

AMPCO INTERROGATORY 1

Issue 1.0 Revenue Requirement, Operating Costs and Capital Spending

1.0-AMPCO-1

INTERROGATORY

Ref: Exhibit A Tab 2 Schedule 2 Attachment #1 Page 2

Culture & Workforce Transformation Align culture, mindset, skills and capabilities to deliver on strategy	3. Operational Efficiency - Percentage of Strategic Initiatives that are completed on time	90% of Strategic Initiatives are completed on time (i.e. within 50% of assigned schedule contingency) as established by the internal IESO Integrated Project Plan and Project Charter. Strategic Initiatives are a newly defined measure attribute, therefore 2021 will be the first time this is being measured.	80%	80%	85%	90%	90%
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With respect to the 5-Year Measure #3 - Operational Efficiency - Percentage of Strategic Initiatives that are completed on time:

- Please provide the percentage of strategic initiatives completed on time within 0% of the assigned schedule contingency for each of the years 2016 to 2020.
- Please provide the percentage of strategic initiatives completed on time within 50% of the assigned schedule contingency for each of the years 2016 to 2020.
- Please provide the percentage of strategic initiatives completed on time within 100% of the assigned schedule contingency for each of the years 2016 to 2020.
- Please explain how deferred projects are treated with respect to this measure.
- Please explain if a measure to track the percentage of strategic initiatives completed on budget was considered and why it was rejected if applicable.

RESPONSE

- As noted in the measure table, this is a new measure and 2020 was the first time the data was collected for this measure. A relevant data set for the requested period 2016-2020 is not available.
- See response to (a) above.
- See response to (a) above.
- This is a measure for strategic initiatives that have been initiated (i.e., formally started). If a project is deferred and moved out of the strategic initiatives portfolio in a given year, that project will not have bearing on the measure.
- Although the IESO does track actual spend against budget for all projects, including strategic initiatives, the measure of on time completion for strategic initiatives is most aligned with the IESO's organizational efficiency objective.

AMPCO INTERROGATORY 2

Issue 1.0 Revenue Requirement, Operating Costs and Capital Spending

1.0-AMPCO-2

INTERROGATORY

Ref: Exhibit B Tab 1 Schedule 2 P5

The IESO indicates it is guided by the following core strategies:

- Ensure cost-effective reliability
- Enable competition
- Advance sector leadership
- Drive business transformation
- Prepare for the sector of the future

Please provide the core IESO strategies in the last approved Business Plan and explain any differences.

RESPONSE

The table below shows the core strategies from the 2019-2021 approved Business Plan, which are not materially different than the revised strategies used as foundation for the 2020-2021 Business Plan. The main differences consist of the integration of reliability with cost-effectiveness and increased focus on enabling competition and preparing for the sector future.

Table 1: IESO 2019 Corporate Performance Management Strategic Themes

Themes	Sector Leader - Cost Efficiency	Sector Leader - Reliability and Resiliency	Sector Leader - Innovation	Corporate Agility and Effectiveness	Sector Leader - Purposeful Engagement
Strategic Outcomes	Best cost resource acquisition to efficiently manage IESO-administered markets in an evolving sector.	An integrated electricity system that is reliable, resilient and secure in a period of accelerating change.	Integration of acquired sector innovation expertise into our operations, planning and advice.	A talented, diverse and empowered workforce that is flexible to respond to internal and external customer needs.	A long-term energy perspective for IESO initiatives that delivers independent and informed energy policy advice.

1 An updated summary of IESO's strategy is provided as Attachment 1 to this exhibit. The
2 strategy update considered changes in the external environment due to the pandemic and other
3 factors that impacted the IESO, the sequencing and prioritization of multi-year initiatives within
4 the IESO's plan, as well as the confirmation of the IESO's three strategic objectives and five
5 core strategies.

JUNE 8, 2021

Strategy, Business Plan and 2021 Priorities

Barbara Anderson
CFO and Vice President, Corporate Services

- IESO's strategy was updated in early 2020 to reflect the changes in the external operating environment and the corresponding alignment of strategic priorities
- The Board met in June 2020 for a Board strategy discussion. The intent was to:
 - Discuss the changes in the business environment and implications for IESO as they re-evaluate their strategy;
 - Review and provide feedback on the evolution of the 5-year strategic plan; and
 - Provide input on key strategic issues that are facing IESO currently.
- The Board's feedback from the productive session was incorporated into the updated strategy material within this presentation (see section 1)
- The updated strategy was reviewed with the Board in Q4 2020, as part of the Enterprise Planning Framework
- As IESO completed year 1 of the 2020-2022 Business Plan, it is management's view that the strategy continues to be sound and the organization is focused on the 2021 priorities to deliver identified strategic outcomes

Enterprise Planning Framework



1. 5-Year Strategic Plan Summary

Purpose

Vision

Values

Strategic Objectives

Core Strategies

Aligning on Strategy Terminology

TERM	DEFINITION	HOW LONG IS IT RELEVANT?
PURPOSE	The inspirational reason for being; the reason we exist beyond profit	Meant to endure over many years
VISION	Our north star; the stretch goal we want to achieve by the end of the planning time frame	For the duration of the plan
VALUES	Beliefs that guide an organization's internal conduct and interactions with external stakeholders; that shape our culture	Meant to endure for multiple iterations of strategy; may be updated over time to align to significant strategy changes
STRATEGIC OBJECTIVES	What we want to accomplish by the end of the planning time frame – the outcomes , with defined metrics and targets	For the duration of the plan
CORE STRATEGIES	How we will accomplish the objectives with associated initiatives	For the duration of the plan; but initiatives and tactics will change and evolve as strategy is implemented

Purpose

Our **purpose** is our inspirational reason for being; the reason we exist beyond profit.

IESO PURPOSE

Electricity is the backbone of modern civilization.

We are the heartbeat, ensuring affordable electricity is available where and when people need it

Our **vision** is our north star; the stretch goal we want to achieve by the end of the planning time frame.

To be the trusted leader that guides Ontario's electricity future

We listen and respond to our stakeholders; transparent, unbiased, making decisions in the best interests of Ontario. We have influence.

We play an active leadership role in the electricity ecosystem to create and bring to life a long term electricity view that will be in the best interests of Ontario. We are thought leaders. We have an important mandate as a trusted, unbiased integrator.

We believe that a healthy electricity system will enhance Ontario's health and prosperity. We have a view of Ontario's electricity future and a plan to get there. We are innovative and future focused in assessing and integrating existing and future electricity resources and services.

Values

Values are the beliefs that guide an organization's internal conduct and interactions with external stakeholders; that shape an organization's culture.

IESO VALUES

Commitment
&
Accountability

Genuine
Caring

Purposeful
Engagement

Openness to
Change

Collaboration
& Teamwork

Strategic objectives are what we want to accomplish by the end of 5-year planning time frame. We have identified desired outcomes to inform the metrics we will set to monitor organizational performance.

Strategic Objectives	Outcomes we are looking for:
Best Outcomes: Deliver best electricity outcomes for Ontario	<p>Best outcomes is the optimal mix of:</p> <ul style="list-style-type: none"> • Cost efficiency: cost effectiveness, price efficiency • Reliability & Resiliency: core to our mandate; fundamental expectation of our stakeholders • Sustainability: longer term view on how we can influence environmental sustainability in the sector (acknowledging parameters / constraints of government policy)
Culture & Workforce Transformation: align culture, mindset, skills and capabilities to deliver on strategy	<ul style="list-style-type: none"> • Agility / efficiency: we have organizational agility; better process / tool / technology efficiency; better data and decision making; role clarity • Culture that supports and enables strategy: our team is accountable, empowered; we are diverse and inclusive; we are collaborative across the enterprise and live our values • Has the right talent / competencies: we have the right people and skill sets to execute our strategy; broader and deeper where we require it
Stakeholder Trust : Enhance stakeholders' trust in IESO to operate in best interests of Ontario	<ul style="list-style-type: none"> • Stakeholder Trust: our core stakeholders (government / regulator; market participants; end consumer; and our employees) have trust in us • Elements of trust: integrity / consistency; ability; benevolence (assuming good intent)

Updated Core Strategies	
1.	Drive business transformation
2.	Advance sector leadership
3.	Ensure cost-effective system reliability
4.	Enable competition
5.	Prepare for the future of the sector

Summary of the current 5-Year Strategy

PURPOSE	<p><i>Electricity is the backbone of modern civilization.</i></p> <p>We are the heartbeat, ensuring affordable electricity is available where and when people need it</p>				
VISION	To be the trusted leader that guides Ontario's electricity future				
VALUES	Commitment & Accountability	Genuine Caring	Purposeful Engagement	Openness to Change	Collaboration & Teamwork
STRATEGIC OBJECTIVES	<ol style="list-style-type: none"> AFFORDABILITY, RELIABILITY, SUSTAINABILITY: Deliver optimized balance to ensure best overall electricity outcomes for Ontario CULTURE & WORKFORCE TRANSFORMATION: Align culture, mindset, skills & capabilities to deliver on strategy STAKEHOLDER TRUST: Enhance stakeholders' trust in IESO to operate in the best interests of Ontario 				
CORE STRATEGIES	<p><i>Drive Business Transformation</i></p> <ul style="list-style-type: none"> Technology and Data Diversity and Inclusion Employee Engagement Space Needs 	<p><i>Advance Sector Leadership</i></p> <p>Unsolicited proposals</p> <p>Industrial Rate Design</p>	<p><i>Ensure Cost-Effective System Reliability</i></p> <ul style="list-style-type: none"> Resource Adequacy Transition MRP-RSS Cyber Security MSP Recommendations Ancillary Services 2021 – 2024 Conservation First Framework 	<p><i>Enable Competition</i></p> <ul style="list-style-type: none"> Capacity Auctions Competitive Transmission Procurement Storage Integration 	<p><i>Prepare for the Future of the Sector</i></p> <ul style="list-style-type: none"> Distributed Energy Resources Hybrid Storage 10 Year Plan

2021 Enterprise Priorities: Overview

Filed: September 9, 2021, EB-2020-0230,
Exhibit I, Tab 1.0, Schedule 2 - 1.0 AMPCO 2, Attachment 1,
Page 12 of 15

5-YEAR CORE STRATEGIES	2021 ENTERPRISE OBJECTIVES : <i>Top 10 for 2021</i>
DRIVE BUSINESS TRANSFORMATION	<ol style="list-style-type: none"> 1. Continue culture shift 2. Establish / prioritize technology & data roadmap 3. Determine office space configuration / evolve way of working
ADVANCE SECTOR LEADERSHIP	<ol style="list-style-type: none"> 4. Advance stakeholder and sector engagement to establish mutual expectations
ENSURE COST-EFFECTIVE SYSTEM RELIABILITY	<ol style="list-style-type: none"> 5. Capacity and resource acquisition 6. Reliability and cost effectiveness 7. Cyber security 8. MRP
ENABLE COMPETITION	<ol style="list-style-type: none"> 9. Enable resources to deliver on capacity / participate in markets
PREPARE FOR THE FUTURE OF THE SECTOR	<ol style="list-style-type: none"> 10. Establish scope and framework for 10-year plan

Strategic Initiatives

Filed: September 9, 2021, EB-2020-0230,
Exhibit I, Tab 1.0, Schedule 2 - 1.0 AMPCO 2, Attachment 1,
Page 13 of 15

Core Strategies	Priority Initiatives	Strategic Initiatives
Ensure cost-effective reliability	Resource Adequacy Transition	Capacity Auction (Formerly TCA)
		Capacity Enhancements
		Resource Acquisition Initiative
	MRP-RSS	MRP-Energy
		Replacement of Settlement Systems
		Market Analysis and Simulation Toolset (MAST)
		MRP Readiness
	Cyber Security	Identity Access Management (IAM)- Phase 2
		Mobile Cyber Security Controls
		Data Loss Prevention
	Market Surveillance Panel Recommendations	Improving Accessibility of Operating Reserve
		Transmission Rights Clearing Account (TRCA) Disbursement
		Review of CMSC paid to Dispatchable Loads Phase 2
		OR and Interties
		MSP Recommendations
		Transmission Rights Markets Platform Refresh
	Ancillary Services	(placeholder for a competitive procurement)
	2021 – 2024 Conservation First Framework	CDM-IS Enhancements
	(not mapped to priority)	Dynamic Limits in Real-Time (DLRT)

Core Strategies	Priority Initiatives	Strategic Initiatives
Enable competition	Competitive Transmission Procurement	(Not expected to proceed with competitive procurements)
	Storage Integration	Enabling Resources Program
		Energy Storage Resources in the DSO Tool
		Supporting Changes for Storage in the AGC Tool
	Unsolicited proposals	Lake Eerie Connector
Advance sector leadership	Unsolicited proposals	Oneida
	Industrial Rate Design	(No Strategic Initiatives currently Identified)
Prepare for the sector of the future	Distributed Energy Resources	Enabling Resources Program
	Hybrid Storage	Enabling Resources Program
	10 Year Plan	(No Strategic Initiatives currently Identified)

Strategic Initiatives

Filed: September 9, 2021, EB-2020-0230,
Exhibit I, Tab 1.0, Schedule 2 - 1.0 AMPCO 2, Attachment 1,
Page 15 of 15

Core Strategies	Priority Initiatives	Strategic Initiatives
Drive business transformation	Technology and Data	Data Excellence Program
		Data Warehouse Optimization
		HR Analytics & Workforce Planning
	Diversity and Inclusion	Foster Safety and Strengthen Equity
	Building organizational capability	Implement the talent acquisition strategy and support the learning framework
	Employee Engagement	Build connection between employees and strategy
	Space Needs	IESO Space Needs Phase 2 - Design & Assessment
		Office Pilot
		BOC Relocation
		IESO Space Needs Phase 3 - Implement & Transition

AMPCO INTERROGATORY 3

Issue 1.0 Revenue Requirement, Operating Costs and Capital Spending

1.0-AMPCO-3

INTERROGATORY

Ref: Exhibit D-1-1, Attachment 2 Appendix 2-JB

Please add 2019 OEB Approved to Appendix 2-JB (excel).

RESPONSE

The 2019 OEB Approved is already provided in Appendix 2-JB as shown below. It is the starting point indicated as "Opening OM&A Expenses" of \$178.3 million.

Table 1: Appendix 2-JB

Filed: May 27, 2021, EB-2020-0230, Exhibit D-1-1, Attachment 2, Page 1 of 1			
Appendix 2-JB			
Operating Expense Drivers			
(\$ Millions)	2019*	2020 Actual	2021 Budget
Opening OM&A Expenses	178.3	177.2	171.3
Collective agreements/escalations	-	3.0	3.4
Increased costs of employee benefits	3.6	3.0	0.6
Cancellation of Incremental Capacity Auction (ICA) work stream	(1.5)	(4.0)	-
MRP deferral of external support for market rule amendments	(1.5)	(1.9)	0.6
Non-repeatable legal and consulting spend/recovery	-	(2.7)	0.8
Staffing costs capitalization	(0.0)	(1.3)	(1.5)
Other legal & consulting fees savings	(0.3)	(1.1)	(0.0)
COVID-19 related costs	-	1.2	(1.2)
Telecomm and computer services/HW/SW for new projects	-	-	2.2
Higher overhead cost allocation	(1.1)	(0.5)	(0.5)
Various other	(0.4)	(1.6)	(0.3)
Actual/Application Year Budget OM&A Expenses	177.2	171.3	175.2
* This reflects cost drivers between 2019 OEB approved budget and 2019 Actual			

AMPCO INTERROGATORY 4

Issue 1.0 Revenue Requirement, Operating Costs and Capital Spending

1.0-AMPCO-4

INTERROGATORY

Ref: Exhibit D Tab 1 Schedule 2 Page 1 Table 1

Please map the FTEs to each IESO Business Unit for the years 2019 to 2021.

RESPONSE

Please see the following table:

Table 1: Average FTE per Business Unit – 2019 to 2021

Average FTE	2019 OEB Approved	2019 Actual	2020 Actual	2021 Budget
Planning, Acquisition and Operations	251	250	252	254
Policy, Engagement and Innovation	118	108	111	105
Information and Technology Services	135	122	127	128
Legal Resources and Corporate Governance	74	69	71	73
Market Assessment and Compliance Division	7	6	6	7
CEO	8	8	8	8
Corporate Services	109	105	112	118
Human Resources	19	18	19	21
Corporate Adjustment	-4			
Market Renewal	125	81	66	81
Total	842	769	772	794

* The negative 4 FTEs represent the impact of hiring lags across the organization.

AMPCO INTERROGATORY 5

Issue 1.0 Revenue Requirement, Operating Costs and Capital Spending

1.0-AMPCO-5

INTERROGATORY

Ref: Exhibit E Tab 1 Schedule 2 Page 3

Actual cost and schedule performance is measured against approved values during the project closure phase along with the reason or variances. Verification that the business objectives have been achieved and lessons learned are also captured during this phase. The post closure phase is utilized whenever business objectives cannot be verified until some time after project closure. This allows the measurement of business objectives to happen following project completion.

a) Please provide the cost and schedule performance of projects against approved values completed in each of the years 2018 to 2020.

b) Please identify any completed projects where the business objectives were not achieved.

RESPONSE

a) Tables 1 to 3 below show the performance of projects closed in 2018, 2019 and 2020.

Table 1: Cost and Schedule Performance for Projects Closed in 2018

Change Initiative/Project	Capital Cost (\$M's)		Schedule (months)		Objectives Achieved	Comments
	Budget (incl. Contingency)	Actual	Baseline (incl. Contingency)	Actual		
Unified Communications	\$3.3M	\$0.2M	18	17	Y	Projects was largely underspend since the video conferencing was de-scoped
Enterprise Cyber Security Management	\$3.7M	\$3.2M	12	15	Y	

Refresh (Advance Malware)						
PMU Integration Phase 2	\$0.8M	\$0.7	14	14	Y	

1

2 **Table 2: Cost and Schedule Performance for Projects Closed in 2019**

Change Initiative/ Project	Capital Cost (\$M's)		Schedule (months)		Objectives Achieved	Comments
	Budget (incl. Contingency)	Actual	Baseline (incl. Contingency)	Actual		
Aspen Refresh	\$0.8M	\$0.6M	6	6	Y	
IESO Simulator Project - Phase 2	\$0.7M	\$0.4M	12	11	Y	
Tier 1 Storage Refresh project	\$2.0M	\$1.6M	38	11	Y	System went in-service within the approved timeline. Closure activities and some minor defect fixes, took extra time.

3

1 **Table 3: Cost and Schedule Performance for Projects Closed in 2020**

Change Initiative/Project	Capital Cost (\$M's)		Schedule (months)		Objectives Achieved	Comments
	Budget (incl. Contingency)	Actual	Baseline (incl. Contingency)	Actual		
Operations Readiness Initiative	\$6M	\$5M	40	54	Y	Schedule delay was due to extended negotiations for automated operating reserve activation with neighbouring jurisdictions and a delayed start of the Dynamic Security Analysis Enhancements project. Budget underspend was related to scope refinement throughout the life of the Program
Corporate PBX Phone System refresh	\$1.8M	\$1.2M	21	19	Y	
Wide Area View Phase 1	\$1.6M	\$1.2M	34	34	Y	
FIT & microFIT Tool Redevelopment and Integration	\$3.5M	\$3.4M	38	40	Y	System went in-service within the approved timeline. Closure activities and some minor defect fixes, took extra time.
Wallboard Refresh	\$3.9M	\$3.4M	19	19	Y	

- 1 b) All completed projects achieved business objectives.

AMPCO INTERROGATORY 6

Issue 1.0 Revenue Requirement, Operating Costs and Capital Spending

1.0-AMPCO-6

INTERROGATORY

Exhibit B Tab 2 Schedule 1 Page 7

The Business Plan states "In 2019, following stakeholder feedback, the IESO released its first Innovation Roadmap, which prioritized the areas of focus that will guide its efforts to continue providing a stable and affordable electricity system in the face of ongoing transformation. In setting out its approach to enabling innovation, the IESO aimed to ensure the strategic allocation of funds, while developing a robust work plan to guide project development. The Roadmap positions the IESO to act on these priorities, while undertaking, supporting or participating in projects that will benefit the sector, and result in the lowest cost to consumers."

- a) Please provide the date the Innovation Roadmap was released.
- b) Please provide a copy of the Innovation Roadmap and workplan.
- c) Please identify the areas of focus for 2019, 2020 and 2021.
- d) Please provide the total OM&A and capital costs related to the Innovation Roadmap for each of the years 2019 to 2022.
- e) Please identify all projects/initiatives and associated costs related to the Innovation Roadmap for 2019 to 2022.
- f) Please provide any business cases related to the projects in part (e).

RESPONSE

- a) The final Innovation Roadmap was released on May 8, 2019.
- b) The Innovation Roadmap¹ document and associated work plan² are available on the IESO website. The IESO's areas of focus for 2019, 2020 and 2021 planning period are detailed on page 6 of the Innovation Roadmap document.
- c) Please see part (b) above.
- d) For clarity, the Innovation Roadmap is not a program or distinct project but rather a means of communicating all of the work the IESO is undertaking related to innovation in various

¹ <http://www.ieso.ca/-/media/files/ieso/document-Library/Innovation-Roadmap/Innovation-Roadmap-20190508>

² <https://www.ieso.ca/en/Get-Involved/Innovation/Projects>

parts of the organization. The initiatives captured in the Innovation Roadmap work plan include three sources of funding:

Grid Innovation Fund (GIF)

- The GIF is funded through the global adjustment with an annual budget of up to \$9.5 million and requires matching funding of at least 25-50% from Fund recipients;
- Per the IESO's Memorandum of Understanding (MOU) with the Ministry of Energy, Northern Development and Mines, the IESO administers GIF in accordance with the Transfer Payment Accountability Directive (TPAD) which includes requirements for financial accountability, prudent spending and annual reporting on expenditures/value for money to the Government; and
- A complete list of project investments by the GIF and its predecessor funds is available on the IESO's website³.

Operating & Maintenance Budget

- The IESO's white papers, research efforts and other operations and maintenance initiatives outlined in the Innovation Roadmap work plan are captured in existing line items within Exhibit D-1-1 Appendix 2-JC of the IESO's 2020-2021 Revenue Requirement Submission; associated costs are tracked and monitored per the IESO's internal financial tracking procedures; and
- Any external support for white papers/research has been or will be competitively procured.

Capital Budget

- The Innovation Roadmap work plan included a small number of in-progress and planned capital projects necessary to update tools and systems to remove barriers to the fair competition of resources (e.g., energy storage) within IESO-administered markets; and
- The IESO has a rigorous process for prioritizing, allocating and tracking budget for capital projects that places highest priority on projects necessary to maintain system reliability and market efficiency, see Exhibit E-1-2.

The IESO will not be able to provide a breakdown of the costs and headcount of each individual activity within the work plan as the Innovation Roadmap is a means of communicating work that the IESO is undertaking in various parts of the organization with existing internal procedures for tracking/validating expenditures. The IESO, however, does validate and track expenditures on activities set out within the Innovation Roadmap work plan (e.g. TPAD requirements for GIF).

³ <https://www.ieso.ca/-/media/Files/IESO/Document-Library/funding/Grid-Innovation-Fund/Grid-Innovation-Fund-Portfolio-Nov-2020.ashx>

- 1 e) Please see the IESO's response to part (b) above for the list of initiatives included in the
2 Innovation Roadmap 2019-2021 work plan. The IESO's response to part (d) above provides
3 additional details on project funding and tracking.
- 4 f) The IESO does not produce business cases for the day-to-day work covered by its
5 operations and maintenance budget that supports the Innovation Roadmap. The IESO
6 provides business case information for material capital projects which can be found in
7 Exhibit E-2-1, Attachments 1 through 4. However, the projects included in the Innovation
8 Roadmap are below the IESO's materiality threshold.

1 **AMPCO INTERROGATORY 7**

2 Issue 1.0 Revenue Requirement, Operating Costs and Capital Spending

3 1.0-AMPCO-7

4 **INTERROGATORY**

5 Exhibit E Tab 2 Schedule 2 Page 1 Table 1

6 a) Please add 2020 Minister Approved Capital Budget to Table 1.

7 b) Please provide an excel version of Table 1 in part (a).

8 **RESPONSE**

9 a) The referenced Table 1 includes 2020 Minister Approved Capital Budget.

10 b) Please see Exhibit E-1-2, Attachment 1.

PWU INTERROGATORY 1

Issue 1.1: Is the IESO's Fiscal Year 2020 revenue requirement of \$188.6 million appropriate?

Issue 1.2: Is the IESO's Fiscal Year 2021 revenue requirement of \$191.8 million appropriate?

1-PWU-1

INTERROGATORY

Ref: Exhibit A, Tab 1, Schedule 4, Page 3 of 6, lines 1-10

The IESO has historically been able to maintain its expenses within inflation rates despite staffing cost pressures from collective agreements and higher pension liabilities. In 2020, the IESO managed to reduce spending by \$5.9 million compared to 2019 while continuing to deliver on important system enhancements within the core operational project portfolio and Market Renewal Program (MRP).

a) Please provide a breakdown of the \$5.9 million spending reduction by drivers

Ref: Exhibit A, Tab 1, Schedule 4, Page 3 of 6, lines 10-12

To offset the savings, there was incremental spending related to the collective agreements, revisions to actuarial pension liability assumptions and additional spending to ensure the safety of staff working on site.

b) Please list and describe the additional spending on safety of staff working on site in the reference

Ref: Exhibit A, Tab 1, Schedule 4, Page 3 of 6, lines 10-12

In addition, management will be limiting other operating cost impacts by shifting more work in-house, absorbing incremental work with existing staff, and reprioritizing and adjusting the timelines of discretionary projects that can be deferred with minimal risk.

c) Please list and describe works the IESO currently outsources but plans to shift in-house in the future

Ref: Exhibit A, Tab 2, Schedule 1, Page 6 of 8, lines 11-12 (IESO STAKEHOLDER ENGAGEMENT)

The ICA work stream was cancelled in 2019 and engagement transitioned to the Resource Adequacy (RA) engagement.

d) Please provide a table showing the historical and projected spending on IESO Stakeholder Engagement related to the MRP since the launch of the program.

e) What is the total spending on the ICA stream of the MRP that had been incurred before it was cancelled?

RESPONSE

- a) Please see Schedule 14 - 1.1 SEC 3 and Exhibit D-1-1, Page 3, Table 3.
- b) Please see Schedule 1 - 1.1 OEB Staff 8b).
- c) Please see Schedule 1 - 1.2 OEB Staff 14a).
- d) Stakeholder engagement has been, and will continue to be, a central pillar to the Market Renewal Program (MRP). Regarding spending on this activity, there are three main areas of costs:

- 1. One dedicated FTE for engagement activities. The average cost of an FTE is \$175,000. This position will be in place for the balance of the program.

Table 1: FTEs for MRP Engagement Activities 2017-2021

(In \$ millions)	2017	2018	2019	2020	2021	2022	2023	Total
FTEs for Engagement Activities	0.2	0.2	0.2	0.2	0.2	0.2	0.2	1.4

- 2. Associated costs for engagement events, including room rental, audio visual, etc. Those costs are \$0.3 million from the beginning of MRP; though it is anticipated there will be low or limited future costs, as a function of the COVID-19 pandemic, and the success of using online platforms for engagement.

Table 2: MRP Stakeholder Engagement Rental Facilities Costs 2017-2023

(In \$ millions)	2017	2018	2019	2020	2021	2022	2023	Total
Rental Facilities	0.1	0.2	-	-	-	-	-	0.3

- 3. Supporting staff resources for engagement activities. For example, when subject matter experts are used for engagement meetings, or when staff are responding to feedback on the proposed Rules or Detailed Design. This effort is not explicitly costed, though it is a part of job functions to support engagement activity, and builds on the IESO's corporate strategic objective of building stakeholder trust.

- e) The total spending on the ICA stream before it was cancelled was \$14.8 million.

PWU INTERROGATORY 2

Issue 1.3: Are the IESO's 2020 staffing levels and compensation (including salaries, benefits, pensions and other post-employment benefits) appropriate?

Issue 1.4: Are the IESO's 2021 projected staffing levels and compensation (including salaries, benefits, pensions and other post-employment benefits) appropriate?

1-PWU-2

INTERROGATORY

Ref: Exhibit D, Tab 1, Schedule 1, Plus Attachment(s), PP: 2-4, compiled from Tables 2,3,4

	2019 Actual	2020 Actual	2021 Budget
Increased costs of employee benefits	\$3.6M	\$3.0M	\$0.6M

a) Please explain how the steady decrease in increased costs of employee benefits achieved

Ref: Exhibit D, Tab 1, Schedule 3, Plus Attachment(s), Page 1 of 6

An additional 22 FTEs on average are required in 2021, mainly to support market rule amendments and documentation work support (19 FTEs on average) and to support work related to enabling resources (3 FTEs on average).

b) How many of those 22 additional FTEs have been filled so far?

Ref: Exhibit D-1-3, Attachment 1, page 1 of 1, Appendix 2-K (Employee costs)

c) Please recast the FTE and compensation numbers by representation - Management, PWU, Society, etc.

Ref: EB-2020-0230, Exhibit B-1-2, Page 9 of 19 (Business Plan)

Staffing

In 2020, 709 full time positions support the IESO's core initiatives. Staffing levels in 2021 and 2022 (713 and 716 employees respectively) are required to support new initiatives to enable resources, and the reallocation of previously externally funded staff back to core operations. In 2020, 70 employees will be required to enable Market Renewal – Energy market design and implementation; this number will increase slightly in 2021 and 2022 to support market rule amendments and documentation work.

The 2019 decision to cease the incremental capacity auction (ICA) work under the Market Renewal Program resulted in no further related hires, with existing staff being redeployed to capacity market design, the MRP energy work stream and the IESO's core operations.

Average FTEs

Full Time Equivalents (FTEs)	2019 Actual	2020 Budget	2021 Budget	2022 Budget
Core Operations	689	709	713	716
Market Renewal – Energy	49	70	81	81
Market Renewal – Capacity (ICA)	31	-	-	-
Total FTEs	769	779	794	797

- d) Please recast the average FTEs in the chart by representation-Management, PWU, Society, etc.

RESPONSE

- a) The fluctuations in costs of employee benefits are driven by pension and OPEB actuarial updates – in this case resulting in steady decrease of annual cost increases. The IESO filed updated pension assumptions with the Ontario pension regulator in September 2019 (as required at least every three years per the actuarial valuation process). The largest impact from these updated assumptions was from revised life expectancy based upon the actuary's assessment of IESO's actual and expected experience. These updated assumptions were utilized to update the 2020 accounting assumptions which led to the increase in pension expense.
- b) The majority of the incremental headcount in 2021 is due to the Market Renewal program. Details are included in the MRP cost report (Exhibit G-2-1) and the table below:

Table 1: MRP FTEs 2020-2021

MRP FTEs	2020 Actual	2021 Actual July	2021 Budget
Regular	36	37	45
Temporary	9	10	7
MRP Core FTEs	45	47	52
MRP Support FTEs	28	28	42
MRP FTEs Total	73	75	94

As of July 2021, additional resources have been added to the program to support market rule development and change management activities, and other movements within the program have resulted in two net additional resources. The remaining hires will be internal assignments from IT after the completion of detailed design and internal and external training resources.

In instances where regular staff is added to MRP from other areas of the business, their home role is backfilled by temporary staff until they return once their MRP assignment is completed.

The scope for Enabling Resources is under development and thus no incremental resources have been hired so far.

c) and d) The following table shows the FTEs and compensation numbers by representation - Management, PWU, Society for 2019 – 2021.

Table 2: FTEs - Management, PWU and Society 2019-2021

Average Full Time Equivalents (Capital and Operating expenses FTEs)	2019 Actual	2020 Actual	2021 Budget
Executive	7	7	7
Management	129	134	127
Society	570	562	593
PWU	63	69	67
Total IESO Core	769	772	794
Compensation & Benefits (\$ Millions)	2019 Actual	2020 Actual	2021 Budget
Executive/Board	4.3	4.4	4.5
Management	26.3	27.2	25.6

Average Full Time Equivalents (Capital and Operating expenses FTEs)	2019 Actual	2020 Actual	2021 Budget
Society	82.8	84.2	86.4
PWU	9.9	10.0	8.8
Total IESO Core Operating Expense	123.2	125.8	125.3

OEB STAFF INTERROGATORY 1

Issue 1.1 Is the IESO's Fiscal Year 2020 revenue requirement of \$188.6 million appropriate?

1-Staff-1

INTERROGATORY

a. Exhibit A / Tab 1 / Schedule 2 / p. 1

b. Exhibit B / Tab 1 / Schedule 3 / p. 2

Preamble:

At reference a. above, the IESO states that it "received a letter from the Minister approving the 2020-2022 Business Plan and the budget for 2020." Reference b. is the Minister's letter. In it, he states "[t]his letter constitutes my approval of the **Consolidated Business Plan and the budgets** for each of the 2020 and 2021 in accordance with my authority under subsection 24(2) of the *Electricity Act, 1998* and as provided under the current MOU between the IESO and the Ministry dated May 15, 2017." [Emphasis added]

Question(s):

a) The Ministerial approval provided appears different from prior year revenue requirement, expenditures and usage fees applications. Specifically, whereas previous Minister letters stated that the IESO's Business Plan¹ was approved, the above referenced letter states that the Minister is providing his approval of both the Business Plan and budgets for 2020 and 2021.

In the IESO's view, does the language used by the Minister this year have any significance? If so, please describe how the IESO interprets the Minister's approval to be different from previous years.

RESPONSE

a) The language used by the Minister this year is different in that the Minister approved multiple years of revenue (2020 and 2021) whereas historically the Minister only approved a single year of revenue (e.g., only approved 2019). The IESO does not perceive any other differences in the approval but cannot speak to the Minister's intent in the different language used.

¹ EB-2019-0002, EB-2018-0143

OEB STAFF INTERROGATORY 2

Issue 1.1 Is the IESO's Fiscal Year 2020 revenue requirement of \$188.6 million appropriate?

1-Staff-2

INTERROGATORY

a. Exhibit C / Tab 2 / Schedule 1 / p. 1

b. Exhibit B / Tab 2 / Schedule 2 / p. 9

Preamble:

The IESO proposes a 2020 revenue requirement of \$188.6 million. The IESO states that the 2020 revenue requirement is based on 2020 actual operating expenditures of \$186.3 million and, given the deficit in the IESO's operating reserve, retaining an operating surplus of \$2.3 million.

The table below is an excerpt from Exhibit B-2-2, p. 9 of the application.

IESO Core Operations	2020 Actual (\$ thousands)
System Fees	188,602
Other Revenue	3,651
Interest and investment income	2,989
Core Operating Revenues	195,242
Core Operating Expenses	(189,714)
Core Operating Surplus	5,528

Questions:

- The excerpt above shows 2020 core operating expenses of \$189.7 million, whereas the application states the 2020 revenue requirement is based on 2020 operating expenditures of \$186.3 million. Please describe the reason(s) for the variance.
- The excerpt above shows a 2020 core operating surplus of \$5.5 million, whereas the application states the 2020 operating surplus was \$2.3 million. Please describe the reason(s) for the variance.
- Please recreate the table above using the exact figures used by the IESO to determine actual core 2020 operating expenses of \$186.3 million and an operating surplus of \$2.3 million. Please also identify the source of all figures used. If required for purposes of clarity, please add additional rows to the table to demonstrate all inputs that informed the IESO's calculations.

RESPONSE

a) The variance is due to two differences in the presentation of financial information in the Annual Report (\$189.7 million) and the Revenue Requirement Submission (\$186.3 million):

- The PSAS Recovery (\$3,285 million) is reported on the balance sheet in the Annual Report (see Exhibit B-2-2 p. 17) and as an expense under Corporate Adjustments (see Exhibit D-1-1, Attachment 3) in the Revenue Requirement Submission.
- Other Revenue and Interest and investment income (\$6,640 million), as shown in the excerpt, are listed as revenue in the Annual Report rather than netted from expenses in the Revenue Requirement Submission.

The summation of the two differences explain the variance: \$186.3 million + \$6,640 million - \$3,285 million = \$189.7 million.

b) The variance of \$3.2 million between the 2020 core operating surplus of \$5.5 million shown in the Annual Report and the \$2.3 million in the Revenue Requirement Submission is due to the difference in presentation of PSAS Recovery (\$3.2 million). PSAS Recovery is reported as an expense in total operating costs under Corporate Adjustments in the Revenue Requirement Submission, whereas the recovery amount is reported in the Balance Sheet in the Annual Report.

c)

Table 1: Statement of Operations and Accumulated Deficit

IESO Core Operations	2020 Actual (\$ thousands)	2020 Actual (\$ thousands) [recreated]
System Fees	188,602	188,602
Other Revenue	3,651	-
Interest and investment income	2,989	-
Core Operating Revenues	195,242	188,602
Core Operating Expenses	(189,714)	(186,3)*
Core Operating Surplus	5,528	2,3

*See Exhibit D-1-1, Attachment 3 for the breakdown of these costs.

OEB STAFF INTERROGATORY 3

Issue 1.1 Is the IESO's Fiscal Year 2020 revenue requirement of \$188.6 million appropriate?

1-Staff-3

INTERROGATORY

a. Exhibit D / Tab 1 / Schedule 2 / p. 7

Preamble:

At the above reference, the IESO states: "[t]he \$4.2 million variance in 2019 results vs OEB approved budget is related to higher than expected pension/OPEB liability evaluation and other one-time benefit adjustments; partially offset by [a] higher **cost allocation rate** than anticipated." [Emphasis added]

OEB staff notes that the term "OPEB" refers to other-post employment benefits.

Questions:

- a) Please describe/define the "cost allocation rate" referenced above, including how the IESO determined an update to the rate (or rates) was required and how the rate was calculated.
- b) Please describe if and how the updated cost allocation rate impacted the IESO's 2020 and 2021 revenue requirement requests.
- c) In the OEB-approved Settlement for the IESO's 2018 Revenue Requirement Submission¹, the IESO agreed to implement the recommendations of the BDR report related to cost allocation and apply the same recommendations to the Market Assessment and Compliance Division. Please identify if the cost allocation rate(s) referenced in the quote above are related to the work undertaken by BDR, and if so, how. If not, please explain the differences.

RESPONSE

- a) The "cost allocation rate" referenced is the rate determined to allocate charges associated with staff and other resources used to provide non-core services to third parties (Smart Metering (SME), market rule enforcement and education (MACD Enforcement), conservation programs), as described in Exhibit C-3-1. Based on the methodology identified in the BDR report filed July 16, 2018, EB-2018-0143, Exhibit C-3-1, Attachment 1, the IESO determines the allocation rate which will be impacted by IESO's costs increases (collective agreement, facilities costs, rent, IT) as

¹ EB-2018-0143

1 well as FTE changes. The rates are determined annually and applied to actual timesheet
2 tracking of time use by employees on tasks for non-core services.

3 b) In 2020, the variance in costs to determine the allocation rate was not materially
4 different than 2019 to warrant a change in allocation rate, but there was \$0.5 million
5 savings to the revenue requirement compared to 2019 due to increase in time allocated
6 to non-core services. In 2021, the projected increase in IESO's costs and reduction of
7 total FTEs triggered an increase in the cost allocation rate thus reducing the revenue
8 requirement by \$0.5 million compared to 2020.

9 c) The reference to cost allocation rate(s) in the quote above is the result of the allocation
10 methodology work undertaken by BDR.

OEB STAFF INTERROGATORY 4

Issue 1.1 Is the IESO's Fiscal Year 2020 revenue requirement of \$188.6 million appropriate?

1-Staff-4

INTERROGATORY

a. Exhibit D / Tab 1 / Schedule 1 / p. 2

Preamble:

At the above reference, the IESO states that its Operations, Maintenance and Administrative (OM&A) costs in 2020 were \$13.1 million lower compared to 2019 in part due to higher cost allocation.

Question:

- a) Please discuss how the IESO determined that a higher cost allocation to areas such as the Smart Metering Entity (SME) and Market Assessment and Compliance Division (MACD) was appropriate. When responding, please indicate if the change was the result of errors in the previous cost allocation study completed by BDR, a change in the activities undertaken by IESO divisions in 2020 (such as MACD and the SME), or other.

RESPONSE

- a) The change in cost allocation in 2020 compared to 2019 is driven by an increase in support staff time allocated to non-core services based on actual timesheet tracking. The cost allocation rate itself remained unchanged as there was no material change in costs or FTEs for the purpose of determining the rate. Please see Schedule 1 - 1.1 OEB Staff 3 for an explanation on the rate calculation.

OEB STAFF INTERROGATORY 5

Issue 1.1 Is the IESO's Fiscal Year 2020 revenue requirement of \$188.6 million appropriate?

1-Staff-5

INTERROGATORY

a. Exhibit A / Tab 1 / Schedule 4 / p. 1

Preamble:

At the above reference, the IESO states: "[t]he revised Business Plan was submitted to the Minister of Energy, Northern Development and Mines (Minister) on December 9, 2020 for approval. As per legislation, the IESO requires Ministerial approval of its Business Plan before it can file a revenue requirement submission with the OEB. The Minister approved the Business Plan on April 28, 2021."

The IESO is requesting approval of its 2020 expenditure and revenue requirements and the fees charged in 2020.

Questions:

- a) Was the IESO's decision making process related to the expenditures and capital investments made in 2020 affected by the absence of a Minister approved business plan. If so, how?
- b) What would be the implications if, for some reason, the OEB determined that certain expenditures or capital investments made by the IESO in 2020 were not prudent?

RESPONSE

- a) The IESO reviewed its strategy and planning assumptions in response to COVID-19 pandemic impacts in early 2020, resulting in a reduction of expenses to below pre-pandemic levels. In the absence of final approved 2020 fees the IESO continued to collect fees based on 2019 rates on an interim basis while it exercised fiscal prudence by keeping its expenses below prior year levels, pending approval of its revised budget.
- b) The IESO's 2020 expenditures and capital investments were below prior year levels while also incorporating one-time COVID-19 pandemic related expenses. In this challenging year, the IESO delivered on its various priorities and projects while also effectively transitioning the organization to work remotely and ensuring the health and safety of its staff. The IESO's expectation is that the expenditures and investments have been demonstrably prudent in delivery of IESO's strategy and any exceptions would have to be addressed on an individual basis.

OEB STAFF INTERROGATORY 6

Issue 1.1 Is the IESO's Fiscal Year 2020 revenue requirement of \$188.6 million appropriate?

1-Staff-6

INTERROGATORY

a. Exhibit B / Tab 1 / Schedule 2 / p. 4

b. Exhibit B / Tab 1 / Schedule 3 / p. 2

Preamble:

The IESO's application suggests that future fees applications may cover three-year periods and seek OEB approval of the same. The Minister has indicated he is supportive of this proposal, however, has also stated that the IESO must work with Ministry and OEB staff to determine how it can be successfully implemented.

Question:

- a) Please discuss the status of the IESO's three-year application and how it expects to engage OEB staff during its development.

RESPONSE

- a) The IESO continues to investigate the potential implementation of a three-year business plan and fees application approval process with staff at the Ministry of Energy. The IESO expects to engage with OEB Staff on this matter upon completion of the IESO's current revenue requirement proceeding.

OEB STAFF INTERROGATORY 7

Issue 1.1 Is the IESO's Fiscal Year 2020 revenue requirement of \$188.6 million appropriate?

1-Staff-7

INTERROGATORY

a. Exhibit G / Tab 1 / Schedule 2 / pp. 1-3

Preamble:

At the above reference, the IESO discusses its adjustment account, and the balances in it as of December 31, 2020. The IESO also states that MACD conducts the bulk of the activities that led to the payments deposited into the adjustment account.

The Table below is an excerpt from the above referenced section of the application.

IESO Adjustment Account Inflows and Outflows (in thousands)

Transaction Description	Balance at December 31, 2018	2019 Net Cash Flow	Balance at December 31, 2019	2020 Net Cash Flow	Balance at December 31, 2020
Received from Market Participants as a result of penalties, fines, damages, and payment adjustments	\$188,252	\$32,240	\$220,493	\$2,766	\$223,259
Transferred to IESO	(\$23,438)	(\$8,585)	(\$32,023)	(\$10,673)	(\$42,696)
Returned to Market & all Market Participants	(\$136,248)	(\$10,282)	(\$146,530)	(\$7,504)	(\$154,034)
IESO Board Mandated Reserve	(\$20,000)		(\$20,000)		(\$20,000)
Available for future distribution (IESO or Market)	\$8,566	\$13,373	\$21,940	(\$15,411)	\$6,529

Questions:

- a) OEB staff interprets that the values shown in the column entitled "Balance at December 31, 2020" represent the total amounts of money collected through market enforcement activities (\$223.3 million), transfers to the IESO (\$42.7 million), or returned to the market (\$154 million) to date. Please confirm OEB staff's interpretation. If applicable, please identify over what period of time this money was collected/transferred/returned.

- 1 b) Please confirm if the \$32.2 million and \$2.8 million shown in the columns entitled "2019
2 Net Cash Flow" and "2020 Net Cash Flow", respectively, represents the total amount of
3 money collected by the IESO in 2019 and 2020, respectively, through market
4 enforcement activities. If not, please identify how much money was received in 2020.
- 5 c) The IESO's 2019 audited financial statements (Exhibit B-2-1, p. 23) indicate that in 2019
6 the IESO collected \$9.1 million in market sanctions and payment adjustments and
7 generated an accumulated surplus of \$383 thousand. At the table above, the IESO
8 indicates that in 2019 it collected \$32.2 million through penalties, fines, damages, and
9 payment adjustments and, after disbursements, held a surplus of \$4.8 million (\$13.4
10 million - \$8.6 million). Please explain the relationship between these values and why
11 variances between them exist.
- 12 d) The IESO's 2020 audited financial statements (Exhibit B-2-2, p. 18) indicate that in 2020
13 the IESO collected \$10.1 million in market sanctions and payment adjustments and
14 generated an accumulated surplus of \$0. At the table above, the IESO indicates that in
15 2020 it collected \$2.8 million through penalties, fines, damages and payment
16 adjustments and, after disbursements, generated a surplus of -\$15.4 million. Please
17 explain the relationship between these values and why variances between them exist.
- 18 e) OEB Staff's interpretation is that the table above indicates that through the adjustment
19 account, \$10.7 million was transferred to the IESO in 2020. With respect to this transfer,
20 please:
- 21 i. Describe how the IESO determined that a transfer of \$10.7 million was
22 appropriate and the parties responsible for making the determination.
- 23 ii. Provide a detailed budget that demonstrates how the \$10.7 million was spent by
24 the IESO in 2020. The budget should identify all activities the \$10.7 million
25 funded (e.g., staffing, education) and be provided in a manner that clearly
26 identifies how all monies were spent.
- 27 iii. Describe how the transfer impacted the IESO's revenue requirement request for
28 2020. When responding, please indicate if and how the transfer acted as an
29 offset to required revenue that would otherwise have been collected through
30 usage fees.
- 31 iv. Describe how the IESO has factored adjustment account transfer projections into
32 its 2021 revenue requirement request. When responding, please indicate if and
33 how the transfer acts as an offset to required revenue that would otherwise be
34 collected through usage fees.
- 35 v. Describe how the IESO would have funded the activities paid for through the
36 \$10.7 million transfer if these monies were not available in the adjustment
37 account.

- 1 f) Please confirm that \$7.5 million was returned to the market and market participants in
2 2020 and the mechanism used to provide the return.
- 3 g) Given the IESO has a \$10 million reserve, please discuss how the IESO determined that
4 a \$20 million reserve was appropriate to retain in the adjustment account. When
5 responding, please indicate the role of the reserve account as well as how often, and for
6 what purposes, the IESO has been required to leverage these funds.
- 7 h) Given the adjustment account has a \$20 million reserve, please describe why it is
8 appropriate for the IESO to retain an additional \$6.5 million for future distribution and
9 not return these funds to the market and market participants.
- 10 i) The table above indicates that the IESO collected approximately \$30 million less through
11 penalties, fines, damages, and payment adjustments in 2020 compared to 2019. Please
12 explain the reasons for the year-over-year change.

13 **RESPONSE**

14 Preamble:

15 The IESO notes that the Adjustment Account is an account established within the wholesale
16 markets. The IESO deposits penalty payments and other prescribed funds such as payment
17 adjustments arising from resolution of settlement disputes and negotiated settlements into the
18 Adjustment Account. The Market Rules prescribe that certain IESO expenses associated with
19 those outcomes are to be reimbursed from the Adjustment Account. The IESO does not seek
20 fee recovery for expenses reimbursed via the Adjustment Account.

- 21 a) The IESO can confirm the OEB's understanding is correct. The period is since market
22 opening.
- 23 b) The IESO can confirm that both amounts were collected as a result of market
24 enforcement activities.
- 25 c) These values are unrelated. The amounts in the above table refer to balances and cash
26 flows in the Adjustment Account. In 2019, after additions to the account of \$32.2 million
27 and reductions through transfers to the IESO (\$8.6 million) and disbursements to
28 market participants (\$10.3 million) there remained \$13.4 million in excess of the IESO
29 Board mandated minimum balance of \$20 million that is available for future transfers or
30 disbursements.

31 The amounts referenced in the IESO's 2019 audited financial statements refer to
32 amounts transferred to the IESO from the Adjustment Account for reimbursement of
33 expenses as prescribed by the market rules. The referenced \$383 thousand surplus is a
34 result of amounts transferred to the IESO in advance of expenses being incurred. There
35 existed a timing variance between when IESO incurred the expenses which is reflected
36 in Exhibit B-2-2, page 18, and when the Adjustment Account funds are transferred to
37 the IESO as reflected in the table above.

In 2020, there was a policy change where funds would be transferred after expenses are incurred (first quarter expenses are reimbursed from the Adjustment Account in the second quarter) and as a result there is a \$0 surplus in 2020 see Exhibit B-2-2, page 18.

d) Please see part (c) above.

e)

i. The IESO Board determined that a transfer of \$10.7 million was appropriate based on the tracking of IESO's enforcement activities (primarily MACD's efforts) plus the IESO Board's annual review and approval for any directed amounts for special education and initiatives. The activities and efforts are both prescribed by the Market Rules.

ii.

Table 1: Adjustment Account Transfer Expenses

Description	Total
Compensation and Benefits	6,575
Professional and Consulting	1,527
Operating and Administration	2,571
Total	10,673

iii. The transfer did not affect the IESO's revenue requirement request as the IESO does not seek fee recovery for expenses reimbursed via the Adjustment Account. If the \$10.7 million was not available to be transferred from the Adjustment Account, the IESO can consider scaling back activities reimbursed by the Adjustment Account or an increase in the OEB-approved IESO usage fee.

iv. For 2021, the IESO expects the Adjustment Account to continue to (a) reimburse the IESO for associated costs or expenses related to penalties, damages, fines and payment adjustments arising from resolved settlement disputes and (b) as directed by the IESO Board of Directors each year for any special education and initiatives. Therefore, the IESO's 2021 usage fee does not include the revenue request for these reimbursements from the Adjustment Account.

v. See the response to (iii).

f) The IESO confirms that \$7.5 million was returned to the market and market participants in 2020. This was done through the IESO's regular monthly billing cycle in which the IESO (or reimburses) market participants and paid in one lump sum. Market participants' pro-rata share of the total was based on the total allocated quantity of

1 energy withdrawn for consumers, or the scheduled quantity of energy withdrawn for
2 exporters, over the prior six months.

- 3 g) It is difficult to predict annual penalty or dispute receipts and disbursements each
4 year in/from the Adjustment Account as these matters are subject to unpredictable
5 negotiated settlements and Market Rule investigations which may or may not resolve
6 with the addition of amounts into the Adjustment Account. The \$20 million is a
7 target amount. Therefore, each year the Adjustment Account's final balance at
8 December 31 is not known until the period/disputes are finalized.

9 The Adjustment Account is not an IESO asset and is instead an wholesale markets
10 account (see response to (c) above). As prescribed in the Market Rules (Chapter 9,
11 6.18), the IESO Board of Directors shall review at least annually the allocation of the
12 Adjustment Account including directing that some or all of the Adjustment Account
13 balance be retained (i.e., the reserve of \$20 million). The reserve amount may
14 fluctuate as determined by the IESO Board. The current reserve of \$20 million is
15 targeted for the IESO's reimbursement of associated costs or expenses related to
16 penalties, damages, fines and payment adjustments arising from resolved settlement
17 disputes plus reimbursement for special education and initiatives.

18 Please see response to (g) above. Funds in excess of the current reserve of
19 \$20 million are available and considered for disbursement. However, there are a
20 number of enforcement actions and settlement disputes currently under
21 development and the uncertainty of the dispute receipts and disbursement combined
22 with the forecast to support the processing of these files, has resulted in the IESO's
23 decision to not distribute the \$6.5 million above the \$20 million reserve to eligible
24 market participants.

- 25 h) The amount the Adjustment Account collects through penalties, fines, damages and
26 payment adjustments is the result of enforcement activities from MACD's
27 investigations and Settlement activities. See response (h) above as these activities
28 are difficult to predict.

OEB STAFF INTERROGATORY 8

Issue 1.1 Is the IESO's Fiscal Year 2020 revenue requirement of \$188.6 million appropriate?

1-Staff-8

INTERROGATORY

a. Exhibit A / Tab 2 / Schedule 2 / p. 2

b. Exhibit C / Tab 2 / Schedule 1 / p. 2

c. Exhibit D / Tab 1 / Schedule 1 / p. 3

d. Exhibit D / Tab 1 / Schedule 1 / p. 4

Preamble:

At the above noted first reference, the IESO stated that in response to the COVID-19 pandemic it deferred a number of lower priority capital projects.

At the above noted second reference, the IESO stated that in 2020, the IESO managed COVID-19 pandemic-related impacts, including \$1.0 million of one time expenses as COVID-19 pandemic plans were executed to ensure the safety of staff working on-site to support grid operations and the reliability of the electricity system.

At the above noted third reference, the IESO indicated that had incurred COVID-19 pandemic related costs of \$1.2 million for 2020 which was then removed in 2021 at the above noted fourth reference, representing a \$1.2 million decrease for 2021. The IESO explained (at the above noted second reference) that COVID-19 pandemic costs are included in the 2020 revenue requirement actual spend, but excluded from the 2021 revenue requirement, as the majority of the spend is expected to have enduring benefits against any future waves.

Questions:

a) As per the above noted second reference, the IESO stated that \$1.0 million of COVID-19 pandemic expenses were incurred in 2020, however at the above noted third reference, the IESO indicated that \$1.2 million of COVID-19 pandemic expenses were incurred in 2020. Please clarify which is the correct number.

b) Please confirm that in the 2020 Actual revenue requirement, versus 2019, the IESO is requesting an increase of \$1.2 million of OM&A related to the COVID-19 pandemic, but no change in capital additions/expenditures related to the COVID-19 pandemic. If this is not the case, please explain. Please also describe and quantify the significant components.

c) Please confirm that in the 2021 Budget revenue requirement, versus 2020 actual, the IESO is requesting a decrease of \$1.2 million of OM&A related to the COVID-19

pandemic, but no change in capital additions/ expenditures related to the COVID-19 pandemic. If this is not the case, please explain. Please also describe and quantify the significant components.

d) Please confirm that the impacts of the capital projects that were deferred, or are being deferred, in response to the COVID-19 pandemic, on the 2020 Actual and 2021 Budget revenue requirements are immaterial. If this is not the case, please explain, including why these savings from deferred capital projects are not being reflected in such revenue requirements.

e) Please confirm that any savings related to the COVID-19 pandemic have been identified and that all reasonable avenues of cost reduction have been explored and prudently acted upon and reflected in the 2020 Actual and 2021 Budget revenue requirements. If this is not the case, please explain.

RESPONSE

a) The \$1.2 million of COVID-19 pandemic expenses incurred in 2020 provided in Exhibit D-1-1, page 3 is the correct number. Most of the expenses were related to preparing our facilities to maintain operations while ensuring staff health and wellbeing, having site and staff backup to ensure continued operations of our Control Room and equipment available to facilitate work-from-home.

Table 1: 2020 Actual – Covid-19 Pandemic OM&A expenses

COVID-19 pandemic expenses (\$ Millions)	2020 Actual
Facilities modifications to meet regulations and protect staff	0.4
Incremental staff and overtime to support Control Room operation	0.3
Services to ensure and promote staff wellbeing	0.2
Technology and equipment to facilitate work-from-home	0.2
Legal and consulting services	0.1
Total	1.2

b) Confirmed.

c) Confirmed.

d) Confirmed.

e) Confirmed.

OEB STAFF INTERROGATORY 9

Issue 1.1 Is the IESO's Fiscal Year 2020 revenue requirement of \$188.6 million appropriate?

1-Staff-9

INTERROGATORY

a. Exhibit B / Tab 2 / Schedule 2 / p. 18 / 2020 Annual Report (p. 16)

b. Exhibit D / Tab 1 / Schedule 2 / p. 7

Preamble:

At the above noted first reference, the IESO stated that effective January 1, 2011, the IESO adopted Canadian public sector accounting standards (PSAS) with a transition date of January 1, 2010. The adoption of PSAS was accounted for by retroactive application with restatement of prior periods. The corresponding change to pension and OPEBs resulted in previously unrecognized actuarial losses and past service costs of \$98,832 thousand at the date of transition being charged to the PSAS Transition Item's accumulated deficit.

The IESO further noted that each year, the IESO recovers a portion of the PSAS Transition Item's deficit through the IESO's annual system fees revenue. OEB staff notes that this is recovered as part of "Corporate Adjustments" which are included in the IESO's revenue requirement OM&A.

At the above noted second reference, the IESO indicated its actual and budgeted Corporate Adjustments included in OM&A, as shown in OEB Staff Table 1 below.

OEB Staff Table 1 – Overview of Corporate Adjustments

IESO Business Unit (\$ millions)	2019 OEB Approved	2019 Actual	2020 Actual	2021 Budget
Corporate Adjustment	2.8	7.0	3.7	1.6

Questions:

a) Please provide a breakdown for each year (e.g., 2019 OEB-approved, 2019 Actual, 2020 Actual, 2021 Budget) of the Corporate Adjustments shown in OEB Staff Table 1, listing the PSAS Recovery Amount and other. Please explain any significant changes in the PSAS Recovery Amount, year-over-year.

b) Please describe and quantify how any Corporate Adjustments, in particular the recovery of PSAS transition items, are reflected in the IESO's amortization/depreciation, capital additions and capital expenditures.

RESPONSE

a) Please see the table below.

Table 1: Corporate Adjustments breakdown 2019 – 2021 shown in OEB Staff Table 1

	2019 OEB Approved	2019 Actual	2020 Actual	2021 Budget
PSAS Transition Item Recovery	\$3.9	\$3.9	\$3.3	\$3.3
Pension/OPEB adjustment	\$0.0	\$2.1	\$1.9	\$0.0
Other one-time items	(\$0.4)	\$2.6	\$0.4	\$0.4
Overhead cost recovery	(\$0.7)	(\$1.6)	(\$1.9)	(\$2.1)
	\$2.8	\$7.0	\$3.7	\$1.6

The PSAS transition item recovery change in 2020 is due to the change in pension and OPEB expense calculation. In 2018, the Auditor General recommended that the IESO change its discount rate to 'cost of borrowing' in calculating the cost of its pension and other post-employment benefit (OPEB) expenses. This resulted in a historical restatement of the pension and OPEB liability of \$13.4 million and increasing the PSAS recovery balance of \$ by \$17.9 million. The collection of the PSAS recovery balance was recalculated in 2020 using the 2020 Estimated Average Remaining Service Life (EARSL) of employees (approximately 17 years) which resulted in an annual recovery of \$3.3 million, \$0.6 million lower than 2019. Recovering this balance over EARSL ensures that this expense is recovered in equal amounts to each future period of service of employees active at the date of the amended calculation.

The Pension/OPEB benefit actuarial estimates are budgeted at each work program individual budget level; however, for Actual purposes, the true-up between the budgeted actuarial estimate and the actual actuarial report is recorded in Corporate Adjustment.

The one-time items in 2019 are mainly related to health/dental benefit and banked vacation true-up between accruals booked at the individual work program level and the actual costs.

The overhead cost recovery represents the portion of IESO costs allocated and recovered from Smart Metering Entity (SME) and Market Assessment and Compliance Division (MACD). Please see Schedule 1 - 1.1. OEB Staff 3 for further details on cost allocation.

1 b) Effective January 1, 2011, the IESO adopted PSAS with a transition date of January 1,
2 2010. The adoption of PSAS was accounted for by retroactive application with
3 restatement of prior periods subject to the requirements in Section PS 2125, First-time
4 Adoption by Government Organizations. The corresponding change to pension and
5 other-post employment benefits resulted in previously unrecognized actuarial losses and
6 past service costs of \$98,832 thousand at the date of transition being charged to the
7 PSAS Transition Item's accumulated deficit. Each year, the IESO recovers a portion of
8 the PSAS Transition Item's deficit through its revenue requirement, particularly through
9 recognizing the amortization as an employee benefit expense at the Corporate
10 Adjustment level. There is no impact to capital expenditures or amortization.

OEB STAFF INTERROGATORY 10

Issue 1.1 Is the IESO's Fiscal Year 2020 revenue requirement of \$188.6 million appropriate?

1-Staff-10

INTERROGATORY

a. Exhibit D / Tab 1 / Schedule 2 / p. 7

Preamble:

At the above noted first reference, the IESO provided an overview of "Corporate Adjustments" which are included in its OM&A. The IESO stated that Corporate Adjustments are mainly comprised of the annual amortization of the accumulated deficit resulting from the PSAS transition item, corresponding to change[s] in pension and OPEBs, partially offset by the overhead cost recovery from other funding sources.

The IESO also stated the following regarding the Corporate Adjustments:

- The 2019 actual versus 2019 OEB-approved increase of \$4.2 million relates to [a] higher than expected pension/OPEB liability evaluation and other one-time benefit adjustments, partially offset by [a] higher cost allocation rate than anticipated.
- The 2020 actual versus 2019 actual decrease of \$3.3 million relates to [a] PSAS amortization rate change and non-repeatable 2019 one-time health/dental benefit costs.
- The 2021 budget versus 2020 actual decrease of \$2.1 million relates to the reclassification of [a] pension/OPEBs adjustment to each work program individual budget and higher cost allocation due to [a] higher overhead rate.

Questions:

- a) It is OEB staff's understanding that the Corporate Adjustments are primarily related to the annual amortization of the accumulated deficit resulting from the PSAS transition item (i.e., a historical transition item) versus a change to the 2019, 2020, and 2021 pension and OPEBs amounts themselves. OEB staff is unclear whether the IESO is inferring that the historical PSAS transition item changes from year to year. Please explain.
- b) Also incorporating the IESO's answer to question a) and 1-Staff-3, please explain why the Corporate Adjustments 2019 actual versus 2019 OEB-approved increase of \$4.2 million partly relates to a higher than expected pension/OPEB liability evaluation and other one-time benefit adjustments and partially offset by higher cost allocation.

- 1 c) Also incorporating the IESO's answer to question a), please explain why the Corporate
2 Adjustments 2020 actual versus 2019 actual decrease of \$3.3 million relates to a PSAS
3 amortization rate change and non-repeatable 2019 one-time health/dental benefit costs.
- 4 d) Also incorporating the IESO's answer to question a) and 1-Staff-3, please explain why
5 the Corporate Adjustments 2021 budget versus 2020 actual decrease of \$2.1 million
6 relates to the reclassification of [a] pension/OPEBs adjustment to each work program
7 individual budget and higher cost allocation.

8 **RESPONSE**

9 For responses to a), b), c) and d) please see Schedule 1 - 1.1 OEB Staff 9.

OEB STAFF INTERROGATORY 11

Issue 1.1 Is the IESO's Fiscal Year 2020 revenue requirement of \$188.6 million appropriate?

1-Staff-11

INTERROGATORY

a. Exhibit B / Tab 2 / Schedule 2 / p. 17-18, 2020 Annual Report (pp. 15-16)

b. EB-2019-0002 / Response to OEB Staff Interrogatory #18, April 30, 2019

Preamble:

At the above noted first reference, the IESO indicated that the annual recovery of a portion of the PSAS Transition Item's deficit (through the IESO's annual system fees revenue) is transferred from the Regulatory Deferral Account – Accumulated Surplus/(Deficit) to the PSAS Transition Item accumulated deficit each year.

At the above noted second reference, the IESO provided the following Forecast Variance Deferral Account (FVDA) table, which is shown in OEB Staff Table 2 below.

OEB Staff Table 2 – Breakdown of the FVDA

FVDA (in \$ millions)	2015	2016	2017	2018
Beginning Balance	7.6	10.0	10.0	6.0
In year surplus/(deficit)	12.0	12.6	1.4	1.3
OEB decision and order - reduce operating reserve	-	-	(4.0)	-
Rebates to Market Participants	(9.6)	(12.6)	-	-
Impact of accounting policy change (discount rate)	-	-	-	(13.4)
2017 surplus allocated to 2018 operating reserve deficit	-	-	(1.4)	1.4
Ending balance	10.0	10.0	6.0	(4.7)

Questions:

- Please confirm that the terms "Regulatory Deferral Account – Accumulated Surplus/(Deficit)" (used in the Annual Report) and "Forecast Variance Deferral Account" (used in the revenue requirement application) can be used interchangeably. If this is not the case, please explain.
- Please confirm that the annual amount recovered via the Corporate Adjustments reflected in the revenue requirements is first reflected in the FVDA as part of the "in year surplus/(deficit)" line in OEB Staff Table 2 and then transferred to the PSAS Transition Item accumulated deficit on an annual basis. If this is not the case, please explain.

- c) Please explain which line item in the OEB Staff Table 2 reflects the annual transfer to the PSAS Transition Item accumulated deficit and tie these amounts to the Regulatory Deferral Account – Accumulated Surplus/(Deficit) presented in the notes to the IESO’s financial statements.
- d) Please provide an updated OEB Staff Table 2 continuity schedule, also showing 2019 Actual, 2020 Actual, and 2021 Budget, in addition to the 2015 through 2018 values that are already reflected in OEB Staff Table 2.
- e) Please provide an explanation for any significant changes in any components of the year-over-year balances, specifically, 2019 Actual compared to 2018 Actual, 2020 Actual compared to 2019 Actual, and 2021 Budget compared to 2020 Actual.

RESPONSE

- a) The terms “Regulatory Deferral Account – Accumulated Surplus/(Deficit)” (used in the Annual Report) refers to Actual amounts and “Forecast Variance Deferral Account” (used in the revenue requirement application) refers to Actual and Budget amounts, however they are both referring to the same account.
- b) Confirmed.
- c) The “in year surplus/(deficit)” line in OEB Staff Table 2, includes the annual transfer to the PSAS Transition Item accumulated deficit, more specifically it represents the sum of the core operations revenue and expenses as well as the “Recovery of PSAS transition items” shown in the Regulatory Deferral Account – Accumulated Deficit” table on page 15 of the Annual Report (Exhibit B-2-2). The portion for Recovery of PSAS transition is the amount transferred to the “PSAS Transition Item – Accumulated Deficit” table on page 16 of the Annual Report. See Table 1 below for more details.

Table 1: 2019-2020 FVDA Beginning and Ending Balances

FVDA (in \$ millions)	2020	2019
Beginning Balance	(1.0)	(4.7)
In year surplus/(deficit)	2.3	3.7
<i>Core operation revenues</i>	<i>195.3</i>	<i>202.6</i>
<i>Core operation expenses (excluding recovery of PSAS)</i>	<i>(189.7)</i>	<i>(195.0)</i>
<i>Recovery of annual PSAS transition items</i>	<i>(3.3)</i>	<i>(3.9)</i>
OEB decision and order - reduce operating reserve	-	-
Rebates to Market Participants	-	-
Ending balance	1.3	(1.0)

d) Please find below updated continuity schedule.

Table 2: Updated OEB Staff Table 2 Continuity Schedule

FVDA (in \$ millions)	2015	2016	2017	2018	2019	2020	2021
Beginning Balance	7.6	10.0	10.0	6.0	(4.7)	(1.0)	1.3
In year surplus/(deficit)	12.0	12.6	1.4	1.3	3.7	2.3	-
OEB decision and order - reduce operating reserve	-	-	(4.0)	-	-	-	-
Rebates to Market Participants	(9.6)	(12.6)	-	-	-	-	-
Impact of accounting policy change (discount rate)	-	-	-	(13.4)	-	-	-
2017 surplus allocated to 2018 operating reserve deficit	-	-	(1.4)	1.4	-	-	-
Ending balance	10.0	10.0	6.0	(4.7)	(1.0)	1.3	1.3

e) The variance between 2019 and 2018 of \$3.7 million, is driven by the 2019 actual surplus which is mainly due to reduced spending in the Market Renewal Program. There was delay in adding resources to the program during the development of the detailed design, the deferral of external support required for market rule amendments.

The variance between 2020 and 2019 of \$2.3 million is driven by the 2020 actual surplus associated with one-time items from litigation cost recovery and earnings made on investments and reduced spending in general administration expenses impacted by the COVID-19 pandemic.

The latest operating expenditure forecast, which includes six months of Actual and six months' forecast, is aligned to budget with less than 1% variance. Accordingly, the IESO does not anticipate operating deficits/surpluses in 2021.

OEB STAFF INTERROGATORY 12

Issue 1.1 Is the IESO's Fiscal Year 2020 revenue requirement of \$188.6 million appropriate?

1-Staff-12

INTERROGATORY

a. EB-2019-0002 / Reply Submission, November 6, 2019 / p. 10

b. Exhibit B / Tab 1 / Schedule 1 / p. 1

c. Exhibit F / Tab 1 / Schedule 1 / p. 2

Preamble:

At the above noted first reference, the IESO submitted, as part of its 2019 revenue requirement application reply submission, that it would bring forward a plan for recovery of its deficit through its fees, in its next fees case (i.e., the 2020 and 2021 revenue requirement applications).

At the above noted second reference, in the IESO's December 9, 2020 cover letter to the Minister of Energy, Northern Development and Mines regarding its 2020-2022 Business Plan, the IESO stated that it is deferring the recovery of the IESO's depleted operating reserves, as part of this Business Plan.

At the above noted third reference, the IESO again stated that it is deferring the planned recovery of the depleted operating reserve, with the current balance of the FVDA being \$8.7 million lower than the OEB approved funding level. The IESO has proposed a 2020 revenue requirement that would retain the 2020 operating surplus of \$2.3 million in the FVDA as an incremental first step towards the recovery of the IESO's depleted operating reserve. The IESO further stated that an operating reserve recovery approach will be evaluated as part of the next business plan filing and subsequent revenue requirement submission.

The IESO further indicated that its balance in the FVDA as of December 31, 2020 is \$1.3 million.

Questions:

a) Please provide an update on the IESO's progress in developing an appropriate strategy to address the funding gap for both the PSAS Transition Item accumulated deficit and any future deficits that may be reflected in the FVDA.

b) Please describe the manner that the IESO intends to recover this shortfall, over what time period, and its impact on ratepayers.

c) The covering letter to the 2020-2022 Business Plan (reference b.) states "[a]s part of this plan, I am deferring the recovery of the IESO's depleted operating reserves." OEB

1 staff interpret this quote to mean that through its 2021 budget, the IESO does not
2 intend to replenish the account to its approved level of \$10 million. Accordingly, please
3 identify how the IESO will treat any operating surplus, if any, in 2021. Specifically, is the
4 IESO's intent to retain any operating surplus in the FVDA, return the surplus to
5 consumers, or other?

- 6 d) Please describe the implications to the IESO of only having a \$1.3 million balance in the
7 FVDA as of December 31, 2020, versus its approved operating reserve of \$10 million.

8 **RESPONSE**

- 9 a) The IESO is addressing the recovery of the PSAS Transition Item by including
10 approximately \$3.3 million in its revenue requirement annually. The collection of the
11 PSAS recovery balance was calculated using the outstanding PSAS Transition balance
12 over the 2020 Estimated Average Remaining Service Life (EARS�) of employees
13 (approximately 17 years). For further details see Schedule 1 – 1.1 OEB 9a).

14 The operating reserve balance is currently at \$1.3 million. The IESO's current strategy is
15 to defer including additional revenue requirement in its budget to restore the \$10 million
16 operating reserve in order to mitigate the impact of cost increases on market
17 participants. The IESO is able to manage this risk, and any operating deficits in the near
18 term, through its credit facility, and will look to restore its balance over time through
19 retention of any operating surpluses and further consideration of additional revenue
20 requirement in the IESO fee in future revenue requirement submissions.

- 21 b) Please see the response to (a) above.

- 22 c) The Forecast Variance Deferral Account (FVDA) is used to record surpluses and deficits.
23 Any operating deficit would draw on the balance in the FVDA account of \$1.3 million and
24 any operating surpluses would be retained by the IESO in support of replenishing its
25 operating reserve back to \$10 million approved levels. The latest operating expenditure
26 forecast for 2021, which includes six months of Actual and six months' forecast,
27 is aligned to budget with less than 1% variance.

28 The IESO proposes to rebate surpluses to customers when the FVDA exceeds the OEB
29 approved level. Currently, there is no reasonable prospect that the FVDA balance will be
30 in surplus beyond \$10 million at the end of 2021.

- 31 d) Reduced levels of the operating reserve expose the IESO to additional financial risk.
32 Given the scope and complexity of its mandate, the IESO recognizes the potential for
33 changes in its external environment that can result in additional unplanned work
34 activities that may be material in scope and are beyond the control of management.
35 As a result, any spending overages beyond the balance of the FVDA would need to be
36 funded through its credit facility with the IESO incurring borrowing costs.

OEB STAFF INTERROGATORY 13

Issue 1.1 Is the IESO's Fiscal Year 2020 revenue requirement of \$188.6 million appropriate?

1-Staff-13

INTERROGATORY

a. EB-2019-0002 / OEB Staff Submission / October 25, 2019 / pp. 21-22

Preamble:

As per its submission in the IESO 2019 revenue requirement proceeding, OEB staff is seeking further information on the IESO's proposed cost recovery strategy and its addressing of the funding gap, also noted in interrogatory 1-Staff-12.

At the above reference, OEB staff noted that with respect to the impacts of certain IESO retroactive accounting policy changes, the total adjustment in 2017 for pension and OPEB was \$31.3 million. OEB staff stated that of this amount, \$13.4 million has been recorded in the FVDA while \$17.9 million has been recorded in the PSAS Transition Item – Accumulated Deficit account.

OEB staff submitted that "the OEB and all parties in the 2020 application must be able to assess how much of the 2019 operating surplus, if any, has been applied to offset the historical pension and OPEB costs in the FVDA, as well as whether or not that form of cost recovery is appropriate." OEB staff further submitted that "any adjustments to the amortization of the PSAB [sic] Transition Item account should be appropriately disclosed with respect to how the \$17.9 million increase in that account has been addressed in the IESO's recovery proposal."

Questions:

- a) Please describe how much of the 2019 and 2020 components of the December 31, 2020 balance of \$1.3 million in the FVDA has been applied to offset the historical pension and OPEB costs recorded in the FVDA. Please also describe the IESO's proposed form of cost recovery on this matter and provide reasons as to whether or not its form of cost recovery is appropriate.
- b) Please provide more detail regarding any adjustments to the amortization of the PSAS Transition Item – Accumulated Deficit account with respect to the \$17.9 million increase in that account. Please also describe the IESO's proposed form of cost recovery on this matter, including the \$17.9 million increase, and provide reasons as to whether or not its form of cost recovery is appropriate.

1 **RESPONSE**

- 2 a) The December 31, 2020 \$1.3 million balance in the FVDA has not been applied to offset
3 the historical pension and OPEB costs. Please see Schedule 1 – 1.1 OEB 9a).
- 4 b) Please see Schedule 1 – 1.1 OEB 9a). The IESO has provided for the PSAS recovery
5 within its revenue requirement at an annual recovery of \$3.3 million based on the 2020
6 Estimated Average Remaining Service Life (EARS�) of employees (approximately 17
7 years).

1 **AMPCO INTERROGATORY 8**

2 Issue 1.1 Is the IESO's Fiscal Year 2020 revenue requirement of \$188.6 million appropriate?

3 1.1-AMPCO-8

4 **INTERROGATORY**

5 Ref: Exhibit A Tab 1 Schedule 4 Page 3

6 One of the main drivers for the reduced spending in 2020 was increased labour capitalization
7 rates.

8 Please explain this rate increase and impact.

9 **RESPONSE**

10 The number of FTEs working on capital projects in 2020 was higher than in 2019 and as
11 evidenced by Exhibit D-1-1, Table 3, contributed to \$1.3 million in lower operating
12 compensation costs. This increased capitalized compensation is aligned with and supports
13 higher capital portfolio spending in 2020 as compared to 2019 as per Exhibit E-2-1.

APPrO INTERROGATORY 1

Issue 1.1 Is the IESO's Fiscal Year 2020 revenue requirement of \$188.6 million appropriate?

1.1-APPrO-1

INTERROGATORY

References: Executive Summary, Exhibit A, Tab 1, Schedule 2, page 1 of 3; Executive Summary, Exhibit B-1-1, Page 1 of 2; Executive Summary, Exhibit B-1-2, pages 8 and 9 of 19; and Exhibit C, Tab 2, Schedule 1, Page 1 of 2

Preamble: The evidence requests a 2020 revenue requirement of \$188.6 million whereas the December 9, 2020 letter from Terry Young to the Minister Rickford and Associate Minister with enclosed 2020-2022 Business Plan forecasts a 2020 revenue requirement of \$189.6 million.

What is the source of this discrepancy?

RESPONSE

The Business Plan set out a 2020 revenue requirement of \$189.6 million, as stated in a letter from Terry Young to the Minister Rickford and Associate Minister on December 9, 2020. However, in light of the filing of the IESO's 2020 submission in 2021, the IESO is requesting to have the current OEB approved 2020 interim usage fees approved as final usage fees for 2020. Under this proposal, the IESO requests approval of a 2020 revenue requirement of \$188.6 million.

1 **APPrO INTERROGATORY 2**

2 Issue 1.1 Is the IESO's Fiscal Year 2020 revenue requirement of \$188.6 million appropriate?

3 1.1-APPrO-2

4 **INTERROGATORY**

5 **Reference:** 2020 Annual Report, Exhibit B-2-2, Page 27 of 36 at note 16; and Exhibit D, Tab
6 1, Schedule 1, Plus Attachment(s), Page 4 of 4; and Exhibit D-1-1, Attachment 2, Page 1 of 1

7 **Preamble:** The evidence provides that the IESO may be liable under additional terminated
8 renewable energy contracts to a maximum of \$3,580 thousand, but that the likelihood or
9 amount of any liability under these contracts cannot be reasonably determined and therefore
10 no liability has been accrued in the financial statements.

11 How was the \$3,580 thousand figure calculated? Which renewable energy contracts
12 were included in that calculation?

13 **RESPONSE**

14 As at December 31, 2020, the IESO estimated a maximum of \$3,580 thousand as a contingent
15 liability based on various terminated energy contracts (solar, biogas, water, biomass) in which
16 the respective counterparties had not yet responded to the IESO's termination notices.

17 The above terminated energy contracts were terminated in 2018 where the IESO exercised its
18 termination rights under the energy contracts that had not yet reached an advanced stage in
19 their development.

APPrO INTERROGATORY 3

Issue 1.1 Is the IESO's Fiscal Year 2020 revenue requirement of \$188.6 million appropriate?

Issue 1.2 Is the IESO's Fiscal Year 2021 revenue requirement of \$191.8 million appropriate?

[1.1/1.20-APPrO-3](#)

INTERROGATORY

Reference: Exhibit D, Tab 1, Schedule 2, Page 6 of 8

Preamble: The evidence provides that about one third of the spending of the Corporate Services (CS) group is related to the IESO's office lease agreements, maintenance, insurance and property taxes.

Which insurance is included in this calculation and how does that cost compare to the cost of the IESO's errors & omissions liability insurance for each of 2020 and 2021? Where in the application is the cost of the IESO's error & omissions liability insurance included?

RESPONSE

All of IESO's insurance coverages are included under the calculation of the expenses for Corporate Services in the OM&A Programs Table. The costs of the errors and omissions liability insurance for 2020 (actual) and 2021 (budgeted) are less than 40% of the total insurance program costs for each of the relevant periods. The cost of the IESO's error & omissions liability insurance is included under the Finance & Treasury line item in the OM&A Programs Table, Exhibit D-1-1 Attachment 3 – Appendix 2-JC.

REASCWA INTERROGATORY 1

Issue 1.1 Is the IESO's Fiscal Year 2020 revenue requirement of \$188.6 million appropriate?

1.1-REASCWA-1

INTERROGATORY

Reference: Exhibit A, Tab 1, Schedule 4, Page 1, Lines 14-18

a) Regarding the fiscal year 2020 revenue requirement, other than revisions relating to the COVID-19 pandemic and the impacts on Ontario's electricity demand, did the IESO make any other revisions to, or deviations from, the 2020-22 Business Plan, particularly as they relate to priority initiatives such as the Market Renewal Program (MRP), the Resource Adequacy Framework initiative and resource procurement initiatives and mechanisms, power system planning initiatives, and/or initiatives relating to integrating energy storage, 'hybrid' resources (e.g., renewable generators coupled with energy storage), and Distributed Energy Resources (DERs)?

b) Please provide a description of any changes to, or deviations from, the 2020-22 Business Plan during fiscal year 2020 due to issues unrelated to the COVID-19 pandemic and a copy of draft Business Plans that document those changes.

RESPONSE

a) No.

b) The IESO's application is based on the business plan as approved by the Minister. Variances between actual and budget from the business plan for O&M have been outlined in Schedule 14 – 1.1 SEC 9 and for capital in Exhibit E-1-2 Attachment 2.

EDA INTERROGATORY 1

Issue 1.1 Is the IESO's Fiscal Year 2020 revenue requirement of \$188.6 million appropriate?

Issue 1.2 Is the IESO's Fiscal Year 2021 revenue requirement of \$191.8 million appropriate?

EDA Interrogatory 1

INTERROGATORY

Evidence Reference: G/2/1/p5 Table 2

EDA Interrogatory 1

a) Please identify:

a. the first ever incurrence of MRP costs

b. the level of MRP costs recovered in 2020

c. the level of MRP costs to be recovered in 2021, the earliest date that the MRP costs included in the 2021 budget will be recovered through regulated fees and charges, and explain the appropriateness of this date

d. the timing of the IESO's first ever provision of MRP services

b) Please discuss the timing of the recovery of MRP related costs through regulated rates and/or charges, with a focus on whether it aligns with good rate making practices.

RESPONSE

a)

a. The Market Renewal Program (MRP) program started incurring costs in 2017.

b. Operating expenses in 2020 were \$2.1 million. Capital expenses in 2020 were \$25.0 million and will be recovered through amortization expense once the program is in service.

c. Operating expenses to be recovered in 2021 is budgeted at \$3.6 million and are recovered as they occur. This amount is included as part of the IESO's revenue 2021 revenue requirement submission and is collected through the IESO's fee. Capital expenses in 2021 is budgeted at \$36.0 million and is recovered through amortization expense once the program is in service.

d. The first provision of MRP services will occur after the MRP in-service date expected to be November 2023.

1 b) The estimated capital cost of MRP is \$148 million. This amount will be collected from
2 rate payers through annual amortization expense over the useful life of the program,
3 currently estimated between 15 – 20 years. This approach ensures that rate payers
4 receive both the benefit and cost of the program over the amortization period. MRP-
5 related operating costs, not eligible to be capitalized, are incurred and recovered on an
6 annual basis within IESO's fees.

ENERGY PROBE INTERROGATORY 1

1.1 Is the IESO's Fiscal Year 2020 revenue requirement of \$188.6 million appropriate?

1.1-EP-1

INTERROGATORY

Reference: Exhibit A, Tab 1, Schedule 4, Page 1

Preamble: "In response to the COVID-19 pandemic and the impacts on Ontario's electricity demand, the IESO revised its Business Plan to reduce its budgeted revenue requirement. The revised Business Plan was submitted to the Minister of Energy, Northern Development and Mines (Minister) on December 9, 2020 for approval. As per legislation, the IESO requires Ministerial approval of its Business Plan before it can file a revenue requirement submission with the OEB. The Minister approved the Business Plan on April 28, 2021."

- a) When was the original Business Plan completed?
- b) Was the original Business Plan submitted to the Minister for Review?
- c) Did the Minister issue instructions to the IESO directing that the Business Plan be revised or did the IESO management decide to revise its original Business Plan on its own without any directive from the Minister or Ministry staff? Please explain, providing dates of consultation with the Minister and file a copy of any directives, instructions or requests that IESO may have received from the Minister or Ministry staff regarding revision of the original Business Plan.
- d) Please explain why it took almost four months for the Minister to approve IESO's revised Business Plan.
- e) Please file copies of all written or electronic communications between the IESO and the Minister or Ministry staff between December 8, 2020 and April 28, 2021 regarding the revised Business Plan.

RESPONSE

- a) The original Business Plan was completed and submitted September 3rd, 2019.
- b) Yes, the original Business Plan was submitted to the Minister for review.
- c) The IESO did not receive any formal instruction, request, or directive from Ministry staff or the Minister asking it to resubmit its Business Plan. The IESO consults with the Ministry regularly and these discussions inform the IESO's revisions to its Business Plan to better reflect the needs of the sector.
- d) The IESO cannot speak to the Minister's review process.
- e) The IESO's revenue requirement submissions are based on the Minister approved Business Plan, which has been filed in this proceeding along with the Minister's letter of approval. Accordingly, the IESO respectfully declines to provide communications

1 between the IESO and the Minister or Ministry staff, as they do not have relevance to
2 the review of the IESO's fees and expenditures in this proceeding.

OSEA INTERROGATORY 4

Issue 1.1 Is the IESO's Fiscal Year 2020 revenue requirement of \$188.6 million appropriate?

Issue 1.2 Is the IESO's Fiscal Year 2021 revenue requirement of \$191.8 million appropriate?

OSEA IR 4, ISSUES 1.1 AND 1.2

INTERROGATORY

Reference: Exhibit-A-1 - Stakeholder Engagement Framework

Preamble: Many communities and businesses are adopting sustainability goals including changes to how they source and consume electricity. OSEA is interested in understanding what investments the IESO is planning to make to support these sustainability goals.

Questions:

- a) Please provide a summary of investments the IESO plans to make to support consumer choice for sustainability goals. Please specify if the investments are capital or O&M and the magnitude of anticipated investment (i.e., dollar amount).
- b) Has the IESO through the Stakeholder Engagement Framework or other initiatives compiled sustainability goals for municipalities and large businesses in Ontario? If so, please provide a summary of the information compiled by the IESO.

RESPONSE

- a) The IESO has not tracked individual community and customer sustainability goals. The IESO, however, does engage regularly with communities and large consumers and invites their input in regional and bulk planning activities, including sustainability goals. This information is helpful in supporting and understanding future system needs and electricity load forecasts and is included, as appropriate, based on the commitment level and detail of the community's plans/goals, in published regional and bulk plans which identify recommendations to address resulting needs. For example, a number of municipalities and industrial customers are considering electrification initiatives that could create a higher demand for electricity in certain regions of the province and lead to new infrastructure investments. Specifically, the IESO has been working with LDCs in the Peterborough to Kingston region to develop additional forecast scenarios that capture community and customer electrification plans to ensure plan recommendations can accommodate potential future needs. The IESO will continue to actively seek this input from municipalities and industrial customers and consider this information in its regional electricity planning work. In addition, discussions held among the Regional Electricity Networks over the past two years ([2020](#) and [2021](#)) have focused on learning

- 1 about and sharing priorities among Network members – these priorities have and will
- 2 continue to drive discussions about the importance of local energy solutions.
- 3 b) Please see the response to (a) above.

SEC INTERROGATORY 1

Issue 1.1 Is the IESO's Fiscal Year 2020 revenue requirement of \$188.6 million appropriate?

1.1-SEC-1

INTERROGATORY

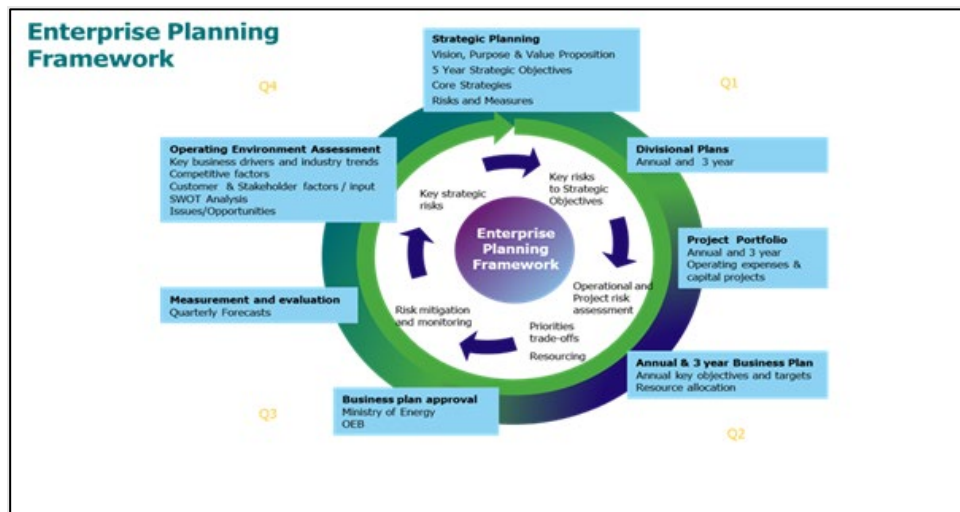
[C-1-1, p.1] Please provide a copy of all budget guidance documents that were issued regarding the budgets that underlie this application.

RESPONSE

The relevant budget guidance documents are provided below and as Attachment 1 to this exhibit.

The IESO utilizes its enterprise planning framework to guide its budgeting process.

Figure 1: Enterprise Planning Framework



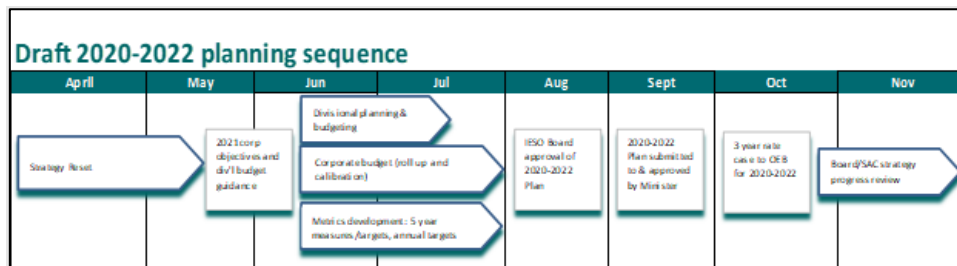
The planning process utilizes a number of meetings with the Executive Team as well as divisional level budget owners, where budget assumptions and guidance are provided based on IESO's strategy (see below). Given the iterative nature of the 2020-2021 process due to COVID-19, the budgets were revisited a number of times culminating with the incorporation of the 2020 realities facing the sector due to impacts from the pandemic, and with a fiscally responsible spending for 2021 returning to pre-COVID levels.

1 **Figure 2: Summary 5-Year Strategic Plan**

SUMMARY 5-YEAR STRATEGIC PLAN						
PURPOSE	Electricity is the backbone of modern civilization. We are the heartbeat, ensuring affordable electricity is available where and when people need it					
VISION	To be the trusted leader that guides Ontario's electricity future					
VALUES	Expertise with Humility	Commitment & Accountability	Genuine Caring	Purposeful Engagement	Openness to Change	Collaboration & Teamwork
STRATEGIC OBJECTIVES	1. AFFORDABILITY, RELIABILITY, SUSTAINABILITY: Deliver optimized balance to ensure best overall electricity outcomes for Ontario 2. CULTURE & WORKFORCE TRANSFORMATION: Align culture, mindset, skills & capabilities to deliver on strategy 3. STAKEHOLDER TRUST: Enhance stakeholders' trust in IESO to operate in the best interests of Ontario					
CORE STRATEGIES	Drive Business Transformation • Technology / data roadmap • Culture transformation • Future-ready workforce	Advance Sector Leadership • Thought leadership • Sector engagement	Ensure Cost-Effective System Reliability • Real time power system • Longer term power system	Enable Competition • Capacity • Energy	Prepare for the Future of the Sector • 10-year roadmap • Invest in innovation	

2
3

4 **Figure 3: Strategy Update Results in 2020-2022 Adjusted Planning Cycle**



5

- 6 • Q1-Q2 - Strategy review and 2020 budget alignment to consider and incorporate
- 7 impacts of COVID-19 on operating environment;
- 8 • Q2 - ELT issues corporate priorities and budget guidance to cascade into divisional
- 9 priorities and plans;
- 10 • Q2 – accelerated budgeting cycle to plan 2021 and 2022 initiatives within agreed
- 11 strategic priorities and available funding;
- 12 • Q3 – file three-year plan with Minister and OEB, requesting multi-year approval of
- 13 budget and rates; and
- 14 • Q4 – re-engage Board and SAC in review of progress against strategy ahead of next
- 15 planning cycle.

2021 – 2023 Business Planning

Prepared for Directors' Quarterly Meeting

February 21st, 2020

2021- 2023 Business Planning Context

2020 – 2022 Business Plan was revised:

- 2020 funding flat for the 4th year
- 1% increase for each of 2021, 2022

Revisions to maintain flat funding included:

- Reduced Professional & Consulting spend to 2017 – 2019 historical levels
- Increased hiring lags to better reflect actual trends
- Requirement for incremental initiatives reduced by \$1.6 million by stretching existing resources to deliver initiatives
- \$2 million of incremental initiatives to be funded on a priority basis as savings materialize

Positioning for 2021-2023

- Any materialized savings will be used to fund prioritized initiatives
- Some work will likely be deferred to 2021
- Continued headcount increases in 2020 to fill vacancies and staff MRP

2021 Considerations

- 1% increase is insufficient to fund existing commitments (collective agreements and IT contract escalations)
- Any net new requirements will have to displace existing funding/work
- Need to consider ALL spending – baseline and incremental for trade-off purposes
- Headcount/resource planning needs to be included in trade-off considerations
- Criteria for evaluating initiatives (similar to capital portfolio) are needed
- Budgeting by initiatives

2021 Planning – New Elements

- Targets set at the onset of the process
- Budgeting by initiatives
- Prioritization criteria
- Cross functional initiatives prioritization and trade-offs for both OPEX and Capital
- BP working group/committee of Directors
- Inclusion of HR in resource planning meetings
- VP presentations prior to submission of final Business Plan

1 **SEC INTERROGATORY 2**

2 Issue 1.1 Is the IESO's Fiscal Year 2020 revenue requirement of \$188.6 million appropriate?

3 1.1-SEC-2

4 **INTERROGATORY**

5 Please provide a copy of all documents that were provided to the Board of Directors in
6 approving the underlying budgets contained in the Business Plan and this Application.

7 **RESPONSE**

8 The Board of Directors approved the Business Plan presented on August 2020; however,
9 subsequent refinements were made in the Business Plan that was submitted to the Ministry in
10 September 2020 to adjust the Operating Reserve Strategy and then in December 2020 to defer
11 additional funding toward the Operating Reserve recovery in order to focus funds towards
12 initiatives that are important to ratepayers.

13 Please see the following attachments to this exhibit which were provided to the IESO Board of
14 Directors:

- 15 • Attachment 1 - 2020 - 2022 Business Plan Presentation,
16 • Attachment 2 - 2020 - 2022 Business Plan Document, and
17 • Attachment 3 - 2020 - 2022 Board Resolution December 9, 2020.

Revised 2020-2022 Business Plan

IESO Audit Committee of the Board of Directors

August 25th, 2020

Purpose and Summary

Purpose of Item Recommendation for approval to the Board

Executive Summary

IESO completed a revision to its 2020-2022 business plan to incorporate outcomes of a strategy refresh and to update 2020 expenses for COVID-19 impacts to its operating environment. In addition, a three year approval approach is proposed.

For 2020, the IESO reduced its revenue requirement by 1.3% to \$188.6 million versus prior year. The IESO proposes to return to pre-COVID funding levels for 2021, and a 1% increase for 2022, which would, in effect, represent a 1% increase over the three-year planning period and the first increase since 2017. Further, the organization continues work to identify potential operating efficiencies within the 2020-2022 planning period.

Significant Issues, Risks and Opportunities: Government sensitivity to return to historical pre-COVID 19 funding levels for 2021 and proposed operating reserve recovery putting pressure on revenue fee rate in 2020-2022

Summary of Items for Approval

- Multi-year approval approach for Ministry and Ontario Energy Board
- Revised 2020-2022 Business Plan
 - IESO strategy refresh in early 2020 guides priorities in business plan
 - COVID-19 and Adjustments to Funding Levels
- Operating Reserve Recovery during the planning period

Three year Business Plan and Fees

Corrected: September 13, 2021, EB-2020-0230, Exhibit 1, Tab 1.1, Schedule 14 - 1.1 SEC 2, Attachment 1, Page 4 of 16

For its 2020 to 2022 business plan, the IESO is proposing a three-year approval approach, with annual fiscal outlooks within the three years to be provided to the Ministry. This will reduce regulatory and administrative burden and costs borne by the IESO and all stakeholders, and provide the IESO with more certainty to plan for future years

The annual outlook would highlight any changes or adjustments to the approved plan within the approved revenue requirement and provide an overview on a rolling 3 year basis

No legislative changes are needed for this proposal however IESO and Ministry will consider to document the process change through an update to Memorandum Of Understanding with the Ministry

This approach has received preliminary support from the Ministry and the Ontario Energy Board

Summary 5-Year Strategy

Corrected: September 13, 2021, EB-2020-0230, Exhibit I, Tab 1.1, Schedule 14 - 1.1 SEC 2, Attachment 1, Page 5 of 16

SUMMARY 5-YEAR STRATEGIC PLAN						
PURPOSE	<p><i>Electricity is the backbone of modern civilization.</i></p> <p>We are the heartbeat, ensuring affordable electricity is available where and when people need it</p>					
VISION	To be the trusted leader that guides Ontario's electricity future					
VALUES	Expertise with Humility	Commitment & Accountability	Genuine Caring	Purposeful Engagement	Openness to Change	Collaboration & Teamwork
STRATEGIC OBJECTIVES	<ol style="list-style-type: none"> 1. AFFORDABILITY, RELIABILITY, SUSTAINABILITY: Deliver optimized balance to ensure best overall electricity outcomes for Ontario 2. CULTURE & WORKFORCE TRANSFORMATION: Align culture, mindset, skills & capabilities to deliver on strategy 3. STAKEHOLDER TRUST: Enhance stakeholders' trust in IESO to operate in the best interests of Ontario 					
CORE STRATEGIES	<p><i>Drive Business Transformation</i></p> <ul style="list-style-type: none"> Continue culture shift Establish / prioritize technology & data roadmap Determine office space configuration / evolve way of working 	<p><i>Advance Sector Leadership</i></p> <ul style="list-style-type: none"> Advance stakeholder and sector engagement to establish mutual expectations 	<p><i>Ensure Cost-Effective System Reliability</i></p> <ul style="list-style-type: none"> Capacity and resource acquisition Reliability and cost effectiveness Cyber security Market Renewal - Energy 	<p><i>Enable Competition</i></p> <ul style="list-style-type: none"> Enable resources to deliver on capacity / participate in markets 	<p><i>Prepare for the Future of the Sector</i></p> <ul style="list-style-type: none"> Establish scope and framework for 10-year plan 	

COVID-19 and Adjustments to Funding Levels

Corrected: September 13, 2021, EB-2020-0230, Exhibit I, Tab 1.1, Schedule 14 - 1.1 SEC 2, Attachment 1, Page 6 of 16

- Original 2020-2022 Business Plan was revised to include changes in the external environment.
- In response to COVID-19 impacts in Q1, IESO reduced its 2020 revenue requirement by 1.3%, inclusive of one-time pandemic-related expenses.
- IESO proposes return to pre-COVID funding levels for 2021, which are consistent with 2017-2019 funding levels.
- For 2022, a 1% increase is proposed, which represents the first increase since 2017.
- Further, the organization continues work to identify potential operating efficiencies within the 2020-2022 planning period.

2020-2022 key cost drivers and trends

Total expenses during the business plan horizon are increasing by about one percent annually, driven by tight cost management and re-prioritization of projects in order to offset impact from collective agreement escalations and lower interest rates eroding interest income and increasing pension liabilities

- In 2020 costs were managed through risk-informed deferral or slower pacing of various initiatives, reduced contract services and consulting fees, and general and administrative cost reductions associated to stay-in-place orders
- 2021 cost drivers include deferred 2020 projects, work for enabling a more competitive electricity marketplace and market rule manual amendments; these will mostly be offset through judicious management of resources, process efficiencies and re-engineering how IESO delivers its core mandate
- 2022 cost increases due to higher pension liabilities, and continuation of market related projects, are partially offset by savings as IESO reconfigures its overall footprint

Detailed Financials

Corrected: September 13, 2021, EB-2020-0230, Exhibit I, Tab 1.1, Schedule 14 - 1.1 SEC 2, Attachment 1, Page 8 of 16

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

(\$ Millions)	2019 Actual	2020 Budget	2021 Budget	2022 Budget
Revenue				
IESO Usage Fee	191.0	188.6	190.8	192.7
Total Revenue	191.0	188.6	190.8	192.7
Expenses				
Operating Expenses	168.6	170.1	170.5	172.9
Amortization	19.1	19.7	19.2	19.1
Net Interest	(9.0)	(3.3)	(2.5)	(3.5)
Total Core Operations	178.7	186.5	187.2	188.5
 Market Renewal - Energy	 3.1	 2.1	 3.6	 4.2
Market Renewal - Capacity (ICA)	5.5	-	-	-
Total Expenses	187.3	188.6	190.8	192.7
Operating Surplus/(Deficit)	3.7	-	-	-

2020 - 2022 Capital Projects

Corrected: September 13, 2021, EB-2020-0230, Exhibit I, Tab 1.1, Schedule 14 - 1.1 SEC 2, Attachment 1, Page 9 of 16

Capital (\$ Millions)	2019	2020	2021	2022
	Actual	Budget	Budget	Budget
Core Operations Initiatives	20.6	28.2	30.0	30.0
Market Renewal - Energy	10.3	28.9	49.4	39.8
Total Capital Envelope	30.9	57.1	79.4	69.8

The 2020-2022 capital requirements reflect the following:

- Market Renewal - Energy requirements are aligned with the Business Case approved in 2019
- The core capital budget of \$28.2 million focuses primarily on facilitating the delivery of corporate priorities as well as refresh projects to replace or upgrade aging systems and infrastructure. The 2020 core capital portfolio has increased due to:
 - Carryover of in-flight projects from 2019
 - Cadence of cash flow for large projects has changed

2020-2022 Capital Projects

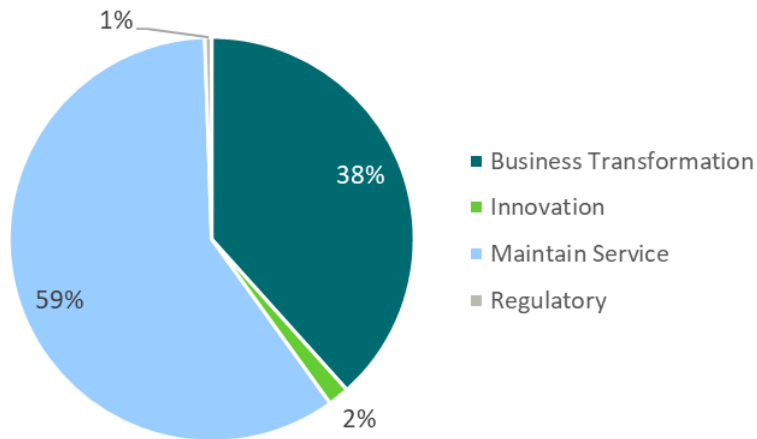
Corrected: September 13, 2021, EB-2020-0230 Exhibit I, Tab 1.1, Schedule 14 - 1.1 SEC 2, Attachment 1, Page 10 of 16

Composition of the Core Operations capital project portfolio increases focus toward Business Transformation and Innovation in 2021

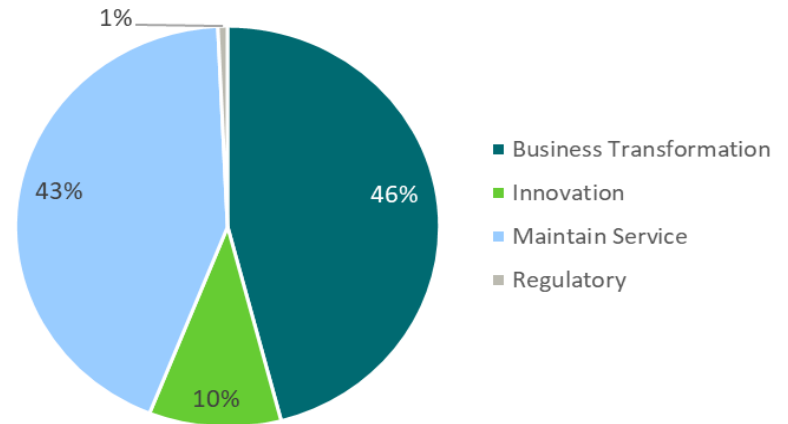
2020 focus directed toward refresh projects to replace or upgrade aging systems and infrastructure

2021 includes increased investments to support business transformation, innovation and to ensure reliability, with the advancing of Wide Area Visualization Environment Phase 2 and Dynamic Limits in Real Time (DLRT) projects, making further investments in Data Excellence, new Data Warehouse and enabling resources to participate in markets while examining further mechanisms to secure capacity

2020 Project Portfolio - Budget Allocation



2021 Project Portfolio - Budget Allocation



2020 - 2022 Staffing

Corrected: September 13, 2021, EB-2020-0230, Exhibit I, Tab 1.1, Schedule 14 - 1.1 SEC 2, Attachment 1, Page 11 of 16

Staffing levels are relatively flat over the planning period, with a few strategic positions added, after rigorous review, to support key initiatives

Key staffing change drivers:

- Redeployment of 2019 Incremental Capacity Auction (ICA) staff to core operations and other priorities
- Core staff increases due to enabling resources initiatives, IESO culture enhancements, and the reallocation of previously externally funded staff back to core operations
- Market Renewal – Energy staff levels will reach 70 in 2020, which is consistent with the approved business case. The key drivers of the staffing increase include addition of internal IT and other market design and implementation resources, as well as staff to support change management activities. Resource increases in 2021-2022 are required to complete market rule amendments and documentation.

Full Time Equivalents (FTEs)	2019 Actual	2020 Budget	2021 Budget	2022 Budget
Core Operations	689	709	713	716
Market Renewal – Energy	49	70	72	76
Market Renewal – Capacity (ICA)	31	-	-	-
Total FTEs	769	779	785	792

2020-2022 MRP – Energy Financials

Corrected: September 13, 2021; EB-2020-0230; Exhibit I, Tab 1.1, Schedule 14 – 1.1 SEC 2 Attachment 1, Page 12 of 16

- Market Renewal – Energy project business case was approved by IESO's Board in late 2019
- The business case cost estimates to deliver the Energy work stream, including contingency, range from \$151 million to \$194 million. The 2020-2022 business plan financials reflect the mid-range number of \$172 million
- The annual Market Renewal – Energy project costs within 2020-2022 are consistent with the business case, with some adjustments in timing and dollars between years
- The project is on track and on budget to its in-service date in Q1 2023

Market Renewal Financial Summary

(\$ Millions)	2019 Actuals	2020 Budget	2021 Budget	2022 Budget
Market Renewal Program - Operating				
Market Renewal - Energy	3.1	2.1	3.6	4.2
Market Renewal - Capacity (ICA)	5.5	-	-	-
Total Operating Expenses	8.6	2.1	3.6	4.2
Total Capital Expenses	10.3	28.9	49.4	39.8

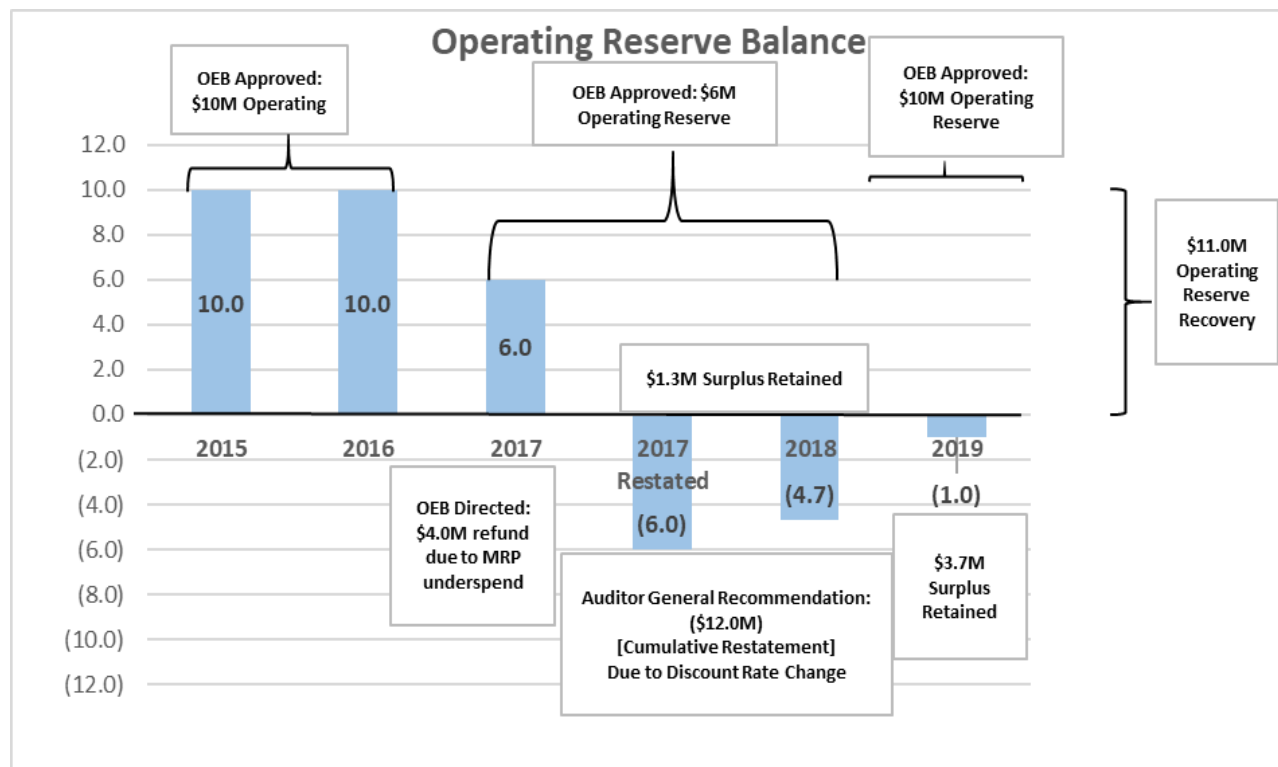
IESO Operating Reserve Recovery – Context

Corrected: September 13, 2021, EE-2020-0230, Exhibit I, Tab 1.1 Schedule 14 - 1.1 SEC 2, Attachment 1, Page 13 of 16

- Proposed operating reserve recovery is a separate approval item in addition to and not included in IESO's operating expenses within the Business Plan
- Within its 2019 fees case proceeding, the Ontario Energy Board approved IESO's \$10 million operating reserve level and directed the IESO to address its recovery within the 2020 filing
- The IESO proposes an annual recovery of \$1 million over 2020-2022 planning period, and to continue afterwards until the IESO reaches \$10 million, which puts some upward pressure on its fees rates
- Market Renewal – Energy going into service in 2023 will have a material impact on IESO's fee rates as the investment and interest costs for the program are recovered through amortization
- The Operating Reserve recovery in 2020-2022 is an opportunity to build up the reserve and serve as a rate smoothing mechanism to MRP rate impacts in 2023

IESO Operating Reserve Recovery

Corrected: September 13, 2021, EE-2020-0250, Exhibit I, Tab 1.1 Schedule 14 - 1.1 SEC 2, Attachment 1, Page 14 of 16



- The IESO's operating reserve is currently in a deficit position due to prior year accounting policy change
- In 2019, Ontario Energy Board approved the IESO to restore its operating reserve to \$10 million level during the 2020-2022 planning period
- The IESO is proposing to recover an estimated \$3 million over 2020-2022 rates for a total operating reserve of \$2 million by end of 2022. The funding for this recovery is in addition to IESO's core revenue requirement and will therefore have additional impact on fees.

Business Plan Risks

- **Government sensitivity**, in the context of the current fiscal environment, with respect to:
 - Return to historical pre-COVID-19 funding levels for 2021 from a reduced funding level in 2020
 - Proposed Operating Reserve recovery putting upward pressure on IESO's revenue fee rates in 2020-2022

IESO's Business Plan has aligned priorities and resources to support decision-making in consideration and mitigation of the strategic risks as outlined in the Enterprise Risk Management agenda item

Next steps/ Implementation

- **August 11:** Present overview of Business Plan to the Stakeholder Advisory Committee (SAC)
- **August 19:** Brief Ministry on Business Plan
- **August 25:** Board approval of Business Plan
- **September 1:** Deliver Business Plan to the Minister of Energy, Northern Development and Mines
- **October/November:** File multi-year revenue requirement submission with the Ontario Energy Board

Revised Business Plan 2020-2022

Independent Electricity System Operator
September 1, 2020

Contents

- 1 Letter from the President & CEO
- 3 Financial Overview
- 6 Market Renewal Financials
- 8 Appendix 1: IESO Performance Management – Measures and Targets
- 10 Appendix 2: Enterprise Risk Management
- 11 Appendix 3: Capital Spending

Letter from the President & CEO

Over the past few years, our efforts to maintain a cost-effective and reliable electricity system have been shaped, in part, by electricity sector transformation – more resources, new business models, emerging technology, and demands for more choice in how we produce and consume electricity.

In 2020, the emergence of COVID-19 added another layer of complexity, and reminded us how factors outside the sector also have a big impact on Ontario's electricity system. At the time of writing, the province is reopening and electricity demand, which dropped significantly while businesses shut down, is evolving to a new normal. We have updated our forecasts to incorporate the potential long-term impacts to the economy.

As the province continues to recover in the months and years ahead, ensuring Ontario residents and businesses receive reliable and affordable electricity will be especially important. It is within this context that the IESO presents its 2020-2022 Business Plan.

This plan lays out how we will deliver on our core strategic priorities, sets out the initiatives and investments that are integral to achieving them, articulates the risks that inform our decision-making and establishes the performance measures that will demonstrate our success.

From a reliability standpoint, this year has demonstrated the value of our diverse supply mix and responsive electricity markets. While the recent shutdown of businesses caused electricity demand to drop to lows we haven't seen in over a decade, subsequent heatwaves, and the suspension of the Industrial Conservation Initiative, resulted in the highest peak demands since 2013. Throughout the pandemic, Ontario's electricity system remained reliable.

Looking ahead, Ontario's electricity system is well-positioned for the future, with enough existing and available resources to meet electricity demand until the mid-2020s under both faster and slower economic recovery scenarios.

Over the course of the planning period, enhancements to our bulk and regional planning processes, planning and reliability tools, advancements of the Market Renewal – Energy project and improvements to our cybersecurity sector services and coverage, will continue to play an important role in ensuring cost-effective and risk-adjusted grid reliability in real-time and longer term.

To help ensure electricity is affordable, enabling greater competition in our electricity markets will continue to be a priority. Our first capacity auction will launch this December, which will allow generators with expired contracts, demand response and imports to compete. In addition, we will begin engaging stakeholders on the development of a strategy for the competitive acquisition of resources to meet short, medium and long-term electricity system capacity needs, recognizing that not all resources can participate in auctions. This will include expanding the number of eligible resources, increasing competition and driving down costs that can participate in the Capacity Auction. To further competition, we will build on a previous scoping and assessment exercise to enable the participation of several resource types such as storage, hybrid facilities, Demand Response and Distributed Energy Resources and intertie transactions to deliver capacity into the real-time energy market.

We are also at a pivotal moment in our Market Renewal – Energy project, moving from the detailed design phase to implementation, which is expected to be complete in 2023. Designed to improve how we supply, schedule and price electricity by addressing longstanding market inefficiencies, this comprehensive suite of reforms is expected to result in net benefits of \$800 million in the first 10 years alone.

With greater uncertainty and ongoing sector transformation, the IESO is continuing to make innovation a priority by leading or supporting initiatives that can increase the reliability or cost-effectiveness of the electricity system. This will include addressing calls for greater community choice and alternatives to traditional transmission infrastructure by testing whether using distributed energy resources can help meet fast-growing needs and drive down costs in the province's York Region. Another priority is Windsor Essex, where electricity demand is expected to double over the next five years as a result of the expected growth in the greenhouse industry. Working with greenhouse growers and others, the IESO is supporting a number of initiatives that will help improve capacity in the area.

Whether ensuring reliability or enabling competition to reduce costs, working with stakeholders and communities across the province will become even more important to helping us meet the challenges associated with ongoing disruption. Bringing together these different perspectives helps lead to better outcomes. Recognizing this, in 2020 we introduced a new framework to make it easier for stakeholders to engage with us. Over the course of this planning cycle, we will use our early experiences to evolve this new streamlined approach to stakeholder engagement.

In preparing for the future, our recent experiences with COVID-19 and working from home underline the need to sharpen our focus on reducing our own costs, and on developing a flexible workforce strategy. Positioning the IESO to meet the challenges ahead involves developing a more cohesive and inclusive culture, and a more agile and engaged workforce – and building new capabilities that will drive performance, now and in the years ahead. The latter includes harnessing the value of internal data to improve fact-based decision-making for both the IESO and our market participants and stakeholders.

The 2020-2022 Business Plan sets out the IESO revenue requirement and capital spending needed to maintain our critical responsibilities over the three-year period. The move to a three-year cycle, which is consistent with the practice of other regulated entities in the Ontario electricity sector, will reduce costs associated with an annual filing. Updates to this plan will be submitted on an annual basis to account for required deviations from established program parameters, timelines or funding envelopes.

With our commitment to delivering value through organizational efficiencies and by investing in priority projects, the IESO maintained flat revenue requirement levels from 2017-2019. In early 2020, in response to the emergence of COVID-19, the IESO reduced its revenue requirement by 1.3% inclusive of one-time pandemic-related expenses. The IESO proposes a return to pre-COVID-19 funding levels for 2021 and a 1% increase to its operating expenses for 2022. In addition to the revenue required to address its operating and capital expenses, the IESO is also seeking to build up its operating reserve to \$2 million over the course of the planning period. This reserve was drawn down in 2019 due to an accounting policy change required by the Auditor General of Ontario.

Funding for capital projects to facilitate the delivery of the tools, technology and programs that are required to achieve our strategic objectives, including cybersecurity enhancements and the multi-year

Market Renewal – Energy project, will be \$57.1 million in 2020, \$79.4 million in 2021 and \$69.8 million in 2022.

As the province continues to recover from the effects of the pandemic, the IESO remains committed to ensuring Ontarians benefit from a reliable, affordable and sustainable electricity system.

Peter Gregg
President and CEO, IESO

Financial Overview

The 2020-2022 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 to execute key strategies, including ensuring cost effective system reliability, enabling competition, driving business transformation, advancing sector leadership and preparing for the future of the sector. The IESO has maintained flat revenue requirement levels from 2017-2019 through prudent investments in its priorities, while focusing on process enhancements, leveraging organizational efficiencies and closely managing cost pressures.

In early 2020 in response to COVID-19 impacts on Ontario's electricity demand and on the organization, the IESO reduced its revenue requirement by 1.3% to \$188.6 million. For its operating costs, IESO proposes to return to pre-COVID funding levels for 2021, and a 1% increase for 2022, which would, in effect, represent a 1% increase over the three-year planning period and the first increase since 2017.

In 2020, the IESO managed COVID-19-related impacts, including one-time expenses as pandemic plans were executed to ensure the safety of staff working on-site to support grid operations and the reliability of the electricity system. The IESO took steps to prioritize new projects and initiatives to manage costs, while continuing to deliver on important system enhancements within the Market Renewal –Energy project (MRP) and other multi-year projects. 2021 cost drivers include impact from 2020 projects deferred due to prioritization, work for enabling a more competitive electricity marketplace and market rule manual amendments; these will mostly be offset through judicious management of resources, process efficiencies and re-engineering how IESO delivers its core mandate. 2022 cost increases due to higher pension liabilities, and continuation of market related projects, are partially offset by savings as IESO reconfigures its overall footprint. Further, the organization continues work to identify potential operating efficiencies within the 2020-2022 planning period.

The IESO remains committed to enabling a more competitive electricity marketplace, through the delivery of the capacity auction in 2020, working with its stakeholders to develop a competitive resource acquisition strategy for short, medium and long-term capacity needs and by enabling more resources to participate. Internally, the IESO will drive business transformation by implementing a workplace strategy aimed at enhancing its culture and people practices to accelerate performance, and by establishing a technology and data roadmap to enable better analytics, achieve new efficiencies and deliver value to the sector. This work will position the IESO to achieve its vision of being “the trusted leader that guides Ontario's electricity future,” while meeting electricity needs reliably and at the lowest cost to Ontario electricity customers.

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

For 2020, the IESO anticipates an average of 779 full-time employees to deliver on core electricity system responsibilities, as well as to support Market Renewal - Energy. After rigorous review, staffing levels will remain relatively flat over the planning period, with a few strategic positions added to support key initiatives.

The IESO historically has maintained an operating reserve of \$10 million but was reduced to a deficit position due to the Auditor General of Ontario's requested accounting changes. The Ontario Energy Board approved this level of reserve to manage cost or revenue variances from budgets, as well as changes to the external environment that impact the IESO and may not be within its control or reasonably foreseeable, a practice adopted by similar sector organizations. Given the scope and complexity of its mandate, the IESO recognizes the potential for additional unplanned work activities that may be material in scope and are beyond the control of management.

The IESO is seeking to build up its operating reserve by \$1 million annually over the course of the 2020- 2022 planning period up to a total \$2 million. The funding for this recovery will be an ongoing cost until the IESO reaches \$10 million, in addition to the IESO's core revenue requirement and will, therefore, have an additional impact on fees.

Detailed Financials

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

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

(\$ Millions)	2019 Actual	2020 Budget	2021 Budget	2022 Budget
Revenue				
IESO Usage Fee	191.0	188.6	190.8	192.7
Total Revenue	191.0	188.6	190.8	192.7
Expenses				
Operating Expenses	168.6	170.1	170.5	172.9
Amortization	19.1	19.7	19.2	19.1
Net Interest	(9.0)	(3.3)	(2.5)	(3.5)
Total Core Operations	178.7	186.5	187.2	188.5
Market Renewal - Energy	3.1	2.1	3.6	4.2
Market Renewal - Capacity (ICA)	5.5	-	-	-
Total Expenses	187.3	188.6	190.8	192.7
Operating Surplus/(Deficit)	3.7	-	-	-
Proposed recovery to restore operating reserve	-	1.0	1.0	1.0
Accumulated operating Surplus/(Deficit)	(1.0)	0.0	1.0	2.0

Capital

The IESO regularly prioritizes capital initiatives. The business planning process establishes an appropriate capital envelope for core operating initiatives with commitments approved individually on an ongoing basis. This practice is consistent with prior years. The capital implementation stage of the Market Renewal – Energy project (MRP), which began in 2018, will continue through the planning period.

2020 capital focus is directed towards refresh projects to replace or upgrade aging systems and infrastructure, including carryover of in-flight projects from 2019. 2021 capital funding increase will support projects destined to enable a more competitive electricity marketplace and ensure the system reliability, such as Wide Area Visualization Environment, Market Analysis and Simulation Toolset, and Data Warehouse. The work for most of these projects expands multi-year, thus the flat funding requirement for Core operations initiatives in 2022.

The Market Renewal - Energy project business case was approved in 2019, and the table below includes the forecasted spend for 2020 and business case budgets for 2021 and 2022, as well as a summary of the total capital spending required in this plan. Project details and associated descriptions are included in Appendix 3.

Capital (\$ Millions)	2019	2020	2021	2022
	Actual	Budget	Budget	Budget
Core Operations Initiatives	20.6	28.2	30.0	30.0
Market Renewal - Energy	10.3	28.9	49.4	39.8
Total Capital Envelope	30.9	57.1	79.4	69.8

Staffing

In 2020, 709 full time positions support the IESO’s core initiatives. Staffing levels in 2021 and 2022 (713 staff and 716 staff respectively) are required to support new initiatives to enable resources, workplace and culture enhancements, and the reallocation of previously externally funded staff back to core operations. Resources required to support the Market Renewal - Energy market design and implementation will reach 70 staff in 2020 and increase slightly in 2021 and 2022 to support market rule amendments and documentation work.

The 2019 decision to cease the incremental capacity auction (ICA) work under Market Renewal Program resulted in no further related hires, with existing staff being redeployed to capacity market design, the MRP energy work stream and IESO’s core operations.

Average FTEs

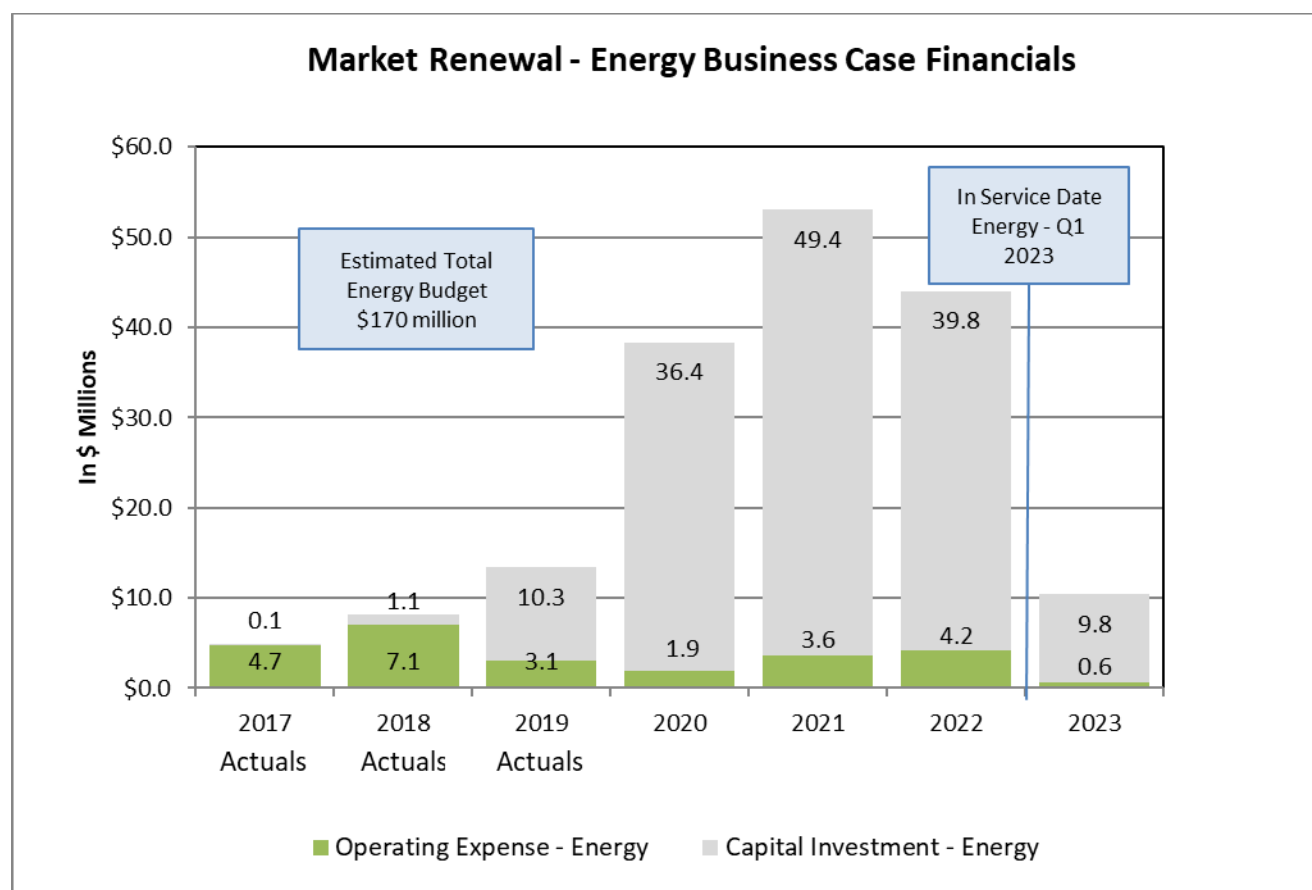
Full Time Equivalents (FTEs)	2019	2020	2021	2022
	Actual	Budget	Budget	Budget
Core Operations	689	709	713	716
Market Renewal - Energy	49	70	72	76
Market Renewal - Capacity (ICA)	31	-	-	-
Total FTEs	769	779	785	792

Market Renewal Financials

Market Renewal will continue with the delivery of the Energy work stream during this business planning period. The current cost estimate, which includes the delivery of the energy work stream, and the cost of the capacity work stream up until the end of 2019, is approximately \$192 million.

Market Renewal - Energy Business Case Approval

The business case for the Market Renewal - Energy work stream was approved by the IESO Board on October 23, 2019 and the revised in-service date for the energy work stream is March 2023. The estimated cost to deliver the energy work stream, including contingency, ranges from \$151 million to \$194 million. The business plan financials reflect the mid-range number of \$172 million.



Market Renewal- Energy Funding Update

Market Renewal will continue the detailed design and implementation phase of the energy work stream, which are classified as capital spending. This work will proceed with broad support across the organization and will include a significant complement of IT resources to support implementation of the energy deliverables, while managing the inter-related nature of other significant IESO initiatives. Market Renewal activities funded through operating costs include market rule amendments and related stakeholder activities, change management planning and coordination, and updates to internal and external manuals.

Market Renewal Financial Summary

(\$ Millions)	2019 Actuals	2020 Budget	2021 Budget	2022 Budget
Market Renewal Program - Operating				
Market Renewal - Energy	3.1	2.1	3.6	4.2
Market Renewal - Capacity (ICA)	5.5	-	-	-
Total Operating Expenses	8.6	2.1	3.6	4.2
Total Capital Expenses	10.3	28.9	49.4	39.8

The annual Market Renewal – Energy project costs within 2020-2022 are consistent with the business case, with some adjustments in timing and dollars between years. The project is on track and on budget to its in-service date in Q1 2023.

Appendix 1: IESO Performance Management – Measures and Targets

In tandem with its updated strategic plan, the IESO developed a five year strategic measures and targets monitoring framework to ensure ongoing alignment to the priorities of the organization. This approach is transitional for the organization and represents an advancement in the maturity of the IESO's Performance Management. The measures are intended to support monitoring of performance towards the five-year strategic objectives. Going forward, the IESO will track annual performance against targets as well as continually assess the measures to ensure they drive performance and track progress against strategic objectives. This approach provides for an expanded view of measuring and monitoring performance not just within the IESO but on a broader sector scale, in the context of supporting advice to the market and in our stakeholder engagements. This change is expected to have significant advantages for aligning behaviours and driving actions for desirable long-term performance outcomes.

Five-Year Strategic Objectives	Metrics	Five-Year Targets
Culture & Workforce Transformation	1. Employee Engagement - Meaningful increases in survey results for specific engagement areas that are selected based on the IESO's annual budgets and priorities	<ul style="list-style-type: none"> 4% annual increase from baseline as established by previous survey
	2. Agility - Employee feedback on Openness to Change	<ul style="list-style-type: none"> 65% positive employee feedback on the Openness to Change scale
	3. Efficiency - Percentage of strategic initiatives that are completed on time	<ul style="list-style-type: none"> 90% of strategic initiatives are completed on time (i.e., within 50% of assigned schedule contingency) as established by the integrated project plan and project charter
Affordability, Reliability, Sustainability	4. Cost-Effectiveness – Accuracy of the hourly day-ahead market forecasts to actual demand	<ul style="list-style-type: none"> Annual forecast error is within +/- 2.5% (actual vs. forecast)
	5. Cost-Effectiveness - Forecast reserve margin, including IESO resource (energy, capacity and ancillary services) and conservation acquisition plans, above/below requirement in five years	<ul style="list-style-type: none"> Over/under supply deviation of 0.9 is achieved, where a measure of 1 indicates right-sized over/under supply of services

Five-Year Strategic Objectives	Metrics	Five-Year Targets
	6. Reliability – Number and duration of forced outages to resources above 250 MW	<ul style="list-style-type: none"> Measures the performance of the resource fleet Measurement methods and targets will be confirmed by December 4, 2020
	7. Reliability – Number and duration of extended forced outages to transmission facilities above 230 kV	<ul style="list-style-type: none"> Measures bulk transmission system performance beyond four hours in duration Measurement methods and targets will be confirmed by December 4, 2020
	8. Market Efficiency – Transparency index assessing share of system costs flowing through the market	<ul style="list-style-type: none"> Improve index by 1% by 2024
	9. Sustainability – Total greenhouse gas (GHG) emissions from electricity production	<ul style="list-style-type: none"> Total GHG emissions no more than 10% above forecast each year
Stakeholder Trust	10. Stakeholder Satisfaction - Survey result	<ul style="list-style-type: none"> By 2023, 84% of stakeholders indicate IESO's engagement meets or exceeds their expectations
	11. Stakeholder Trust – Survey result	<ul style="list-style-type: none"> Measurement methods and targets will be confirmed by December 31, 2020

Appendix 2: Enterprise Risk Management

The IESO's established enterprise risk management (ERM) program supports the identification, assessment and mitigation of risks that the organization faces in achieving its strategic objectives. This business plan has aligned priorities and resources across key areas of the IESO to support informed decision-making in the consideration and mitigation of the strategic risks identified below.

Risk Event Description	Strategic Objective		
	Affordability, reliability, sustainability	Culture and workforce transformation	Stakeholder trust
The IESO's assessments of system needs and the plans to meet them do not align with sector expectations.	X		X
Supply and demand are significantly mismatched over the longer term.	X		X
Conditions for market power, such as a further increase in the concentration of generation ownership, are enhanced.	X		X
Operating in a constrained environment defers and delays advancement of key initiatives to innovate the business and electricity sector.	X	X	X
Users of the IESO's information technology systems are subject to cyberattacks.	X	X	X
The IESO's information systems are subject to intentional and unintentional exfiltration of sensitive data	X	X	X
The IESO's ability to facilitate cybersecurity situational awareness and information exchange across Ontario's electricity sector is diminished.	X		X
A regulatory decision is invoked that is contrary to the delivery of enhanced competitive mechanisms.	X		X
Non-electricity sector entrants cause significant disruption in energy market dynamics.	X		
Availability of human capital with required skills is inconsistent with the IESO's need for talent in hard-to-fill roles.	X	X	
The IESO is unable to retain critical staff or transition employees into emerging roles.	X	X	
An extreme weather event significantly damages generation or transmission assets.	X		

Appendix 3: Capital Spending

Summary for 2020-2022 capital spending

Change Initiatives/Projects (\$ Millions)	2020 Plan	2021 Plan	2022 Plan
Centralized Alarm Management System Replacement	0.4	2.1	1.1
Replacement of the Settlement Systems	8.4	8.8	10.9
SCADA/Energy Management System (EMS) Upgrade	7.9	3.4	0.6
Corporate PBX Phone System Refresh	1.2		
Data Excellence Program	0.5	1.3	1.8
Dispatch Data Management Systems Refresh	1.5	0.1	
Capacity Auction	1.7	0.1	
External Identity Management (Portal)	1.1	0.3	
Wide Area Visualization Environment (WAVE) - Phase 2	0.5	1.2	0.4
Enabling Resources to Deliver on Capacity/Participate in Markets		0.5	2.4
Addressing Market Surveillance Panel (MSP) Recommendations		1.8	1.6
Data Warehouse		0.5	1.0
Dynamic Limits in Real-Time		1.1	1.2
New Capacity/Resource Acquisition Initiatives		1.0	2.0
Network Performance Monitoring and Diagnostic			2.5
Capital (\$1 million & above)	23.2	22.2	25.5
Other Initiatives/Projects (Less than \$1 million)	5.0	7.8	4.5
Total Without Market Renewal – Energy project	28.2	30.0	30.0
Market Renewal Program – Energy project	28.9	49.4	39.8
Total Including Market Renewal – Energy project	57.1	79.4	69.8

2020-2022 Capital Plan Details

Project	Description
Centralized Alarm Management System (CAMS) Replacement	The CAMS project will ensure IESO operators can continue to manage alarms and events that are important indicators of change by implementing a solution to software that will no longer be supported by the vendor.
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 the system to meet current and future business needs.
Supervisory Control and Data Acquisition (SCADA) / Energy Management System (EMS) Upgrade	This project will upgrade the Supervisory Control and Data Acquisition (SCADA)/Energy Management System (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 for energy storage resources to become integrated suppliers of regulation services.
Corporate PBX Phone System Refresh	This refresh project will replace and consolidate the existing Avaya PBX system with a new phone system featuring enhanced mobility capabilities.
Data Excellence Program	To help harness the full value of IESO data, this program will establish a data management and analytics framework that will support IESO business needs, and enhance access to data and information by external audiences.
Dispatch Data Management Systems Refresh	This project will move the Dispatch Data Management System (DDMS) to a vendor-supported hardware and software platform and introduce a number of upgrades to address reliability and performance concerns and enhance functionality of the current DDMS.
Capacity Auction	The capacity auction will be run annually to meet resource adequacy needs alongside other procurement tools. Designed to enable resources to compete to meet system needs in shorter time frames, the first annual capacity auction in December 2020 will include eligible DR participants, off-contract generators, system-backed imports, and uncontracted storage for a 2021/2022 commitment period. The auction will be evolved over time to deliver efficient and cost-effective outcomes by improving the auction processes and allowing additional resources to participate.
External Identity Management (Portal)	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.

Project	Description
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 to Deliver on Capacity / Participate in Markets	The IESO will increase the number of resource types that can participate in the IESO markets to deliver energy, capacity and ancillary services. Increasing supply options will lower the total cost of meeting system needs.
Addressing Market Surveillance Panel (MSP) Recommendations	This project is proposed as a portfolio of initiatives to develop, evolve and address inefficiencies in the electricity market in response to observations by the MSP and other stakeholders.
Data Warehouse	In use since market opening, the IESO's current market data warehouse has limited data utilization/reporting/management functionality. This project will implement an updated data warehouse strategy and supporting applications, enabling the IESO to effectively manage and leverage the data it collects.
Dynamic Limits in Real-Time (DLRT)	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 supports increased system security and resiliency.
New Capacity/Resource Acquisition Initiatives	The IESO will continue to evolve the capacity auction to enable greater participation in the IESO-administered markets from a wider range of resources. The addition of new resources is expected to increase competition, reduce system costs and maximise the return on the investment in the new platform. In parallel, the IESO will need to develop, implement and execute other tools and mechanisms to maintain resource adequacy.
Network Performance Monitoring and Diagnostic	The IESO's Core and Data Center 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 enhance visibility, reduced troubleshooting effort and time to resolution and predictive failure analysis.

Resolution of the Board of Directors Independent Electricity System Operator

December 9, 2020

In Respect of an Update to the 2020 – 2022 Business Plan

WHEREAS the Board of Directors approved the IESO 2020 - 2022 Business Plan at its August 26, 2020 meeting and through subsequent review Management recommends a change to defer the recovery of the IESO operating reserve and instead use that funding toward other IESO initiatives;

AND WHEREAS the Audit Committee has reviewed and recommends the approval of this change to the 2020 – 2022 Business Plan by the Board of Directors;

NOW THEREFORE BE IT RESOLVED THAT the change to the 2020 – 2022 Business Plan to defer recovery of the IESO operating reserve is approved.

SEC INTERROGATORY 3

Issue 1.1 Is the IESO's Fiscal Year 2020 revenue requirement of \$188.6 million appropriate?

1.1-SEC-3

INTERROGATORY

Please provide details of all productivity and efficiency measures the IESO undertook in 2019 and 2020 and plans to undertake in 2021. Please quantify the savings.

RESPONSE

In order to manage OM&A cost pressures from collective agreement and inflation, the IESO has prioritized work and changed internal processes - as part of the ongoing focus on internal continuous improvement – to better allow support for capital projects with existing staff, delay hiring of vacancies, and avoid external costs by leveraging existing staff expertise. In 2020, the IESO implemented new tools/technologies that facilitated the work-from-home model, and remote learning, which produced savings in various areas (from facilities costs to training). In addition, the IESO intends to shift more work in-house, including audit work associated with Contract Management, support for recruitment, as well as legal support.

Given that these activities are function centered across multiple areas in the organization it is difficult to quantify specific savings; however, below table reflects the main drivers in the year over year OM&A variances, with savings opportunities offsetting risks, cost increases or unplanned items.

Table 1: Year over Year OM&A variances

(\$ Millions) [Increase +/Decrease (-)]	2019 Actual	2020 Actual	2021 Budget
Opening OM&A Expenses	179.8*	177.2	171.3
Collective agreements/escalations	3.0	3.0	3.4
Costs of employee benefits (not captured in other drivers)	(0.9)	3.0	0.6
Incremental Capacity Auction (ICA) work stream / Capacity Market Design	0.6	(4.6)	(0.9)
MRP – Energy program	(6.6)	(1.0)	1.5
Non-repeatable legal and consulting spend/recovery	2.0	(2.7)	0.8
Core operations higher labour capitalization	(0.0)	(1.2)	(2.5)
Other legal & consulting fees savings	(1.0)	(1.1)	(0.0)

COVID-19 related costs	-	1.2	(1.2)
Telecomm and computer services/HW/SW for new projects	-	-	2.2
Various other	0.2	(2.5)	0.1
Actual/Application Year Budget OM&A Expenses	177.2	171.3	175.2
Year over Year variance	(2.7)	(5.9)	3.9

1 * Represents 2018 Actual OM&A

SEC INTERROGATORY 4

Issue 1.1 Is the IESO's Fiscal Year 2020 revenue requirement of \$188.6 million appropriate?

1.1-SEC-4

INTERROGATORY

Please provide a summary of all internal audit reports issued since 2019, their recommendations, and the status of the implementation of those recommendations.

RESPONSE

The IESO's Internal Audit group (Internal Audit) provides independent and objective services on risk management, controls and governance processes to management and the Audit Committee of the Board of Directors. The IESO Internal Audit function is committed to being a high value, cost-effective contributor to the overall business success of the IESO. The Internal Audit group develops an annual Audit Services Plan.

Audit Service Plan

The Audit Services Plan includes audits covering process control, information technology and policy compliance. The following provides a listing of the internal audits completed between January 2019 and July 2021 by audit type and a summary of key themes and risk areas identified. The date in brackets after the audit name denotes the year the audit was completed. This response also includes a status update on the IESO management team's (management) actions pursuant to audit recommendations.

Process Control

The objectives of a process control review are to confirm that the IESO's controls are designed appropriately for the task, as well as to verify that they are operating as designed. These reviews may confirm that the organizational or program processes are aligned with leading industry practices.

The process control assurance audits completed between January 2019 and July 2021 are:

- Forecast variable generation (2019)
- Records management (2019)
- Market participant registration (2019)
- Control room training (2019)
- Market settlement SOC 1 and 2 (2019)
- Forecast short term demand (2020)
- Pre-construction development cost re-imbursement (2020)
- DACE & DSO audit (2020)

- Freedom of information (2020)
- Employee expenses (2020)
- Electricity resource planning process (2020)
- Inputs to network model build (2021)
- Pre-construction development cost (2021)
- Transmission rights (2021)
- Generation contract settlement (2021)
- Conservation contract settlement (2021)
- Project management (2021)

The following is a summary of key themes and risk areas identified by Internal Audit to be addressed by management:

- Contract management
- Collaboration between business units
- Access to data and data quality
- Timeliness of project completion
- Data, tools and service level standards to track, monitor and improve process efficiency
- Regular monitoring/evaluating of market and program outcomes
- Continuous improvement of IT tools
- Manual work-arounds to address tool shortcomings
- Compliance with the business-led IT tool policy
- Simplify governance
- Regular review and maintenance of governing documents, e.g., policy, process and job documents
- Document approvals to ensure appropriate audit trail
- Ensure potential for fraud is addressed in process design

Information Technology

The objective of an IT review is to confirm that IESO's IT system control and processes are designed appropriately for the purpose, as well as to verify that these controls are operating as intended. These reviews often confirm that the controls and practices are aligned with leading industry practices. IT and end user computing tool reviews are often included within process audits; these are not called out in this section.

The IT audits completed between January 2019 and July 2021 are:

- IT governance (2020)
- IT Project pre-implementation testing (2020)

- IT general controls (2021)

The following is a summary of key themes and risk areas identified by Internal Audit to be addressed by management:

- Data, tools and service level standards to track, monitor and improve process efficiency
- Contract management
- Data and IT architecture governance
- Project risk tracking and monitoring
- Oversight of project go-live decision making

Policy Compliance & Governance

The objective of policy compliance reviews is to confirm that the organization is in compliance with documented and approved corporate or government policies. A secondary objective of these reviews is to identify any existing gaps in the policy and procedure (e.g. a new government administrative directive, such as the Travel, Meal, Hospitality and Expenses Directive) that should be updated by the IESO.

The Policy Compliance audits completed between are:

- Fraud risk assessment (2019)
- Entity level review (2019)
- Treasury Board and Management Board of Cabinet Directive compliance review (annual)

The following is a summary of key themes and risk areas identified by Internal Audit to be addressed by management:

- Increase use of data analytics
- Increase use of continuous fraud monitoring
- Regular monitoring/evaluating of market and program outcomes

Management Response and Action Plans

Management has fully participated in the internal audit process, has accepted recommendations presented by Internal Audit and implemented necessary action plans.

As of September 1, 2021, there were sixteen (16) open and twenty-six (26) closed recommendations related to the seven (7) audits listed below. Internal Audit actively tracks progress and is satisfied that Management is diligently and effectively addressing the recommendations.

- Forecast short term demand (2020)
- Employee expenses (2020)
- Electricity Resource planning process (2020)
- Inputs to network model build (2021)
- IT governance (2020)
- IT Project pre-implementation testing (2020)
- Fraud risk assessment (2019)

SEC INTERROGATORY 5

Issue 1.1 Is the IESO's Fiscal Year 2020 revenue requirement of \$188.6 million appropriate?

1.1-SEC-5

INTERROGATORY

[A-2-1] With respect to stakeholder engagement:

- a. For each of its current stakeholder engagement initiatives, please provide a list of entities who represent non-large volume customers (i.e. non-Class A eligible consumers).
- b. Please explain how the IESO ensures that it receives the views of non-large volume customers (i.e. non-Class A eligible consumers), within its customer engagement activities.

RESPONSE

- a. The IESO does not ask engagement initiative participants to identify who they represent. As such it is not possible to accurately provide a list of entities or individuals who represent non-large volume customers. However, in 2020 the IESO held over 100 engagement meetings with almost 7000 participants – of that, the IESO recorded discussions and engagement with over 2000 participants through Regional and Community Engagement.
- b. The IESO sends out broad communications to inform customers, stakeholders and interested individuals about its ongoing and future engagement activities. This is done through the Weekly IESO Bulletin, social media platforms like Twitter and LinkedIn, as well as through the IESO's Regional Electricity Networks, which consists mostly of low volume consumers (individuals, small businesses, municipalities, Indigenous communities, etc.), and subscribers to receive regular updates on regional electricity planning engagement initiatives. The IESO has 2,200 subscribers to the Bulletin, 16,600 followers on LinkedIn and 7.250 followers on Twitter.

Recognizing that electricity needs and priorities differ among regions across the province, the IESO established five regional networks with more than 2,500 members that includes regular communication around IESO initiatives. These networks bring together individuals and organizations with an enduring interest in local, regional and provincial electricity issues, who wish to discuss future needs and be informed about the latest issues and innovations in Ontario's electricity sector. Regular communications and updates are shared with members that are relevant to their region of the province, as

1 well as IESO initiatives and engagements. Past newsletters, communications and events
2 are available on each of the five Network sections on IESO Connects.

3 As well, the IESO continues to leverage the insights of its Stakeholder Advisory
4 Committee (SAC) to ensure well rounded policy-level input is received on IESO initiatives
5 from a diverse set of senior stakeholder representatives. The IESO SAC currently
6 includes representation from low volume consumers.

7 The IESO's Technical Panel, which discusses proposed changes to the IESO market
8 rules, has a member from the municipal sector to bring a low volume and/or residential
9 perspective to the deliberations held by the Panel.

10 Please also see the response to Schedule 16 - 1.1 VECC 10a).

SEC INTERROGATORY 6

Issue 1.1 Is the IESO's Fiscal Year 2020 revenue requirement of \$188.6 million appropriate?

1.1-SEC-6

INTERROGATORY

[EB-2019-0002, Exhibit I, Tab 1.1, Schedule 10.07 SEC 7b, Attachment 1] Please provide a list of each of the recommendations contained in the IESO Report on Governance and Decision Making and the status on their implementation.

RESPONSE

All recommendations contained in the IESO Report on Governance and Decision Making were assessed, implemented and/or practically adopted into IESO processes as of February 2020. A summary of the 14 recommendations is below with a note on the assessment of recommendation #10:

1. Publicly post all market rules amendment related materials going to the IESO Board
2. Publicly post written reasons for IESO Board decisions re: market rule amendments
3. Publicly post all stakeholder feedback on draft market rule amendments
4. Publicly post historical market manual baselines
5. Guidelines for market rules distinction from market manuals
6. Thresholds for determining which market manual content should be provided to stakeholders for review with draft market rules
7. For each market rule amendment, review as part of the engagement phase and provide summary of stakeholder engagement feedback to the Technical Panel
8. Review Technical Panel composition and processes to avoid duplication
9. Introduce new Markets Committee – subsequently called Market Development Advisory Group
10. Fund low volume consumer representation and participation in stakeholder engagements [note: research found that funding alone will not achieve the desired results; work will continue through regional electricity networks which has attracted a broad representation of low volume consumers in its membership. Please also see response to Schedule 16 - 5.2 VECC 10.]
11. Consult Market Development Advisory Group on recruitment of Technical Panel members
12. Consult Market Development Advisory Group on recruitment of Dispute Resolution Panel members

- 1 13. Amend the Dispute Resolution provisions of the market rules
- 2 14. Ongoing receptiveness to new mechanisms for market participant redress in market
- 3 design

1 **SEC INTERROGATORY 7**

2 Issue 1.1 Is the IESO's Fiscal Year 2020 revenue requirement of \$188.6 million appropriate?

3 1.1-SEC-7

4 **INTERROGATORY**

5 The IESO has undertaken a new stakeholder engagement initiative regarding recovering certain
6 costs associated with connecting a new facility, or modifying an existing facility, to the
7 proponent seeking the change from the individual facility owner and not through the usage fee:

8 a. What is the timeline for the implementation of these new charges?

9 b. Does the IESO expect that this will result in a new or modified registration fee?

10 c. If this change had been in place in 2021, what would be the reduction in the total costs
11 recovered by all load customers through the usage fee?

12 **RESPONSE**

13 a. The IESO expects to file for approval of these fees in its next revenue requirement
14 submission. The cost recovery fees would only be implemented following OEB approval.

15 b. The IESO expects the stakeholder engagement will lead to a proposal for a new or
16 modified registration fee.

17 c. The IESO does not have this information as that evaluation would involve
18 implementation details, such as staff time records, that are not available. The IESO
19 estimates that the costs recovered through the fee will vary from year to year subject to
20 the number of projects market participants bring forward.

8 This measure is a broad indicator of over-all system cost effectiveness based on load forecast –
9 not a measure of absolute cost forecasting. Since load forecasting provides the basis for
10 resource commitment, this metric impacts the incurrence of resource costs. The more accurate
11 the IESO is in forecasting load, the greater the likelihood that it can commit sufficient resources
12 in a cost-effective manner that avoids over-commitment of resources, inefficient commitment of
13 short lead-time resources or under-utilization of available resources. This metric measures the
14 percentage difference between actual load and forecasted load.

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1 **Table 1: OMA Program Tables – Appendix 2-JC**

Appendix 2-JC
OM&A Programs Table

(\$ Millions)	2019 OEB Approved	2019 Actual	2020 Actual	2020 Budget	2021 Budget
Planning, Acquisition and Operations	44.2	41.3	47.0	46.7	48.5
VP Office	0.7	1.2	0.9	0.8	0.9
Power System Assessments	15.1	12.6	14.9	14.8	14.7
Resource Planning	4.8	4.8	5.4	5.2	5.3
Transmission Planning	4.9	4.4	4.7	4.8	4.8
Market Operations	15.7	15.5	15.6	15.5	15.6
Markets & Procurement	3.0	2.9	4.5	4.7	7.2
Capacity Market Design	-	-	1.0	0.9	-
Policy, Engagement and Innovation	24.5	23.3	26.8	27.5	24.1
VP Office	0.8	0.6	0.8	0.9	0.9
NERC Membership	-	-	4.5	4.7	4.8
Energy Efficiency	4.4	4.8	3.5	3.7	6.2
Marketing & Conservation Alliances	3.4	3.3	3.9	4.1	-
Corporate Affairs and First Nation & Metis Relations	8.4	8.9	7.6	8.1	8.6
Innovation, Research & Development	4.7	3.1	3.6	3.2	3.7
Regulatory Affairs	1.8	1.6	1.9	1.8	-
OEB Annual Cost Assessment	1.0	0.9	0.9	1.1	-
Information and Technology Services	41.8	40.6	40.0	41.7	43.1
VP Office	0.6	1.4	0.9	0.9	0.9
CIO Office (Organizational Governance Support)	1.9	1.3	1.1	1.2	1.2
Information Security	5.5	5.7	4.2	4.2	4.2
Business Services & Solution Delivery	16.7	14.9	15.8	16.1	16.5
IT Infrastructure & Operations (Technology Services)	17.2	17.3	18.1	19.2	20.3
Legal Resources and Corporate Governance	14.1	17.5	16.8	16.7	19.1
VP Office	1.3	1.3	1.6	1.3	1.2
General Counsel	5.0	8.9	7.5	7.9	6.5
Market Rules and Regulatory Affairs	-	-	-	-	2.3
OEB Annual Cost Assessment	-	-	-	-	0.9
Board	0.7	0.6	0.6	0.7	0.7
Contract Management	7.0	6.7	7.2	6.9	7.5
Market Assessment and Compliance Division	2.0	1.8	1.4	1.2	1.3
Chief Executive Office	7.7	7.5	3.0	2.7	3.1
CEO Office	6.3	1.8	1.6	1.3	1.9
NERC Membership	-	4.6	-	-	-
Internal Audit	1.5	1.2	1.4	1.4	1.2
Corporate Services	24.4	25.3	26.1	26.0	26.3
VP Office	0.5	0.7	0.7	0.7	0.7
Finance & Treasury	3.7	3.8	3.7	3.5	3.7
Procurement	1.5	1.6	2.0	1.9	2.0
Financial Planning and Analysis	1.5	1.7	1.9	1.8	1.8
Settlements	5.4	5.3	5.2	5.1	5.3
Enterprise Change	2.8	3.6	3.3	3.4	3.4
Facilities	9.0	8.6	9.3	9.6	9.4
Human Resources	5.0	4.2	4.3	4.4	4.5
Corporate Adjustment¹	2.8	7.0	3.7	4.2	1.6
Sub-total	166.6	168.6	169.2	171.1	171.5
Market Renewal	11.7	8.6	2.1	2.0	3.6
Total OM&A Expenses	178.3	177.2	171.3	173.2	175.2
Interest and Amortization	12.5	10.1	15.0	16.4	16.7
Amortization	18.4	19.1	19.6	19.7	19.2
Interest	(5.9)	(9.0)	(4.6)	(3.3)	(2.5)
Total Expenses	190.8	187.3	186.3	189.6	191.8

¹Corporate Adjustment includes the amortization of accumulated deficit resulting from the Public Sector Accounting Standards (PSAS) transition item and other post-employment benefits, as well as overhead cost recovery

1 **Table 2: Employee – Appendix 2-K**

Appendix 2-K
Employee Costs

	2019 OEB Approved*	2019 Actual	2020 Actual	2020 Budget	2021 Budget
Average Number of Employees (Capital and Operating expenses FTEs)					
Executive	7	7	7	7	7
Management	132	129	134	128	127
Non-Management Regular	633	545	557	573	596
Non-Management Temporary	71	88	74	71	64
Total	842	769	772	779	794
Operating expenses figures below are in \$ millions					
Total Salary and Wages					
Executive and Board	3.4	3.3	3.4	3.6	3.4
Management	17.4	19.1	19.7	18.9	18.4
Non-Management Regular	63.8	60.1	62.7	62.4	64.8
Non-Management Temporary	5.2	8.6	7.0	7.2	5.0
Total	89.8	91.2	92.7	92.1	91.7
Total Benefits					
Executive	0.9	1.0	1.0	1.0	1.0
Management	5.8	7.1	7.5	8.0	7.2
Non-Management Regular	21.8	23.3	24.1	23.9	25.0
Non-Management Temporary	0.7	0.6	0.5	0.6	0.4
Total	29.1	32.1	33.1	32.7	33.6
Percentage of Salary and Wages	32%	35%	36%	35%	37%
Total Compensation (Salary, Wages & Benefits)					
Executive and Board	4.3	4.3	4.4	4.6	4.5
Management	23.2	26.3	27.2	26.2	25.6
Non-Management Regular	85.6	83.4	86.7	86.2	89.8
Non-Management Temporary	5.9	9.2	7.5	7.8	5.4
Total	118.9	123.2	125.8	124.8	125.3

2

SEC INTERROGATORY 13

Issue 1.1 Is the IESO's Fiscal Year 2020 revenue requirement of \$188.6 million appropriate?

1.1-SEC-13

INTERROGATORY

With respect to the IESO's [Innovation and Sector Evolution White Paper Series](#):

- a. Please provide the 2020 and 2021 budget for this initiative.
- b. Please provide a status update on the reports initiated scheduled to be initiated in 2020 and 2021.

RESPONSE

- a. The budget associated with the Innovation and Sector Evolution White Paper Series for 2020 and 2021 is included in the OM&A of the Innovation, Research and Development group and is captured in existing line items within Exhibit D-1-1, Appendix 2-JC of the IESO's 2020-2021 Revenue Requirement Submission. The IESO does not track these costs in greater granularity than what is reported in the Revenue Requirement Submission.
- b. The following is a list of the Research and White Papers include in the Innovation Roadmap 2019-2021 workplan and their status. In most cases this work has proceeded as planned, but in some instances the planned work has been included in other initiatives or deferred as identified in the table.

Table 1: List of Research and White Papers – Innovation Roadmap 2019-2021 Workplan

Research or White Paper	Status
Evolving consumer preferences, choices and behaviours (white paper)	In progress – surveying delayed by Covid-19. Expected completion prior to end of year 2021.
Non-wires alternatives (NWA) markets and transmission-distribution interoperability (white papers)	Complete – available here and here
Distribution sector structural options: implications in high distributed energy resource (DERs) future (white paper) [with the Energy Transformation Network of Ontario]	Complete – available here

Conceptual framework for integration of distributed energy resources (DERs) in IESO-administered markets (white paper(s))	Complete – available here and draft available here . Final to be published in the coming weeks.
Real-time visibility of DERs: recommendations regarding appropriate level of visibility (report)	This work has been transitioned to the DER Market Vision Project and DER market design work
Decarbonized economies and impact of externalities on wholesale market (white paper)	This research effort has been deferred due to competing priorities but related work is underway through the Gas Phase Out Impact Assessment
AI and Machine Learning: electricity sector implications (white paper)	In progress – research ongoing
Electrified transportation adoption (call for papers)	This research effort has been deferred due to competing priorities
New Demand Response products and services (call for papers)	This work has been explored through the IESO's Expanding Participation in Operating Reserve and Energy initiative and will continue through the DER Market Vision Project and DER market design work

OEB STAFF INTERROGATORY 14

Issue 1.2 Is the IESO's Fiscal Year 2021 revenue requirement of \$191.8 million appropriate?

1-Staff-14

INTERROGATORY

a. Exhibit A / Tab 1 / Schedule 4 / p. 3

b. Exhibit D / Tab 1 / Schedule 1 / p. 4 / Table 4

Preamble:

At reference a., the IESO states that 2021 budgeted OM&A expenses are increasing by \$3.9 million compared to 2020 actual expense levels. The IESO further states that to manage 2021 OM&A costs, management will be shifting more work in-house. At reference b., the IESO provides its detailed OM&A budget for 2021.

Questions:

a) Please describe the work the IESO intends to move in house as well as the party or parties who would have completed the work if it was not shifted.

b) Will/has the IESO hire(d) additional staff to manage the work being shifted in house? If yes:

i. How many additional staff will be hired?

ii. Describe how the IESO determined that cost savings were achievable by shifting work in house versus the alternative. Please ensure the response considers the total compensation that will be provided to the additional staff over the lifetime of their employment (e.g., pension, benefits, and salary).

c) Please create a table in the same format as reference b. showing actual 2021 OM&A expenditures to date.

RESPONSE

a) In-house work includes audit work associated with Contract Management, talent acquisition support for recruitment, as well as legal work done by in-house counsel. The IESO has a roster of external vendors that are considered when external support is needed, and established procurement processes are used for this support. The IESO has avoided higher external costs by doing work in-house but is not able to attribute this cost avoidance to specific third parties.

- 1 b) (i) No material staff increases are planned to support additional in-house work. Work
2 will be prioritized using established criteria such that it can be completed without
3 material increase in staff levels.
- 4 (ii) In the case of requiring incremental staff, the IESO determined the cost savings by
5 comparing the cost required to engage third party service provider against the total
6 compensation and benefits expenses of the incremental staff. In other cases, the cost
7 savings is represented by the costs that would otherwise have been paid to third party
8 service providers as work is absorbed by existing IESO staff.
- 9 c) There is no change to the table as shown in Exhibit D-1-1, Page 4, Table 4 as the 2021
10 forecast is in line with 2021 budget. Please see Schedule 1 - 2.3 OEB Staff 27b) for the
11 2021 OPEX forecast.

OEB STAFF INTERROGATORY 15

Issue 1.2 Is the IESO's Fiscal Year 2021 revenue requirement of \$191.8 million appropriate?

1-Staff-15

INTERROGATORY

a. Exhibit C / Tab 3 / Schedule 1 / p. 1

Preamble:

At the above reference, the IESO states that "[a]s part of its mandate, the IESO performs work that is funded from other sources and not included in the revenue requirement: The Smart Metering Entity (SME), market rule enforcement and education, conservation programs, and programs that the IESO delivers in partnership with organizations within the energy sector."

Question:

- a) Please describe how the IESO would manage the costs and staffing resources of the above noted activities if their funding sources were for some reason eliminated. E.g., would the IESO fund these activities through its revenue requirement, discontinue delivery of the services, other?

RESPONSE

- a) Should the funding sources be eliminated, resources would be adjusted accordingly, including potential wind-up of the programs or assignment of the costs to the IESO. If costs were assigned to the IESO, the IESO would seek an increase in the OEB-approved IESO usage fee in due course. Please also see Schedule 1 – 1.1 OEB Staff 7e) v.

AMPCO INTERROGATORY 9

Issue 1.2 Is the IESO's Fiscal Year 2020 revenue requirement of \$188.6 million appropriate?

1.2-AMPCO-9

INTERROGATORY

Ref: Exhibit A Tab 1 Schedule 4 Page 3

The 2021 budgeted OM&A expenses represent an increase of \$3.9 million from the 2020 actual expenses, driven in part by the impact of collective agreement escalations.

a) Please provide the collective agreement escalations for compensation for each of the years 2019 to 2022.

b) Please provide the collective agreement escalations for benefits for each of the years 2019 to 2022.

RESPONSE

a) Please see below collective agreement escalations for compensation for each of the years 2019 to 2022.

The IESO - Society of United Professionals ("Society") collective agreement was renewed for a 3-year period January 1, 2019 – December 31, 2021. The table below reflects the salary compensation increases in that contract, awarded through interest arbitration.

The IESO – Power Workers' Union ("PWU") collective agreement was renewed for a 3-year period, April 1, 2017 – March 31, 2019 and subsequently a 1-year renewal through March 31, 2020. The table below reflects the negotiated salary compensation increases in those contracts.

In 2019, Bill 124, "Protecting a Sustainable Public Sector for Future Generations Act" was passed, legislating a 3-year moderation period which placed a limit of 1% on wage increases and a limit of 1% on total compensation in each year of the labour contract. The moderation period for the Society starts as of the next collective agreement for the period beginning January 1, 2022. The PWU moderation period began as of April 1, 2020. The IESO and the PWU are currently bargaining in the second year of the moderation period.

This has been reflected in the table below.

1 **Table 1: Compensation Escalations**

	Collective Agreement Escalations %	
	Society	PWU
2019	2.0%	2.5%
2020	2.0%	1.0%
2021	2.5%	1.0%
2022	1.0%	1.0%

2 Note: the highlighted section in the table reflects the bargaining unit's moderation period
3 limiting wages and compensation increases to 1% as per Bill 124

4 b) Please see below collective agreement escalations for non-salary related benefits for each of
5 the years 2019 to 2022. Salary related benefits increased at the same rate as compensation,
6 provided in the table above. Consistent with the information provided in (a) above, IESO's
7 bargaining units are limited in benefit increases such that total compensation does not
8 exceed 1% in each year of the labour contract during the 3-year moderation period.

9 **Table 2: Benefits Escalations**

	Collective Agreement Escalations %	
	Society	PWU
2019	(3.0%)	8.0%
2020	3.0%	1.0%
2021	3.0%	1.0%
2022	1.0%	1.0%

10 Note: the highlighted section in the table reflects the bargaining units' moderation period
11 limiting benefit increases to 1% as per Bill 124

12 **Notes on the Society benefit increases:**

- 13 • 2019 includes a one-time savings related to an increase in post retirement benefit
14 eligibility.
- 15 • 2019 – 2021 includes increases for maternity leave top up benefits and temp benefits
16 after 6 months
- 17 • 2022 benefit increases are in line with Bill 124: 1% benefit increase limit

1 **Notes on the PWU benefit increases:**

- 2 • 2019 includes increases for maternity leave top up benefits and temp benefits after 6
3 months
4 • 2020 – 2021 benefit increases are in line with Bill 124: 1% benefit increase limit

1 **AMPCO INTERROGATORY 10**

2 Issue 1.2 Is the IESO's Fiscal Year 2020 revenue requirement of \$188.6 million appropriate?

3 1.2-AMPCO-10

4 **INTERROGATORY**

5 Ref: Exhibit A Tab 1 Schedule 4 Page 3

6 The 2021 budgeted OM&A expenses increase of \$3.9 million from the 2020 actual expenses will
7 be offset in part through an update of cost allocation rates to reflect IESO's overhead cost
8 reality.

9 Please explain further.

10 **RESPONSE**

11 In 2021, the increase in IESO's costs and reduction of total FTE's triggered an increase in the
12 cost allocation rate thus reducing the revenue requirement by \$0.5 million compared to 2020.

13 Please see more details at Schedule 1 - 1.1 OEB Staff 3.

1 **APPrO INTERROGATORY 4**

2 Issue 1.2 Is the IESO's Fiscal Year 2021 revenue requirement of \$191.8 million appropriate?

3 [1.2-APPrO-4](#)

4 **INTERROGATORY**

5 **Reference:** Executive Summary, Exhibit A, Tab 1, Schedule 4, Page 3 of 6, lines 20-21

6 **Preamble:** The evidence provides that IESO management will be limiting operating cost
7 impacts by shifting more work in-house, absorbing incremental work with existing staff,
8 and reprioritizing and adjusting the timeline of discretionary projects that can be deferred
9 with minimal risk.

10 Which “discretionary projects” are being “reprioritized” and what are their adjusted
11 timelines? Please provide a copy of the IESO’s risk assessment that led to its determination
12 of which discretionary projects can be deferred with minimal risk.

13 **RESPONSE**

14 Please refer to Schedule 2 - 1.5 AMPCO 11 for the list of projects. The IESO assesses risk
15 internally with the project sponsors, other stakeholders and the Project Portfolio Management
16 Team to determine the potential risks of deferring the project and mitigating actions that may
17 need to be taken.

1 **APPrO INTERROGATORY 5**

2 Issue 1.2 Is the IESO's Fiscal Year 2021 revenue requirement of \$191.8 million appropriate?

3 [1.2-APPrO-5](#)

4 **INTERROGATORY**

5 **Reference:** Executive Summary, Exhibit A, Tab 1, Schedule 4, Page 5 of 6, Lines 7-13;
6 Exhibit F, Tab 1, Schedule 1, Page 2 of 2

7 **Preamble:** The evidence provides that there is an FVDA 2020 opening balance of a \$1.0
8 million deficit and an FVDA 2021 opening balance of a \$1.3 million surplus due to an interim
9 core operations surplus of \$2.3 million.

10 What is the source(s) of the \$2.3 million core operations surplus?

11 **RESPONSE**

12 The \$2.3 million is the 2020 Actual surplus. Please Schedule 1 - 1.1 OEB 11e) for further details.

1 **APPrO INTERROGATORY 6**

2 Issue 1.2 Is the IESO's Fiscal Year 2021 revenue requirement of \$191.8 million appropriate?

3 1.2-APPrO-6

4 **INTERROGATORY**

5 **Reference:** Executive Summary, Exhibit A, Tab 1, Schedule 4, Page 5 of 6, Lines 7-13;
6 Exhibit F, Tab 1, Schedule 1, Page 2 of 2

7 **Preamble:** The evidence provides that the IESO is proposing a 2020 revenue requirement that
8 would retain an operating surplus of \$2.3 million in the FVDA.

9 Why does IESO require the FVDA to be replenished to \$2.3 million in 2021? How did the IESO
10 conclude that a \$1 million dollar incremental surplus is the appropriate amount?

11 **RESPONSE**

12 The 2020 FVDA opening balance was a deficit of \$1.0 million and by retaining the 2020
13 operating surplus of \$2.3 million the IESO is able to bring the FVDA balance to
14 \$1.3 million, partially replenishing the \$10 million operating reserve approved by the OEB. Please
15 see Schedule 1 - 1.1 OEB 12c) and d) for further details.

1 **APPrO INTERROGATORY 7**

2 Issue 1.2 Is the IESO's Fiscal Year 2021 revenue requirement of \$191.8 million appropriate?

3 [1.2-APPrO-7](#)

4 **INTERROGATORY**

5 **Reference:** Executive Summary, Exhibit A, Tab 1, Schedule 4, Page 5 of 6, Lines 7-13;
6 Exhibit F, Tab 1, Schedule 1, Page 2 of 2

7 **Preamble:** The evidence provides that an operating reserve recovery strategy will be further
8 evaluated as part of the IESO's next business plan filing and subsequent revenue requirement
9 submission.

10 What is the IESO's "operating reserve recovery strategy"? Why does the FVDA need to be
11 replenished before the IESO's operating reserve recovery strategy is completed and approved?

12 **RESPONSE**

13 Please see Schedule 1 - 1.1 OEB Staff 12a), c) and d).

1 **APPrO INTERROGATORY 8**

2 Issue 1.2 Is the IESO's Fiscal Year 2021 revenue requirement of \$191.8 million appropriate?

3 [1.2-APPrO-8](#)

4 **INTERROGATORY**

5 **Reference:** Executive Summary, Exhibit B-1-1, Page 1 of 2

6 **Preamble:** The evidence includes a letter from Terry Young to Minister Rickford and Associate
7 Minister Walker dated December 9, 2020 enclosing the IESO's 2020-2022 Business Plan. That
8 letter states in part that "I am deferring the recovery of the IESO's depleted operating reserves"

9 How is the IESO's proposed replenishment of the FVDA consistent with this language?

10 **RESPONSE**

11 Please see Schedule 1 – 1.1 OEB Staff 12c) and d).

REASCWA INTERROGATORY 2

Issue 1.2 Is the IESO's Fiscal Year 2021 revenue requirement of \$191.8 million appropriate?

1.2-REASCWA-2

INTERROGATORY

Reference: Exhibit A, Tab 1, Schedule 4, Page 1, Lines 14-18

a) Regarding the fiscal year 2021 revenue requirement, other than revisions relating to the COVID-19 pandemic and the impacts on Ontario's electricity demand, did the IESO make any other revisions to, or deviations from, the 2020-22 Business Plan, particularly as they relate to priority initiatives such as the MRP, the Resource Adequacy Framework initiative and resource procurement initiatives and mechanisms, power system planning initiatives, and/or initiatives relating to integrating energy storage, 'hybrid' resources, and DERs?

b) Please provide a description of any changes to, or deviations from, the 2020-22 Business Plan during fiscal year 2021 due to issues unrelated to the COVID-19 pandemic and a copy of draft Business Plans that document those changes.

RESPONSE

a) No.

b) The IESO's application is based on the business plan as approved by the Minister. Variances between actual and budget from the business plan for O&M have been outlined in Schedule 14 – 1.1 SEC 9 and for capital in Exhibit-1-2, Attachment 2.

REASCWA INTERROGATORY 3

Issue 1.2 Is the IESO's Fiscal Year 2021 revenue requirement of \$191.8 million appropriate?

1.2-REASCWA-3

INTERROGATORY

Reference: Exhibit E, Tab 2, Schedule 1, Page 3

Preamble: IESO has established a Resource Adequacy Framework to procure resources (e.g., generation, energy storage, etc.) to meet Ontario's supply needs. Within the Resource Adequacy Framework are procurement initiatives and mechanisms (e.g., Capacity Auction, Request for Proposals (RFPs)/contracts, etc.) that will be used by the IESO to meet these needs. Market participants and stakeholders continue to work with IESO through IESO stakeholder engagement initiatives towards better understanding the details of procurement initiatives and mechanisms towards making investment decisions to help meet Ontario's supply needs. Such details are essentially needed towards making investment decisions regarding operating resources and potential new projects.

- a) Please define the Change Initiative/Project identified as "New Capacity/Resource Acquisition Initiatives" per Table 3: Summary of IESO Capital Projects.
- b) Does "New Capacity/Resource Acquisition Initiatives" include capital budget allocation regarding the following IESO initiatives that have been discussed with stakeholders: i) Capacity Auction design and associated amendments to the Market Rules and Market Manuals; ii) assessment of and potential procurement of resources categorized as Unsolicited Proposals; iii) development of RFPs and associated contracts relating to procurement initiatives to meet mid-term and long-term supply needs; and/or iv) Reliability Must-Run (RMR) contracts that have been or will be sole sourced negotiated with select counterparties to meet specific supply needs?
- c) Please provide details and documents related to the allocated \$1 million capital budget for "New Capacity/Resource Acquisition Initiatives".

RESPONSE

- a) These projects include the Capacity Auction and the Mid-Term and Long-Term Requests for Proposals (RFP).
- b) The New Capacity/Resource Acquisition Initiatives budget includes capital work associated with Capacity Auction enhancements.

1 c) At this time, the IESO has initiated the Capacity Enhancement project which forms
2 part of this initiative and includes enhancements to the tools used to administer the
3 Capacity Auction. The \$1 million capital budget is the IESO's estimate of capital
4 expenditures in 2021. Once the IESO enters the planning phase of this project, the
5 project budgets for 2021 and 2022 will be further refined. There are currently no
6 capital expenditures anticipated for the work associated with the Mid-Term and
7 Long-Term RFP's in 2021 or 2022.

REASCWA INTERROGATORY 4

Issue 1.2 Is the IESO's Fiscal Year 2021 revenue requirement of \$191.8 million appropriate?

1.2-REASCWA-4

INTERROGATORY

Reference: Exhibit E, Tab 2, Schedule 2, Page 3

a) Please provide the status of "New Capacity/Resource Acquisition Initiatives", as the Status Notes section within Table 1 is blank?

b) Please provide the status of "Enabling Resources to Deliver on Capacity/Participate in Markets", as the Status Notes section within Table 1 is blank?

RESPONSE (IRD lead)

a) The project is currently in the initiation phase.

b) The IESO formally launched a public engagement on the Enabling Resources Program (ERP) in April 2021, which sought stakeholder feedback on identified priority market enablement opportunities. IESO is in the process of developing an integrated ERP work plan that is reflective of stakeholder feedback and considers other priority IESO initiatives, including Resource Adequacy and Market Renewal. The final ERP work plan is expected to be published before the end of 2021.

In parallel, market integration efforts are underway for hybrid resources via the Hybrid Integration Project engagement. An additional engagement for the market integration of DER is expected to be initiated in October.

CME INTERROGATORY 1

Issue 1.2 Is the IESO's Fiscal Year 2021 revenue requirement of \$191.8 million appropriate?

CME # 1

INTERROGATORY

Ref: Exhibit A, Tab 1, Schedule 4, pages 3 of 6 – Issue 1.2

At page 3, the IESO stated "These increases will mostly be offset through judicious management of resources and labour capitalization (aligned to higher capital portfolio in accordance to IESO capitalization practices), reduction of COVID-19 pandemic expenses, and an update of cost allocation rates to reflect IESO's overhead cost reality"

- (a) Please explain further how an update to cost allocation rates will help offset the increases referred to in the paragraph.

Ref: Exhibit A, Tab 1, Schedule 4, page 3 of 6 – Issue 1.2

At page 3, the IESO stated "In addition, management will be limiting other operating cost impacts by shifting more work in-house, absorbing incremental work with existing staff, and reprioritizing and adjusting the timelines of discretionary projects that can be deferred with minimal risk."

- (b) Please define 'minimal risk' and explain the types of risks that the projects which will be deferred possessed, and why the IESO determined that those risks were acceptable.

RESPONSE

- a) Please see the responses at Schedule 1 – 1.1 OEB Staff 3c), and Schedule 2 - 1.2 AMPCO 10.

- b) As it relates to reprioritizing and adjusting the timelines of projects, "minimal risks" are those that the IESO does not expect to have an impact on reliability or achieving the IESO's mandate or the success of MRP or can be mitigated through actions such as extending the vendor's support contracts for aging systems or infrastructure. In other cases, the IESO may be deferring the achievement of process or functionality improvements by delaying improvement or enhancement projects.

1 **EDA INTERROGATORY 2**

2 Issue 1.2 Is the IESO's Fiscal Year 2021 revenue requirement of \$191.8 million appropriate?

3 EDA Interrogatory 2

4 **INTERROGATORY**

5 **Evidence Reference:** B/2/2/p14

6 **Preamble** The IESO capitalizes costs when the underlying assets are deemed ready for use.

7 **EDA Interrogatory 2**

8 Please discuss whether the IESO's capitalization policy aligns with good rate making practices,
9 specifically that capital costs be included recovered through rates when the associated assets
10 are 'used and useful'. Please be detailed and state all assumptions.

11 **RESPONSE**

12 The IESO adheres to Canadian Public Sector Accounting Standards regarding capital costs.
13 This accounting standard aligns with good rate making practices. Each year the independent
14 auditors examine the IESO's capitalized costs as part of the audited financial statements.
15 Capital costs are aligned and expensed (via OEB-approved rates) to the periods that reflect
16 their future useful lives.

EDA INTERROGATORY 3

Issue 1.2 Is the IESO's Fiscal Year 2021 revenue requirement of \$191.8 million appropriate?

EDA Interrogatory 3

INTERROGATORY

Evidence Reference: B/1/2/p6

EDA Interrogatory 3

Please provide the IESO's proposed 2021 budget associated with creating, maintaining and enhancing strong cyber security partnerships. Please provide the data:

- a) in the format that the revenue requirement is presented in
- b) on a line-item basis.

RESPONSE

- c) The table below shows the IESO's proposed 2021 budget for Information Security in the format that the revenue requirement is presented in on an item-line basis.

Table 1: Proposed 2021 Budget – Information Security

Information Security	2021 Budget (\$m)
Compensation & Benefits	2.3
Professional & Consulting	1.7
Operating & Administration	0.2
Total	4.2

- d) Please see part (a) above.

1 **ENERGY PROBE INTERROGATORY 2**

2 1.2 Is the IESO's Fiscal Year 2021 revenue requirement of \$191.8 million appropriate?

3 **1.2-EP-2**

4 **INTERROGATORY**

5 **Reference:** Exhibit A, Tab 1, Schedule 3, Page 1

6 **Preamble:** The IESO proposes a 2021 revenue requirement of \$191.8 million, which is a 0.2%
7 annualized increase compared to the IESO's last approved revenue requirement in 2019.

8 Considering that it is now August, 2021, what is the 2021 revenue requirement based on the
9 latest available information?

10 **RESPONSE**

11 Please refer to Schedule 1 - 1.3 OEB Staff 27b).

OSEA INTERROGATORY 1

Issue 1.2 Is the IESO's Fiscal Year 2021 revenue requirement of \$191.8 million appropriate?

OSEA IR 1, ISSUE 1.2

INTERROGATORY

Reference: Exhibit A-2-2, Attachment 1, Page 5 of 6

Preamble: The 5-year strategic objective for reliability targets below 9.2% performance for the thermal resource fleet from 2021 to 2025 for the IESO. The IESO explains that the 9.2% represents two standard deviations from the 5-year historical baseline average. Gas-fired generation performance is a key component of Ontario's electricity system reliability.

Questions:

- a) Please confirm that the 5-year historical baseline average referred to by the IESO is for transmission connected gas-fired generation in Ontario with installed capacity greater than 250 MW.
- b) Please provide documentation supporting the calculation of the 5-year historical baseline average that yielded the 9.2% target, including generation unit, outage date, outage duration, and cause for outage if available.
- c) Has the IESO compared the historic baseline of Ontario gas-fired generation units to other jurisdictions? If so, please provide the information and documentation supporting the IESO's comparison and the IESO's research about other jurisdictions.

RESPONSE

- a) The 5-year historical baseline average referred to includes all thermal resources. It is not exclusive to transmission connected gas-fired generation in Ontario with installed capacity greater than 250 MW.
- b) The historical data used to calculate the baseline contains confidential resource specific data that cannot be disclosed. The baseline of 7.7% was calculated using the weighted average Equivalent Forced Outage Rate on Demand (EFORd) of Ontario's generation fleet from 2016 – 2020. And the performance target of 9.2% represented two standard deviations from the mean.
- c) The IESO has not compared the historic baseline of Ontario gas-fired generation units to other jurisdictions.

OSEA INTERROGATORY 2

Issue 1.2 Is the IESO's Fiscal Year 2021 revenue requirement of \$191.8 million appropriate?

OSEA IR 2, ISSUE 1.2

INTERROGATORY

Reference: Exhibit A-2-2, Attachment 1, Page 6 of 6

Preamble: The IESO's transparency index for 2021 to 2025 is based on a portion of revenues received by suppliers (or payments from consumers) for electricity in wholesale markets, compared to the total of costs of supplying the electricity. The target starts at 19.2% in 2021 and rises to 20% by 2025.

Questions:

- a) Please provide the transparency index for 2019 and 2020 with breakdown by any sub-categories the IESO uses. OSEA assumes a large component of payments are made through Global Adjustment (GA).
- b) Please provide a summary of Forgone Energy Payments to contracted resources by resource type for 2019 and 2020. Forgone Energy Payments are payments made by the IESO to contracted resources for curtailed energy due to system conditions (e.g., Surplus Baseload Generation).
- c) Please provide the analysis used to determine the transparency index target for 2021 to 2025.
- d) Has the IESO compared the 2021 to 2025 transparency index to other jurisdictions (e.g., NYISO, ISO-NE)? If so, please provide the information and documents supporting the comparison.

RESPONSE

- a) The baseline year is 2020 and the final values have yet to be calculated. The numbers in the Exhibit are illustrative.
- b) The breakdown of such payments were not done for this calculation.
- c) The 5-year target is based on an improvement of 1% over the baseline year of 2020. It is a placeholder value that may be adjusted pending the calculation for 2021.
- d) No, the IESO has not.

OSEA INTERROGATORY 3

Issue 1.2 Is the IESO's Fiscal Year 2021 revenue requirement of \$191.8 million appropriate?

OSEA IR 3, ISSUE 1.2

INTERROGATORY

Reference: Exhibit E-2-1

Preamble: The IESO through the capacity auction capital project intends to continue to enhance the capacity auction to help meet Ontario's resource adequacy needs. Through 2020 and into 2021 the IESO ran an Energy Efficiency Auction Pilot, successfully selecting 7.4 MW of peak demand reduction for the winter of 2022/2023. OSEA is interested in understanding how energy efficiency pilot results will be incorporated within the Capacity Auction Capital Project.

Questions:

- a) Does the IESO intend to include energy efficiency in future Capacity Auctions for this revenue requirement request? If yes, please provide details on the capital cost and O&M costs of incorporating energy efficiency into future Capacity Auctions. If no, please provide any business cases or analysis that supported the IESO's decision to not include energy efficiency in future Capacity Auctions.
- b) Has the IESO conducted an analysis on the cost effectiveness of the results of the Energy Efficiency Auction Pilot completed by the IESO? If yes, please provide the analysis.

RESPONSE

- a) The IESO is currently in the process of reviewing the outcomes of the Energy Efficiency (EE) Auction Pilot to collect lessons learned and recommendations for whether and how this type of mechanism can be used to procure energy efficiency resources in the future. This analysis will be included in the 2022 Mid-Term Review as required by the September 30, 2020 direction on the 2021-2024 CDM Framework.
- b) The IESO will be calculating the final cost effectiveness of the EE Auction Pilot through the annual EE program evaluation processes in 2024. This will take place once the IESO has determined actual savings delivered by the resources in the 2022-2023 winter and summer obligation periods. The results of the auction can be found on EE Auction Pilot webpage, which includes a post auction report detailing which resources cleared and accepted offer price information.

OEB STAFF INTERROGATORY 16

Issue 1.3: Are the IESO's 2020 staffing levels and compensation (including salaries, benefits, pensions and other post-employment benefits) appropriate?

Issue 1.4: Are the IESO's 2021 projected staffing levels and compensation (including salaries, benefits, pensions and other post-employment benefits) appropriate?

1-Staff-16

INTERROGATORY

a. Exhibit D / Tab 1 / Schedule 3 / p. 1

b. Exhibit G / Tab 2 / Schedule 1 / p. 9, Table 10

Preamble:

The table below is an extract from reference a.

Staffing and Operating Compensation Expenses

	2019 OEB Approved	2019 Actual	2020 Actual	2021 Budget
Average Number of Employees (Capital and Operating expenses FTEs)				
Executive	7	7	7	7
Management	132	129	134	127
Non-Management Regular	633	545	557	596
Non-Management Temporary	71	88	74	64
Total	842	769	772	794
Operating expenses figures below are in \$ millions				
Total Compensation (Salary, Wages & Benefits)				
Executive and Board	4.3	4.3	4.4	4.5
Management	23.2	26.3	27.2	25.6
Non-Management Regular	85.6	83.4	86.7	89.8
Non-Management Temporary	5.9	9.2	7.5	5.4
Total	118.9	123.2	125.8	125.3

1 Questions:

- 2 a) The OEB approved compensation budget for 2019 of \$118.9 million was to support a
3 staffing complement of 842. Based on this, the average IESO total compensation in
4 2019 was expected to be ~\$141,000 (\$118.9 million / 842). In 2019, the IESO spent
5 \$123.2 million to support 769 staff, which equates to an actual average total
6 compensation of ~\$160,000 (\$123.2 million / 769). The IESO states that the overspend
7 against budget in 2019 was primarily the result of an increase of \$3.6 million in
8 employee benefits. On average, an increase of \$3.6 million would result in each staff
9 member receiving an additional \$4,700 in compensation, bringing the expected average
10 IESO total compensation in 2019 from ~\$141,000 to ~\$146,000. The actual per
11 employee average IESO total compensation is therefore ~\$14,000 higher than actuals
12 (\$146,000 expected vs. \$160,000 actual). Please explain why 2019 average per
13 employee total compensation is higher than expected.
- 14 b) The OEB approved compensation budget for management in 2019 of \$23.2 million was
15 to support 132 management level staff. Based on this, the average IESO management
16 compensation in 2019 was expected to be ~\$176,000. In 2019, the IESO spent \$26.3
17 million to support 129 staff, which equates to an average total compensation of
18 ~\$204,000. Please explain why 2019 average per management employee total
19 compensation is ~\$28,000 higher than expected.
- 20 c) The OEB approved compensation budget for non-management regular staff in 2019 of
21 \$85.6 million was to support 633 non-management level staff. Based on this, the
22 average IESO non-management compensation in 2019 was expected to be ~\$135,000.
23 In 2019, the IESO spent \$83.4 million to support 545 staff, which equates to an average
24 total compensation of ~\$153,000. Please explain why 2019 average per non-
25 management employee total compensation is ~\$18,000 higher than expected.
- 26 d) The IESO spent \$125.8 million in 2020 to support 772 FTEs. The IESO's proposed 2021
27 total compensation budget is \$125.3 million and is meant to support 794 FTEs. Please
28 explain how the IESO can support the proposed 2021 FTE count that is 22 FTE's higher
29 than 2020 levels with less budget than it spent in 2020.
- 30 i. If related to labour capitalization, as applicable, please explain what non-
31 capitalized 2020 labour is being capitalized in 2021, as well as the reason(s) why
32 that labour was not capitalized in 2020.
- 33 e) At reference b., the IESO shows that MRP staffing levels will increase by 21 in 2021
34 compared to 2020. Please indicate if the additional FTEs are temporary or fulltime
35 resources (or a combination thereof), the amount of total compensation these FTEs will
36 receive in 2021, and the degree to which the total compensation costs of these FTEs will
37 be capitalized in 2021.

- f) Please indicate the number of FTEs whose total compensation will be capitalized in 2021, the projects these FTEs are assigned to, as well as the total cost of capitalized labour in 2021.
- i. On a project-by-project basis, please describe how the IESO intends to manage the costs of these employees post project close. As an example, upon project close, will the total compensation costs of FTEs assigned to the MRP be included as an OM&A expense in future revenue requirements?

RESPONSE

- a) The compensation costs are in part in operating expense budget and in part in capital budget. 2019 average per employee total compensation as illustrated in question (a) is calculated based on Total Compensation costs in the operating expense budget divided by Total Average Number of Employees. Total Average Number of Employees includes both Operating expense and Capital FTEs.
- b) As 2019 capitalized FTEs were reduced due to cancellation of Incremental Capacity Auction and delays in Market Renewal Program, total FTE count is reduced. Accordingly, capital budget is reduced while the operating expense budget portion of compensation remained unchanged. So proportionately, as a result, the average per employee total compensation increased on the operating expense side, because while total FTEs were reduced, their corresponding compensation reduction was in capital costs. In conclusion, the calculation of average per employee total compensation is somewhat misleading when the calculation only considers operating expenses, while excluding capital, while combining operating expense and capital in the FTE count.
- c) 2019 average per management employee total compensation is higher than expected due to unbudgeted severance and lower than budgeted capitalized FTEs.
- d) 2019 average per non-management employee total compensation is higher than expected due to unbudgeted severance, lower than budgeted capitalized FTEs as described in (a), and lower vacation usage (higher cost for banked vacation liability).
- i. The additional FTEs required in 2021 will be funded primarily through MRP capital as work ramps up on the program.
- e) The breakdown of the 21 incremental MRP FTEs, total compensation and regular vs temporary designation is in the table below:

Table 1: Breakdown of 21 Incremental FTEs

	Operating Regular	Operating Temporary	Capital Regular	Capital Temporary	Total
Total FTE	2.0	1.5	17.5	-	21.0
Total Cost (In \$ millions)	0.4	0.2	3.2	-	3.7

- 1 f) 94 FTEs are assigned in 2021 to support the many projects under the total capital
2 envelope as required. In 2021, the total cost of capitalized labour and benefits is
3 budgeted to be \$23.5 million.
- 4 i. In general, upon project close, the capital FTEs are assigned to the next project
5 in the envelope. Upon the closure of MRP, all implementation resources will
6 return to their home positions, shared resources will be assigned to other
7 initiatives and temporary staff will be terminated.

OEB STAFF INTERROGATORY 17

Issue 1.3: Are the IESO's 2020 staffing levels and compensation (including salaries, benefits, pensions and other post-employment benefits) appropriate?

Issue 1.4: Are the IESO's 2021 projected staffing levels and compensation (including salaries, benefits, pensions and other post-employment benefits) appropriate?

1-Staff-17

INTERROGATORY

a. Exhibit D / Tab 1 / Schedule 1 / Attachment 3 - Appendix 2-JC - OMA Programs Table (Excel spreadsheet)

b. Exhibit D / Tab 2 / Schedule 1 / p. 1

Preamble:

At the above noted first reference, the IESO has provided the following Interest amounts that are embedded into OM&A which are shown below in OEB Staff Table 3.

OEB Staff Table 3 – Interest Amounts

	2019-OEB Approved	2019 Actual	2020 Actual	2021 Budget
Interest	(5.9)	(9.0)	(4.6)	(2.5)

OEB staff is seeking additional information that demonstrates that the interest on the cumulative difference between cash and accrued pension and OPEBs amounts is being appropriately allocated to the revenue requirements.

OEB staff also notes that at the above noted second reference, interest for 2021 Budget is a credit of \$1.6 million, versus a credit of \$2.5 million shown in OEB Staff Table 3.

Questions:

a) Please confirm which is the correct number for the 2021 Budget interest – whether it is a credit of \$1.6 million or a credit of \$2.5 million.

b) Please confirm that for each year (e.g., 2019 Actual, 2020 Actual, 2021 Budget) the interest income shown in OEB Staff Table 3 includes calculated interest on the cumulative difference between the amounts collected under the cash basis versus amounts collected under the accrual basis for pension and OPEBs costs. If this is not the case, please explain.

c) Please provide the supporting calculation for the amount referred to in part b).

RESPONSE

- a) The correct number for the 2021 Budget interest is a credit of \$2.5 million, see revised table below in response to c).
- b) Yes, for each year (e.g., 2019 Actual, 2020 Actual, 2021 Budget) the interest income shown in OEB Staff Table 3 includes calculated interest on the cumulative difference between the amounts collected under the cash basis versus amounts collected under the accrual basis for pension and OPEBs costs.
- c) The net interest item is calculated as follows:

Table 1: Net Interest Expense

Net Interest Expense (In \$ millions)	2019 OEB Approved	2019 Actual	2020 Actual	2021 Budget
Interest OEFC/Credit Facility	2.1	2.3	1.7	1.5
Capitalized Interest	(0.9)	(0.5)	(0.7)	(0.8)
Financing Charges	0.3	0.3	0.3	0.3
Short Term Investment Income	(5.9)	(7.9)	(3.5)	(2.2)
Long Term Investment Income	(1.5)	(3.2)	(2.4)	(1.3)
Total	(5.9)	(9.0)	(4.6)	(2.5)

OEB STAFF INTERROGATORY 18

Issue 1.3: Are the IESO's 2020 staffing levels and compensation (including salaries, benefits, pensions and other post-employment benefits) appropriate?

Issue 1.4: Are the IESO's 2021 projected staffing levels and compensation (including salaries, benefits, pensions and other post-employment benefits) appropriate?

1-Staff-18

INTERROGATORY

Preamble:

OEB staff is seeking additional information regarding the IESO's pension and OPEB amounts.

Questions:

- a) Please provide a breakdown of the pension and OPEBs amounts included in OM&A and capital for 2019 OEB-approved, 2019 Actual, 2020 Actual, and 2021 Budget. Please also explain any significant changes incurred year-over-year.
- b) Please provide the most recent actuarial reports/valuations for pension and OPEBs.
- c) Please demonstrate how the pension and OPEBs amounts in the 2019 Actual, 2020 Actual, and 2021 Budget tie to the most recent actuarial reports/valuations and the audited financial statements, as applicable.
- d) If the balances in the actuarial reports/valuations and the audited financial statements are different from what is being sought in the 2020 Actual and 2021 Budget revenue requirements, then please provide an explanation supporting why the amount in the revenue requirements is more appropriate.
- e) Please confirm that the IESO's pension and OPEBs costs are proposed to be continued to be recovered using the default accrual basis, rather than the cash basis. If the IESO is proposing to include pension and OPEBs amounts based on the cash method, please provide sufficient supporting rationale and evidence for adopting the cash method and quantify the impact of any transitions.

RESPONSE

- a) The table below provides pension and OPEB amounts included in OM&A and capital for 2019 OEB-approved, 2019 Actual, 2020 Actual, and 2021 Budget.

The \$1.9 million increase in 2019 Actual versus 2019 OEB-approved was driven primarily by lower OPEB discount rates. The \$2.7 million variance in 2020 Actual versus 2019 Actual is mainly driven by lower return on assets caused by market conditions. 2021

budget projects a slight increase of \$0.5 million related to return on assets expectations, partially offset by an increase in OPEB discount rates.

Table 1: Pension and OPEB Amounts – OM&A

Included in OMA and Capital (\$000's)	2019 OEB Approved*	2019 Actual	2020 Actual	2021 Budget
Pension	8,746	8,680	11,214	12,240
Other Benefits (OPEB)	9,261	11,269	11,435	10,913
Total	18,007	19,949	22,649	23,153

b) Refer to Attachment 1 to this exhibit (password 13303).

c) Please see below reconciliation to most recent actuarial report/valuation provided above.

The actual report in the first two columns also corresponds to the audited financial statements (Benefit cost identified in Exhibit B-2-2, page 21).

Table 2: Reconciliation - 2019 and 2020 Actual and 2021 Budget

\$000's	2019 Actual ¹	2020 Actual ¹	2021 Budget ²
Per Actuarial Report:			
Pension benefits	9,258	11,976	13,168
Other Benefits (OPEB)	11,976	12,248	11,740
Total Pension/OPEB	21,235	24,224	24,908
Reconciliation:			
Capital and Operating in Revenue Requirement Submission	19,949	22,649	23,153
Pension/OPEB included in Non-IESO Core services	1,285	1,575	1,755
Total Pension/OPEB	21,235	24,224	24,908

¹The latest actuarial report that is being provided in response b) is the year-end report which ties back to the Audited Financial statements

² Reconciliation of 2021 Budget against actuarial report for budgeting provided in Attachment 2 to this exhibit.

- 1 d) The balances in the actuarial reports/valuations and the audited financial statements are
2 higher from what is being sought in the 2020 Actual and 2021 Budget revenue
3 requirements, because they are inclusive of the portion of Pension and OPEB for work
4 that is funded from other sources (i.e., SME, MACD, government programs) and not
5 included in the revenue requirement.
- 6 e) The IESO adheres to Canadian Public Sector Accounting Standards (same as utilized by
7 Ontario government) which does not permit the cash basis. The IESO accrues
8 obligations under pension and other post-employment benefit plans.



January 13, 2021

BY E-MAIL

PRIVATE & CONFIDENTIAL

Ms. Melanie Dugard
Grant Thornton LLP
201 City Centre Drive, Suite 501
Mississauga ON L5B 2T4

**RE: INDEPENDENT ELECTRICITY SYSTEM OPERATOR ("IESO")
PUBLIC SECTOR ACCOUNTING INFORMATION FOR FISCAL YEAR 2020**

Dear Ms. Dugard:

This letter and the attached appendices summarize the results of the accounting valuations for the post-employment pension and benefits plans named below for the fiscal year from January 1, 2020 to December 31, 2020. We have also included the results for the fiscal year 2019 for comparison purposes. Our report covers the following plans:

- Independent Electricity System Operator Pension Plan ("RPP");
- Independent Electricity System Operator Supplemental Employee Retirement Plan ("SERP"); and
- Other (non-pension) post-employment and post-retirement benefit arrangements ("OPEB").

The year-end liabilities have been determined using a September 30 measurement date. Aon has been engaged by IESO for the development of the results in these valuations.

All figures are in Canadian dollars.

We confirm that:

- The valuations have been performed in accordance with the requirements of Public Sector Accounting Handbook Section PS 3250 ("PSAB").
- The plans are all defined benefit plans as defined by PSAB.

It is our understanding that for the purposes of PSAB accounting:

- The discount rate for the RPP is determined by reference to the expected return on plan assets; consistent with management's best estimate of expected long-term experience and short-term forecasts.



Ms. Melanie Dugard
January 13, 2021
Page 2

- The discount rate for SERP and OPEB is determined using the cost of borrowing applicable to IESO. To estimate the rate expected plan cash flows were discounted using a yield curve based on Ontario provincial bonds and a single rate was determined which produced an equivalent present value. We then added a spread of 50 basis points to the single rate.
- Unrecognized gains or losses are amortized on a systematic basis over the EARSL of the related employee group.
- Expected return on assets is based on market-related value of assets which is determined by deferring and amortizing all asset gains and losses (including fixed income gains and losses) each year over 3 years.
- Prior service costs are recognized in the period in which the amendment occurs.

We have discussed with the administrator that:

- The valuations include all employee future benefit plans required to be included in the valuations.
- The plan provisions are up to date as of the date of our report.
- The plan administrator will advise us of changes to plan provisions and events which occur in the period from the date of the valuations up to the expected date of our report that could have a material effect on the valuations.

In conducting these valuations, we have used:

- Plan membership information supplied by IESO's third-party administrator, Morneau Shepell, as of January 1, 2019;
- Expected contributions and benefit payments for the development of the fiscal 2020 expense;
- Actual contributions and benefit payments for the December 31, 2020 funded status;
- Financial statements of the pension fund prepared by CIBC Mellon;
- The projected benefit actuarial cost method; and
- Actuarial assumptions that have been determined as best estimate assumptions developed by management. A summary of the assumptions used are in the appendices.

The SERP plan is secured with a letter of credit and as such contributions are required to be made to a refundable tax account that has been established with the Canada Revenue Agency when premiums for the letter of credit are paid. The balance of the refundable tax account is being recorded as a corporate asset and therefore is not included as an asset for the purposes of the SERP.

We are not aware of any subsequent events which occurred or were fully committed to after December 31, 2020 and before the date of this report which would have a material impact on these results.



Ms. Melanie Dugard
January 13, 2021
Page 3

For the purposes of these valuations, it is our opinion that:

- The membership data on which the valuation is based are sufficient and reliable for the purpose of the valuation.
- The assumptions are appropriate for purposes of the valuation.
- The calculations have been made in accordance with our understanding of the requirements of PSAB 3250.
- This report has been prepared, and our opinions given, in accordance with accepted actuarial practice in Canada.

Sincerely,

A handwritten signature in black ink, appearing to read "Linda Byron".

Linda M. Byron, FCIA, FSA
Senior Partner

A handwritten signature in black ink, appearing to read "Reinhart Kramreither".

Reinhart Kramreither, FCIA, FSA
Health & Benefits Assistant Vice President

Encl.

cc: Mr. Anthony Martinello, IESO
Mr. John Radich, Aon
Mr. Dawar Ahmed, Aon

INDEPENDENT ELECTRICITY SYSTEM OPERATOR

PSAB Disclosures
December 31, 2020 (\$000s)

	Registered Plan	Non-Registered Plan	OPEB Plan	Total
Change in benefit obligation				
Benefit obligation - September 30, 2019	\$ 575,483	\$ 43,393	\$ 145,316	\$ 764,192
Current service cost (employer)	12,494	1,448	7,629	21,571
Interest cost	32,030	1,281	4,396	37,707
Employee contributions **	8,793	-	-	8,793
Plan amendments	-	-	-	-
Benefits Paid	(28,824)	(1,357)	(2,158)	(32,339)
Net transfer in (out)	1,835	-	-	1,835
Actuarial loss (gain)	1,922	1,791	10,515	14,228
Benefit Obligation - September 30, 2020	\$ 603,733	\$ 46,556	\$ 165,698	\$ 815,987
Change in plan assets				
Market value of plan assets - September 30, 2019	\$ 632,234	\$ -	\$ -	\$ 632,234
Actual return on plan assets	35,393	-	-	35,393
Employer contributions	14,033	1,357	2,158	17,548
Employee contributions	8,793	-	-	8,793
Benefits paid	(28,824)	(1,357)	(2,158)	(32,339)
Surplus paid out to employer	-	-	-	-
Settlement payments	-	-	-	-
Net transfer in (out) *	1,835	-	-	1,835
Acquisitions (divestitures)	-	-	-	-
Actual plan expenses	-	-	-	-
Foreign exchange rate changes	-	-	-	-
Market value of plan assets - September 30, 2020	\$ 663,464	\$ -	\$ -	\$ 663,464
Actuarial Value of Assets - BOY	\$ 614,134	\$ -	\$ -	\$ 614,134
Actuarial Value of Assets - EOY	\$ 655,774	\$ -	\$ -	\$ 655,774
Reconciliation of funded status - end of period				
Funded status - surplus (deficit)	\$ 59,731	\$ (46,556)	\$ (165,698)	\$ (152,523)
Employer contributions after measurement date	-	346	614	960
Unamortized transitional obligation (asset)	-	-	-	-
Unamortized past service cost	-	-	-	-
Unamortized net actuarial loss (gain)	(53,250)	14,608	14,123	(24,519)
Accrued benefit asset (liability)	\$ 6,482	\$ (31,602)	\$ (150,961)	\$ (176,081)
Valuation allowance	-	-	-	-
Accrued benefit asset (liability), net of valuation allowance	\$ 6,482	\$ (31,602)	\$ (150,961)	\$ (176,081)
Components of 2020 expense				
Current service cost (employer)	\$ 12,494	\$ 1,448	\$ 7,629	\$ 21,571
Interest cost	32,030	1,281	4,396	37,707
Expected return on plan assets	(33,612)	-	-	(33,612)
Curtailment loss (gain)	-	-	-	-
Settlement loss (gain)	-	-	-	-
Amortization of past service costs	-	-	-	-
Amortization of net actuarial loss (gain)	(2,614)	949	223	(1,442)
Increase (decrease) in valuation allowance	-	-	-	-
Special termination benefits	-	-	-	-
Net expense (income)	\$ 8,298	\$ 3,678	\$ 12,248	\$ 24,224
Expected average remaining service life ("EARS")	14.5	14.5	17.2	
Balance Sheet Reconciliation				
Accrued benefit asset/(liability) at Dec 31, 2019	\$ 3,000	\$ (29,296)	\$ (140,841)	\$ (167,137)
Net income / (expense) for period	(8,298)	(3,678)	(12,248)	(24,224)
Contributions	11,780	1,372	2,128	15,280
Accrued benefit asset/(liability) at Dec 31, 2020	\$ 6,482	\$ (31,602)	\$ (150,961)	\$ (176,081)
Actual Asset Allocation at September 30, 2020				
Canadian equity securities	15.4%	N/A		
Foreign equity securities	35.9%	N/A		
Canadian debt securities	30.3%	N/A		
Global infrastructure	9.3%	N/A		
Canadian real estate	8.9%	N/A		
Cash equivalents	0.3%	N/A		
Assumptions at the beginning of the period				
Discount rate for RPP	5.50%			5.50%
Discount rate for SERP & OPEB	2.90%			2.60%
Rate of compensation increase	3.50%			3.50%
Health care inflation - Select	6.40%			6.20%
Health care inflation - Ultimate	4.00%			4.00%
Expected rate of return on plan assets	5.50%			5.50%
Inflation	2.00%			2.00%
Mortality	95% CPM Public MI-2017	Mortality		95% CPM Public MI-2017
Assumptions at the end of the period				
Discount rate for RPP				5.50%
Discount rate for SERP & OPEB				2.60%
Rate of compensation increase				3.50%
Health care inflation - Select				6.20%
Health care inflation - Ultimate				4.00%
Expected rate of return on plan assets				5.50%
Inflation				2.00%
Mortality				95% CPM Public MI-2017
2020 Cash Flows				
Estimated Employee Contributions	8,793	-	-	
Estimated Employer Contributions	14,033	1,308	2,158	
Estimated Benefit Payments	28,824	1,308	2,158	
EARS	14.5	14.5	17.2	
Actual Employee Contributions	8,793	-	-	
Actual Employer Contributions	14,033	1,357		
Actual Benefit Payments	28,824	1,357		

* Transfer amount represents the net transfers resulting from reciprocal transfer agreements

** Includes employee contributions for past service

INDEPENDENT ELECTRICITY SYSTEM OPERATOR

PSAB Disclosures
December 31, 2019 (\$000s)

	Registered Plan	Non-Registered Plan	OPEB Plan	Total
Change in benefit obligation				
Benefit obligation - September 30, 2018	\$ 544,293	\$ 33,174	\$ 140,074	\$ 717,541
Current service cost (employer)	10,355	962	5,723	17,040
Interest cost	30,328	1,340	5,776	37,444
Employee contributions **	8,313	-	-	8,313
Plan amendments	-	-	-	-
Benefits Paid	(25,013)	(1,249)	(2,600)	(28,862)
Net transfer in (out)	-	-	-	-
Actuarial loss (gain)	7,207	9,166	(3,657)	12,716
Benefit Obligation - September 30, 2019	\$ 575,483	\$ 43,393	\$ 145,316	\$ 764,192
Change in plan assets				
Market value of plan assets - September 30, 2018	\$ 584,607	\$ -	\$ -	\$ 584,607
Actual return on plan assets	51,052	-	-	51,052
Employer contributions	13,275	1,249	2,600	17,124
Employee contributions	8,313	-	-	8,313
Benefits paid	(25,013)	(1,249)	(2,600)	(28,862)
Surplus paid out to employer	-	-	-	-
Settlement payments	-	-	-	-
Net transfer in (out) *	-	-	-	-
Acquisitions (divestitures)	-	-	-	-
Actual plan expenses	-	-	-	-
Foreign exchange rate changes	-	-	-	-
Market value of plan assets - September 30, 2019	\$ 632,234	\$ -	\$ -	\$ 632,234
Actuarial Value of Assets - BOY	\$ 574,989	\$ -	\$ -	\$ 574,989
Actuarial Value of Assets - EOY	\$ 614,134	\$ -	\$ -	\$ 614,134
Reconciliation of funded status - end of period				
Funded status - surplus (deficit)	\$ 56,751	\$ (43,393)	\$ (145,316)	\$ (131,958)
Employer contributions after measurement date	2,253	331	644	3,228
Unamortized transitional obligation (asset)	-	-	-	-
Unamortized past service cost	-	-	-	-
Unamortized net actuarial loss (gain)	(56,004)	13,766	3,831	(38,407)
Accrued benefit asset (liability)	\$ 3,000	\$ (29,296)	\$ (140,841)	\$ (167,137)
Valuation allowance	-	-	-	-
Accrued benefit asset (liability), net of valuation allowance	\$ 3,000	\$ (29,296)	\$ (140,841)	\$ (167,137)
Components of 2019 expense				
Current service cost (employer)	\$ 10,355	\$ 962	\$ 5,723	\$ 17,040
Interest cost	30,328	1,340	5,776	37,444
Expected return on plan assets	(31,543)	-	-	(31,543)
Curtailment loss (gain)	-	-	-	-
Settlement loss (gain)	-	-	-	-
Amortization of past service costs	-	-	-	-
Amortization of net actuarial loss (gain)	(2,525)	341	477	(1,707)
Increase (decrease) in valuation allowance	-	-	-	-
Special termination benefits	-	-	-	-
Net expense (income)	\$ 6,615	\$ 2,643	\$ 11,976	\$ 21,234
Expected average remaining service life ("EARSL")	14.5	14.5	16.7	
Balance Sheet Reconciliation				
Accrued benefit asset/(liability) at Dec 31, 2018	\$ (2,640)	\$ (27,926)	\$ (131,524)	\$ (162,090)
Net income / (expense) for period	(6,615)	(2,643)	(11,976)	(21,234)
Contributions	12,255	1,273	2,659	16,187
Accrued benefit asset/(liability) at Dec 31, 2019	\$ 3,000	\$ (29,296)	\$ (140,841)	\$ (167,137)
Actual Asset Allocation at September 30, 2019				
Canadian equity securities	16.3%	N/A		
Foreign equity securities	34.3%	N/A		
Canadian debt securities	30.3%	N/A		
Global infrastructure	9.2%	N/A		
Canadian real estate	9.3%	N/A		
Cash equivalents	0.6%	N/A		
Assumptions at the beginning of the period				
Discount rate for RPP	5.50%	Assumptions at the end of the period		5.50%
Discount rate for SERP & OPEB	4.00%	Discount rate for SERP & OPEB		2.90%
Rate of compensation increase	3.50%	Rate of compensation increase		3.50%
Health care inflation - Select	8.00%	Health care inflation - Select		6.40%
Health care inflation - Ultimate	4.50%	Health care inflation - Ultimate		4.00%
Expected rate of return on plan assets	5.50%	Expected rate of return on plan assets		5.50%
Inflation	2.00%	Inflation		2.00%
Mortality	CPM Public MI-2017	Mortality		95% CPM Public MI-2017
2019 Cash Flows				
Estimated Employee Contributions	8,847	-	-	
Estimated Employer Contributions	12,349	1,282	2,813	
Estimated Benefit Payments	24,163	1,282	2,813	
EARSL	14.5	14.5	16.7	
Actual Employee Contributions	8,313	-	-	
Actual Employer Contributions	13,275	-	2,600	
Actual Benefit Payments	25,013	1,249	2,600	

* Transfer amount represents the net transfers resulting from reciprocal transfer agreements

** Includes employee contributions for past service

Actuarial Assumptions

December 31, 2019 Disclosure and 2020 Expense

Economic Assumptions

Discount Rate – RPP	5.50% per year
Discount Rate – SERP & OPEB	2.90% per year
Inflation	2.00% per year
Return on Assets	5.50% per year
Increases in Salary	3.50% per year
Increases in YMPE	2.75% per year
Increases in ITA Maximum	\$3,025.56 per year in 2019 and increasing by 2.50% per year after 2019
Dental Inflation	4.00% per year
Prescription Drugs Inflation	6.40% per year in 2019 grading down to an ultimate rate of 4.00% per year in 2031
Other Medical (Non-Drug) Inflation	4.50% per year
Expenses	Included in Return on Assets

Demographic Assumptions

Retirement Age	Rates vary by age and service (see January 1, 2019 actuarial valuation report)
Mortality Rates	95% of CPM public sector mortality table with improvement scale MI-2017
Withdrawal Rates	Rates vary by age and service (see January 1, 2019 actuarial valuation report)
Percent With Spouse at Retirement	90%
Age Difference	Male Spouse three years older

Cost Methods

Actuarial Cost Method	Projected Unit Credit
Asset Valuation Method	
For RPP	Market-related value ¹
For SERP and OPEB	N/A

¹ Investment gains and losses during each year are recognized in the smoothed value of assets over three years

Actuarial Assumptions

December 31, 2020 Disclosure

Economic Assumptions

Discount Rate - RPP	5.50% per year
Discount Rate - SERP & OPEB	2.60% per year
Inflation	2.00% per year
Return on Assets	5.50% per year
Increases in Salary	3.50% per year
Increases in YMPE	2.75% per year
Increases in ITA Maximum	\$3,025.56 per year in 2019 and increasing by 2.75% per year after 2019
Dental Inflation	4.00% per year
Prescription Drugs Inflation	6.20% per year in 2020 grading down to an ultimate rate of 4.00% per year in 2031
Other Medical (Non-Drug) Inflation	4.00% per year
Expenses	Included in Return on Assets

Demographic Assumptions

Retirement Age	Rates vary by age and service (see January 1, 2019 actuarial valuation report)
Mortality Rates	95% of CPM public sector mortality table with improvement scale MI-2017
Withdrawal Rates	Rates vary by age and service (see January 1, 2019 actuarial valuation report)
Percent With Spouse at Retirement	90%
Age Difference	Male Spouse three years older

Cost Methods

Actuarial Cost Method	Projected Unit Credit
Asset Valuation Method	
For RPP	Market-related value ¹
For SERP and OPEB	N/A

¹ Investment gains and losses during each year are recognized in the smoothed value of assets over three years

Membership Data—RPP

Reference should be made to the valuation report for funding purposes as at January 1, 2019 for a complete description of the data and the tests performed to ensure the reliability of the data.

Membership Data—SERP

The following table presents relevant characteristics of the membership as at January 1, 2019 for those estimated to be entitled to a benefit from the SERP on the accounting basis. For confidentiality purposes an age and service table has not been included.

Active Members of the SERP

	January 1, 2019		
	Males	Females	Total
Number	59	24	83
Average age	47.1	49.5	47.8
Average service from date of hire	16.4	12.4	15.3
Average credited service	14.9	8.6	13.1
Average pensionable earnings	\$ 195,477	\$ 197,679	\$ 196,114

Retired Members of the SERP

	January 1, 2019		
	Males	Females	Total
Number	46	7	53
Average age	67.7	68.0	67.8
Average monthly pension	\$ 2,179	\$ 554	\$ 1,964

Deferred Vested Members of the SERP

	January 1, 2019		
	Males	Females	Total
Number	4	0	4
Average age	50.4	0	50.4
Average monthly pension	\$ 963	\$ 0	\$ 963

Membership Data—OPEB

The following table presents relevant characteristics of the membership as at January 1, 2019 for those estimated to be entitled to a benefit from the OPEB on the accounting basis. For confidentiality purposes an age and service table has not been included.

	1-Jan-19
Post-Retirement Benefits	
Active Employees	
Number	708
Average Age	42.5
Average Years of Service	9.5
Expected Average Remaining Service Lifetime (EARSL)]	17.2
Expected Average Service to Full Eligibility	12.2
Retirees	
Number	
Single Coverage	29
Family Coverage	274
Total	303
Average Age	70.0
Beneficiaries	
Number	
Waived Coverage	0
Single Coverage	46
Total	46
Average Age	77.0
Post-Employment Benefits	
Disabled Employees Receiving Benefits	10

Claims Costs assumption – OPEB

PWU			
	Drugs	Other Medical	Dental
	2019	2019	2019
<=55	\$2,005	\$647	\$716
60	\$2,608	\$761	\$877
65	\$1,203	\$869	\$908
70	\$1,328	\$880	\$938
75	\$1,328	\$890	\$946
80	\$1,328	\$897	\$890
85+	\$1,328	\$884	\$848

Society			
	Drugs	Other Medical	Dental
Age	2019	2019	2019
<=55	\$1,366	\$1,102	\$854
60	\$1,776	\$1,297	\$1,045
65	\$819	\$1,481	\$1,082
70	\$905	\$1,499	\$1,118
75	\$905	\$1,517	\$1,127
80	\$905	\$1,528	\$1,061
85 and over	\$905	\$1,507	\$1,011

Management			
	Drugs	Other Medical	Dental
Age	2019	2019	2019
<=55	\$1,321	\$836	\$755
60	\$1,718	\$984	\$925
65	\$793	\$1,123	\$958
70	\$875	\$1,137	\$990
75	\$875	\$1,151	\$997
80	\$875	\$1,159	\$939
85 and over	\$875	\$1,143	\$895

Plan Provisions—Pension

Registered Plan

See January 1, 2019 actuarial valuation report for a summary of the plan provisions.

SERP

The SERP provides the portion of the RPP formula benefits that are in excess of the amounts that are permitted by the *Income Tax Act* to be paid from the RPP. The SERP also includes special pension arrangements provided to certain individuals.

Plan Provisions—OPEB

Eligibility Retirees from active service, in receipt of a pension, are eligible for life insurance, medical and dental coverage as described later.

Employees hired on or after certain dates described below must also meet applicable service requirements. Employees in the Management group hired on or after January 1, 2006 must have more than 10 years of service at retirement to be eligible under the Standard plan, or have at least 21 years of service at retirement to be eligible under the Enhanced plan. Employees represented by the PWU and hired after April 1, 2006 and before April 1, 2012 require 7 years of service to be eligible for post-retirement benefits. Employees represented by the PWU and hired on or after April 1, 2012 require at least 10 years of service to be eligible for post-retirement benefits. Employees represented by the Society and hired after January 1, 2010 require 10 years of service to be eligible for post-retirement benefits.

Deferred vested members with 25 or more years of service at termination are eligible for medical and dental coverage once they commence receiving a pension from the Company. Members of the Society group who are eligible to retire with an unreduced pension and with 25 or more years of service at termination who choose to take the commuted value of their pension instead of receiving a pension from the Company may elect benefits coverage of 70% of the medical and dental coverage or choose a one-time lump-sum payout instead of the benefits.

Spouses and dependents are eligible for medical and dental coverage while the retiree is alive. After the retiree's death, spouses and dependents are eligible for coverage if the spouse is in receipt of a pension.

Surviving spouses and dependants of an employee who died in active employment are also eligible for medical and dental coverage if the spouse is in receipt of a pension.

Plan Provisions—OPEB (continued)

Benefits

Life Insurance

Life coverage equal to 50% of base annual earnings at retirement is provided in the first 10 years of retirement, reducing to 25% of base annual earnings 10 years after retirement.

Retirement Bonus

Employees with 10 or more years of continuous service receive a lump-sum payment of one month's earnings at retirement, subject to advance notice requirements.

Medical and Dental

Vary depending on the employee group the retiree was in as an active employee. The groups are as follows:

- Members of the Society of Energy Professionals ("Society")
- Members of the Power Workers' Union ("PWU")
- Management Group ("Management")

Semi-Private and Private Hospital Accommodation Plan

- The semi-private differential between ward accommodation and semi-private accommodation in an active treatment hospital.
- Up to \$30 per day (\$40 for Society and Management) for a maximum of 120 days in any period of 365 consecutive days towards semi-private or private room accommodation in a hospital for the chronically ill or a chronic care unit of a general hospital.
- Up to \$20 per day (no limit for Society and Management) for the differential between ward accommodation and semi-private accommodation (or private room for PWU) in a contract (private) hospital or a convalescent/rehabilitative hospital up to 120 days (365 days for Society and Management) per lifetime.

These expenses are not subject to the annual deductible.

Plan Provisions—OPEB (continued)

Extended Health Care Benefits Plan

Covers benefits such as:

- Differential between semi-private and private room accommodation in an active treatment hospital.
- Prescription drugs (as listed in the Company Drug Formulary List) subject to the following:
 - (a) A dispensing fee up to a maximum of \$9.00 for PWU (increasing to \$9.50 effective April 1, 2011), \$9.00 for Management, and \$9.50 for Society, per prescription for drugs that require a prescription by law (the maximum does not apply in certain limited situations).
 Generic substitution unless the physician requests no substitution.
 Over-the-counter drugs that do not require a prescription by law are covered where medically required (life sustaining drugs only for Society and Management).

- Blood and blood products.

Private-duty nursing, subject to a maximum fee as set by the largest Nursing Registry in Ontario.

- Ambulance services.
- Physiotherapy treatments (subject to some limitation).
- Miscellaneous items such as prosthetic appliances, equipment rental, support stockings.
- Dental treatment as the result of an accident.
- Hearing aids (once every three years, no restriction for Management).
- Eyeglasses (including contact lenses) up to \$500 for PWU and Management and \$550 for Society per person every two calendar years.
- Laser eye surgery up to a lifetime maximum of \$3,000 for PWU and Management and \$3,200 for Society

Plan Provisions—OPEB (continued)

- Services of clinical psychologists, registered massage therapists, speech therapists, chiropractors, podiatrists, chiropodists, naturopaths, dieticians (for Society and Management only), registered nutritionists (for PWU only), homeopaths, acupuncturists, certified shiatsu therapists (for Society only) and clinical ecologist subject to certain per person per calendar year maximum which may vary by Claim Branch.

Annual deductibles are as follows:

- Management and PWU: \$20 single / \$40 family
Society: \$25 single / \$50 family

Deductibles do not apply to vision care and hearing aids.

Out-of-Province Medical Emergency Benefit Coverage

For management pensioners the plan provides comprehensive coverage for emergency medical and dental treatment required when traveling temporarily outside of Ontario or outside of Canada. Reimbursement is based on reasonable and customary charges of the area in which the service or supply is provided.

Dental Benefits

The plan pays 100% of Class A Services and 75% of Class B Services (85% for Society and Management members).

Class A Services include examinations, x-rays, preventive services, periodontal services, endodontic services and extensive oral surgery. Class B Services include dentures and crowns.

For all Claim Branches, the current ODA Fee Guide applies for Society, and the prior year Guide applies for Management and PWU.

No deductibles apply. There is an annual maximum of \$4,500 (excluding orthodontics).

This plan also pays 75% of eligible charges related to Orthodontic Benefits subject to a lifetime maximum per individual of \$5,000 per person (\$4,500 for PWU effective April 1, 2009).

About Aon

Aon plc (NYSE:AON) is a leading global professional services firm providing a broad range of risk, retirement and health solutions. Our 50,000 colleagues in 120 countries empower results for clients by using proprietary data and analytics to deliver insights that reduce volatility and improve performance.

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May 18, 2021

BY E-MAIL

PRIVATE & CONFIDENTIAL

Mr. Kevin Reid
Manager, Financial Resource Planning & Analysis
Independent Electricity System Operator
Station A, Box 4474
Toronto, ON M5W 4E5

**RE: INDEPENDENT ELECTRICITY SYSTEM OPERATOR ("IESO") PUBLIC SECTOR
ACCOUNTING EXPENSE SENSITIVITY ESTIMATES FOR FISCAL YEARS 2021
THROUGH TO 2024**

Dear Kevin:

We are pleased to provide you with projections of the pension expense through 2024 for business planning purposes, for the following plans:

- Independent Electricity System Operator Pension Plan ("RPP");
- Independent Electricity System Operator Supplemental Employee Retirement Plan ("SERP"); and
- Other (non-pension) post-employment and post-retirement benefit arrangements ("OPEB")

We have also prepared a funding estimate for the years 2021 through 2024 inclusive for the RPP.

This letter reflects the following:

- Expected employer contributions for future years based on IESO's funding policy;
- Discount rate and expected return on assets assumption of 5.40% throughout the expense projection period from the 2021 year end to 2024 for the RPP and is 10 basis points lower than the discount rate used at December 31, 2020 year end;
- Discount rates of 3.50% throughout the expense projection period from the 2021 year end to 2024 for the SERP and OPEB. The 3.50% was based on market rate for provincial bonds plus 50 basis points and reflects market conditions at April 30, 2021;
- For the projected RPP going concern results at January 1, 2022, we have used a discount rate of 5.40% and a provision for adverse deviations of 8.00%, under the assumption that the next actuarial valuation will be filed on that date. These rates reflect current market conditions at March 31, 2021. Other key assumptions unchanged from the 2019 actuarial valuation;
- For the solvency valuation we have used the preliminary assumptions prescribed as at April 30, 2021;
- Asset performance through March 31, 2021;
- Expected 2021-2024 contributions based on IESO's funding policy and projections of funded position in accordance with January 2019 valuation.



Mr. Kevin Reid
May 18, 2021
Page 2

In conducting this analysis, we have used:

- Plan membership information supplied by IESO as of January 1, 2019 for the pension plans, as summarized in the summary of results for the January 1, 2019 actuarial valuation;
- Plan membership information supplied by IESO as of January 1, 2019 for the OPEB plan;
- Scheduled changes in PWU, Society and non-represented member contributions;
- Actual asset returns and cash flows for the RPP to March 31, 2021;
- Expected contributions based on the plan's funding policy and the January 1, 2019 actuarial valuation;
- Expected benefit payments for the fiscal years 2021 through to 2024;
- An acceptable method to roll forward the plan liabilities; and
- An acceptable method to roll forward the plan assets, while assuming a 5.40% investment return.

We have used the same actuarial methods and assumptions as were used for the fiscal 2020 year-end disclosure with the exception of changes to the RPP, OPEB and SERP discount rates which have been updated to reflect current market conditions.

We note that the 2021 expense included in this letter is not expected to change unless there is a significant event that would require an adjustment, such as changes due to collective bargaining, plan design changes or substantial membership changes. The 2022, 2023 and 2024 expense estimates will differ from these estimates as a result of asset returns differing from expectations and differences in contributions and benefit payments. Furthermore, if there are any changes in actuarial assumptions, these will impact the following year's expense. Changes in membership are not expected to impact the expense until 2023, since the next actuarial valuation is planned for January 1, 2022, which will be reflected in the 2022 year end disclosures and 2023 expense.



Mr. Kevin Reid
May 18, 2021
Page 3

See Appendix B for a breakdown of each benefit plan's expense by component.

Expense (in CDN \$000s)	2021	2022	2023	2024
RPP	\$ 7,465	\$ 8,074	\$ 8,123	\$ 7,892
SERP	3,799	3,226	3,284	3,342
OPEB	<u>14,255</u>	<u>11,028</u>	<u>11,725</u>	<u>12,448</u>
Total	\$ 25,519	\$ 22,328	\$ 23,132	\$ 23,682

Sincerely,

Linda Byron
Fellow of the Canadian Institute of Actuaries

Reinhart Kramreither
Fellow of the Canadian Institute of Actuaries

Encl.

cc: Mr. Anthony Martinello, Independent Electricity System Operator
Mr. Dawar Ahmed, Aon
Mr. John Radich, Aon



Mr. Kevin Reid
May 18, 2021
Page 4

Appendix A

Independent Electricity System Operator Funding Projection for 2021-2024 (in CDN \$000s)

	2021 ¹	2022 ²	2023	2024
Going Concern (BOY)				
Actuarial Value of Assets (net of PYCB) ³	696,500	695,317	732,791	770,600
Liabilities	<u>618,900</u>	<u>689,303</u>	<u>719,957</u>	<u>752,525</u>
Funded Position as at January 1	77,600	6,014	12,834	18,075
Discount Rate	5.80%	5.40%	5.40%	5.40%
Inflation Rate	2.00%	2.00%	2.00%	2.00%
Provision for Adverse Deviations (PfAD)	7.80%	8.00%	8.00%	8.00%
Mortality Table	95% CPM Public 2014 with projection MI-2017			
Solvency (BOY)				
Market Value of Assets (net of PYCB)	696,503	713,942	745,878	779,796
Liabilities	<u>682,600</u>	<u>630,852</u>	<u>655,948</u>	<u>681,294</u>
Funded Position as at January 1	13,903	83,090	89,930	98,502
Discount Rate - CV	1.2% for 10 years; 2.8% thereafter	1.9% for 10 years; 3.5% thereafter		
Discount Rate - Annuity Purchase	2.58%	3.23%	3.23%	3.23%
Mortality Table	CPM Combined 2014 with projection CPM-B			
Contributions				
Total Normal Cost	21,800	25,315	26,201	27,118
Employee Contributions	<u>9,147</u>	<u>9,473</u>	<u>9,810</u>	<u>10,159</u>
Employer Normal Cost	12,653	15,842	16,391	16,959
Contribution exempt under transitional rules	(239)	-	-	-
Going Concern Special Payments	-	-	-	-
Solvency Special Payments	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
Minimum Required Contributions	12,414	15,842	16,391	16,959
Funding Policy Recommended Contribution	12,653	15,842	16,391	16,959
Prior Year Credit Balance	-	-	-	-
Total Expected Company Contributions	12,653	15,842	16,391	16,959

Notes

1. Based on Q4 2020 dashboard results
2. Next valuation required as at January 1, 2022
3. Asset gains/losses smoothed over 3 years. Asset expected to return 5.80% per annum for 2021 and 5.40% per annum for 2022 through 2024.



Mr. Kevin Reid
May 18, 2021
Page 5

Appendix B

Independent Electricity System Operator PSAB Expense Projection for FY2021-2024 (in CDN \$000s)

	RPP	SERP	OPEB	Total
Salary Scale	3.50%	3.50%	3.50%	
Inflation	2.00%	2.00%	2.00%	
Mortality	CPM Public MI-2017	CPM Public MI-2017	CPM Public MI-2017	
Fiscal 2021 Expense				
Discount Rate	5.50%	2.60%	2.60%	
Expected Return on Assets	5.50%	n/a	n/a	
Current Service Cost	\$ 12,759	\$ 1,559	\$ 8,931	\$ 23,249
Interest Cost	33,553	1,233	4,503	39,289
Expected Return on Plan Assets	(35,705)	-	-	(35,705)
Amortization of Net Actuarial Loss (Gain)	(3,142)	1,007	821	(1,314)
Net expense (income)	\$ 7,465	\$ 3,799	\$ 14,255	\$ 25,519
Fiscal 2022 Expense				
Discount Rate	5.40%	3.50%	3.50%	
Expected Return on Assets	5.40%	n/a	n/a	
Current Service Cost	\$ 13,490	\$ 1,329	\$ 6,875	\$ 21,694
Interest Cost	34,936	1,449	5,238	41,623
Expected Return on Plan Assets	(37,232)	-	-	(37,232)
Amortization of Net Actuarial Loss (Gain)	(3,120)	448	(1,085)	(3,757)
Net expense (income)	\$ 8,074	\$ 3,226	\$ 11,028	\$ 22,328
Fiscal 2023 Expense				
Discount Rate	5.40%	3.50%	3.50%	
Expected Return on Assets	5.40%	n/a	n/a	
Current Service Cost	\$ 14,329	\$ 1,376	\$ 7,184	\$ 22,889
Interest Cost	36,468	1,490	5,563	43,521
Expected Return on Plan Assets	(39,324)	-	-	(39,324)
Amortization of Net Actuarial Loss (Gain)	(3,350)	418	(1,022)	(3,954)
Net expense (income)	\$ 8,123	\$ 3,284	\$ 11,725	\$ 23,132
Fiscal 2024 Expense				
Discount Rate	5.40%	3.50%	3.50%	
Expected Return on Assets	5.40%	n/a	n/a	
Current Service Cost	\$ 14,825	\$ 1,424	\$ 7,507	\$ 23,756
Interest Cost	38,002	1,529	5,904	45,435
Expected Return on Plan Assets	(41,412)	-	-	(41,412)
Amortization of Net Actuarial Loss (Gain)	(3,523)	389	(963)	(4,097)
Net expense (income)	\$ 7,892	\$ 3,342	\$ 12,448	\$ 23,682

OEB STAFF INTERROGATORY 19

Issue 1.3: Are the IESO's 2020 staffing levels and compensation (including salaries, benefits, pensions and other post-employment benefits) appropriate?

Issue 1.4: Are the IESO's 2021 projected staffing levels and compensation (including salaries, benefits, pensions and other post-employment benefits) appropriate?

1-Staff-19

INTERROGATORY

a) Exhibit B/Tab 2/Schedule 1 / p. 26, 2019 Annual Report (p. 24)

b) Exhibit B/Tab 2/Schedule 2 / p. 21, 2020 Annual Report (p. 19)

Preamble:

At the above noted first and second reference, the IESO has included the following principal assumptions that are used to calculate benefit obligations at the end of the year, as shown below in OEB Staff Table 4.

OEB Staff Table 4 – Discount Rate at the End of the Period

	2020 Registered Pension Benefits	2019 Registered Pension Benefits	2018 Registered Pension Benefits		2020 Supplemental Pension Benefits	2019 Supplemental Pension Benefits	2018 Supplemental Pension Benefits		2020 Other Benefits	2019 Other Benefits	2018 Other Benefits
Discount rate at the end of the period	5.50%	5.50%	5.50%		2.60%	2.90%	4.00%		2.60%	2.90%	4.00%

Questions:

In calculating benefit obligations:

a) Does IESO agree with the values shown in OEB Staff Table 4? If the IESO disagrees, please update OEB Staff Table 4.

b) Please update OEB Staff Table 4 to also show 2019 OEB-approved and 2021 values.

c) Please explain why the discount rates at the end of the period for the "Supplemental Pension Benefits" and "Other Benefits" of 2020 [2.60%], 2019 [2.90%], and 2018 [4.00%] are much lower than the "Registered Pension Benefits" discount rate of 5.50% for 2020, 2019, and 2018.

RESPONSE

a) Yes. This table matches the IESO's audited financial statements.

b) The 2021 actual values will not be finalized until the independent audit of 2021 financial statements is completed in early 2022.

Table 1: Discount Rate at the end of the period

	2021 Budget	2020	2019	2019 OEB Approved	2018
Registered Pension Benefits	5.50%	5.50%	5.50%	5.50%	5.50%
Supplemental Pension Benefits	3.20%	2.60%	2.90%	5.50%	4.00%
Other Benefits	3.20%	2.60%	2.90%	5.50%	4.00%

c) The "Registered Pension Benefits" discount rate is based on the expected return on pension plan assets while the discount rate for the "Supplemental Pension Benefits" and "Other Benefits" is determined using the cost of borrowing as applicable to IESO. These valuations have been performed in accordance with the requirements of the Public Sector Accounting Standards (PSAS). Further, these rates are reviewed with IESO's independent auditor.

Both rates are different and incomparable as they are determined based on two distinct sets of calculations, assumptions and time periods.

OEB STAFF INTERROGATORY 20

Issue 1.3: Are the IESO's 2020 staffing levels and compensation (including salaries, benefits, pensions and other post-employment benefits) appropriate?

Issue 1.4: Are the IESO's 2021 projected staffing levels and compensation (including salaries, benefits, pensions and other post-employment benefits) appropriate?

1-Staff-20

INTERROGATORY

a. Exhibit B, Tab 2, Schedule 1 / Page 27, 2019 Annual Report (p. 25)

b. Exhibit B, Tab 2, Schedule 2 / Page 22, 2020 Annual Report (p. 20)

Preamble:

At the above noted first reference and second reference, the IESO has included the following principal assumptions that are used to calculate benefit costs at the beginning of the period, as shown below in OEB Staff Table 5.

OEB Staff Table 5 – Discount Rate at the Beginning of the Period

		2020 Registered Pension Benefits	2019 Registered Pension Benefits	2018 Registered Pension Benefits		2020 Supplemental Pension Benefits	2019 Supplemental Pension Benefits	2018 Supplemental Pension Benefits		2020 Other Benefits	2019 Other Benefits	2018 Other Benefits
Discount rate at the beginning of the period		5.50%	5.50%	5.50%		2.90%	4.00%	4.00%		2.90%	4.00%	4.00%

Questions:

In calculating benefit costs:

a) Does IESO agree with the values shown in OEB Staff Table 5? If the IESO disagrees, please update OEB Staff Table 5.

b) Please update OEB Staff Table 5 to also show 2019 OEB-approved and 2021 values.

c) Please explain why the discount rates at the beginning of the period for the "Supplemental Pension Benefits" and "Other Benefits" of 2020 [2.90%], 2019 [4.00%], and 2018 [4.00%] are much lower than the "Registered Pension Benefits" discount rate of 5.50% for 2020, 2019, and 2018.

RESPONSE

a) Yes. This table matches the IESO's audited financial statements.

b) The 2021 actual values will not be finalized until the independent audit of 2021 financial statements is completed in early 2022.

Table 1: Discount rate at the beginning of the period

	2021 Budget	2020	2019	2019 OEB Approved	2018
Registered Pension Benefits	5.50%	5.50%	5.50%	5.50%	5.50%
Supplemental Pension Benefits	2.90%	2.90%	4.00%	5.50%	4.00%
Other Benefits	2.90%	2.90%	4.00%	5.50%	4.00%

c) The "Registered Pension Benefits" discount rate is based on the expected return on pension plan assets while the discount rate for the "Supplemental Pension Benefits" and "Other Benefits" is determined using the cost of borrowing as applicable to IESO. These valuations have been performed in accordance with the requirements of the Public Sector Accounting Standards (PSAS). Further, these rates are reviewed with IESO's independent auditor.

Both rates are different and incomparable as they are determined based on two distinct sets of calculations, assumptions and time periods.

OEB STAFF INTERROGATORY 21

Issue 1.3: Are the IESO's 2020 staffing levels and compensation (including salaries, benefits, pensions and other post-employment benefits) appropriate?

Issue 1.4: Are the IESO's 2021 projected staffing levels and compensation (including salaries, benefits, pensions and other post-employment benefits) appropriate?

1-Staff-21

INTERROGATORY

Preamble:

OEB staff is seeking additional information regarding the IESO's pension and OPEB amounts.

Questions:

- a) Please confirm that there is an inverse relationship between the discount rate and the present value of any pension and OPEBs obligations, as well as versus those incorporated into the pension and OPEB amounts included in the IESO's 2019 Actual, 2020 Actual, and 2021 Budget, meaning that the lower the discount rate, the higher the present value. If this is not the case, please explain.
- b) Also incorporating the IESO's answer to question a), please explain why the IESO made the decision to accept materially different discount rate assumptions between 1) the "Registered Pension Benefits" and 2) the "Supplemental Pension Benefits" and "Other Benefits".
- c) Please confirm that all of the 2019, 2020, and 2021 assumptions used for accounting purposes are the same as those used in the actuarial valuations for funding purposes. If this is not the case, please quantify and explain any significant impacts, including any significant impacts on amounts incorporated into the pension and OPEB amounts included in the IESO's 2019 Actual, 2020 Actual, and 2021 Budget.

RESPONSE

- a) Confirmed.
- b) The "Registered Pension Benefits" discount rate is based on the expected return on pension plan assets while the discount rate for the "Supplemental Pension Benefits" and "Other Benefits" is determined using the cost of borrowing as applicable to IESO. These valuations have been performed in accordance with the requirements of the Public Sector Accounting Standards (PSAS). Further, these rates are reviewed with IESO's independent auditor.

1 Both rates are different and incomparable as they are determined based on two distinct
2 sets of calculations, assumptions and time periods.

- 3 c) The IESO co-ordinates both accounting and funding valuation purposes with the IESO's
4 actuary. And the IESO's independent auditor reviews all accounting assumptions in
5 regards to the IESO's financial statements.

6 However different standards do apply to accounting versus funding.

7 For accounting, the IESO adheres to Canadian Public Sector Accounting Standards (see
8 answer to (b) above) and for funding the IESO adheres to the requirements as listed in
9 Ontario's Pension Benefits Act.

10 For the registered pension plan, the IESO's accounting and funding assumptions are
11 generally similar. However, the funding assumptions are filed once every three years
12 with Ontario's pension regulator (last one was filed for January 1, 2019), whereas the
13 accounting assumptions are reviewed and updated if applicable every year. The other
14 key difference between accounting and funding for the registered pension plan is that
15 the funding valuation is required to include a specific Provision for Adverse Deviation
16 (PfAD) to add a level of conservatism to the funding valuation. The accounting standard
17 does not include a similar PfAD assumption.

18 For the separate Supplemental Pension Benefits and OPEB plans, the IESO does not file
19 any funding valuations. Therefore, the IESO only utilizes the accounting standards.

OEB STAFF INTERROGATORY 22

Issue 1.3: Are the IESO's 2020 staffing levels and compensation (including salaries, benefits, pensions and other post-employment benefits) appropriate?

Issue 1.4: Are the IESO's 2021 projected staffing levels and compensation (including salaries, benefits, pensions and other post-employment benefits) appropriate?

1-Staff-22

INTERROGATORY

a. Exhibit D / Tab 1 / Schedule 1 / p. 1

b. Exhibit D / Tab 1 / Schedule 1 / p. 2

c. Exhibit D / Tab 1 / Schedule 1 / p. 3 & 4

d. Exhibit D/ Tab 1/ Schedule 3/ Attachment 1 / Appendix 2-K Employee Costs (Excel spreadsheet)

Preamble:

At the above noted first reference, regarding increased costs of employee benefits, the IESO indicated that 2019 actual versus 2019 OEB-approved was \$3.6 million higher spending due to [an] actuarial pension liability update and higher medical/dental benefit usage.

At the above noted second reference, regarding increased costs of employee benefits, the IESO indicated that 2020 Actual versus 2019 Actual was \$3.0 million higher spending due to revisions to actuarial pension liability assumptions due to the COVID-19 pandemic.

At the above noted third reference, regarding increased costs of employee benefits, the IESO indicated that 2021 Budget versus 2020 Actual was \$0.6 million higher spending, but no description was included.

At the above noted fourth reference, the IESO has included the total benefits, as shown below in OEB Staff Table 6.

OEB Staff Table 6 – Total Benefits

	2019 OEB- Approved	2019 Actual	2020 Actual	2021 Budget
Total Benefits \$	29.1	32.1	33.1	33.6
Year-over-Year Change \$		3.0	1.0	0.5
Year-over-Year Change %		10.1%	3.2%	1.6%

Questions:

a) Does IESO agree with the values shown in OEB Staff Table 6? If the IESO disagrees, please update OEB Staff Table 6.

b) Regarding 2019 Actual versus 2019 OEB-approved OM&A:

i. Please confirm that the \$3.6 million higher spending of 2019 Actual versus 2019 OEB-approved was driven primarily by the above noted reductions in the discount rates between 2018 and 2019 or those between 2019 OEB-approved and 2019 Actual. If this is not the case, please explain. Please clarify whether it was both pension and OPEBs that were impacted and not just pension.

ii. Please explain why OEB Staff Table 6 shows a year-over-year change of \$3.0 million, versus a change of \$3.6 million described at the above noted first reference.

c) Regarding 2020 Actual versus 2019 Actual OM&A:

i. Please confirm that the \$3.0 million higher spending of 2020 Actual versus 2019 Actual was driven primarily by the above noted reductions in the discount rates between 2019 and 2020. If this is not the case, please explain. Please clarify whether it was both pension and OPEBs that were impacted and not just pension.

ii. Please explain why OEB Staff Table 6 shows a year-over-year change of \$1.0 million, versus a change of \$3.0 million described at the above noted second reference.

d) Regarding 2021 Actual versus 2020 Actual OM&A:

i. Regarding increased costs of employee benefits from 2021 Budget versus 2020 Actual of \$0.6 million, please describe the reasons for this change and whether it was driven primarily by a further reduction in the discount rates between 2020 and 2021. If this is not the case, please explain. Please clarify whether it was both pension and OPEBs that were impacted and not just pension.

ii. Please explain why OEB Staff Table 6 shows a year-over-year change of \$0.5 million, versus a change of \$0.6 million described at the above noted third reference.

RESPONSE

a) The IESO agrees with values shown in OEB Staff Table 6.

1 b)

2 i. The \$3.0 million higher spending of 2019 Actual versus 2019 OEB-approved was
3 driven primarily by reductions in the discount rates and higher health and dental
4 benefit usage.

5 ii. OEB Staff Table 6 shows a year-over-year change of \$3.0 million, versus a
6 change of \$3.6 million shown in Table 2 in Exhibit D-1-1. The difference of
7 \$0.6 million is made up of the benefits impact from the cancellation of Capacity
8 work stream and MRP deferral of external support for market rule amendments.

9 c)

10 i. The \$1.0 million higher spending of 2020 Actual versus 2019 Actual was driven
11 primarily by lower return on assets caused by the market conditions and to a
12 lesser degree by reductions in the discount rates between 2019 and 2020.

13 ii. OEB Staff Table 6 shows a year-over-year change of \$1.0 million, versus a
14 change of \$3.0 million shown in Table 3 in Exhibit D-1-1. The difference of
15 \$2.0 million is made up of the benefits impact from the cancellation of Capacity
16 work stream, MRP deferral of external support for market rule amendments and
17 capitalization of staff costs.

18 d)

19 i. The \$0.5 million higher spending of 2021 Budget versus 2020 Actual was
20 primarily driven by lower return on assets caused by the market conditions
21 between 2020 and 2021.

22 ii. OEB Staff Table 6 shows a year-over-year change of \$0.5 million, versus a
23 change of \$0.6 million shown in Table 4 in Exhibit D-1-1. The difference of
24 \$0.1 million is due to the benefits impact from MRP deferral of external support
25 for market rule amendments and capitalization of staff costs.

OEB STAFF INTERROGATORY 23

Issue 1.3: Are the IESO's 2020 staffing levels and compensation (including salaries, benefits, pensions and other post-employment benefits) appropriate?

Issue 1.4: Are the IESO's 2021 projected staffing levels and compensation (including salaries, benefits, pensions and other post-employment benefits) appropriate?

1-Staff-23

INTERROGATORY

a. Exhibit D / Tab 1 / Schedule 3 / p. 2

b. Exhibit B / Tab 2 / Schedule 1 / p. 26, 2019 Annual Report (p.24)

c. Exhibit B / Tab 2 / Schedule 2 / p. 21, 2020 Annual Report (p. 19)

Preamble:

At the above noted first reference, the IESO indicated some of the increase in cost from 2019 to 2020 reflects the IESO's higher pension expenses. The IESO noted that this is due to expected lower performance on pension plan assets due to current market conditions.

At the above noted second reference and third reference, the IESO indicated that the one-year actual return on the registered pension plan's assets as at September 30, 2020 was 6.2% per annum (2019: 9.3% per annum; 2018: 8.3% per annum).

Questions:

a) What were the 2019 OEB-approved, 2019 Actual, and 2020 Actual actuarial assumptions for the expected return on plan assets?

b) Please explain whether most of the increase in pension expenses from 2019 to 2020 is due to differences between the expected returns on plan assets in question a) and the actual returns on plan assets noted in the preamble to this interrogatory, as well as the decrease in the actual returns themselves. If this is not the case, please explain.

RESPONSE

a) Expected return on plan assets:

2019 OEB-approved: 5.5%

2019 Actual: 5.5%

2020 Actual: 5.5%

b) The IESO filed updated pension assumptions with the Ontario pension regulator in September 2019 (as required at least every three years). There were assumption

1 updates regarding active members' demographics and plan members' longevity life
2 expectancy based upon the actuary's assessment of actual and expected experience.
3 These updated assumptions were utilized to update the accounting assumptions which
4 partially led to the increase in 2020 pension expense.

ENERGY PROBE INTERROGATORY 3

1.3 Are the IESO's 2020 staffing levels and compensation (including salaries, benefits, pensions and other post-employment benefits) appropriate?

1.3-EP-3

INTERROGATORY

Reference: Exhibit B, Tab 2, Schedule 2, Page 32 of 36, 2020 Summary Compensation Table

- a) Please explain why Compensation for both the prior CEO and Interim CEO is shown in 2020?
- b) In particular, why are two salaries shown totalling \$1.027 million, rather than two part-year salaries plus severance?
- c) Did Mr. Gregg receive both Compensation and Severance in 2020? If so, provide the Salary/compensation amount and for how many months.

RESPONSE

- a) The disclosure includes the salaries of the President/CEO, Chief Financial Officer, and the top three Executive earners (other than the President/CEO and CFO) within the organization. Peter Gregg was the President/CEO until September 15th 2020 and Terry Young took over the President/CEO role from September 15th 2020 to May 25 2021. Given that both held the President/CEO role in 2020, it was decided that both should be included in the disclosure.
- b) The \$1.027 million paid to Peter Gregg and Terry Young takes into account the pro-rated base earnings, variable pay and other annual compensation paid to both Peter Gregg and Terry Young. As Mr. Gregg left the IESO voluntarily to pursue other opportunities, he was not entitled to severance and was not provided any.
- c) As Mr. Gregg voluntarily left the IESO to pursue other opportunities, he was not entitled to severance and was not provided any.

1 **SEC INTERROGATORY 10**

2 Issue 1.3 Are the IESO's 2020 staffing levels and compensation (including salaries, benefits,
3 pensions and other post-employment benefits) appropriate?

4 1.3-SEC-10

5 **INTERROGATORY**

6 [A-2-2, Attach] Are the IESO Five Year Performance Measures & Targets used in the context of
7 any management incentive pay? If so, please explain how. If not, please explain why not.

8 **RESPONSE**

9 As disclosed in our annual report, the IESO Board annually establishes a robust set of
10 performance measures, which are evaluated each year. The IESO Board assesses corporate
11 performance results and the CEO's individual performance results. Under the plan, having
12 assessed the results against target, the Board has discretion in determining the final
13 performance rating. The Board considers the assessed results, which have been verified
14 through an internal audit process, to award variable compensation. The variable compensation
15 award for the CEO and Vice-Presidents is capped at 10% of fixed compensation. The plan
16 provides for awards at or below the capped amount depending on the performance results
17 achieved. External measures are not included in the performance measurement framework for
18 compensation plan related decisions.

SEC INTERROGATORY 11

Issue 1.3 Are the IESO's 2020 staffing levels and compensation (including salaries, benefits, pensions and other post-employment benefits) appropriate?

1.3-SEC-11

INTERROGATORY

[D-1-2, p.5] Please provide the total costs and total number of FTEs for the Market Assessment and Compliance Division each year between 2018 and 2021, regardless of their source of funding.

RESPONSE

Please see table below.

Table 1: Costs and FTEs – Market Assessment and Compliance Division

(\$ Millions)	2018 Actual	2019 Actual	2020 Actual	2021 Budget
Market Assessment and Compliance Division	7.8	10.8	11.8	12.7

FTEs	2018 Actual	2019 Actual	2020 Actual	2021 Budget
Market Assessment and Compliance Division	32	40	40	43

SEC INTERROGATORY 12

Issue 1.3 Are the IESO's 2020 staffing levels and compensation (including salaries, benefits, pensions and other post-employment benefits) appropriate?

1.3-SEC-12

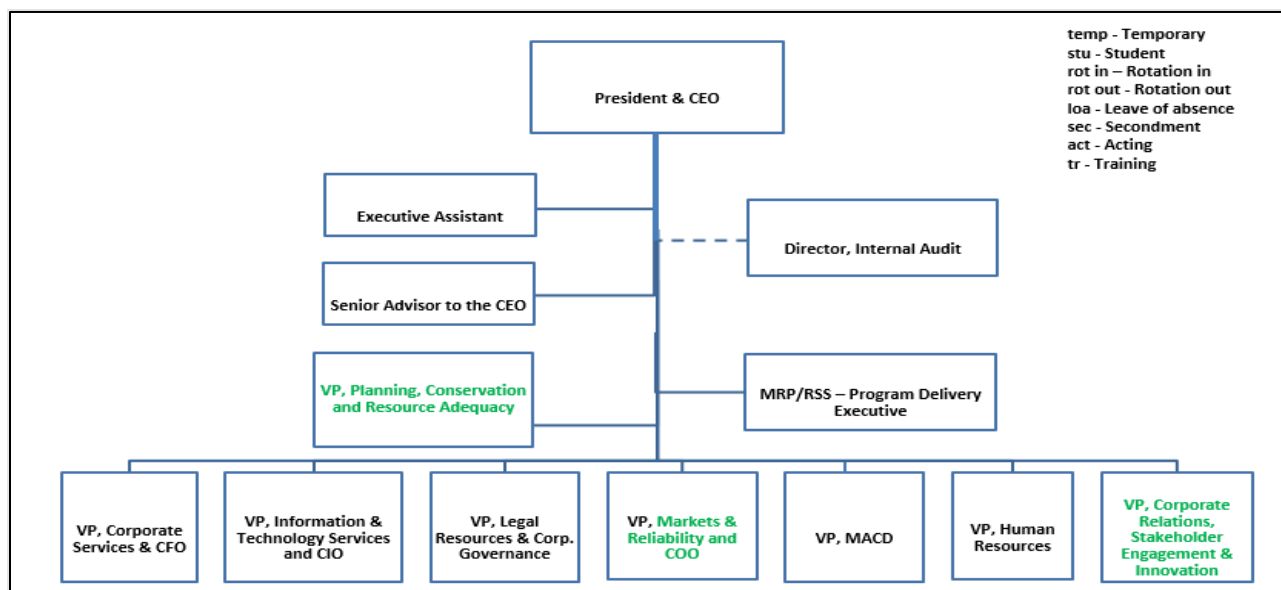
INTERROGATORY

[Exhibit D-1-2, Attachment 1] On August 19, 2021, the IESO announced new executive leadership appointments to be made effective August 30, 2021. Please explain how these new appointments change the organizational structure from that set out in the evidence. If it has been changed, please provide a revised the organizational chart.

RESPONSE

Below is a copy of the organizational chart effective August 30, 2021. The appointment of the Vice President of Planning, Conservation and Resource Adequacy, is also effective August 30. This business unit is established to forecast system conditions and to take action to ensure the IESO maintains reliability in the future by leveraging the interrelationships between system planning, resource acquisition and conservation. With the creation of this business unit, VP Planning, Acquisition and Operations role and business unit is now focused on the markets and reliability.

Figure 1: Organizational Chart



VECC INTERROGATORY 1

1.0 Revenue Requirement, Operating Costs and Capital Spending

Issue 1.3 Are the IESO's 2020 staffing levels and compensation (including salaries, benefits, pensions and other post-employment benefits) appropriate?

1.3-VECC-1

INTERROGATORY

Reference: Exhibit G, Tab 2, Schedule 1, page 9

- a) After the initial implementation of the MRP will there be a net increase in the number of FTEs as compared to the number currently engaged in operationalizing market rules?
- b) If yes, please provide the net increase and explain why the MRP requires more full time staff than the existing market rules implementations.
- c) What is the anticipated reduction in MACD staff once the MRP is fully implemented?

RESPONSE

- a) The Market Renewal Program (MRP) will introduce fundamental reforms to market operations, including a new market (Day Ahead) and enhanced processes to improve how we supply, schedule and price electricity. The extent to which incremental resources may be required to operate the renewed market relative to today's market will be determined as the project progresses through the implementation phase.
- b) See response to a).
- c) See response to a).

VECC INTERROGATORY 2

1.0 Revenue Requirement, Operating Costs and Capital Spending

Issue 1.3 Are the IESO's 2020 staffing levels and compensation (including salaries, benefits, pensions and other post-employment benefits) appropriate?

1.3-VECC-2

INTERROGATORY

Reference: Exhibit A, Tab 2, Schedule 2, page 1

"The IESO has taken steps to improve organizational efficiency by shifting more work in-house, and absorbing new incremental work with existing staff (see Exhibit D-1-3). The IESO also limited the overall impact to compensation and benefits costs by managing vacancies and temporary positions. The IESO has also started an assessment of office space needs in response to the COVID-19 pandemic impact, which has the potential to allow the IESO to reconfigure and reduce overall office footprint by exploring a hybrid working model for returning to the office."

a) When is IESO's lease next renewed?

b) What cost savings are anticipated as part of lease renewal?

RESPONSE

a) The IESO has four leased properties, its Toronto office ("Toronto"), a satellite office in Oakville ("Oakville"), a Backup Operating Centre and Backup Data Centre. The current leases for the Toronto and Oakville locations will expire October 31, 2025, while the lease of the Backup Operating Centre expires October 31, 2026. The current Backup Data Centre lease expires October 31, 2024.

b) As of the end of October 2021, the IESO will not be renewing the lease for one floor at the Toronto location which will result in an annual saving of \$0.3 million in 2022. The results of the space needs assessment, which is expected to complete in 2022, will help inform decisions around remaining lease renewals. Even as the IESO considers further overall footprint reductions, the soft commercial real estate market in the GTA and particularly downtown Toronto may result in delayed savings from potential sub-leasing.

REASCWA INTERROGATORY 5

Issue 1.4 Are the IESO's 2021 projected staffing levels and compensation (including salaries, benefits, pensions and other post-employment benefits) appropriate?

1.4-REASCWA-5

INTERROGATORY

References: Exhibit D, Schedule 2, Page 2, Lines 19-27, and
Exhibit D-1-1, Attachment 3, Line 15

- a) Regarding the OMA Overview relating to the Markets & Procurement division within the IESO Planning, Acquisition and Operations business unit (Line 15 within Exhibit D-1-1, Attachment 3), what portion of the \$7.2 million OM&A expenditure for 2021 has been allocated for the procurement of resources (excluding procuring resources through Capacity Auctions) to meet IESO's forecast supply needs to maintain Ontario's resource adequacy and reliability?
- b) Does this OM&A expenditure include: i) assessment and potential procurement of resources categorized as Unsolicited Proposals; ii) development of RFPs and associated contracts relating to procurement initiatives to meet mid-term and long-term supply needs; and/or iii) RMR contracts that have been or will be sole sourced negotiated with select counterparties to meet specific supply needs?
- c) Please provide any documents that detail the spending and how it is being allocated.

RESPONSE

- a) Approximately \$1.5 million of the \$7.2 million OM&A expenditure relates to the procurement of resources to meet IESO's forecast supply needs to maintain Ontario's resource adequacy and reliability.
- b) The OM&A expenditure primarily relates to the development of RFPs and associated contracts relating to procurement initiatives to meet mid-term and long-term supply needs.
- c) The spending is being allocated towards IESO labour and external technical consultants and lawyers. See response to Schedule 12 - 3.1-OSEA-5.

REASCWA INTERROGATORY 6

Issue 1.4 Are the IESO's 2021 projected staffing levels and compensation (including salaries, benefits, pensions and other post-employment benefits) appropriate?

1.4-REASCWA-6

INTERROGATORY

References: Exhibit D-1-1, Attachment 2, Line 11, and
Exhibit D, Tab 1, Schedule 3, Page 1, Lines 3-6

Preamble: Based on forecast supply needs, IESO had planned to develop the Incremental Capacity Auction (ICA) as part of the MRP. The IESO subsequently cancelled the ICA and is now planning to use a combination of Capacity Auctions, RFPs and associated contracts, etc. to meet Ontario's supply needs.

- a. Line 11 within Exhibit D-1-1, Attachment 2 shows \$5.5 million in avoided expenditures resulting from the IESO cancelling the ICA in July 2019. Have any of the ICA related avoided expenditures been re-allocated to the procurement of resources (excluding re-allocation to Capacity Auction related initiatives) to meet IESO's forecast supply needs to maintain Ontario's resource adequacy and reliability?
- b. Please provide supporting documentation in the form of budgets and/or reporting.

RESPONSE

- a. See response to Schedule 4 - 3.4-REASCWA-18.
- b. See response to a).

REASCWA INTERROGATORY 7

Issue 1.4 Are the IESO's 2021 projected staffing levels and compensation (including salaries, benefits, pensions and other post-employment benefits) appropriate?

1.4-REASCWA-7

INTERROGATORY

References: Exhibit B-1-2, Page 3 and 6,
Exhibit D-1-1, Attachment 3, Lines 15 and 23,
Exhibit D, Tab 1, Schedule 2, Page 2, Lines 19-27, and
Exhibit D, Schedule 2, Page 3, Lines 1-15

Preamble: The IESO Business Plan 2020-22 listed enabling resources for broader participation within the IESO-Administered Markets (IAM) as a priority initiative, as being done by all other Canadian and U.S. wholesale electricity markets. To integrate and/or procure emerging and new technologies (e.g., energy storage, 'hybrid' renewable generators coupled with energy storage, DERs) IESO has been working with market participants and stakeholders to accomplish this through specific stakeholder engagement initiatives (e.g., Enabling Resources Program (ERP), Hybrid Integration Project (HIP), etc.). However, broader integration of these technologies is being planned for post MRP implementation (i.e., ERP and HIP are planned to be implemented post the November 30, 2023 go-live date for MRP, without a specific timeframe after MRP go-live for implementation). As being presently accomplished in other Canadian and U.S. wholesale electricity markets, these technologies are being integrated and/or procured to help meet supply needs cost-effectively at a faster rate than being planned for within the IAM – which should be of consideration within Ontario, considering forecast supply needs and planned procurement initiatives, as emerging and technologies could help meet Ontario's supply needs.

- a) What portion of OM&A expenditures for 2021 for the Markets & Procurement business unit and the Innovation, Research & Development business unit within the Policy, Innovation & Engagement division (Lines 15 and 23, respectively, within Exhibit D-1-1, Attachment 3) have been allocated to enable resource participation (e.g., energy storage, 'hybrids', DERs) within the IAM and/or to specifically help meet IESO's forecast supply needs to maintain Ontario's resource adequacy and reliability?

RESPONSE

- a) The work related to the Enabling Resources initiative is managed out of the core budget and it is therefore difficult to provide precise estimates. OM&A expenditures for enabling

1 participation projects, including DERs, hybrids, and storage, are captured in existing line
2 items within Exhibit D-1-1, Appendix 2-JC of the IESO's 2020-2021 Revenue
3 Requirement Submission; and associated costs are tracked and monitored per the
4 IESO's internal financial tracking procedures.

1 **CME INTERROGATORY 4**

2 Issue 1.4 Are the IESO's 2021 projected staffing levels and compensation (including salaries,
3 benefits, pensions and other post-employment benefits) appropriate?

4 CME # 4

5 **INTERROGATORY**

6 **Ref: Exhibit D, Tab 1, Schedule 3, page 3 of 6 – Issue 1.4**

7 At page 3 the IESO provides a table of the initiatives it is engaging in to bring compensation to
8 the 50th percentile.

9 a) Does the IESO forecast how impactful each initiative will be, or in other words, how
10 much closer it will bring compensation to the 50th percentile during the term of the
11 application?

12 b) If yes, please provide the forecast impact of each initiative. If not, why not?

13 **RESPONSE**

14 a) The IESO does not forecast how impactful each initiative will be but does look at the
15 cost savings when it is implementing changes through bargaining (pension changes,
16 etc.) and management merit planning, taking into account the impact the
17 recommendations and changes will have on the overall compensation and
18 benefits/pension budget.

19 b) Although the IESO does not forecast the impact of each initiative, it is continually
20 looking for means to help bring the compensation to the 50th percentile. Whether it be
21 through bargaining or by following strict principles and guidelines to restrict the amount
22 of pay increases/offers, the IESO is committed to continually putting forward efforts to
23 align Total Remuneration to the 50th percentile.

ENERGY PROBE INTERROGATORY 4

1.4 Are the IESO's 2021 projected staffing levels and compensation (including salaries, benefits, pensions and other post-employment benefits) appropriate?

1.4-EP-4

INTERROGATORY

Reference: Exhibit D, Tab 1, Schedule 1, Plus Attachment(s); Exhibit D Tab 1 Schedule 3 Table 1 and Table 2 Plus Attachment(s)

Preamble: "The 2021 budgeted OM&A expenses of \$175.2 million, represent an increase of \$3.9 million from the 2020 actual results, mainly driven by the impact of collective agreement escalations and the impact of work to enable a more competitive electricity marketplace and market rule and manual amendments."

- a) Please provide a schedule that shows the changes in FTEs from 2019 actual to 2020 and 2021 budget for non-management regular staff by department.
- b) Please provide details of the increases in salaries for each group of employees for 2019-2021. Specifically provide performance pay for each group.
- c) Please provide details of increases in benefits for each group of employees for 2019-2021.
- d) Has IESO progressed towards the median (50 percentile) total compensation indicated by the OEB? Please provide evidence in support of this, such as the 2021 Benchmarking Study.
- e) What is the IESO pension contribution ratio for each group, relative to the goal of 1:1 (Leech Report)? Please show historic and 2021 data.

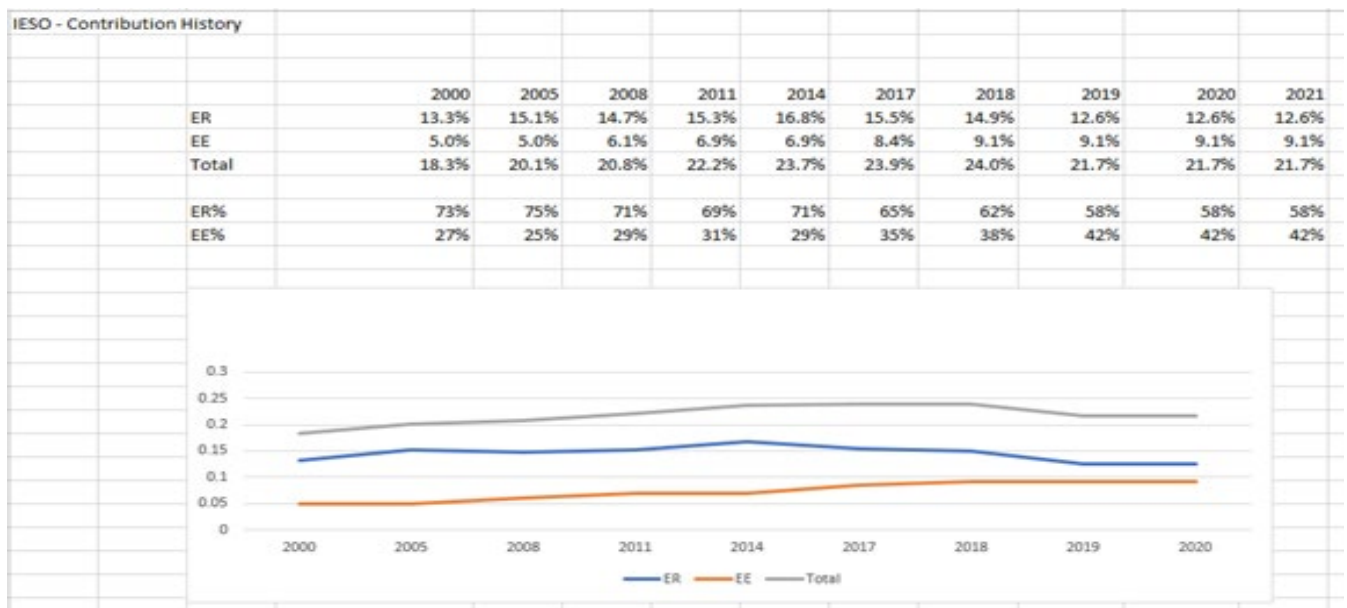
RESPONSE

- a) Please see the response at Schedule 2 - 1.0 AMPCO 4. Note that the IESO does not track management/non-management by department in budgeting of FTEs.
- b) Salary increases to represented staff are given in accordance with the Collective Agreements. Collective agreements range from 1-2.5% and typically planning assumptions for management match those percentages. With regard to performance pay, the variable pay-plan forms part of the total executive compensation package only. The IESO Board annually establishes a robust set of performance measures, which are evaluated each year. The IESO Board assesses corporate performance results and the CEO's individual performance results. Under the plan, having assessed the results against target, the Board has discretion in determining the final performance rating. The Board considers the assessed results, which have been verified through an internal audit process, to award variable compensation. The variable compensation award for the CEO and Vice-Presidents is capped at 10% of fixed compensation. The plan provides for

awards at or below the capped amount depending on the performance results achieved. Further information can be found in the IESO Annual report at Exhibit B-2-1.

- c) Employee benefits, as an expense category, represents the components of compensation and benefits related to health and dental benefit coverage, pension plan expenses, and other (non-pension) post-employment and post-retirement benefit expenses (OPEB). The increases in cost reflects the IESO's actuarial provider assumptions for increased benefit claims costs, updated mortality tables which assumes employees will draw on the pension plan longer, and higher pension expenses due to expected lower performance on pension plan assets due to current market conditions.
- d) As noted in Table 2 of Exhibit D-1-3, the IESO continues to put in place measures to help mitigate increases to employee salaries, pensions and benefits. The IESO has engaged Mercer to conduct its 2021 Benchmarking and this exercise will begin later this Fall. Once the benchmarking exercise is complete, the IESO will be able to fully realize the progress it has made towards bringing the total compensation to the 50th percentile.
- e) The table below shows the cost sharing % for each pension valuation date since 2000. A substantial decrease in employer contributions from 2000 to current has been realized. Employee % cost sharing will again increase once the 2025 plan changes to the Society provisions come into effect. The IESO Actuary does not break down the cost sharing by groups but was able to provide the overall breakdown from 2000 on.

Table 1: Cost Sharing Percentage per Pension Valuation 2000 – 2021



AMPCO INTERROGATORY 11

Issue 1.5 Is the IESO's 2020 capital expenditure envelope of \$52 million for capital projects for Fiscal Year 2020 appropriate?

1.5-AMPCO-11

INTERROGATORY

In response to the COVID-19 pandemic, the IESO deferred a number of lower priority projects. Please identify the projects and expenditures deferred.

RESPONSE

The table below identifies the projects that were deferred from 2020 including their estimated expenditures:

Table 1: Change Initiatives/Projects

Change Initiatives/Projects (\$ Millions)	Comments	Forecast Capital Expenditure
PMU Integration Phase 3	Deferred until 2023	\$3M
Oracle Database Infrastructure Refresh	Deferred until 2021	\$1.5M

In addition to these, a number of smaller initiatives including Extract Transformation and Load (ETL) Processor upgrade, Funds Management and Human Resource Analytics and Workforce Planning projects with a combined budget of approximately \$1 million were also deferred to 2021 and beyond.

1 **APPrO INTERROGATORY 9**

2 Issue 1.5 Is the IESO's 2020 capital expenditure envelope of \$52 million for capital projects for
3 Fiscal Year 2020 appropriate?

4 1.5-APPrO-9

5 **INTERROGATORY**

6 **Reference**, Exhibit G, Tab 1, Schedule 2, Page 2 of 3

7 **Preamble:** The evidence provides that \$8,585 thousand and \$10,673 thousand were transferred
8 from the Adjustment Account to the IESO in 2019 and 2020, respectively.

9 How were these amounts allocated at the IESO? What is the projected amount to be transferred
10 from the Adjustment Account to the IESO in 2021?

11 **RESPONSE**

12 These amounts reflect reimbursements to the IESO in respect of associated costs or expenses
13 incurred determining or defending penalties, damages, fines and payment adjustments arising
14 from resolved settlement disputes and to support special education projects or initiatives as
15 directed by the IESO Board of Directors as per Chapter 9 section 6.18 of the Market Rules. The
16 estimate for the associated costs that will be incurred in 2021 is \$12.5 million.

APPrO INTERROGATORY 14

Issue 1.5 Is the IESO's 2020 capital expenditure envelope of \$52 million for capital projects for Fiscal Year 2020 appropriate?

Issue 1.6 Is the IESO's 2021 capital expenditure envelope of \$68.6 million for capital projects for Fiscal Year 2021 appropriate?

1.5/1.6-APPrO-14

INTERROGATORY

Reference: Executive Summary, Exhibit B-1-2, Pages 16 to 19 of 19

Preamble: There are a number of change initiatives/projects listed in Appendix 3 to the IESO's Revised 2020-2022 Business Plan.

Please provide an explanation as to why each of those initiatives/projects are required to proceed in 2020 and/or 2021?

RESPONSE

The IESO regularly prioritizes capital initiatives and the business planning process establishes an appropriate capital envelope for core operating initiatives with commitments approved individually on an ongoing basis. The 2020 capital focus is directed toward refresh projects to replace or upgrade aging systems and infrastructure, including carryover of in-flight projects from 2019. The increase in capital funding in 2021 will support projects – such as Wide Area Visualization Environment, Market Analysis and Simulation Toolset, and Data Warehouse – to ensure system reliability and enable a more competitive electricity marketplace. For more details please see the 2020-2022 Capital Budget Details listed in the IESO's 2020-2022 Business Plan Exhibit B-1-2, Page 17 and the business case information provided for the IESO's material capital projects in Exhibit E-2-1, Attachments 1 to 4.

APPrO INTERROGATORY 15

Issue 1.5 Is the IESO's 2020 capital expenditure envelope of \$52 million for capital projects for Fiscal Year 2020 appropriate?

Issue 1.6 Is the IESO's 2021 capital expenditure envelope of \$68.6 million for capital projects for Fiscal Year 2021 appropriate?

1.5/1.6-APPrO-15

INTERROGATORY

Reference: Executive Summary, Appendix 3 to Business Plan, Exhibit B-1-2, Page 16 of 19; Exhibit E, Tab 2, Schedule 1, Page 3 of 7; and Exhibit E-1-2, Attachment 1, Page 1 of 1, Capital Projects, Appendix 2-AA

Preamble: The evidence includes a capital budget of \$1.8 million and \$1.6 million in years 2021 and 2022, respectively, for "Addressing Market Surveillance Panel (MSP) Recommendations".

Which MSP recommendations are these line items referring to and what work does this entail?

RESPONSE

These line items refer to the following MSP recommendations:

- Recommendation 3-1 from the MSP's May 2017 monitoring report
- Recommendation 3-1 from the MSP's January 2013 monitoring report
- Recommendation 3-6 from the MSP's August 2010 monitoring report
- New MSP recommendations made in 2021 and 2022 that may require capital funding

Addressing these MSP recommendations entails:

- Implementing an operating reserve settlement claw-back for inaccessible operating reserve and modifying the IESO's dispatch tool to account for actual output/consumption in determining the operating reserve activation dispatch target. Further details on this project are available on Improving Accessibility of Operating Reserve webpage of the IESO's website at <https://www.ieso.ca/en/Sector-Participants/Engagement-Initiatives/Engagements/Improving-Accessibility-of-Operating-Reserve>.
- Implementing high value opportunities identified in the IESO Transmission Rights Review Final Report to enhance the Transmission Rights market. Further details on the Transmission Rights Review, including the Transmission Rights Review Final Report, are

1 available on the IESO's website at <https://www.ieso.ca/en/Sector->
2 [Participants/Engagement-Initiatives/Engagements/Completed/Transmission-Rights-](https://www.ieso.ca/en/Sector-Participants/Engagement-Initiatives/Engagements/Completed/Transmission-Rights-)
3 [Market-Review-2021](https://www.ieso.ca/en/Sector-Participants/Engagement-Initiatives/Engagements/Completed/Transmission-Rights-Market-Review-2021)

- 4 • The MSP issues twice annual market monitoring reports, which frequently contain
5 recommendations directed to the IESO. Work in response to these recommendations is
6 reasonably foreseeable but subject to the receipt of any new MSP recommendations that
7 require capital spending to address in 2021 and 2022.

1 **APPrO INTERROGATORY 16**

2 Issue 1.5 Is the IESO's 2020 capital expenditure envelope of \$52 million for capital projects for
3 Fiscal Year 2020 appropriate?

4 Issue 1.6 Is the IESO's 2021 capital expenditure envelope of \$68.6 million for capital projects
5 for Fiscal Year 2021 appropriate?

6 1.5/1.6-APPrO-16

7 **INTERROGATORY**

8 **Reference:** Executive Summary, Appendix 3 to Business Plan, Exhibit B-1-2, Page 16 of 19

9 **Preamble:** The evidence includes a significant capital budget of \$8.4 million and \$8.8 million in
10 years 2020 and 2021, respectively, for "Replacement of the Settlement Systems".

11 What does this capital project entail?

12 **RESPONSE**

13 Please see Exhibit E-2-1, Attachment 1.

APPrO INTERROGATORY 17

Issue 1.5 Is the IESO's 2020 capital expenditure envelope of \$52 million for capital projects for Fiscal Year 2020 appropriate?

Issue 1.6 Is the IESO's 2021 capital expenditure envelope of \$68.6 million for capital projects for Fiscal Year 2021 appropriate?

1.5/1.6-APPrO-17

INTERROGATORY

Reference: Executive Summary, Appendix 3 to Business Plan, Exhibit B-1-2, Page 16 of 19

Preamble: The evidence includes a capital budget of \$8.4 million and \$8.8 million in years 2020 and 2021, respectively, for "Other Initiatives/Projects (Less than \$1 million)".

Which initiatives/projects does this line item include?

RESPONSE

The capital budgets for "other Initiatives/Projects (Less than \$1 million)" is \$5.0 million and \$7.8 million respectively and is made up of the following types of projects:

Types of Misc. projects <\$1M	2020		2021	
	Actual	# Projects	Budget	# Projects
Building Services	\$.2M	3	\$.7M	2
Infrastructure and IT Applications support	\$4.8M	41	\$7.1M	23

1 **APPrO INTERROGATORY 18**

2 Issue 1.5 Is the IESO's 2020 capital expenditure envelope of \$52 million for capital projects for
3 Fiscal Year 2020 appropriate?

4 Issue 1.6 Is the IESO's 2021 capital expenditure envelope of \$68.6 million for capital projects
5 for Fiscal Year 2021 appropriate?

6 1.5/1.6-APPrO-18

7 **INTERROGATORY**

8 **Reference:** Exhibit C-3-1, Attachment 1, Page 1 of 1

9 **Preamble:** The evidence includes a \$0.9 million and \$1.2 million spend in years 2020 and 2021,
10 respectively, for "Other Programs" under overhead cost recovery.

11 What are these "Other Programs"?

12 **RESPONSE**

13 "Other Programs" under overhead cost recovery include the conservation programs, and
14 programs that the IESO delivers in partnership with organizations within the energy sector.

REASCWA INTERROGATORY 8

Issue 1.5 Is the IESO's 2020 capital expenditure envelope of \$52 million for capital projects for Fiscal Year 2020 appropriate?

1.5-REASCWA-8

INTERROGATORY

References: Exhibit A, Tab 1, Schedule 4, Page 4, Lines 15-19,
Exhibit E, Tab 2, Schedule 1, Attachment 1, Page 1, Lines 23-28, and
Exhibit E, Tab 2, Schedule 1, Attachment 2, Page 1, Lines 24-27

Preamble: Transparency and details are needed to determine what portions of the 2020 capital budget, that have not been allocated to MRP capital, are essentially needed to implement MRP (e.g., settlement system, etc.).

a) What portion of the \$27 million capital, that is not budgeted within the MRP \$25 million capital, is required to support the MRP implementation?

b) Please provide supporting documentation.

RESPONSE

a) No portion of the \$27 million capital is required to support MRP implementation

b) Please see (a).

CME INTERROGATORY 3

Issue 1.5 Is the IESO's 2020 capital expenditure envelope of \$52 million for capital projects for Fiscal Year 2020 appropriate?

Issue 1.6 Is the IESO's 2021 capital expenditure envelope of \$68.6 million for capital projects for Fiscal Year 2021 appropriate?

CME # 3

INTERROGATORY

Ref: Exhibit E, Tab 1, Schedule 2, page 3 of 3 – Issues 1.5 and 1.6

At page 3, the IESO states: "During the inception phase, the IESO assesses project submissions against a set of criteria, which consider: strategic objectives, mitigation of strategic risk, business value and deliverability. The IESO then scores, ranks and prioritizes the projects accordingly. After assessing the resource needs for each of the projects and considering IESO's resource capacity to support these enterprise projects, the IESO establishes an annual project portfolio. This exercise is performed annually as part of business planning and establishes an appropriate capital envelope for each year within the business planning outlook. At this stage of the project lifecycle, project estimates are "order of magnitude" estimates, reflecting a higher level of uncertainty."

- a) Please confirm that the IESO's budgeting process for capital projects creates a project funding envelope after the desired projects are established as part of the annual portfolio. It does not develop the portfolio as a consequence of a capital spending envelope.
- b) Does the IESO ever determine that the priority projects that it has the resource capacity to support would require too high of a budget envelope?
- c) What is the IESO's process if the order of magnitude estimates turn out to be significantly lower than what is actually required. Does the capital envelope expand to meet the increased cost, or would that cause a reprioritization or removal of projects?

RESPONSE

- a) The IESO can confirm that the capital envelope is established as a result of identifying the projects to be undertaken in a particular year.
- b) Typically, the IESO's ability to deliver projects is limited by internal staff capacity rather than by overall capital cost of a particular project. In addition, larger capital projects tend to be, by their nature, multi-year initiatives with their costs spread over multiple years.

- 1 c) If the order of magnitude estimate is significantly lower than actually required, the
2 projects are further analyzed to find areas of cost savings to offset the increase or
3 the IESO may re-sequence other projects to accommodate the increased costs
4 within the approved capital envelope, including deferral of other work to subsequent
5 years. This is done in consultation with the project sponsors and Project Portfolio
6 Management Team.

ENERGY PROBE INTERROGATORY 5

1.5 Is the IESO's 2020 capital expenditure envelope of \$52 million for capital projects for Fiscal Year 2020 appropriate?

1.5-EP-5

INTERROGATORY

Reference: Exhibit A, Tab 1, Schedule 4, Page 2

Preamble: "The IESO utilizes a project portfolio management process to evaluate capital projects' alignment with the organization's strategic objectives and rank projects relative to each other to determine priority and ensure resources are focused on critical work. Through this process, the IESO may defer initiatives in recognition of organizational capacity and resource limits and to manage budget impacts in the short term."

- a) Please file a document that describes the portfolio management process including the ranking of projects relative to each other.
- b) Please list the titles of IESO staff responsible for the portfolio management process and describe their roles in the process.
- c) Please file a document listing the projects that were ranked in the portfolio management process for 2020 and 2021, giving the rank of each project.

RESPONSE

- a) In addition to the description listed in Exhibit E-1-2 - Capital Expenditure Planning Overview, please see Attachment 1 to this exhibit for a copy of the IESO's Project Prioritization Rankings.
- b) The following identifies the staff responsible for the portfolio management process along with their roles and responsibilities.

Process Owner and Chair of the Project Portfolio Management Team (PPMT) –
Director Enterprise Change

The process owner is responsible for the oversight of the Prioritize Project Process and for chairing the PPMT meetings. The PPMT Chair facilitates the discussion to ensure all positions and opinions have been heard, and gains consensus for recommendations going to the Executive Leadership Team (ELT). The PPMT Chair will present regular (at least quarterly) updates on the progress of the Project Portfolio and prepare quarterly portfolio updates and take forward portfolio recommendations to the ELT for approval.

PPMT members – Representatives from each Business Unit

Current Membership:

- Director, Total Rewards
- Director, Market Development and Resource Procurement
- Director, Business Service & Solution Delivery
- Senior Director, Planning
- Director Contract Management
- Senior Director, Power System Assessments
- Director, Settlements
- Program Delivery Executive, MRP-RSS Program
- Director, Governance and Divisional Support – MACD
- Director, Innovation, Research and Development
- Director, IT Infrastructure and Operations
- Director, Information Security

As representatives of their individual business units, PPMT members:

- Provide support/guidance to the sponsors/ authors from their respective business units;
- Ensure that projects have support from the appropriate business unit leader. Where a business unit submits more than one project for consideration request that the business unit indicate the relative priority of their submissions;
- Review materials ahead of PPMT meetings and actively engage in discussion at the meetings;
- Have a good knowledge and understanding of strategic objectives and strategic risks;
- Participate in the validation and prioritization of project submissions and notify project sponsors of PPMT validation and prioritization decisions;
- Participate in the identification of Strategic Initiatives and their alignment with Strategic Objectives or Priority Initiatives; and

- Review portfolio progress reports and support discussions and recommendations regarding changes to the portfolio based on project progress, available funding, newly identified projects or changes in strategic direction.

Project Management Office (PMO) & Change Delivery representatives

PMO and Change Delivery representatives support the PPMT Chair and members by:

- Scheduling regular monthly PPMT meetings and ad-hoc meetings, when required;
- Preparing and communicating PPMT meeting agenda to the PPMT members;
- Facilitating the PPMT meetings and recording meeting key notes and decisions reached;
- Maintaining the prioritization process and procedures, templates and artifacts;
- Reporting the portfolio's performance against achievement of business objectives, capital utilization and critical resource constraints;
- Publishing portfolio reports to the PMO webpage, as appropriate;
- Providing project portfolio management subject matter expertise; and
- Providing the PPMT members with orientation and information on the process and supporting procedures.

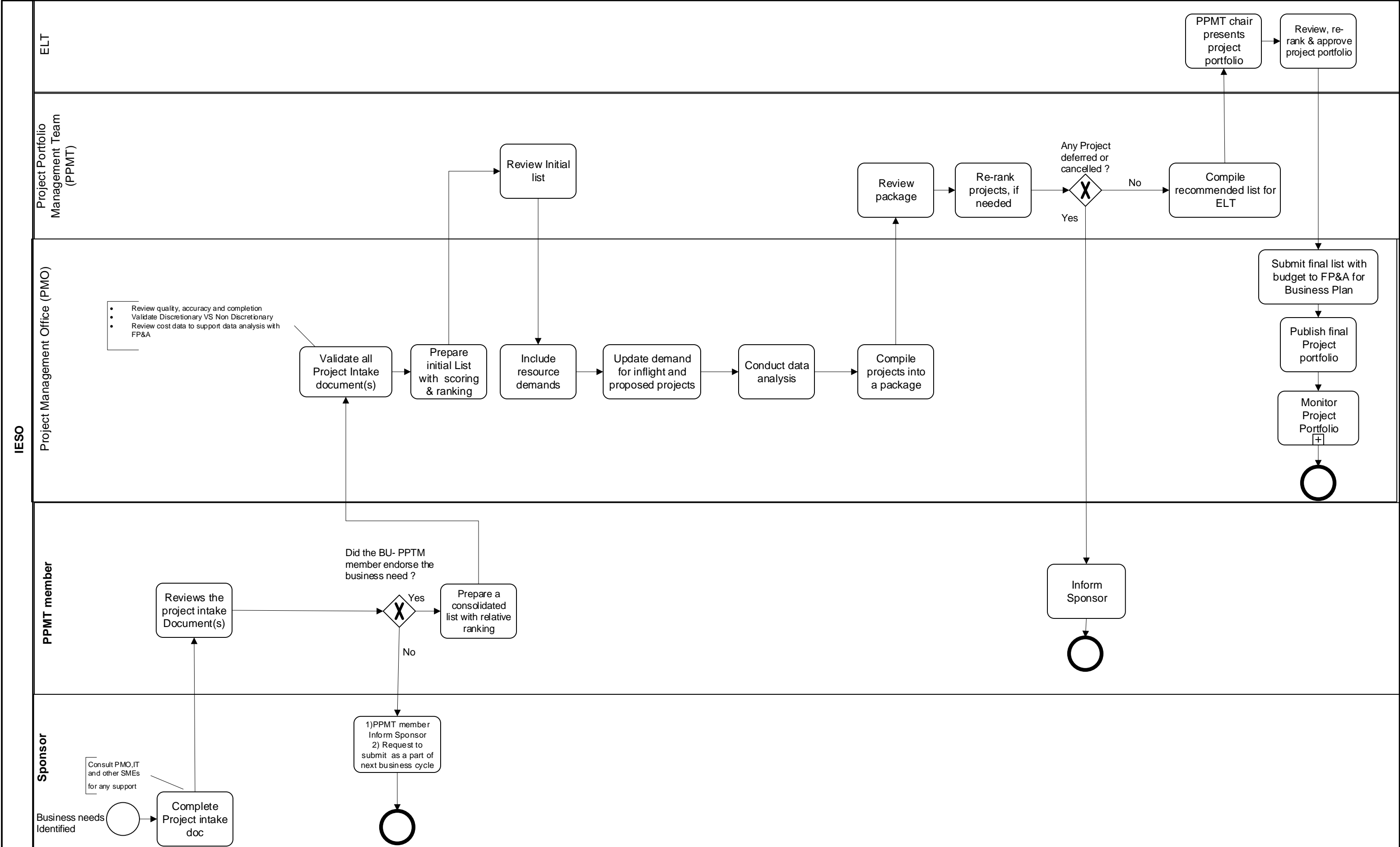
Finance Representative – Director, Enterprise Planning, Risk and Performance

The Finance representative supports the team in understanding the business planning process and timelines and budgetary implications of the portfolio on the IESO's operating budget.

Enterprise Risk Management (ERM) Representative – Senior Manager, Enterprise Risk and Corporate Performance

The ERM representative brings subject matter expertise on enterprise risk and supports the PPMT's understanding of Strategic and Operational risks and helps the PPMT understand how project submissions may support the mitigation of these risks. ERM also helps ensure that risk is appropriately considered in various trade-off discussions.

- c) Attached to this exhibit please find Attachments 2 and 3 for 2020 and 2021 rankings for each project, respectively.



Project Prioritization - 2020 with Project Status as of December 2020

Rank	Project Title	Business Unit	Project Phase	Project Stage
1	Market Renewal Program - Energy	PAO	Execution	Design
2	Centralized Alarm Management System Replacement	I&TS	Planning	Procurement
3	Replacement of the Settlement Systems	CS	Execution	Build Test Design
4	Identity Access Management - Phase 2	I&TS	Execution	Build
5	Wide Area View Phase 1	PAO	Closure	Closed
6	Implementing GTL Obligations under proposed IDC Changes	PAO	On Hold	Build
7	Microsoft Licenses 2018-2020	I&TS	Execution	Procurement
8	Capacity Auction	PAO	Execution	Test Build
9	SCADA/EMS Upgrade	I&TS	Execution	Design Build
10	External Identity Management (Portal)	I&TS	Execution	Design Build
11	Corporate PBX Phone System Refresh	I&TS	Closure	Deployment
12	Data Excellence Program	I&TS	Execution	Procurement Analysis & Requirements
13	Enabling Resources to Deliver on Capacity /Participate in Market	PAO	Initiation	Initiation
14	Review of CMSC paid to Dispatchable Loads Phase 2	PAO	Execution	Design Build
15	ITSM Phase 2	I&TS	Execution	Design
16	Hub Intranet Redevelopment	PEI	Initiation	Procurement Analysis & Requirements

17	Access Switches Refresh	I&TS	Deferred	
18	Oracle Database Infrastructure Refresh	I&TS	Deferred	
20	Misc. HW/SW funding case	I&TS	Closure	
21	ETL Processor Upgrade	I&TS	Deferred	
22	Funds Management	I&TS	Deferred	
23	Meter Data Management System Upgrade	I&TS	Deferred	
24	Sharepoint (Collaboration) Refresh	I&TS	Withdrawn	
25	Energy Planning Model (PLEXOS and UPLAN) Refresh	PAO	Withdrawn	
26	Market Development Initiatives - Program	PAO		
26A	Improving Accessibility of Operating Reserve	PAO	Initiation	Initiation
27	Short Term Demand Forecasting	PAO	Withdrawn	
28	Wide Area Visualization Environment (WAVE) - Phase 2	PAO	Execution	Design Build
29	Cooling Tower Replacement Support	CS	Closure	Closed
30	Human Resource Analytics and Workforce Planning (WFP)	CS	Deferred	
31	Intrusion Prevention System (IPS) Refresh	I&TS	Execution	Procurement Design
32	Web Filtering	I&TS	Execution	Build Test
33	Examination of Space Needs Phase 2: Design & Assessment	CS	Planning	Design
34	AODA Compliance - Documents	LRCG	Execution	Design Build

35	Transmission Rights Clearing Account (TRCA) Disbursement	PAO	Execution	Build Test
36	Backup Storage Array Refresh	I&TS	Execution	Procurement
37	Mobile Cyber Security Controls	I&TS	Planning	Analysis & Requirements

Project Prioritization - 2021 with Project Status as of July 2021

Rank	Project Title	Business Unit	Project Phase	Project Stage
1	Market Renewal Program - Energy	MRP	Execution	Build Requirements Gathering
2	Enabling Resources Program	PEI	Initiation	
3	Dynamic Limits in Real-Time	PAO	Planning	Define Requirements
4	Transmission Rights Clearing Account (TRCA) Disbursement	PAO	Closure	Closed
5	Addressing Market Surveillance Panel (MSP) Recommendations	PAO		
6	Transmission Rights Auction (TRA) Platform Refresh	I&TS	Not Initiated	
7	Data Excellence Program	I&TS	Execution	
8	AODA Compliance - Documents	LRCG	Execution	Design Aquire Solution
9	External Identity Management (Portal)	I&TS	Execution	Build Design
10	Capacity Auction	PAO	Execution	Build Test
11	Energy Model Alignment (EMA)	PAO	Initiation	Initiation
12	Mobile Cyber Security Controls	I&TS	Withdrawn	
13	Market Analysis and Simulation Toolset (MAST)	PAO	Not Initiated	
14a	Resource Adequacy	PAO		
14b	Capacity Enhancements	PAO	Initiation	Initiation
15	Wide Area Visualization Environment (WAVE) - Phase 2	PAO	Execution	Build

16	Centralized Alarm Management System Replacement	I&TS	Execution	Design Build
17	Generation Contracts– Further Integration & Ongoing Optimization	LRCG	Not Initiated	
18	CDMIS Enhancements	PEI	Execution	Build Design Test
19	Replacement of the Settlement Systems	CS	Execution	Build Test
20	Intrusion Prevention System (IPS) Refresh	I&TS	Closure	In-Service
21	Web Filtering	I&TS	Closure	Closed
22	Backup Storage Array Refresh	I&TS	Closure	Closed
23	Project 3 - Establish IAM Governance	I&TS	Execution	Build Design
24	Project 4 - Process & Technology Conformance	I&TS	Not Initiated	
25	Lawson Upgrade	CS	Closure	Closed
26	Separation of Corporate & Market Transactions	CS	Not Initiated	
27	DDMS Refresh	I&TS	Closure	Closed
28	IESO Intranet Redevelopment	PEI	On Hold	Requirements Gathering
29	SCADA/Energy Management System (EMS) Upgrade	I&TS	Execution	Build Test
30	Implementing GTL Obligations under proposed IDC Changes	PAO	On Hold	Build Test
31	Enterprise Data Warehouse Optimization	I&TS	Initiation	Requirements Gathering
32	Access Switches Refresh	I&TS	Planning	Design Acquire Solution
33	Antivirus Replacement	I&TS	Initiation	Initiation

34	Oracle Database Infrastructure Refresh	I&TS	Execution	Build Design
35	Space Needs Program - Phase 2: Design & Assessment	CS	Closure	Closed
36	Core Network Refresh	I&TS	Not Initiated	
37	MACD Enforcement Support Tool	MACD	Not Initiated	
38	Review of CMSC paid to Dispatchable Loads Phase 2	PAO	Closure	Closed
39	Improving Accessibility of Operating Reserve	PAO	Initiation	Initiation
40	Corporate PBX Phone System refresh	I&TS	Closure	Closed
41	ITSM Phase 2	I&TS	Execution	Build Test
TBD	New - Lake Erie Connector (LEC)	PAO	Initiation	Initiation
TBD	New - Oneida	LRCG	Initiation	Initiation

1 **SEC INTERROGATORY 14**

2 Issue 1.5 Is the IESO's 2020 capital expenditure envelope of \$52 million for capital projects for
3 Fiscal Year 2020 appropriate?

4 1.5-SEC-14

5 **INTERROGATORY**

6 [E-2-1; E-3-1] For each capital project, the IESO has provided a breakdown of costs into capital
7 and OM&A. How does the IESO determine for each *capital* project, which costs are capitalized
8 and which are OM&A? Please provide a copy of the IESO's capitalization policy.

9 **RESPONSE**

10 The IESO adheres to Canadian Public Sector Accounting Standards regarding capital costs. This
11 accounting standard is the effective policy. Each capital project is assessed on it's own merits as
12 to capital costs, OM&A, and useful life (i.e. value given to the IESO), all in accordance with the
13 accounting standard. Each year the IESO's independent auditors examine the capitalized costs
14 and OM&A as part of their audit for the IESO's financial statements. Capital costs are aligned
15 and expensed to the periods that reflect their future useful lives.

SEC INTERROGATORY 15

Issue 1.5 Is the IESO's 2020 capital expenditure envelope of \$52 million for capital projects for Fiscal Year 2020 appropriate?

1.5-SEC-15

INTERROGATORY

[E-2-1, Attach 1] With respect to the Replacement of Settlement System Capital Project:

- a. Please provide a copy of the internal business case for the project. Please explain any variances between the costs/schedule included in the internal business case and that presented in the evidence.
- b. [p.2] Please provide a breakdown of the capital expenditures.
- c. Does IESO measure progress on the project by way of SPI/CPI measures? If so, please provide the most recent measures.
- d. [p.6] Please explain the procurement and contracting method for the project.
- e. [p.7] Please provide a copy of the most recent "monthly progress reporting" and any "exception reporting for material deviation in costs, schedule and objectives".

RESPONSE

- a. The IESO notes that it does not create internal business cases for its capital projects and has provided the relevant information found in a business case for all material capital projects in its evidence in response to the OEB's 2019 Decision. The IESO uses Project Charters to seek approval for individual projects within the portfolio. While the IESO does not view all the information within Project Charters as relevant to this proceeding, in an effort to be responsive a copy of the latest Project Charter for the Replacement of Settlement System project is provided as Attachment 1 to this response.

This document is prepared for internal use in support of project approval, monitoring and control of the project, and contains additional confidential details than what has been provided into evidence as part of Attachment 1 to Exhibit E-2-1.

The information provided into evidence contains updated cost, schedule and risk information to reflect current project status and forecasts and allows for enhanced OEB review of the IESO's capital projects. As noted in the Project Charter, the project has an approved budget of \$48.0 million, including \$13.2 million of project contingency. Based on the procurement of the vendor and the execution of the contracts, the project budget estimate has been refined and updated. As stated in evidence, the total project

budget is \$38.5 million including \$8.9 million of project contingency. The capital cost is \$36.8 million, including \$8.5 million of project contingency. The reduction in cost is as a result of the vendor costs being lower than initially anticipated and a reduction of contingency levels to reflect increased level of certainty as a result of finalizing the vendor's scope of work.

- b. Breakdown of the capital expenditures:

Table 1: Replacement of Settlement System Capital Project – Capital Expenditures

	Actuals (YTD)	Forecast to Complete	Estimate at Complete
Total Internal Labor	\$4.3M	\$7.9M	12.2M
Total Contract/Computer Services	\$9.4M	\$6.1M	15.5M
Total Hardware and Building Services	\$0.1M	\$0.5M	\$0.6M
Total Miscellaneous	\$0.1M	\$0.8M	\$0.9M
Total CAPEX	\$13.9M	\$15.3M	\$29.2M

Total including available contingency of \$7.6M = \$36.8M against approved budget of \$36.8M

- c. With the exception of MRP, the IESO does not measure progress on projects by way of SPI/CPI measures. Project Health is measured across a number of Key Performance Indicators including Budget, schedule, business objectives and project management process adherence.
- d. Standard Open Competitive Procurement, done through Request for Proposal. Contract type is a Master Services Agreement and Statement of Work (SOW).
- e. Regular monitoring, tracking and reporting is done for each approved capital project. On a monthly basis, a Project Portfolio Dashboard Report (PPDR) is produced and shared with the internal stakeholders including Executive Leadership team for full transparency and governance. A copy of the PPDR is included as Attachment 2 to this interrogatory response. There have been no exception reports for this project.

Project Charter for: Centralized Alarm Management System Replacement

Document ID:	PC-10	Author(s):	
Issue:	2.0	Sponsor:	
Effective Date:	January 05, 2021	Project ID:	433

1 Project Executive Summary

The project will replace the existing Central Alarm Management System (CAMS) solution with a vendor supported alarm capability. This will directly support the mitigation of a key corporate risk: “A significant cybersecurity event occurs that disrupts the operation of the IESO – including reliable grid operations and efficient market operations – for extended periods of time”¹.

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.

This project was included as part of the approved 2019 IESO Project Portfolio, where it was initially assumed that the current CAMS could be upgraded from its current version. This work was estimated to be complete within 12-18 months with an overall project cost of \$500K.

Since initiating the project a number of key assumptions have changed resulting in significantly increased costs and timing. These include the following:

- The need to replace rather than refresh the current CAMS;
- Procurement approach changes;
- Timing and cost refinements as a result of detailed planning; and
- Securing a separate Business Rules Management solution was removed from the scope.

We are seeking approval for a total expenditure of \$6 M to complete the project of which \$5.2 M is capital.

The project budget includes a contingency of \$900 K which reflects an estimation accuracy of +/- 20%.

Post 2022, the IESO will be contractually obligated to pay \$229K annually in 2023 and 2024 in premium support and approximately \$300 K until 2029. The project forecasts a target date of March 17, 2023 for completion including an additional 7 months of contingency to account for scheduling uncertainties.

Incremental operating expenses of \$200K has been included in the business plan for 2022. The additional incremental operating expenses will be offset through expected reductions in I&TS operating costs due to higher than estimated capital labour expenses to support Market Renewal program and the core capital project portfolio.

The table below shows the anticipated expenditure over the period of the project.

Year	2019	2020	2021	2022	Contingency	Total with contingency
Capital	-	-	\$3,707,635	\$726,138	\$826,000	\$5,259,927
Operating Expense IESO labour & Premium support)	\$14,368	\$260,000	\$207,299	\$204,464	\$83,333	\$769,464
Total	\$14,368	\$260,000	\$3,914,934	\$930,602	\$909,333	\$6,029,391

2 Business Objectives and Measures

1. Improve the IESO's alarming capabilities while maintaining compliance with North American Electric Reliability Corporation (NERC) Critical Infrastructure Protection (CIP) standards.
 - a. Replace the CAMS solution with a vendor supported alarm solution.
 - b. Realize internal efficiency gains as the effort to support the replacement CAMS solution will be reduced
 - c. Improve agility and flexibility in deploying and maintaining alarms.
 - d. Ensure the new CAMS solution retains a centralized design.
2. Ensure the replacement CAMS solution supports the System Security Solution (SSS) program or positions the IESO to move forward with the SSS program:
 - a. Ensure alarms are integrated with a business rules capability that can accept information from all relevant IESO and external sources.
 - b. Ensure solution integration through use of standard information exchange protocols and interfaces.

For this project, all business objectives are due and measures performed by the solution go-live date.

Ref #	Business Objective #	Procedure for Measures (identify how the performance will be measured)	Measured when and by whom?
1	1	Replacement CAMS solution implemented with ongoing vendor support resulting in: <ul style="list-style-type: none"> Improved agility and flexibility in deploying and maintaining alarms. The replacement CAMS solution integrates the alarms currently implemented using SCADA solution. 	Accepted ³ by Project sponsor (Director, Business Service & Solution Delivery) and Business process owners (Director, Market Operations and Director, Power System Assessments)
2	1	Replacement CAMS solution implemented with ongoing vendor support resulting in: <ul style="list-style-type: none"> Realized internal efficiency gains due to reduced effort to support the replacement CAMS solution. The replacement CAMS solution complies with IESO information security policies and standards. 	Accepted ⁴ by Project sponsor (Director, Business Service & Solution Delivery), Information security SME (Director, Information Security) and Solution Steward (Manager, Business Services-PA&O)

³ Based on defined roles, procedures, etc. including ITOPS, TS and MOFS procedure

⁴ Based on roles, procedures, etc. and Access Management/InfoSec signoff on designs

Ref #	Business Objective #	Procedure for Measures (identify how the performance will be measured)	Measured when and by whom?
3	2	Replacement solution(s) implemented with ongoing vendor support resulting in: <ul style="list-style-type: none"> Simplified solution integration through use of standard information exchange protocols and interfaces 	Accepted by Project sponsor (Director, Business Service & Solution Delivery), Information security SME (Director, Information Security) and Solution Steward (Manager, Business Services-PA&O)
4	2	Business rule capability implemented as Alarm Management Systems (AMS) component with ongoing vendor support providing: <ul style="list-style-type: none"> Centralized business rules that can process information from all relevant IESO and external sources Business roles for alarm recipients and administrators 	Accepted ⁵ by Project sponsor (Director, Business Service & Solution Delivery) and Business process owners (Director, Market Operations and Director, Power System Assessments)

2.1 Benefits Expected

The organization can expect to gain the following benefits through the completion of this project:

- Improve the IESO's alarming capabilities while maintaining compliance with NERC CIP standards.
- Improve agility and flexibility in deploying and maintaining alarms.
- Realize internal efficiency gains as the effort to support the replacement CAMS solution will be reduced.
- Support SSS program goals to achieve:
 - Shorter delivery times for technology components; and
 - The ability to swap out components more readily.

3 Project Overview

The project will replace the CAMS solution with a vendor supported alarm capability. The CAMS solution provides System Operations with an integrated view of alarms from many real time systems such as SCADA, MIS, Information Publishing System & DDMS.

This will be a replacement project and not an upgrade to the latest version of the NetIQ's Novell Operations Centre (NOC) application. Based on feedback from CAMS vendor, the project is not pursuing an upgrade from NOC version [REDACTED] to NOC version [REDACTED]. The CAMS vendor has been acquired a new offering HP Enterprise and will not offer NOC support after the currently released version [REDACTED].

⁵ Based on business design, solution design and test results

3.1 Project Scope

The project will:

1. Procure and replace the CAMS solution
 - a. Conduct market research for available CAMS solutions
 - b. Develop the Statement of work (SOW) including relevant business and technical requirements for CAMS replacement solution
2. Re-establish and configure alarms
3. Perform training
4. Deploy and test solution with appropriate documentation
5. Ensure user access to active alarms at the time of go-live

3.2 High Level Assessment of Impacted Business Processes, Systems and Governing Documents

3.2.1 Processes

1. Direct Short-Term Operations including activities Forecast Demand and Assess outage
2. Plan Operations / Commit Resources
3. Submit Market Transactions
4. Administer Dispatch Results
5. Operate Technology
6. Resolve IT Incident
7. Fulfill IT Service Request
8. Identify Possible Non-Compliance
9. Assess Market State

3.2.2 Systems

1. CAMS solution: NetIQ's Novell Operations Centre (NOC)
2. NOC integration to other solutions including:
 - a) Centralized Forecast System (CFS)
 - b) Outage Coordination and Scheduling System (OCSS)
 - c) Dispatch Service
 - d) Demand Forecast System (DFS)
 - e) Market Information System (MIS)
 - f) Demand Response Auction (DRA)
 - g) Transmission Right System/Auction (TRS/TRA)
 - h) Market Information Management (MIM)
 - i) Operating Security Limit (OSL)
 - j) SCADA
 - k) Day Ahead Optimization System (DAOS)
 - l) Dispatch Data Management System (DDMS)

3.2.3 Governing Documents

- CAMS procedures including internal manual(s)

3.3 Out of Scope

The project team confirmed the following processes do not use CAMS services:

- Plan Operations activities before day-ahead.
- Plan Operations day-ahead activities relating to Forecast Demand and Assess Outage
- Resolve IT Problem
- Manage Cyber Security Event

3.4 Overall Project Timeline

Following the decision to replace the NOC solution, the revised total duration of the project is expected to be 36 months.

The project Kick off meeting was held on April 16, 2019 and the planning phase was initially expected to be completed by Q4 2019. Due to changes in procurement approach, the planning phase experienced delays and the revised forecast for the completion of planning activities is the end of Q4 2020.

The Execution phase will commence after procurement and the project is targeting to complete by March 17, 2023 and has considered an additional 7 months of contingency. Overall project timeline is outlined below.



3.5 Cost

Category	Initial Budget (PC V1.0)			Revised Budget (PC V2.0)		
	Project Cost	Contingency	Total	Project Cost	Contingency	Total
Capital	\$4,000,000	\$1,000,000	\$5,000,000	\$4,433,773	\$826,000	\$5,259,927
Operating	\$400,000	\$100,000	\$500,000	\$686,131	\$83,333	\$769,464
Total	\$4,400,000	\$1,100,000	\$5,500,000	\$5,119,904	\$909,333	\$6,029,391

3.6 Key Resource Needs

Project Manager
 Business Analyst
 Solution Analyst -BDS
 Solution Analyst -CTS/Infrastructure
 Information Security SME
 Procurement specialist
 QA lead
 Test Lead
 Control Room SME
 ITOPS SME
 MFI SME
 Operational Assessments SME
 Disaster Recovery SME
 Compliance SME

For a full list of roles and responsibilities please see the Team Roles and Responsibility document posted on the Project Management Office (PMO) page: [REDACTED]

Resource Demand Plan for CAMS project : [REDACTED]

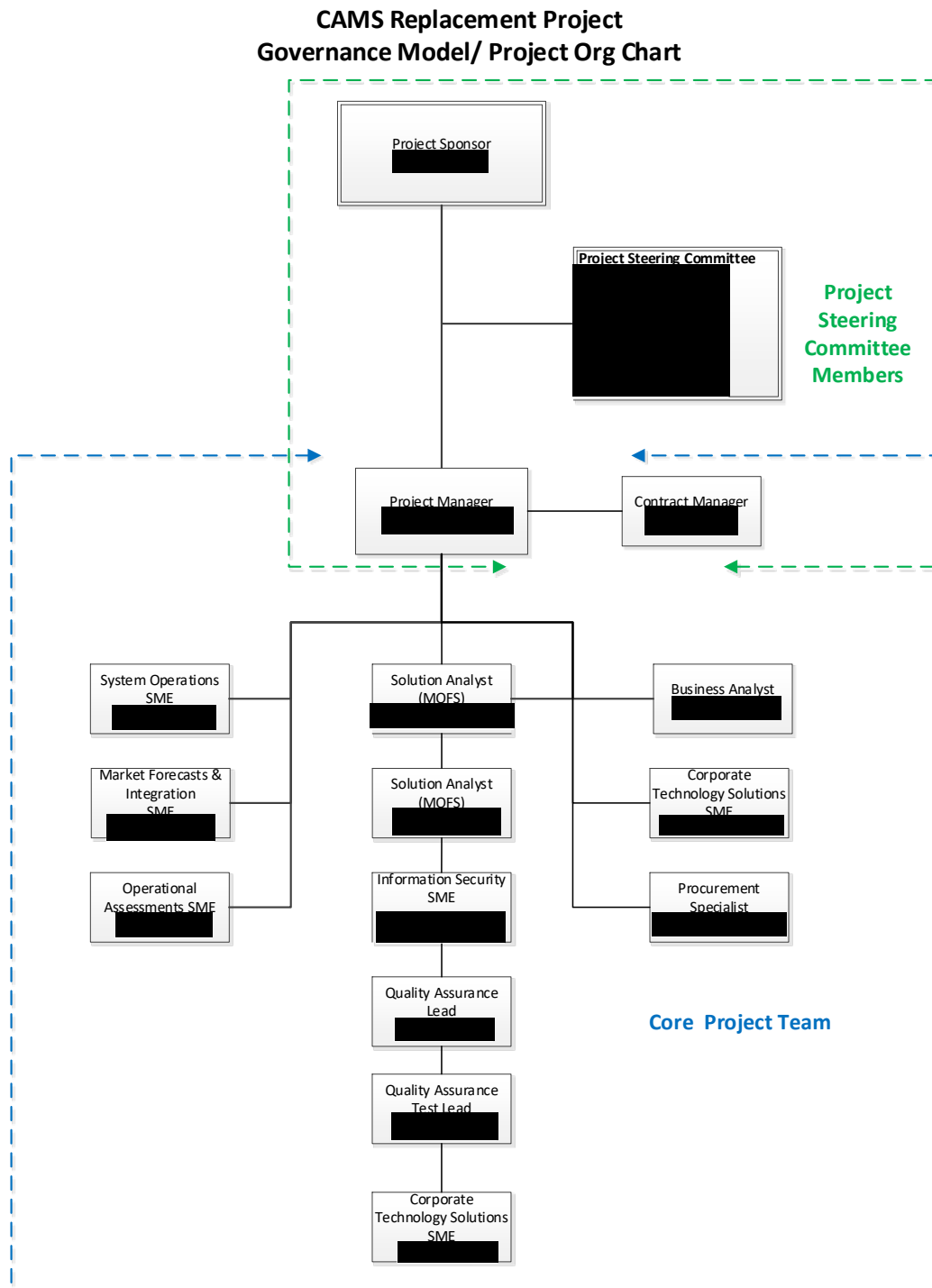
4 Key Stakeholders (Internal and External)

Table 1 Key Stakeholder list

Stakeholder	Stakeholder Role	How They Are Affected or How They Are Participating
System Operations (PA&O / Market Operations)	Direct Customer, Builder & Process Owner	<p>Affected:</p> <p>Improved alarm capability, availability and reliability by ensuring vendor support for NOC replacement solution with access to software fixes.</p> <p>More consistent situational awareness of the IESO Controlled grid for System Operations.</p> <p>Reduced alarm solution failures' negative impacts on other systems such as SCADA.</p> <p>Improved IESO agility in deploying new alarms.</p> <p>Participating:</p> <p>Provide requirements, test cases, and testers.</p>
Operational Assessments (PA&O / PSA / OE)	Indirect customer, Builder	<p>Provide requirements, test cases, and testers.</p> <p>Update manuals and procedures</p>
Market Forecasts and Integration (PA&O / Market Operations)	Direct Customer, Builder & Process Owner	<p>Same as for System Operations</p> <p>MRP/DAM may introduce increased leveraging of CAMS alarms for milestones and awareness</p>

Stakeholder	Stakeholder Role	How They Are Affected or How They Are Participating
ITS-BSSD	Solution Owner	<p>Affected:</p> <p>Enhanced customer satisfaction</p> <p>Improved alarm solution availability and reliability.</p> <p>Reduced IESO effort in supporting replacement alarm solution</p> <p>Participating: Provide or delegate owner approval</p>
ITS – BSSD /MOFS	Direct customer & Builder	<p>Affected: Reduced IESO effort in supporting replacement alarm solution</p> <p>Participating:</p> <p>Provide technical requirements, test cases, and testers.</p> <p>Update solution manuals and procedures</p>
IT-TS	Direct customer & Builder	<p>Affected: N/A</p> <p>Participating:</p> <p>Deliver any technical component changes per requirements</p> <p>Update technical manuals and procedures</p>
ITS - Operations	Direct customer & Builder	<p>Affected: Reduced IESO effort in operating replacement alarm solution</p> <p>Participating:</p> <p>Provide IT Operation requirements, test cases, and testers.</p> <p>Update manuals and procedures</p>

5 Project Governance Structure



6 Delivery Approach

This project will be delivered as per the new Portfolio Project Management Life Cycle (PPMLC) process. Project will be delivered in a single phase.

The procurement methodology has evolved through an RFP to single sourcing.

7 Assumptions, Constraints and Potential Risks

7.1 Project Assumptions

- The current CAMS solution is NetIQ's Novell Operations Centre (NOC) and does not include SCOM or other solutions.
- The replacement CAMS solution will have sufficient business rule capability to meet IESO alarm requirements.
- The project does not anticipate affecting market rules or market manuals.
- This project will maintain an interface to SCADA EMS using the Data Acquisition from Industrial Systems (DIAS) protocol.
- MRP program DAM requirements for alarms should fall within the identified CAMS solution requirements.

7.2 Project Constraints

Current vendor is no longer offering any NOC upgrade option.

- Potential Project Risks and Mitigation Actions

Table 2: Risk Summary

Risk ID	Risk Description	Inherent Risk Level	Mitigation Tasks	Mitigation Tasks Implemented (Yes/No)	Mitigated Risk Level
1	Microfocus have a low credit rating and as a result are unable to maintain the long term viability of the product	High	<p>IESO will negotiate with vendor for perpetual licenses.</p> <p>IESO will only pay vendor for services once work or milestones are complete, which forms 20% of fees payable in 2020 and 2021.</p> <p>MicroFocus financial position has been stable for the last 5 years.</p> <p>Intellectual Property is purchased by another company who can maintain the viability of the product but likely at increased future support costs.</p>	<p>Yes</p> <p>Yes</p>	High

Risk ID	Risk Description	Inherent Risk Level	Mitigation Tasks	Mitigation Tasks Implemented (Yes/No)	Mitigated Risk Level
2	Vendor does not demonstrate ability to integrate with exiting SCADA systems.	Critical	<p>Provide vendor with SCADA interface source code and relevant documentation for customization.</p> <p>Engage with vendor for demonstration of integration with SCADA prior to signing the contract.</p> <p>Engage with the vendor to ensure they contractually commit to delivering Mandatory Requirement # 8</p>	<p>Yes</p> <p>Yes</p> <p>Yes</p>	High
3	The replacement CAMS solution may not have sufficient business rule capability to meet IESO alarm requirements	High	<p>During the planning phase, a decision was made to repatriate securing a separate Business Rules Management Solution from the project back to the System Security Solution (SSS) program.</p> <p>Market research indicates that alarm logic should be sufficient to meet IESO Alarm requirements.</p>	<p>Yes</p> <p>Yes</p>	Low

8 Change Controls

Changes in the project that will impact/exceed tolerance levels for objectives, time and cost will be managed through the formal Project Change Management Process resulting in the Project Exception Report. The Project Exception Report (if approved) will result in the re-baselining of the project. Refer to the Project Exception Report for reference and additional details.

Appendix A: NPV Analysis and Cash Flow

Net Present Value (NPV) Calculator:

Project information and Key Financial Rates:

Project Name:	Centralized Alarm Management Replacement Project		
Recommended Option:	1		
Useful Life:	5	Years	
IESO Labour Rate	\$110	per hour	
Cost of Capital - Year 0 (Current Year)	1.97	%	
Cost of Capital - Year 1	2.69	%	
Cost of Capital - Year 2 to Year 10	3.63	%	

Enter the Annual Total Cash Flows below:

EXPENDITURES (cash outflow):

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Estimated Project Cost: (Analysis, design, build, implement)	14,368	260,000	3,914,934	930,602	0	0					
Ongoing Maintenance \$ Projected (after project is implemented)			623,650	293,470	321,920	331,726	346,390	348,198	365,604	383,887	403,082
(after project is implemented) (Calculation based on 1496 working hours/FTE)											
Labour: \$	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Other post implementation costs - itemize below											
Total Expenditures	\$14,368	\$260,000	\$4,538,584	\$1,224,072	\$321,920	\$331,726	\$346,390	\$348,198	\$365,604	\$383,887	\$403,082
Present Value of Expenditure:	\$14,368	\$253,189	\$4,226,194	\$1,099,893	\$279,130	\$277,557	\$279,674	\$271,286	\$274,870	\$278,506	\$282,188

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	Year 8	Year 9	Year 10
(after project is implemented) (Calculation based on 1496 working hours/FTE)											
Labour: \$	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Maintenance \$ Avoided (after project is implemented)											
Monetized Internal Efficiency Gains (after project is implemented)											
Monetized External Efficiency Gains (after project is implemented)											
Other - itemize below											
Total Savings	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Present Value of Saving:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Net Present Value Analysis Results:

Present Value of Expenditures:	\$7,536,854
Present Value of Savings:	\$0
Net Present Value of Project Alternative	-\$7,536,854

Project Cost Worksheet		
	Item Description	Total Item Cost (\$) <i>(not including taxes)</i>
A - Project Capital Costs:		
1	IESO Labour	1000000
2	IESO - Overtime	0
3	NON IESO Labour	0
4	Employee Expenses	0
5	Consultants	0
6	Computer Services/Software	3183773
7	Computer Equipment	250000
8	Material & Supplies	0
9	Telecommunications	0
10	Contract Service	0
11	Interest	0
12	Other	0
Sub Total (Project Capital Cost):		4433773
13	IESO Project Management charges <i>@ typically 3 - 5% of "Sub Total Project Capital Cost" " from above OR insert lump sum value. (includes PMO support and project management related charges)</i>	0
Sub Total (Project Capital Cost + Project Management):		4433773
14+15	Contingency	826000
Total Project Capital + Contingency (CDN \$): (AA)		5259773
B - Project OM&A Costs:		
16	Labour	436131
17	Staff Expenses	0
18	Training and Assc Travel	0
19	Consultants	0
20	Other	250000
Sub Total (Project OM&A Cost):		686131
21	IESO Project Management charges <i>@ 3 - 5% of "Sub Total Project OM&A Cost " from above.</i>	0
Sub Total (Project OM&A Cost + Project Management):		686131
22+23	Contingency	83333
Total Project OM&A+ Contingency (CDN \$): (BB)		769464
Total Project Cost including Contingency (CDN (AA + BB)		6029237

Appendix B: Alternative analysis

Identified Alternatives Summary

Alternative 1 – Do Nothing (Not Viable)

The Central Alarm Management System (CAMS) solution provides System Operations with an integrated view of alarms from many real time systems such as SCADA, MIS, Information Publishing System & DDMS. The IESO uses NetIQ's Novell Operations Centre software as the key component of its CAMS.

Recently, there have been multiple incidents where NetIQ's Novell Operations Centre (NOC) failures have impacted CAMS availability and reduced System Operations' situational awareness of the IESO Controlled grid.

It is not viable to accept this ongoing risk to the IESO's core strategy of ensuring system reliability. A CAMS refresh will help mitigate the key corporate risk: "A significant cybersecurity event occurs that disrupts the operation of the IESO – including reliable grid operations and efficient market operations – for extended periods of time".

Alternative 2 – CAMS refresh - (Not Viable)

A CAMS refresh project was included as part of the approved 2019 IESO Project Portfolio, where it was initially estimated to be complete within 12-18 months with an overall project cost of \$500K.

During project initiation, the IESO determined that the CAMS vendor does not have a future roadmap to support the NOC application. The project scope was changed from a refresh to a full replacement of CAMS.

Alternative 3 – CAMS replacement (Recommended)

As outlined in two previous alternatives, based on current CAMS vendor directions and IESO business priorities, the project will replace the current Centralized Alarm Management System.

Appraisal of Alternatives

Ref #	Alternative	NPV	Achievement of Business Objectives	Risk	Consideration
1	Do Nothing	n/a	This alternative does not achieve any of the stated business objectives	High – Potential failures of current system and reduced System Operations situational awareness Vulnerable to Cyber-attacks.	Not Viable
2	CAMS Refresh	n/a	This option is not feasible as outlined above and so does not achieve any of the stated business objectives	High – Option not feasible. See risk from Option 1	Not Viable

<i>Ref #</i>	<i>Alternative</i>	<i>NPV</i>	<i>Achievement of Business Objectives</i>	<i>Risk</i>	<i>Consideration</i>
3	CAMS Replacement		This option addresses all of the stated business objectives	<p>Low –IESO resources are committed to the project schedule. Survey of the vendor space confirms that solutions are available that will meet critical IESO requirements for a centralized alarm management capability</p> <p>High - The vendor, Microfocus ceases to operate as going concern or becomes bankrupt. The speculative creditworthiness of the vendor jeopardizes their ability to execute the contract</p>	Recommended

Document Control

Note: The sequence of signatures required is as shown below.

Authors:

Prepared By	Role
	Project Manager
	Business Analyst

Project Management Adherence Review:

Reviewed By	Role
	PMO Project Support

Financial Review:

Reviewed By	Role
	VP Corporate Services & CFO, CS-Corporate Services
	Director, Enterprise Planning, Risk & Performance

Content Reviewers:

Reviewed By	Role
	Manager, Change Delivery and resource manager
	Manager, Business Analysis Services and resource manager
	Supervisor Quality Assurance and resource manager
	Manager Operational Assessment and resource manager
	Senior Manager & CIP Senior Manager and resource manager
	Director, Enterprise Change
	Senior Manager System Ops, PSC member , Business Lead, and Process Steward DSTO
	Senior Manager MF&I, PSC member , and Process Steward Plan Operations
	Senior Manager OE/OA, PSC member
	Manager IT Operations , and PSC member
	Manager CTS, and PSC member
	Manager MOFS, Contract Manager, PSC member, and Solution Steward

Approvals:

Approved By	Role
	Director Business Solutions, PSC member and Project Sponsor
	VP Information & Technology Services CIO, ITS-Information & Tech Services
	Interim President & CEO, OAR approver

* Indicates approvals in Citadel.

Distribution List

Name	Organization
Citadel	IESO
PMO	IESO
Finance	IESO

Document Change History

Issue	Reason for Issue	Date
2.0	Increased planning duration due to procurement changes , enhanced project schedule to include execution phase and remove Business rule management solution from project scope.	June,10, 2020

References

Document Title	Document ID
Central Alarm Management System (CAMS) Platform Refresh	
CAMS Project Charter V.1	
Project Roles and Responsibilities	
Integrated Project Plan	TBD

Related Documents

Document Title	Document ID
White Paper: IESO EMS Solution Replacement	

– End of Document –

SEC INTERROGATORY 16

Issue 1.5 Is the IESO's 2020 capital expenditure envelope of \$52 million for capital projects for Fiscal Year 2020 appropriate?

1.5-SEC-16

INTERROGATORY

[E-2-1, Attach 2] With respect to the Supervisory Control and Data Acquisition/Energy Management System Upgrade Capital Project:

- a. Please provide a copy of the internal business case for the project. Please explain any variances between the costs/schedule included in the internal business case and that presented in the evidence.
- b. [p.2] Please provide a breakdown of the capital expenditures.
- c. Does IESO measure progress on the project by way of SPI/CPI measures? If so, please provide the most recent measures.
- d. [p.4] Please explain the contracting method for the project.
- e. [p.4] Since the IESO undertook the project by way of sole source procurement, please explain how it ensured that the price from the vendor was fair.
- f. [p.6] Unlike the Replacement of Settlement System Capital Project, the evidence does not indicate that there are "monthly progress reporting" or "exception reporting for material deviation in costs, schedule and objectives". Please explain why not and if there is such reporting, please provide a copy of the most recent monthly progress reporting, and any exception reporting.

RESPONSE

- a. The IESO notes that it does not create internal business cases for its capital projects and has provided the relevant information found in a business case for all material capital projects in its evidence in response to the OEB's 2019 Decision. The IESO uses Project Charters to seek approval for individual projects within the portfolio. While the IESO does not view all the information within Project Charters as relevant to this proceeding, in an effort to be responsive a copy of the latest Project Charter for the Supervisory Control and Data Acquisition/Energy Management System Upgrade Project is provided as Attachment 1 to this response.

This document is prepared for internal use in support of project approval, monitoring and control of the project, and contains additional confidential details than what has been provided into evidence in the attachment to Exhibit E-2-1 of the Revenue Requirement Submission.

The information provided into evidence contains updated cost, schedule and risk information to reflect current project status and forecasts and allows for enhanced OEB review of the IESO's capital projects.

- b. Breakdown of the capital expenditures as of August 9, 2021:

Table 1: Supervisory Control and Data Acquisition/Energy Management System Upgrade Capital Project – Capital Expenditures Breakdown

	Actuals (YTD)	Forecast to Complete	Estimate at Complete
Total Internal Labor	\$1.2M	\$0.8M	\$2.0M
Total Contract/Computer Services	\$5.0M	\$3.1M	\$8.1M
Total Hardware and Building Services	\$1.0M	\$0.0M	\$1.0M
Total Miscellaneous	\$0.1M	\$0.1M	\$0.2M
Total CAPEX	\$7.3M	\$4.0M	\$11.3M

- c. With the exception of MRP, the IESO does not measure progress on projects by way of SPI/CPI measures. Project Health is measured across a number of Key Performance Indicators including Budget, schedule, business objectives and project management process adherence. Sole sourced negotiated agreement through an approved allowable exception.
- d. The IESO established a sufficiently detailed project scope of work which informed the Statement of Work to be undertaken by the vendor and provided a solid basis to validate and challenge the vendor cost estimates.
- e. Through negotiations, the IESO worked with the vendor to influence how they staffed the project and negotiated bulk labour rates to reduce overall vendor costs. Where it was more cost effective to do so, the IESO undertook some of the scope of work such as some of the testing and display conversion activities. The IESO was able to achieve a 19% reduction from a similar SCADA/EMS upgrade project performed in 2013 (\$5.8M USD vs. \$7.1M USD), not accounting for inflation.
- f. Regular monitoring, tracking and reporting is done for each approved capital project. On a monthly basis, a Project Portfolio Dashboard Report (PPDR) is produced and shared with the internal stakeholders including Executive Leadership team for full transparency and governance. A copy of the PPDR is included as Attachment 2 to Schedule 14 – 1.5 SEC 15.

Project Charter for: SCADA/EMS Upgrade

Document ID:	PC-14	Author(s):	
Issue:	2.0	Sponsor:	
Effective Date:	February 28, 2019	Project ID:	437

1 Project Executive Summary

The Supervisory Control and Data Acquisition (SCADA)/Energy Management System (EMS) solution is scheduled for an upgrade given that the operating system will come out of support by November 2021 and a hardware upgrade will be due at that time. The last SCADA/EMS refresh went in service in July 2016.

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 solution to facilitate the System Security Solution² (SSS) Roadmap implementation. 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.

Based on the approved Project Charter version 1.0, the project has completed the planning phase activities. The project scope has been clarified, a schedule developed and vendor costs have been finalized concluding with a Statement of Work (SOW) signed on December 31, 2019.

A decision was made to transfer some of the scope of work from Wide Area View Environment (WAVE) - Phase 2 within the 2020 project portfolio. This transfer is net neutral in terms of impact on the 2020 project portfolio. The transfer was done in order to reduce potential rework

¹ https://en.wikipedia.org/wiki/Energy_management_system

² Foundational to IESO's identity is its expertise in managing Ontario's Bulk Electrical System in real time. To facility this, IESO Control Room Operators (CRO) depend on accurate and reliable information (e.g. real time telemetry, computation, out of limit alarms, etc.) to assess the state of the IESO Controlled Grid. An essential source of this information is IESO's System Security Solution (SSS) or Energy Management System (EMS) solution which includes SCADA/EMS, OSISoft's PI (for visualization), Novell Operations Center (for alarming), Operations Security Limits (OSL) and Dynamic Stability Assessment (DSA).

and mitigate the risk of schedule delays in the WAVE Phase 2 project. This scope transfer requires moving funds (\$1.03M) from WAVE Phase 2 to this project.

This SCADA/EMS Project Charter v 2.0 is seeking approval to proceed to the execution phase of the project that is estimated to cost a total of \$15.03M (including \$2.38M contingency), of which \$14.34M is capital expense. The project continues to forecast a completion date in March 2023, including 12 months of contingency to account for scheduling uncertainties.

The table below shows the anticipated expenditure over the period of the project.

Year	2019	2020	2021	2022	Contingency	Total
Capital	\$0	\$8,300,000	\$3,200,000	\$573,000	\$2,270,000	\$14,343,000
Operating	\$220,000	\$200,000	\$150,000	\$80,000	\$114,000	\$684,000
Total	\$220,000	\$8,420,000	\$3,350,000	\$653,000	\$2,384,000	\$15,027,000

2 Business Objectives and Measures

1. 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).
2. 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.
3. 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.

Table 2-1 Performance Measures

Ref#	BO#	Procedure for Measures (identify how the performance will be measured)	Measured when and by whom?
1	1,2	Upgraded SCADA/EMS is successfully deployed in Production and meets the approved “I&TS ³ Grid & Market Operations Service level requirements” (REQ-220) for Phase I before end of project.	Reviewed by Project Steering Committee (PSC) Approved at go-live by Director, Market Operations, Director, Power System Assessments, Director, Technology Support, Director, Business Solutions
2	2	Process and solution owners will accept the list of implemented features associated with reduction of operation complexity as per Statement of Work (SOW).	Reviewed by PSC Approved as and directed by Director, Market Operations, Director, Power System Assessments, Director Business Solutions
3	3	At the Phase II AGC go live before end of project, <ul style="list-style-type: none"> • Energy storage resources/ facilities are modelled within the AGC tool, which can account for an energy storage facility’s current state-of-charge. • The AGC tool will accept a storage resource’s base point. This will position the AGC tool to support storage facilities splitting their MW and MWh capacity to offer some to the energy and operating reserve market and some to AGC⁴. 	Reviewed by PSC Approved at AGC go-live date by Director, Market Operations, Director, Power System Assessments

³ Information and Technology Services IESO Business Unit

⁴ For example, a 100 MW, 200 MWh battery must be able to offer 30 MW and 60 MWh for AGC and use the remaining 70 MW and 140 MWh for energy and operating reserve market participation. Bids and offers will be managed by the energy storage facility.

2.1 Benefits Expected

The upgrade to the SCADA/EMS solution will:

1. Improve SCADA/EMS reliability and resilience:
 - Mitigate the risk of using obsolete or unsupported hardware, infrastructure and software;
 - Reduce the security risk associated with cyber threats by upgrading the SCADA/EMS infrastructure and technology;
 - Maintain compliance with electricity regulatory requirements;
 - Meet Planning, Acquisition and Operations (PA&O) Service Level Requirements for IT supported solutions and services
2. New or re-engineered displays will improve human interaction with the SCADA/EMS tools by following IESO's Visual Communication Convention Guide (where supported by the ABB solutions).
3. This project aligns with the strategic outcome "An integrated electricity system that is reliable, resilient and secure in a period of accelerating change": Fundamental to IESO's mandate to "Operate the Ontario Power System in Real Time" is the use of a reliable SCADA/EMS platform that provides IESO staff visibility and situational awareness of the ICG.
4. The IESO's Automatic Generator Control (AGC) tool will model storage resources with their state of charge and will accept storage resources' base point. This will position the AGC tool to facilitate energy storage resources to simultaneously participate in the energy and operating reserve market while providing regulation services. As part of the corporate initiative to integrate storage resources and the related innovation roadmap, these changes will move the regulation market towards increased competition in regulation market as it becomes more hospitable to support a wider range of energy storage participants.

3 Project Overview

3.1 Project Scope

The project will:

1. Upgrade the SCADA/EMS solution;
2. Develop Statement Of Work (SOW) including relevant business and technical requirements for SCADA/EMS upgrade solutions and AGC tools modification;
3. Identify differences between current and new SCADA/EMS systems, address and manage these changes;
4. Where feasible, reduce operational complexity by using new features in the latest version of vendor SCADA/EMS platform (e.g. assess and accept/reject new features);

- a. Include Power System Equipment Size requirements per vendor change request (VCR) 210 for WAVE Phase II project;
5. Perform training, and
6. Deploy and test solution with appropriate documentation;

3.2 High Level Assessment of Impacted Business Processes, Systems and Governing Documents

3.2.1 Processes

1. Build (Online/Offline/Combined) Network Models;
2. Derive Mid-Term Limits (Base System Control Orders (SCOs));
3. Plan Operations activities (Derive Deployment Limits, Assess Outage, Forecast Demand, Commit Resources [i.e. Day-Ahead Commitment Process]);
4. Direct Short-Term Operations (DSTO);
5. Operational Assessments Activities⁵ (Assess Reliability, Assess Market Efficiency, Address Operations Issue⁶);
6. Issue North American Electric Reliability Corporation (NERC) Event Reports; Publish Non-Automated Operations Reports; Issue Discretionary Operations Reports;
7. Operate Technology; Resolve IT Incident; Resolve IT Problem.

3.2.2 Systems

1. Network Manager (NM) SCADA/EMS systems including:
 - a) SCADA applications (Data Acquisition, Control System Supervision, ...);
 - b) Energy Management System (EMS) applications (e.g. Security Analysis, AGC, System Security Monitoring, ...);
 - c) User Interface (WS500);
 - d) Data Engineering (DE);
 - e) Power System Explorer DE tool (PSE DE)
 - f) Replica/Study system;
 - g) Process Communication Units (PCU) Front End servers;
 - h) Inter Control-Center Communications Protocol (ICCP) Front End servers;
2. SCADA/EMS Interfaces (e.g. Market Information System (MIS), Day-ahead optimization scheduler (DAOS), Centralized Alarm Management System (CAMS), Dispatch and Data Management System (DDMS), OSISoft's PI, On-Line Limit Derivation (OLLD), ...);

⁵ Undocumented activities supporting both Plan Operations and DSTO

⁶ Including "Address Issue with Participant"

3. NM Power System Simulator (PSS) systems including:
 - a. Operator Training Simulator (OTS)
 - b. Simulator Dispatch Tool
4. PSS Interfaces (i.e. Thermal Limit Manager (TLM) and Operations Security Limits (OSL))

3.2.3 Governing Documents

The execution phase will identify any procedures/SCO changes.

3.3 Out of Scope

Processes⁷

- Organization registration and participant authorization
- Equipment & Facility registration
- Connection Assessment and Approval
- Regional Planning processes;
- 'Generation and transmission procurements/contracts' processes;
- 'Energy Efficiency' processes;
- Business function "Conduct Reliability and Operability Planning" (e.g. Conduct Reliability and Operability Planning; Issue 18-Month Outlook; Forecast Long-Term Demand; Perform Reliability and Operability Studies; Determine 5-Year Required Reserve Margins).

Solutions⁸

- Dispatch Data Management System modules
- Centralized Alarm Management
- Data Historian
- Outage Coordination and Scheduling System (OCSS)
- Dynamic Stability Assessment (DSA)
- Operating Security Limits
- Market Information System
- Day Ahead Optimization

Governing Documents

- No impact to market rules or manuals.

⁷ Possible minor procedure impacts for data retrieval or use of study tool.

⁸ Some interfaces to these solutions are in scope.

3.4 Overall Project Timeline

The project started on May 22, 2019 after the kickoff meeting and is planned to go in service by January 31, 2022 and close the project on March 31, 2022. The project will have an additional 12 months of schedule contingency.

The Execution phase duration is expected to be 2 years from approval of the project charter version 2.0 and completion of procurement activities. The project plan details were developed during the Planning phase. Overall project timeline is outlined below.

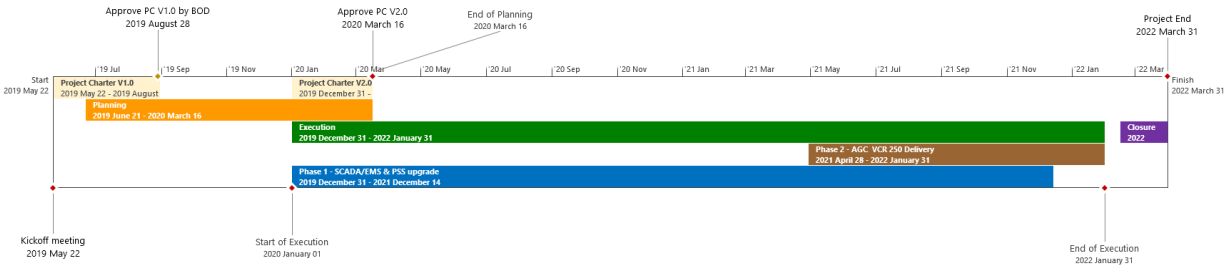


Figure 3-1 Overall Project Timeline

3.5 Overall Project Cost

The level of project contingency has been reduced in order to reflect the increased level of cost certainty resulting from the vendor negotiations and planning activities. Additionally, a decision was made to transfer some of the scope work from WAVE Phase II project to this project with budget of \$1.03M in capital funds.

The budget for this project is re-baselined to \$15,027K, with an estimation accuracy of +/- 20%. This budget includes \$14,343K in Capital funds (including \$2,384K of contingency) and \$684K in Operating funds (including \$114K of contingency) to implement this project.

Table 3-1 Overall Cost Summary

	Initial Budget (PC V1.0)			Revised Budget (PC V2.0)		
Category	Project Cost	Contingency	Total	Project Cost	Contingency	Total
Capital	\$9,000,000	\$4,000,000	\$13,000,000	\$12,073,000	\$2,270,000	\$14,343,000
Operating	\$800,000	\$200,000	\$1,000,000	\$570,000	\$114,000	\$684,000
Total	\$9,800,000	\$4,200,000	\$14,000,000	\$12,643,000	\$2,384,000	\$15,027,000

3.6 Key Resource Needs

The following identifies the key resources required to support the project.

- Project Manager
- Business Analyst
- Solution Analyst

- Network Model Build System Analyst
- Technical Analyst
- Data Base Administrators
- Infrastructure and Network – Subject Matter Expert (SME)
- Infosec - SME
- Test Analyst
- Quality Assurance Lead
- Test Lead
- IT Operations & IT Service Delivery - SME
- Control Room - SME
- Market Forecast & Integration - SME
- Power System Limits - SME
- Real-Time Applications - SME
- Operational Assessments - SME
- Market & Technology Integration - SME
- Performance Validation & Modelling – SME
- Operations Integration - SME
- Procurement Specialist
- Customer Relations - SME

For a full list of roles and responsibilities please see the Team Roles and Responsibility document posted on the Project Management Office (PMO) page: [REDACTED]

4 Key Stakeholders (Internal and External)

Table 4-2 Key Stakeholder list

Stakeholder Group	Stakeholder Role	Process	How They Are Affected or How They Are Participating
Control Room System Operations (PA&O / Market Operations)	Customer Manager: Process Owner, Resource manager Builder	Direct Short-Term Operations (including activities Forecast Demand and Assess outage)	<ul style="list-style-type: none"> • Sustain service 'manage system security' for process group "operate real-time grid and market" with improved solution reliability and resilience. • SCADA/EMS positioned to support the following: Wide Area Visualization Environment (WAVE) Phase 2 • Increased resiliency to Cyber Security threats as its components will be up-to-date and vendor supported • Refreshed SCADA/EMS tools and procedures • Refreshed study and simulator tools • CRO manages dispatchable energy storage resources in the energy and operating reserve markets

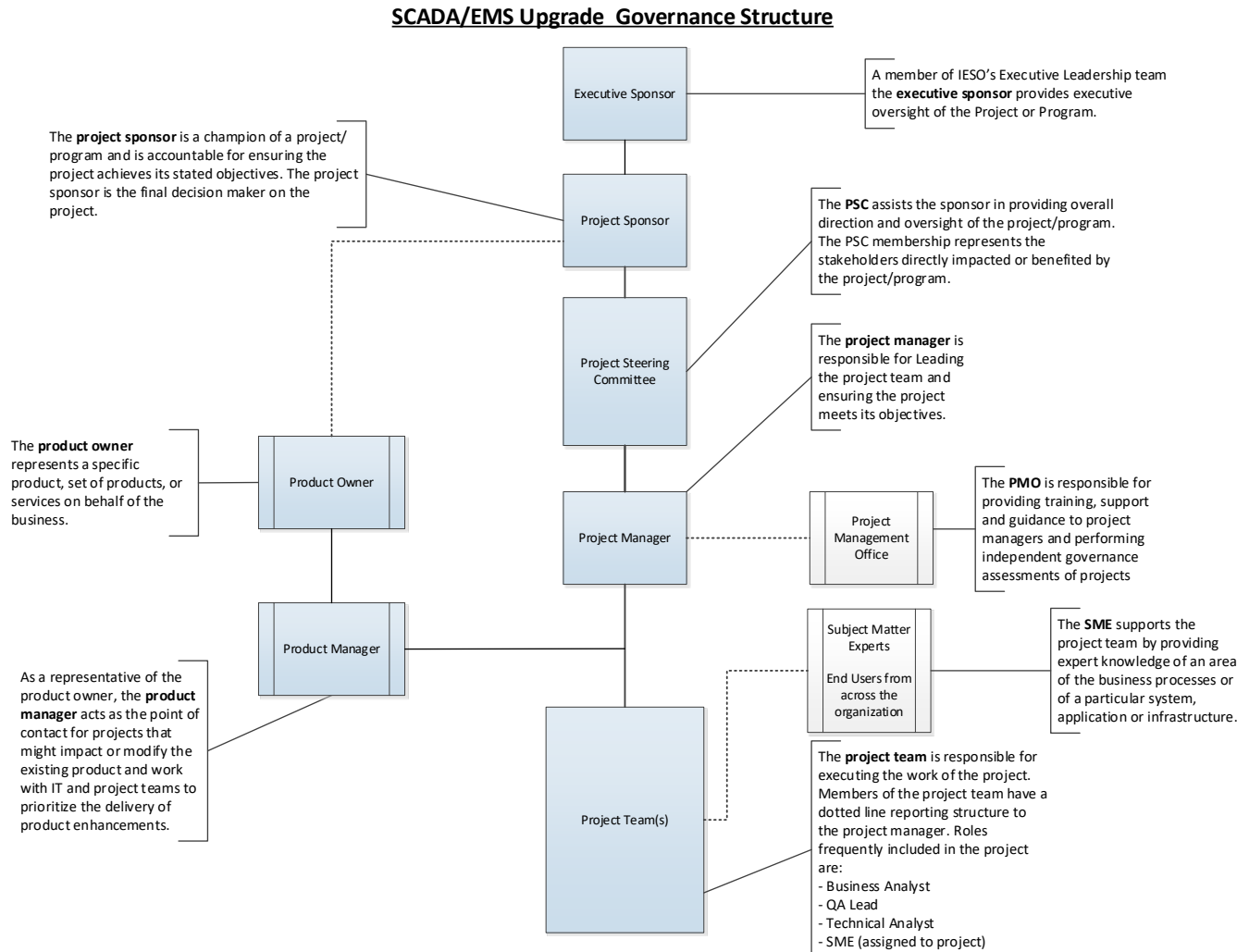
Stakeholder Group	Stakeholder Role	Process	How They Are Affected or How They Are Participating
Operational Assessments (PA&O / Power System Assessments (PSA) / Operational Effectiveness (OE))	Customer, Resource manager Builder	Activities: Assess Reliability Assess Market Efficiency Address Operations Issue (including “Address Issue with Participant”) for Direct Short-Term Operations & Plan Operations	<ul style="list-style-type: none"> Additional or extended role to provide visual and design expertise for SCADA/EMS displays Refreshed SCADA/EMS tools and procedures Refreshed study and simulator tools
Market & Technology Integration (MTI) (PA&O / PSA / OE)	Resource manager Builder	Not Applicable	<ul style="list-style-type: none"> Resources required to support the project MTI is mandated to integrate storage resources into IESO operations.
Advanced Technology Research (Policy, Engagement & Innovation (PEI) / Innovation, Research and Development (IRD))	Resource manager Builder	Not Applicable	Participating: <ul style="list-style-type: none"> Communication with external stakeholders via the Energy Storage Advisory Group for energy storage related upgrades Provide expertise for energy storage related matters, including ancillary services and market participation
Market Forecasts and Integration (MF&I) (PA&O / Market Operations)	Customer/Manager: Process Owner, Resource manager Builder	Plan Operations activities: Derive Deployment Limits Assess Outage Forecast Demand Commit Resources (Day-Ahead Commitment Process)	<ul style="list-style-type: none"> Refreshed tools and procedures for MF&I outage assessment studies Refreshed SCADA/EMS tools and procedures Refreshed study and simulator tools MF&I will be updated on the new resource types and IESO directions for energy storage resources.
Real-Time Applications (PA&O / PSA)	Customer/Manager: Process Owner Resource manager Builder	Build Online Network Model Build Combined Network Model	<ul style="list-style-type: none"> Refreshed SCADA/EMS tools and procedures

Stakeholder Group	Stakeholder Role	Process	How They Are Affected or How They Are Participating
Operations Integration (PA&O / PSA)	Customer/Manager: Process Owner Resource manager Builder	Build Online Network Model	<ul style="list-style-type: none"> Refreshed SCADA/EMS tools and procedures
Performance Validation and Modelling (PA&O / PSA)	Customer/Manager: Process Owner Resource manager Builder	Commission Equipment	<ul style="list-style-type: none"> Refreshed SCADA/EMS tools and procedures
Power System Limits / Engineering Studies (PA&O / PSA)	Customer/Manager: Process Owner, Resource manager Builder	Derive Mid-Term Limits Activity Derive Deployment Limits (Plan Operations)	<ul style="list-style-type: none"> SCADA/EMS positioned to support the following: WAVE Phase 2, Dynamic Limits in Real-Time (DLRT) and Phasor Measurement Unit (PMU) projects Refreshed SCADA/EMS tools and procedures
IT - Operations	Direct customer & Builder	Operate Technology Resolve IT Incident Resolve IT Problem	<p>Affected:</p> <p>Reduced IESO effort in operating refreshed SCADA/EMS solution</p> <p>Participating:</p> <p>Provide IT Operation requirements, test cases, and testers.</p> <p>Update manuals and procedures</p>
MOFS, CIM (DAs) (IT/ Business Service & Solution Delivery /)	Customer: (for Solution Steward) Manager: Business Solution Owner delegate (for Alex), Resource manager Builder	Resolve IT Incident Resolve IT Problem (Implement Security Patch) (Implement Change)	<p>Affected:</p> <p>Reduced IESO effort in supporting refreshed SCADA/EMS solution</p> <p>Participating:</p> <p>Provide technical requirements, test cases, and testers.</p> <p>Update solution manuals and procedures</p>

Stakeholder Group	Stakeholder Role	Process	How They Are Affected or How They Are Participating
CTS, Infrastructure (IT/ IT Infrastructure & Operations)	Manager: Technical Solution / component Owner delegate (for Alex), Resource manager Builder	Change initiative & Resolve IT Incident Resolve IT Problem (Implement Security Patch) (Implement Change)	Affected: Reduced IESO effort in supporting refreshed SCADA/EMS solution Participating: Provide technical requirements, test cases, and testers. Update solution manuals and procedures
Representative ICCP / PCU participant(s)	Customer, builder	Commission Equipment	Participate in testing to verify replacement servers and solutions
Representative AGC participant(s)	Customer, builder	Commit Resources Direct Short-Term Operations	Participate in testing to verify replacement solutions

5 Project Governance Structure

This document defines the high -level approach and plan for the project. Complete details will be included in the Project Plan.



6 Delivery Approach

This project will be delivered as per the new Portfolio Project Management Life Cycle (PPMLC) process. The detailed approach with steps for delivery will be defined in the Integrated Project Plan document.

Based on current IESO capabilities and business priorities (e.g. Market Renewal Program (MRP), Replacement of Settlement System etc.) the project will upgrade the current SCADA/EMS platform using the existing SCADA/EMS vendor.

The project execution will be done in two phases:

Phase 1: Upgrade the SCADA/EMS platform.

Phase 2: Deliver enhancements to AGC tools required for storage resources.

7 Assumptions, Constraints and Potential Risks

7.1 Project Assumptions

- 1) Other initiatives (e.g. PMU, DLRT projects and MRP program) will address any requirements for additional SCADA/EMS capacity and functionality.
- 2) The project will port SCADA/EMS custom applications' as-is functionality (i.e. outputs not interface) to the new SCADA/EMS system.
- 3) Displays will not be reformatted to accommodate 16:9 aspect ratio displays as part of this project.
- 4) The Network Manager X (NM X) AGC solution will be enabled to support "Storage Resources". Each energy storage resource is currently modelled as two resources (i.e. one generator and one load). Registering and modeling a 'storage resource' is out of scope for the SCADA/EMS Upgrade project. However, the enhanced AGC tool must handle both models (i.e. two resources or a single storage resource).
- 5) Dispatch Scheduling and Optimization (DSO) changes required to allow energy storage resources / facilities to be fully dispatchable and eligible to participate in the energy and operating reserve markets are out of scope for the SCADA/EMS Upgrade project. A separate project intake document was submitted to the 2020 PPMT process for these DSO changes.
- 6) The new SCADA/EMS will not change any interfaces to non-ABB systems.
- 7) The Central Alarm Management System (CAMS) will integrate with available NM alarm interfaces with no required NM X software changes.

Deviations from assumptions is liable to impact schedule and cost estimates.

7.2 Project Constraints

This project must be deployed by December 2022 to enable/support downstream and parallel projects/programs e.g. Market Renewal Program (MRP) and Wide Area Visualization Environment (WAVE) Phase II project.

7.3 Potential Project Key Risks and Mitigation Actions

Table 2: Risk Summary

#	Risk ID	Risk Description	Initial Risk Level	Mitigation/ Risk Response Tasks	Mitigated Risk Level
1	8	Possible project delays: Vendor delivery of the new SCADA/EMS system is on the critical path. Based on previous projects experience with ABB, the vendor may not deliver as per the agreed upon schedule and design	Critical	<p>A) Ask vendor to provide detailed schedule and status for previously delayed tasks.</p> <p>B) IESO to closely monitor vendor progress.</p> <p>C) Vendor to include demonstration of the features (e.g. model and displays conversion) and work performed through automation.</p> <p>D) Include contingency time and cost</p>	Medium
2	18	Other In-flight projects (e.g. DLRT, WAVE, MRP, ...) may require changes to the scope of SCADA/EMS upgrade project.	High	<p>A) Postpone implementation of proposed scope changes to SSS roadmap.</p> <p>B) Identify potential projects/ initiatives that may impact the SCADA/EMS scope of work and regularly monitor any impacts. Other projects shall consider the cost of their impacts to the SCADA/EMS project.</p> <p>C) This project has included time contingency that would be utilized should this risk materialize.</p>	Medium

8 Change Controls

Changes in the project that will impact/exceed tolerance levels for objectives, time and cost will be managed through the formal Project Change Management Process resulting in Project Exception Reports. The Project Exception Reports (if approved) will result in the re-baselining of the project. Refer to the Project Exception Reports for reference and additional details.

Appendix A: NPV Analysis and Cash Flow

Net Present Value (NPV) Calculator:

A. Project information and Key Financial Rates:

Project Name:	SCADA/EMS Upgrade Project	
Recommended Option:	SCADA/EMS Upgrade -Sole source procurement	
Useful Life:	5	Years
IESO Labour Rate	\$110	per hour
Cost of Capital - Year 0 (Current Year)	2.69	%
Cost of Capital - Year 1	3.63	%
Cost of Capital - Year 2 to Year 7	4	%

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)	8,350,000	3,200,000	523,000					

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Ongoing Maintenance \$ Projected (after project is implemented)	370000	388500	407925	428322	449739	472226	495838	520630

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
(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	\$8,720,000	\$3,588,500	\$930,925	\$428,322	\$449,739	\$472,226	\$495,838	\$520,630
Present Value of Expenditure:	\$8,720,000	\$3,462,800	\$860,692	\$380,777	\$384,439	\$388,135	\$391,868	\$395,636

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
(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:	\$14,984,348
Present Value of Savings:	\$0
Net Present Value of Project Alternative	-\$14,984,348

Appendix B: Alternative analysis

Identified Alternatives Summary

Alternative 1 – Do Nothing (Not Viable)

The Supervisory Control and Data Acquisition/Energy Management System (SCADA/EMS) is the primary system used by System Operations to monitor the status of the IESO Controlled Grid (ICG). The SCADA/EMS captures information about the status of the ICG using telemetry information provided by market participants and presents the information to the system operators through graphical displays. The SCADA/EMS also provides advanced applications that use the telemetry information to provide system operators with ability to assess the ICG's current and future state.

A separate but companion product that is associated with the EMS is the Power System Training Simulator (PSS). The PSS is used to train IESO system operators using simulated events. This enables system operators to experience and learn in a realistic environment using the tools that they will use in the Control Room to operate the ICG.

The SCADA/EMS and PSS are critical pieces of the infrastructure used by the IESO and is subject to audits by the North American Electric Reliability Corporation (NERC). Maintenance of the SCADA/EMS life cycle is a key activity that enables us to be compliant with the reliability standards published by NERC.

SCADA/EMS and PSS are proprietary products provided by ABB Inc. that have been heavily customized since their installations that started in 2002. By December of 2020 components of the current SCADA/EMS and PSS will be operating on unsupported hardware and with an operating system that is currently on extended support. A refresh of this system is required in order to mitigate the risk associated with operating from an unsupported platform.

Alternative 2 – SCADA/EMS replacement -Competitive procurement (Not Viable)

Strategic changes to the design of the SCADA/EMS and PSS are planned to occur over the next 5-7 years that would result in duplication of effort and costs that would be associated with a competitive procurement of a new SCADA/EMS and PSS at the current time. IESO strategic and business plan timelines cannot support a competitive procurement schedule.

The SCADA/EMS and PSS are highly customized for the IESO and built into the ABB Network Manager platform. ABB is the only vendor that has the ability to upgrade the Network Manager platform as it is a proprietary product. Changing the vendor through a competitive procurement would introduce significant risks as the project rebuilds required functionalities with new tools.

Alternative 3 – SCADA/EMS Upgrade -Sole source procurement (Recommended)

As outlined in two previous alternatives, based on current IESO capabilities and business priorities the project will upgrade the current SCADA/EMS platform using a single source procurement and justification per allowable exemptions from competitive procurements⁹.

Appraisal of Alternatives

Ref #	Alternative	NPV	Achievement of Business Objectives	Risk	Consideration
1	Do Nothing	n/a	This alternative does not achieve any of the stated business objectives	High –Planning Acquisition & Operations (PA&O) ability to manage reliability of the IESO Controlled Grid (ICG) will be negatively impacted given potential for reduced SCADA / EMS solution reliability and availability.	Not Viable
2	SCADA/EMS replacement - Competitive procurement	n/a	This option is not feasible as outlined above and so does not achieve any of the stated business objectives	High –Strategic initiatives will be deferred due to procurement schedule delays resulting in duplication of effort and increased risk to the IESO Controlled Grid (ICG) and IESO Administered Markets (IAM).	Not Viable
3	SCADA/EMS refresh - Sole source procurement	-\$15M	This option addresses all of the stated business objectives	Low –IESO resources and vendor are committed to the project schedule. Assessment of the vendor solution confirms that it will meet critical IESO requirements to manage the reliability of the IESO Controlled Grid.	Recommended

⁹ Per Ontario Public Sector Procurement Directive, December 2014 and the IESO Procurement Policy

- 1) 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:
 - i) 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
 - ii) Would cause significant inconvenience or substantial duplication of Costs for the IESO.
- 2) Where only one supplier is able to ensure compatibility with existing products and services

Document Control

Note: The sequence of signatures required is as shown below.

Authors:

Prepared By	Role
	Project Manager
	Business Analyst

Project Management Adherence Review:

Reviewed By	Role
	PMO Project Support

Financial Review:

Reviewed By	Role
	Director, Enterprise Planning, Risk & Performance
	VP – Corporate Services & CFO

Content Reviewers:

Reviewed By	Role
	Solution Analyst
	Manager, Change Delivery
	Director, Enterprise Change
	Manager, Business Analysis Services
	Manager, Market Operations & Forecast Systems;
	Manager, Operational Assessments
	Sr. Manager, Market Forecasts & Integration
	Sr. Manager, System Operations
	Sr. Manager, Performance, Applications & Integration

	Sr. Manager, Engineering Studies
	Sr. Manager, Procure to Pay
	Director, Market Operations; Project Steering Committee Member
	Director, IT Infrastructure & Operations; Project Steering Committee Member
	Director, Power System Assessments; Project Steering Committee Member
	Director, Finance, Corporate Controller & Treasury; Project Steering Committee Member

Approvals:

Approved By	Role
	Director Business Service & Solution Delivery; Project Sponsor; Project Steering Committee Member
	President & CEO (On behalf of the Board)
IESO Board	IESO Board

** Indicates who will approve in Citadel.*

Distribution List

Name	Organization
Citadel	IESO
PMO	IESO
Finance	IESO

Document Change History

Issue	Reason for Issue	Date
2.0	<p>Project charter to enter Execution Phase:</p> <ul style="list-style-type: none"> Project Executive Summary (sec 1): updated to reflect additional scope and cost moved from WAVE phase II project. High Level Assessment of Impacted Business Processes, Systems and Governing Documents Sec 3.2): updated with revised list of processes and systems. Overall Project Cost (sec 3.5): updated to reflect the increased level of cost certainty resulting from the vendor negotiations and planning activities. Planning Phase (sec 3.7): Removed. Key Stakeholders (sec 4): updated to include external stakeholders (Market Participant participate in testing). Project Governance Structure (sec 5): updated to include new Product owner and Product Manager Delivery Approach (sec 6): updated to include two phases project delivery. Assumptions, Constraints and Potential Risks (Sec 7): updated to include revised list of assumptions and key risks NPV and Cash flow (Appendix A): NPV calculation added for recommended alternative <p>Alternative analysis (Appendix B): alternatives and appraisal included</p>	January 30, 2019
1.0	Project charter to enter Initiation Phase	July 24, 2019

References

Document Title	Document ID
Project Intake Document	
Project Roles and Responsibilities	
I&TS Grid & Market Operations Service level requirements	

Related Documents

Document Title	Document ID
Visual Communication Convention Guide	

– End of Document –

SEC INTERROGATORY 17

Issue 1.5 Is the IESO's 2020 capital expenditure envelope of \$52 million for capital projects for Fiscal Year 2020 appropriate?

1.5-SEC-17

INTERROGATORY

[E-2-1, Attach 3] With respect to the Centralized Alarm Management System Replacement Project:

- a. Please provide a copy of the internal business case for the project. Please explain any variances between the costs/schedule include in the internal business case and that presented in the evidence.
- b. [p.2] Please provide a breakdown of the capital expenditures.
- c. Does IESO measure progress on the project by way of an SPI/CPI measures? If so, please provide the most recent measures.
- d. Please explain the contracting method for the project.
- e. [p.5] Unlike the Replacement of Settlement System Capital Project, the evidence does not indicate that there are "monthly progress reporting" or "exception reporting for material deviation in costs, schedule and objectives". Please explain why not and if there is such reporting, please provide a copy of the most recent monthly progress reporting, and any exception reporting.

RESPONSE

- a. The IESO notes that it does not create internal business cases for its capital projects and has provided the relevant information found in a business case for all material capital projects in its evidence in response to the OEB's 2019 Decision. The IESO uses Project Charters to seek approval for individual projects within the portfolio. While the IESO does not view all the information within Project Charters as relevant to this proceeding, in an effort to be responsive a copy of the latest Project Charter for the Centralized Alarm Management System Replacement Project is provided as Attachment 1 to this response. This document is prepared for internal use in support of project approval, monitoring and control of the project, and contains additional confidential details than what has been provided into evidence as part of Attachment 3 to Exhibit E-2-1.

The information provided into evidence contains updated cost, schedule and risk information to reflect current project status and forecasts and allows for enhanced OEB review of the IESO's capital projects. As noted in evidence, high and critical level risks

identified in the Project Charter have been further mitigated and now have a lower residual risk. The project team continues to monitor these, along with other project risks to ensure that the assessed risk level and mitigating actions are appropriate.

- b. Breakdown of the capital expenditures (As of August 9, 2021):

Table 1: Centralized Alarm Management System Replacement Project Capital Expenditures Breakdown

	Actuals (YTD)	Forecast to Complete	Estimate at Complete
Total Internal Labor	\$0.2M	\$0.5M	\$0.7M
Total Contract/ Computer Services	\$2.3M	\$1.0M	\$3.3M
Total Hardware and Building Services	\$0.1M	\$0.0M	\$0.1M
Total Miscellaneous	\$0.0M	\$0.0M	\$0.0M
Total CAPEX	\$2.6M	\$1.5M	\$4.1M

Total including contingency of \$0.8M = \$4.9M against approved budget of \$5.2M. This reflects latest forecast Capital cost to be underspent.

- c. With the exception of MRP, the IESO does not measure progress on projects by way of SPI/CPI measures. Project Health is measured across a number of Key Performance Indicators including Budget, schedule, business objectives and project management process adherence.
- d. The project initially performed a Standard Open Competitive Procurement, done through Request for Proposal. No suitable vendors were identified at that time which met the criteria. The IESO directly sourced and evaluated vendors known in the marketplace and through an allowable exception, entered into a Master Services Agreement and Statement of Work (SOW).
- e. Regular monitoring, tracking and reporting is done for each approved capital project. On a monthly basis, a Project Portfolio Dashboard Report (PPDR) is produced and shared with the internal stakeholders including Executive Leadership team for full transparency and governance. A copy of the PPDR is included as Attachment 2 to Schedule 14 – 1.5 SEC 15.

Project Charter for: Centralized Alarm Management System Replacement

Document ID:	PC-10	Author(s):	
Issue:	2.0	Sponsor:	
Effective Date:	January 05, 2021	Project ID:	433

1 Project Executive Summary

The project will replace the existing Central Alarm Management System (CAMS) solution with a vendor supported alarm capability. This will directly support the mitigation of a key corporate risk: “A significant cybersecurity event occurs that disrupts the operation of the IESO – including reliable grid operations and efficient market operations – for extended periods of time”¹.

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.

This project was included as part of the approved 2019 IESO Project Portfolio, where it was initially assumed that the current CAMS could be upgraded from its current version. This work was estimated to be complete within 12-18 months with an overall project cost of \$500K.

Since initiating the project a number of key assumptions have changed resulting in significantly increased costs and timing. These include the following:

- The need to replace rather than refresh the current CAMS;
- Procurement approach changes;
- Timing and cost refinements as a result of detailed planning; and
- Securing a separate Business Rules Management solution was removed from the scope.

We are seeking approval for a total expenditure of \$6 M to complete the project of which \$5.2 M is capital.

The project budget includes a contingency of \$900 K which reflects an estimation accuracy of +/- 20%.

Post 2022, the IESO will be contractually obligated to pay \$229K annually in 2023 and 2024 in premium support and approximately \$300 K until 2029. The project forecasts a target date of March 17, 2023 for completion including an additional 7 months of contingency to account for scheduling uncertainties.

Incremental operating expenses of \$200K has been included in the business plan for 2022. The additional incremental operating expenses will be offset through expected reductions in I&TS operating costs due to higher than estimated capital labour expenses to support Market Renewal program and the core capital project portfolio.

The table below shows the anticipated expenditure over the period of the project.

Year	2019	2020	2021	2022	Contingency	Total with contingency
Capital	-	-	\$3,707,635	\$726,138	\$826,000	\$5,259,927
Operating Expense IESO labour & Premium support)	\$14,368	\$260,000	\$207,299	\$204,464	\$83,333	\$769,464
Total	\$14,368	\$260,000	\$3,914,934	\$930,602	\$909,333	\$6,029,391

2 Business Objectives and Measures

1. Improve the IESO's alarming capabilities while maintaining compliance with North American Electric Reliability Corporation (NERC) Critical Infrastructure Protection (CIP) standards.
 - a. Replace the CAMS solution with a vendor supported alarm solution.
 - b. Realize internal efficiency gains as the effort to support the replacement CAMS solution will be reduced
 - c. Improve agility and flexibility in deploying and maintaining alarms.
 - d. Ensure the new CAMS solution retains a centralized design.
2. Ensure the replacement CAMS solution supports the System Security Solution (SSS) program or positions the IESO to move forward with the SSS program:
 - a. Ensure alarms are integrated with a business rules capability that can accept information from all relevant IESO and external sources.
 - b. Ensure solution integration through use of standard information exchange protocols and interfaces.

For this project, all business objectives are due and measures performed by the solution go-live date.

Ref #	Business Objective #	Procedure for Measures (identify how the performance will be measured)	Measured when and by whom?
1	1	Replacement CAMS solution implemented with ongoing vendor support resulting in: <ul style="list-style-type: none"> Improved agility and flexibility in deploying and maintaining alarms. The replacement CAMS solution integrates the alarms currently implemented using SCADA solution. 	Accepted ³ by Project sponsor (Director, Business Service & Solution Delivery) and Business process owners (Director, Market Operations and Director, Power System Assessments)
2	1	Replacement CAMS solution implemented with ongoing vendor support resulting in: <ul style="list-style-type: none"> Realized internal efficiency gains due to reduced effort to support the replacement CAMS solution. The replacement CAMS solution complies with IESO information security policies and standards. 	Accepted ⁴ by Project sponsor (Director, Business Service & Solution Delivery), Information security SME (Director, Information Security) and Solution Steward (Manager, Business Services-PA&O)

³ Based on defined roles, procedures, etc. including ITOPS, TS and MOFS procedure

⁴ Based on roles, procedures, etc. and Access Management/InfoSec signoff on designs

Ref #	Business Objective #	Procedure for Measures (identify how the performance will be measured)	Measured when and by whom?
3	2	Replacement solution(s) implemented with ongoing vendor support resulting in: <ul style="list-style-type: none"> Simplified solution integration through use of standard information exchange protocols and interfaces 	Accepted by Project sponsor (Director, Business Service & Solution Delivery), Information security SME (Director, Information Security) and Solution Steward (Manager, Business Services-PA&O)
4	2	Business rule capability implemented as Alarm Management Systems (AMS) component with ongoing vendor support providing: <ul style="list-style-type: none"> Centralized business rules that can process information from all relevant IESO and external sources Business roles for alarm recipients and administrators 	Accepted ⁵ by Project sponsor (Director, Business Service & Solution Delivery) and Business process owners (Director, Market Operations and Director, Power System Assessments)

2.1 Benefits Expected

The organization can expect to gain the following benefits through the completion of this project:

- Improve the IESO's alarming capabilities while maintaining compliance with NERC CIP standards.
- Improve agility and flexibility in deploying and maintaining alarms.
- Realize internal efficiency gains as the effort to support the replacement CAMS solution will be reduced.
- Support SSS program goals to achieve:
 - Shorter delivery times for technology components; and
 - The ability to swap out components more readily.

3 Project Overview

The project will replace the CAMS solution with a vendor supported alarm capability. The CAMS solution provides System Operations with an integrated view of alarms from many real time systems such as SCADA, MIS, Information Publishing System & DDMS.

This will be a replacement project and not an upgrade to the latest version of the NetIQ's Novell Operations Centre (NOC) application. Based on feedback from CAMS vendor, the project is not pursuing an upgrade from NOC version [REDACTED] to NOC version [REDACTED]. The CAMS vendor has been acquired a new offering HP Enterprise and will not offer NOC support after the currently released version [REDACTED].

⁵ Based on business design, solution design and test results

3.1 Project Scope

The project will:

1. Procure and replace the CAMS solution
 - a. Conduct market research for available CAMS solutions
 - b. Develop the Statement of work (SOW) including relevant business and technical requirements for CAMS replacement solution
2. Re-establish and configure alarms
3. Perform training
4. Deploy and test solution with appropriate documentation
5. Ensure user access to active alarms at the time of go-live

3.2 High Level Assessment of Impacted Business Processes, Systems and Governing Documents

3.2.1 Processes

1. Direct Short-Term Operations including activities Forecast Demand and Assess outage
2. Plan Operations / Commit Resources
3. Submit Market Transactions
4. Administer Dispatch Results
5. Operate Technology
6. Resolve IT Incident
7. Fulfill IT Service Request
8. Identify Possible Non-Compliance
9. Assess Market State

3.2.2 Systems

1. CAMS solution: NetIQ's Novell Operations Centre (NOC)
2. NOC integration to other solutions including:
 - a) Centralized Forecast System (CFS)
 - b) Outage Coordination and Scheduling System (OCSS)
 - c) Dispatch Service
 - d) Demand Forecast System (DFS)
 - e) Market Information System (MIS)
 - f) Demand Response Auction (DRA)
 - g) Transmission Right System/Auction (TRS/TRA)
 - h) Market Information Management (MIM)
 - i) Operating Security Limit (OSL)
 - j) SCADA
 - k) Day Ahead Optimization System (DAOS)
 - l) Dispatch Data Management System (DDMS)

3.2.3 Governing Documents

- CAMS procedures including internal manual(s)

3.3 Out of Scope

The project team confirmed the following processes do not use CAMS services:

- Plan Operations activities before day-ahead.
- Plan Operations day-ahead activities relating to Forecast Demand and Assess Outage
- Resolve IT Problem
- Manage Cyber Security Event

3.4 Overall Project Timeline

Following the decision to replace the NOC solution, the revised total duration of the project is expected to be 36 months.

The project Kick off meeting was held on April 16, 2019 and the planning phase was initially expected to be completed by Q4 2019. Due to changes in procurement approach, the planning phase experienced delays and the revised forecast for the completion of planning activities is the end of Q4 2020.

The Execution phase will commence after procurement and the project is targeting to complete by March 17, 2023 and has considered an additional 7 months of contingency. Overall project timeline is outlined below.



3.5 Cost

Category	Initial Budget (PC V1.0)			Revised Budget (PC V2.0)		
	Project Cost	Contingency	Total	Project Cost	Contingency	Total
Capital	\$4,000,000	\$1,000,000	\$5,000,000	\$4,433,773	\$826,000	\$5,259,927
Operating	\$400,000	\$100,000	\$500,000	\$686,131	\$83,333	\$769,464
Total	\$4,400,000	\$1,100,000	\$5,500,000	\$5,119,904	\$909,333	\$6,029,391

3.6 Key Resource Needs

Project Manager
 Business Analyst
 Solution Analyst -BDS
 Solution Analyst -CTS/Infrastructure
 Information Security SME
 Procurement specialist
 QA lead
 Test Lead
 Control Room SME
 ITOPS SME
 MFI SME
 Operational Assessments SME
 Disaster Recovery SME
 Compliance SME

For a full list of roles and responsibilities please see the Team Roles and Responsibility document posted on the Project Management Office (PMO) page: [REDACTED]

Resource Demand Plan for CAMS project : [REDACTED]

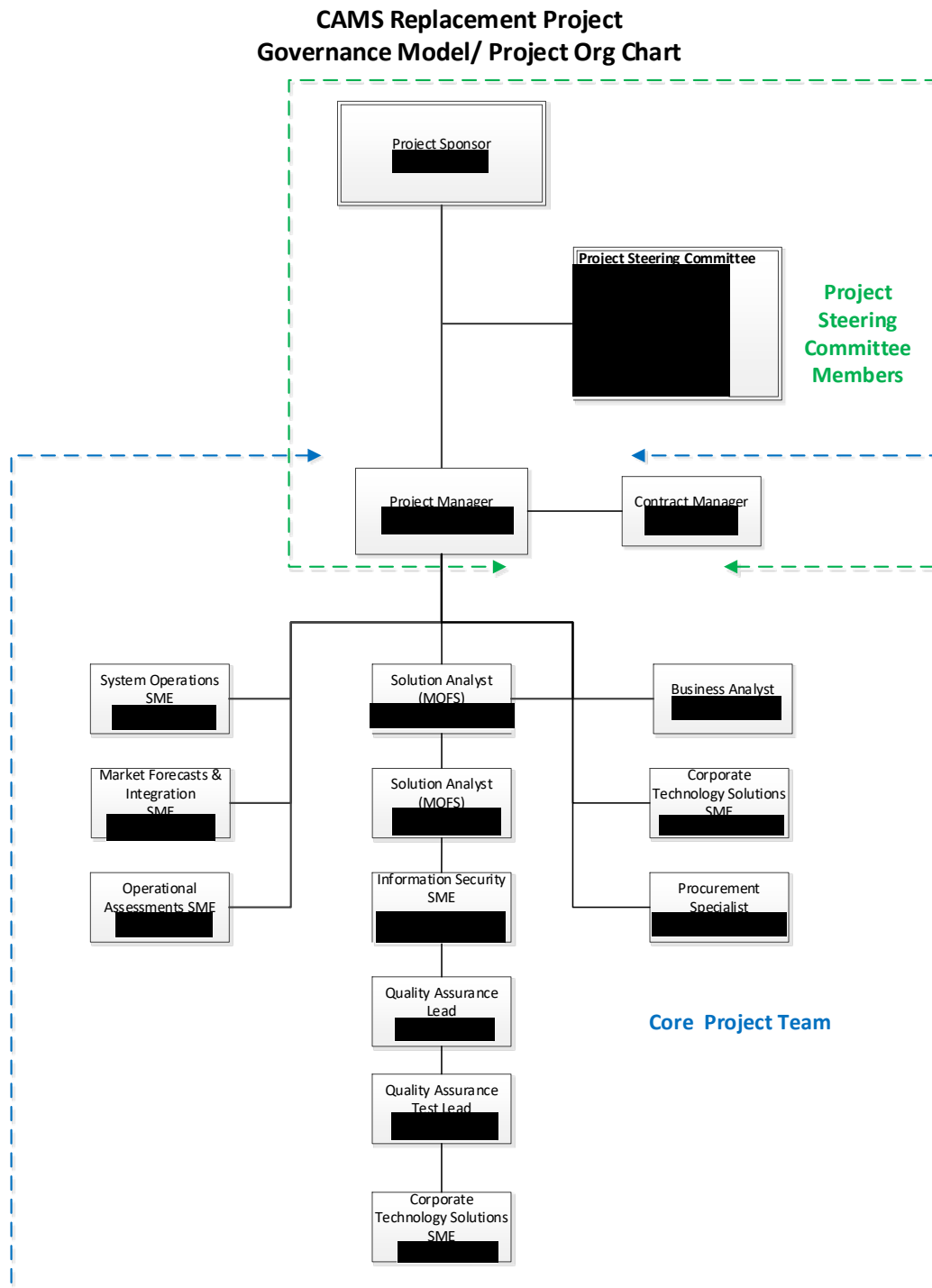
4 Key Stakeholders (Internal and External)

Table 1 Key Stakeholder list

Stakeholder	Stakeholder Role	How They Are Affected or How They Are Participating
System Operations (PA&O / Market Operations)	Direct Customer, Builder & Process Owner	<p>Affected:</p> <p>Improved alarm capability, availability and reliability by ensuring vendor support for NOC replacement solution with access to software fixes.</p> <p>More consistent situational awareness of the IESO Controlled grid for System Operations.</p> <p>Reduced alarm solution failures' negative impacts on other systems such as SCADA.</p> <p>Improved IESO agility in deploying new alarms.</p> <p>Participating:</p> <p>Provide requirements, test cases, and testers.</p>
Operational Assessments (PA&O / PSA / OE)	Indirect customer, Builder	<p>Provide requirements, test cases, and testers.</p> <p>Update manuals and procedures</p>
Market Forecasts and Integration (PA&O / Market Operations)	Direct Customer, Builder & Process Owner	<p>Same as for System Operations</p> <p>MRP/DAM may introduce increased leveraging of CAMS alarms for milestones and awareness</p>

Stakeholder	Stakeholder Role	How They Are Affected or How They Are Participating
ITS-BSSD	Solution Owner	<p>Affected:</p> <p>Enhanced customer satisfaction</p> <p>Improved alarm solution availability and reliability.</p> <p>Reduced IESO effort in supporting replacement alarm solution</p> <p>Participating: Provide or delegate owner approval</p>
ITS – BSSD /MOFS	Direct customer & Builder	<p>Affected: Reduced IESO effort in supporting replacement alarm solution</p> <p>Participating:</p> <p>Provide technical requirements, test cases, and testers.</p> <p>Update solution manuals and procedures</p>
IT-TS	Direct customer & Builder	<p>Affected: N/A</p> <p>Participating:</p> <p>Deliver any technical component changes per requirements</p> <p>Update technical manuals and procedures</p>
ITS - Operations	Direct customer & Builder	<p>Affected: Reduced IESO effort in operating replacement alarm solution</p> <p>Participating:</p> <p>Provide IT Operation requirements, test cases, and testers.</p> <p>Update manuals and procedures</p>

5 Project Governance Structure



6 Delivery Approach

This project will be delivered as per the new Portfolio Project Management Life Cycle (PPMLC) process. Project will be delivered in a single phase.

The procurement methodology has evolved through an RFP to single sourcing.

7 Assumptions, Constraints and Potential Risks

7.1 Project Assumptions

- The current CAMS solution is NetIQ's Novell Operations Centre (NOC) and does not include SCOM or other solutions.
- The replacement CAMS solution will have sufficient business rule capability to meet IESO alarm requirements.
- The project does not anticipate affecting market rules or market manuals.
- This project will maintain an interface to SCADA EMS using the Data Acquisition from Industrial Systems (DIAS) protocol.
- MRP program DAM requirements for alarms should fall within the identified CAMS solution requirements.

7.2 Project Constraints

Current vendor is no longer offering any NOC upgrade option.

- Potential Project Risks and Mitigation Actions

Table 2: Risk Summary

Risk ID	Risk Description	Inherent Risk Level	Mitigation Tasks	Mitigation Tasks Implemented (Yes/No)	Mitigated Risk Level
1	Microfocus have a low credit rating and as a result are unable to maintain the long term viability of the product	High	<p>IESO will negotiate with vendor for perpetual licenses.</p> <p>IESO will only pay vendor for services once work or milestones are complete, which forms 20% of fees payable in 2020 and 2021.</p> <p>MicroFocus financial position has been stable for the last 5 years.</p> <p>Intellectual Property is purchased by another company who can maintain the viability of the product but likely at increased future support costs.</p>	<p>Yes</p> <p>Yes</p>	High

Risk ID	Risk Description	Inherent Risk Level	Mitigation Tasks	Mitigation Tasks Implemented (Yes/No)	Mitigated Risk Level
2	Vendor does not demonstrate ability to integrate with exiting SCADA systems.	Critical	<p>Provide vendor with SCADA interface source code and relevant documentation for customization.</p> <p>Engage with vendor for demonstration of integration with SCADA prior to signing the contract.</p> <p>Engage with the vendor to ensure they contractually commit to delivering Mandatory Requirement # 8</p>	<p>Yes</p> <p>Yes</p> <p>Yes</p>	High
3	The replacement CAMS solution may not have sufficient business rule capability to meet IESO alarm requirements	High	<p>During the planning phase, a decision was made to repatriate securing a separate Business Rules Management Solution from the project back to the System Security Solution (SSS) program.</p> <p>Market research indicates that alarm logic should be sufficient to meet IESO Alarm requirements.</p>	<p>Yes</p> <p>Yes</p>	Low

8 Change Controls

Changes in the project that will impact/exceed tolerance levels for objectives, time and cost will be managed through the formal Project Change Management Process resulting in the Project Exception Report. The Project Exception Report (if approved) will result in the re-baselining of the project. Refer to the Project Exception Report for reference and additional details.

Appendix A: NPV Analysis and Cash Flow

Net Present Value (NPV) Calculator:

Project information and Key Financial Rates:

Project Name:	Centralized Alarm Management Replacement Project		
Recommended Option:	1		
Useful Life:	5	Years	
IESO Labour Rate	\$110	per hour	
Cost of Capital - Year 0 (Current Year)	1.97	%	
Cost of Capital - Year 1	2.69	%	
Cost of Capital - Year 2 to Year 10	3.63	%	

Enter the Annual Total Cash Flows below:

EXPENDITURES (cash outflow):

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Estimated Project Cost: (Analysis, design, build, implement)	14,368	260,000	3,914,934	930,602	0	0					
Ongoing Maintenance \$ Projected (after project is implemented)			623,650	293,470	321,920	331,726	346,390	348,198	365,604	383,887	403,082
(after project is implemented) (Calculation based on 1496 working hours/FTE)											
Labour: \$	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Other post implementation costs - itemize below											
Total Expenditures	\$14,368	\$260,000	\$4,538,584	\$1,224,072	\$321,920	\$331,726	\$346,390	\$348,198	\$365,604	\$383,887	\$403,082
Present Value of Expenditure:	\$14,368	\$253,189	\$4,226,194	\$1,099,893	\$279,130	\$277,557	\$279,674	\$271,286	\$274,870	\$278,506	\$282,188

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	Year 8	Year 9	Year 10
(after project is implemented) (Calculation based on 1496 working hours/FTE)											
Labour: \$	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Maintenance \$ Avoided (after project is implemented)											
Monetized Internal Efficiency Gains (after project is implemented)											
Monetized External Efficiency Gains (after project is implemented)											
Other - itemize below											
Total Savings	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Present Value of Saving:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Net Present Value Analysis Results:

Present Value of Expenditures:	\$7,536,854
Present Value of Savings:	\$0
Net Present Value of Project Alternative	-\$7,536,854

Project Cost Worksheet		
	Item Description	Total Item Cost (\$) <i>(not including taxes)</i>
A - Project Capital Costs:		
1	IESO Labour	1000000
2	IESO - Overtime	0
3	NON IESO Labour	0
4	Employee Expenses	0
5	Consultants	0
6	Computer Services/Software	3183773
7	Computer Equipment	250000
8	Material & Supplies	0
9	Telecommunications	0
10	Contract Service	0
11	Interest	0
12	Other	0
Sub Total (Project Capital Cost):		4433773
13	IESO Project Management charges @ typically 3 - 5% of "Sub Total Project Capital Cost" " from above OR insert lump sum value. (includes PMO support and project management related charges)	0
Sub Total (Project Capital Cost + Project Management):		4433773
14+15	Contingency	826000
Total Project Capital + Contingency (CDN \$): (AA)		5259773
B - Project OM&A Costs:		
16	Labour	436131
17	Staff Expenses	0
18	Training and Assc Travel	0
19	Consultants	0
20	Other	250000
Sub Total (Project OM&A Cost):		686131
21	IESO Project Management charges @ 3 - 5% of "Sub Total Project OM&A Cost " from above.	0
Sub Total (Project OM&A Cost + Project Management):		686131
22+23	Contingency	83333
Total Project OM&A+ Contingency (CDN \$): (BB)		769464
Total Project Cost including Contingency (CDN (AA + BB)		6029237

Appendix B: Alternative analysis

Identified Alternatives Summary

Alternative 1 – Do Nothing (Not Viable)

The Central Alarm Management System (CAMS) solution provides System Operations with an integrated view of alarms from many real time systems such as SCADA, MIS, Information Publishing System & DDMS. The IESO uses NetIQ's Novell Operations Centre software as the key component of its CAMS.

Recently, there have been multiple incidents where NetIQ's Novell Operations Centre (NOC) failures have impacted CAMS availability and reduced System Operations' situational awareness of the IESO Controlled grid.

It is not viable to accept this ongoing risk to the IESO's core strategy of ensuring system reliability. A CAMS refresh will help mitigate the key corporate risk: "A significant cybersecurity event occurs that disrupts the operation of the IESO – including reliable grid operations and efficient market operations – for extended periods of time".

Alternative 2 – CAMS refresh - (Not Viable)

A CAMS refresh project was included as part of the approved 2019 IESO Project Portfolio, where it was initially estimated to be complete within 12-18 months with an overall project cost of \$500K.

During project initiation, the IESO determined that the CAMS vendor does not have a future roadmap to support the NOC application. The project scope was changed from a refresh to a full replacement of CAMS.

Alternative 3 – CAMS replacement (Recommended)

As outlined in two previous alternatives, based on current CAMS vendor directions and IESO business priorities, the project will replace the current Centralized Alarm Management System.

Appraisal of Alternatives

Ref #	Alternative	NPV	Achievement of Business Objectives	Risk	Consideration
1	Do Nothing	n/a	This alternative does not achieve any of the stated business objectives	High – Potential failures of current system and reduced System Operations situational awareness Vulnerable to Cyber-attacks.	Not Viable
2	CAMS Refresh	n/a	This option is not feasible as outlined above and so does not achieve any of the stated business objectives	High – Option not feasible. See risk from Option 1	Not Viable

<i>Ref #</i>	<i>Alternative</i>	<i>NPV</i>	<i>Achievement of Business Objectives</i>	<i>Risk</i>	<i>Consideration</i>
3	CAMS Replacement		This option addresses all of the stated business objectives	<p>Low –IESO resources are committed to the project schedule. Survey of the vendor space confirms that solutions are available that will meet critical IESO requirements for a centralized alarm management capability</p> <p>High - The vendor, Microfocus ceases to operate as going concern or becomes bankrupt. The speculative creditworthiness of the vendor jeopardizes their ability to execute the contract</p>	Recommended

Document Control

Note: The sequence of signatures required is as shown below.

Authors:

Prepared By	Role
	Project Manager
	Business Analyst

Project Management Adherence Review:

Reviewed By	Role
	PMO Project Support

Financial Review:

Reviewed By	Role
	VP Corporate Services & CFO, CS-Corporate Services
	Director, Enterprise Planning, Risk & Performance

Content Reviewers:

Reviewed By	Role
	Manager, Change Delivery and resource manager
	Manager, Business Analysis Services and resource manager
	Supervisor Quality Assurance and resource manager
	Manager Operational Assessment and resource manager
	Senior Manager & CIP Senior Manager and resource manager
	Director, Enterprise Change
	Senior Manager System Ops, PSC member , Business Lead, and Process Steward DSTO
	Senior Manager MF&I, PSC member , and Process Steward Plan Operations
	Senior Manager OE/OA, PSC member
	Manager IT Operations , and PSC member
	Manager CTS, and PSC member
	Manager MOFS, Contract Manager, PSC member, and Solution Steward

Approvals:

Approved By	Role
	Director Business Solutions, PSC member and Project Sponsor
	VP Information & Technology Services CIO, ITS-Information & Tech Services
	Interim President & CEO, OAR approver

* Indicates approvals in Citadel.

Distribution List

Name	Organization
Citadel	IESO
PMO	IESO
Finance	IESO

Document Change History

Issue	Reason for Issue	Date
2.0	Increased planning duration due to procurement changes , enhanced project schedule to include execution phase and remove Business rule management solution from project scope.	June,10, 2020

References

Document Title	Document ID
Central Alarm Management System (CAMS) Platform Refresh	
CAMS Project Charter V.1	
Project Roles and Responsibilities	
Integrated Project Plan	TBD

Related Documents

Document Title	Document ID
White Paper: IESO EMS Solution Replacement	

– End of Document –

SEC INTERROGATORY 18

Issue 1.5 Is the IESO's 2020 capital expenditure envelope of \$52 million for capital projects for Fiscal Year 2020 appropriate?

1.5-SEC-18

INTERROGATORY

[E-2-1, Attach 4] With respect to the Capacity Auction Capital project:

- a. Please provide a copy of the internal business case for the project. Please explain any variances between the costs/schedule included in the internal business case and that presented in the evidence.
- b. [p.5] Please provide a breakdown of the capital expenditures.
- c. Does IESO measure progress on the project by way of SPI/CPI measures? If so, please provide the most recent measures.
- d. Please explain the contracting method for the project.
- e. [p.8] Unlike the Replacement of Settlement System Capital Project, the evidence does not indicate that there are "monthly progress reporting" or "exception reporting for material deviation in costs, schedule and objectives". Please explain why not and if there is such reporting, please provide a copy of the most recent monthly progress reporting, and any exception reporting.

RESPONSE

- a. The IESO notes that it does not create internal business cases for its capital projects and has provided the relevant information found in a business case for all material capital projects in its evidence in response to the OEB's 2019 Decision. The IESO uses Project Charters to seek approval for individual projects within the portfolio. While the IESO does not view all the information within Project Charters as relevant to this proceeding, in an effort to be responsive a copy of the Project Charter for this project, originally named the Transitional Capacity Auction project, is provided as Attachment 1 to this response. This document is prepared for internal use in support of project approval, monitoring and control of the project, and contains additional confidential details than what has been provided into evidence as part of the Attachment 4 to Exhibit E-2-1.

The information provided into evidence contains updated cost, schedule and risk information to reflect current project status and forecasts and allows for enhanced OEB review of the IESO's capital projects. As noted in the evidence, decisions were made subsequent to the approval of the original Project Charter resulting in a reduced scope,

1 timeline and forecast expenditure. Originally the project was approved with total
2 expenditure of \$10 million to complete the initial scope of the Transitional Capacity
3 Auction Project, of which \$7.4 million is capital. The project budget included a
4 contingency of \$2.6 million. With the decision to reduce the scope to the Capacity
5 Auction Project to deliver only the new auction engine, processes and settlement tool
6 changes to support the December 2020 Capacity Auction and to conduct further capacity
7 auction enhancements under the New Capacity/Resource Acquisition Initiative the
8 forecast to complete the work is \$6.6 million, \$5.6 million of which is capital and the
9 work expected to complete in August 2021.

10 b. Breakdown of the capital expenditures (As of August 9, 2021):

11 **Table 1: Capacity Auction Capital project Capital Expenditures Breakdown**

	Actuals (YTD)	Forecast to Complete	Estimate at Complete
Total Internal Labor	\$3.2M	\$0.M	\$3.2M
Total Contract/ Computer Services	\$2.2M	\$0.0M	\$2.2M
Total Hardware and Building Services	\$0.0M	\$0.0M	\$0.0M
Total Miscellaneous	\$0.2M	\$0.0M	\$0.2M
Total CAPEX	\$5.6M	\$0.0M	\$5.6M

12 c. With the exception of MRP, the IESO does not measure progress on projects by way of
13 SPI/CPI measures. Project Health is measured across a number of Key Performance
14 Indicators including Budget, schedule, business objectives and project management
15 process adherence.

16 d. Competitive Standard Procurement under a Vendor of Record and Statements of Work
17 (SOW) under existing agreements.

18 e. Regular monitoring, tracking and reporting is done for each approved capital project. On
19 a monthly basis, a Project Portfolio Dashboard Report (PPDR) is produced and shared
20 with the internal stakeholders including Executive Leadership team for full transparency
21 and governance. A copy of the PPDR is included as Attachment 2 to Schedule 14 –
22 1.5 SEC 15. There have been no exception reports for this project.

Project Charter for: Transitional Capacity Auction (TCA)

Document ID:	PC-7	Author(s) and Project Manager:	
Issue:	1.0	Sponsor:	
Effective Date:	June 7, 2019	Project ID:	442

Purpose

The project charter formally authorizes the initiation of a project and gives the project manager authority to apply organizational resources to the project activities, and gains the commitment of resource managers and stakeholders. The Project Charter acts as the contract between the project manager and project sponsor. The Project Charter is flexible and scalable to address the size and nature of a particular project or program. The Project Charter can be used by the project manager to gain approval for the full project cost, timeline and resources or can be evolved (through subsequent versions) to seek approval for one or more phases of the project. During the planning phase the project team refines the project's goals and scope and determines the project cost and schedule through a number of activities including, analysis, design and procurement. The outcome of the planning phase will be documented in the Project Plan.

The Project Charter includes a description of the business needs, describes how the project will address them, and is an instrument for gaining stakeholder agreement about the vision and goals. The Project Charter:

- Establishes high-level goals or objectives for the project;
- Shows alignment of the project to enterprise strategy, goals and priorities;
- Identifies key stakeholders, both internal and external;
- Identifies the scope, schedule and cost for the overall project and the detailed scope, schedule and cost to complete the planning phase of the project;
- Identifies the overall project delivery approach;
- Identifies potential risks, quality assurance activities and controls, as well as assumptions and constraints;
- Establishes the Project Steering Committee; and
- Initiates project monitoring and controls.

1 Project Executive Summary

The Transitional Capacity Auction (TCA) project will meet an emerging need for additional committed capacity in Ontario beginning in the summer of 2020 and will be designed to satisfy this near-term reliability need until at least winter 2024/2025. The TCA enables an effective transition to the execution of the first Incremental Capacity Auction (ICA) – expected in Q4-2022 to meet capacity needs starting summer 2025. The TCA will also seek to improve certain reliability aspects of the rules TCA participants must follow as the IESO will be relying on these resources to balance supply and demand. TCA is required to enable additional resources as Demand Response (DR) participants alone will not be able to satisfy Ontario's future capacity need.

Like the ICA, the TCA will use a competitive and transparent platform to acquire capacity while providing the best value for Ontario consumers by evolving the Demand Response Auction (DRA). This will be done by enabling new resource types as well as including some key ICA design features. New participation is expected to come from existing generators who are coming off contract and available capacity-backed imports from other markets.

By evolving the DR Auction and taking advantage of the early design work of the ICA, TCA project costs will be minimized. In addition, the TCA project will create learning opportunities (design and implementation) for auction participants and IESO's ICA team. These lessons learned will increase the effectiveness of the development and execution of the ICA.

The TCA project is in alignment with IESO's priority as outlined in Peter Gregg's January 2019 speech¹ to the Ontario Energy Network, specifically:

"In December, we will run an auction to meet capacity needs for 2020. Our goal is to have that auction and subsequent auctions build on the current demand response auction including allowing more resource types to compete. This would provide generators whose contracts are expiring over the next few years an opportunity to compete in our electricity market and help meet emerging capacity needs."

The TCA project will be conducted in two phases in order to incrementally increase auction participation and incorporate new design features starting in the 2020 summer commitment period:

[REDACTED]

- TCA **Phase 1** will enable dispatchable, non-committed² generators in addition to current Demand Response (DR) participants for the December 2019 TCA, with capacity delivery for the summer 2020 and winter 2021 commitment periods.
- TCA **Phase 2** will enable additional resources, factoring project effort against capacity value, for subsequent TCAs starting Q2-2020. TCAs are likely to take place approximately semi-annually. This will include enhancement to the capacity qualification process and enabling imports and self-schedulers participants.

² Non-committed is defined as “Resources that are not –in whole or in part - rate-regulated, contracted to the IESO, contracted to the OEFC, or obligated as a resource backed capacity export to another jurisdiction during the entire duration of a given Commitment Period”, per [Transitional Capacity Auction Phase I Design Document](#) published externally.

The total estimated cost for both phases of the work, without contingency, is \$7.38M. This includes an incremental cost to the IESO of approximately \$1.6M in external vendor costs and approximately \$2.5M in IESO labour (five FTEs). All other costs are expected to be composed of re-allocated IESO labour. A detailed breakdown is shown in the table below

	Phase 1			Phase 2			Grand Total
	Cost	Contingency (20%)	Total	Cost	Contingency (40%)	Total	
Operating Expense	\$0.62M	\$0.12M	\$0.75M	\$1.34M	\$0.54M	\$1.88M	\$2.62M
Capital	\$1.05M	\$0.21	\$1.26M	\$4.37M	\$1.75M	\$6.12M	\$7.37M
Total	\$1.67M	\$0.33M	\$2.00M	\$5.71M	\$2.28M	\$8.00M	\$10.00M

The Project Charter is seeking approval for the range of project costs as listed below:

- **Capital:** \$5.42M to \$7.37M
- **Operating:** \$1.96M to \$2.63M
- **Total Project Cost:** \$7.38M to \$10.00M

The project is expected to complete by September 30, 2021. To address the level of uncertainty we are requesting an additional 9 months of time contingency which would extend the project to June 30 2022.

Project costs and schedule will be reviewed at the completion of the planning phase and the Project will seek appropriate Project Steering Committee and IESO Board approvals for any changes that exceed the upper ranges listed here.

The estimated percentage of TCA work that is directly transferrable to ICA work is approximately 30%. This estimate includes capital work related to enabling imports, auction engine, a portion of the work to create forms to support the auction and quality assurance work. As the TCA project progresses, it will assess various design feature alternatives in order to meet the objectives of this project. In carrying out this assessment the project will consider the

enduring value of the change/enhancement, the complexity of the design and implementation, and the benefit to the IESO, participants and market efficiency to achieve the optimal outcome.

The inaugural list of critical risks for the TCA project is as follows:

- Lack of stakeholder support due to expanded resource participation in the auction, more stringent market rules vs market manual requirements, and compressed timelines for engagement;
- Limited IESO human resources;
- If ICA go-live is delayed, lack of capability to support new build (i.e. out of scope for TCA) that might be required to meet our 2025+ capacity needs; and

More details and additional risks are noted in the subsequent section of this Project Charter.

2 Business Needs and Project Goals

There is an immediate need to develop and implement a mechanism to acquire capacity³ in order to mitigate an emerging capacity supply gap expected to begin in 2020 and increase significantly in 2023 when OPG's Pickering A station retires and the current contract for OPG's Lennox GS expires.

The IESO believes that a capacity auction is the most effective way to meet Ontario capacity needs for the next decade:

- For the next decade, Ontario needs capacity and not energy. That is, the type of resources required to meet Ontario capacity needs over the next decade are resources that will run infrequently during short periods of highest demand or when the system experiences short term challenges
- Ontario's capacity need varies through time. As a result, a capacity acquisition mechanism that avoids locking in and using the wrong resources is preferred. Over the past decade, long term contracts locked-in Ontario to limited flexibility and therefore large costs:
 - We observed that the Ontario system was overbuilt as demand decreased.

³ Capacity is the capability to generate electricity (or to reduce the consumption of electricity through demand response) when needed:

- Capacity is essential to be able to manage the changing demand on the system both from hour-to-hour and between seasons.
- A reliable system has adequate capacity committed to meet peak demands under various system conditions including extreme weather.

Acquiring capacity essentially covers the portion of costs to build and/or maintain resources while the energy market covers the costs of a resource to actually run and provide energy.

- For long stretches of time, baseload generation exceeded baseload demand leading to reliance on exports and other mitigation measures to balance supply and demand.
- Procurements did not acquire the optimal mix of generation, as they provided large amounts of energy but not enough flexibility.
- Contracted resources were protected from market rule changes and didn't always support system operability – leading to protracted contract amendment discussions (e.g. wind dispatch) or unnecessary costs (e.g. gas generators with high minimum outputs increased hydro spill).
- There is much uncertainty in near-term capacity requirements: potential changes to the Industrial Initiative (ICI), conservation, nuclear refurbishments etc will likely change capacity needs. Annual capacity auction allows us to adjust requirements year-to-year as information improves.

As a result, in the near term, we expect that a Capacity Auction will be effective at acquiring lower cost resources to meet Ontario capacity needs: re-contracting existing resources, imports, demand response, uprates of existing generators etc.

The goal of the TCA project is to competitively acquire sufficient additional capacity to meet Ontario's capacity needs identified by the IESO's Resource Planning⁴ team that occurs between summer 2020 and winter 2024/2025, and as such provide a transitional mechanism for participants to participate in the ICA once available.

Failure to implement the TCA project will result in:

- Insufficient capacity starting summer 2020 to winter 2024/25 – potentially causing a reliability issue; or
- The need for long-term contracts or short-term Reliability Must Run Contracts which are less competitive (i.e. less benefits to rate payers) and lack flexible compared to markets⁵ which will increase ratepayer costs. This will also increase the risk by affecting stakeholder confidence, reduce competition, and negatively impact the success of ICA and its ability of the IESO to attract participation in the execution of capacity auctions.

2.1 Benefits Expected

The benefits of this project include:

1. Addressing Ontario capacity requirements reliably and cost-effectively in the period before the ICA is available;

⁴ See Appendix B

⁵ See "A Benefits Case Assessment for the Market Renewal Project" by The Brattle Group,

2. Preparing the IESO and participants for the transition to a comprehensive, transparent, competitive capacity acquisition mechanism where the target capacity is based on a reliability need; enabling a transition for market participants and the IESO to the ICA allowing lessons learned for the incremental capacity auction implementation; and
3. Limiting the change of existing business and processes by leveraging the existing DR Auction framework of rules, manuals and tools.

The project is expected to deliver a conservatively calculated net benefit of approximately \$180M (2019, NPV 5%) compared to traditional contract procurement over 5 years of the TCA.

In developing the financial benefit for the TCA, the analysis used a number of sources of information:

1. Information from “A Benefits Case Assessment for the Market Renewal Project”⁶ as well as information from the 2019 MRP Business Case.
2. Internal projections on expected MWs to meet resource adequacy and resource assurance needs.
3. The benefit range was derived from comparing expected costs between the ‘low’ auction price and the ‘low’ contract price scenarios, and the between the ‘high auction price and the ‘high contract price scenarios. The average of the two resulting NPV values was used as the benefit minus the TCA cost of implementation.
4. An estimate of future capacity auction clearing prices, where the market clearing price reflects the number of MWs required:
 - In general terms, clearing prices in an auction will reflect the cost of acquiring sufficient resources to meet at least the target capacity
 - In developing representative pricing, the latest DR auction prices were used as a reasonable starting point and then prices were incremented using a ‘high’ and ‘low’ price scenario to develop a sensitivity for potential savings:
 - i. In the low price scenario, auction clearing prices were incremented by 10% and 7% in the first 2 years and then by 25% and 47% in the last two respectively.
 - ii. In the high price scenario, auction clearing prices rise by 10% to 25% year over year.
 - In both scenarios, forecasted prices increase more dramatically in 2023 and then again 2024 due to higher capacity needs. In 2023, imports, and other resources

⁶ Same,

are expected to compete with Lennox, while in 2024, a new build price was included.

5. In the “but for” contracting cases it is assumed that MWs are procured through targeted procurements, and again a ‘low’ price and ‘high’ price scenario were developed:
 - In the ‘low’ price scenario, additional DR is contracted at a 15% discount to those procured under the DR3 program. Lennox GS is re-contracted at a modest premium to existing prices to reflect remediation work necessary to keep the plant operating. Needs in 2024 are met at the cost of a single cycle gas turbine (low case).
 - The ‘high’ price scenario has RFP prices steady until 2021 followed by modest increases for 2022 and 2023 with a jump in pricing for 2024 due to the assumed new build of a combined cycle gas turbine (high case).
 - In both cases it is assumed that an RFP is issued in 2020 and the resource comes into service (or returns to service if it is off contract) in 2024.
6. In all scenarios, an annual 2.5% inflation adder was included.

In conducting the analysis, a conservative assessment has been taken. Specifically, a number of sources of potential benefits have been omitted including:

- No benefits from existing DR auction (i.e. target MW are reduced by ~750 MW) as it is assumed that the DR auction could continue to acquire similar quantities to what cleared in December 2018. As such, this calculation only considers incremental capacity above the 750 MW.
- No integration benefits from implementing the Single Schedule Market in 2022.
- Auction attracts modest uprates (3% of fleet, versus 7-10% considered achievable) to existing output of the current installed capacity in Ontario.
- Auction prices rise from current levels and more than double to attract a combustion turbine or existing gas asset to clear the TCA.
- Modest levels of imports consistent with Planning/Operations assumptions
- No reduction of benefits for the “but for” procurement case from locking-in resources that subsequently are not required
- The “but for” procurement case assumes the IESO can procure DR at lower rates than under DR3 (\$90,000 MW-yr versus \$104,000 MW-yr)

There is some additional sensitivity in developing the above calculation as the majority of the benefits accrue in the latter 2 years of the TCA when significant MWs are needed to meet system needs. Should the TCA be less effective, or an RFP more effective than expected then

the potential benefits would be reduced. However, the experience from other jurisdictions and from Ontario is that once an annual auction mechanism is in place it has consistently exceeded expectations in its ability to attract low cost capacity resources that were previously not in the market.

Detailed benefit calculations are show in Appendix C.

Upon completion of the TCA Project the following business objectives are expected to be achieved:

Business Objective ID	Component	Business Objective
1	Phase 1	Enable dispatchable, non-committed generators to participate in TCA and to deliver capacity to meet May 2020 to April 2021 capacity need.
2	Phase 2	<p>Improve the capacity qualification process, as well as, enable:</p> <ul style="list-style-type: none"> • system-backed imports, • resource-backed imports, • up rates and remaining uncontracted plant capacity, and • self-scheduling resources <p>to participate in TCAs and to deliver capacity to meet May 2021 to April 2025 capacity need.</p>

2.2 Measures for Business Objectives

TCA project business objectives will be measured as follow:

Business Objective Measure ID	Business Objective #	Procedure for Measures (identify how the performance will be measured)	Measured when and by whom?
1	1	Transitional Capacity Auction is successfully implemented and operated to acquire the required target capacity through 2019 TCA.	December 2019 – ongoing for each auction – Director, Power System Assessments
2	1	Dispatchable, non-committed generators are able to participate in December 2019 TCA.	December 2019 – ongoing for each auction – Director, Power System Assessments
3	1,2	All the processes, tools and rules are successfully implemented to enable successful auction participants to deliver the capacity obligation secured through TCA.	December 2019 – ongoing for each auction – Director, Power System Assessments
4	2	Transitional Capacity Auctions are successfully implemented and operated to acquire the required target capacity through 2020-2021 TCAs.	December 2020 – ongoing for each auction – Director, Power System Assessments
5	2	Participants are able to offer system-backed import capacity into the 2020 TCA	June 2020 [TBC]– ongoing for each auction – Director, Power System Assessments
6	2	Participants are able to offer resource-backed import capacity into the 2020 TCA	Dec 2020 [TBC]– ongoing for each auction – Director, Power System Assessments

3 Project Overview

The following sections will describe project scope, high level impact assessment, timeline, cost, and resource need.

3.1 Project Scope

The scope of TCA is outlined in the following table. Up-to-date scope listing is found on TCA SharePoint site: [REDACTED]

This project will only seek to enable resources that can currently participate in the IESO's energy market. If other initiatives of the IESO enable new entrants then the TCA may seek to incorporate these entrants into the auction as appropriate.

Phase 1 scope includes design and implementation changes to enable dispatchable, Noncommitted generators to participate in TCA, and provide an incremental improvement to the reliability aspects of TCA participants.

Phase 2 scope includes design and implementation changes to:

- Enable system-backed imports
- Enable resource-backed imports
- Enable other resources as appropriate
- Phase in appropriate ICA design elements, including enhancement to capacity qualification process

3.2 High Level Assessment of Impacted Business Processes, Systems and Governing Documents

3.2.1 Processes

Phase 1

Process	Impact
Qualify Capacity	Update the process to allow participants to specify the type of resource (generator vs. load) that will deliver the capacity that may be secured through the auction
Record Equipment	Update the process to create a task for Contract Management group to verify that the selected generator resources do not have any active contracts within the commitment period.

Phase 2 – TBD: To be updated in later version of Project Charter

Process	Impact

3.2.2 Systems

Phase 1

Solution	Impact
Online IESO	<ol style="list-style-type: none"> 1. Rename all occurrences of “Demand Response Auction” to “Transitional Capacity Auction” 2. Allow generation participants to submit authorization requests to become an auction participant 3. Allow Auction participants to specify the type of resource during qualification process that will deliver the capacity 4. Allow generator participants to associate generator resources to a capacity obligation, if required 5. Implement business rules to allow participants to associate only the previously selected resource types to be associated with a capacity obligation 6. Implement new tasks for Contract Management to ensure that the selected generator resources do not have any active contracts within the commitment period.
Post Auction Reports	Add additional information related to generator resources in the post auction report
Commercial Reconciliation System (CRS)	Enable generation, modify availability charge and update capacity charge

Phase 2 - TBD: To be updated in later version of Project Charter

Solution	Impact
Demand Response Auction Tool (Matlab)	Add constraints for zonal min as a downward sloping curve.

3.2.3 Governing Documents

Phase 1

Market Rules Chapter, Section	Impact
Chapter 7, Section 18 Demand Response Auction	Rename section to Transitional Capacity Auction Change references from Demand Response Auction to Transitional Capacity Auction
Chapter 7, Section 18.1 Purpose of Demand Response Auctions	Change references from Demand Response Auction to Transitional Capacity Auction
Chapter 11 Definitions	Change references from Demand Response Auction to Transitional Capacity Auction Change definition of commitment period Add definition for obligation period
Chapter 2, Section 2.1.1..10	Update the list of classes of market participants to by changing “demand response auction participants” to “capacity auction market participants”
Chapter 7, Section 18 (throughout)	Change references from Demand Response Auction to Transitional Capacity Auction Change references from demand response auction participant to capacity auction participant
Chapter 7, Section 18.2.2 Participation in Demand Response Auctions	Language added to differentiate between requirements for demand response providers and generators
Chapter 7, Section 18.5 Demand Response Auction Parameters	Change references from Demand Response Auction to Transitional Capacity Auction
Chapter 7, Section 18.6 Demand Response Auction Parameters	Change references from Demand Response Auction to Transitional Capacity Auction
Chapter 7, Section 18.2.3	Change references from Demand Response Auction to Transitional Capacity Auction
Chapter 2, section 5B	Change references from Demand Response Auction to Transitional Capacity Auction

Market Rules Chapter, Section	Impact
Chapter 2, Section 5.1	Change references from Demand Response Auction to Transitional Capacity Auction
Chapter 2 Appendices	Change references from Demand Response Auction to Transitional Capacity Auction
Chapter 7, S. 19 Demand Response Market Participants with Demand Response Capacity Obligations	Change references from Demand Response Auction to Transitional Capacity Auction in 19.1.2, add that dispatchable, non-committed resources can register
Chapter 7, S. 19.6 (New)	Create a new section that describes the Eligibility Requirements for Generators with a Capacity Obligation
Chapter 7, Section 18.9 Demand Response Capacity Obligation Transfers	Change references from Demand Response Auction to Transitional Capacity Auction
Chapter 2, Section 3	No changes anticipated
Chapter 3, Section 6.3	Events of default

Phase 2 - TBD: To be updated in later version of Project Charter

Market Rules Chapter, Section	Impact

Phase 1

Market Manuals	Title	Impact
MM 1.1, Section 2	Participant Authorization, Maintenance & Exit	Replace use of "Demand Response" and update description (if required).
MM 1.2, Section 6	Facility Registration, Maintenance and De-registration	Update DR section to include any generation specific registration requirements and replace use of "Demand Response". For 2020 and beyond, registration changes might be required but operational experience from 2019 change will provide greater clarity on the overall need.
MM 12	Demand Response Auction	<p>1) Replace use of "DR/Demand Response"</p> <p>2) Updates to reflect changes in the Registration process and Settlements (Charges, non-performance factor update) for enabling generation</p> <p>3) Update demand curve elements description (Target Capacity Calculation, Zonal Min. Treatment)</p> <p>4) Review and update DR timelines (if required)</p> <p>5) Add criteria for capacity obligation transfer from the IM 12.1</p> <p>6) Update buy-out process timeline and eligibility, if applicable</p>

Market Manuals	Title	Impact
MM 7.3, Section 4.2.4	Outage Management	Include test activation requirements for generation resources.
MM 2 Part 2.1 Section 5.3	Dispute Resolution	Remove SIA requirement for DR participants. No SIA is required to participate in TCA (since physical resources participating in TCA should have already have gone through the connection assessment process).
MM 2 Part 2.1 Section 8.4.2	Dispute Resolution	Remove SIA requirement for DR participants. No SIA is required to participate in TCA (since physical resources participating in TCA should have already have gone through the connection assessment process).
MM 4.2 Section 2.4.1	Submission of Dispatch Data in the Real-Time Energy and Operating Reserve Markets	For 2019, update to include generation resources.
MM 7.4 Section 3, 3.1	IESO-Controlled Grid Operating Policies	Mentions demand response for availability forecast. Add/Update with "capacity/auctioned capacity".
MM5 Part 5.4	Prudential Support	Replace use of "DR/Demand Response"
MM 5.5	Physical Markets Settlement Statements	1) Replace use of "DR/Demand Response" 2) Add charges for generation resource
IM 12.1	Demand Response Auction	1) Replace use of "DR/Demand Response" 2) Update group names as per organization chart

Market Manuals	Title	Impact
		3) Update templates and descriptions as per updated process 4) Update timelines for Settlements and IT related work

Phase 2 – TBD: To be updated in later version of Project Charter

Market Manuals	Title	Impact

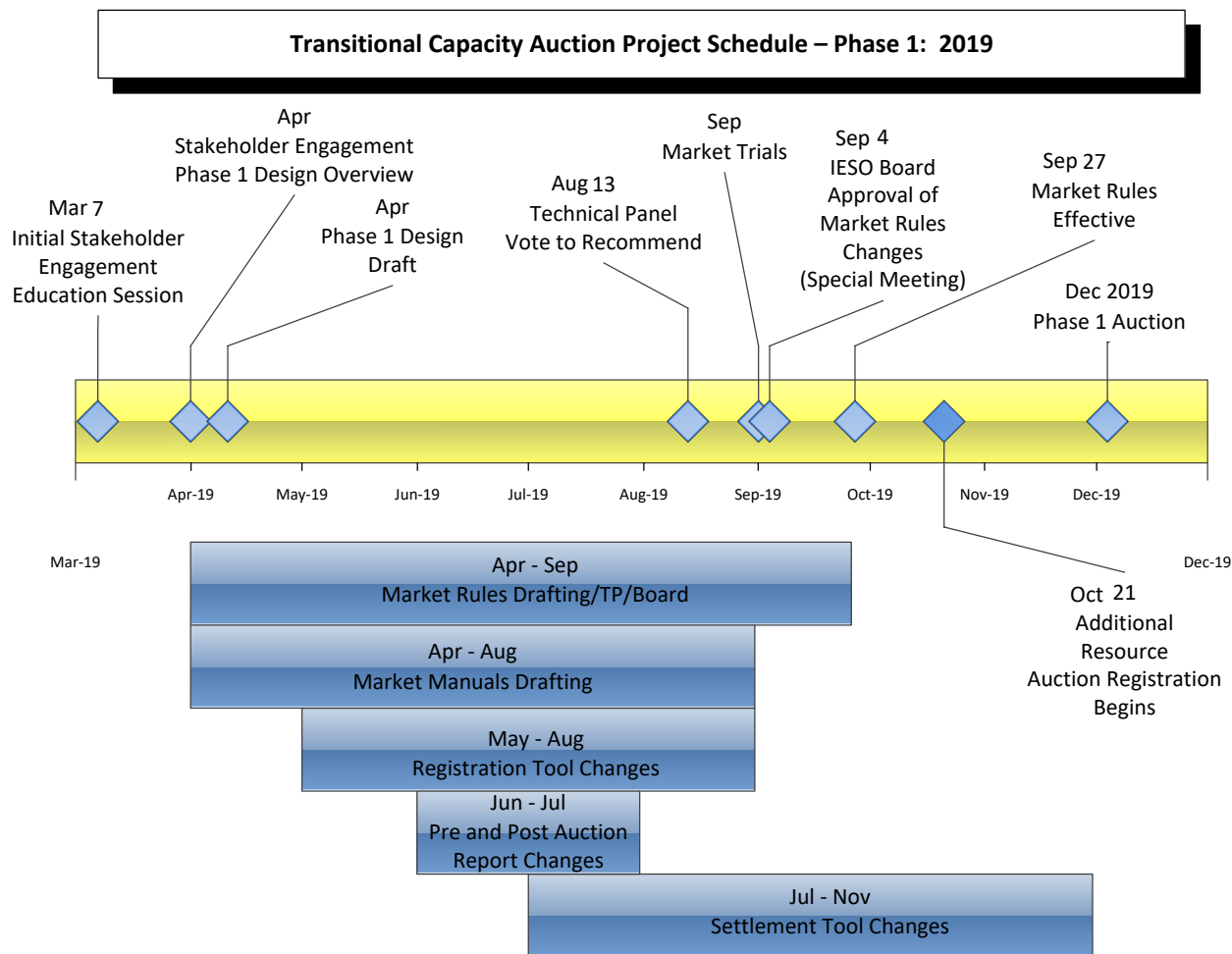
3.3 Out of Scope

The following items are out of scope for the entire TCA project:

- Market rule, market manual, and system changes to enabling participation of new entrants in the IESO-administered markets
- Pre-auction capacity verification for individual resources as part of capacity qualification.
- Work related to minimum hour of dispatch.
- Seasonal co-optimization within the auction engine.
- Rebalancing auctions in between TCA auctions.
- Enabling participation in the auction by new-build generation facilities.
- Delisting processes for existing generators.
- Enhancing performance obligations, assessment and non-performance implications.

3.4 Overall Project Timeline

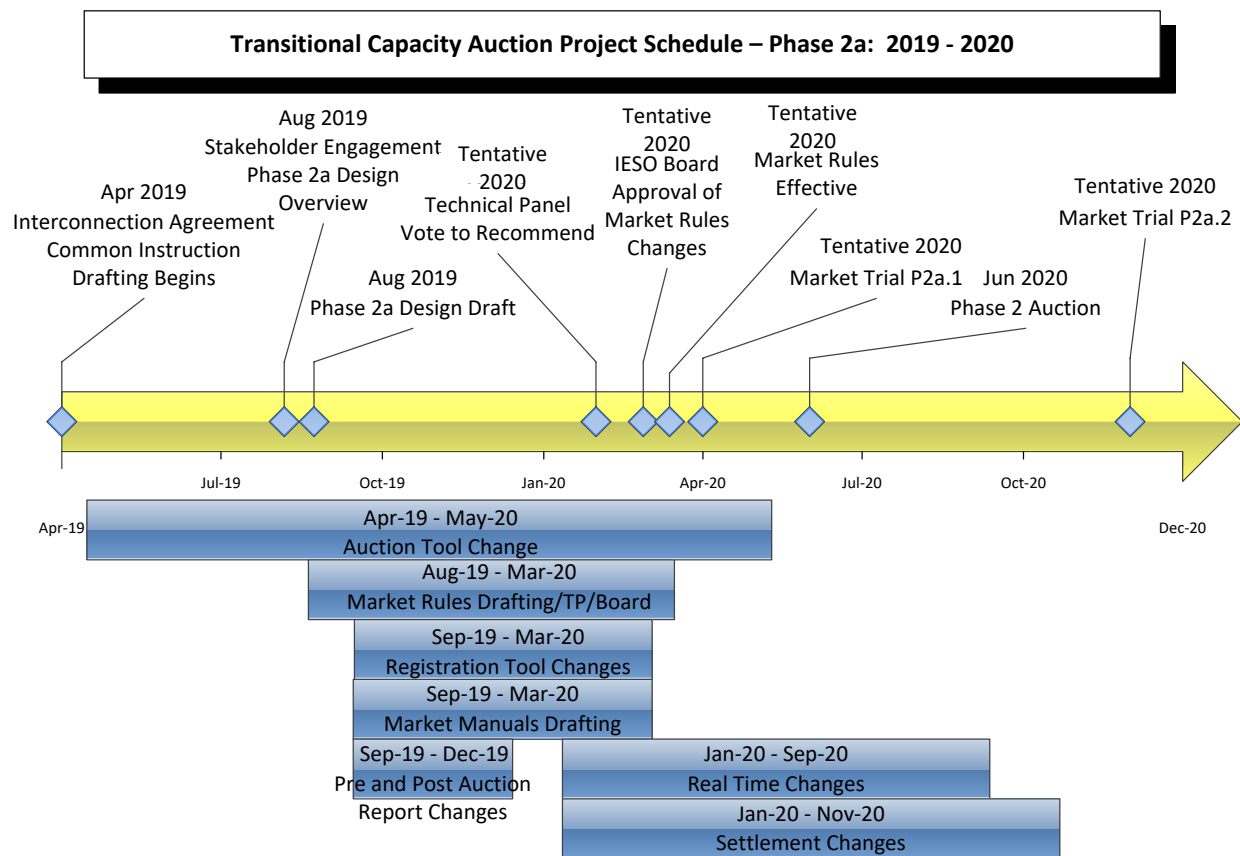
TCA Schedule Phase 1:



Phase 1 schedule: March 01 2019 to December 31 2019

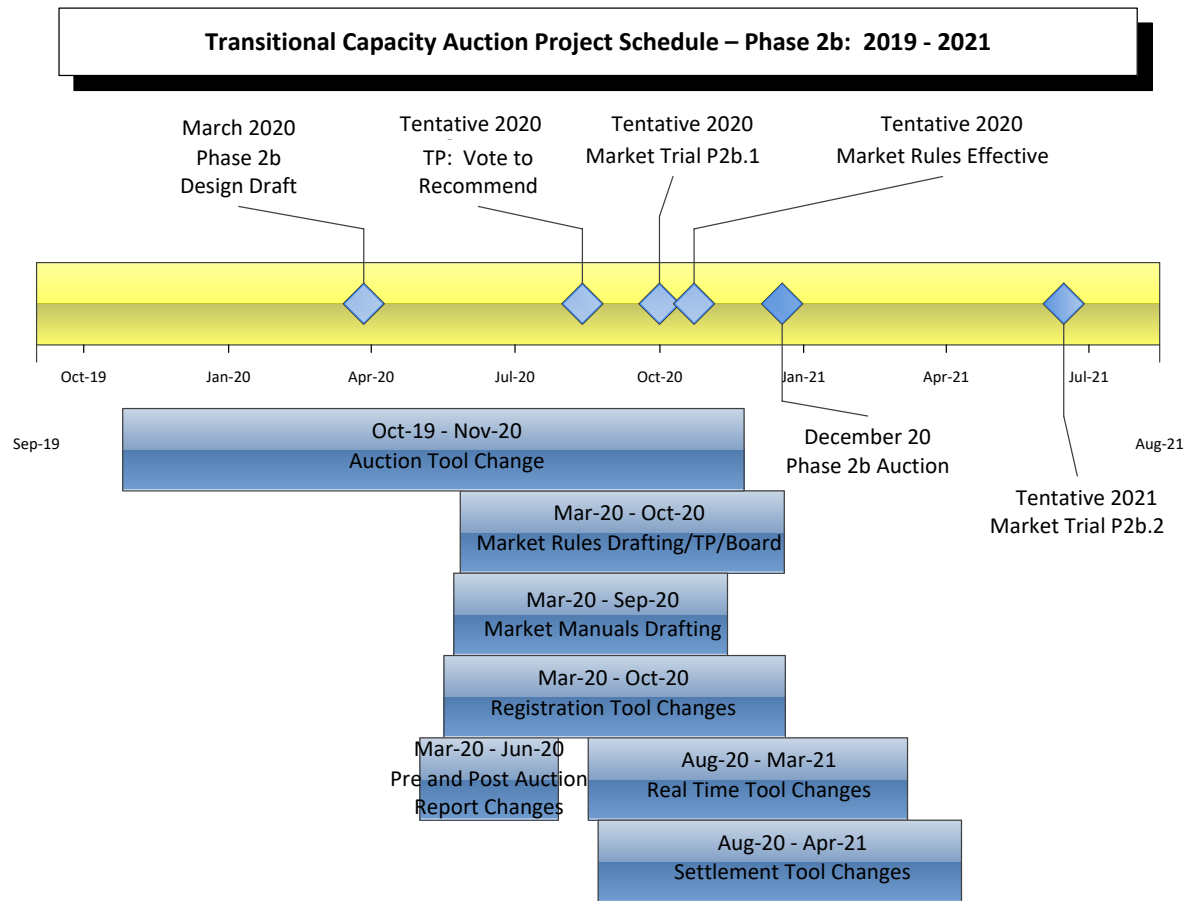
Phase 1 schedule contingency: Jan 1, 2020 to Apr 30, 2021 (when commitment period starts)

TCA Schedule Phase 2:



Phase 2a (Jun 2020 auction) schedule: April 01, 2019 to Dec 31, 2020

Phase 2a (Jun 2020 auction) schedule contingency: Jan 2021 to May 2021 (when commitment period starts)



Phase 2b (Dec 2020 auction) schedule: Q3 2019 to Q3 2021

Phase 2b (Dec 2020 auction) schedule contingency: Q4 2021 to Q2 2022 (when commitment period starts)

3.5 Cost

The estimated cost breakdown of the project is presented in table below:

	Phase 1	Phase 2	Phase 1 + Phase 2
Capital Cost [\$]	\$ 1,046,000	\$ 4,370,000	\$ 5,416,000
Capital Contingency [\$] Phase 1 = 20% Phase 2 = 40%	\$ 209,000	\$ 1,748,000	\$ 1,957,000
Capital Cost with Contingency [\$]	\$ 1,255,000	\$ 6,118,000	\$ 7,373,000
Operating Cost [\$]	\$ 621,000	\$ 1,341,000	\$ 1,962,000
Operating Contingency [\$] Phase 1 = 20% Phase 2 = 40%	\$ 124,000	\$ 536,000	\$ 660,000
Operating Cost with Contingency [\$]	\$ 745,000	\$ 1,877,000	\$ 2,622,000
Cost [\$] = CPX + OPX i.e No Contingency	\$ 1,667,000	\$ 5,711,000	\$ 7,378,000
Contingency [\$] (CPX + OPX)	\$ 333,000	\$ 2,284,000	\$ 2,617,000
Max Cost [\$] i.e. With Contingency	\$ 2,000,000	\$ 7,995,000	\$ 9,995,000

3.6 Key Resource Needs

The following identifies the key resources required to support the project in 2019. An updated 2019 resource plan along with an estimated 2020 resource plan will be provided as a part of the Project Plan.

List of resources required and names identified, if any:

- Accenture Contract Services (CRS)
- CD – Business Lead (Imports) [REDACTED]
- CIM - Solution Analyst (Online IESO)
- Connection Assessments - SME
- Contracts – SME [REDACTED]
- Customer Stakeholder & Community Engagement – SME [REDACTED]
- EC – Business Analyst [REDACTED]
- Finance

- IT – Appian Developer (Reports)
- IT – Appian Developer [REDACTED]
- Legal [REDACTED]
- MACD SME
- PAO:M&TI – SME [REDACTED]
- Market Rules – SME [REDACTED]
- Market Settlements – SME [REDACTED]
- ICA [REDACTED]
- MRP QA SME [REDACTED]
- Operations Integrations - SME
- PAO:MF&I SME
- PAO:PSL SME
- Planning [REDACTED]
- Project Manager [REDACTED]
- Procurement SME
- RMSS – Solution Analyst [REDACTED]
- Vendor:Brattle
- Operational Assessments – Manager [REDACTED]

3.7 Approval Detail for the Current Project Charter

3.7.1 Timeline

The funds requested in the current version of the Project Charter are to be used from now until Dec 2019.

Key milestones are outlined in Section 3.4.

3.7.2 Cost

Please see Section 3.5.

3.7.3 Resources

Please see resource details from Section 3.6.

4 Key Stakeholders (Internal and External)

Stakeholders include:

- D - Direct Customer Stakeholder Group(s): Direct customer stakeholder groups receive the benefit or harm of the change initiative.
- I - Indirect Customer Stakeholder Group(s): Indirect customer stakeholder groups are once removed from the direct impact of a change. They are noted when it is possible they will experience an indirect benefit or harm resulting from the change initiative. This impact should be considered during Analyze and Design.
- M - Manager Stakeholder(s): Listed by job title, manager stakeholders have the authority to authorize the addition, change or removal of processes, systems, or governing documents.
- B - Builder Stakeholder Group(s): Listed by group, builder stakeholders are those who provide the resources to do the work to implement the change

A stakeholder group can belong to both Customer and Builder groups.

Table 1. Key Stakeholder list

Stakeholder	Stakeholder Role	How They Are Affected or How They Are Participating
Power System Assessments	Direct Customer Stakeholder Group	<ol style="list-style-type: none"> 1. Qualify Capacity 2. Acquire Capacity <ol style="list-style-type: none"> a. Conduct Auction b. Monitor Capacity Readiness 3. Market facing documentation 4. Manage Enrolment Request 5. Authorize Market and Program Participation (Auction Participant) 6. Manage Enrolment Request to Authorize for the Physical Market (Auction Market Participant) 7. Register Facilities (both physical and virtual facilities)

Stakeholder	Stakeholder Role	How They Are Affected or How They Are Participating
		a. Physical Generator Facility; 8. Market facing documentation
Market Operations – Market Forecasts & Integration	Direct Customer Stakeholder Group	1. Determine in-market capacity available for planning horizon 2. Utilize available in-market capacity for day-ahead commitment 3. Outage/Unavailability of TCA resources 4. Market facing documentation
Market Operations – System Operations	Direct Customer Stakeholder Group	1. Utilize available in-market capacity for dispatch scheduling to manage reliability 2. Confirm or adjust available in-market capacity as part of ex-post activity 3. Market facing documentation
Market Settlements	Direct Customer Stakeholder Group	1. Settle payments, set-offs, clawbacks, cost recovery 2. Create new charge types to facilitate settlement of payments, set-offs and cost recovery as required 3. Market facing documentation
Meter Data Management	Direct Customer Stakeholder Group	1. Register Revenue Meter Installation for Generator facilities 2. Market facing documentation
Finance & Treasury	Direct Customer Stakeholder Group	1. Determine Auction Deposit 2. Collect, track, disburse deposit as required 3. Set Prudential Support for Capacity market participation

Stakeholder	Stakeholder Role	How They Are Affected or How They Are Participating
		4. Market facing documentation
Information Technology & Services	Direct Customer Stakeholder Group	<ol style="list-style-type: none"> 1. Publish pre auction and post auction reports as required 2. Modify applications as required
MACD	Direct Customer Stakeholder Group	<ol style="list-style-type: none"> 1. Monitor for patterns of non-compliance and anomalies for cleared capacity, in-market capacity, and settlement amounts 2. Enforce non-compliance
Customer Outreach	Direct Customer Stakeholder Group	<ol style="list-style-type: none"> 1. New market participants to train 2. Potentially increase in the volume of work as a result of new participants
Customer Response	Direct Customer Stakeholder Group	Training Capacity Market Participants (energy market participation, Online IESO tool, accessing reports site, produce training materials etc.)
IT Service Desk	Direct Customer Stakeholder Group	Support new CMPs who are using external facing IESO systems
Auction participants	Direct Customer Stakeholder Group	Participate in pre-auction, auction and post-auction activities and deliver capacity obligation in the real time energy market during the commitment period
Markets	Direct Customer Stakeholder Group	Establish and lead design work
IESO Market Participants	Direct Customer Stakeholder Group	Changes may create direct impacts

Stakeholder	Stakeholder Role	How They Are Affected or How They Are Participating
Local Distribution Companies	Indirect Customer Stakeholder Group	<ol style="list-style-type: none"> 1. Cleared capacity participants may request measurement data from LDCs 2. Aggregators may request acknowledgement from LDCs regarding location of demand response contributors
Director Planning and Assessments	Manager Stakeholder	<ol style="list-style-type: none"> 1. Manage Enrolment Request 2. Authorize Market and Program Participation 3. Qualify Capacity (TBC) 4. Acquire Capacity (TBC) 5. Conduct Capacity Auction 6. Register Facility 7. Establish import limits, when appropriate
Director Market Operations	Manager Stakeholder	<ol style="list-style-type: none"> 1. Plan Operations 2. Direct Short-Term Operations
Director Settlements	Manager Stakeholder	<ol style="list-style-type: none"> 1. Settle Markets and Programs
Director MACD	Manager Stakeholder	<ol style="list-style-type: none"> 1. Detect Non-Compliance 2. Enforce Non-Compliance
Director, Finance, Corporate Controller & Treasury,	Manager Stakeholder	<ol style="list-style-type: none"> 1. Set Prudential Support 2. Set and Collect Auction Deposit
Director Business Solutions	Manager Stakeholder	<ol style="list-style-type: none"> 1. Operate Technology 2. Publish Reports
Director, Corporate & Regulatory Affairs	Manager Stakeholder	<ol style="list-style-type: none"> 1. Deliver Marketplace Training 2. Corporate communications and customer service

Stakeholder	Stakeholder Role	How They Are Affected or How They Are Participating
TCA Design Manager	Builder Stakeholder	Project Design Lead
Enterprise Change	Builder Stakeholder	Project Manager
Customer Information Management	Builder Stakeholder	Solution Analyst
Technology Support	Builder Stakeholder	Technical Analyst, Technical Specialists, Database administrators
Business Solutions	Builder Stakeholder	Solution Analysts, Solution Specialists, Developers
Business Analysis Services	Builder Stakeholder	Business Analyst
Market Registration	Builder Stakeholder	Process subject matter experts
Power System Assessments	Builder Stakeholder	Process subject matter experts
Market Operations	Builder Stakeholder	Process subject matter experts
Market Settlements	Builder Stakeholder	Process subject matter experts
Meter Data Management	Builder Stakeholder	Process subject matter experts
Treasury and Finance	Builder Stakeholder	Process subject matter experts
Stakeholder and Public Affairs	Builder Stakeholder	Process subject matter experts

5 Project Governance Structure

Project Steering Committee approves TCA project decision

Member Name	Title	Representing
██████████	VP Planning, Acquisition and Operations/COO	Planning, Acquisition and Operations, Market Renewal
██████████	VP Information & Technology Services/CIO	Information & Technology Services
██████████	VP Legal Resources and Corporate Governance	Legal
██████████	VP Corporate Services/CFO	Finance
██████████	VP Policy, Engagement and Innovation	External Stakeholders
██████████	Director MACD	Market Assessment & Compliance

6 Delivery Approach

Due to a need for a commitment of resources as early as 2020, the DR Auction will evolve in a phased approach:

Phase 1: Add dispatchable, non-committed generators to current eligible DR participants for the December 2019 TCA for a 2020/2021 commitment period. Agile development method will be used for registration tool (i.e. OnlineIESO) changes while all other tool development will be done using waterfall method.

Phase 2: Add additional resources and design features factoring project effort against capacity value. There will likely be more than one set of design changes spread out over multiple auctions within Phase 2. Agile development method will be used for registration tool (i.e. OnlineIESO) changes while all other tool development will be done using waterfall method.

External Communication:

- Phase 1 and 2 design documents will be used for documenting official design decisions made. Market Rules and Market Manuals will be the enduring official documents detailing the changes.

- Interim design discussions could be discussed at TCA SE, SAC and DRWG
- Written stakeholder feedback from design documents review and stakeholder meetings will be reviewed, and IESO response to stakeholder feedback will be posted.

Internal Communication:

Decisions made are communicated internally:

- Project sponsor informs ELT biweekly as needed
- Business lead informs managers and directors regularly
- Project team meets with ICA project team biweekly. Items discussed and decisions made are documented
- Project sponsor, business lead and project manager meet monthly with PSC. Meeting minutes are documented.

7 Assumptions, Constraints and Potential Risks

7.1 Project Assumptions

1. For Phase 1, new eligible participants are limited to non-committed and non-regulated dispatchable generators
2. Adequate IESO internal resources and support.
3. No “showstoppers” from external/internal stakeholders.
4. Design maturity can be reached to start writing business requirements in March/April 2019 and supporting IT tool development beginning no later than mid-May

7.2 Project Constraints

1. First auction for Phase 1 is December 2019

7.3 Potential Project Risks and Mitigation Actions

Table 2: Risk Summary

Risk ID	Risk Description	Initial Risk Level	Mitigation Tasks	Mitigation Tasks Implemented (Yes/No)	Mitigated Risk Level
R001c	Compressed timelines for stakeholder engagement affect the quality of the overall design considerations needed to develop a robust TCA.	Critical	Additional time and cost have been added to the project. Some inefficiency is acceptable given reliability needs and the evolving nature of the TCA project. Issues discovered may be corrected in a future auction.	Yes	High
R001d	Stakeholder lacks understanding on the capacity need requirements for 2020 and the urgency to implement auction mechanism by end of 2019 Q4 leads to slow stakeholder buy in.	Critical	Executive outreach is used to build relationships and understand areas of concern and support. Stakeholder engagement to provide SE plan to ensure participation from affected participants and consideration of their input.	Yes	High

Risk ID	Risk Description	Initial Risk Level	Mitigation Tasks	Mitigation Tasks Implemented (Yes/No)	Mitigated Risk Level
R005	IESO human resources are limited.	Critical	Reflect this project priority properly and communicate human resourcing need as early as possible. Mitigated by formal project ranking and it is approved in the 2019 Project Portfolio.	Yes	Medium
R015	Gaps in design due to aggressive timeline	High	Accepted for Phase 1. For Phase 2, if gaps are identified subsequently prioritize design requirements and roll them into the following TCAs as appropriate.	Yes	High
R016	Gaps in testing due to aggressive timeline	High	Work with IT QA to come up with Project QA plan. Plan and prioritize rework for later project phases.	Yes	Medium
R019	IT tool changes are delayed.	High	Limit and prioritize scope as required.	Yes	Medium

Risk ID	Risk Description	Initial Risk Level	Mitigation Tasks	Mitigation Tasks Implemented (Yes/No)	Mitigated Risk Level
R023	If ICA go-live is delayed, TCA does not support new build and might cause reliability issue.	Critical	Continue to work with ICA team to look for implementation of more advanced ICA design features in TCA if ICA project schedule is at significant risk.	Yes	High
R025	Stakeholder engagement (SE) for Design will not be completed before tool development begins. If there are showstoppers from SE there will be rework and project delay.	High	Accepted due to compressed timeline. If showstoppers are encountered go-live date could be delayed.	No (Accepted Risk)	High
R028	Phased in approach means that the first auctions may not have the needed transparency, certainty and competition that the ICA would have, reducing both short-term and long-term efficiency	High	IESO to make strong commitment that capacity auctions are main procurement tool and continuous evolution of auctions is a must	Yes	Medium
R029	Neighbouring jurisdictions may not provide sufficient or timely support for capacity imports,	High	Develop strategy of working with ISO/RTOs, as well as stakeholders in	Yes	Medium

Risk ID	Risk Description	Initial Risk Level	Mitigation Tasks	Mitigation Tasks Implemented (Yes/No)	Mitigated Risk Level
	limiting the amount of import capacity available and reducing TCA effectiveness.		neighbouring jurisdictions		
R030	There might not be enough capacity to meet the increased target capacity requirement.	High	Develop transparent plan for enabling resources to understand potential and timing considerations	Yes	Medium
R031	<p>Certain processes/features will likely have to be manual/more opaque. This might cause:</p> <ul style="list-style-type: none"> - Potential stakeholder pushback with compliance if it is not specified in market rules and manuals - Processes/features might be open to policy influence if they are not codified in market rules 	High	Will continue re-evaluate process/features and make required changes as Phase 2 evolves.	Yes	Medium
R032	Government policy development/changes may result in significant political risk to the viability of the	High	Proactive government strategy needed; narrative and quantitative	Yes	Medium

Risk ID	Risk Description	Initial Risk Level	Mitigation Tasks	Mitigation Tasks Implemented (Yes/No)	Mitigated Risk Level
	auction and reduce risk appetite of investors in Ontario		analyses needed to support that IESO's approach will deliver lowest cost outcome		
R033	Timing between auction and MRP Energy coming into service may result in risks to participants. This is related to the revenue uncertainty due to the changeover from the current market to the renewed energy market.	High	Cannot be mitigated and accept risk. TCA to continue working with MRP team.	No	High
R034	Phased in approach will mean changing framework and rules, reducing certainty. This adds risks to Market Participants as they are uncertain when or how they can optimally participate in TCA and thus the auction may not provide the appropriate business environment to enable and expand auction participation.	High	ICA HLD will provide the vision and direction for comprehensive auction. Ensure lessons learned are outlined and discussed transparently and built into the processes; need clear work plan for the next few years to give clarity and confidence through the transition	Yes	Medium

Risk ID	Risk Description	Initial Risk Level	Mitigation Tasks	Mitigation Tasks Implemented (Yes/No)	Mitigated Risk Level
R035	Transitional approach may not yield sufficient revenues for existing assets, resulting in shutdowns, and reducing future liquidity	High	Accept risk. Will continue to work with demand curve parameters.	No (Accept Risk).	High
R037	TCA is unable to meet objectives, eroding ICA support.	High	See all documented risks and mitigation tasks.	Yes	Medium

8 Change Controls

Changes in the project that will impact/exceed tolerance levels for objectives, time and cost will be managed through the formal Project Change Management Process resulting in a Project Exception Report. The Project Exception Report, if approved, will result in the re-baselining of the project. Refer to the Project Exception Report for reference and additional details.

Appendix A: NPV Analysis and Cash Flow

Net Present Value (NPV) Calculator:

A. Project information and Key Financial Rates:

Project Name:	Transitional Capacity Auction	
Recommended Option:	<enter recommended option>	
Useful Life:	5	Years
IESO Labour Rate	\$110	per hour
Cost of Capital - Year 0 (Current Year)	1.97	%
Cost of Capital - Year 1	2.69	%
Cost of Capital - Year 2 to Year 10	3.63	%

Enter the Annual Total Cash Flows below:

B. EXPENDITURES (cash outflow):

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Estimated Project Cost: (Analysis, design, build, implement)	\$ 2,910,000.00	\$ 3,599,000.00	\$ 859,000.00			

Rationale: Section 1, capital only per PRO-69

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Ongoing Maintenance \$ Projected (after project is implemented)						

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
(after project is implemented) (Calculation based on 1496 working hours/FTE)	0	2	2	2	2	2
Labour: \$	\$0	\$329,120	\$329,120	\$329,120	\$329,120	\$329,120

Rationale: Incremental recurring cost of 2FTEs.

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Other post implementation costs - itemize below						

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Total Expenditures	\$2,910,000	\$3,928,120	\$1,188,120	\$329,120	\$329,120	\$329,120
Present Value of Expenditure:	\$2,910,000	\$3,825,222	\$1,106,342	\$295,732	\$285,373	\$275,376

C. SAVINGS (cash inflow):

Savings must be quantifiable, measurable and verifiable.

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
(after project is implemented) (Calculation based on 1496 working hours/FTE)						
Labour: \$	\$0	\$0	\$0	\$0	\$0	\$0

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Maintenance \$ Avoided (after project is implemented)						

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Monetized Internal Efficiency Gains (after project is implemented)						

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Monetized External Efficiency Gains (after project is implemented)		\$ 2,563,525	\$ 7,431,596	\$ 21,942,723	\$ 44,972,373	\$ 160,580,768

Rationale: See Project Charter Section 2.1

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Other - itemize below						

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Total Savings	\$0	\$2,563,525	\$7,431,596	\$21,942,723	\$44,972,373	\$160,580,768
Present Value of Saving:	\$0	\$2,496,373	\$6,920,080	\$19,716,691	\$38,994,541	\$134,358,776

D. Net Present Value Analysis Results:

Present Value of Expenditures:	\$8,698,044
Present Value of Savings:	\$202,486,460
Net Present Value of Project Alternative	\$193,788,416

Appendix B: Capacity Need

TCA Strategy – Proposed Winter Target Capacity *

Delivery Period (Summer)	2019/20 (DR Auction - completed)	2020/21 (TCA in December 2019)	2021/22 (TCA in June 2020)	2022/23 (TCA in December 2020)	2023/24 (TCA in June 2021)	2024/25 (TCA in December 2021)
IESO Planning Adequacy Requirement	0	0	0	1,085	2,263	4,063
TCA Reliability Assurance	-	667	867	1,464	N/A	N/A
Proposed TCA Target Capacity	606	667	867	1,464	2,263	4,063

Reliability
Assurance period

Set equal to IESO Planning
Adequacy Requirement

* - Based on data from the 2018 Technical Planning Conference and subject to pre-auction review/change



12

7

⁷ Slide 12, “[Transitional Capacity Auction Draft Phase I Design](#)” TCA Stakeholder engagement presentation to be held on April 18, 2019.

TCA Strategy – Proposed Summer Target Capacity *

Delivery Period (Summer)	2019 (DR Auction - completed)	2020 (TCA in December 2019)	2021 (TCA in June 2020)	2022 (TCA in December 2020)	2023 (TCA in June 2021)	2024 (TCA in December 2021)
IESO Planning Adequacy Requirement	0	811	335	583	3,844	4,686
TCA Reliability Assurance	611	672	874	1,136	N/A	N/A
Proposed TCA Target Capacity		811	874	1,136	3,844	4,686

* - Based on data from the 2018 Technical Planning Conference and subject to pre-auction review/change



13

8

⁸ Slide 13, “[Transitional Capacity Auction Draft Phase I Design](#)” TCA Stakeholder engagement presentation to be held on April 18, 2019.

Appendix C: Benefits

Summer				Target Capacity					
			Row	Calc	2019	2020	2021	2022	2023
MWs				-	811	874	1,136	3,844	4,686
DR Auction discount (-750MW)	750	A			61	124	386	3,094	3,936
Escalated @ inflation 2.5%									
Low prices	Auction price [\$/MW-yr]	B		51,000	57,400	63,038	64,613	82,786	124,455
High prices	Auction price [\$/MW-yr]	C		51,000	57,400	73,544	86,151	110,381	135,769
Low prices	Contract price [\$/MW-yr]	D		104,000	92,250	94,556	96,920	99,343	170,843
High prices	Contract price [\$/MW-yr]	E		104,000	106,600	109,265	118,458	132,458	181,025
Low prices	Contract Price - Auction Price [\$/MW]	F	(D-B)xA/2	-	1,062,925	1,954,163	6,235,197	25,613,978	91,291,066
High prices	Contract Price - Auction Price [\$/MW]	G	(E-C)xA/2	-	1,500,600	2,214,718	6,235,197	34,151,971	89,064,455
NPV (5%)									
NPV (low prices)	100,772,612	H	NPV of Row F						
NPV (High prices)	106,705,396	J	NPV of Row G						

				Target Capacity					
Winter		Row	Calc	2019	2020	2021	2022	2023	2024
MWs				606	667	867	1,464	2,263	4,063
DR Auction discount	750	A		-	61	261	858	1,657	3,457
Escalated @ inflation 2.5%				100%	103%	105%	108%	110%	113%
Low prices	Auction price [\$/MW-yr]	B		51,000	57,400	63,038	64,613	82,786	124,455
High prices	Auction price [\$/MW-yr]	C		51,000	57,400	73,544	86,151	110,381	135,769
Low prices	Contract price [\$/MW-yr]	D		104,000	92,250	109,265	111,997	114,797	170,843
High prices	Contract price [\$/MW-yr]	E		104,000	106,600	109,265	111,997	114,797	170,843
Low prices	Contract Price - Auction Price [\$/MW]	F	(D-B)xA/2	-	1,062,925	6,032,689	20,327,387	26,520,760	80,181,203
High prices	Contract Price - Auction Price [\$/MW]	G	(E-C)xA/2	-	1,500,600	4,661,623	11,087,666	3,658,036	60,624,812
NPV (5%)									
NPV (low prices)	108,686,463	H	NPV of Row F						
NPV (High prices)	65,745,917	J	NPV of Row G						

Sum of Summer and Winter, low prices	\$ 209,459,075	K	Sum of H's	
Sum of Summer and Winter, high prices	\$ 172,451,313	L	Sum of J's	
Average of low and high prices	\$ 190,955,194	M	AVG of K and L	
Project Cost	\$ 10,000,000	N		
TCA Project Benefits	\$ 180,955,194	M-N		

Document Control

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Project Management Adherence Review:

Reviewed By	Role
	PMO Project Support

Financial Review:

Reviewed By	Role
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	Director, Resource Planning

	Director, Market Operations
	Director, Settlements
	Director, Business Solutions
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	Project Steering Committee Member
	Steering Committee Member, Director MACD

Approvals:

Approved By	Role
	Project Sponsor
	President & CEO (On behalf of the Board)
IESO Board	IESO Board

** Indicates who will approve in Citadel.*

Distribution List

Name	Organization
Citadel	IESO
PMO	IESO
Finance	IESO

Document Change History

Issue	Reason for Issue	Date

References

Document Title	Document ID
Approved Project Portfolio	
<i>Project Roles and Responsibilities</i>	

Related Documents

Document Title	Document ID

– End of Document –

1 **APPrO INTERROGATORY 10**

2 Issue 1.6 Is the IESO's 2021 capital expenditure envelope of \$68.6 million for capital projects
3 for Fiscal Year 2021 appropriate?

4 1.6-APPrO-10

5 **INTERROGATORY**

6 **Reference:** Executive Summary Exhibit A, Tab 1, Schedule 4, Page 4 of 6, lines 10-22; and
7 Capital Expenditure Summary, Exhibit E-1-2, Attachment 2, Page 1 of 1

8 **Preamble:** The 2021 proposed capital budget (\$32.6 million for core capital and \$36 million for
9 MRP) is significantly higher than previous years (capital spending in 2019 was \$20.5 million for
10 core capital and \$10.3 million for MRP; capital spending in 2020 was \$27 million for core capital
11 and \$25 million for MRP). The proposed 2021 budget is therefore an over 27% increase for core
12 capital and 50% increase for MRP as compared to the average of 2019 and 2020 actuals.

13 What is the reason(s) for these significant increases in the proposed 2021 budget?

14 **RESPONSE**

15 The core capital budget represents an increase from 2020 to support projects designed to
16 enable a more competitive electricity marketplace and ensure system reliability. In addition, the
17 IESO is in the execution phase of three significant initiatives, SCADA/Energy Management
18 System (EMS) Upgrade, Replacement of Settlement Systems and Centralized Alarm
19 Management System Replacement which have a combined budget in 2021 of \$16.9 million. For
20 MRP, the funding increase is due to the implementation phase of the project.

1 **APPrO INTERROGATORY 11**

2 Issue 1.6 Is the IESO's 2021 capital expenditure envelope of \$68.6 million for capital projects
3 for Fiscal Year 2021 appropriate?

4 1.6-APPrO-11

5 **INTERROGATORY**

6 **Reference:** Exhibit B-1-2, Page 16 of 19; and Exhibit E-1-2, Attachment 1

7 **Preamble:** There appears to be a discrepancy between the 2021 capital project budget filed at
8 Appendix 2-AA (\$36 million) and that included in Appendix 3 to the IESO's 2022-2022 Revised
9 Business Plan (\$44.6 million).

10 Which figure is correct? What is the source of the discrepancy?

11 **RESPONSE**

12 The correct number is \$36.0 million.

13 The source of the discrepancy is the IESO's Board approval for a revised budget and schedule
14 for MRP that occurred after the 2020-2022 Business Plan was approved, but before the revenue
15 requirement proceedings. The 2020-2022 Business Plan reflected the MRP business case budget
16 that was approved in October 2019, while the Revenue Requirement Submission reflects the
17 revised budget approved in March 2021.

18 For more details about the baseline budget and schedule change, refer to Exhibit G-2-1, Page 3
19 (Market Renewal Program Cost Report).

1 **APPrO INTERROGATORY 12**

2 Issue 1.6 Is the IESO's 2021 capital expenditure envelope of \$68.6 million for capital projects
3 for Fiscal Year 2021 appropriate?

4 1.6-APPrO-12

5 **INTERROGATORY**

6 **Reference:** Executive Summary Exhibit A, Tab 2, Schedule 2, Page 2 of 3, lines 24-25

7 **Preamble:** The evidence provides that the IESO deferred a number of lower priority projects in
8 response to the COVID-19 pandemic.

9 Which projects comprise those lower priority projects? Please provide a copy of the IESO's
10 assessment used to determine which projects were lower priority.

11 When does the IESO intend to resume these deferred projects?

12 **RESPONSE**

13 Please see the response at Schedule 2 - 1.5 AMPCO 11 for a list of deferred projects. The IESO
14 assesses risk internally with the project sponsors, other stakeholders and the Project
15 Portfolio Management Team to determine the potential risks of deferring the project
16 and mitigating actions that may need to be taken.

1 **APPrO INTERROGATORY 13**

2 Issue 1.6 Is the IESO's 2021 capital expenditure envelope of \$68.6 million for capital projects
3 for Fiscal Year 2021 appropriate?

4 1.6-APPrO-13

5 **INTERROGATORY**

6 **Reference:** Executive Summary Exhibit A, Tab 2, Schedule 2, Page 3 of 3, lines 6-9

7 **Preamble:** The evidence provides that the IESO's approach to prioritize investments resulted in
8 certain impacts, including the slower deliver of discretionary initiatives (with potential reputational
9 and stakeholder risks from not moving forward on these initiatives as quickly as stakeholders
10 would like).

11 Which discretionary initiatives are referred to here? When will those initiatives be completed?

12 **RESPONSE**

13 See response at Schedule 2 – 1.5 AMPCO 11.

1 **APPrO INTERROGATORY 19**

2 Issue 1.6 Is the IESO's 2021 capital expenditure envelope of \$68.6 million for capital projects
3 for Fiscal Year 2021 appropriate?

4 1.6-APPrO-19

5 **INTERROGATORY**

6 **Reference:** Exhibit D, Tab 1, Schedule 1, Page 4 of 4, Table 4: 2021 OM&A Expenses

7 **Preamble:** The evidence includes a \$2.2 million budget in 2021 for "Telecommunications and
8 computer services/Hardware/Software for new projects".

9 What specifically does this line item include?

10 **RESPONSE**

11 This line item includes support and maintenance costs for hardware and software acquired for
12 projects like Replacement of Settlement Systems and SCADA/EMS Upgrade as well as some of
13 the smaller projects in the portfolio. It also includes the impact of contract escalations on pre-
14 existing hardware and software support contracts and telecommunications increases.

1 **REASCWA INTERROGATORY 9**

2 Issue 1.6 Is the IESO's 2021 capital expenditure envelope of \$68.6 million for capital projects
3 for Fiscal Year 2021 appropriate?

4 1.6-REASCWA-9

5 **INTERROGATORY**

6 References: Exhibit A, Tab 1, Schedule 4, Page 4, Lines 23-26,
7 Exhibit E, Tab 2, Schedule 1, Attachment 1, Page 1, Lines 23-28, and
8 Exhibit E, Tab 2, Schedule 1, Attachment 2, Page 1, Lines 24-27

9 Preamble: Transparency and details are needed to determine what portions of the 2021 capital
10 budget, that have not been allocated to MRP capital, are essentially needed to implement MRP
11 (e.g., settlement system).

12 a) What portion of the \$32.6 million capital, that is not budgeted within the MRP \$36
13 million capital, is required to support the MRP implementation?

14 b) Please provide any supporting documentation.

15 **RESPONSE**

16 a) No portion of the \$32.6 million capital is required to support MRP implementation

17 b) Please see (a).

EDA INTERROGATORY 4

Issue 1.6 Is the IESO's 2021 capital expenditure envelope of \$68.6 million for capital projects for Fiscal Year 2021 appropriate?

EDA Interrogatory 4

INTERROGATORY

Evidence Reference: nil

Preamble

The IESO's 2021 capital spending will be \$68.6 million, or \$16.6 million higher than 2020's level.

EDA Interrogatory 4

Please identify and describe the financial controls that the IESO has in place with respect to capital spending and which controls were implemented in advance of capital spending on the MRP. Please describe the following in detail:

- a) How capital spending (e.g., amount, timing, levels, changes) is monitored and reported
- b) The type of controls applied relative to the level of spending (e.g., budget process, proposal review, variance analysis, review of any proposed or actual overspending, actual activity vs planned activity)
- c) How proposed changes to previously approved capital spending plans are:
 - Reviewed
 - Either approved or denied
- d) How materiality is:
 - assessed on a line-item basis and in-total
 - used as a control mechanism
- e) The mitigation techniques that are available to the IESO to manage changes in capital spending, and identify those that have been used by the IESO

RESPONSE

- a) Capital spending is monitored and reported on a monthly basis by each individual project with actual expenditures and forecasts compared against approved budget and contingency. Variances to approved budget are reported to the individual Project Steering Committees and, where variances exceed the total approved budget, including

contingency, exception reports are required to request additional funding which is approved by the appropriate approval authority based on the Organizational Authority Register. Individual project actual and forecast expenditures are consolidated at the portfolio level and compared and reported against the overall capital envelope approved each year. Monthly project portfolio summary reports are prepared and distributed to internal stakeholders. This approach is also followed by MRP.

b) Please refer to part a).

c) Proposed changes to approved capital spending levels are presented to the Project Sponsor and Project Steering Committee in the form of an exception report where the reason for the variance is outlined along with impacts to cost and schedule and alternatives considered to mitigate these impacts. The Project Sponsor will either approve or deny such requests in consultation with the Director, Enterprise Change to ensure cost increases can be accommodated within the overall portfolio capital envelope. Where the sponsor does not have the appropriate level of approval authority, the request for additional funding is approved by the appropriate approval authority as per the Organizational Authority Register. Impact of the change on the overall approved budget is reported on a monthly basis.

For details, please see Attachment 1 - Administer Project Change Procedure to this interrogatory.

d) Material changes that exceed the approved individual line-item budget or total approved budget, not including contingency, are brought to the attention of the Project Sponsor and Project Steering Committee to approve the release of project contingency or, where there is a forecast underspend on other line item, to reallocate budget between different line items.

e) The IESO monitors and assesses the impact of individual capital expenditures on the overall portfolio capital expenditures and forecasts on a monthly basis. Where overall costs are expected to exceed the capital envelope in a particular year, the IESO can either look to reduce the capital expenditure on a particular project or, where feasible, defer or delay the initiation of other projects within the portfolio. Alternatively, where it expects to underspend against the overall portfolio budget in a particular year, the IESO can advance projects from future years to take advantage of available capital assuming that there are sufficient internal resources to do so.

Administer Exception Procedure

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1. Purpose

This procedure documents the steps to be executed by the project manager (PM), project steering committee (PSC) and the project sponsor to initiate, review and approve an exception (i.e. a change or deviation from the project scope, cost, time or quality parameters).

This procedure only describes the steps performed by the primary roles in the “Manage Project” process. Steps performed outside of this process are not included in this procedure.

2. Preamble

The “Administer Exception” procedure describes steps to approve changes (deviations) to 4 of the 6 project aspects, namely: business objectives (benefits), cost, duration (time) or risk where the change is greater than the contingency allowed in the approved Project Charter. The absence of a documented contingency in a Project Charter means the project has zero contingency for changes - no default contingencies are implied. Contingencies may be defined individually for some or all 4 of these project aspects – business objectives, cost, duration and risk.

Contingencies for the remaining two project aspects, namely: scope and quality may be documented in the project plan document after discussions with the steering committee provided that the overall impact of deviation in scope or quality remains within the approved limits for business objectives (benefits), cost, duration or risk including contingencies.

3. Administer Exception

The Project Manager is primarily responsible for continuous monitoring of the six project Key performance indicators. The Project Steering Committee (PSC) on the other hand, has a primary accountability for oversight of the project and as such is also accountable (and responsible) for ensuring that there are no unauthorized deviations from the approved project charter.

The purpose of this procedure is:

- a) for the project manager to inform the project team, the PSC, and prepare an Exception Report in the prescribed format;
- b) for the PSC to review the exception and when satisfied approve the recommended exception if within its approval range; or
- c) Recommend and forward the exception to the Project Sponsor for approving authority.

This procedure is triggered as soon as a change to one or more of the project aspects is forecast to be out of tolerance thresholds.

Step #	Role	Activity	Response Time (Business Days)
1	Project Manager	Inform and consult other members of the project team (via email or team meeting) to gather information, determine the nature and extent of the change (or deviation) and its impact on one or more of the 6 project aspects.	ASAP
2	Project Manager	Inform the PSC (via email or PSC meeting) of the need for an exception report citing the reasons, justification and preliminary impact of the change. Also indicate the mode in which approval will be sought (<i>See notes in step #4 below</i>).	ASAP
3	Project Steering Committee	Review preliminary information and seek further information/clarifications, if required.	-
4	Project Manager	<p>Prepare an exception approval request in the appropriate form (see notes below) and:</p> <ol style="list-style-type: none"> Submit to PMO for review Once reviewed by PMO submit for review and approval to all members of the PSC; and indicate whether or not the change (or deviation) will fall within the approved project contingency or will exceed it. Also indicate if any business objectives will not be achieved or will be significantly modified. <p>Notes:</p> <ul style="list-style-type: none"> <i>Unless otherwise stipulated in the Project Steering Committee Operating Procedure, the PM may request approval through an email or a meeting of the PSC if the exception falls within the approved project contingency.</i> <i>For exceptions that will exceed one or more of the 4 project contingency limits approved in the project charter and/or will require approval of the OAR authority; the exception approval request must be prepared using the Exception Report Template available on the PMO intranet page.</i> <i>Step #4(b) above will determine whether the exception can be approved by the PSC or the Project charter approver or his/her delegate.</i> 	ASAP
5	Project Steering Committee	<p>Upon receiving a request for review, each member of the PSC will:</p> <ol style="list-style-type: none"> Review the exception and where required seek further information/clarifications from the project manager or other subject matter experts (SME's). Provide the PM with comments. <p>Note: <i>The PSC members may choose to agree or disagree with the recommendation of the PM and may suggest an alternate/modified solution or even cancellation of the project.</i></p>	Within specified time
6	Project	At the end of the review period the PM will:	1-2

	Manager	<ul style="list-style-type: none"> a. Incorporate the PSC comments, if any; and b. re-submit the updated exception to the PSC. 	
7	Project Steering Committee	<p>Upon receiving the updated exception:</p> <ul style="list-style-type: none"> a. if the exception is within the approved project contingencies, each member will approve the exception and convey the decision to the PM <i>[Go to Step#10]</i>. <p><u>Else</u></p> <ul style="list-style-type: none"> b. if the exception exceeds any of the contingencies approved in the project charter, each member will sign the collective recommendation; <u>and</u> c. the steering committee will submit the exception report to the project sponsor for onward submission to the project charter approver or his/her delegate. 	ASAP
8	Project Sponsor	Forward the exception report to the project charter OAR approver or his/her delegate for ratification of the PSC recommendation.	ASAP
9	Project Sponsor	Upon receiving the ratification or otherwise the project sponsor will inform the PSC and the PM of the decision via email	ASAP
10	Project Manager	<p>Upon receiving approval the PM will:</p> <ul style="list-style-type: none"> a. File the exception approval in the project directory; b. Upload the scanned copy of the approved exception report in Citadel. c. Update the Integrated project plan to document the reference to the approved exception and communicate. d. Inform PMO and the project support representative in Finance. 	

– End of Document –

ENERGY PROBE INTERROGATORY 6

1.7 Has the IESO adequately described its material capital projects?

1.7-EP-6

INTERROGATORY

Reference: Exhibit E, Tab 2, Schedule 1, Attachments 1-5

Please provide a schedule with the list of the following Capital Projects, including Approved Cost, Contingency, Current estimate, Variation, Cost to Complete and Completion Date:

- Replacement of Settlement System (RSS)
- Energy Management System (EMS)
- Central Alarm Management System (CAMS)
- Market Renewal Program Energy Stream (MRP)
- Capacity Auction Project (CAP)
- Other Capital Projects (<\$2 million each)

RESPONSE

Table 1: Capital Projects

Project	Approved Capital Cost	Approved Contingency	Total Approved Capital Cost	Current Capital Estimate at Complete	Variance to Approved Cost	Forecast Completion Date
Replacement of the Settlement Systems	\$28.3M	\$8.5M	\$36.8M	\$29.2M	\$0.9M	Jun 06, 2024
SCADA/EMS Replacement Project	\$12.1M	\$2.3M	\$14.4M	\$11.3M	(\$0.8M)	May 31, 2022
Centralized Alarm Management System Replacement Project:	\$4.4M	\$0.8M	\$5.2M	\$4.1M	(\$0.3M)	Sept. 17, 2022
Market Renewal Program Energy Stream (MRP)	\$140.4M	\$10M	\$150.4M	\$150.4M	\$10M	Nov 30, 2023
Capacity Auction Project	\$5.4M	\$2.0M	\$7.4M	\$5.6M	\$0.2M	Aug 31, 2021
Data Excellence Program (including Data Warehouse)	\$3.0M		\$3.0M	\$2.7M	(\$0.3M)	Dec. 31, 2023

Project	Approved Capital Cost	Approved Contingency	Total Approved Capital Cost	Current Capital Estimate at Complete	Variance to Approved Cost	Forecast Completion Date
Dispatch Data Management Systems Refresh	\$3.1M	\$0.6M	\$3.7M	\$3.2M	\$0.1M	Jul. 14, 2021
External Identity Management (Portal)	\$1.2M	\$0.2M	\$1.4M	\$1.4M	\$0.2M	Sep. 28, 2021
Wide Area Visualization Environment (WAVE) - Phase 2	\$2.8M	\$0.4M	\$3.2M	\$2.7M	(\$0.1M)	Aug. 30, 2024
*Enabling Resources to Deliver on Capacity/Participate in Markets				\$2.9M		
*Addressing Market Surveillance Panel (MSP) Recommendations				\$1.6M		
Dynamic Limits in Real-Time	\$3.5M	\$1.0M	\$4.6M	\$3.5M		Jan. 31, 2023
**New Capacity/Resource Acquisition Initiatives				\$2.5M		
**Network Performance Monitoring and Diagnostic				\$2.8M		

1 *Project has recently initiated, planning activities in progress.

2 ** Projects not yet started

3 For additional details on these material projects, please see the responses at Schedule 14 –
4 1.5 SEC 15 and 18.

OEB STAFF INTERROGATORY 24

Issue 1.8 Is the IESO's Registration and Application Fees revenue forecast for Fiscal Year 2021 appropriate?

1-Staff-24

INTERROGATORY

a. Exhibit C / Tab 3 / Schedule 1 / p. 1

Preamble:

At the above reference, the IESO states that procurement revenues, meant to cover the costs the IESO incurs to process procurement applications, are not expected to materially affect the IESO's revenue requirement.

Questions:

- a) Please clarify if the IESO's statement that registration fee revenue is not expected to materially affect the revenue requirement is based on a \$10,000 or \$50,000 registration fee.
- b) Please provide the IESO's estimate for the costs it anticipates incurring to process procurement applications in 2021. When responding, please indicate if these costs are built into the IESO's 2021 revenue requirement request of \$191.8 million.
- c) Please provide the IESO's estimate of the revenue it anticipates generating through registration fees in 2021. When responding, please indicate if these revenues are reflected in the IESO's 2021 revenue requirement request of \$191.8 million.

RESPONSE

- a) The fees that are proposed to be charged for the IESO's upcoming procurements (up to \$50,000) would be used, in part, to offset labour costs associated with the administration of the procurement, in addition to helping the IESO offset the costs of external consultants used to support the design of the procurement. Due to these offsets, the proposed fees are not expected to materially affect the total revenue requirement. See response to Schedule 1 - 3.1 OEB Staff 28.
- b) The IESO is in the process of developing and launching the medium-term RFP, for which proposals are expected to be submitted in 2022. As such, the IESO will not incur any costs for processing procurement proposals in 2021. The costs that have been built into the IESO's 2021 Revenue Requirement Submission are for the development, design and executing of the medium-term and the long-term RFPs set out in the IESO's 2021 Annual Acquisition Report.

- 1 c) See response to b). The IESO will not generate any revenue through proposal
- 2 registration fees in 2021.