Training

4 Key Stakeholders

Key Stakeholders are identified in Table 1

Table 1. Key Stakeholder list

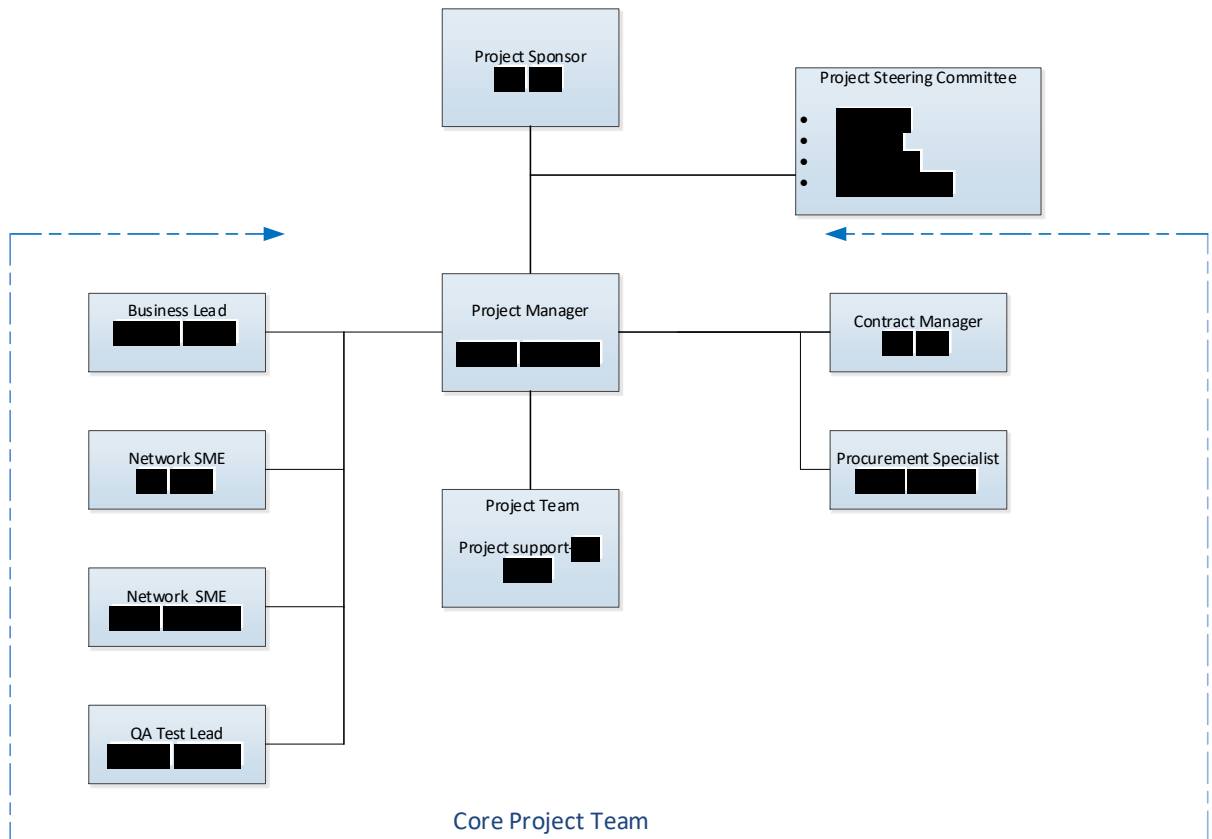
Stakeholder Group	Stakeholder Role	How They Are Affected or How They Are Participating
I&TS – Infrastructure	Project Sponsor, Direct customer, Manager	Participating: Ensures that the project identifies and achieves its stated objectives and is accountable to other stakeholders to ensure that the project delivers the expected outcomes.
I&TS – Infrastructure	Business Lead, Direct Customer, Builder	Participating: Represents the business and acts as an interface between the project team and project sponsor to support the project manager in delivering solutions that meet the sponsor's objectives.
I&TS – Infrastructure	Subject Matter Expert, Direct Customer	Participating: Provides infrastructure requirements; the new system design; delivers the system upgrade; and performs quality assurance on the delivered products. Train staff on the new tool.
Disaster Recovery (DRP)	Consultation, Indirect Customer	Participating: Provides disaster recovery requirements and reviews the new system design.
Information Security	Consultation, Indirect Customer	Participating: Perform security assessments on the new system. Advise any security vulnerabilities and to provide recommendations to address those.
Quality Assurance	Consultation, Builder	Participating: Provides support in creating a test strategy and test plans.

Stakeholder Group	Stakeholder Role	How They Are Affected or How They Are Participating
IT Operations	Consultation, Indirect Customer	Participating: Assist with scheduling work windows and outages during the implementation phase. Review and approve IT Operations Guide.
Procurement	Procurement, Indirect Customer	Participating: Provide input for procurement strategy. Prepare and issue procurement documents and contracts.

The list of stakeholders will be further refined as part of the Planning Phase and will be updated in the Integrated Project Plan.

5 Project Governance Structure

Core Network Refresh Project Governance Model/Project Organizational Chart



6 Delivery Approach

The Project will adhere to IESO's Portfolio Project Management Life Cycle (PPMLC) and Procurement process.

The project employs the Solution Development Life Cycle (SDLC). Each delivery stage produces a solution blueprint for its deliverables prior to beginning their implementation. This approach will help ensure that the project has the capability to maneuver, as needed, to meet evolving expectations of the business and of end-users.

The project objectives will be delivered in two stages:

- Stage one to procure and update IESO Core Network infrastructure hardware and software; and
- Stage two to procure and implement Software Defined Networking (SDN) required hardware and software.

7 Assumptions, Constraints and Potential Risks

7.1 Project Assumptions

The project will use the Vendor of Record (VOR) to procure the core routers and the network hardware.

7.2 Project Constraints

None identified.

7.3 Potential Project Risks and Mitigation Actions

The following medium risks have the potential of preventing the project from achieving its objectives within time and/or budget:

- Network component supply chain issues;
- Hardware and software price increase (SDN, Network equipment); and
- Increased SDN licenses due to additional hardware and equipment at the time of implementation.

A more detailed risk assessment will be performed as part of the Planning Phase and residual risks with a high or critical risk level will be included in Integrated Project Plan along with mitigation actions planned or taken in order to reduce the risk level to an acceptable level.

8 Change Controls

Changes in the project that will impact the achievement of business objectives or exceed tolerance levels for time and cost will be managed through the Manage Project Process resulting in a Project Exception Report. A Project Exception Report, if approved, will result in the re-baselining of the project.

Appendix A: NPV Analysis and Cash Flow

A. Project information and Key Financial Rates:

Project Name:	Core Network Refresh	
Recommended Option:	Alternative 2	
Useful Life:	5	Years
IESO Labour Rate	\$110	per hour
Cost of Capital - Year 0 (Current Year)	1.18	%
Cost of Capital - Year 1	1.72	%
Cost of Capital - Year 2 to Year 10	2.00	%

Enter the Annual Total Cash Flows below:

B. EXPENDITURES (cash outflow):

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Estimated Project Cost: (Analysis, design, build, implement)	62,000	2,002,000	1,840,000					

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Ongoing Maintenance \$ Projected (after project is implemented)		405,300	810,600	932,600	932,600	932,600	932,600	932,600

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Labour Added: FTEs (after project is implemented) (Calculation based on 1496 working hours/FTE)								
Labour: \$	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Other post implementation costs - itemize below								

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Total Expenditures	\$62,000	\$2,407,300	\$2,650,600	\$932,600	\$932,600	\$932,600	\$932,600	\$932,600
Present Value of Expenditure:	\$62,000	\$2,366,595	\$2,547,674	\$878,810	\$861,578	\$844,685	\$828,122	\$811,884

C. SAVINGS (cash inflow):

Savings must be quantifiable, measurable and verifiable.

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Labour Avoided or Reduced: FTEs (after project is implemented) (Calculation based on 1496 working hours/FTE)								
Labour: \$	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Maintenance \$ Avoided (after project is implemented)								

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Monetized Internal Efficiency Gains (after project is implemented)								

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Monetized External Efficiency Gains (after project is implemented)								

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Other - itemize below								

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Total Savings	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Present Value of Saving:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

D. Net Present Value Analysis Results:

Present Value of Expenditures:	\$9,201,348
Present Value of Savings:	\$0
Net Present Value of Project Alternative	-\$9,201,348

Appendix B: Alternative Analysis

Identified Alternatives Summary

Alternative 1 – Do Nothing (Not Viable)

Do not replace the Core Network devices at our Primary and the Backup Operations Centers (BOC) with the latest hardware models and software with vendor support and maintain existing hardware [REDACTED]. Maintaining a Core network with aging hardware puts the IESO at an unacceptable risk of failure. The Core network is the backbone of the organization's computing environment and any failure within it impacts all employees, all business solutions, all telecommunications and telephony. It is critical to maintain an updated Core network infrastructure and a core network design that aligns with industry standards.

Alternative 2 –Replace Core Network Hardware (Recommended)

This alternative replaces the existing Core Network devices at our Primary and the Backup Operations Centers (BOC) with the latest hardware models and software with vendor support and maintenance for 5 years. This alternative meets the business objective and will ensure a reliable network backbone with increased bandwidth capacity. [REDACTED]. Replacing the Core routers and Data Center networking devices will prepare us for Software-Defined Networking (SDN) and ensure consistency of all network environments at our Primary and Backup Operating Centers.

Appraisal of Alternatives

<i>Ref #</i>	<i>Alternative</i>	<i>NPV</i>	<i>Achievement of Business Objectives</i>	<i>Risk</i>	<i>Consideration</i>
1	Do Nothing	N/A	No	Will leave the IESO vulnerable to degrading hardware and software security threats that may potentially disrupt the operation of the IESO.	Not viable
2	Replace existing Core Network Hardware	-\$9.2M	Yes	No material risks are anticipated in undertaking this option.	Recommended

Appendix C: Project Cost Worksheet

Core Network Refresh		
Project Charter		
Code	Project Capital Expenses	PC V1.0 Overall Projected Budget
	Total Internal Labor	\$ 418,000
Mutliple	IESO Labour	\$ 418,000
	Total Contract/Computer Services	\$ 902,000
	Total Hardware and Building Services	\$ 2,406,000
74500	Computer Equipment	\$ 2,406,000
	Total Miscellaneous	\$ 100,000
87000	Interest	\$ 100,000
	Subtotal Capital Budget without Contingency	\$ 3,826,000
	Contingency	\$ 939,000
	Total Capital Budget with Contingency	\$ 4,765,000
Code	Project Operating Expenses	PC V1.0 Overall Projected Budget
	Total Internal Labor	\$ 80,000
Mutliple	IESO Labour	\$ 80,000
	Total Contract/Computer Services	\$ -
	Total Hardware and Building Services	\$ -
	Total Miscellaneous	\$ -
	Subtotal Operating Budget without Contingency	\$ 80,000
	Contingency	\$ 24,000
	Total Operating Budget with Contingency	\$ 104,000
	Subtotal Capital and Operating Budget without Contingency	\$ 3,906,000
	Contingency (capital + operating)	\$ 963,000
	Total Capital and Operating Budget with Contingency	\$ 4,869,000

Document Control

Note: * indicates which roles will be required to approve in Citadel workflow, however, document will be reviewed by all other roles identified.

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Reviewed By	Role
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Approved By	Role
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Distribution List

Name	Organization
[REDACTED]	IESO
PMO	IESO
Finance	IESO

Document Change History

Issue	Reason for Issue	Date
1.0	Version 1.0 of the Project Charter	26 April 2022

References

Document Title	Document ID
Project Intake Document	[REDACTED]
Project Roles and Responsibilities	[REDACTED]

Related Documents

Document Title	Document ID
Integrated Project Plan	<i>TBD</i>

– End of Document –

Program Charter for: Enabling Resources Program

Document ID:	██████	Author(s):	██████████ ██████████
Issue:	1.0	Project Executive Sponsor:	██████████
		Project Sponsor:	██████████████████
Effective Date:	April 14, 2022	Project ID:	400

1 Executive Summary

In recent years, the IESO and external stakeholders have identified opportunities to more fully use the technical capabilities of existing and emerging resource types to provide the services required by the Ontario electricity system.

The Enabling Resources Program (ERP) is an integrated set of work streams and individual projects to be undertaken by the IESO to enable existing and emerging resources to provide required services that they are technically capable of providing but currently cannot, or can only partially, provide under current market architecture. The ERP plan will consider the timing and nature of electricity system needs against the capabilities of resources and the timing of when these resources will become available for reacquisition (in the case of existing assets) or acquisition (in the case of new resources). By integrating multiple projects together under a program umbrella the IESO can leverage synergies and prioritize amongst the projects. The IESO will also be able to provide a roadmap detailing how the ERP can assist in meeting forecasted system needs and increase competition in the IESO's Resource Adequacy procurements while respecting staffing limitations.

As captured in the 2022 Annual Acquisition Report (AAR), a variety of procurement mechanisms are underway or under consideration under the Resource Adequacy Framework to address a current estimated capacity gap of 1,135 MW in 2025, rising to 2,384 MW in 2026. Longer-term procurements will address needs over the 2027 to 2034 period, ranging from approximately 2,500 to 3,900 MW.

To support the success of the IESO's Resource Adequacy framework, which is intended to address forecasted system needs, the ERP will prioritize the integration of hybrid and

storage resources into the IESO-administered markets. Hybrids and storage have been prioritized within ERP, given the volume of resources with the potential to be hybridized that are coming off contract or existing that could contribute to near-term (2026) reliability needs if enabled in the IESO-administered markets. The participation of these resources in upcoming procurements is expected to be essential to support sufficient competition given the uncertainty over gas generation eligibility and the cost and development timelines for other resource types. The IESO has applied for federal funding to support the ERP.

Within ERP, the IESO has identified hybrids (storage + generation), Distributed Energy Resources (DERs) and storage as high-priority enablement opportunities.

This initiative directly supports the following:

- **Enable Competition:** Increasing the quantity/diversity of resources that can participate in the markets will: increase competition to advance affordability; and mitigate the undue market power of existing large Market Participants;
- **Ensure Cost Effective System Reliability:** enabling existing and emerging resources more fully in our markets will give the IESO additional needed tools to meet reliability needs this decade; and
- **Prepare for the Future of the Sector:** Providing a clear plan/schedule for market updates by mid-decade— especially for resources ineligible for the first Resource Adequacy RFP – will reduce the likelihood of policy intervention and enable new, clean electricity resources into the IESO-administered markets to support customer-driven electrification and decarbonization.

The ERP also addresses the following strategic risks:

- The IESO develops tools/mechanisms to acquire resources, but the design and integration of the tools don't effectively balance ratepayer and supplier risk.
- The conditions for market power, such as a further increase in the concentration of ownership of generation, are enhanced.
- A Government policy change diverges from market efficient outcomes required to deliver a competitive marketplace.
- Missed opportunity to support sector innovation.
- A critical bulk electricity system reliability event is triggered by the behaviour of distribution connected resources.

The total cost of the Program is anticipated to be \$15.2M including a contingency of \$1.4M which reflects an estimation accuracy of +/- 10%. In 2021 there was \$313K spent on visioning work for both Hybrid Facilities and DER, along with work undertaken to set up the Program. The Program is expected to be completed by the end of 2026. The Program Charter is seeking approval of the full amount as an envelope.

In 2022, the IESO will establish a coordinated plan to clarify the timeline for each constituent project within the ERP, reconciling available IESO staffing with the timing of forecasted system needs and off-contract resource availability. Hybrid and DER foundational models will be built on the Market Renewal Program (MRP platform (MRP goes live; then foundational models are triggered). ERP design/implementation work can be scheduled in accordance with the changing availability of staff as a result of the MRP schedule or other IESO priorities.

The table below shows the overall expenditure over the period of the Program.

Name	Capital Costs		Operating Costs		Total (without Contingency)	Total (with Contingency)
	Budget (\$K)	Contingency (\$K)	Budget (\$K)	Contingency (\$K)	(\$K)	(\$K)
Hybrid Resources	2,350	235	2,331	233	4,681	5,149
Distributed Energy Resources	3,350	335	3,032	303	6,382	7,020
Storage Operational Enhancements	2,490	249	300	30	2,790	3,069
Total	8,190	819	5,663	566	13,853	15,238

Table 1.1: Anticipated Total Expenditure for Program

The ERP was included in the 2022-2024 Business Plan with capital spending of \$2.5M, starting in 2024. Staff will develop and submit individual Project Charters to seek approval for the design and implementation of each constituent project including operating and capital expenditures. In addition, there will be an associated Integrated Project Plan (IPP) for each project. As the visioning and design work progresses, overall program costs and schedule will be refined and the Program Charter will be revised accordingly.

2 Program Objectives

IESO has implemented a Resource Adequacy (RA) framework to acquire resources to meet short, mid, and long-term electricity system needs. The RA framework includes a number of different procurement approaches and timing that the IESO will leverage to procure the electricity products and services needed to meet Ontario's growing reliability needs.

The ERP will support the RA framework's objective of delivering cost-effective reliability by:

- increasing the quantity and diversity of resources that can participate in the IESO-administered markets, including through RA procurements;
- enhancing the enablement of storage resources in the IESO-administered markets to facilitate storage participation in the ancillary services markets and manage Control Room work load; and
- providing stakeholders with a clear plan for market updates over the 2020s to facilitate investment planning.

Program success will be measured through the successful implementation of the work streams identified in the Program overview section and through the successful participation of emerging resources (hybrid, storage and DERs) in the IESO-administered markets through the use of the new market participation models resulting from the work. As organizational priorities shift, the IESO will revisit the work plan and its integration with other projects. Specific business objectives and measures will be established for each project and will be captured in the corresponding Project Charters. Through the introduction of the ERP, the IESO expects the following benefits:

- Increasing the quantity/diversity of resources that can participate in the markets will: increase competition, advance affordability and mitigate the potential for undue market power of existing large Market Participants; enable new clean electricity resources in support of customer-driven electrification and decarbonization;
- Enhancing enablement of storage resources in the markets will give the IESO additional tools to meet reliability needs; and
- Providing stakeholders with a clear plan/schedule for market updates over the 2020s – especially for resources ineligible for the first Resource Adequacy RFP – will enhance investor confidence in the IESO-administered markets.

3 Program Overview

3.1 Program Scope

The ERP will focus on enabling resources to provide required services that they are technically capable of providing but currently cannot, or can only partially provide under current electricity market architecture. This enablement will be accomplished through a series of work streams. Specific projects may evolve over the life of the Program but are expected to address the enablement of the following resource types:

Hybrid Resources

- Design and implementation of foundational market participation models for generation and storage resources located behind a single connection point to the grid, including potential changes to uplift allocation for storage resources to improve market efficiency;
- Identification and assessment of potential future enduring market participation models (that can unlock additional capability from hybrids as warranted by market needs, resource proliferation and availability of IESO resources for integration work) for hybrid and stand-alone storage resources; and
- Working with the government on potential Ontario Regulation 429/04 updates for hybrids, to remove global adjustment from energy that is stored and that originally came from the on-site generator.
- Development of a capacity qualification process for hybrid resources taking part in RA procurements.

Distributed Energy Resources (DER)

- Design and implementation of a foundational market participation model(s) for DERs, including aggregations of dispatchable load and generation that can include individual resources <1MW of size, and establishment of a Transmission-Distribution interoperability framework to ensure deliverability/maintain local network reliability; and
- Identification and assessment of potential future enhanced DER market participation models that can be enabled when warranted by market needs, resource proliferation and availability of IESO resources for integration work.

Operational Enhancements for Storage Resources

- Automatic Approval of State of Charge

- Implementation of auto-approval of storage resource State-of-Charge change requests within the mandatory window; and
- Supporting Changes for Storage in Automatic Generation Control (AGC)
 - Complete integration of storage resources into AGC through updates to multiple supporting systems.

3.2 Overall Program Timeline

The overall Program is expected to complete by the end of 2026 with the implementation phase of many of the projects starting post-MRP. See the schedule of projects and high-level deliverables below:

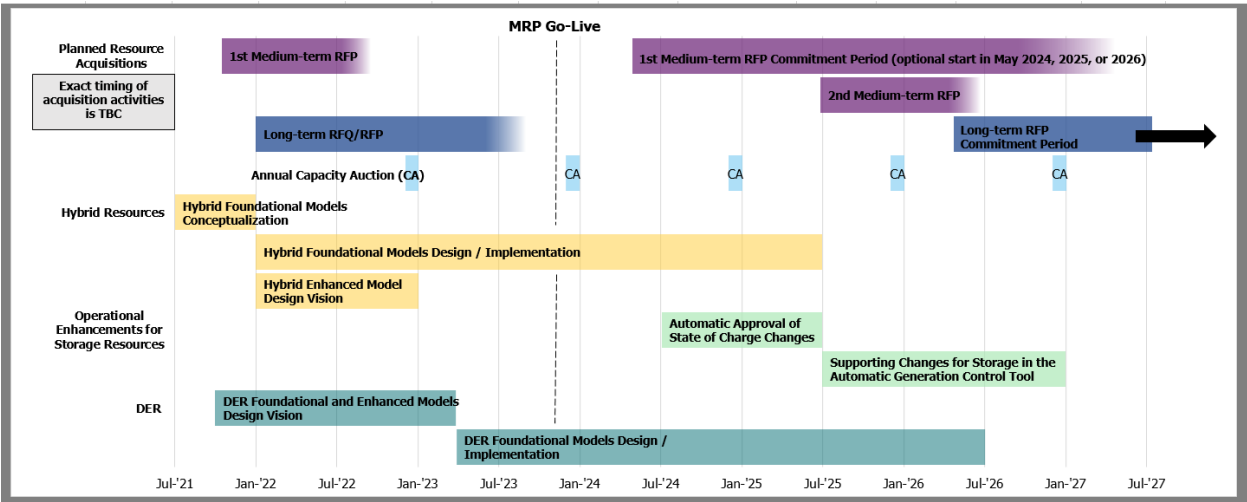


Table 3.1: Timeline for Enabling Resources Program

3.3 Cost

Over the period of the Program, the IESO expects a total expenditure, capital and operating expense, of \$15.2M (including contingency). A high-level breakdown is provided in Table 3.2 below.

	Actuals		Budget										
Calendar Year	2021		2022		2023		2024		2025		2026		Contingency
Initiative	CAP	OPEX	CAP	OPEX	CAP	OPEX	CAP	OPEX	CAP	OPEX	CAP	OPEX	
Total	-	313	-	1,775	300	1,675	2,525	1,250	4,015	450	1,350	200	1,385
Hybrid Resources													
IESO Labour		231		900	300	600	700	200		-			
Consultants				150		50		150		50			
Other							675		675				
Total	-	231	-	1,050	300	650	1,375	350	675	50	-	-	468
DER													
IESO Labour		82		600		800	500	600	1,000	200	500	100	
Consultants		0		125		225		200		100		-	
Other							450		450		450		
Total	-	82	-	725	-	1,025	950	800	1,450	300	950	100	638
Storage Operational Enhancements													
IESO Labour							200	100	500	100	400	100	
Other									1,390				
Total	-	-	-	-	-	-	200	100	1,890	100	400	100	279

Table 3.2: Enabling Resources Program Cost – figures in \$Ks

3.4 Key Resource Needs

The Program will continue to require resources, from I&TS (solution design, implementation and maintenance of technical tools) and the various IESO Business Units as key stakeholders and beneficiaries of the projected enhancements, as follows:

- Project Managers
- Business Analysts
- Solution Analysts
- Solution Architects
- Network Architect
- Information Security Architect
- Enterprise Architect
- Data Base Administrators
- Data Analysts, Data Architect/Modeler and Data Scientists

- Subject Matter Experts (SMEs) from the engaged Business Units s, specific to each project as well as additional resources for specific input such as Legal, Regulatory, Stakeholder Engagement, etc.

Certain, more specialized and/or time limited skills may also be acquired externally.

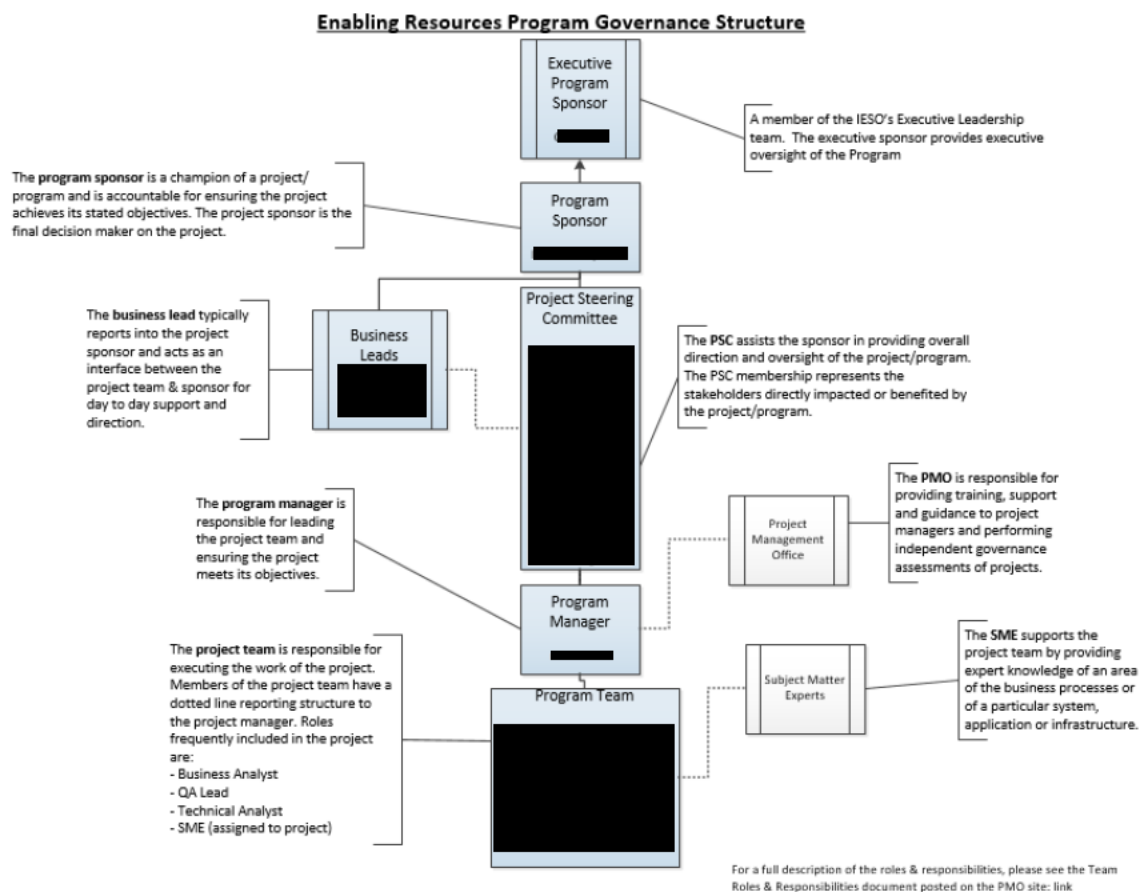
IESO resources will be defined in more detail within each project under the Program, and outlined separately in individual Integrated Project Plans.

4 Key Stakeholders

Stakeholders that have a role in the individual projects within the ERP will be identified in the projects' specific Integrated Project Plans.

5 Program Governance Structure

The diagram below represents the governance for the overall Program. Each identified project will have its own sponsor, business lead and project manager but will be governed by a single Program Steering Committee. The Program governance structure will be updated, as necessary, to reflect the increased complexity of projects reporting into the Program.



6 Delivery Approach

The Program represents a staged approach to achieving the overall business objectives of enabling resources through a number of individual projects and initiatives. The Program will start by developing a foundational design vision and high-level design for hybrid and DER resources on a priority basis and then initiating individual projects to deliver on these designs and other Program elements.

7 Assumptions, Constraints and Potential Risks

7.1 Project Assumptions

The following assumptions have been used to develop this Program Charter:

- Hitachi Energy will be available to support the development of estimates for costs and schedule for the Dispatch Scheduling and Optimization (DSO) solution, along with a general feasibility analysis for potential enhanced Hybrid and DER market participation models.
- Although IESO has submitted an application to NRCan for approximately \$9M of funding to support the Program, the ERP budget does not reflect any potential NRCan funding offsets.

7.2 Program Constraints

The undertaking of ERP cannot impact the delivery of the Market Renewal Program (MRP). Prior to MRP go-live, both the staff and budget requirements will be kept at a modest level. The design vision work will be accommodated within existing staffing levels. There is some flexibility to adjust the timing of DER integration work if needed. The bulk of the ERP design will be completed prior to MRP go-live, while the implementation work will be completed in parallel with MRP development.

Details of project constraints will be provided in the Integrated Project Plan for each project.

7.3 Potential Program Risks and Mitigation Actions

While there are currently no Program risks that have a high or critical residual risk, there are certain skillsets and expertise required to execute the Program that are limited due to their deployment on the Market Renewal Program. This dependency will have to be actively managed throughout the Program.

Further risk assessment will be performed for each individual project within the Program.

Note: The Program team will maintain a comprehensive risk log which will include a complete list of risks including those with a medium or low risk level. New or modified risks and mitigation plans will be highlighted to the Program Sponsor and Program Steering Committee members via monthly progress reporting.

8 Change Controls

Changes in the Program that will impact/exceed tolerance levels for objectives, time and cost will be managed through the formal Change Management Process resulting in a revised Program Charter.

Appendix A: Program Cost Worksheet

Enabling Resources Program		
Program Charter		
Code	Project Capital Expenses	PC V1.0 Approved Budget
	Total Internal Labor	\$ 4,100,000
Mutiple	IESO Labour	\$ 4,100,000
72000	Staff Expenses	\$ -
	Total Contract/Computer Services	\$ 4,090,000
74000	Computer Services/Software	\$ 4,090,000
73000	Consultants	
70020	Contract Staff	
72900	Contract Labour	
77000	Contract Services	
72020	Contractor Expenses	
77080	Legal Services	
	Total Hardware and Building Services	\$ -
	Total Miscellaneous	\$ -
	Subtotal Capital Budget without Contingency	\$ 8,190,000
	Contingency	\$ 819,000
	Total Capital Budget with Contingency	\$ 9,009,000
Code	Project Operating Expenses	PC V1.0 Approved Budget
	Total Internal Labor	\$ 4,613,000
Mutiple	IESO Labour	\$ 4,613,000
72000	Staff Expenses	
	Total Contract/Computer Services	\$ 1,050,000
74000	Computer Services/Software	
73000	Consultants	\$ 1,050,000
70020	Contract Staff	
77000	Contract Services	
72020	Contractor Expenses	
77080	Legal Services	
	Total Hardware and Building Services	\$ -
	Total Miscellaneous	\$ -
	Subtotal Operating Budget without Contingency	\$ 5,663,000
	Contingency	\$ 566,300
	Total Operating Budget with Contingency	\$ 6,229,300
	Subtotal Capital and Operating Budget without Contingency	\$ 13,853,000
	Contingency (capital + operating)	\$ 1,385,300
	Total Capital and Operating Budget with Contingency	\$ 15,238,300

Document Control

Note: * indicates which roles will be required to approve in Citadel workflow, however, document will be reviewed by all other roles identified.

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Distribution List

Name	Organization
██████	IESO
PMO	IESO
Finance	IESO

Document Change History

Issue	Reason for Issue	Date

References

Document Title	Document ID
Project Intake Document	████
Project Roles and Responsibilities	██████

Related Documents

Document Title	Document ID
<Enter document name here>	<Enter document identification number here>

– End of Document –

SPACE NEEDS PROGRAM - PHASE 3 IMPLEMENT AND TRANSITION

Executive Summary

The IESO owns and leases three office facilities in the Greater Toronto Area. The primary location, the Mississauga control centre, which the IESO owns and operates, was built in 1989 and requires significant investments in its electrical, mechanical and structural systems over the next 4-5 years. The IESO will leverage the results of the office pilot project undertaken in 2022 to define the path forward with respect to the IESO's overall office footprint and the modernization of the workspace. The modernization of the workspace will be critical to meet the needs of today's workforce and supports the attraction and retention of IESO staff.

Phase 3 of the Space Needs Program (the Program) builds on earlier work and will implement a number of building enhancements and improvements at the IESO's Mississauga control centre as well as renovate the office spaces across its optimized footprint over the next three years.

The Need for the Project

Investments in the IESO's primary location are needed to maintain critical building systems and also create a modern, activity-based workspace that meets the needs of its evolving business and workforce and represents the most significant investment in its facilities since the control centre was built. The high-level objectives of the Program are to create a workplace that:

- effectively supports a Hybrid Work Model;
- reflects the IESO's critical role in the electricity sector;
- enables staff to be effective;
- supports teamwork and collaboration, stakeholder engagement;
- supports employee retention and attraction; and
- results in reduced operating costs.

The Program is a Strategic Initiative that supports the IESO's core strategy to Drive Business Transformation and helps define and enhance its desired culture and employee experience.

As with many organizations, the experience of working from home has changed the IESO's perspective of the role of that the office plays in supporting the business and has accelerated the opportunity for the IESO to re-examine how it uses its office space and the needed investments in technologies to support the majority of the staff to be able to work effectively when working remotely. The IESO now offers a hybrid work program to most of its employees based on business needs.

Driven by the transition to working remotely, the Canadian landscape signaled that the role of the office, in both the public and private sector, is changing. Critical to the evolution is the concept of a more employee centric business model which fosters a culture of collaboration, idea exchange and replenishes social capital. This aligns closely to the IESO value of purposeful engagement as well as strengthens its attraction & retention objective.

Cost and Schedule

A total estimated capital expenditure of \$40 million is required to complete the project.

Program Name	2023 Capital Budget	2024 Capital Budget	2025 Capital Budget	2026 Capital Forecast
Space Needs Program	\$7.0M	\$10.0M	\$13.0M	\$10.0M

The project is expected to start in Q2 2023 and be complete by Q4 2026.

These estimates and the assignment of appropriate levels of contingency will be further refined once the project is formally initiated.

Business Goals/Objectives

This project will achieve the following business objectives:

- Implement a more employee centric work environment which introduces the concept of activity-based work, fosters a culture of collaboration, idea exchange, team building, training and replenishes social capital.
- Optimize the amount of office space required to support current staffing levels and expected future growth and results in a reduction of long-term operating costs.
- Make prudent investments in the mechanical, electrical and structural systems at the Mississauga control centre to allow the ongoing operation of the facility over the next 15-20 years.

The specific business objectives will be refined as part of project initiation.

Alternatives Considered

Alternative 1 – Implement & Transition (Recommended)

Under this alternative, the IESO would analyze its required footprint based on the experiences of the office pilots introduced in 2021 and 2022, and its hybrid work arrangement, and renovate the appropriate space at its Mississauga control centre and downtown office location. The renovated space would reflect a new, modern activity-based workspace and necessary meeting and collaboration space to meet current and future needs.

The IESO, therefore, would be able to reduce the overall office footprint across its three office locations resulting in significantly reduced ongoing operating costs. The IESO would also make the necessary investments in electrical, mechanical and structural systems to maintain the facility in good working order for the next 15-20 years.

Alternative 2 – Do Nothing (Not Recommended)

The do-nothing option would have the IESO maintain its current offices and Mississauga control centre and negotiate new leases at its leased facilities in Oakville and Toronto upon expiry of the current leases at the end of 2025. The IESO would only make the necessary structural, mechanical and electrical upgrades at its control centre to maintain the facility in good working order. The Do-Nothing option would not address any of the Program's objectives, the changing role of the office, the reduced occupancy needs presented by adopting a new Hybrid Work Model or result in longer term operating cost saving.

Delivery Approach

This project will be delivered as per the Portfolio Project Management Life Cycle (PPMLC) and Solution Delivery Life Cycle (SDLC) processes. The detailed approach with steps for delivery will be defined in the Planning Phase.

Risk Assessment

The project risks and mitigation strategies are developed in alignment with the IESO's Enterprise Risk Management (ERM) Framework and the corporate process for conducting risk assessments. The ERM Framework supports risk assessment, analysis, mitigation and monitoring.

The IESO will continue to evaluate risks and appropriate mitigation plans throughout the project lifecycle. The following are the key risks identified that need to be managed as part of this project.

Table 3: Risk Assessment

Risk	Residual Risk Level	Mitigation Activities	Target Risk Level
Qualified general contractors are unavailable to support the project on the proposed timelines requiring the IESO to extend current leases beyond the current term.	High	<ul style="list-style-type: none"> • Issue the RFP early in the project lifecycle (Planned). • Build in conditions in the general contractor contract that incents on time or even accelerated completion of the work (Planned). • Manage the sequence of the work to minimize the likelihood that delays will impact current lease terms (Planned). • Negotiate short term extension options to current leases should they need to be extended (Planned). 	Medium
Lead time of construction and other materials result in project delays	High	<ul style="list-style-type: none"> • Use experience from office pilot to determine areas of largest delivery risk and prioritize the RFP and/ordering of these materials (Planned). 	Medium

Risk	Residual Risk Level	Mitigation Activities	Target Risk Level
		<ul style="list-style-type: none">• Work with vendors and General contract to actively expedite these orders (Planned).	

Project Governance Structure

The project will adhere to IESO's Project Management Lifecycle and associated project management controls which includes monthly progress reporting, project steering committees and exception reporting for material deviations in cost, schedule and objectives. The Project Sponsor and Project Steering Committee (made up of key internal stakeholders) provide oversight of the project. Due to the size and nature of the project, the Executive Sponsor will provide regular reports to the committees of the IESO Board of Directors.

LAWSON REFRESH

Executive Summary

Lawson, the current financial and accounting application supporting both the Market and Corporate accounts, has been used at the IESO since 1998. The last Lawson refresh project was completed in 2020 and is now reaching the end of life. The infrastructure refresh and the need to upgrade the financial and accounting software to a version that is supported by the vendor presents an opportunity for the IESO to consider enterprise business management best practice and have software that integrates all the processes needed at the IESO to deliver on its strategy's financial planning and reporting. This project will replace the IESO's current financial system to ensure that it continues to meet future financial accounting needs with a vendor-supported tool.

The Need for the Project

The last Lawson refresh project was completed in 2020 and added a contract management module for IESO Procurement. The IESO's non-cloud Lawson toolset is an end-of-life product with current maintenance ending in 2030. Going forward Lawson is providing cloud-based suites only. The IESO requires an Enterprise Resource Planning (ERP) suite that can be a replacement for Lawson (including the contract management module), Procure to Pay and financial planning, budgeting and analysis modules, and integrate with other systems that are impacted.

Once the IESO completes its Lawson Refresh project, the suite of financial and management tools/system to manage the IESO financial planning and reporting will be better integrated, without requiring manual updates to reflect changes in project management, business planning, budgeting, resource planning, procurement, and performance measures. The IESO will be improving the flexibility for financial reporting, planning and forecasting to its various stakeholders within and outside the IESO.

Cost and Schedule

A total estimated capital expenditure of \$7.5 million and a total estimated operating expenditure of \$2.4 million is required to complete the project.

The project is expected to start in Q2 2023 and be completed by Q4 2026.

These estimates and the assignment of appropriate levels of contingency will be further refined once the project is formally initiated.

Business Goals/Objectives

This project will achieve the following business objectives:

- Improved data integrity and resource/tools' efficiencies that feed the IESO's financial, accounting and procurement functions, supporting IESO business and IESO-administered markets (market efficiency);
- Centralize the IESO's contracts (IESO Corporate Accounts Payable and IESO Global Adjustment impacted contracts - rate payer value);
- Reduce the number of vendor contracts managed by I&TS and Procurement to run the Finance System (rate payer value); and
- No net increase in software licenses and subscriptions.

The specific business benefits will be refined as part of project initiation.

Alternatives Considered

Alternative 1 – Initiate an RFP to implement a new financial system (Recommended)

Implement a solution coming out of the RFP. This will ensure all options can be reviewed to implement a new financial suite solution to better support the needs for the IESO today and in the future.

Alternative 2 – Implement Cloud Based Lawson Solution (Not Recommended)

Implement the current Lawson financial system with cloud-based solution. In this alternative the IESO will miss out on the integration of systems across the organization and the efficiencies gained from that integration.

Alternative 3 – Do Nothing (Not Recommended)

This is not possible given that this is the IESO's only financial system and if not refreshed or replaced the IESO would be without vendor support. The IESO would not be able to respond to changing business needs or be given support when issues arise.

Delivery Approach

This project will be delivered as per the Portfolio Project Management Life Cycle (PPMLC) and Solution Delivery Life Cycle (SDLC) processes. The detailed approach with steps for delivery will be defined in the Planning Phase.

Risk Assessment

The project risks and mitigation strategies are developed in alignment with the IESO's Enterprise Risk Management (ERM) Framework, the corporate process for conducting risk assessments. The ERM Framework supports risk assessment, analysis, mitigation and monitoring.

The IESO will continue to evaluate risks and appropriate mitigation plans throughout the project lifecycle. The following are the key risks identified that need to be managed as part of this project.

Table 3: Risk Assessment

Risk	Residual Risk Level	Mitigation Activities	Target Risk Level
Significant changes introduced by the project are not well adopted by IESO staff leading to increased inefficiencies.	High	<ul style="list-style-type: none"> • Ensure all users receive adequate training by vendor. (Planned) • Ensure adequate time for training prior to implementation. (Planned) 	Medium
Critical Subject Matter Experts are unavailable due to day-to-day activities.	High	<ul style="list-style-type: none"> • Manage the sequence of work to minimize the impacts to team members during busy periods. (Planned) • Supplement headcount, if required. • Ensure reasonable implementation period to account for resource availability. 	Medium
Business requirements are not fully met.	High	<ul style="list-style-type: none"> • Engage Business Advisor for 6 months prior to issuing RFP in order to document all requirements. 	Low

Project Governance Structure

The project will adhere to the IESO's Project Management Lifecycle and associated project management controls which includes monthly progress reporting, project steering committees and exception reporting for material deviations in cost, schedule and objectives. The Project Sponsor and Project Steering Committee (made up of key internal stakeholders) provide oversight of the project.

BACKUP OPERATING CENTRE AND BACK UP DATA CENTRE RELOCATION

Executive Summary

In support of its critical reliability mandate and to meet North American Electric Reliability Corporation (NERC) and Northeast Power Coordinating Council (NPCC) reliability standards and criteria, the IESO maintains both a Backup Operating Centre (BOC) and Backup Data Centre (BDC). Due to a recent and unexpected change in the service provider for these critical facilities, the IESO needs to exit the current facilities at the end of their current leases which expire in late 2024 and early 2025 for the BDC and BOC, respectively. This project will seek to relocate both the IESO's BOC and the BDC prior to the end of their current lease terms to ensure continuity of these critical services.

The project will include all costs associated with securing the appropriate facilities and services for both critical functions, construction costs to fit-out the facilities to meet business needs and regulatory compliance needs, equipment, telecommunication, furniture and computing and network infrastructure.

In addition, the project will be responsible for decommissioning the systems and infrastructure that support the existing BOC and BDC.

The Need for the Project

Maintain continuity and reliability standard compliance for these two critical backup centres at the end of their current lease and service agreement expiration.

Cost and Schedule

The project is expected to be completed in Q2 2025 for a total estimated cost of \$21.1 million of which \$15.9 million is capital. Due to the high level of uncertainty all costs include 50% contingency which will be further refined in the planning phase of the project. It should be noted that the cost estimates of \$10.4 million shown in Appendix 3 of the 2023-2025 Business

Plan does not reflect this contingency amount. Contingency is not allocated for each item within the Business Plan but rather managed across the overall portfolio of projects as part of our regular monitoring activities.

The project is entering the initiation phase. Planning is expected to start in Q1 2023.

Business Goals/Objectives

The project will achieve the following business objective:

1. Secure the necessary facilities and availability services to meet the IESO's back up operating and data centre needs for the next 10 years

Alternatives Considered

Alternative 1 – Relocate the existing BOC and BDC to new locations (Recommended)

Under this alternative we would relocate both the IESO's Backup Operating Centre (BOC) and Backup Data Centre (BDC) prior to the expiry of their current leases.

The BOC & BDC form a critical component of IESO's reliable operation of the grid and IESO administered markets and is a requirement of NERC's Reliability Standards and NPCC criteria. This option manages the risk to the reliable operation of the power system should our primary operations centre or data centre fail or become inoperable and also mitigates the risk of non-compliance with the Reliability Standards. This option manages the uncertainty around our current facilities and service providers and provides a path to manage these critical functions over the next 10+ years.

Alternative 2 – Do Nothing (Not Viable)

The previous service provider for both the Backup Operating Centre and Backup Data Centre has exited the business due to financial difficulties. As a result, the IESO is currently fully managing the BOC facility and a new service provider has purchased the Backup Data Centre

business. The owner of the BOC is looking to redevelop the site in mid-2025 requiring the IESO to find a new location for the BOC. There is also uncertainty regarding the long-term business model for the new BDC service provider beyond the current lease term.

The do-nothing option is not viable as it would impact the IESO ability to ensure reliability of the IESO Controlled Grid and Administered Market.

Delivery Approach

This project will be delivered as per the Portfolio Project Management Life Cycle (PPMLC) and Solution Delivery Life Cycle (SDLC) processes. The detailed approach with steps for delivery will be defined in the Planning Phase.

Risk Assessment

The project risks and mitigation strategies are developed in alignment with IESO's Enterprise Risk Management (ERM) Framework, the corporate process for conducting risk assessments. The ERM Framework supports risk assessment, analysis, mitigation and monitoring.

The following are the key risks identified that need to be managed as part of this project. The IESO will continue to evaluate risks and appropriate mitigation plans throughout the project lifecycle.

Table 3: Risk Assessment

Risk	Residual Risk Level	Mitigation Activities	Target Risk Level
Facilities that meet the IESO's mandatory and non-mandatory	Critical	Work with a Real Estate Broker and data centre expert to perform	Medium

Risk	Residual Risk Level	Mitigation Activities	Target Risk Level
requirements for the Backup Operating Centre are not available within the distance from our primary control centre necessary to meet our reliability standard compliance		a detailed market scan of available sites and services for the BOC (Underway) Adjust non-mandatory requirements to increase the number of viable sites (Planned)	

Project Governance Structure

The project is adhering to IESO's Project Management Lifecycle and associated project management controls which includes monthly progress reporting, project steering committees and exception reporting for material deviations in cost, schedule and objectives. The Project Sponsor and Project Steering Committee (made up of key internal stakeholders) provide oversight of the project.

METER DATA MANAGEMENT SYSTEM REPLACEMENT

Executive Summary

In order to continue to sustain the required IESO settlement services provided by the Meter Data Management (MDM) Solution there is a need to replace the existing MDM application system (Database & Application components) due to changes in current vendor's product line.

The Need for the Project

The current off-the-shelf application was put into service in August 2015 and has customized functionality built into the application based upon the unique requirements of the IESO settled markets, and thus supports IESO revenue metering standards, meter data management and settlement processes as detailed in the IESO Market Rules (Ch.6, Sec. 5.2.3). The vendor has announced that the application will be replaced with a new product called MDM and the IESO custom functionality will need to be rewritten in a new programming language. The rewrite will be substantive and therefore the vendor is recommending replacing the current MDM system.

Cost and Schedule

The project is planned to be initiated in Q3 2023 and is expected to take anywhere from 3 to 5 years to complete. Overall project expenditure is expected to be \$23 million based upon the cost of the previous project, including inflation. Capital expenditure is estimated at \$18 million which includes \$4.8 million contingency to account for uncertainties. See E-2-1 Attachment 1 – Capital Projects (Appendix 2-AA) for details.

Incremental ongoing annual expenses once the project goes in-service is expected to be \$.3 million for software licences and subscriptions, professional services and technology maintenance & support.

Business Goals/Objectives

- Reliability and Availability – Sustain the current level of service for the next five years while reducing the potential of service interruptions and unplanned events due to aging equipment and vendor support limitations;
- Increasing Capacity – Be able to handle the expected growth in meter reads to support implementation of Enabling Resources Program and Resources Acquisition Program;
- Enhancement to Services - This includes providing additional flexibility for future business needs and improved performance for both internal users and market participants.

Alternatives Considered

Alternative 1 – Do Nothing (Not Recommended)

Continue to use current software on an upgraded version of the application database. The current application software maintenance agreement ends May 2024 requiring the IESO to pay for premium support or use another third party vendor to support any changes after May 2024. The vendor support will increase by 30% for premium support as of that date. Using a third party to support the application will cost a minimum of \$100,000 per year.

Alternative 2 – New Product Replacement (Recommended)

Replace the existing MDM application with a new application through a competitive procurement. The current application has reached its end of life with support and the present vendor wants their customers to move to another platform. Moving platforms involves rebuilding the customization for the IESO and there is not easy migration path. This will require significant resources from both IESO business, IT, Procurement and the vendor to complete a wholesale change to MDM.

Alternative 3 – Custom Replacement (2nd Recommendation)

Replace existing MDM application with a custom-built application by the current vendor for new Commercial Reconciliation System (CRS) who has already done similar work at two other ISOs in North America. This will allow for the IESO to reduce maintenance fees with the vendor for both application support (\$60,000/year). Having the application run on the same engine as the new CRS will allow for a better allocation of IESO IT resources which will net a savings of \$200,000/year.

Delivery Approach

This project will be delivered as per the Portfolio Project Management Life Cycle (PPMLC) and Solution Delivery Life Cycle (SDLC) processes. The detailed approach with steps for delivery will be defined in the Planning Phase.

Risk Assessment

The project risks and mitigation strategies are developed in alignment with IESO's Enterprise Risk Management (ERM) Framework, the corporate process for conducting risk assessments. The ERM Framework supports risk assessment, analysis, mitigation and monitoring.

The following are the key risks identified that need to be managed as part of this project. The IESO will continue to evaluate risks and appropriate mitigation plans throughout the project lifecycle.

Table 3: Risk Assessment

Risk	Residual Risk Level	Mitigation Activities	Target Risk Level
Meter Data Management solution proposed technology is not as expected (usability, functionality) which may result in objectives not being met	High	Development of clear requirements together with a comprehensive testing plan will ensure project objectives are met. Project schedule will consider gates to allow early detection if requirements are not met. Project budget will consider appropriate project time and cost contingency should the mitigation activities prove insufficient. (Planned)	Medium
Integration with legacy systems and managing integration for the meter data management solution during project may be more complex or time consuming than expected which, may impact project timelines or result in objectives not being met	High	Project change management process in place to manage cost or schedule deviations. (Planned)	Medium

Project Governance Structure

The project is adhering to IESO's Project Management Lifecycle and associated project management controls which includes monthly progress reporting, project steering committees and exception reporting for material deviations in cost, schedule and objectives. The Project Sponsor and Project Steering Committee (made up of key internal stakeholders) provide oversight of the project.

ENABLING GRID TRANSFORMATION PROGRAM

Executive Summary

As articulated in the IESO's Strategic Plan, the IESO must support Ontario's Electricity Transformation. One of the ways the IESO will support this transformation is by ensuring that it continues to effectively and reliably operate an increasingly complex and dynamic regional grid over the next 5 to 10 years. The IESO will achieve this outcome by evolving its operating tools, processes and people to support a more complex set of supply resources, storage, expanded transmission and integration with distributed energy resources across the province and in neighbouring regions.

Some of the changes are already impacting Operations (i.e., manual load curtailments and greater use of remedial action schemes) while other impacts will take a few more years to arrive (i.e., new generation). Given the time and effort that will be needed to make the transition to the future state of the grid, some urgency is needed so that the changes are completed in advance of the critical need. The Enabling Grid Transformation Program (the Program) has developed a delivery plan that considers the need to spread out the required changes out over time to manage workload. The following projects are planned to be initiated over the business plan timeframe.

- Phasor Measurement Unit (PMU) Implementation – Identified as a separate project in the Business Plan
- EMT Software Procurement and Installation (In-flight)
- Rules Engine
- SCADA/Energy Management System (EMS) Replacement

Some other project work is already underway including the Wide Area Visualization Environment (WAVE Phase 2) and the Dynamic Limits in Real-time (DLRT) projects that are highlighted Exhibit E-2-1 Attachment 10 Material Capital Project Progress Updates.

The Need for the Program

IESO is actively investing in enabling new resources and developing a resource adequacy framework to manage the exit of key baseload and other aging resources. This work will also be critical to meeting initial stages of higher demands due to electrification and enabling future options to maintain reliability of the IESO controlled grid. These system changes will bring new technologies to the grid, and a more dynamic system as the IESO starts to transform the grid while other neighbouring entities, such as NYISO, are also transforming their grids.

Beyond supply resources, load continues to grow in all pockets of the province which has triggered the largest transmission build out in Ontario in decades. In an effort to save ratepayers money, the IESO will continue to seek to maximize the use of existing transmission assets through the use of numerous, yet increasingly complex, remedial action schemes or manual actions to manage consumption of some new loads. The use of these special systems or other manual control actions allows the IESO to maximize power transfers across the province – saving ratepayers billions of dollars by avoiding or reducing new transmission build. However, this creates more a more challenging operating environment – increasing the risk of mis-operation or operator error in managing these numerous schemes.

Given all this investment and system change, the IESO must be able to operate the evolving and complex grid of the future through the execution of effective operations processes and critical tools. The IESO must be able to effectively plan for complex operations and to have an appropriate security monitoring process and toolset is foundational to all other work at the IESO. Without security monitoring and accurate operating instructions, including operating limits, the IESO will be unable to reliably schedule and operate the market dispatch of both conventional and future technologies. Additional work beyond the scope of the Enabling Grid

Transformation Program may be required to support deeper de-carbonization efforts beyond the mid-2030s.

Cost and Schedule

The estimated capital expenditure for the program for the period 2023-2025 is \$8.2 million. This is based on the estimated capital expenditure for EMT Software Procurement and Installation, Rules Engine and SCADA/Energy Management System (EMS) Replacement projects (excluding DLRT, WAVE Phase 2 and the PMU projects).

Program Name	2023 Capital Budget	2024 Capital Budget	2025 Capital Budget
Enabling Grid Transformation Program	\$0.1M	\$1.1M	\$7.0M

See E-2-1 Attachment 1 – Capital Projects (Appendix 2-AA) for details.

Overall expenditure for the program is estimated to be \$54.5 million of which the majority is expected to be capital. The following table captures the expenditure and timeline estimates by project. These estimates and the assignment of appropriate levels of contingency will be further refined once the project is formally initiated.

Project Name	Overall Expenditure	Start	End
EMT Software Procurement and Installation	\$0.2M	Q4 2022	Q2 2025
Rules Engine	\$5.5M	Q1 2024	Q4 2026
SCADA/Energy Management System (EMS) Replacement (includes new visualization capabilities,	\$48.8M	Q1 2025	Q4 2028

data analytics, and integration of automation into revised security monitoring software)			
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The program started in 2022 with the procurement of the EMT Software and will be completed in 2028.

Business Goals/Objectives

- Implementation of modern visualization and analytic tools for operations support and real-time operations;
- Improved security monitoring for real-time operations by enabling more complex limit development and real-time adaptation of system conditions in operational limits;
- Seek to automate real-time operational activities to minimize the risk of operator error and manage real-time operator workloads;
- Improved system integration tools and processes to better integrate connection applicants into real-time operations;
- Improved training and instructions for operations planning and real-time operations.

Alternatives Considered

Alternative 1 – Do Nothing (Not Recommended)

Maintaining status quo will not evolve IESO toolset and processes used to prepare for, and manage, real-time system reliability. Without effective monitoring and automation when operating more supply and load resources, and an increasingly complex system, human operating errors are more likely leading to reduced reliability.

Alternative 2 – Implement subset of components listed in Alternative 3

Complete a subset of projects under this program listed in Alternative 3. A more detailed analysis will be required to determine possible project complexity and risk as project analysis continues. There are options to refresh certain sub-components noted in Alternative 3.

Alternative 3 – Implement the following projects (Recommended)

1. Integration of Dynamic Limits in Real-Time (DLRT) into real-time operations and replacing our Operating Security Limit (OSL) toolset;
2. Development of a new rules engine to enable improved delivery of complex operating instructions to real-time operators along with the initial stages of automating elements of operator tasks.
3. Integration of Phasor Management Unit (PMU) technologies into real-time operations;
4. SCADA Replacement:
 - a. Replacement of the legacy Energy Management Systems (EMS) with a core SCADA system;
 - b. New visualization tools for operations support and real-time operators;
 - c. New analytic capabilities leading to automated real-time operations (i.e., automate RAS arming/disarming selections, and understanding energy capabilities in neighbouring systems of resources impacting Ontario);
5. New Electromagnetic Transient (EMT) study capabilities to better analyse new inverter-based technologies impact on power system reliability;
6. Improved processes to better integrate connection applicants into real-time operations;

7. Improved training and instructions for day-ahead planning and real-time operations.

Delivery Approach

This project will be delivered as per the Portfolio Project Management Life Cycle (PPMLC) and Solution Delivery Life Cycle (SDLC) processes. The detailed approach with steps for delivery will be defined in the Planning Phase.

Risk Assessment

The project risks and mitigation strategies are developed in alignment with IESO's Enterprise Risk Management (ERM) Framework, the corporate process for conducting risk assessments. The ERM Framework supports risk assessment, analysis, mitigation and monitoring.

The following are the key risks identified that need to be managed as part of this project. The IESO will continue to evaluate risks and appropriate mitigation plans throughout the project lifecycle.

Table 3: Risk Assessment

Risk	Residual Risk Level	Mitigation Activities	Target Risk Level
There is a complex mix of highly technical and specialized tools that need to be modernized to maintain pace with a changing power system. The complexity of the work may overwhelm our vendors or staff capability leading to program delays and high costs.	Critical	The program will invest in upgrades to tools, and processes to address the influx of changes expected on the IESO-controlled grid. We will take a pragmatic approach to upgrading, replacing or adding new systems that balance implementation cost,	Medium

Risk	Residual Risk Level	Mitigation Activities	Target Risk Level
		complexity and costs against improvements to operating reliability. The program could be de-scoped or the schedule refined as more project planning analysis is completed for each phase of the program.	
New tools are expected to change the operating processes used by operators. As such, the changes may not be readily accepted or understood by operators leading to inability to in-service the new systems.	Critical	Early operator involvement in the program along with a human factors/change approach to the program will enable operators to understand the planned work and support its implementation – leading to greater rate of acceptance and buy-in on the proposed changes.	Low

Program Governance Structure

The Program is adhering to IESO's Project Management Lifecycle and associated project management controls which includes monthly progress reporting, project steering committees and exception reporting for material deviations in cost, schedule and objectives. The Program Sponsor and Project Steering Committee (made up of key internal stakeholders) will provide oversight of the project.

MATERIAL CAPITAL PROJECT PROGRESS UPDATES

The following are updates on previously approved ongoing material capital projects:

Replacement of the Settlement Systems

Executive Summary

In replacing settlement systems that have been in operation since market opening in 2002, this project will address market re-design needs associated with implementation of the Market Renewal Program (MRP) and enable systems to meet current and future business needs. In 2020, the IESO settled approximately \$20 billion in the IESO-Administered Markets, Ministry of Energy supported programs, and Global Adjustment through the settlement systems.

The Need for the Project

The existing settlement solution was put into operation as part of the opening of Ontario's electricity market in May 2002 to settle the wholesale electricity market. Over the years, it was modified to meet new settlement requirements which resulted from incremental improvements to the design of IESO-administered markets and new government policies, directives and regulations. Due to the technological limitations of the solution, IESO had to rely upon end-user computing ("EUC") tools to address IESO's needs. The use of EUC tools has introduced an increased risk of error and solution failures and has made it difficult to manage technologies, train staff to use and keep the system and tools up to date. These limitations pose a significant risk to achieving the design and schedule of the MRP settlement due to the solution's lack of flexibility and aging technology.

This project will sustain and integrate IESO's settlements services by addressing issues with the existing settlement solution, create transparency and efficiencies in the process to address settlement statement disagreements, and enable the implementation of the new settlement design requirements required to deliver settlements for the MRP.

Project Status: In-flight - Execution Phase

The project is being implemented in two phases. The first phase will release the core settlements engine and charge types to support the settlement of the existing market and allow the IESO to retire the existing commercial reconciliation system. The second phase will introduce the new charge types to support MRP.

Capital Budget (Including Contingency): \$ 36.8 million

Allocated Capital Contingency: \$8.5 million

See E-2-1 Attachment 1 – Capital Projects (Appendix 2-AA) for details.

Forecast Completion Date: Phase 1 – Q3 2024, Phase 2 - Q2 2025

Business Goals / Objectives

- Implement a settlement solution to better support Settlements' needs for the IESO administered markets and programs and changes from government policies, directives and regulations, today and in the future;
- Improve the settlement control framework through enhancing the automated preventive, detective and corrective controls;
- Improve settlement solution flexibility and maintainability through new architecture design and underlying technologies;
- Increase the efficiency and effectiveness of addressing and resolving settlement inquires and disagreements by improving the processes, market rules and systems.

Resource Adequacy Program
<p>Executive Summary</p> <p>As part of its commitment to transition to the long-term use of competitive mechanisms to meet Ontario’s resource adequacy needs, the IESO is working with stakeholders to implement the resource adequacy framework to develop and execute mechanisms, such as the Capacity Auction and Requests for Proposals (RFPs) to procure reliability services and products through different mechanisms.</p>
<p>The Need for the Program</p> <p>Within the broader Resource Adequacy framework, the capacity auction is a key mechanism to acquire capacity for short-term resource adequacy needs and the IESO has introduced a number of enhancements through the Capacity Auction Enhancements project which is currently the only capital work being undertaken as part of this Program. The IESO will continue to evolve and make incremental improvements to the auction framework to ensure it meets growing capacity needs cost effectively.</p> <p>The IESO’s 2021 Annual Planning Outlook (APO) signaled growing capacity needs emerging mid-decade following the expected retirement of the Pickering Nuclear Generating Station. The 2021 APO anticipated capacity needs to exceed 7,000 MW (comprising existing resources off-contract that need to be re-acquired plus new resources) in 2026 continuing to grow into the 2030s. The IESO is establishing a cadence of competitive procurements, alongside other mechanisms, such as programs and negotiations, to secure existing and new resources to meet the medium-term and long-term emerging system needs. These mechanisms are being designed with stakeholder input as part of the broader Resource Adequacy framework, which will result in tools/mechanisms that effectively balance ratepayer and investor risk. As a result of these procurements and other actions taken, the 2022 APO showed a significant reduction in 2026 capacity needs, and capacity needs that grow to over 7,000 MW in 2029.</p>
<p>Program Status: See below:</p> <p>Capacity Auction Enhancements: In-flight – Execution Phase</p> <p>Forward Capacity Auction: Not initiated</p>

Capacity Auction Enhancements Project:

Capital Budget (Including Contingency): \$ 3.9 million

Allocated Capital Contingency: \$0.6 million

Forward Capacity Auction Project:

Estimated Capital Cost: \$3.3 million

Estimated Capital Contingency: None

See E-2-1 Attachment 1 – Capital Projects (Appendix 2-AA) for details.

Forecast Completion Date:

Capacity Auction Enhancements: Q4-2023

Forward Capacity Auction: TBD

Business Goals / Objectives

- Improve resource availability and performance by ensuring capacity secured through the auction is better aligned with their resource adequacy value starting with the December 2023 Capacity Auction;
- Expand participation by enabling additional resource types in the December 2022 Capacity Auction;
- Improve business certainty for participants by setting minimum capacity target, starting with the December 2021 Capacity Auction;
- Ensure system reliability & enable competition by implementing RFP processes to secure resources to meet mid-term & long-term resource adequacy needs emerging in 2026.

Dynamic Limits in Real-Time

Executive Summary

In enabling the continuous assessment of real-time grid conditions, the Dynamic Limits in Real-Time (DLRT) Project will significantly improve the utilization of Ontario's transmission system, resulting in market and system operations efficiencies, and increased system security and resilience. The DLRT project deploys capabilities to continuously evaluate the security of the grid and provides timely and precise information to operators, even following unforeseen events. These capabilities will enable the IESO to continue to meet its regulatory obligations in light of evolving reliability requirements, enhance the resiliency of the grid, and provide improved market outcomes.

The DLRT project is a significant step forward in ensuring the reliability of the province's power system and delivers foundational change in how transmission limits are determined and used to operate the grid.

The incremental costs of this project are more than offset by the benefits, given its potential to achieve significant market savings, which, at the minimum, are \$1.5 million every year following completion of the project.

The Need for the Project

Reliability and resiliency: The IESO has a mandate to ensure the reliability of the province's power system, which includes operating within the capabilities of its equipment (i.e., ratings), in order to prevent equipment damage, and to protect staff and the public. While the mandate is not new, we are seeing there is a trend within the industry whereby manufacturers and asset owners are "tightening" equipment ratings – including allowed operating voltages.

As a result, the IESO is currently in a position where it must acquire new capabilities to assess and monitor the system with respect to these new criteria or be non-compliant with our Market Rule obligations. This project implements a cost-effective solution to assess and

monitor post-contingency voltage levels in real-time and protect equipment from over-voltages.

Market Efficiency: Dynamically determined real-time stability limits will often allow for increased power transfers on the grid because they take into account actual system conditions, as opposed to the off-line calculated limits in use today. Off-line calculated limits need to rely on conservative assumptions to account for the variety of system conditions that may exist over the period for which they will be in use. As a result, real-time stability and voltage limits improve the utilization of the existing transmission system and increase market efficiency such that the efficiency benefit generates a positive, yet conservative, net present value for this project in excess of \$1.7 million in just the first four years of in-service operations of DLRT.

Process efficiency: Deploying real-time stability limit derivation capability will lay the foundation for gains in efficiency for process work related to providing back-office engineering support to the Control Room and for development of mid-term and short-term operating limits.

Project Status: In-flight – Planning Phase

Project is progressing in accordance with the plan.

Estimated Capital Cost (Including Contingency): \$4.6 million

Estimated Capital Contingency: \$1.1 million

See E-2-1 Attachment 1 – Capital Projects (Appendix 2-AA) for details.

Forecast Completion Date: Q1 2025

Business Goals / Objectives

1. Comply with regulatory requirements by providing the capability to assess and monitor post-contingency voltage levels on the transmission system in real-time.
2. Enhance the reliability and resiliency of the IESO-controlled grid by significantly improving the timeliness of stability operating limits with respect to varying real-time system conditions.
3. Improve the utilization of the IESO-controlled grid resulting in \$1.5 million annual market benefit through reduced costs to ratepayers.
4. Add new capabilities for determining and manually implementing dynamic limits in real-time, while maintaining current staffing levels within the Markets and Reliability Business Unit.

SCADA/Energy Management System (EMS) Upgrade

Executive Summary

This project will upgrade the SCADA/EMS, the primary system operators use to monitor and manage the IESO-controlled grid. The resulting improvements will enable custom applications to run on the latest version of the vendor's software and improve the ability of energy storage resources to become integrated suppliers of regulation services.

The Need for the Project

A SCADA/EMS is a system of computer-aided tools used by operators of electric utility grids to monitor, control, and optimize the performance of the generation and/or transmission system¹.

This project will extend the life of current SCADA/EMS. In addition to the upgrade this project will incorporate the objectives of the Storage Resources in the IESO's Automatic Generator Control (AGC) tool initiative and implement the changes to the SCADA/EMS to support the Wide Area View Environment (WAVE) – Phase 2 project.

Project Status: In-flight - Execution Phase

The project released its entire approved time contingency due to delays in vendor delivery. It is progressing according to the latest approved project plan and is expected to complete Q1 2023. The upgrades for the core SCADA/EMS and AGC changes, which represent the majority of the project scope, went into service in November 2022.

Capital Budget (Including Contingency): \$ 14.3 million

Allocated Capital Contingency: \$2.3 million

¹ https://en.wikipedia.org/wiki/Energy_management_system

See E-2-1 Attachment 1 – Capital Projects (Appendix 2-AA) for details.

Forecast Completion Date: Q1 - 2023

Business Goals / Objectives

- Extend the life of SCADA/EMS platform for a minimum of 5 years from the in-service date, sustain the related services, and improve reliability and resilience per “I&TS Grid & Market Operations Service level requirements” (REQ-220).
- Reduce operational complexity by using the latest version of the vendor’s SCADA/EMS platform. This will improve the operators’ ability to operate the IESO Controlled Grid (ICG) according to industry standards. Any enhancements or use of new features to reduce operational complexity will be balanced against the project timelines and resource limitations.
- Ensure that:
 - a. Energy storage resources providing regulation service can be modeled within the AGC tool; and,
 - b. The AGC tool can account for an energy storage facility’s state-of-charge when providing regulation services.

Centralized Alarm Management System Replacement	
Executive Summary	
<p>The Centralized Alarm Management System (CAMS) Replacement project will ensure IESO operators can continue to manage alarms and events that are important indicators of change by implementing a new solution to replace software that will no longer be supported by the vendor.</p>	
The Need for the Project	
<p>The project will replace the existing CAMS solution with a vendor supported alarm capability.</p> <p>Recently, there have been multiple incidents where CAMS failures have reduced System Operations' situational awareness of the IESO Controlled grid². Such failures have at times also negatively impacted other systems such as the Supervisory Controls and Data Acquisition (SCADA) system. Further, CAMS failures have delayed IESO ability to deploy new alarms.</p>	
Project Status: In-flight - Execution Phase	
<p>The project time is expected to exceed the approved schedule baseline including contingency due to issues discovered late in the Execution Phase of the project. A Project Exception Report requesting additional time has been submitted for approval.</p>	
Capital Budget (Including Contingency): \$ 5.3 million	
Allocated Capital Contingency: \$0.8 million	
See E-2-1 Attachment 1 – Capital Projects (Appendix 2-AA) for details.	

² Examples: 1) Configuration database stopped allowing changes; 2) Both the primary and secondary databases corrupted causing a full day outage to CAMS.

Forecast Completion Date: As per the Project Exception Report referred in the Project Status section, the project is now expected to complete Q4 - 2023.

Business Goals / Objectives

- Improve the IESO's alarming capabilities while maintaining compliance with North American Electric Reliability Corporation (NERC) Critical Infrastructure Protection (CIP) standards.
 - Replace the CAMS solution with a vendor supported alarm solution.
 - Realize internal efficiency gains as the effort to support the replacement CAMS solution will be reduced
 - Improve agility and flexibility in deploying and maintaining alarms.
 - Ensure the new CAMS solution retains a centralized design.
- Ensure the replacement CAMS solution supports modern integration methodologies.

Market Analysis and Simulation Toolset (MAST)

Executive Summary

As the MRP is introducing wholesale market changes, current tools to monitor, assess and analyze the new market will be insufficient. MAST will deploy a common assessment tool environment that can be utilized in multiple business processes that will monitor, correct, improve or alter market design or operations over the day-ahead, pre-dispatch and real-time periods. The new tools are required after MRP go-live.

The Need for the Project

This project is critical to realize the anticipated benefits of the renewed market, as unintended outcomes resulting from inefficient market schedules or perverse financial incentives through the potential for counter-intuitive market prices could diminish the benefits of MRP and have a negative impact on the stakeholder perception of market operations. In the 20 years of administering the existing market, the previous monitoring and analysis through simulation tools has resulted in savings to the ratepayer of well over several hundred million dollars through changes to the legacy market design. Such tools have traditionally allowed the IESO to analyze and resolve market outcomes that were found to be irrational, stifle competition, provide unwarranted windfall gains, or were economically inefficient. Going forward the IESO must have new tools to assess the effectiveness of MRP to identify potential solutions to address unintended outcomes and inefficiencies.

Project Status: In-flight - Planning Phase

The project has experienced delays due to the availability of critical IESO and vendor resources which has caused the Planning Phase to be extended until May 2023. The project will be put on hold at that time with the extension of the MRP project schedule. This project will resume in the implementation phase once internal and vendor resources are available but before MRP go-live.

Capital Budget (Including Contingency): \$ 6.4 million

Allocated Capital Contingency: \$1.5 million

See E-2-1 Attachment 1 – Capital Projects (Appendix 2-AA) for details.

Forecast Completion Date: Q3 – 2025

Business Goals / Objectives

1. Maintain the IESO's regulatory obligation to support the monitoring and investigative mandate of the Ontario Energy Board's Market Surveillance Panel by simulating market results with assumptions on market design and participant behaviour.
2. Sustain the ability and have more advanced capability that matches sophistication of the new market to monitor the performance of the IESO-administered markets and identify anomalous/unintended outcomes and the exercise or abuse of market power.
3. Provide the capability to simulate scenarios to measure benefits realization and to identify potential unintended market outcomes from implemented market initiatives.
4. Improve the quality and consistency of analysis results between Markets and Reliability and Market Assessment & Compliance Division (MACD) by moving to a common IT supported toolset while maintaining separation of function between the two groups.

\$1 MILLION - \$4 MILLION CAPITAL PROJECT UPDATES

Below is a summary of the planned projects, and an update on the progress of the IESO's ongoing capital projects that have a total capital expenditure between \$1 million and \$4 million. Please refer to E-2-1 Attachment 1 – Capital Projects (Appendix 2-AA) for more details on cost and variance.

Data Excellence Program
<p>Executive Summary</p> <p>To help harness the full value of IESO data, this program establishes an evolved data management and analytics framework to support IESO business needs and enhance third-party access to data and information. Data governance policies and tools (Data Catalog), an updated data warehouse strategy and supporting applications for high-value use cases and a centre of excellence for advanced machine learning applications are in the scope of the program roadmap.</p>
<p>The Need for the Program</p> <p>In 2019, the IESO embarked on an intentional and structured effort to evolve its data & analytics maturity level. This is being accomplished by developing a data strategy designed to treat organizational data as a valuable business asset, thereby creating opportunities for meaningful ratepayer and organizational value creation from the vast quantity of information in the IESO's data repositories.</p> <p>To help achieve this imperative, this strategic initiative employs a business-centric approach to enhance the IESO's data management & analytics capabilities by establishing a governance framework and practices and by extracting value through a broad range of enterprise-wide applications. The following projects are part of this program.</p> <p>Data Governance Policy – project commenced in Q3-2021</p> <p>A new IESO Data Governance Policy has been created to support the key provisions of an Enterprise-wide Data Governance Program at the IESO – the policy was enacted in 2022,</p>

along with a training companion course that was designed to explain foundational concepts of data governance and their application at the IESO.

Data Catalog Tool Implementation – project commenced in Q1-2020

An Enterprise-wide Data Governance Program is to be deployed through the use of a Data Catalog tool. The tool will be populated one data domain at a time. This will include the governance roles, a catalog of the datasets, data dictionary/business glossary, retention schedules, security classifications and data quality specifications.

Machine Learning Data Lab – project commenced in Q3-2020

The IESO has a large talent pool of analysts who leverage the data available. The current tools at their disposal have not kept pace with the advancements that are now common place in other industries. To enable our resources to gain experience with machine learning algorithms, this project will establish a Data Lab that will be available for users to access with some pre-loaded data sets and to upload their own data.

Enterprise Data Warehouse Optimization – project commenced in Q2-2021

The Enterprise Data Warehouse Optimization project will ensure that IESO has an efficient data warehouse design and supporting processes in place to enable our data to be extracted and analyzed quickly and accurately. This will allow for the improvement of the existing data in the warehouse through the creation of data marts and other database improvements, and will introduce new data sets to the warehouse in a manner designed for analytics and not simply for storage purposes.

The project will use an iterative and “time bound” approach to develop data marts for as many uses cases as possible on a priority basis, before the end of December 2023 and within the approved budget. This innovative and iterative approach will allow the IESO to prioritize the pain points its analysts are facing with the current data available in the data warehouse and set the IESO up for success with the additional data coming from market renewal and other data intensive projects.

Program Status: In-flight - Execution Phase

Data Governance Policy & Training Course: Complete

Data Catalog Tool Implementation: In-flight – Closure Phase

Machine Learning Data Lab - Complete

Enterprise Data Warehouse Optimization: In-flight – Execution Phase

Additional program elements are contemplated for 2024 and 2025, that may include procurement and implementation of advanced analytical tools, external reporting optimizations or other necessary projects as identified by the business, for an additional investment of \$800,000 and \$500,000 in 2024 and 2025 respectively.

Current Approved Capital Budget: \$3 million

Allocated Capital Contingency: None

Current Program Forecast Completion Date: Q4 2023

Business Goals / Objectives

The goal of the Data Excellence Program is to support the IESO's core strategy of driving business transformation by maturing its Data & Analytics Framework, in alignment with the evolved needs of the sector.

Wide Area Visualization Environment (WAVE) – Phase 2

Executive Summary

The WAVE Phase 2 project expands the IESO's visibility into neighboring power systems. The first project (WAVE Phase 1) improved the IESO's situational awareness to the west of Ontario. This project will improve situational awareness and maintain ongoing compliance with North American Electric Reliability Corporation (NERC) Interconnection Reliability Operating (IRO) standards by expanding modelling to neighboring power systems (NYISO, PJM and Hydro-Quebec), improving the IESO's ability to monitor and respond to real-time conditions that may affect the IESO controlled grid.

The Need for the Project

The IESO has limited visibility outside Ontario and typically is not aware of changes in power flows in neighboring jurisdictions until they show up as changes in parallel flows in Ontario. This lack of visibility limits the IESO's ability to proactively position the system to maintain reliability following external disturbances or rapidly changing external market conditions. Additionally, NERC standards mandate awareness and real-time simulation of critical elements in adjacent Reliability Coordinator (RC) areas. This project takes a prudent approach to ensuring compliance with NERC critical standards and improving the IESO's awareness of key elements in adjacent reliability coordinator areas.

Project Status: In-flight - Execution Phase

Due to impacts of delays in Supervisory Control and Data Acquisition (SCADA)/Energy Management System (EMS) Upgrade project and internal resource constraints, the decision has been made to place the project on hold after incorporating the power system model (Q2-2023). The project will resume once critical subject matter experts are available to support the remaining external models.

Capital Budget (Including Contingency): \$3.2 million

Allocated Capital Contingency: \$0.4 million

Forecast Completion Date: Q4 2025

Business Goals / Objectives

- Improve visibility and modelling of identified critical elements for three external Reliability Coordinators (RC): NYISO, PJM and Hydro Quebec, which will give the IESO an enhanced wide area view and facilitate maintaining compliance with applicable/relevant versions of NERC reliability standards.
- Improve the ability of the IESO to monitor real-time wide area operating conditions in accordance with NERC guidelines and evolving best practices on situational awareness.

Addressing Market Surveillance Panel (MSP) Recommendations Program

Executive Summary

A portfolio of initiatives to develop, evolve and address inefficiencies in the electricity market in response to observations by the MSP and other stakeholders.

Projects currently included in the program are as follows:

Improving Accessibility of Operating Reserve – project commenced in Q1 2021

- Operating Reserve (OR) is stand-by supply that the IESO can quickly call upon in the event of an unexpected mismatch between supply and demand. IESO carries operating reserve to comply with the requirements set out in NERC's Disturbance Control Standard (BAL-002-3) and NPCC's Regionals Reliability Reference Directory #5. The objective of this project is to develop a solution that improves the accessibility of the scheduled OR.

Transmission Rights Market Enhancement and Platform Refresh – project commenced in Q4-2021

- The IESO uses the Transmission Rights Auction (TRA) tool to administer the monthly Transmission Rights Market. The underlying technology platform has reached end of life and is unable to support further enhancements to the TRA tool. This project will update the TRA platform, improve efficiency for support staff and introduce one of the high-value enhancements identified in the recent Transmission Rights Market Review performed by the IESO in response to a MSP recommendation. Additional enhancements identified in the TRA Review are included below as part of the project "Transmission Rights Review – High Value Opportunities"

The Need for the Program

This program is a portfolio of projects proposed to address current as well as anticipated (i.e. yet to be issued) Market Surveillance Panel (MSP) recommendations. These projects will be incremental improvements and enhancements to the electricity market to address MSP concerns and inefficiencies.

Reports and findings from the MSP can identify issues related to anti-competitive behavior, such as gaming, and other shortcomings within the market design with impacts commonly in the tens of millions of dollars. These issues can have a significant public and media profile. The ability of the IESO to respond effectively to findings is critical to maintaining both its corporate reputation and stakeholder and investor confidence in the IESO-administered markets.

Program Status:

- Improving Accessibility of the Operating Reserve: In-flight -Execution Phase. Expected completion Q2 2023.
- Transmission Rights Market Enhancement and Platform Refresh: In-flight -Planning- Expected completion Q4 2024

Other projects will be considered for inclusion under this Program on a priority basis, such as Maximizing the Value of OR Participation across Interties and High Value Opportunities identified as part of the Transmission Rights review.

Estimated Capital Cost (Including Contingency): \$2.4 million

Estimated Capital Contingency: \$0.6 million

Forecast Program Completion Date: TBD as other projects will be considered for inclusion under this Program on a priority basis.

Business Goals / Objectives

- Initiatives from this program will help ensure reliability through improving the functioning of the electricity market. Depending on the nature of the recommendation, the issues identified by the MSP may directly impact system reliability.
- Initiatives from this program will help enable and strengthen competition by contributing to a more efficient, fair marketplace and selecting the most economic resources.
- Ensure the IESO compensates market participants for the amount of OR that resources are capable of providing during an Operating Reserve Activation.

Enterprise Antivirus Replacement	
Executive Summary	
<p>The current antivirus solution which was commissioned in 2018 will no longer be supported as the current vendor is moving to a cloud-based service offering only, which will not meet the current NERC Critical Infrastructure Protection (CIP) standards. This project will replace the current antivirus solution with a new "on-premise" solution that will maintain the IESO's security posture and continue to meet the NERC CIP requirements.</p>	
The Need for the Project	
<p>The vendor will be migrating the existing solution to a cloud-only format, making it non-compliant with the existing NERC-CIP standards; where the requirement is for an "on-premise" solution. This project is required to replace the existing solution with a solution that will detect, prevent and respond to cybersecurity threats and attacks, and allow the IESO to remain compliant with NERC CIP standards.</p>	
Project Status: In-flight - Execution Phase - Project is progressing according to plan.	
Capital Budget (Including Contingency): \$0.7 million Allocated Capital Contingency: \$0.1 million	
Forecast Completion Date: Q4 2023	
Business Goals / Objectives	
<ul style="list-style-type: none">• Continue detection, prevention, and response to cybersecurity threats and attacks with a vendor supported Advanced Endpoint Detection and Response solution;• Maintain compliance with NERC CIP standards with the vendor supported solution.	

Long Term Demand Forecast	
Executive Summary	
<p>This project will replace the existing Long-Term Demand Forecast tools which have reached end of life and update the end-use load profiles used to develop the long-term forecasts. These tools are essential to support the planning processes that forecast system needs and provide infrastructure investment advice for the next 20 years.</p>	
The Need for the Project	
<p>The Annual Planning Outlook (APO) is the primary input into the Annual Acquisition Report (AAR) which identifies future capacity needs. The long-term demand forecast is the first input into this process. Without a functional tool the IESO will be challenged in its ability to effectively forecast future capacity needs. Further, as the tool is only supported on a virtual computer it can only be accessed by one user at a time. This limits the IESO's ability to produce multiple scenarios in parallel and ability to address government requests or model for different scenarios which could be used to inform planning decisions.</p> <p>The grid is currently experiencing a significant step change in how electricity is being used. This project will retire the current Long Term Demand Forecast tool and procure a new tool, as well as update the datasets. The current tool was procured approximately 15 years ago and has limitations of access, IT support, age and data. The project will also revamp the Long-Term Demand Forecast process, as well as improve the accessibility and reliability of the remaining tools and data.</p>	
Project Status: In-flight - Planning Phase	
Project is progressing according to Plan.	
Capital Budget (including contingency): \$2.6 million	
Allocated Project Contingency: \$0.6 million	
Forecast Completion Date: Q2 2025	

Business Goals / Objectives

1. Deliver a new Long-Term Demand Forecast solution (for the 20- to 30-year time frame), including updating the datasets, to sustain the production of reliable long-term demand forecasts;
2. Updating demand forecast tools and capability improves forecasting and reduces risks to reliability related to under-forecasting system needs;
3. Improve the accessibility and reliability of the demand forecasting tools and data, to reduce operational risks to the IESO; and
4. Improve the consistency of outputs from the 18-month and 20 to 30-year demand forecasts to reduce reputational risks to the IESO.

PMU Integration – Phase 3
<p>Executive Summary</p> <p>Phasor Measurement Units (PMUs) can continuously deliver high-quality, time synchronized real-time power system data at a high frequency (30-60 samples per second). Building on the earlier phases of this work, Phase 3 will integrate PMU data into the IESO's operations support tools and services, as well as live information into the Control Room. Obtaining PMU data from across Ontario will improve real-time monitoring of the IESO-controlled grid; obtaining PMU data from other jurisdictions outside of Ontario will improve wide-area view; and both will improve the IESO's overall situational awareness. PMUs also provide the IESO the ability to diagnose incidents and to more efficiently comply with several NERC reliability standards.</p>
<p>The Need for the Project</p> <p>Over the last decade, the Ontario electricity sector has evolved into a more dynamic power system with higher penetration of intermittent inverter-based resources, distributed energy resources (DERs), and storage devices, while we also anticipate a decreasing quantity of large traditional generation sources. This evolving supply mix has resulted in less system inertia and greater challenges for system operators to continuously monitor the grid. Combined with the potential for climate change driven increases in severe weather events, tighter supply margins and a changing supply mix across Ontario and North America, and expanding infrastructure in Ontario, enhancing the IESO's situational awareness will be critical to maintaining reliability and resilience.</p> <p>Obligations on market participants to have PMUs installed at certain specified locations have been included in the IESO's Market Rules starting in December 2024.</p>
<p>Project Status: Planned - Not Initiated - The project is expected to be initiated in Q2 2023.</p>
<p>Capital Cost: \$3.25 million</p> <p>Assigned Capital Contingency: None</p>

Forecast Completion Date: Q4 2025

Business Goals / Objectives

- Improve the reliability of the Ontario power system by adding new infrastructure with new and advanced system monitoring and data recording capability;
- Improve the ability of the IESO to comply with NERC reliability standards due to availability of high quality data, particularly for MOD-033;
- Improve the ability of the IESO to diagnose local and interconnection-wide incidents and design mitigation steps;
- Improve the ability of the IESO to view near real-time wide-area operating conditions; and
- Contribute to the enabling of emerging resources types through improved monitoring and understanding of their operations during system events.

Firewall Refresh	
Executive Summary	
<p>The IESO plays a critical role in maintaining the safe and reliable operation of Ontario’s bulk electricity system and in administering the wholesale electricity market. As a thought leader in the electricity sector, the IESO must have a robust and reliable computing infrastructure that includes cyber defense controls. This project will refresh the Checkpoint firewall appliances as they reach end of vendor support.</p>	
The Need for the Project	
<p>This project seeks to build on the strengths of the existing security architecture by upgrading the key security controls at the firewall perimeter of our data network. This upgrade will allow the IESO to take advantage of features which are used to reduce the risk of evolving cyber-attacks and ensure it mitigates security concerns related to the industry.</p>	
Project Status: Planned – Not Initiated	
Estimated Capital Cost including Contingency: \$3 million	
Estimated Capital Contingency: None	
Forecast Completion Date: Q4 2024	
Business Goals / Objectives	
<ul style="list-style-type: none">• Sustain the availability and reliability of the firewall service by refreshing the existing Checkpoint firewall to ensure continuous vendor support for 5 years.	

Data Loss Prevention (DLP) Phase 2

Executive Summary

The IESO plays a critical role in maintaining the safe and reliable operation of Ontario's bulk electricity system and in administering the wholesale electricity market. The IESO also plays a role as a cyber security thought leader in the electricity sector. As such, the IESO needs to act as an example by having a robust and reliable computing infrastructure that includes cyber defense controls. Data loss prevention (DLP) is an approach that seeks to improve information security and protect business information from data breaches. It can detect data movement and prevent end-users from moving key information outside the network. This project is focused on a technological DLP solution that will provide features and benefits in a variety of situations, all of which will allow the IESO to better understand how high-value data is handled within the network and will, where necessary, automate the prevention of data sharing with unauthorized personnel.

The Need for the Project

DLP identifies, monitors, and protects data in use or in motion on the network, as well as data at rest in storage or on desktops, laptops and mobile devices. Through deep content inspection and a contextual security analysis of transactions, DLP serve as the enforcers of data security policies and provide a centralized management framework designed to help detect and prevent the unauthorized disclosure or transmission of sensitive information.

DLP protects against mistakes that lead to data leaks and intentional misuse. As organizations such as the IESO recognize the growing risk of data loss and the importance of data protection, it is vital to the IESO to have a DLP tool to ensure that IESO data is protected from both accidental or malicious misuse that can lead to the potential leakage or even loss of data.

Project Status: Planned – Not Initiated

Estimated Capital Cost including Contingency: \$2.5 million

Estimated Capital Contingency: None
Forecast Completion Date: Q2 2025
Business Goals / Objectives <ul style="list-style-type: none">• Provide visibility on both accidental and malicious misuse of IESO data as well as prevention of potential leakage or loss of sensitive data;

Windows Infrastructure Refresh	
Executive Summary	
<p>The IESO utilizes Microsoft Windows Servers and related hardware and software components to provide the underlying platform for all the applications used by the IESO. Collectively known as "Windows Infrastructure", it provides a number of services, including, amongst others: authentication and authorization, remote desktop connection (terminal server) and wireless authentication.</p> <p>These services are critical for the operations of IT systems required to meet our business obligations. This project will refresh the Windows Infrastructure.</p>	
The Need for the Project	
<p>The Microsoft Windows Server operating system version in use is nearing end-of-life which means no support will be provided by Microsoft including critical security patches.</p> <p>Furthermore, the hardware for these servers are no longer supported by its vendor and require a high-priced extended maintenance support to ensure its continued operation.</p> <p>A new hardware infrastructure ensures the continuous vendor support and latest Windows operating system provides patches for critical security patches and bug fixes.</p>	
Project Status: Planned – Not Initiated	
Estimated Capital Cost including Contingency: \$2 million	
Estimated Capital Contingency: None	
Forecast Completion Date: Q4 2024	
Business Goals / Objectives	
<ul style="list-style-type: none">• Refresh the hardware infrastructure hosting the core Windows services; and• Upgrade the Windows Server Operating System to ensure continuous availability of vendor support for the next five years.	

MIM Technical Refresh
<p>Executive Summary</p> <p>The Market Information Management (MIM) system is the IESO solution that receives Dispatch Information (bids/offers) from market participants and is the repository for the results of the Day Ahead Optimization System and Market Information System. This project will update the solution to use supported hardware and technology components.</p>
<p>The Need for the Project</p> <p>The MIM Technical Refresh project will update the solution to use current hardware and supported technology components. This initiative directly supports IESO’s “Ensure System Reliability” strategy by ensuring information technology systems used to receive energy bids and offers from Market Participants are deployed on vendor supported technologies. Having up-to-date energy bids and offers allows IESO Control Room Operators (CRO) to understand the energy supply available to match Ontario’s changing load. This contributes to the CROs ability to effectively manage the operation of the IESO Control Grid (ICG).</p> <p>This project mitigates the corporate risk of Critical Information Technology System failure impacting control room operations by refreshing end-of life, obsolete and unsupported technologies.</p> <p>The MIM Technical Refresh project needs to be complete as soon as possible in order to support a number of MIM enhancements being introduced as part of the Market Renewal Program (MRP)</p>
<p>Project Status: In-flight - Execution Phase</p> <p>The project is progressing according to plan.</p>
<p>Capital Budget (Including Contingency): \$3.8 million</p> <p>Allocated Capital Contingency: \$0.4 million</p>
<p>Forecast Completion Date: Q3 2023</p>

Business Goals / Objectives

- Extend the life of the MIM system and infrastructure for a minimum of 5 years from the in-service date;
- Reduce the security risk associated with cyber threats by refreshing the MIM infrastructure and technology;
- Deliver the updated MIM platform to MRP to support required functionality enhancements.

LogRhythm Security Information and Event Monitoring (SIEM) Refresh	
Executive Summary	
<p>The IESO plays a critical role in maintaining the safe and reliable operation of Ontario’s bulk electricity system and in administering the wholesale electricity market. As a thought leader in the electricity sector, the IESO needs to lead by example by having a robust and reliable computing infrastructure that includes cyber defense controls.</p> <p>LogRhythm is IESO’s SIEM solution that monitors security events by gathering log data across all IT connected systems; and maintains compliance with NERC CIP-007 (System Security Management) by demonstrating compliance to and retaining evidence related to each NERC requirement.</p> <p>This project will refresh the LogRhythm solution with the latest hardware and software commissioned in 2019 to align with the solution refresh cycle. The new appliances will have more computing capacity to accommodate the growth of IT systems.</p>	
The Need for the Project	
<p>This project seeks to maintain the SIEM, which is an important Security Operations Centre (SOC) tool to meet changing business requirements. This refresh will allow the IESO to take advantage of features which are used to reduce the risk of evolving cyber-attacks and ensure we mitigate security concerns related to our industry.</p> <p>Aside from preventing potential security breaches and complying with NERC CIP standards, the refresh of the LogRhythm SIEM will maintain custom Advanced Intelligence Engine (AIE) rules for SOC reporting, log collection and analysis.</p>	
Project Status: Planned – Not Initiated	
Estimated Capital Cost including Contingency: \$3 million	
Estimated Capital Contingency: None	
Forecast Completion Date: Q1 2026	

Business Goals / Objectives

- Sustain the availability and reliability of the LogRhythm SIEM service with continuous vendor support for 5 years;
- Increased capacity to accommodate growth of IT systems monitored by LogRhythm.

Network WAN Infrastructure Refresh	
Executive Summary	
<p>The IESO Wide-Area Network (WAN) infrastructure is a complex collection of networks that communicate with one another. These WANs facilitate communication, the sharing of information and much more between devices that provide the IESO internet access, inter-office communication between all IESO locations, and real-time telemetry with Market Participants through a WAN provider. This project will replace all the aging CISCO WAN infrastructure.</p>	
The Need for the Project	
<p>This refresh project will replace the Cisco devices that are End of Support or nearing their End-of-Life dates. The Aggregation Services Routers (ASR) for example, are used primarily for edge routing for the IESO enterprise networks and service providers. They are used at the IESO for high bandwidth applications, such as internet streaming (i.e., video conferencing, connectivity to cloud services), and real-time telemetry applications that support SCADA.</p> <p>This project will refresh WAN infrastructure that supports the main three functions of internet access, interoffice connectivity and Market Participant communications.</p>	
Project Status: Planned – Not Initiated	
Estimated Capital Cost including Contingency: \$1.7 million	
Estimated Capital Contingency: None	
Forecast Completion Date: Q1 2026	
Business Goals / Objectives	
<ul style="list-style-type: none">• Sustain the availability and reliability of the network WAN infrastructure with continuous vendor support for 5 years.	

Cybectec Refresh	
Executive Summary	
<p>The IESO collects over 100,000 telemetry data points every two (2) seconds and pushes that data into the Supervisory Control and Data Acquisition (SCADA) systems. The Cybectec gateways are used for protocol conversion and data concentration for the telemetry data points. These communication machines collect data from the field and feed the data into the Process Communication Units (PCU) and SCADA. This project will refresh the existing Cybectec gateways that have reached the end of their useful life.</p>	
The Need for the Project	
<p>This refresh project will replace the hosted Cybectec gateways commissioned in 2014. The Cybectec gateways are no longer supported by the vendor. Additional gateways will also be purchased as swap appliances for critical events such as hardware failure. The new hardware comes with improved technical specifications that will benefit the IESO in future projects requiring high performance.</p>	
Project Status: Planned – Not Initiated	
Estimated Capital Cost including Contingency: \$1 million	
Estimated Capital Contingency: None	
Forecast Completion Date: Q2 2026	
Business Goals / Objectives	
<ul style="list-style-type: none">• Sustain the availability and reliability of the Cybectec gateways with vendor supported hardware and software.	

Aspen File Server Refresh	
Executive Summary	
<p>Aspen is IESO's corporate file server. As part of this project, the underlying hardware and software for Aspen will be replaced. Data which resides on existing Aspen file server will be migrated to the new Aspen file server as part of this project.</p> <p>This project will refresh the underlying Aspen file server storage array infrastructure commissioned in 2019.</p>	
The Need for the Project	
<p>The Aspen file server contains critical business information, collaboration and personal folders. Vendor support for the Aspen file server storage array infrastructure will end on November 30, 2026.</p>	
Project Status: Planned – Not Initiated	
Estimated Capital Cost including Contingency: \$2.5 million	
Estimated Capital Contingency: \$0.4 million	
Forecast Completion Date: Q3 2026	
Business Goals / Objectives	
<ul style="list-style-type: none">• Sustain the availability and reliability of file server service with a vendor supported file server;• Increase capacity of the Aspen file server service to accommodate incremental file storage needs.	

Intrusion Prevention System Refresh
<p>Executive Summary</p> <p>The IESO has a critical role to play in maintaining the safe and reliable operation of Ontario’s bulk electricity system and in administering the wholesale electricity market. The IESO is tasked with providing Cyber Security Information Sharing (CSIS) services to all licensed electricity distributors and transmitters in Ontario. The IESO continues to expand its Lighthouse program; a voluntary situational awareness and information-sharing initiative. By necessity, the IESO needs to lead by example by having a robust and reliable computing infrastructure that includes cyber defense controls.</p> <p>The Intrusion Prevention System (IPS) prevents network security attacks such as brute force attacks, Denial of Service (DoS) attacks and vulnerability exploits. IPS continuously monitors network traffic to detect/prevent against known and unknown vulnerability.</p>
<p>The Need for the Project</p> <p>This project seeks to build on the strengths of the existing security architecture by upgrading the key security controls at the perimeter of the IESO’s data network. The Intrusion Prevention System (IPS) complements the IESO’s existing key cyber controls such as firewalls, and advanced malware prevention. This upgrade will allow the IESO to take advantage of features which are used to reduce the risk of evolving cyber-attacks and ensure it mitigates security concerns related to the industry. The refresh project will upgrade the current IPS appliances commissioned in 2021 to align with the solution refresh cycle.</p>
<p>Project Status: Planned – Not Initiated</p>
<p>Estimated Capital Cost including Contingency: \$1.5 million</p> <p>Estimated Capital Contingency: None</p>
<p>Forecast Completion Date: Q4 2026</p>
<p>Business Goals / Objectives</p> <ul style="list-style-type: none"> • Sustain availability and reliability of the intrusion prevention service with continuous vendor support for 5 years.

Hub Intranet Redevelopment

Executive Summary

The IESO intranet ("the Hub") is one of the IESO's primary communications tool and information resource for employees. It is the source of information for internal and sector news, business resources and documents, employee resources, training & development information and social information, among others. A newly designed intranet site and supporting infrastructure will:

- ensure content is delivered more efficiently;
- facilitate enhanced collaboration across the organization;
- enable more efficient tools to support business activities;
- incorporate governance, accountability and maintenance that will improve quality; and
- as well as promote IESO values, mandate, vision and culture.

The Need for the Project

The current version and platform for the Hub is still largely a legacy site of the pre-merger IESO's intranet. Color schemes and some basic branding elements were altered to give it a new look for "day one" of the new organization in 2015. It was a temporary solution that was necessary to have required documents and information in place as part of the merger activities.

The site is not representative of the current environment the organization now operates in, including the global Covid-19 pandemic and its dramatic impact on society. The content management system upon which it is built and supporting infrastructure is no longer supported. The information architecture has become cluttered and difficult for employees to intuitively find the information they need. The search function is not very effective, and it often takes several "clicks" to get to the information being looked for, if at all. Site governance and content maintenance has been lacking over time.

The original budget was less than \$1 million and included as part of the "Other Initiatives/Projects (Less than 1 million)" in Appendix 3 of the 2023-2025 Business Plan. Through planning activities, the IESO identified the need for additional hardware requirements which have led to the increase in project costs.

Project Status: In-flight – Execution Phase

A Project Exception Report has been submitted to seek approval for an additional capital funds and extend completion to June 30, 2023 to accommodate some late identified changes that need to be accommodated to achieve the project's business objectives.

Capital Budget (Including Contingency): \$2 million

Allocated Capital Contingency: \$0.3 million has been released to the project

Forecast Completion Date: Q2 2023

Business Goals / Objectives

- Improve the employee experience in using the IESO intranet by streamlining access to employee, departmental and company information and tools;
- Sustain employee engagement and promote employee community in a distributed workforce, by ensuring the Intranet presents timely and relevant information; and
- Sustain the intranet by mitigating the risk of the use of unsupported technology by moving to a supported platform with vendor support for 5 years.

External Identity Management (Portal)
<p>Executive Summary</p> <p>The IESO external portal is used as an entry point for participants to multiple market-facing applications and collaboration communities. This project will replace the existing portal, which is at end-of-life, and enable the delivery of efficient services to IESO staff and external customers.</p>
<p>The Need for the Project</p> <p>The IESO external portal is a critical tool supporting the day-to-day operations of Market and Program Participants by managing access to applications such as Dispatch Data Management System (DDMS), Transmission Rights Auction (TRA), and internal and external Collaboration communities.</p> <p>The existing solution is built on a solution platform which is now at end-of-life and is out of vendor support as of 2019. There is a need to replace the existing Portal and its collaboration community functions.</p>
<p>Project Status: Complete</p> <p>A Project Exception Report (PER) was approved to increase capital funding by \$0.2 million and extend timeline by 7 months until Q2 2022 to address a number of technical issues identified when the new products were being released into the Production environment. The project has achieved its stated business objectives.</p> <p>This project was initially estimated to be less than \$1 million of capital and hence was included in the "Other Initiatives/Projects (Less than \$1 million) in the previous Business Plan submission.</p>
<p>Actual Capital Cost: \$1.6 million</p> <p>Capital Contingency: N/A</p>
<p>Actual Completion Date: May 5, 2022</p>

Business Goals / Objectives

1. Improve the reliability and availability of the external document sharing and collaboration system by replacing the aging technology with a solution that is vendor supported at least for the next 5 years after which the standard Information Technology component refresh and upgrade cycle begins.
2. Reduce the internal and external customer support management, and relating access administration and incident management cost associated with all in-scope applications authenticated and authorized via External Identity Management system;
3. Enhance the reputation of the IESO by:
 - Offering external users and market participant an enhanced and easier to use self-service functionality as it relates to identity management such as password resets; and
 - Providing external users and market participants with improved access to the applications and their information published via the external document sharing and collaboration system.
4. Enhance the IESO security posture by:
 - Protecting IESO documents and information by giving authorized groups access to confidential contents/documents via the implementation of information rights management functionality which is not currently supplied by the existing collaboration tool; and
 - Protecting IESO and customer identities and accounts by adding features such as adaptive multi factor authentication, and therefore reducing the risk of an intruder gaining access to critical systems and data.

Network Performance Monitoring and Diagnostic (NPMD) Solution
<p>Executive Summary</p> <p>The IESO's Core and Data Centre networks provide the backbone of the IESO's network infrastructure connecting all systems and locations in a robust and reliable high-performance network. The Network Performance Monitoring and Diagnostic (NPMD) solution will provide the capabilities to monitor network devices, analyze network packets for enhanced visibility, reducing troubleshooting effort and time to resolution and predictive failure analysis. This project builds on the foundation that was put in place with the acquisition and configuration of the Network Taps hardware that captures and centralizes network traffic.</p>
<p>The Need for the Project</p> <p>The NPMD solution will provide the capabilities to monitor network traffic, and analyze network packets for enhanced visibility via real-time and historical data. An enhanced network monitoring and traffic analysis provides the ability to take full advantage of the Network Taps hardware.</p>
<p>Project Status: In-flight - Execution Phase</p> <p>Project is proceeding according to Plan</p>
<p>Capital Budget (Including Contingency): \$2.1 million</p> <p>Allocated Capital Contingency: \$0.2 million</p>
<p>Forecast Completion Date: Q3 2023</p>
<p>Business Goals / Objectives</p> <ul style="list-style-type: none"> • Enhance the reliability of IT systems connected to the IESO network by introducing network traffic visibility at all IESO locations. • Provide visibility to and analysis of the network traffic inside the virtualization environment¹.

¹ Virtualization environment hosts virtual machines at IESO.

Data Historian Expansion and Upgrade

Executive Summary

The Data Historian is a real-time application that is currently used by the IESO for data collection, historicizing, finding, analyzing, delivering, and visualizing telemetry data from process control systems to assist in the operation of the IESO-Controlled Grid.

The current version of the Data Historian is no longer supported by the vendor. This project will upgrade the Data Historian and its desktop clients to the latest software release and provide sufficient capacity to support additional data points that are required to accommodate the additional data introduced by the Wide Area Visualization Environment (WAVE) Phase 2 project.

The Need for the Project

The version of Data Historian currently deployed, including its desktop clients, are no longer supported by the vendor and vendor support is provided on a best-efforts basis.

Upgrading the Data Historian and its desktop clients to the latest release will enable the vendor to provide support, ensure the continuous operations of Data Historian, and availability of software patches. Furthermore, with the increased need for additional data points, this initiative will also provision for the capacity requirement of these additional data points.

The original cost projection for this project was less than \$1 million and it was included as part of "Other Initiatives/Projects (Less than \$1 million)". Refinements through our planning activities have resulted in higher estimated costs for this work.

Project Status: In-flight - Planning Phase

Project is progressing according to plan.

Estimated Capital Cost including contingency: \$1.6 million

Estimated Capital Contingency: \$0.2 million

Forecast Completion Date: Q3 2024

Business Goals / Objectives

- Sustain IESO ability to receive real-time telemetry data and display it for visibility in control room operations;
- Sustain IESO ability to record real-time telemetry data for off-line audit, research, and analysis purposes; and
- Increase capacity of the Data Historian software and infrastructure to accommodate increased volume of incoming telemetry points expected over the next 5 years.

IESO Space Needs Program – Office Pilot

Executive Summary

As part of the broader IESO Space Needs Program the IESO will introduce a number of new office design concepts and principles in areas of the IESO's offices in order to assess which concepts work to create a modern, flexible, activity-based workplace to meet current and future IESO needs. The project consists of the following three elements:

- **The Clarkson Office Pilot at the Clarkson** - An area on the second floor will be reconfigured and retrofitted to include unassigned seating and communities, increased access to natural light, inclusion of new kitchenette and new furnishing which will provide a mix of individual workstations, private enclosed offices and informal collaboration spaces. The pilot area will also incorporate improved audio and video capability in the meeting rooms.
- **Introduction of two design concepts; unassigned seating and the community concept at Adelaide and a small pilot area at Clarkson.** The Adelaide component will allow the consolidation of staff from the 15th floor and will be managed within the existing floor set-up, without renovations or alterations to the layout.
- **Meeting Room Enhancements** - In support of the initial Hybrid Work Model implementation, the project will also include upgrades to audio and video capability in 25 meetings rooms across both sites which represents approximately 50% meeting room coverage and will support hybrid meetings, collaboration and enhance the employee experience.

The Need for the Project

In 2020, due to COVID pandemic, remote work for the majority of staff became the new norm. The IESO's experience of working from home has reinforced the need to re-examine how it uses its office space and the investments needed in its facilities and technologies to

support staff working effectively, whether in the office or remotely. The first step towards navigating the future of work is the Office Pilot Project. The project will enable testing of the new design concepts and principles and gain valuable employee feedback. This experience and feedback will inform longer term investments that will be made in the IESO Space Needs Program.

Project Status: Execution Phase

The project is progressing according to plan.

This project was initially estimated to be less than \$1 million of capital and hence was included in the "Other Initiatives/Projects (Less than \$1 million) in the previous Business Plan submission.

Capital Budget (Including Contingency): \$2.6 million

Allocated Capital Contingency: \$0.3 million

Expected Completion Date: Q2 2023

Business Goals / Objectives

- Validate the new office design concepts as part of the Clarkson Office Pilot;
- Build staff support for, and anticipate resistance to, the implementation of future office design through staff engagement throughout the project lifecycle;
- Establish a future "universal" office design that can be deployed at any IESO office location and support a future hybrid work model, reflecting staff feedback gained from the Pilot;
- Reduce IESO expenses for office space by cost-effectively accommodating staff from the 15th floor at our Adelaide location once the lease expires; and
- Support the initial Hybrid Work Model implementation with enhancements to collaboration technology in 25 meetings rooms at Clarkson and Adelaide.

GROSS ASSETS AND AMORTIZATION

The IESO's gross assets reflect tangible capital assets recorded at cost, including 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.

Asset additions represent assets under construction that are placed in service during the budget period, including some capital projects listed in Appendix 3 of the 2023-2025 Business Plan (see Exhibit B-1-2 2023-2025 Business Plan), in accordance with their expected in-service date.

Assets under construction generally relate to the cost of physical facilities, information technology hardware and software, and includes amounts 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.

The capital cost of tangible capital assets in service is amortized on a straight-line basis over an asset's estimated service life. The estimated service lives of tangible capital assets are subject to periodic review (see Exhibit E-1-1 Asset Management Process Overview). The effects of changes in the estimated lives are amortized on a prospective basis. Amortization of new asset additions is also according to assigned service lives and the in-service date available during business plan development. The in-service dates are determined as part of the Capital Expenditure Planning Process (see Exhibit E-1-2 Capital Expenditure Planning Process Overview).

Any gains and losses on sales or premature retirements of tangible capital assets are charged to operations. There have not been any gains or losses on retirement of tangible assets in the past three years and there are none in the 2023-2025 budget.

Amortization Expense

The 2022 budget assumed \$46.0 million in asset additions with an associated \$4.0 million amortization, as reflected in Exhibit E-3-1 Attachment 1 – Service Life Comparison and Amortization Expense, primarily driven by the assumption that the Supervisory Control and Data

1 Acquisition/Energy Management System (SCADA/EMS), the Centralized Alarm Management
2 System (CAMS), and the first phase of the Replacement of Settlement Systems would be
3 implemented within the year. The completion of these projects has been delayed beyond 2022;
4 hence, 2022 actual asset additions and amortization was below budget by \$30.3 million and
5 \$2.8 million respectively.

6 The 2023-2025 Business Plan amortization is based on a projection of ongoing amortization of
7 existing assets budgeted to be completed as of January 1, 2023, and the projected amortization
8 of new asset additions after January 1, 2023, in accordance with the projected in-service dates
9 and service life determined during the capital expenditure planning process.

10 The 2023 amortization expense of \$23.0 million, includes \$20.5 million for existing assets and
11 \$2.5 million for new assets planned at the time to be placed into service towards the end of the
12 year, most notably for Dynamic Limits in Real-Time, MIM Technical Refresh, Enterprise Antivirus
13 Replacement, second portion of RSS phase 1, among others. The 2024 amortization budget of
14 \$22.0 million includes \$0.5 million for \$9.3 million worth of new asset additions projected to be
15 completed by the end of the year, primarily comprised of Core Network Refresh, Wide Area
16 Visualization Environment phase 2, Transmission Rights Auction Platform Refresh and RSS
17 phase 2. In 2025, there are two major projects driving new asset additions and corresponding
18 amortization expense of \$27 million: Market Renewal Program and the Backup Operating and
19 Data Centres Relocation Project.

FORECAST VARIANCE DEFERRAL ACCOUNT

The IESO's operating reserve is maintained to address cost or revenue variances from forecasts that are not always within the control of management nor reasonably foreseeable, a practice that is aligned with the practices of other similar sector organizations. The balance of the operating reserve is recorded in the Forecast Variance Deferral Account (FVDA).

The IESO's revenue requirement is a fixed amount approved by the OEB with IESO usage fees 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, a variance between the forecast withdrawals and actual withdrawals is to be expected. Therefore, it is also expected that there will be some variance between actual revenues and expenses and the OEB-approved revenue requirement. This variance is reflected as either a deficit or surplus in the IESO's core operations financial results. Surplus variances are collected in the IESO's operating reserve and recorded in the FVDA. Deficit variances draw on the operating reserve and are similarly recorded in the FVDA.

In the OEB's 2019 Decision on the IESO's 2019 Revenue Requirement Submission (EB-2019-0002), the IESO received approval to retain an operating reserve of \$10 million. The IESO's practice is to seek OEB approval to return any surplus more than the reserve threshold to market participants as part of its revenue requirement submission.

Request for Operating Reserve Increase

The IESO is requesting to increase the FVDA balance to \$15 million effective January 1, 2023, to manage cost or revenue variances that may arise over the planning horizon with the approval of all three years of the 2023-2025 Business Plan. This proposed increase recognizes the potential for additional unplanned events that may be material in scope and cost, given the scope and complexity of IESO's mandate and the expected transformation of the sector over the 2023-2025 Business Plan. In the scenario where costs exceed the current level of the operating reserve, the IESO must fund these costs by either reducing invested funds or increasing borrowings, because the IESO is a not-for-profit, non-taxable corporation established pursuant to Part II of the *Electricity Act, 1998*, these actions have net interest impacts that increase costs. Further, these expenditures would need to be restored in the next Business Plan

1 and revenue requirement submission, and would therefore have a future impact on the IESO's
2 revenue requirement and usage fees. The IESO believes that a \$15 million FVDA balance will be
3 a reasonable and adequate reserve against the uncertainties and impacts referred to above
4 within the 2023-2025 planning horizon. The proposed \$15 million reserve is approximately 8%
5 of the IESO's proposed annual revenue requirement over the 2023-2025 period.
6

7 **Balance of the Forecast Variance Deferral Account**

8 As of January 1, 2021, the FVDA had a balance of \$1.3 million. By the end of the year, the
9 IESO's core operations were in a surplus position of \$7.4 million mainly driven by \$3.2 million
10 from higher than expected demand volume that resulted from a heat wave over the summer
11 months, \$2.7 million increase in net interest related to better than expected long term
12 investments performance associated with a strong equity market, \$0.6 millions of underspend
13 on the Market Renewal Program, and \$0.7 million lower amortization expense due to delays in
14 capital projects completion, resulting in an \$8.7 million total balance as of January 1, 2022.

15 In 2022, the IESO's core operations were in a surplus position of \$15.0 million due to \$7.3
16 million upside in interest income caused by higher overnight interest rates, \$5.8 million higher
17 revenues than planned primarily driven by upward demand volumes in the winter and summer
18 months, and \$2.4 million lower amortization expense associated with delays in completion of
19 capital projects, partially offset by \$0.5 million higher than planned OM&A expenses; resulting
20 in an operating reserve balance of \$23.7 million as of January 1, 2023. As the IESO enters into
21 its first three-year approval cycle for the 2023-2025 Business Plan, the IESO is seeking to fund
22 the operating reserve to a balance of \$15 million through this available surplus balance. After
23 the increase of the operating reserve balance to \$15 million, the IESO will be in a position to
24 rebate to market participants a total of \$8.7 million.
25

26 The table below provides the historical balances and operating variances in the FVDA:
27

Table 1: 2019 -2025 Balances and Transactions in the FVDA

	Historical					Budget		
(\$ Millions)	2019 Actual	2020 Actual	2021 Actual	2022 OEB Approved	2022 Actual	2023	2024	2025
Opening Balance	(4.7)	(1.0)	1.3	8.7	8.7	15.0	15.0	15.0
Surplus (Deficit)	3.7	2.3	7.4	0.0	15.0	0.0	0.0	0.0
Closing Balance before rebates	(1.0)	1.3	8.7	8.7	23.7	15.0	15.0	15.0
Proposed Market Participants Rebate					(8.7)			
Closing Balance	(1.0)	1.3	8.7	8.7	15.0	15.0	15.0	15.0
OEB Approved Balance	10.0	10.0	10.0	10.0	10.0	15.0	15.0	15.0
Proposed Increase to Balance	-	-	-	-	5.0	-	-	-

Operating Reserve Recovery

The balance of the FVDA as at December 31, 2022, was \$23.7 million, \$13.7 million above the OEB approved funding level of \$10 million. The IESO proposes that the increase to a \$15 million operating reserve be funded by \$5 million of the \$13.7 million surplus and the remaining \$8.7 million be refunded to market participants.

IESO Three-Year Revenue Requirement Application

In consultation with the Ministry of Energy and the OEB, the IESO has put together a three-year revenue requirement submission for the first time in its history before the OEB. The annual approach to OEB review presented a challenge to the timing of approval of the IESO's revenue requirement and usage fees within the year in which the IESO sought approval. The three-year submission provides an avenue to receive review and approval of the IESO's revenue requirement in advance of the years in which those costs will be incurred and within the prescribed legislation. Below, the IESO has proposed a process for adjustment in the case of a material change in the IESO's business after receiving OEB approval and prior to the following application for review.

Variances During Three-Year Period

The IESO expects that the FVDA will capture variances in budget after the IESO's three-year revenue requirement submission proceeding has concluded and prior to the next application. The IESO expects to carry surplus or deficits for the three-year period for dispensation at the next application. Given the IESO's three-year approval cycle and the requirement for Minister's approval of a revised business plan, there is a limited window for interim year adjustments.

Proposal for Adjustment Due to Material Unforeseen Change

The IESO's proposal to increase the operating reserve to \$15 million is expected to decrease the risk of unforeseen expenses or revenues exceeding the operating reserve. However, if unforeseen expenses or change in revenues cause the IESO's proposed operating reserve, and the balance of the FVDA, to reduce below zero in Year 1 of the three-year cycle (i.e., in 2023), the IESO proposes that the IESO may choose to re-apply to adjust its fees. If the \$15 million threshold is exceeded, the IESO would review whether it is appropriate and feasible to apply for revised usage fees with the OEB. The IESO's review would take into account the timing of the Minister's review of a revised Business Plan, the timing of an OEB proceeding, the impact on ratepayers, and the availability of the IESO's letter of credit with the Ontario Electricity Financial Corporation. There may be a possibility to apply for revised usage fees if material unforeseen changes impact the IESO in Year 2, however the timing for approval of revised usage fees would be limited. Given that, the IESO proposes that any material unforeseen expenses in Year 2 or Year 3 would likely be reviewed in the next application. The proposal seeks to balance the need to preserve the benefits of the multi-year approach, with the possibility for material unforeseen changes that would materially impact the IESO's revenue requirement beyond a reasonable threshold.

Material Change Threshold

The IESO defines the material change threshold as follows:

- A change in revenue or expenses that results in an operating reserve deficit
- Occurs in Year 1 after receiving three-year approval of IESO usage fees
- A change that has significant impact on the operation of the IESO

Process for Usage Fees Adjustment

If the material change threshold is reached, and the IESO decides the best course of action is to revise its usage fees, then the IESO would file a revised Business Plan with the Minister of Energy (The Minister) and following the Minister's approval of the revised Business Plan, file a revised revenue requirement submission to the OEB for revised usage fees. The IESO would request approval of revised usages fees necessary to recover some or all of the IESO's \$15 million operating reserve as appropriate at the judgment of the IESO based on business needs, economic factors and impact on market participants.

For the revised revenue requirement submission, the IESO proposes a limited scope of review focused on the unforeseen expense and its direct impact to the IESO's budget in order to maintain the regulatory efficiency of a multi-year approach. A limited scope of review would be requested to achieve the approval of revised usage fees prior to January 1st of Year 3.

The IESO proposes that a revised submission during interim years would adhere to the following process:

- Material change takes place during Year 1 of three-year cycle after OEB approval of usage fees;
- IESO Annual Report completed in Q1 Year 2 confirms material change in Year 1 has reached material change threshold;
- IESO Business Plan revised and re-submitted to Minister;
- After Minister approval received, revised application is filed with OEB
- Revised application would request:
 - Approval to amend usage fees in Year 3 to recover some or all of the amounts that impacted the IESO's operating reserve to fall below the prescribed threshold.

The IESO would specify the costs that impacted the IESO's operating reserve in detail and demonstrate that these impacts could not be accommodated within the approved IESO budget. The IESO proposes that the amount to recover should not be prescriptive but based on IESO judgment of business needs, economic outlook, and impact on market participants at that time.

1 **Benefits of Adjustment Proposal**

2 The proposal seeks to provide the following benefits:

- 3 • Easy to implement and understand;
- 4 • Stable, evergreen process that does not change with circumstances;
- 5 • Does not erode benefits of three-year approach;
- 6 • Timely review that is consistent with OEB review principles of materiality, need and
- 7 prudence.

8 **Surplus Threshold**

9 The IESO proposes that if the balance of its operating reserve reaches above \$30 million during

10 the interim year period after the conclusion of the OEB proceeding, the IESO will refund this

11 surplus over \$30 million within a month of the publication of its Annual Report on March 31st.

SUMMARY OF RESPONSES TO OEB DECISIONS

This exhibit includes specific reference to prior OEB decisions and/or settlement agreements that committed the IESO to provide information or undertake specific studies, analysis or engagements within this revenue requirement submission.

Table 1: Summary of IESO Responses to OEB Decisions

Source of Commitment	Commitment	IESO Response
EB-2022-0002 Settlement Agreement – Issue 1.1	With respect to the frequency of the IESO's revenue requirement submissions, intervenors strongly support the IESO moving to a multi-year revenue requirement and fees application and encourage the IESO to do so as soon as possible.	With the subject application, the IESO has requested for approval its 2023, 2024 and 2025 revenue requirements and usage fees.
EB-2022-0002 Settlement Agreement – Issue 1.1	<p>With respect to planning and market data, the IESO will engage an independent third-party to conduct a jurisdictional review of the types of market and planning information and data that are made available in other comparable jurisdictions and how such information and data is made available. The results of the jurisdictional review will be made public by the end of Q2 2023. The information and data that will be considered within the scope of the review, shall include, at a minimum:</p> <ul style="list-style-type: none"> • Real-time market clearing price • Energy offers including price-quantity pairs for cleared and un-cleared entities • Energy bids including price-quantity pairs for cleared and un-cleared entities 	The IESO has engaged an independent third-party to conduct the jurisdictional review of market and planning information and data that is made available in other comparable jurisdictions. The jurisdictional review is underway and the IESO expects to publish the results publicly by the end of Q2 2023.

Source of Commitment	Commitment	IESO Response
	<ul style="list-style-type: none"> • Provincial, regional, and local demand for real-time energy dispatched (e.g., hourly data available by all planning regions and planning areas) • Unit generation by real-time dispatch and schedule • Forecast demand for different time periods including: pre-dispatch, day-ahead, month-ahead and long-term • Impact assessments for new loads and generators • Impact assessment for retirement of loads and generators • Summary of access and details of regional and bulk electricity system planning documents including scoping, need, costs, plans and construction schedule • Process, timelines, and cost to request data from data owners • Requirements to access confidential information including which entities are allowed to access, the process to retain confidential data access, the length of time confidential access is granted etc. <p>The jurisdictions reviewed should include AESO, NYISO, ISO-NE, MISO, PJM, ERCOT, and CAISO.</p>	
EB-2022-0002 Settlement Agreement – Issue 1.1	With respect to the IESO’s Grid Innovation Fund, the IESO will provide an update in the next Revenue Requirement Submission	Please see G-1-1 Attachment 1 - Progress on Implementing Recommendations from Third Party Evaluation of the Grid Innovation Fund

Source of Commitment	Commitment	IESO Response
	on the progress of implementing recommendations made in the third-party evaluation of the Grid Innovation Fund ¹ .	
EB-2022-0002 Settlement Agreement – Issue 1.1	The IESO will also undertake a third-party evaluation of the Grid Innovation Fund every two years and will publish those evaluations publicly soon after each is completed.	The evaluations will be published on the IESO's website when completed. A procurement is currently underway to select a vendor to conduct an evaluation. The evaluation is planned to be completed by early 2024.
EB-2022-0002 Settlement Agreement – Issue 1.2	<p>With respect to compensation, the IESO will continue to work to make progress towards reaching the 50th percentile for total compensation, and:</p> <ul style="list-style-type: none"> • In the next Revenue Requirement Submission, the IESO will: <ul style="list-style-type: none"> ○ Report on the progress of actions taken to make progress towards meeting the 50th percentile for total compensation. ○ Include a forward-looking itemized plan identifying how the IESO proposes to continue make progress towards reaching the 50th percentile for total compensation including incremental steps taken or planned to be taken. 	See page 3 of Exhibit D-1-3 Staffing and Compensation and Exhibit D-1-3 Attachment 3 - Non-Executive Total Remuneration Review.

¹EB-2022-0002 - Exhibit G-1-1 – Summary of Responses to OEB Decisions, page 3

Source of Commitment	Commitment	IESO Response
	<p>The IESO will include forecast timelines for the actions identified in the itemized plan.</p> <ul style="list-style-type: none"> ○ Re-file the current total compensation study (Exhibit D-1-3 Staffing and Compensation Attachment 3 – Non-Executive Total Remuneration Review), as evidence. 	
	<p>With respect to compensation, the IESO will continue to work to make progress towards reaching the 50th percentile for total compensation, and:</p> <ul style="list-style-type: none"> • In 2024 the IESO will: <ul style="list-style-type: none"> ○ Undertake an updated total compensation study and will file that study as evidence in the subsequent Revenue Requirement Submission. The IESO does not plan to file a new total compensation study in its 2023 Revenue Requirement Submission as it believes that insufficient time will have elapsed since the filing of the current total compensation study for there to have been material changes to the IESO's progress towards the 50th percentile. 	<p>The IESO has planned the next benchmarking survey on Non-Executive Total Remuneration Review for 2024 and plans to file it in its 2026-2028 Revenue Requirement Submission application.</p>

Source of Commitment	Commitment	IESO Response
	<p>With respect to compensation, the IESO will continue to work to make progress towards reaching the 50th percentile for total compensation, and:</p> <ul style="list-style-type: none"> • In the next Revenue Requirement Submission, the IESO will: <ul style="list-style-type: none"> ○ Include a management bargaining mandate to work towards a 50:50 employee-employer pension and other post-employment benefits (OPEB) contribution ratio for upcoming collective agreement negotiations with both the Society of United Professionals and Power Workers Union. The IESO will also continue to work towards a 50:50 employee-employer pension and OPEB contribution ratio for management employees. 	<p>See page 3 of Exhibit D-1-3 Staffing and Compensation.</p>
EB-2022-0002 Settlement Agreement – Issue 1.3	<p>With respect to capital project execution, the IESO will:</p> <ul style="list-style-type: none"> • File an update in the next Revenue Requirement Submission on the implementation of recommendations made in the Project Management Internal Audit Report². 	<p>See G-1-1 Attachment 2 – Internal Audit Recommendations & Management Response</p>
	<p>With respect to capital project execution, the IESO will:</p> <ul style="list-style-type: none"> • Develop and include in its next Revenue Requirement Submission a metric (including results) for cost 	<p>See page 7 of Exhibit E-2-1 Capital Budget Overview and Progress on Capital Projects</p>

² EB-2022-0002 - Exhibit H-5.1-13 – Schedule 13 - 5.1 SEC 18 Attachment 1

Source of Commitment	Commitment	IESO Response
	performance of its strategic initiatives that mirrors its current 'Operational Efficiency - Percentage of Strategic Initiatives that are completed on time' measure included in its 5-year Strategic Objectives	
EB-2022-0002 Settlement Agreement – Issue 3.1	<p>The Reliable Integration Fee will be charged for work the IESO undertakes to reliably integrate new or modified facilities that participate in the IESO-Administered Markets, which includes all facilities that are connected to the transmission system and facilities that are connected to the distribution system that participate in the IESO-Administered Markets. The Reliable Integration Fee will also be charged for work the IESO undertakes to reliably integrate new or modified facilities that are connected to the distribution system with an installed capacity greater than 10 MW, regardless of whether they will participate in the IESO-Administered Markets.</p> <p>The Reliable Integration Fee will be effective as of December 8, 2022, which aligns with the effective date for the final round of updates to the IESO's Market Rules and Manuals in 2022.</p>	Effective December 8, 2022, the IESO has begun to charge the Reliable Integration Fee to market participants who initiated a new or modified facilities on or after this date.
EB-2022-0002 Settlement Agreement – Issue 3.1	With respect to data on the application of the Reliable Integration Fee, the IESO will provide aggregated data associated with the costs recovered from various resource types and sizes in the Revenue Requirement Submission following the implementation of the Reliable Integration Fee.	The IESO implemented the fee on December 8, 2022. Given how recent the fee was implemented and the lack of available data, the IESO will provide this data in the 2026-2028 Revenue Requirement Submission.

Source of Commitment	Commitment	IESO Response
EB-2022-0002 Settlement Agreement – Issue 4.1	<p>With respect to further reporting on MRP, beginning for Q3 2022, the IESO will provide a quarterly report, made public on the IESO website within 30 days of the end of each quarter, that will include, as a minimum requirement:</p> <ul style="list-style-type: none"> • Schedule Performance Index (SPI) and Cost Performance Index (CPI) relative to the in-effect baseline schedule and budget. • Actual schedule progress relative to the in-effect baseline schedule and the planned schedule progress relative to the baseline 4 schedule 4 and the in-effect baseline schedule. • Actual year to date spend compared to annual budget, and actual total spend compared to total budget, using the cost categories from Table 2 “MRP Baseline Budget by Operating and Capital Expenses” of the MRP Cost Report, for baseline 4 and the in-effect baseline budget. • Any changes to cost forecast, schedule forecast, or project scope that have occurred since the last quarterly report. <p>In the first quarterly report after implementation of a new baseline schedule, the IESO will include information on the changes between the previous baseline schedule and the new in-effect baseline schedule that is clear and comprehensive.</p>	<ul style="list-style-type: none"> • The IESO implemented further reporting on the MRP beginning with results for Q3 2022 on October 31, 2022. • The IESO posted the first quarterly report covering Q3 2022 on its Market Renewal Program Project Status webpage: https://www.ieso.ca/-/media/Files/IESO/Document-Library/market-renewal/MRP-project-status-report-Q3-2022.ashx • Subsequent quarterly reports are posted to the Market Renewal Program Project Status webpage: https://www.ieso.ca/en/Market-Renewal/Background/Market-Renewal-Program-Project-Status

Source of Commitment	Commitment	IESO Response
EB-2022-0002 Settlement Agreement – Issue 4.4	With respect to the MRP Business Case, the IESO will assess any changes to the MRP Energy Stream Financial Assessment since it was approved by the IESO Board of Directors and will provide a full update publicly on the results of that assessment, including any revisions to the MRP Energy Stream Financial Assessment, within 3 months of the OEB decision in EB-2022-0002 approving this Settlement Proposal.	<p>The IESO provided an update on the results of the assessment of any changes to the MRP Energy Stream Financial Assessment publicly on September 22, 2022. The update is available on the Market Renewal Engagement Page: https://www.ieso.ca/-/media/Files/IESO/Document-Library/engage/imrm/imrm-20220922-mrp-business-case-validation-memo.ashx</p> <p>An accompanying presentation on changes to the revised schedule was also posted: https://www.ieso.ca/-/media/Files/IESO/Document-Library/engage/imrm/imrm-20220922-presentation.ashx.</p> <p>The recorded presentation has also been posted: https://youtu.be/9HrjchYzcuk.</p>
EB-2022-0002 Settlement Agreement – Issue 5.1	With respect to Market Surveillance Panel (MSP) recommendations, the IESO will file in the next Revenue Requirement Submission the latest OEB Annual Status Update and will link the MSP recommendations to any spending in that Revenue Requirement Submission.	<p>Please see Exhibit G-1-1 Attachment 3 - Annual OEB Update on Market Surveillance Panel Recommendations.</p> <p>Note that the IESO does not use activity-based accounting. The IESO has identified those business units that undertake work as part of their core business to address MSP recommendations and linked each</p>

Source of Commitment	Commitment	IESO Response
		recommendation to business unit expenditures. Where capital expenditure has been budgeted to address a specific MSP recommendation, this has also been identified.
EB-2022-0002 Settlement Agreement – Issue 5.1	With respect to internal audits, the IESO will file the following information, in a clear and comprehensive manner, in the next Revenue Requirement Submission: details of the subject matter of the internal audit reports, the recommendations, the action(s) taken as a result of each recommendation, the status of the implementation of each action, and the internal relative risk rating for each observation.	See Exhibit G-1-1 Attachment 4 – Details of Internal Audit Reports.
EB-2018-0143 Settlement Agreement – Issue 1.1	To increase transparency and accountability, the IESO agreed to include a status report on certain recommendations to the IESO included in Chapter 3 of the Auditor General's 2017 Annual Report related to market oversight and cybersecurity (Attachment 1 to the Settlement Agreement). The IESO agreed to file an updated status report in the same format with the OEB each year in its revenue requirement submission or by June 1st, whichever is earlier, until one year after all recommendations have been addressed.	See Exhibit G-2-2 Annual Status Report on 2017 Auditor General Report Recommendations.

PROGRESS ON IMPLEMENTING RECOMMENDATIONS FROM THIRD PARTY EVALUATION OF THE GRID INNOVATION FUND

An independent third-party evaluation of the Grid Innovation Fund was completed in October 2021 and resulted in six recommendations. Actions were taken to implement the recommendations including proposal evaluation criteria, guidance to proponents, and/or enhancements to the application templates and process. The full evaluation is published on the IESO's webpage¹.

Recommendation	Action Taken
1. Evaluate project proposals considering (1) energy and demand savings per measure (2) provincial scale up potential (3) technical and economic feasibility of installing the measure across the province.	A mandatory "Quantifiable Outcomes" template has been incorporated into the application which includes metrics, expected range of results and description for each outcome. This has helped to evaluate the estimated savings and broader potential of proposed projects.
2. Achieved participation and savings estimates are less than estimated. Provide proponents guidance during the proposal stage.	During the application stage, proponents are requested to list participants (non-residential), host sites, and provide letters of support from participants where appropriate.
3. When including cost effectiveness of a conservation measure as a goal for a pilot program, the effect of program scale needs to be considered (i.e. localized pilots are less effective than provincial programs).	The GIF Evaluation Criteria includes a "Potential Impact" criterion which considers the scale of the project.

¹ <https://www.ieso.ca/en/Get-Involved/Funding-Programs/Grid-Innovation-Fund/Projects-Funded>

Recommendation	Action Taken
4. Provide proponents a framework to follow to help understand future impacts if the measure is scaled up to the provincial level, specifically considering applicability to a larger population and low economic/technical barriers.	The 2021 call focused on DER Integration into wholesale and local systems, the outcomes would apply to the provincial population and help reduce economic / technical barriers for DERs.
5. Request proponents to include an outline of next steps that would enable the project to have a broader market effect, post-completion.	Proponents are requested to include a next steps plan or knowledge dissemination plan in their final deliverable.
6. Peak demand savings method was inconsistent across projects. Offer guidance or calculation tools to proponents to estimate savings consistently and appropriately.	Where peak demand savings are applicable, GIF staff will refer proponents to the IESO's peak demand period definition and, where applicable, peak demand factors utilized by the IESO (i.e. IESO's cost-effectiveness tool).

INTERNAL AUDIT RECOMMENDATIONS & MANAGEMENT RESPONSE

Below is an update on the implementation of recommendations made in the Project Management Internal Audit Report¹

Control Objective	Relative risk	Recommendation	Management Actions	Status
A plan for project risk management is developed to identify project risks and sources of risk, and that the degree, type and visibility of risk management are appropriate to both the risk and the importance of project to the organization and other stakeholders; Appropriate risk responses are identified, agreed upon and implemented to minimize project threats and maximize project opportunities; and monitored as well as new risks and risk responses are identified and implemented as applicable.	Medium	<p>It is recommended that management,</p> <p>1.1. Enhance the project risk assessment process by standardizing project risk statements and mitigation actions that are similar within projects by type and size, a sample project risk universe is provided with this report and provide training to PMs to ensure that they have a common understanding of our risk management process, including the definition of a risk, contributing factor, control, mitigation plan;</p> <p>1.2. Work with ERM group to ensure the project risk assessment process is aligned with the Enterprise Risk Management process and to ensure that project risks are elevated at the enterprise level as applicable;</p> <p>1.3. Maintain evidence that risk responses and mitigation efforts are reviewed and updated in</p>	<p>Recommendations addressed including the following actions:</p> <ul style="list-style-type: none"> Established a number of standard risk statements that will be assessed for all projects Reinforced the need to review risks on a regular basis with the Project Managers and to ensure Critical and High risks have visibility at Project Steering Committee Meetings. Established a monthly Risk Review session where the Management Team and Change Delivery team review Critical and High risks to ensure that risks are well understood, articulated and mitigated. 	Complete

¹ EB-2022-0002 - Exhibit H-5.1-13 – Schedule 13 - 5.1 SEC 18 Attachment 1

Control Objective	Relative risk	Recommendation	Management Actions	Status
		<p>a timely manner by the respective stakeholders;</p> <p>1.4. Bring additional profile of critical and high residual risks at Project Steering Committee and project team meetings to ensure that team members are aware of existing and emerging key project risks and how they are being managed.</p>	<ul style="list-style-type: none"> Continue to work with the ERM function to ensure that our practices and terminology is aligned and the appropriate risks are escalated. Conducted joint risk training with the ERM and Change Delivery teams Adopted a common risk reporting tool for both ERM and Project Risk Management. 	
A project schedule is developed, documented and analyzed with planned dates for completing project activities and is used for executing, monitoring and controlling the project.	Medium	The project schedule should be available in the project repository, in a consistent spot, saved in both MS project and PDF. This ensures that most current version of project schedule in pdf format is available for review and action for stakeholders, project team and PSC members to facilitate timely and accurate information for decision making.	The Senior Manager, Change Delivery has reinforced the need for Project Managers to maintain the project schedule in PDF format and link these to the Progress Report.	Complete
Stakeholders for the project are identified and their interests, dependencies, involvement and impact are analyzed and documented.	Medium	It is recommended that management continue to develop and implement a stakeholder engagement process as already identified part of PPMLC framework. For each project, a stakeholder list should be maintained to allow for	The initial version of the Project Charter developed in the Initiation Phase of the project identifies the key stakeholders for the project and how they are affected or how they are participating in the project. This is	Complete

Control Objective	Relative risk	Recommendation	Management Actions	Status
		ease of updates as and when staff and management leaves or changes their position.	further refined in the Integrated Project Plan. In response to the recommendation, we have reinforced with the project team members the importance of early identification and engagement of key stakeholders and the need to maintain a current list of stakeholders as the project continues.	
Resources including team members, facilities, equipment etc. are acquired and assigned appropriately.	Medium	It is recommended that management continue to investigate the feasibility of a tool that manages resources at the corporate level including allocation to projects. In order to provide further efficiencies in the process, this tool should be integrated or have the ability to have a direct interface for capturing actual labour costs as these are coded into Kronos on a bi-weekly reporting cycle by all IESO employees. In the interim of the tool being implemented, project managers should seek confirmation from resource managers that they have reviewed the resource allocation file and whether or not changes to allocated resources are required. This confirmation should be retained in project files.	Although the introduction of a more robust third-party Project and Portfolio Management tool has been identified as part of our 2023-2025 Business Plan, we have taken interim steps to improve our current Excel based tools. <ul style="list-style-type: none"> Currently developing an enhanced Excel tool that allows us to capture actual labour time and costs – Expected completion Q1 2023. On a monthly basis, Project Managers are verifying resource allocation with project team and resource managers 	Underway
The project's overall progress is tracked, reviewed and	Medium	It is recommended that management investigate the feasibility and benefit of acquiring a project	As noted under the previous item, the IESO the need for a more robust	Not Started

Control Objective	Relative risk	Recommendation	Management Actions	Status
reported to inform stakeholders of the current state of the project, any actions taken to address performance issues and any impacts to the project schedule and cost.		management tool to streamline the project tracking, monitoring and reporting process. Where possible, existing IESO tools may be put to use with additional training to project team members. Further efficiencies and savings may be had by combining the functionality of resource planning, allocation and capturing actual costs discussed in the audit observation #4 above.	third-party Project and Portfolio Management tool has been identified as part of our 2023-2025 Business Plan.	
The approach for communication is documented to efficiently and effectively engage stakeholders by presenting relevant information in a timely manner. The project information is communicated efficiently and effectively between the project team and stakeholders.	Medium	It is recommended that Enterprise Change management, <ul style="list-style-type: none"> Determine if and when project steering committees are necessary, and if necessary, what an appropriate meeting cadence is for each project type; Review the Project Roles and Responsibilities document outlining the role of a PSC member and revise it to further clarify meeting etiquette of members; As discussed in Appendix A – Observation #4 below, further develop the soft skills of PMs to ensure that they effectively engage all PSC members and ensure effective collaboration. 	The following practices have been reinforced with the project managers as part of regular team meetings. <ul style="list-style-type: none"> As part of a project initiation the Project Manager prepares the Project Steering Committee (PSC) Operating Procedure which covers items such as meeting cadence, roles and responsibilities, quorum etc. This is preferred over updating the Project Roles and Responsibilities document. Project Manager may recommend PSC meeting cancellation if there are no notable updates or decisions 	Complete

IESO Annual Update to the Ontario Energy Board on Actions Taken to Address Market Surveillance Panel Recommendations

(Period from January 2018 – December 2022)

IESO Licence Obligation under Section 6.2.5

Provide the Board, on or before the end of each calendar year, with the status of actions taken by the Licensee further to all recommendations addressed to the Licensee in any report issued by the Market Surveillance Panel in that year and the preceding four calendar years to the extent that they remain outstanding and, where no action has been taken in relation to a recommendation, the rationale for not taking action. The Licensee's response to recommendations in any report issued by the Market Surveillance Panel within 30 days of the end of the calendar year will be included in the succeeding report.

Report	Recommendation Number	Recommendation	IESO 2022 Update to the OEB	Link to Spending in 2023-2025 Revenue Requirement Submission
March 22, 2018	3-1	The Independent Electricity System Operator should implement rules that allow it to recover Congestion Management Settlement Credit (CMSC) payments made to dispatchable loads when those payments are the result of an operational constraint arising from conditions at the dispatchable load's facility. The IESO should also examine whether the scope of the current provisions that allow it to recover CMSC payments from generators in relation to SEAL (safety, equipment and applicable law) related constraints should be expanded to cover any other operational	<p>The IESO has implemented Market Rule changes to allow for the claw back of Congestion Management Settlement Credit (CMSC) payments made to dispatchable loads due to SEAL (safety, equipment, applicable law) reasons. This is in alignment with the CMSC claw back rules for dispatchable generators. The changes (MR-00447-R00) became effective on April 6, 2021.</p> <p>Additionally, under the renewed market post Market Renewal, facilities will not be eligible for make-whole payments due to an operational constraint arising from conditions at the facility.</p>	There is no proposed spending in 2023-2025 related to this recommendation.

Report	Recommendation Number	Recommendation	IESO 2022 Update to the OEB	Link to Spending in 2023-2025 Revenue Requirement Submission
		constraints arising from conditions at the generator's facility.		
March 22, 2018	4-1	The Independent Electricity System Operator should set the replacement bid price to \$0/MWh, or slightly negative, when it calculates constrained-on Congestion Management Settlement Credit payments for exports bid at negative prices.	<p>The IESO is concerned that a higher replacement bid price floor for calculating Congestion Management Settlement Credit (CMSC), as suggested by this recommendation, may deter traders from submitting export bids below \$0/MWh on any intertie due to the risk of being constrained-on which would impose unnecessary losses on traders and deter trading. This could result in both a reduction in the effectiveness of a valuable system tool during surplus conditions and possibly higher costs to ratepayers.</p> <p>The IESO continues to monitor the materiality of the issue raised by the Market Surveillance Panel. The amount of uplift charges related to the recommendation remains low at less than \$70,000 in total from 2016 to October 2022.</p> <p>The IESO does not intend to pursue this recommendation any further.</p>	The IESO's Markets & Reliability business unit monitors the market uplift charges related to this recommendation in order to monitor the materiality of this issue (see Markets & Reliability section in Exhibit D-1-2 – OM&A Business Unit Detail).
March 22, 2018	4-2(A)	The Independent Electricity System Operator's Board of Directors should revise the materiality threshold value such that operating reserve payments are clawed back when a market participant fails to fully respond to its operating reserve activation.	The settlement claw-back proposed in the Improving Accessibility of Operating Reserve stakeholder engagement (refer to IESO's response to Recommendation 3-1 of May 2017 MSP report that was provided by the IESO in its 2021 Annual Status Update Report to the OEB) is expected to help address the availability of operating reserve (OR) prior to activation. The proposed change in the aforementioned stakeholder engagement is expected to not only	There is no proposed spending in 2023-2025 related to this recommendation.

Report	Recommendation Number	Recommendation	IESO 2022 Update to the OEB	Link to Spending in 2023-2025 Revenue Requirement Submission
			improve the OR accessibility but also incent OR providers to offer their actual OR capability which in turn may reduce the materiality of non-compliance with OR activations. The IESO expects that one year after the proposed change to improve OR accessibility takes effect will be a sufficient period to evaluate the effectiveness of the proposed solution.	
March 22, 2018	4-2(B)	When a market participant fails to fully respond to an operating reserve activation, the Independent Electricity System Operator should calculate the claw back based on the ratio of the energy not provided in response to the activation relative to the energy required by the activation.	<p>The settlement claw-back proposed in the Improving Accessibility of Operating Reserve stakeholder engagement (refer to IESO's response to Recommendation 3-1 of May 2017 MSP report that was provided by the IESO in its 2021 Annual Status Update Report to the OEB) is expected to help address the availability of operating reserve (OR) prior to activation.</p> <p>The proposed change in the aforementioned stakeholder engagement is expected to not only improve the OR accessibility but also incent OR providers to offer their actual OR capability which in turn may reduce the materiality of non-compliance with OR activations. The IESO expects that one year after the proposed change to improve OR accessibility takes effect will be a sufficient period to evaluate the effectiveness of the proposed solution.</p>	There is no proposed spending in 2023-2025 related to this recommendation.
April 29, 2019	3-1(A)	The IESO should formalize the process by which it determines when to disable and re-enable the variable forecasting tool, and should communicate that	In December 2019, the IESO amended Market Manuals to include that the IESO will issue an advisory notice when the tool is disabled/re-enabled and the circumstances under which the IESO may disable the forecast.	There is no proposed spending in 2023-2025 related to this recommendation.

Report	Recommendation Number	Recommendation	IESO 2022 Update to the OEB	Link to Spending in 2023-2025 Revenue Requirement Submission
		process to market participants to increase transparency.		
April 29, 2019	3-1(B)	When a variable generator is on mandatory dispatch and the forecasting tool is disabled, the IESO should set the generator's unconstrained schedule at its forecasted output rather than its maximum offered capacity.	The IESO implemented a tool change in October 2020. Variable generators receiving mandatory dispatch will have their market schedules set to their 5-minute forecast even when the 5-minute variable generation forecast tool has been disabled.	There is no proposed spending in 2023-2025 related to this recommendation.
December 19, 2019	2-1	The IESO should consider ways and means of deterring the Operating Reserve nodal price chasing behaviour.	<p>The IESO shares the Market Surveillance Panel's (MSP) concern that a market participant is being compensated more than internal resources for the same Operating Reserve (OR) service.</p> <p>IESO analysis has determined the "root cause" of the issue to be the different timeframes for scheduling OR from imports (hour-ahead) vs internal supply (every five minutes in real-time). This market design can lead to instances where OR from imports are scheduled in pre-dispatch even if lower cost supply offers were available in real-time. Aligning the scheduling timeframe for OR imports with internally supplied OR on a 5-minute basis would level the playing field and address the root cause. The IESO has identified a market improvement project to schedule OR imports on a 5-minute basis.</p> <p>Due to existing priorities and the focus on the Market Renewal Program (MRP), this recommendation is on hold. The IESO will revisit this recommendation once MRP has been implemented.</p>	There is no proposed spending in 2023-2025 related to this recommendation.

Report	Recommendation Number	Recommendation	IESO 2022 Update to the OEB	Link to Spending in 2023-2025 Revenue Requirement Submission
December 19, 2019	2-2	The IESO should ensure its procedure for determining an outage when administering Transmission Rights aligns with the Market Rules.	<p>The IESO agrees with the MSP's recommendation and acknowledged the Transmission Rights (TR) payments made during outages may not be aligned with existing Market Rules.</p> <p>The IESO held a public webinar in March 2020 to identify this issue to stakeholders and discuss next steps. An interim, manual solution was implemented in April 2020 to stop the improper payments to TR holders. An enduring, automated solution was implemented in October 2020.</p>	There is no proposed spending in 2023-2025 related to this recommendation.
December 19, 2019	3-1(A)	A) The Panel recommends that - when implementing changes to the market - the IESO audit the pre-deployment testing process to ensure that sufficient controls are in place to identify errors and unintended consequences.	<p>Internal Audit has completed its review of the IESO's pre-implementation testing. The results of this review were presented to the Audit Committee of the IESO Board on March 8, 2021.</p> <p>Overall, the audit noted that an enhanced quality assurance program is well positioned to provide independent quality assurance for current approved projects. Internal Audit made 4 medium and 1 low risk observations in the review. Actions were implemented by the end of 2021.</p>	There is no proposed spending in 2023-2025 related to this recommendation.
December 19, 2019	3-1(B)	B) The Panel recommends that, as soon as possible after the IESO detects an error or unintended consequence that significantly impacts the wholesale electricity market, it publicly discloses details of the error or unintended	The IESO has completed the enhancement and formalization of its process for reporting significant anomalous market events, including materiality thresholds, to the public. The enhanced process includes provisions for publicly disclosing the details of the error, an assessment	There is no proposed spending in 2023-2025 related to this recommendation.

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		consequence, the impact on the market and the actions taken or to be taken to address the matter.	of the error from a market impact perspective, and actions taken to address the error, when materiality thresholds have been met and when approval to disclose has been given by the IESO Board of Directors. This process was finalized in Q2 2021.	
July 16, 2020	3-2	In order to provide more consistent market outcomes, the IESO should give further consideration to improving how the need for additional system flexibility is addressed, such as specifying the conditions that require intervention and scheduling the required amount of spinning reserve explicitly in the normal OR market. Although it is acknowledged that no industry standard exists to address flexibility, alternative solutions should also be considered to ensure the most suitable approach is used.	<p>The IESO continues to track industry best practices to address flexibility and monitor the effectiveness of the existing solution.</p> <p>As a result of a previous review, the IESO has found areas in its internal procedure where more clarity around the conditions that necessitate additional flexibility services can be specified. The internal procedure has been updated and implemented by the IESO.</p> <p>The IESO agrees with the MSP on the need to do a more fulsome review of the existing solution and is planning on conducting that review after the implementation of the Market Renewal Program (MRP). The IESO will perform the more fulsome review one year after the implementation of MRP in order to fully assess the impacts of these improvements on the existing OR flexibility solution.</p>	There is no proposed spending in 2023-2025 related to this recommendation.
December 10, 2020	2-1	The IESO should eliminate the payment for start-up costs for second and subsequent RT-GCG runs in a day. Alternatively, when a generation unit has	The IESO agrees that two-shifting generation facilities could be inefficient in certain circumstances. However, eliminating all second start guarantees could deter efficient starts from	This recommendation is being addressed through the Market Renewal Program (see Exhibit G-2-1 – Market Renewal Program Cost Report).

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		<p>participated in the RT-GCG program once during a day, the IESO should consider ways to have the generation unit compensated on the basis of the lesser of the second and subsequent submitted start-up costs or the estimated cost of keeping the generation unit online between RT-GCG runs.</p>	<p>coming to market. Multi-hour optimization of three-part offers is necessary to verify the efficiency of second starts. As part of the Market Renewal Program (MRP), the IESO will be introducing multi-hour optimization of three-part offers (energy, start up, and speed-no-load) across the day-ahead, pre-dispatch, and real-time timeframes. Multi-hour optimization of three-part offers will only schedule generation facilities for two starts in the same day when it is economically efficient to do so.</p> <p>The IESO does not intend to take any additional actions to change the current Real-Time Generation Cost Guarantee (RT-GCG) program design in advance of MRP. The IESO will continue to conduct audits associated with the RT-GCG program.</p>	
December 10, 2020	2-2	<p>The IESO should conduct an audit of RT-GCG cost submissions in situations when a generation unit has a second RT-GCG run within three hours of its first RT-GCG run and the submitted costs of the second run are equal to or higher than the submitted costs of the first run.</p>	<p>The IESO routinely audits the Real-Time Generation Cost Guarantee (RT-GCG) program and has been carrying out such audits since 2011. Consistent with the MSP's recommendation, the IESO's audits consider submitted costs and the circumstances of each RT-GCG start, including when a generation facility has a second start within three hours of its first start.</p>	<p>The IESO's routine audits of the RT-GCG program are carried out by the Market Assessment and Compliance Division (MACD) (see the MACD section in Exhibit D-12 – OM&A Business Unit Detail).</p>
December 10, 2020	2-3	<p>The IESO should treat SAR activations in much the same way as it treats emergency imports; namely, by adding</p>	<p>The current approach to pricing Simultaneous Activation Reserve (SAR) imports has been included in the Market Renewal Program (MRP)</p>	<p>There is no proposed spending in 2023-2025 related to this recommendation.</p>

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		demand back in to the unconstrained schedule.	<p>detailed design (see section 3.8.9.2 of the Grid and Market Operations Integration Detailed Design for further information) and stakeholders were given the opportunity to provide input on this approach.</p> <p>In addition, the IESO has assessed the materiality of SAR imports to be low both in terms of frequency of activation and impact on the Hourly Ontario Energy Price (HOEP).</p> <p>With SAR event pricing recently addressed through MRP and the materiality assessed as low, the IESO does not intend to pursue this recommendation any further at this time.</p>	
December 10, 2020	3-1	The IESO should produce a report that probabilistically assesses the level of economic (i.e. non-firm) imports that would be appropriate to assume in their various resource adequacy studies for each year in the planning timeframe, with stakeholder input, using the Northeast Power Coordinating Council Review of Interconnection Assistance Reliability Benefits study as a reference.	<p>Through the Reliability Standards Review stakeholder engagement, the IESO reviewed assumptions related to compliance with Northeast Power Coordinating Council (NPCC) resource adequacy standards (NPCC "Directory 1"), including assumptions for non-firm imports. Through this engagement, the IESO proposed a methodology to determine an appropriate assumption for non-firm imports which takes into account the NPCC Review of Interconnection Assistance Reliability Benefits study. The Reliability Standards Review concluded on April 9, 2021.</p> <p>The methodology, presented to stakeholders, to determine an appropriate assumption for non-firm imports was included in the assessments for the 2021 Annual Planning Outlook (APO). The</p>	There is no proposed spending in 2023-2025 related to this recommendation.

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			methodology is now included in the IESO's annual process. Preliminary results for the upcoming 2022 APO indicate that the number assumption will remain unchanged.	
December 10, 2020	3-2	The IESO should better align the assumptions used in planning documents on an ongoing basis or explain in detail the reason for remaining differences, with quantities. This should address, at a minimum, differences in economic import assumptions and different weather scenarios that lead to different capacity need outcomes.	<p>The IESO agrees with the MSP on the need to align assumptions used in planning documents.</p> <p>As stated in last update, assumptions for the Reliability Outlook (RO) and Annual Planning Outlook (APO) forecasts were included in the planning documents. Differences in assumptions across these reports will be quantified in the associated methodology documents. There is general alignment in terms of weather assumptions, embedded variable generation, and historical data-sets used. The RO will be updated in 2023 to, among other things, adopt the updated weather methodology consistent with what is in the APO.</p> <p>Continuing alignment between the two forecasts is an objective of the capital Long-Term Demand Forecast Project.</p>	<p>This recommendation is being worked on primarily by the IESO's Planning, Conservation and Resource Adequacy (PCRA) business unit (see PCRA section in Exhibit D-1-2 – OM&A Business Unit Detail).</p> <p>See also the Long-Term Demand Forecast capital project in E-2-1 – Attachment 10 \$1 Million - \$4 Million Capital Project Updates.</p>
December 10, 2020	3-3	The IESO should examine and report on potential improvements to its communications with stakeholders regarding the process(es) used to assess the need for and procure resources to meet future capacity needs. The IESO should also provide greater clarity regarding the documents used to inform	<p>The IESO agrees with the MSP on the need for transparent and clear communications for planning and procurement processes. Through the Resource Adequacy engagement, the IESO worked with stakeholders to develop a resource adequacy framework that will enable competitive solutions to meet system needs.</p> <p>The IESO's documents clearly outline how system needs are identified, the methods used to</p>	This recommendation is being worked on primarily by the IESO's Planning, Conservation and Resource Adequacy (PCRA) and Markets & Reliability business units (see PCRA and Markets & Reliability sections in Exhibit D-1-2 – OM&A Business Unit Detail).

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		<p>those procurements and how any auction or procurement targets are set. In particular:</p> <ul style="list-style-type: none"> • the IESO should publish the analysis and methodology for the Reliability Assurance concept, which appears to be the basis for procuring capacity for the Capacity Auction scheduled for the winter of 2020/21; and • the IESO should explain the purpose of the Reliability Outlook, including a clear indication of which sections of that report may be used for outage planning, which sections (if any) may be used to inform procurements, and which sections have been included for informational purposes only. 	<p>translate those needs into procurement targets, and which processes will be used to procure resources. The IESO can confirm that:</p> <ul style="list-style-type: none"> • The Annual Planning Outlook (APO) assesses system needs and includes a description of the methodologies used to assess system needs. The 2021 APO was published in Q4 2021. • The Annual Acquisition Report (AAR) translates those needs into procurement targets, and serves as the primary source for procurement decisions. The 2022 AAR was published on April 8, 2022. The procurement targets outlined in the AAR do not include additional volumes for "Reliability Assurance." <p>The Reliability Outlook is not used to inform procurements targets. While the Reliability Outlook can assist market participants in assessing outage plans, Market Manual 7.3 is the document that governs the outage assessment process. The purpose of the Reliability Outlook is specified within the Reliability Outlook itself and includes:</p> <ul style="list-style-type: none"> • Advising market participants of the resource and transmission reliability of the Ontario electricity system • Assessing potentially adverse conditions that might be avoided by adjusting or coordinating maintenance plans for generation and transmission equipment • Reporting on initiatives being implemented to improve reliability within this time frame 	
December 10, 2020	3-4	The IESO should periodically make available clear descriptions of the range of potential resources that may need to	The IESO agrees with the MSP on the need for transparent and clear communications for planning and procurement processes. Through	This recommendation is being worked on primarily by the IESO's Planning, Conservation and Resource Adequacy (PCRA) and Markets &

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		be procured, including the volume (MW), timelines, any required characteristics other than capacity (e.g. energy, ramp, etc.) and expected procurement mechanism (e.g. through capacity auctions, and/or alternative mechanisms) as part of its communication of future capacity needs in reports such as the Annual Planning Outlook.	<p>the Resource Adequacy Engagement, the IESO worked with stakeholders to develop a framework that translates system needs to transparent procurement targets.</p> <p>The Annual Planning Outlook (APO) assesses system needs and includes a description of the methodologies used to assess system needs. The 2021 APO was published in Q4 2021.</p> <p>The Annual Acquisition Report (AAR) translates those needs into procurement targets, and serves as the primary source for procurement decisions. The AAR includes descriptions of resources to be procured, including the volume (MW), timelines, any required characteristics other than capacity, and expected procurement mechanism. The 2022 AAR was published on April 8, 2022.</p>	Reliability business units (see PCRA and Markets & Reliability sections in Exhibit D-1-2 – OM&A Business Unit Detail).
December 10, 2020	3-5	The IESO should signal its confidence in different planning assumptions by publishing the uncertainty values associated with relevant assumptions and elements used to calculate the capacity need, including at a minimum a range of economic imports and a range of possible demand forecasts based on underlying economic drivers.	<p>Through the Reliability Standards Review engagement, the IESO developed a methodology, presented to stakeholders, to determine an appropriate assumption for non-firm imports which will be included in each Annual Planning Outlook (APO). The non-firm assumptions were included in the 2021 APO, published in Q4 2021.</p> <p>In order to address uncertainties impacting electricity demand, the IESO builds consideration for load forecast uncertainty into the APO. Assumptions are explained in the APO, and are supported through accompanying methodology</p>	This recommendation is being worked on primarily by the IESO's Planning, Conservation and Resource Adequacy (PCRA) and Markets & Reliability business units (see PCRA and Markets & Reliability sections in Exhibit D-1-2 – OM&A Business Unit Detail).

Report	Recommendation Number	Recommendation	IESO 2022 Update to the OEB	Link to Spending in 2023-2025 Revenue Requirement Submission
			documents and data tables. The IESO expects to continue this practice. Further, through the Resource Adequacy Engagement, stakeholders and the IESO have recognized a need for an acquisition report that clearly states the IESO's procurement need in the form of the Annual Acquisition Report (AAR). The AAR supplements the IESO's efforts to publicly acknowledge uncertainty in planning assumptions by considering the inherent uncertainties within those assumptions as it translates needs into procurement targets. The 2022 AAR was published on April 8, 2022.	
December 10, 2020	3-6	The IESO should examine and report on potential improvements to its stakeholder engagements regarding the methods and assumptions used to develop capacity needs. Specific consideration should be given to a periodic streamlined process to review the case for procuring existing or new resources that involves stakeholders and is overseen by an objective third party.	<p>The IESO continues to review the MSP's recommendation. The IESO's review is not expected to conclude in advance of the Ministry of Energy's review of the long-term energy planning framework.</p> <p>The Ministry's review may result in changes that inform the governance and decision-making related to the IESO's planning and resource acquisition activities.</p>	There is no proposed spending in 2023-2025 related to this recommendation.
September 2, 2021	3-1	The IESO should develop structural solutions for Capacity Auction resource performance failures, with an emphasis on stronger penalties. In general terms, penalties should work together with a Qualified Capacity process to ensure that	The IESO agrees with the MSP's recommendation and has proposed and stakeholdered design for a capacity qualification process and an enhanced performance and availability assessment framework for all Capacity Auction resources (including Hourly Demand Response), where past performance	This recommendation is being worked on primarily by the IESO's Planning, Conservation and Resource Adequacy (PCRA) business unit (see PCRA section in Exhibit D-1-2 – OM&A Business Unit Detail).

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		capacity payments net of penalties reflect each resource’s ability to deliver capacity when dispatched.	<p>would directly impact future qualified capacity and participant revenues.</p> <p>The proposed enhancements would provide a financial incentive for resources to improve performance, much stronger financial consequences for poor performance during times of system need, and ensure capacity payments net of penalties reflect a resource’s ability to deliver capacity when dispatched.</p> <p>The capacity qualification process will have two components (1) availability de-rates, and (2) performance adjustment factors. Availability de-rates, will come into effect during the qualification for the 2023 Capacity Auction, which is expected to run in Q4 2023. Due to internal assessments and stakeholder feedback, the performance adjustment factors will be calculated based on auction performance in 2023/24 and will apply to qualification in the December 2024 Capacity Auction. This will ensure that performance baselines are being assessed with the new enhancements to the performance assessment framework in effect (e.g. tighter dead bands and higher availability charges).</p> <p>Due to the unique Hourly Demand Response participation framework, there is no real-time availability data for the IESO to use to determine an availability de-rate for qualification. For Hourly Demand Response resources, IESO has proposed to subject the resource to a higher availability performance assessment when on standby. As</p>	

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			an alternative the self-scheduled capacity test performance may be used to adjust the obligation and revenues during the obligation period. These proposals are further described in the update to September 2021 recommendation 3-2.	
September 2, 2021	3-2	For all Capacity Auction resources, the IESO should adjust penalties and payments such that there are no financial incentives to submit Capacity Auction offers that exceed expected capabilities.	<p>The IESO agrees with the MSP's recommendation and has proposed and stakeholdered a design for a capacity qualification process and an enhanced performance and availability assessment framework for all Capacity Auction resources (including Hourly Demand Response - HDR) where past performance would directly impact future qualified capacity and participant revenues.</p> <p>Enhancements to the performance assessment framework include: performance testing to capability (rather than bids), tightening performance dead bands for hourly demand response resources, determining performance adjustment factors to apply in the future capacity qualification of an individual resource and an in-period adjustment of obligations and payments in accordance with the demonstrated capability of HDR resources.</p> <p>IESO had initially proposed a settlement charge that would incent HDR resources to make their capacity available during times of system need but has since pursued a new approach to determine an alternative to an HDR availability de-rate in qualification based on further</p>	This recommendation is being worked on primarily by the IESO's Planning, Conservation and Resource Adequacy (PCRA) business unit (see PCRA section in Exhibit D-1-2 – OM&A Business Unit Detail).

Report	Recommendation Number	Recommendation	IESO 2022 Update to the OEB	Link to Spending in 2023-2025 Revenue Requirement Submission
			<p>engagement with stakeholders. This design enhancement proposes to adjust an HDR resource’s obligation and availability payments for the entire obligation period, including a retroactive adjustment, based on actual delivered capacity demonstrated during a capacity test, if the resource does not deliver to at least its cleared UCAP value. Total availability payments received throughout the obligation period, including payments received prior to the test and performance assessment, would be included in the payment adjustment. This new proposal was developed based on stakeholder feedback that the IESO’s previous approach would incent the wrong behaviour and utilized aspects of approaches to assess availability that are used in other jurisdictions that stakeholders suggested the IESO consider.</p> <p>Stakeholder engagement on the 2023 Capacity Auction enhancements is nearing completion, with corresponding market rule amendments to capture the final design decisions expected to be posted ahead of the March, 2023 Technical Panel meeting.</p>	
September 2, 2021	3-3	The IESO should immediately cease reimbursements to gas generators of carbon cost payments.	The Real-Time Generation Cost Guarantee (RT-GCG) program ensures that non-quick start generators are available to meet reliability in real-time. The RT-GCG Program is not a full cost-recovery program. The objective of the program is to provide eligible generators recovery of certain incremental fuel, operating, and maintenance costs incurred as a result of starting	This recommendation is being addressed through the Market Renewal Program (see Exhibit G-2-1 – Market Renewal Program Cost Report).

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			<p>up and ramping to minimum loading point, to the extent those costs are not recovered through market revenues. Carbon costs are an additional operating cost incurred by generators during the start-up period and the IESO considers recovery of these costs to be consistent with the program's methodology, and appropriately reimbursed.</p> <p>In the short term, the RT-GCG program will continue to pass through carbon costs to customers to ensure reliability consistent with the current program design as set out in 2017. In the future, the Market Renewal Program (MRP) will introduce the enhanced real-time unit commitment process which will facilitate enhanced competition between generators based on their all-in costs, including carbon costs. MRP is expected to be in service by May 2025.</p>	
September 2, 2021	3-4	<p>If the IESO insists on reimbursement of carbon cost payments, they should develop a methodology that preserves the incentives of the carbon price. Any reimbursement should amount to a small percentage of the carbon cost payments imposed by the carbon pricing system. Only facilities that have paid an annual carbon cost charge should qualify for the carbon cost reimbursement.</p>	<p>The Real-Time Generation Cost-Guarantee (RT-GCG) program's current carbon cost recovery methodology is designed to accurately reflect the eligible carbon costs incurred by generators. This methodology takes into account the heat rate of thermal generators by assessing the fuel consumed and energy produced specific to start-up operations. With further carbon costs potentially incurred during the full run of a facility, an incentive to reduce emissions intensity and resulting carbon costs remains. The IESO</p>	<p>This recommendation is being addressed through the Market Renewal Program (see Exhibit G-2-1 – Market Renewal Program Cost Report).</p>

Report	Recommendation Number	Recommendation	IESO 2022 Update to the OEB	Link to Spending in 2023-2025 Revenue Requirement Submission
			<p>also notes that based on the current emissions intensity benchmark and the dispatch patterns and efficiency of Ontario's gas fleet, all eligible RT-GCG participants are expected to incur an annual carbon charge.</p> <p>As noted in response to recommendation 3-3 from the Market Surveillance Panel's September 2021 report, in the short term, the RT-GCG program will continue to pass through carbon costs to customers to ensure reliability consistent with the current program design as set out in 2017. In the future, the Market Renewal Program (MRP) will introduce the enhanced real-time unit commitment process which will facilitate enhanced competition between generators based on their all-in costs, including carbon costs. MRP is expected to be in service by May 2025.</p>	
September 2, 2021	3-5	If the IESO does reimburse gas generators for carbon cost payments, the total annual reimbursement from the IESO should be made public to improve transparency, beginning with the total reimbursement to gas generators for 2019 that was made in 2021.	The IESO agrees with the MSP's recommendation and has published the total annual reimbursement for carbon costs under the Real-Time Generation Cost Guarantee (RT-GCG) on the IESO's Market Assessment web page.	This recommendation is being worked on primarily by the IESO's Corporate Relations, Stakeholder Engagement and Innovation (CRSEI) business unit (see CRSEI section in Exhibit D-1-2 – OM&A Business Unit Detail).
September 2, 2021	3-6	The IESO should issue a Request for Proposals in all possible cases where it intends to secure a resource to meet an identified system need that cannot be	The IESO is committed to prioritizing the use of competitive mechanisms. The 2022 Annual Acquisition Report (AAR), published on April 4, includes the decision making methodology used	This recommendation is being worked on primarily by the IESO's Planning, Conservation and Resource Adequacy (PCRA) and Markets & Reliability business units (see PCRA and Markets

Report	Recommendation Number	Recommendation	IESO 2022 Update to the OEB	Link to Spending in 2023-2025 Revenue Requirement Submission
		addressed by existing competitive mechanisms (e.g. Capacity Auction).	<p>to determine solutions to address identified reliability needs. The planned actions and options identified in the 2022 AAR include a variety of competitive processes, including Request for Proposals. The AAR encourages greater competition by specifying design considerations in long-term commitment processes in locations where system needs exist and there are currently limited capable suppliers to address the need.</p> <p>During the mechanism allocation and target setting step of the methodology, the IESO determines which mechanisms from the Resource Adequacy Framework have a high probability of delivering on the needs, taking into consideration whether: (1) there is sufficient time to run a competitive procurement, and (2) a sufficient pool of potential resources or projects exist to support competition.</p> <p>Where competitive mechanisms cannot be implemented, either due to urgency of need or specific requirements that reduce the pool of competition, opportunities such as existing assets, potential import opportunities, or other means are considered to satisfy the identified needs.</p>	& Reliability sections in Exhibit D-1-2 – OM&A Business Unit Detail).
September 2, 2021	3-7	In advance of full implementation of the IESO's Resource Adequacy Framework, when non-competitive procurements may be required, information should be published that clearly states why a non-	The 2022 Annual Acquisition Report (AAR), published on April 4, provides information on the IESO's decision making methodology that is used to determine planned actions to meet identified reliability needs, including the need for non-competitive procurement mechanisms.	This recommendation is being worked on primarily by the IESO's Planning, Conservation and Resource Adequacy (PCRA) and Markets & Reliability business units (see PCRA and Markets & Reliability sections in Exhibit D-1-2 – OM&A Business Unit Detail).

Report	Recommendation Number	Recommendation	IESO 2022 Update to the OEB	Link to Spending in 2023-2025 Revenue Requirement Submission
		<p>competitive procurement was necessary, what effort was made to encourage competition, specific details for both the need and the proposed solution (e.g. amount of annual Unforced Capacity and location), and whether additional actions are necessary if the proposed solution provides more, or less, than what is required.</p>	<p>The AAR includes a summary of information on the needs being addressed (with references to additional public information available through the Annual Planning Outlook or Transmission Plans, as appropriate), the proposed solution, and the risks that were considered in determining the set of planned actions to meet reliability needs.</p> <p>When proposing a non-competitive solution, the AAR provides a signal to the marketplace that there is a need to be met, by clearly and transparently articulating the need and recognizing that a competitive process could be used in the future to meet the need if sufficient resources are available to support competition.</p> <p>The AAR also includes a discussion on activities to enable greater competition and, where needs exist in a specific location, encourages competition by specifying those needs as design considerations in long-term RFPs.</p> <p>The IESO expects to continue to provide this information to stakeholders in future AARs.</p>	
September 2, 2021	3-8	<p>To facilitate the inclusion of projects with broader public benefits in competitive procurement processes, the IESO should separate non-electricity system costs and benefits from the electricity system cost-benefit analysis and publish the results.</p>	<p>The IESO is aware that some facilities or projects may provide public benefits beyond those related to the electricity system. Through the operationalization of the Resource Adequacy Framework via the Annual Acquisition Report and subsequent procurement activities, the IESO is shifting the procurement focus from a resource-</p>	<p>This recommendation is being worked on primarily by the IESO's Planning, Conservation and Resource Adequacy (PCRA) and Markets & Reliability business units (see PCRA and Markets & Reliability sections in Exhibit D-1-2 – OM&A Business Unit Detail).</p>

Report	Recommendation Number	Recommendation	IESO 2022 Update to the OEB	Link to Spending in 2023-2025 Revenue Requirement Submission
			<p>centric to a system-centric approach, where eligible facilities compete to provide the electricity services needed to maintain a reliable electricity system. The identified needs, ensuing procurements, and ultimately procurement outcomes will help to transparently identify the benefits and costs to provide these electricity services.</p> <p>However, accounting for any other non-electricity benefits that may materialize from a procurement, outside of the IESO's objects, is not part of the IESO's mandate. Other public benefits are best assessed and published by the appropriate branch of Government, who can assign a value to the public benefit, and determine how much of the cost of that benefit should be attributed to electricity ratepayers. In these instances, the Government is best positioned to provide policy direction to the IESO in cases where these non-electricity benefits are to be factored into electricity system decisions.</p> <p>With regard to bilateral arrangements, including those that are part of the Ministry of Energy's Unsolicited Proposal assessment process specifically, the IESO would be unable to publish the results of its assessments as these contain third-party confidential information. Furthermore, as part of the Unsolicited Proposal process, this information is provided as confidential advice to</p>	

Report	Recommendation Number	Recommendation	IESO 2022 Update to the OEB	Link to Spending in 2023-2025 Revenue Requirement Submission
			government. Information on the project valuation framework used by the IESO to assess a broad range of projects, including Unsolicited Proposals, is available on the IESO’s website	

DETAILS OF INTERNAL AUDIT REPORTS

In the OEB's Decision and Order in EB-2022-0002, the OEB approved the settlement proposal in which the IESO made the following commitment related to internal audits:

"With respect to internal audits, the IESO will file the following information, in a clear and comprehensive manner, in the next Revenue Requirement Submission: details of the subject matter of the internal audit reports, the recommendations, the action(s) taken as a result of each recommendation, the status of the implementation of each action, and the internal relative risk rating for each observation."

Table 1 below includes the committed information for internal audits conducted in 2022.

Table 1: Details of Internal Audit Reports

Audit Report Subject Area & Objective	Recommendations (Risk Rating [High/Medium])	Management Action Plan (MAP)	Estimated MAP Implementation Date
Corporate Performance Measures review: Annual review completed by a third-party of the corporate performance measures to validate the progress to target.	No recommendations identified.	No recommendations identified.	Not applicable (NA)
Treasury Board & Management Board of Cabinet Directive compliance:	No recommendations identified.	No recommendations identified.	NA

Audit Report Subject Area & Objective	Recommendations (Risk Rating [High/Medium])	Management Action Plan (MAP)	Estimated MAP Implementation Date
<p>Provided reasonable assurance, based on a sample of one, that the relevant by-laws, administrative policies and internal processes of the IESO comply with applicable Treasury Board of Cabinet (TB)/Management Board of Cabinet (MBC) directives.</p>			
<p>IT Asset Portfolio Management: Provided reasonable assurance that the controls over the IT asset portfolio management process are effective and efficient.</p>	<p>1. Management should consider completing a comprehensive review of the IT asset database for any errors or omissions and make necessary corrections to the data fields. (Medium)</p>	<p>1. Management agrees with the observation and will do a comprehensive review of the IT assets in Cherwell.</p>	<p>1. Q3 2023</p>
<p>Internal Audit Quality Assurance: Completed an internal Quality Assurance Review and IESO Internal Audit (IA) remediation of additional gaps identified in external assessment and</p>	<p>No recommendations identified.</p>	<p>No recommendations identified.</p>	<p>NA</p>

Audit Report Subject Area & Objective	Recommendations (Risk Rating [High/Medium])	Management Action Plan (MAP)	Estimated MAP Implementation Date
evaluation of their effectiveness.			
Real-time and day ahead dispatch algorithm: External review of the Dispatch Algorithm and Day Ahead Algorithm and related processes and procedures for compliance with Chapter 7.4 (The Dispatch Algorithm) and Appendix 7.5 of the Market Rules (The Market Clearing and Pricing Process).	No recommendations identified.	No recommendations identified.	NA
Plan Operations – Outage Management: The objective of this review was to provide reasonable assurance that controls are designed effectively to facilitate the objectives and address the key risks of the Outage Management process.	1. Management should identify key performance indicators (KPIs) and other metrics that will help in the oversight of the outage management process. KPIs and metrics could be presented in a dashboard for efficient monitoring and communication. (Medium)	1. Management agrees with the observation and will identify KPIs and continuously track outages that are flagged by the control room for feedback and follow ups. Market Forecasts & Integration (MFI) notes that all outages flagged by the control room in Control Room Operations Window (CROW) are being reviewed by MFI staff in a timely manner and feedback given to the control room as required.	1. Q3 2023
Security Limits:	1. Management should continue to monitor the investment required to mitigate these risks	1. Management will continue to request an improved tool for the market security to	1. Implemented

Audit Report Subject Area & Objective	Recommendations (Risk Rating [High/Medium])	Management Action Plan (MAP)	Estimated MAP Implementation Date
Provided reasonable assurance that the process to develop operating security limits is effectively and efficiently controlled.	identified related to the limitation of the Operating Scheduling Limit (OSL) Database. Controls to mitigate these identified risks should be considered in any future design of a new OSL Database. In the absence of system controls, while less efficient, management should implement manual controls to address these risks. Primarily, require the documented review (e.g., via email) that a second PSL Engineer has reviewed the SOL entered production of the OSL Database. (Medium)	replace the limited OSL tool. In the meantime, we will implement the control recommended: second engineer to validate the entry into the OSL database and formally confirm the validation.	
Metered Market Participant independence audit: A third-party provided reasonable assurance that Meter Data Management (MDM) audits of IESO managed meter installations were completed in accordance with all established audit procedures.	No recommendations identified.	No recommendations identified.	NA
Business Analysis: Provided reasonable assurance that the analyze and design business	1. Management should complete the estimation procedure work that is underway and deploy a robust timeline estimation methodology and guidance based on leading practices and be	1. Management agrees that we would be benefit from a standardized approach to estimating business analysis effort and durations and help address the identified	1. Q2 2023 2. Q2 2023

Audit Report Subject Area & Objective	Recommendations (Risk Rating [High/Medium])	Management Action Plan (MAP)	Estimated MAP Implementation Date
process is effectively and efficiently controlled.	<p>aligned with any existing project timeline estimation methodologies within the organization. (Medium)</p> <p>2. Management should develop and deploy guidance to assess the correct business analysis approach and guidance to develop good business objectives. (Medium)</p> <p>3. Management should consider tracking and measuring the KPI and Service Levels to help ensure the process is functioning efficiently and effectively, and to identify opportunities for improvement. Consider using the "Determine Business Requirements Gathering approach" template a formal planning document to be approved by Executive Sponsor. (Medium)</p>	<p>risks (as captured in Business Analysis Process – PRCS-74). In absence of the formal estimation procedure, broad estimating approaches are communicated to the team and coaching is available as engagements require.</p> <p>2. Management agrees that well written business objectives are critical to a project's overall success, ensures alignment across the team and guides and informs the business analysis products and services on a particular project. We will continue to reinforce the need for well written business objectives through refresher training in 2023 and continue our focussed review of the Project Charter. In terms of the appropriate business analysis approach, we continue to encourage the use of the Business Analyst Engagement Plans that outline the deliverables that the Business Analysts will provide for a project that balances the needs of the project and the available capacity of the BAA team. This document will be reviewed with the Project Sponsor and the Senior Manager, Business Architecture and Analysis. As part of</p>	3. Q2 2023

Audit Report Subject Area & Objective	Recommendations (Risk Rating [High/Medium])	Management Action Plan (MAP)	Estimated MAP Implementation Date
		<p>onboarding of new Business Analysts and ongoing training we will discuss how we can tailor our approach-based project size and type.</p> <p>3. Management will revisit the Service Levels and KPI's included in the document for appropriateness and commit to tracking and measuring the revised measure and service level.</p>	
<p>External Communications – Incident Management: Provided reasonable assurance that the processes to manage external communications incident management is effectively and efficiently controlled.</p>	<p>1. Management should consider creating a customized communication plan separate from the procedures created by the Operations team that contain a unified understanding for when and how communications are to be created and issued in response to significant events. This document could take a more proactive approach to handling communications and reduce any ambiguity or confusion depending on which operational procedure is being followed by which team or department.</p> <p>The communication plan can have sample wording that can be used to prepare communications for key events. This plan could also contain steps to be taken when creating a communication for an incident and include any helpful information like key</p>	<p>1. We acknowledge that a more fulsome communications plan needs to be developed to address significant incidents. We commit to developing a significant incident communications plan that has a clear goal and measurable objectives (KPI's). This plan will also outline the processes, from a communications perspective, to be followed during a "significant incident" and the steps needed to address the situation. Also, within this plan will be templated holding statements, key messages and identified resources from the Communications team that would be involved.</p> <p>2. We acknowledge that a detailed closure report is needed to summarize the action taken, lessons learned, and measurement</p>	<p>1. Q2 2023</p> <p>2. Q2 2023</p>

Audit Report Subject Area & Objective	Recommendations (Risk Rating [High/Medium])	Management Action Plan (MAP)	Estimated MAP Implementation Date
	<p>contacts and resources in various groups (legal, finance, etc.) to collaborate with in such situations. (Medium)</p> <p>2. Management should consider creating a closure report that contains a checklist with all tasks that need to be completed when the External Communications team is informed about a significant incident requiring communication. This checklist could contain a closure report for after the fact, along with lessons learned to assist in better preparing for and communicating potential incidents in the future. (Medium)</p>	<p>of a significant event communications plan. We plan to develop a template to report back on the overall effectiveness on the communications plan and the targets identified within. We aim to have the closure report completed within 3 weeks of the incident and meet with all internal stakeholders involved to review.</p>	
<p>Baseline Review: Provided reasonable assurance that the baseline review process is effectively and efficiently controlled.</p>	<p>1. Management should consider tracking and measuring service levels to help ensure the process is functioning efficiently and effectively (Medium)</p> <p>2. The Baseline team should reinforce (e.g., additional training) with document owners that a legal review of many documents submitted to the baseline process is required. Additional consideration should be given to making it a requirement for the document author to provide a written confirmation to the Baseline Analyst that a legal review was completed or include it as part of the Citadel workflow. By doing so the Baseline team can</p>	<p>1. Management agreed to:</p> <ul style="list-style-type: none"> Review and update the Baseline Market Document Process Specification with up-to-date service levels and tasks associated with measuring, tracking and reporting on those service levels, which have an impact on improving how service is offered. Process stakeholders and Information Steward to review and approve the updated documentation changes. Communicate and train staff on approved process changes. Update the IG quarterly report with the new Baseline service metrics. 	<p>1. Q2 2023</p> <p>2. Q2 2023</p>

Audit Report Subject Area & Objective	Recommendations (Risk Rating [High/Medium])	Management Action Plan (MAP)	Estimated MAP Implementation Date
	help to ensure document owners are compliant with legal requirements. (Medium)	2. Management agreed to: <ul style="list-style-type: none"> Assess the Baseline Process and the supporting solutions (Appian and Citadel) to determine an effective control to satisfy this identified risk i.e., adding a legal review confirmation. Review and update the Baseline Market Document Process and step-by-step guide documents to provide clarity to Document Authors and impacted stakeholders on the requirement for legal review. Communicate any changes and expectations to the Document Authors and impacted stakeholders. 	

MARKET RENEWAL PROGRAM COST REPORT

The Market Renewal Program (MRP) Cost Report is a separate cost centre related specifically to spending that was established through the IESO's 2017 Revenue Requirement Submission. The MRP is modernizing Ontario's electricity markets to deliver an efficient marketplace that will support the electricity grid of the future. Efficient operation of existing resources and effective integration of new resource types is dependent on the foundational improvements MRP will deliver – including prices that reflect costs in the different regions across the province and significantly improved optimization of resource scheduling and dispatch.

Summary of Activities

Throughout 2022, the IESO continued its focus, both internally and externally, on developing the specific changes and details required to implement MRP in the IESO-Administered Market, and on activities to ensure market participant and employee readiness to implement the changes. The IESO also released a revised project schedule and budget.

MRP Schedule and Budget Update

In August 2022, the IESO's Board of Directors ("IESO Board") approved a revised project schedule. The previously communicated in-service date of November 2023 (baseline 4 or BL4) was no longer feasible. Integrating the foundational changes across the more than ten legacy systems that work together to dispatch and settle the wholesale electricity market required more time for solution development and testing than anticipated.

The project reached a stage where the information necessary to more accurately build the schedule was available, including the detailed system requirements and the associated vendor validated solution development times. This allowed IESO to complete a thorough review of the schedule and resulted in a revised in-service date of May 2025, and a forecast budget of \$233 million (baseline 5 or BL5).

The revised budget estimate of \$233 million, including contingency, is \$55 million higher than the previously approved budget of \$178 million. The revised budget is higher due to increased costs to modify the IESO's IT systems, and increased labour costs arising from the longer project duration.

1 The scope of the project has not changed, and a review of the MRP business case¹ shows the
2 renewed market will deliver at least \$700 million in net financial benefits to Ontario consumers
3 over the first 10 years of operation.

4 The IESO is confident this schedule is achievable as many of the previous uncertainties have
5 been addressed through completion of business requirements and vendor validation of timelines
6 to complete system development and testing. Further, the revised schedule provides
7 stakeholders with additional time to complete their own readiness activities.

8 **Implementation**

9 The IESO continues to codify the Detailed Designs into rules, manuals, processes and tools as
10 part of the implementation phase. The implementation phase includes critical steps such as:
11 building and finalizing the business requirements and internal manuals for the IESO, developing
12 and issuing vendor requirements for building IT systems, building and testing these IT systems
13 and, the finalization of Market Rules and Market Manuals. The IESO has developed five of seven
14 planned batches of MRP Market Rules and Market Manuals for stakeholder review. The first two
15 batches of Market Rule amendments, encompassing registration and market power mitigation
16 activities, have been provisionally approved by the IESO's Board of Directors.

17 Given the interconnected nature of the suite of MRP Market Rules, the IESO will not be seeking
18 a formal recommendation from the Technical Panel until all of the Market Rules have been
19 completed, reviewed by stakeholders and posted on the IESO's Technical Panel web page².

20 **Market Participant Readiness**

21 Recognizing the importance of change management and adoption through the Market Renewal
22 journey, the IESO continues to work on Market Participant Readiness activities. This work builds
23 upon the Detailed Design³ chapters that outlined the primary concepts and the changes that
24 Market Participants can expect from the renewed market, by identifying the market design,
25 process changes and the new data flows that will be required and how these relate to different
26 types of participation. It also includes engaging stakeholders on planning and preparing for the

¹ <https://www.ieso.ca/-/media/Files/IESO/Document-Library/engage/imrm/imrm-20220922-mrp-business-case-validation-memo.ashx>

² <https://www.ieso.ca/en/Sector-Participants/Engagement-Initiatives/Technical-Panel/Meetings-and-Materials>

³ <https://ieso.ca/en/Market-Renewal/Energy-Stream-Designs/Detailed-Design>

technical aspects of the changes Market Renewal will bring through training, testing, and market trials.

In 2022, an Implementation Working Group was established comprised of a cross-section of market participant representatives from key stakeholder groups. Two meetings have been held to date with the goal to provide strategic advice on navigating implementation issues, participant readiness timelines in the project schedule, and other matters.

As part of the Market Participant Readiness Plan⁴, and to aid market participants in preparing for the MRP go-live, the IESO released thirteen "Day-In-The-Life" documents covering various participant segments to help participants begin to plan for the business process changes and future training and testing activities that may be needed within their organization.

Response to OEB Decisions

In the OEB's Decision and Order in EB-2022-0002, the OEB approved the settlement proposal in which the IESO agreed to the following:

1. *"With respect to further reporting on MRP, beginning for Q3 2022, the IESO will provide a quarterly report, made public on the IESO website within 30 days of the end of each quarter, that will include, as a minimum requirement:*
 - *Schedule Performance Index (SPI) and Cost Performance Index (CPI) relative to the in-effect baseline schedule and budget.*
 - *Actual schedule progress relative to the in-effect baseline schedule and the planned schedule progress relative to the baseline schedule 4 and the in-effect baseline schedule.*
 - *Actual year to date spend compared to annual budget, and actual total spend compared to total budget, using the cost categories from Table 1 "MRP Baseline Budget by Operating and Capital Expenses" of the MRP Cost Report, for baseline 4 and the in-effect baseline budget.*
 - *Any changes to cost forecast, schedule forecast, or project scope that have occurred since the last quarterly report."*

⁴ <https://www.ieso.ca/-/media/Files/IESO/Document-Library/engage/imrm/imrm-20211216-market-participant-readiness-plan.ashx>

1 The IESO published its first quarterly report covering Q3 2022⁵ on a new MRP project status
2 webpage⁶ in October 2022 as per the settlement proposal. Subsequent quarterly reports are
3 posted to the MRP project status webpage; the most recent quarterly report covers Q4 2022⁷.
4 The quarterly reports include the SPI and CPI relative to the in-effect baseline schedule and
5 budget, together with other requirements identified in the settlement proposal.

6 2. *"In the first quarterly report after implementation of a new baseline schedule, the IESO*
7 *will include information on the changes between the previous baseline schedule and the*
8 *new in-effect baseline schedule that is clear and comprehensive."*

9 The IESO's first quarterly report covering Q3 2022 was the first quarterly report published after
10 IESO Board approval of the baseline 5 (BL5) schedule and budget. As such, the Q3 2022⁸
11 quarterly report included information on the changes between baseline 4 (BL4) and baseline 5
12 (BL5).

13 3. *"With respect to the MRP Business Case, the IESO will assess any changes to the MRP*
14 *Energy Stream Financial Assessment since it was approved by the IESO Board of*
15 *Directors and will provide a full update publicly on the results of that assessment,*
16 *including any revisions to the MRP Energy Stream Financial Assessment, within 3*
17 *months of the OEB decision in EB-2022-0002 approving this Settlement Proposal."*

18 Following the establishment of baseline 5 schedule and budget, the IESO undertook a review of
19 the MRP business case, originally developed in 2019, and published a Market Renewal Program
20 Business Case Validation memo⁹. The memo was published on September 22, 2022 and
21 concluded that the renewed market will deliver substantial net financial benefits of at least \$700
22 million to Ontario consumers over the first 10 years of operation.

⁵ <https://www.ieso.ca/-/media/Files/IESO/Document-Library/market-renewal/MRP-project-status-report-Q3-2022.ashx>

⁶ <https://www.ieso.ca/en/Market-Renewal/Background/Market-Renewal-Program-Project-Status>

⁷ <https://www.ieso.ca/-/media/Files/IESO/Document-Library/market-renewal/MRP-project-status-report-Q4-2022.ashx>

⁸ <https://www.ieso.ca/-/media/Files/IESO/Document-Library/market-renewal/MRP-project-status-report-Q3-2022.ashx>

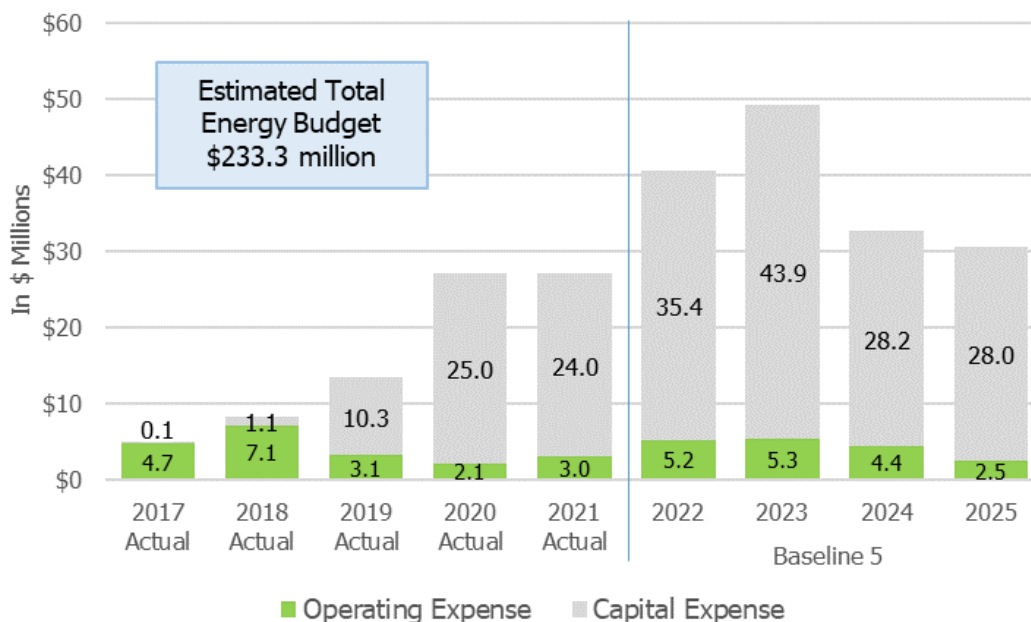
⁹ <https://www.ieso.ca/-/media/Files/IESO/Document-Library/engage/imrm/imrm-20220922-mrp-business-case-validation-memo.ashx>

Baseline Schedule and Budget

The IESO Board approved a new baseline 5 schedule (BL5) in August 2022, including a new MRP program budget of \$233.3 million, inclusive of \$15 million contingency, and a new Go-Live date of May 2025. The IESO publishes a quarterly update tracking project progress and spending against the planned schedule and cost approved for baseline 5.

The cost estimate for the delivery of MRP is \$233.3 million, and a review of the MRP business case shows that the updated net present value of MRP is \$266 million which falls within the 90% probability range of net present value (NPV) values, which are between \$251 million and \$490 million, as calculated for the 2019 Business Case. Please see Figure 1 below.

Figure 1: Cost Estimate for MRP¹⁰



The baseline budget associated with the baseline schedule is outlined in Table 1 below. The budget is divided by operating and capital costs. These costs are broken down into the main cost categories of expenditure.

¹⁰ 2022 Actuals are presented in Tables 3 and 4 in this Exhibit.

After the deployment of MRP, the IESO will incur costs to deliver market participant support and training, complete internal document updates, and support project closure activities while maintaining a capital budget for additional vendor support and internal IT costs for tool changes identified after the in-service date.

Table 1: MRP Baseline Budget by Operating and Capital Expenses

(\$ millions)	2019 Actual	2020 Actual	2021 Actual	2022 Budget (BL5)	2023 Budget (BL5)	2024 Budget (BL5)	2025 Budget (BL5)
Operating Expenses							
Compensation & Benefits	1.7	1.6	2.4	3.9	3.8	3.1	2.0
Professional & Consulting	1.2	0.4	0.5	1.2	1.4	1.2	0.4
Operating & Administration	0.2	0.1	0.1	0.1	0.1	0.1	0.1
Total Operating Expenses	3.1	2.1	3.0	5.2	5.3	4.4	2.5
Capital Expenses							
Compensation & Benefits	-	10.2	11.8	12.6	15.8	14.6	7.0
Professional & Consulting	-	2.7	1.3	2.1	3.7	1.5	1.9
Operating & Administration	10.3	11.8	10.4	19.9	22.7	9.7	1.9
Interest	-	0.3	0.5	0.8	1.7	2.4	2.2
Contingency	-	-	-	-	-	-	15.0
Total Capital Expenses	10.3	25.0	24.0	35.4	43.9	28.2	28.0
Total MRP Expenses	13.4	27.1	27.0	40.6	49.2	32.6	30.5

2022 Budget and Actual Operating Expenses and Capital Expenses

The 2022 financial results are provided in tables 3, and 4 below. The 2022 variances are calculated in reference to the in-effect budget (baseline 5) for 2022. The OEB approved budgets are included for historical reference.

Table 3: 2022 Operating Results

(In \$ millions)	2019 Actual	2020 Actual	2021 Actual	2022 OEB Approved	2022 Budget (BL5) ¹¹	2022 Actual	2022 Variance
Operating Expenses							
Compensation & Benefits	1.7	1.6	2.4	3.9	3.9	4.0	0.1
Professional & Consulting	1.2	0.4	0.5	1.2	1.2	0.6	(0.6)
Operating & Administration	0.2	0.1	0.1	0.1	0.1	0.0	(0.1)
Total Operating Expense	3.1	2.1	3.0	5.2	5.2	4.6	(0.6)

The actual 2022 MRP operating spending is \$0.6 million lower than BL5, due to lower than planned costs for market rules and manuals.

Table 4: 2022 Capital Results

(In \$ millions)	2019 Actual	2020 Actual	2021 Actual	2022 OEB Approved	2022 Budget (BL5) ¹²	2022 Actual	2022 Variance
Capital Expenses							
Compensation & Benefits	6.8	10.2	11.8	12.7	12.6	11.6	(1.0)
Professional & Consulting	2.5	2.7	1.2	4.1	2.1	1.7	(0.4)
Operating & Administration	0.9	11.8	10.5	20.3	19.9	19.9	-
Interest	0.1	0.3	0.5	0.9	0.8	0.8	-
Contingency	-	-	-	3.2	-	-	-
Total Capital Expenses	10.3	25.0	24.0	41.2	35.4	34.0	(1.4)

The actual 2022 MRP capital spending is \$1.4 million lower than BL5, due to underspend of internal IESO labour as resources were able to complete planned work with fewer person-hours than planned.

Performance Reporting

The baseline schedule and budget represent the planned schedule and cost of the project and are used as a standard against which actual performance is measured. The IESO reports on CPI

¹¹ 2022 Budget (BL5) provided as it was approved by the IESO Board following OEB approval of the IESO's 2022 Revenue Requirement Submission.

¹² 2022 Budget (BL5) provided as it was approved by the IESO Board following OEB approval of the IESO's 2022 Revenue Requirement Submission.

and SPI, against the MRP baseline budget and schedule. A value of 1.0 indicates that the cost and/or schedule is tracking to baseline plan. A SPI under 1.0 indicates that the project is behind schedule while a CPI under 1.0 indicates the project is overspent.

As noted above, in the OEB's Decision and Order in EB-2022-0002, the OEB approved the settlement proposal in which the IESO agreed to further reporting on MRP, beginning for Q3 2022, in which the IESO will provide a quarterly report that includes SPI, CPI as well as actual and planned schedule progress and project spend.

The IESO published its first quarterly report covering Q3 2022¹³ on a new MRP project status webpage¹⁴ in October 2022 as per the settlement proposal. Subsequent quarterly reports are posted to the MRP project status webpage; the most recent quarterly report covers Q4 2022¹⁵.

2023 – 2025 Budget Operating Expense and Capital Expenses

Table 5: 2023 – 2025 Operating Budget

(In \$ millions)	2023 Budget	2024 Budget	2025 Budget
Market Rules, Market and Internal Manuals			
Compensation & Benefits	3.8	3.1	2.0
External Legal support	1.1	0.9	0.4
Change Management and Training			
Training Support Contractor	0.2	0.2	-
Generator Contract Review support	0.1	0.1	-
Operating & Administration	0.1	0.1	0.1
Total Operating Expenses	5.3	4.4	2.5

Operating activities reflected in the planning period include the drafting of Market Rules, Market Manuals and Internal Manuals, change management activities, and training and documentation.

¹³ <https://www.ieso.ca/-/media/Files/IESO/Document-Library/market-renewal/MRP-project-status-report-Q3-2022.ashx>

¹⁴ <https://www.ieso.ca/en/Market-Renewal/Background/Market-Renewal-Program-Project-Status>

¹⁵ <https://www.ieso.ca/-/media/Files/IESO/Document-Library/market-renewal/MRP-project-status-report-Q4-2022.ashx>

Table 6: 2023 – 2025 Capital Budget

(In \$ millions)	2023 Budget	2024 Budget	2025 Budget
Capital Expenses			
Compensation & Benefits	15.8	14.6	7.0
Professional & Consulting	3.7	1.5	1.9
Operating & Administration	22.7	9.7	1.9
Interest	1.7	2.4	2.2
Contingency	-	-	15.0
Total Capital Expenses	43.9	28.2	28.0

Capital activities reflected in the planning period include the completion of business requirements, vendor costs for the dispatch scheduling and optimization tool as well as other solution development deliverables (reflected in Operating & Administration).

Staffing Levels

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

- MRP core resources are resources assigned directly to the MRP, either through rotations from the IESO's core operations or external hires on temporary contracts.
- MRP support resources are resources within the IESO's core operations whose roles include supporting market development initiatives corporate wide, such as information and technology services, legal, finance, and human resources.

The 2022 variances are calculated in reference to the in-effect forecast (baseline 5) for 2022.

The OEB approved full-time equivalents are included for historical reference.

Table 8: 2019 - 2022 Full Time Equivalent (FTEs)

MRP FTEs	2019 Actual	2020 Actual	2021 Actual	2022 OEB Approved	2022 Budget (BL5) ¹⁶	2022 Actual	2022 Variance
Total Regular	36	36	35	42	41	41	-
Temporary	4	9	14	10	14	12	(2)
MRP Core FTEs	40	45	49	52	55	53	(2)
MRP Support FTEs	14	28	32	45	40	31	(9)
MRP FTEs Total	54	73	81	97	95	84	(11)

The actual 2022 MRP average FTEs were lower than BL5, mainly driven by to lower than planned shared IT resources required to complete planned work.

Table 9: 2023 - 2025 Full Time Equivalent

MRP FTEs	2023 Budget	2024 Budget	2025 Budget
Total Regular	49	38	18
Temporary	14	13	6
MRP Core FTEs	63	51	24
MRP Support FTEs	46	37	20
MRP FTEs Total	109	88	44

The 2023 - 2025 budget reflects the core resources and support resources that are needed to deliver on the planned work.

Project Governance

Governance of the MRP is provided by the IESO Board of Directors who approve business objectives and an envelope for schedule and budget. An Executive Steering Committee (ESC), comprised of the IESO Executive Leadership Team, works within this envelope to provide strategic direction to the project team and approve scope and delivery strategy. The ESC and the project team are supported by an advisory group comprised of senior leaders throughout the organization who provide guidance and direction for the successful delivery of the program.

¹⁶ 2022 Budget (BL5) provided as it was approved by the IESO Board following OEB approval of the IESO's 2022 Revenue Requirement Submission.

ANNUAL STATUS REPORT ON 2017 AUDITOR GENERAL REPORT RECOMMENDATIONS

In its Settlement Proposal to the 2018 Revenue Requirement Submission (EB-2018-0143), the IESO agreed to include a status report on certain recommendations to the IESO included in Chapter 3 of the Auditor General's 2017 Annual Report related to market oversight and cybersecurity. This was done to increase transparency and accountability. The Settlement Proposal states: "*The IESO agrees to file an updated status report in the same format with the OEB each year in its revenue requirement submission or by June 1st, whichever is earlier, until one year after all recommendations have been addressed.*" Below is the status of these recommendations.

No.	Auditor's Recommendation	IESO Accepting Recommendation (In-Full / In-Part / Not at All)	Status of Implementation	Expected Date of Completion	IESO Explanatory Notes
1 Part (1)	To ensure that ratepayers' interests are protected and that recommendations made by the Ontario Energy Board Market Surveillance Panel to improve market rules are addressed, we recommend that the Independent Electricity System Operator (IESO): <ul style="list-style-type: none"> Implement the Ontario Energy Board Market Surveillance Panel's (OEB Panel) recommendations in 	In-Full	In the process of being implemented OAGO's 2017 VFM report references a suite of OEB Panel recommendations related to both the Real-Time Generation Cost Guarantee (RT-GCG) (referred to as the Standby Cost Recovery Program in the OAGO Report) and Congestion Management Settlement Credits (CMSC) payments (referred to as the Lost Profit Recovery Program in the OAGO Report) in arriving at this recommendation. As identified in the OAGO's 2019 follow up report on the 2017 VFM Report, the IESO has made progress on some of the OEB Panel's recommendations related to the RT-GCG and CMSC payments.	The Market Renewal Program is expected to be in service in May 2025.	

	an effective and timely way;		The RT-GCG program and CMSC payments will be eliminated as part of the IESO's Market Renewal Program (MRP).		
1 Part (2)	<p>To ensure that ratepayers' interests are protected and that recommendations made by the Ontario Energy Board Market Surveillance Panel to improve market rules are addressed, we recommend that the Independent Electricity System Operator (IESO):</p> <ul style="list-style-type: none"> • Where the OEB Panel submits a report to the Independent Electricity System Operator that contains recommendations relating to the misuse, abuse or possible abuse of market power, the IESO should use its authority to amend the market rule immediately and submit it to the Ontario Energy Board for its review. 	In-Full	<p>Since the OAGO report was published in December 2017, the IESO has not received a recommendation from the OEB Panel that identifies the misuse, abuse or possible abuse of market power.</p> <p>In the event that a recommendation of this nature was made by the OEB Panel, the Independent Electricity System Operator (IESO) has taken a number of steps to ensure that recommendations are considered and implemented in an effective and timely fashion. These steps include:</p> <ul style="list-style-type: none"> • Providing a public response from the IESO's President and CEO to new OEB Panel recommendations within 30 days of the publication of the recommendations. • Providing the Ontario Energy Board (OEB) with an annual update on the status of actions taken to address recommendations made in the last five years (per a condition of the IESO's OEB license) and publishing the update to the IESO's website. <p>These processes ensure the IESO has appropriate controls and accountabilities in place to respond effectively and in a timely way to OEB panel recommendations and to report on progress in addressing recommendations to the appropriate oversight bodies.</p>	This recommendation is no longer applicable.	<ul style="list-style-type: none"> • The IESO has identified this recommendation as "No Longer Applicable" to the Auditor General due to: • The MSP not having made a recommendation relating to the misuse, abuse or possible abuse of market power since the OAGO report was published; and • The IESO having implemented processes (as described in the "status of implementation") to ensure any such future recommendations are considered and implemented in an effective and timely fashion.
6	To ensure that ratepayers are not charged for unnecessary costs, we	In-Full	<p>In Process of being implemented.</p> <p>The Independent Electricity System Operator (IESO) is making fundamental changes to the</p>	MRP is expected to be in service in May 2025.	

	recommend that, if the Independent Electricity System Operator does not cancel the Standby Cost Recovery Program, it fully implements the Ontario Energy Board Market Surveillance Panel's (OEB Panel) recommendations and not reimburse generators for operating and maintenance costs under the Program.		<p>wholesale electricity markets through the Market Renewal Program (MRP to improve how we supply, schedule and price electricity to meet Ontario's future needs.</p> <p>As part of MRP, the IESO is eliminating the Real-Time Generation Cost Guarantee (RT-GCG) (referred to as the Standby Cost Recovery Program in the OAGO Report) and implementing an Enhanced Real-Time Unit Commitment (ERUC) process.</p> <p>Instead of compensating generators based on pre-approved costs, ERUC will make use of three-part offer optimization to help ensure that lower cost resources are committed ahead of higher cost options to meet reliability needs.</p> <p>The IESO has completed the Detailed Design for MRP and is engaging stakeholders in developing the associated rules, manuals, processes and tools to implement the renewed energy markets.</p>		
7	To ensure that ratepayers are not charged for unnecessary costs associated with the Lost Profit Recovery Program, we recommend that the Independent Electricity System Operator (IESO) implement the recommendations of the Ontario Energy Board Market Surveillance Panel (OEB Panel) regarding this Program.	In-Full	<p>In process of being implemented</p> <p>The Independent Electricity System Operator (IESO) is making fundamental changes to the wholesale electricity markets through the Market Renewal Program (MRP) to improve how we supply, schedule and price electricity to meet Ontario's future needs.</p> <p>These changes include replacing Ontario's current two schedule market with a Single Schedule Market (SSM). The SSM will eliminate the Congestion Management Settlement Credits (CMSC) payments (referred to as the Lost Profit Recovery Program in the OAGO Report).</p>	MRP is expected to be in service in May 2025.	

			The IESO has completed the Detailed Design for MRP and is engaging stakeholders in developing the associated rules, manuals, processes and tools to implement the renewed energy markets.		
17	<p>To reduce the cybersecurity risk of the Independent Electricity System Operator (IESO), we recommend that:</p> <ul style="list-style-type: none"> the IESO establish an external vendor cybersecurity policy; and the cybersecurity team conduct a regular assessment of the security risk that external vendors pose to the IESO. 	In-Full	<p>The IESO established a formal policy relating to external vendor procurement and revised its procurement process documentation to include a cybersecurity risk assessment (see PRCS-45). In other words, a cyber security vendor risk assessment is triggered throughout the IESO's procurement process.</p> <p>The IESO's Security Standard was updated to reflect the policy of performing cybersecurity evaluations on all cloud vendors, who represent higher cyber risks to IESO relative to hardware and software vendors.</p> <p>The Security Standard update also includes provisions to manage external vendor cyber security risks to comply with North American Electric Reliability Corporation (NERC) Critical Infrastructure Protection Supply Chain risk standards.</p>	<p>Integrate NERC CIP-13 Supply Chain Risk Management scope into existing IESO cyber vendor risk assessment process</p> <p>Implemented July 2020</p> <p>Risk rank list of IESO non-cloud software vendors to be included in assessment scope</p> <p>Implemented December 2020</p>	