BOMA INTERROGATORY 2

INTERROGATORY

2. Ref: Plan, p1

(a) Please discuss the extent to which the Brattle Report proposed savings of more than $3 billion, as a high level estimate of potential savings that might be realized by the implementation of the MRP is a guaranteed result of the initiatives. Please provide any other internal or third party studies which the IESO has conducted since the release of the Brattle Report, which support those high level estimates.

(b) Please provide your best estimate of the ratepayer energy savings in 2023, resulting from the implementation of the MRP (from your evidence, 2023 appears to be the first year after completion of the MRP). Does the IESO expect any ratepayer energy savings in either 2020, 2021, or 2022, resulting from the partial implementation of the MRP initiatives?

(c) Please provide the incremental ratepayer energy savings that IESO expects to result from the implementation of the MRP in the years subsequent to 2023.

RESPONSE

(a) For an updated response to this interrogatory please see the Update on Status of Incremental Capacity Auction, Exhibit C, Tab 2, Schedule 2.

Please see the response to OEB Staff Interrogatory 25 d), at Exhibit I, Tab 6.2, Schedule 1.25.

The 2017 Benefits Case estimated that MRP is expected to deliver an average of $3.4 billion in efficiency savings over a 10-year period. The savings are based on the most likely outlook for demand and other key assumptions at the time the study was undertaken. The report noted that the net benefits could range from $2,200 million to $5,200 million depending on actual market conditions that cannot be predicted with certainty.

(b) For an updated response to this interrogatory please see the Update on Status of Incremental Capacity Auction, Exhibit C, Tab 2, Schedule 2.

The IESO will be calculating expected ratepayer savings over the first 10-years of MRP as part of the Business Case which will be completed by the end of Q3 2019. The IESO is

planning to share the methodology, approach and analysis with stakeholders starting in May 2019.

There is not a partial implementation of MRP. As a result, the IESO does not expect any ratepayer savings in 2020, 2021 or 2022 as a result of MRP initiatives.

(c) Please see (b) above.

BOMA INTERROGATORY 3

INTERROGATORY

3. Ref: Plan, Executive Summary, p4

(a) On page 4, you state that the MRP:

> *"is designed to create more than $3 billion in savings for customers over a five year period with the potential to reach as high as $5.2 billion (over a ten year period)".*

Please confirm that the five year period you are discussing is the period 2023 through 2027, or provide what five year period you are talking about.

(b) At p6 of the Plan, you state:

> *"advancing the MRP to deliver a competitive and efficient market which, over a ten year period, is expected to achieve an average of $3.4 billion in savings".*

Please explain what an average of $3.4 billion in savings means. What is the $3.4 billion the average of? Please clarify the phrase, which is used several times in the Plan.

RESPONSE

a) For an updated response to this interrogatory please see the Update on Status of Incremental Capacity Auction, Exhibit C, Tab 2, Schedule 2.

The quote provided in the interrogatory could not be found in the evidence. The quote appears to be a misquotation of what is stated on page 4 of the evidence, as shown below:

> *The IESO's market renewal program is designed to not only make today's electricity market more efficient*, but *to create more than $3 billion in savings for customers over a 10-year period with the potential to reach as high as $5.2 billion*.

The 10-year period that is referred to is 2021-2030.

b) The $3.4 billion is the estimated net present value (in 2021 dollars) of savings over a 10-year period that MRP is expected to achieve as estimated by the 2017 Benefits Case report. This estimate based on an average of the four demand scenarios in the Ontario Planning

Outlook. The estimated savings are province-wide benefits and shared by customers and suppliers.[1]

[1] For further information, please see "Estimating Potential Benefits to Ontario" (pages 37-40) and "Potential Benefits to Ontario" (pages 73-77) of the 2017 Benefits Case available on the IESO's website: http://www.ieso.ca/Market-Renewal/Stakeholder-Engagements/Market-Renewal-Engagement

BOMA INTERROGATORY 5

INTERROGATORY

5. Ref: Plan, p13

(a) Please explain why energy efficiency and demand response resources should not participate today (rather than "one day") in incremental capacity auctions.

(b) Please provide the current numbers (organizations and individuals, of the Energy Transformation Network of Ontario), their objectives, functions, and level of activity.

RESPONSE

a) For an updated response to this interrogatory please see the Update on Status of Incremental Capacity Auction, Exhibit C, Tab 2, Schedule 2.

Energy efficiency was excluded from the ICA design approximately two years ago because there was a separate funding framework (Conservation First Framework CFF) in place at the time to support energy efficiency investments. Recognizing that the ICA only compensates resources for capacity and that those resources are obligated to participate in the real time energy market, the IESO is considering a range of models that would accommodate the participation of energy efficiency as a competitive resource in Ontario. One option that will be considered is whether and how it could, in the future, participate in the ICA. The IESO is also undertaking a separate energy efficiency pilot auction in the near term that may help inform whether energy efficiency is ultimately included in the ICA.

b) Provided as Attachments 1 and 2 to this exhibit are the Energy Transformation Network of Ontario (ETNO) Member Bios and the ETNO Terms of Reference.

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BOMA INTERROGATORY 6

INTERROGATORY

6. Ref: Plan, p15

Please advise how many of the average headcount of 125 for the MRP for 2019 will be full-time employees of the IESO, full-time contracted employees, part-time employees, and the budget for each. Is the $11.7 million in expenses on p16 of the Plan the cost of the 125 head count, or is any of the compensation of the 125 persons capitalized and included in the proposed $38 million 2019 MRP capital budget? If so, what amount of the compensation costs is capitalized, covering how much of the head count?

RESPONSE

Please see the response to OEB Staff Interrogatory 27 a), at Exhibit I, Tab 6.2, Schedule 1.27. For capitalisation costs, and headcount, please refer to table below:

MRP Headcount	Operating ($M)	Capital ($M)	Total ($M)	Headcount
Regular	$3.7	$6.0	$9.7	53
Temporary	$1.5	$1.8	$3.3	20
Total	**$5.2**	**$7.8**	**$13.0**	**73**

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BOMA INTERROGATORY 8

INTERROGATORY

8. Ref: Plan, p19

(a) Please provide the accounting principles that justify the entirety of the detailed design stage of the MRP being capitalized.

Please provide the external legal costs incurred by the MRP in 2018 versus forecast, and the forecast external legal costs for 2019.

Please provide the current percentage completion of the MRP business case and your estimate of in which month of 2019 it will be complete and published.

(b) Please explain further the comment that "resourcing for the program (MRP) continues to be a challenge". Please discuss how the IESO is striving to meet that challenge. Please provide details.

RESPONSE

(a) The IESO follows Public Sector Accounting Standards and considers the provisions in the Office of the Provincial Controller Division's Tangible Capital Assets Guideline for further interpretations. Generally, IESO projects have three phases: Initiation, Implementation and Closure. Capitalization begins in the Implementation project phase which includes detailed design.

The detailed design phase consists of work activities that are both capital and operating expenses in nature. The majority of the work completed during this phase will be on detailed designs and planning material in advance of the implementation phase which will be capitalized. Operating work activities during the detailed design phase include Market Rules and contract amendments, training and work required to complete the business case.

External legal costs incurred by the MRP are in the table below:

2018 Actual	2018 Forecasted	2019 Budget
$1.2 million	$1.4 million	$1.1 million

It is not possible to provide a meaningful percentage of completion at this time; work on the business case started in Q1 2019 and stakeholders will be engaged in Q2 2019. The business case is estimated to be completed in Q4 2019.

(b) Please see the response to OEB Staff Interrogatory 12, at Exhibit I, Tab 1.3, Schedule 1.12.

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BOMA INTERROGATORY 11

INTERROGATORY

11. Ref: Tab 1, Sch 1, p2

(a) Please report on the status of the IESO's investigation of a multiyear revenue requirement proposal, to assist complying with section 25(1) of the Electricity Act.

(b) Please provide the proposed IESO 2019 expenditures for the wind-up of the Green Ontario Fund.

(c) Please provide the legal status of the MACD Enforcement activities and account. Is the MACD Enforcement a crown agency, a part of the IESO, a part of the Ontario government, or some other entity? How is it funded?

(d) The IESO substantially underspent its 2018 capital budget for both core operations and the MRP. Please discuss the reasons for the underspend in both core operations and the MRP, and whether the IESO is likely to underspend its proposed capital budgets for core operations and the MRP in 2019. What contingency amounts are included in the 2019 budgets?

RESPONSE

(a) Please see the response to OEB Staff Interrogatory 7, at Exhibit I, Tab 1.1, Schedule 1.07.

(b) All of the work that the IESO is doing for the Green Ontario Fund does not impact the IESO's revenue requirement and is funded separately through a Transfer Payment Agreement with the province. The IESO will be reimbursed for all of its termination and wind-up costs under the agreement.

(c) Please see the response to OEB Staff Interrogatory 10, at Exhibit I, Tab 1.3, Schedule1.10.

(d) For an updated response to this interrogatory please see the Update on Status of Incremental Capacity Auction, Exhibit C, Tab 2, Schedule 2.

The MRP will be spending capital dollars throughout 2019 and expects to spend the MRP capital budget. Please refer to AMPCO Interrogatory 31 a), at Exhibit I, Tab 6.2, Schedule 12.31 for contingency amounts.

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OEB STAFF INTERROGATORY 14

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

Staff IR #14

INTERROGATORY

Reference: Exhibit C-2-1. Pg. 13 of 15

Preamble:

The IESO provides three tables that illustrate incremental staffing level increases in 2019 for MRP to 125 full time staff and 21-shared resources.

Questions:

a) Will any of the incremental FTEs required for Market Renewal eventually be converted to full time staff? If yes, please explain how many are expected to become core FTEs and the forecast total FTEs for the IESO. If not, please explain how the IESO will manage any incremental or modified work created by the Market Renewal project without additional FTEs.
b) Of the 50 incremental positions planned in 2019 how many have been filled as of April 9, 2019?

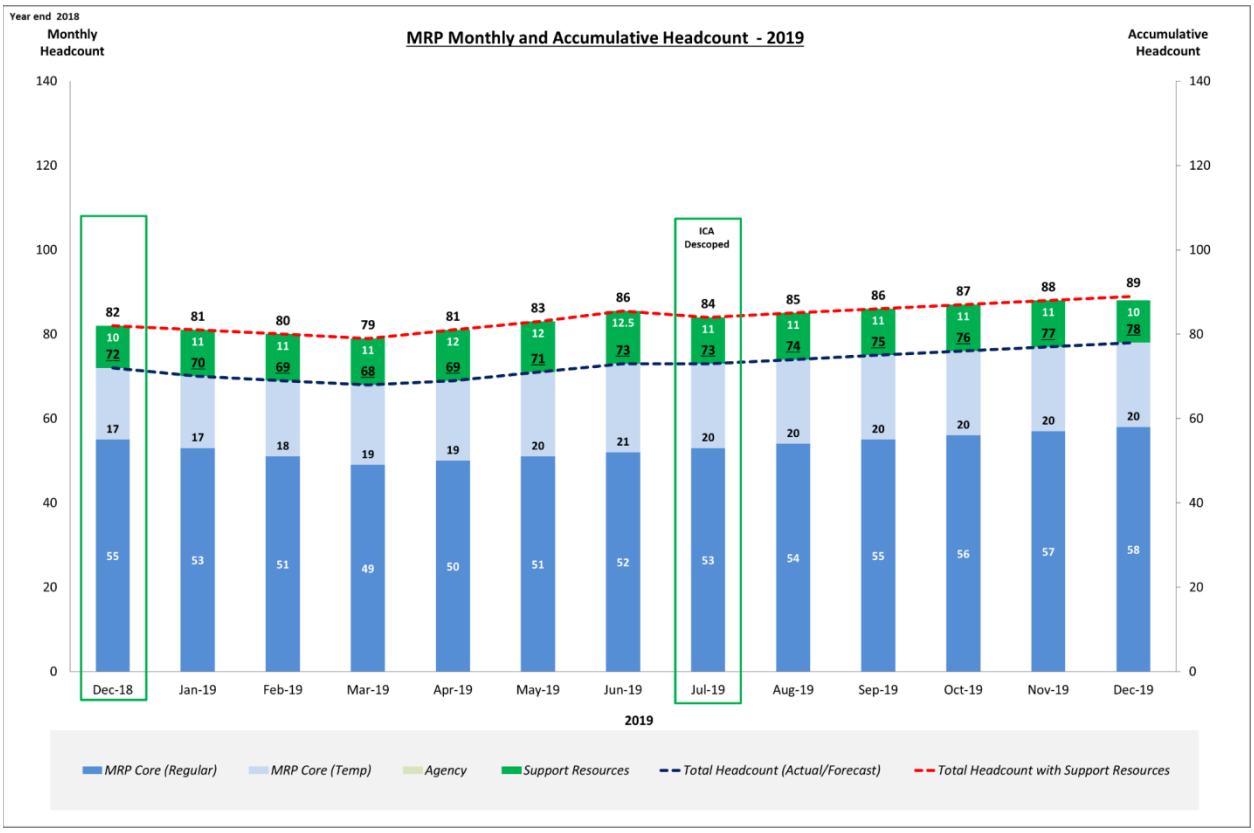
RESPONSE

a) The only MRP positions that will be converted to regular are those with enduring work post MRP. Two areas that have been identified to date include a) Market Power Mitigation (12 incremental roles in MACD) and b) Incremental Capacity Auction (roles to be finalised once detailed design is completed).

b) As of March 31, there were six new hires in 2019, however nine seconded staff returned to their business unit as the Energy stream high level designs were completed. As of March 31, 2019 there were a total of 68 headcount for MRP.[1] The graph below illustrates

[1] From time to time, MRP staff return to their home units. In June 2019, previously reported headcount numbers were updated based on confirmed dates when changes were made.

the forecasted ramp up of staffing over 2019 by regular and temporary headcount. "MRP Core Incremental" are those MRP Core Staff incremental to the previous month.



OEB STAFF INTERROGATORY 15

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

Staff IR #15

INTERROGATORY

Reference: Exhibit A-2-2. Pg. 15 of 27.

Preamble:

At Exhibit A-2-2. Pg. 15 of 27, the IESO states:

> For 2019, the IESO anticipates an average headcount of 726 to deliver its core electricity system responsibilities while continuing the implementation of its strategic initiatives. The Market Renewal Program will require an average headcount of 125 as the program advances to the detailed design stage. This brings the total average headcount requirement for the IESO to 851 in 2019.

Questions:

OEB staff has developed the below matrix based on the information provided at the references cited above. As demonstrated, the IESO forecasts increasing its staffing complement in 2019 by

Staff	**2018 Actual**	**2019 Budget**
Operating headcount	672	726
MRP Headcount	76	125
Total	**748**	**851**

103, or 14% from 2018 levels.

a) The IESO forecasts that significant staffing increases are needed to support delivery of its core operations. Please explain how the IESO determined the number of additional staff required and how the IESO determined that this level of increase was reasonable.

b) The IESO forecasts that significant staffing increases are needed to support MRP activities. Please explain how the IESO determined the number of additional staff required and why the IESO considers these increases to be reasonable.

RESPONSE

a) For an updated response to this interrogatory please see the Update on Status of Incremental Capacity Auction, Exhibit C, Tab 2, Schedule 2.

The table above references actual headcount at December 31, 2018, which is below the approved 2018 headcount budget. The increased 2019 budgeted headcount vs the 2018 actual core operations headcount in the table is mainly due to vacant roles which were not filled in 2018, but are planned to be filled in 2019.

Through its annual business planning cycle the IESO reviews business requirements and the required staffing needed to support its business operations. Based on its business planning process the IESO anticipates an average headcount of 717 in core operations and 125 in Market Renewal for a total of 842 in 2019, as per Exhibit A-2-2, page 17 of the IESO's 2019 Revenue Requirement Submission.

b) For an updated response to this interrogatory please see the Update on Status of Incremental Capacity Auction, Exhibit C, Tab 2, Schedule 2.

The MRP is continually planning the next stages and years of the program and refining those planning assumptions in parallel with execution of the current year's activities. It is through this planning that resource requirements are established. The IESO considers these staffing increases reasonable because in 2019, the MRP will be engaged in detailed design activities and planning for the implementation phase. Additionally, new resources will be hired later in the year for the implementation phase in order to have them ready to begin implementation phase activities in 2020.

ENERGY PROBE INTERROGATORY 9

Issue 1.4 Is the IESO's Capital Expenditure budget for Fiscal Year 2019 appropriate?

Issue 6.3 Are the IESO's forecast 2019 capital costs for the Market Renewal Program appropriate in the context of the scope and timing of the overall project?

INTERROGATORY

EP-9

References: Exhibit B Tab 2 Schedule 1 page 2 Table 4; Exhibit B Tab 3 Schedule 1, Attachment 1, Appendix 2-AA

Preamble: IESO has underspent its capital budget in 2016, 2017 and again in 2018

a) Please provide the actual 2018 Operations and MRP Capital Project spend. Reconcile to the above references.

b) Please provide a detailed explanation for the underspend in IESO's capital budget for 2018.

c) Please discuss in detail why the major "jump" in MRP Capital in 2019 can be managed based on the history of underspend?

d) Should IESO have an MRP Capital Variance Account (MRPCVA) to record and levelize MRP Capital Expenditures? Please discuss, including smoothing of fees.

RESPONSE

a) Please see the response to AMPCO Interrogatory 18 b) & c), at Exhibit I, Tab 1.4, Schedule 12.18. The table below provides 2018 Actuals:

Category	2018 Actuals
Core Operations	14.4
MRP	1.4
Total	**15.8**

b) Please see the response to OEB Staff Interrogatory 17 a), at Exhibit I, Tab 1.4, Schedule 1.17 and AMPCO Interrogatory 18 b).

c) Please see the response to OEB Staff Interrogatory 26 c), at Exhibit I, Tab 6.2, Schedule 1.26.

d) For an updated response to this interrogatory please see the Update on Status of Incremental Capacity Auction, Exhibit C, Tab 2, Schedule 2.

IESO's Forecast Variance Defferal Account is used for MRP, as with other IESO initiatives, to retain and refund program funding collected in years that the IESO underspent its budget and track over-spending to be collected in a future funding period.

The IESO utilizes its credit facilities to obtain capital for its projects, including MRP. The recovery of the capital investment in MRP will occur when the energy and capacity assets are in service through amortization expense, eliminating the requirement for a capital variance account. The multi-year nature of the Market Renewal Program results in differing proportions of capital and operating expenses in each implementation year. The amortization of the capital investment will also occur over a multi-year timeframe. These factors naturally result in a rate smoothing effect.

ENERGY PROBE INTERROGATORY 10

Issue 1.4 Is the IESO's Capital Expenditure budget for Fiscal Year 2019 appropriate?

Issue 6.3 Are the IESO's forecast 2019 capital costs for the Market Renewal Program appropriate in the context of the scope and timing of the overall project?

INTERROGATORY

EP-10

References.: Exhibit A, Tab 2, Schedule 2, Page 7, 2019-2021 Business Plan;

Exhibit B, Tab 3, Schedule 1, Attachment 1, Appendix 2-AA (Capital Projects)

Preamble: *"In 2019, the IESO is planning a capital envelope of $17.3 million to facilitate the delivery of corporate priorities associated with its core business. An investment of $38 million in capital costs is required to fund the next stage of the Market Renewal Program. Further details on the overall capital program are included in Appendix 3."*

a) Please provide a schedule similar to Appendix 2-AAA showing the Capital Budgets for 2018 (Forecast and Actual) by category and the 2019 and 2020 Forecasts.

b) Expand and provide a schedule for the MRP 2018 (Forecast and Actual) by category and the 2019 and 2020 Forecasts.

c) Please provide a variance report for 2018 for Core Operations and MRP.

RESPONSE

a) Please see table below:

Category	2018 Forecast	2018 Actuals	2019 Envelope	2020 Envelope
Core Operations	14.4	14.4	17.3	20.3
MRP	1.2	1.4	26.0	43.3[1]
Total	**15.6**	**15.8**	**43.3**	**63.6**

b) See table in a)

c) Please see the response to OEB Staff Interrogatory 17 a), at Exhibit I, Tab 1.4, Schedule 1.17.

[1] This number will be finalized in the IESO's 2020-2022 Business Plan.

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VECC INTERROGATORY 12

6.0 Market Renewal Program

INTERROGATORY

6.1 Reference A-2-2, pg. 18

a) Please provide an update as to the expected completion date of the MRP business case.

b) Does the IESO intend on circulating for comment a draft of the MRP business case?

RESPONSE

a) The IESO intends to complete the MRP business case in Q4 2019.

b) Please refer to APPrO Interrogatory 11 k), at Exhibit I, Tab 6.2, Schedule 11.11.

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ENERGY PROBE INTERROGATORY 19

Issue 6.1 Is the reporting on financial and operational performance of the Market Renewal Program for 2017, 2018, 2019, and proposed future reporting, appropriate?

INTERROGATORY

EP-19

Reference: Exhibit C-2-1, Attachment 1, Appendix A

Preamble: *"Beginning in January 2019, the IESO will monitor and track project performance for both the Capacity and Energy work streams against the established baseline schedules and budget described below. The schedules and budget for the Energy and Capacity work streams will be tracked and will roll up to form the overall MRP schedule and budget."*

a) Please provide an update on Market Renewal spending for 2018 and a detailed report whether IESO on track to meet its forecasted budgets.

b) For 2019, based on Q1 results, please provide a schedule that indicates for each initiative, if it is on time and budget. Provide relevant comments/discussion.

RESPONSE

a) For an updated response to this interrogatory please see the Update on Status of Incremental Capacity Auction, Exhibit C, Tab 2, Schedule 2.

At the end of the first quarter, on a combined basis, operating and capital expenses for the Market Renewal program were underspent by $2.2 million, but the IESO is forecasting to spend the entire MRP budget in 2019.

Total Results (In $ millions)

	As of March 31, 2019		
	Actual	**Budget**	**Variance**
MRP Program	**4.8**	**7.0**	**2.2**

Operating expenses are $0.9 million below plan due to delayed resourcing for the capacity work stream and offset by additional follow up on the energy high level design as a result of stakeholder feedback.

Operating Results (In $ millions)			
	As of March 31, 2019		
Cost Category	**Actual**	**Budget**	**Variance**
Compensation & Benefits	1.7	2.5	0.8
Professional & Consulting	1.1	1.0	(0.1)
Operating & Administration	0.1	0.3	0.2
Operating Results	**2.9**	**3.8**	**0.9**

Capital expenses are $1.3 million lower than planned as energy resources have been completing additional high level design work which is an operating expense. Professional & consulting cost is also tracking under budget, as the procurement for the detailed design consultant will be completed in Q2.

Capital Results (In $ millions)			
	As of March 31, 2019		
Cost Category	**Actual**	**Budget**	**Variance**
Compensation & Benefits	1.1	1.8	0.7
Professional & Consulting	0.7	1.3	0.6
Operating & Administration	0.1	0.2	0.1
Interest	0.0	0.0	0.0
Capital Results	**1.9**	**3.2**	**1.3**

b) Please see the response to OEB Staff Interrogatory 24 a), at Exhibit I, Tab 6.1, Schedule 1.24. As of March 31, 2019 both Energy and Capacity costs are tracking under budget. Capacity schedule is slightly behind at an SPI of 0.89, while Energy schedule is further lagging at a SPI of 0.7.

SEC INTERROGATORY 17

1.1-SEC-17

INTERROGATORY

Please provide an updated Market Renewal Project budget in the same format as provided in response to SEC IR 21 in EB-2018-0143 (Exhibit I, Tab 6.2, Schedule 8.21 SEC 21). Please provide an explanation of all changes in costs since what was provided in response to SEC IR 21.

RESPONSE

For an updated response to this interrogatory please see the Update on Status of Incremental Capacity Auction, Exhibit C, Tab 2, Schedule 2.

An updated program budget can be found at Exhibit C-2-1 - Market Renewal Program Cost Report, pages 11 and 12, which includes a description of changes from SEC Interrogatory 21 from 2018 (EB-2018-0143).

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SEC INTERROGATORY 18

1.1-SEC-18

INTERROGATORY

Please provide the updated Market Renewal Project program milestones in the same format as provided in response to SEC IR 22 in EB-2018-0143(Exhibit I, Tab 6.2, Schedule 8.22 SEC 22. Please provide an explanation of the status of all 2018 and 2019 milestones from previous forecasts and any changes to future milestones.

RESPONSE

For an updated response to this interrogatory please see the Update on Status of Incremental Capacity Auction, Exhibit C, Tab 2, Schedule 2.

Program Phase	Program Milestone	Target Date (EB-2017-0150)	Status (March 2019)	Forecast Date	Comments
Inception	Benefits Case Finalized	Q1, 2017	Completed	N/A	
Initiation	MRP Stakeholder Engagement & Design Start	Q1, 2017	Completed	N/A	
Initiation	MRP Stakeholder Engagement & Design End	Q3, 2018	In Progress	Q3, 2019	All HLD's have been published and stakeholders are providing feedback.
Planning	Business Case Finalized	Q3, 2018	In Progress	Q4, 2019	Date was revised, as HLD's were not completed.
Design	Detailed Design Start	Q3,2018	Completed	N/A	
Initiation	MRP Stakeholder Engagement & Design - Contingency Start	Q3, 2018	Completed	N/A	
Planning	MRP Stakeholder Engagement & Design - Contingency End	Q4, 2018	In Progress	Q3, 2019	
Implementation	Implementation Start	Q2, 2019	Planned	Q4, 2019	
Design	Detailed Design End	Q4, 2019	Planned	Q4, 2020	
Deployment	In Service: Capacity Auction	Q2, 2020	Planned	Q4, 2022	
Implementation	Implementation - Contingency Start	Q2, 2021	Planned	TBD	
Implementation	Implementation End	Q2, 2022	Planned	Q4, 2022	

Program Phase	Program Milestone	Target Date (EB-2017-0150)	Status (March 2019)	Forecast Date	Comments
Deployment	In Service: Energy	Q2, 2022	Planned	Q2, 2022	
Implementation	Implementation - Contingency End	Q3, 2023	Planned	Q4, 2024	
Deployment	In Service Contingency: Capacity Auction	Q2, 2021	Planned	Q1, 2023	
Deployment	In Service Contingency: Energy	Q3, 2023	Planned	TBD	

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SEC INTERROGATORY 20

1.1-SEC-20

INTERROGATORY

[Ex. A-2-2, p.3] The Minister's letter to the IESO approving the Business Plan states that: "I expect future Market Renewal Project resourcing beyond 2019 will be further reassessed in future business plans and in the IESO's proposed expenditure and revenue requirements submitted to the Ontario Energy Board. I hope that the IESO will continue to focus on operating efficiency and ensuring maximum value for ratepayers".

a. Please explain how the IESO expects plans to reassess the MRP resourcing in future business plans and expenditures.

b. Please explain how the IESO proposed expenditures reflect a focus on operating efficiency and ensuring maximum value for ratepayers.

RESPONSE

a. For an updated response to this interrogatory please see the Update on Status of Incremental Capacity Auction, Exhibit C, Tab 2, Schedule 2.

MRP is a project and not ongoing line business. The MRP plans include the specific work to be accomplished by the project over a set time period. For the period of 2019, the Energy stream and Capacity stream will each be concluding high level designs, and begin developing detailed designs. Subsequent plans for 2020 will continue detail design and then move to the implementation phase. Resources and expenditures in any period will correspond to the needs of the project to deliver the required scope against the schedule within the budget.

b. Please see the response to OEB Interrogatory 1 a), at Exhibit I, Tab 1.1, Schedule 1.01.

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SEC INTERROGATORY 21

1.1-SEC-21

INTERROGATORY

[Ex. A-2-2, p.2; 2-AA] Please provide a detailed breakdown of the $38M of proposed MRP capital. For each material[2] component of the MRP capital, please provide a copy of the business case, project plan, or similar document.

SEC Footnote 2: Materiality defined as $954K. (0.05% of IESO revenue requirement (190.8M) consistent with Board's Filing Requirement For Electricity Distribution Rate for distributors with revenue requirement less than $200M.

OEB Decision on Motion and Procedural Order No. 4 May 31, 2019

The IESO is required to file the further information discussed under the Market Renewal Program section below.

Market Renewal Program

The OEB has concluded that it requires the IESO to provide the following further information for each of the four initiatives of the MRP (Single Schedule Market, Enhanced Real-time Unit Commitment, Day Ahead Market, and Incremental Capacity Auction):

- an assessment of the current inefficiencies or issues with the market that are being addressed
- the rationale to proceed with the project and the options considered including how the project improves on core outcomes such as efficiency, customer value, reliability and safety
- the rationale for decisions to build systems in-house versus acquiring existing systems (i.e. the make versus buy decision)
- a risk assessment and how risks are being mitigated
- the governance of the project, and the involvement of the IESO's Board of Directors in that governance, including a response to KPMG's recommendation for ongoing IESO Board involvement

RESPONSE

Please see the response to OEB Staff Interrogatory 26 a), at Exhibit I, Tab 6.2, Schedule 1.26. A further detailed breakdown of total MRP spending in 2019, including capital budget, is provided on page 2 of this response. The MRP Business Case will be available by the end of Q4 2019.

For similar documents that provide monthly reporting on MRP capital costs in 2018, please see the response to SEC Interrogatory 16, at Exhibit I, Tab 6.1, Schedule 10.16.

Total MRP spending in 2019 including capital budget

Fiscal Year	2019	
	Budget (millions)	
Energy	**Opex**	**Capex**
Project Phases	***HLD***	***Detail Design***
IESO Labour	$0.87	$8.64
Professional & Consulting	$1.26	$4.44
IT Infrastructure & Development	$0.00	$9.93
Other Administrative	$0.13	$0.28
Total w/o Contingency	***$2.26***	***$23.29***
Contingency	$0.12	$2.73
Total with Contingency	***$2.38***	***$26.03***

Capacity	**Opex**	**Capex**
Project Phases	***HLD***	***Detail Design***
IESO Labour	$3.43	$0.00
Professional & Consulting	$0.81	$0.00
IT Infrastructure & Development	$0.05	$0.00
Other Administrative	$0.18	$0.00
Total w/o Contingency	***$4.47***	***$0.00***
Contingency	$0.26	$0.00
Total with Contingency	***$4.72***	***$0.00***

General	**Opex**	**Capex**
IESO Labour	$1.28	$0.00
Professional & Consulting	$2.37	$0.00
IT Infrastructure & Development	$0.06	$0.00
Other Administrative	$0.79	$0.00
Total w/o Contingency	***$4.50***	***$0.00***
Contingency	$0.06	$0.00
Total with Contingency	***$4.56***	***$0.00***

MRP TOTAL	**Opex**	**Capex**
Total with Contingency	***$11.66***	***$26.03***
Annual Cost ($)	**$37.69**	

ADDITIONAL RESPONSE
(per OEB Decision on Motion and Procedural Order No. 4 May 31, 2019)

For an updated response to this interrogatory please see the Update on Status of Incremental Capacity Auction, Exhibit C, Tab 2, Schedule 2.

The IESO provides the following information for each of the Single Schedule Market (SSM), Enhanced Real-time Unit Commitment (ERUC), Day Ahead Market (DAM) and Incremental Capacity Auction (ICA).

Assessment of Current Inefficiencies

an assessment of the current inefficiencies or issues with the market that are being addressed;

The Benefits Case outlined the market design inefficiencies documented by the IESO, the OEB, the Market Surveillance Panel (MSP) and independent industry observers. A partial summary of The Benefits Case's findings, and an update with respect to the approach of the MRP's Business Case, organized by MRP workstream is provided below. The Benefits Case is provided as Attachment 1 to this response.

Energy - SSM

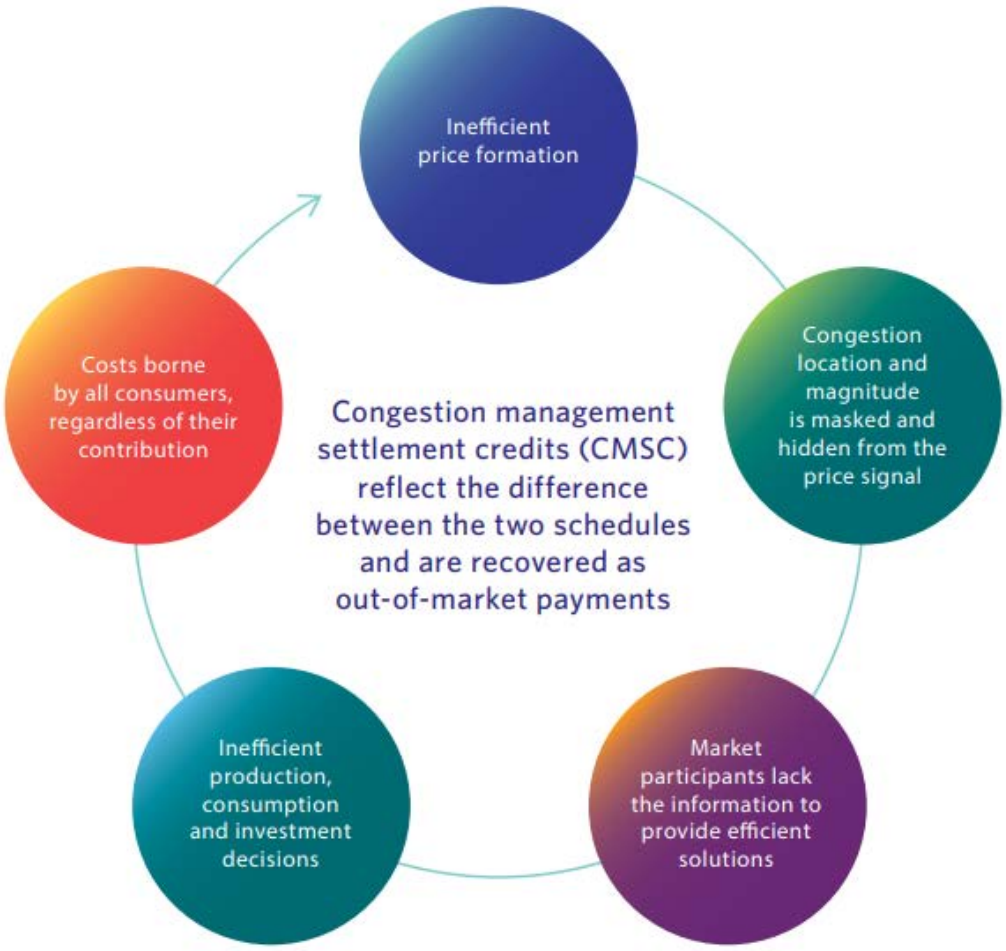
Over the years, a range of concerns over operational complexity and economic inefficiency have emerged with respect to the two-schedule system. These problems have been documented and analyzed extensively by the IESO, the OEB, MSP, and independent industry observers.

One of the main concerns related to the two-schedule system is that it does not reflect the realities of the physical transmission grid, which introduces significant inefficiencies. The two-schedule system leads to market prices paid to suppliers and by consumers that are systematically out of alignment with marginal system costs[1]. The larger the divergences between two schedules, the more out-of-market payments in the form of congestion management settlement credits (CMSC) are required to reconcile the difference.

Greater divergences also increase the probability of inefficient outcomes, such as higher costs, complex settlements and opportunities for market participants to game the system. CMSC payments are not transparent and as such not subject to the scrutiny of transparent markets or the pressures of open competition[2]. See the figure below for some of the core issues with CMSC payments.

[1] Page 14, *The Benefits Case*, The Brattle Group, April 20, 2017
[2] Page 5, Single Schedule Market High-Level Design, September 2018

Figure 1: Effects of CMSC Payments



At least three types of inefficiencies have been identified to be induced by the two-schedule system[3]:

- ***General inefficiency;*** caused by the mismatch in price charged for the marginal unit of consumption and the actual price or cost of the marginal unit of generation.
- ***Intertie inefficiency;*** similar to general inefficiency and occurs in transactions on Ontario's interties with neighboring markets.
- ***Dynamic or Investment inefficiency;*** occurs when investment decisions are skewed by artificial prices.

CMSC is recovered from loads as an out-of-market or "uplift" payment. Uplifts are common features of organized electricity markets meant to incentivize actions beneficial to system goals

[3] Page 14, *The Benefits Case*, The Brattle Group, April 20, 2017

that are not properly compensated or incentivized through market mechanisms. However, the MSP found that they are especially pervasive in the IESO–administered markets, reducing the markets' transparency and efficiency. While uplifts address the problem of creating sufficient incentives for generators to follow dispatch instructions from the IESO, they fail to solve the underlying efficiency issues of the two-schedule system, and sometimes are the source of new inefficiencies, including gaming.

Market renewal is an opportunity to implement a system that naturally incentivizes market participants to maximize system efficiency and lower system and customer costs.

Energy - DAM

Other inefficiencies have been identified with the existing day-ahead commitment process. Currently, as The Benefits Case outlined, the process introduces excess risks that exclude otherwise economic day-ahead export schedules, creating results that are systematically out of alignment with predictable outcomes in the real-time market. Furthermore, due to the lack of day-ahead settlement, day-ahead bids are disconnected from cost because they are not financially binding. As a result of these inefficiencies, internal generators and importers often receive large out-of-market payments.

The MSP has suggested that a true day-ahead settlement would improve the market by "eliminating the need for most generator and import guarantees." The MSP further stated that day-ahead settlement would encourage exporters to become active participants in a day-ahead market by facilitating firm export sales. By incentivizing an increase in imports and exports, a day-ahead market can reduce the market's reliance on non-quick start resources to meet real-time supply and demand mismatches. Additional benefits of implementing a true day-ahead settlement through MRP, include enhanced market power mitigation, improved optimization of day-ahead dispatch, and reduced reliance on the more volatile real-time market for making intra-day unit commitments[4].

Energy - ERUC

Today, unit commitment decisions are made based on energy costs alone, while start-up and speed-no-load costs are not taken into account. This means a resource with lower energy costs but higher overall costs may be committed instead of a resource with lower total costs. In other words, because Real-Time Generation Cost Guarantee (RT-GCG) decisions do not account for all costs, they may result in inefficient outcomes[5]. Costs are evaluated separately for each hour, without taking into consideration the minimum level of output that non-quick start (NQS)

[4]Pages 15 and 16, *The Benefits Case*, The Brattle Group, April 20, 2017.
[5]Page 5, Enhanced Unit Commitment Process High-Level Design, December 2018

resources must provide and the minimum amount of time they must remain online. This results in inefficient scheduling decisions as only the following hour is considered. For example, a resource that has lower costs over a particular hour may get dispatched, though it has a higher cost overall because it must remain online for a longer period of time[6].

The existing unit commitment process is also misaligned with the day-ahead. The day-ahead and intra-day commitment programs use different optimization both in terms of the inputs considered and the optimization timeframe. Day-ahead commitments are based on three-part offers and 24-hour optimization where RT-GCG commitments are based on energy offers only and each hour is optimized independently.

As well, the existing pre-dispatch and RT-CGC programs have heavy administration and oversight requirements. Historically, cost submissions have been subject to review and audit creating a high administrative burden for both the IESO and market participants.

Capacity - ICA

The size of the Global Adjustment has increased significantly over the past decade, both in absolute terms and as a fraction of total customer commodity costs. The net increases in energy plus Global Adjustment costs have introduced substantial concerns about the impact on customer bills. Much of this increase is associated with Ontario's transition to a non-emitting fleet of resources. Ontario has paid a premium for non-emitting resources above fossil-emitting resources, based on environmental policy objectives. Low gas prices and high proportions of non-emitting resources have driven down energy prices, which require a higher Global Adjustment in order to keep contracted resources whole. The IESO, MSP, and others have identified the non-market-based approach to resource planning, selection, and contracting as a key driver of Global Adjustment costs[7].

Challenges have also been identified resulting from centralized procurement and long-term contracts to secure resource adequacy. Under the current system, the costs and risk of inaccurate demand and supply forecasts are borne by consumers. A more competitive market design could shift the risk of over-procurement to capacity suppliers and lead to a more efficient mix of new and existing resources. In addition to these investment-related shortcomings of the current system, the incentives resulting from long term contracts can result in sub-optimal bidding strategies that lead to negative prices and increase system costs. The ICA would implement a competitive capacity auction that eliminates these uneconomic incentives for new resources and existing resources that roll off existing contracts, increasing system efficiency and lowering costs.

[6] Page 5, Enhanced Unit Commitment Process High-Level Design, December 2018
[7] Page 61, *The Benefits Case*, The Brattle Group, April 20, 2017

Rationale to Proceed and Options Considered

the rationale to proceed with the project and the options considered including how the project improves on core outcomes such as efficiency, customer value, reliability and safety;

Market Renewal Program

The MRP is a coordinated set of market reforms that represents the culmination of many years of analysis and observation by the IESO, MSP and Ontario electricity sector stakeholders. The Benefits Case was used as an input to help determine whether to proceed with developing a market design for renewal of the market and to identify options for maximizing benefits and mitigating risks of the effort.

The consideration of options for the MRP included whether to proceed with a coordinated package of market reforms or the continuation of the current energy market design. Within the coordinated package of market reforms there are various combinations of design choices. As recommended by The Benefits Case, the high-level design stage of the MRP has allowed the IESO and stakeholders to carefully examine the available design choices, taking advantage of experiences of other markets, before selecting those that are most beneficial and consistent with Ontario's unique fundamentals and policy environment.

The Benefits Case emphasized the importance of treating the individual components of Market Renewal as part of a package in which the different elements need to work together in an integrated and complementary manner. For example, the SSM will enable the IESO to improve scheduling decisions by laying the foundations for DAM and ERUC. The DAM will produce financially binding day-ahead schedules for all participants. ERUC will make additional scheduling and unit commitment decisions to address deviations between DAM and real-time, ensuring reliability is maintained cost-effectively[8].

Although The Benefits Case reported distinct estimates for benefits associated with the Energy and Capacity workstreams, it interpreted those components as part of a cohesive overall market design. The Benefits Case stated that implementing one component without addressing the others would likely require more costly fixes later[9].

The table below outlines the primary benefits of MRP.

[8] Page 5, Enhanced Unit Commitment Process High-Level Design, December 2018
[9] Page 118, *The Benefits Case*, The Brattle Group, April 20, 2017

Table 1
Primary Benefits of Market Renewal[10]

Benefit Category	Description
Fuel, Emissions, and O&M Cost Savings	The current market does not fully account for all costs and system constraints in commitment and dispatch. This can result in higher-cost resources being used when lower-cost resources are available. Market Renewal will improve the system's ability to identify and utilize the lowest-cost resources to meet demand, including hydro, storage, demand response, and interties. This will reduce the total fuel, CO_2e emissions, and O&M costs associated with operating the system.
Reduced Curtailment/Spilling of Clean Energy	The current market does not fully utilize the existing resources base or incentivize emerging resources to meet system flexibility needs. This causes unnecessary loss of non-emitting generation by spilling hydro and curtailing wind and nuclear generation.
Increased Export Revenues and Reduced Import Costs	A reformed energy market and better optimized interties would lower the barriers to efficient trading of power with neighboring jurisdictions. This would result in increased imports of cheaper generation from neighboring markets, further reducing Ontario-internal generation costs. It would better enable Ontario suppliers to sell power outside the province when it is profitable to do so.
Investment Cost Savings	Transitioning to market-based capacity procurement, combined with improved energy and ancillary market incentives, will enhance competition to meet system needs at lower investment costs. A technology-neutral approach will further increase competition by leveling the playing field for new technologies that traditionally have been left out of the capacity procurement process.
Reduced Gaming Opportunities, Administrative Complexity, and Unwarranted Wealth Transfers	In the current two-schedule system, dispatch instructions do not align with market prices. Suppliers are paid through several different uplift mechanisms to compensate them for operating at market prices below their costs (or for reducing output that would have been profitable). These uplift payments create uneconomic incentives and gaming opportunities, and amplify the administrative burden of market operations for both the IESO and participants. Gaming opportunities in the energy market and lack of competition in capacity procurements both create incentives and opportunities to profit from exploiting the design flaws (typically at the expense of customers), which leads to unwarranted wealth transfer
Supporting Competition and Innovation	Prices that better reflect market conditions will support competition; allowing for competition between a broad set of existing and new resources and technologies will reduce system costs and encourage innovation.
Alignment with Provincial Policy Goals	Market Renewal will create an improved platform for enabling market evolution to support Ontario's future policy objectives and changing market fundamentals.

Market Renewal Program

[10] Page 99, *The Benefits Case*, The Brattle Group, April 20, 2017

Core Outcomes (Efficiency, Customer Value, Reliability, Safety, etc.)

The scope of The Benefits Case's analysis was to estimate the quantitative and qualitative benefits of Market Renewal to Ontario and compare these benefits to the expected costs of implementation. Expected benefits include province-wide efficiency savings due to a lower-cost commitment and dispatch of generating resources, improved balancing of the intermittency of wind and solar output with other system resources, attracting or retaining the most cost-effective resources to ensure resource adequacy, and more effectively trading with neighboring systems. These efficiency savings mean that the Ontario power system will serve load and maintain reliability at a lower overall cost. The efficiency savings measured and presented are a metric that provide the most holistic view of the impacts of Market Renewal and represent true efficiency gains to the province as a whole, regardless of which individual entities capture most of the benefits[11].

The Benefits Case assumes that customers will share approximately half of the efficiency benefits from the Energy workstream, which yields savings of $60 million to $80 million per year over the 2021–2030 period. This customer share of efficiency benefits does not account for any benefits from avoided gaming or transfer payments (of which customers will be the primary beneficiaries), such as cost reductions associated with CMSC and other uplift payments. Customers will realize these efficiency and other non-quantified benefits as a reduction in their combined energy and uplift costs.

The quantified efficiency benefits are predominately driven by the more efficient commitment and dispatch of resources. Some of these benefits will go to customers in the form of lower energy and ancillary service prices plus uplift payments and some will accrue to suppliers in the form of reduced costs or additional sales opportunities[12].

Energy – SSM

Core Outcomes (Efficiency, Customer Value, Reliability, Safety, etc.)

With the proposed SSM design, market prices will reflect the true costs of producing or consuming electricity at a given place and time. Transparent price signals will support more open competition between market participants and lead to more efficient outcomes without the need for the CMSC payments that are a necessary feature of the current design. As technological changes empower a larger range of consumers, more granular pricing will help consumers connect their actions to needs on the system, and maximize the economic benefit for both. Finally,

[11] Pages 7-8, *The Benefits Case*, The Brattle Group, April 20, 2017
[12] Ibid, Page 107

the introduction of a single schedule market will allow the IESO to implement important changes to the energy markets, such as the establishment of DAM and ERUC[13].

Main Benefits of the SSM:

1. Paying supply resources a locational energy price that reflects system conditions where they are connected to the grid will help ensure they present offers that accurately reflect their short-run marginal costs. This, in turn, will result in efficient dispatch, reducing the long-run cost of operating the system.

2. Minimize the need for out-of-market or make-whole payments, which compensate generators when they face a shortfall between their offer price and the revenue earned through market clearing prices.

Energy – DAM

Core Outcomes (Efficiency, Customer Value, Reliability, Safety, etc.)

A financially-binding day-ahead market will provide proper incentives for day-ahead export scheduling and lower-cost unit commitments (compared to supporting exports through the current real-time unit commitment process, which is costlier and less efficient). Customers will benefit from this change by paying lower real-time unit commitment-related uplift costs and purchasing more of their energy at lower day-ahead prices.

The DAM will help drive broad and efficient day-ahead participation leading to improved scheduling decisions. Increased financial and operational certainty will help existing and future market participants manage risk, reducing exposure to real-time price volatility and enabling suppliers to better manage their operations and fuel costs. The introduction of virtual transactions and PRLs will help foster greater competition and thereby increase market efficiency. Together these features will improve the efficiency of day-ahead scheduling in Ontario, making better use of existing assets and helping to reduce costs for consumers[14].

Main Benefits of the DAM:

- Dispatchable resources have improved production certainty,
- The system operator has improved operational certainty as real-time approaches,
- Consumers benefit from more efficient and cost-effective decisions overall, and

[13] Page 5, Single Schedule Market, High-Level Design, September 2018
[14] Day-Ahead Market High Level Design, December 2018

- Qualifying market participants benefit from a hedge against price volatility in the real-time market caused by changes in supply and demand is created

Energy – ERUC

Core Outcomes (Efficiency, Customer Value, Reliability, Safety, etc.)

While the RT-GCG program is an important tool for meeting reliability needs, the design of the RT-GCG program has also been criticized in several MSP reports due to its inefficiency, cost and lack of transparency. Market renewal provides opportunities to improve both the program and the pre-dispatch scheduling process it supports. That is why the IESO is undertaking the ERUC project, which will replace both the current pre-dispatch process and the RT-GCG program.

In particular, ERUC will result in pre-dispatch schedules and unit commitments that better reflect the total cost of NQS supply and that are based on a longer, more efficient optimization timeframe. It will introduce three-part offers into the unit commitment process. NQS resources will have to submit offers for their energy, start-up and speed-no-load costs. Considering these costs in making commitment decisions will increase transparency and competition within the commitment process, resulting in lower costs for consumers. ERUC will also improve the efficiency of commitment decisions by optimizing over multiple hours rather than solving for each hour independently.

When implemented, ERUC will help to ensure that when changes in system needs arise in the pre-dispatch time frame, the most cost-effective set of resources will still be available to meet demand in real-time. ERUC will improve the efficiency of unit commitments in the intra-day timeframe by taking into account all resource costs in commitment decisions and will also improve commitment decisions overall by optimizing over multiple hours rather than solving for each hour independently.

Main Benefits of the ERUC:

1. Participants competitively submit offers reflecting incremental energy, start-up and speed-no-load costs.
2. All costs associated with offers are included in the IESO's optimization tools.
3. Commitment decisions based on the total efficiency of all hours across the commitment period.

Capacity - ICA

Core Outcomes (Efficiency, Customer Value, Reliability, Safety, etc.)

The ICA will develop and implement an enduring market-based capacity procurement mechanism that will, alongside contracted resources and rate-regulated facilities, ensure Ontario's resource adequacy needs are met cost effectively within the broader policy framework[15].

The Benefits Case estimated the potential magnitude of efficiency benefits that the IESO might achieve through an incremental capacity auction based on experience in other markets, after considering the applicability of these experiences in Ontario's unique context. The benefit estimates explicitly considered Ontario's projected supply-demand conditions over time, the status and term of existing contracts, and realized contract costs under the status quo contracting approach[16].

The largest customer efficiency benefits from MRP are associated with the ICA. Customers will realize these benefits as reductions in capacity charges based on capacity auction procurement costs that are below the costs of expiring supply contracts.

As detailed in The Benefits Case, it is expected the ICA will provide benefits to Ontario consumers of $120-$200 million per year in the initial years, eventually growing to benefits of $290-$610 million per year. In order to realize these benefits, the ICA will strive to deliver the most economically efficient outcomes available through a dynamic and technology neutral auction process. Capacity auctions can achieve efficiency benefits by creating a competitive market for suppliers, by increasing the system's ability to adjust to changing supply and demand dynamics.

Unlike the Global Adjustment, capacity auction prices will be driven by market conditions. Suppliers will respond to high prices by investing in new resources where and when they are most needed. A broad set of technologies will compete to provide this incremental supply at least cost. Experience in other markets suggests that a capacity auction can procure capacity at 60%-90% of long-term contracting prices, leading to lower prices for end-use customers. Capacity auctions also transfer the risk of uneconomic investments from customers to suppliers. Under current contracting approaches, customers must pay for unneeded excess capacity; under a capacity market, customers would face low prices during periods of capacity excess[17].

Main Benefits of the ICA:

[15] Incremental Capacity Auction High-Level Design, March 2019
[16] Pages 60-61, *The Benefits Case*, The Brattle Group, April 20, 2017
[17] Ibid, Page 64

- Ensure capacity is secured at lowest cost;
- Help achieve efficiency benefits by creating a competitive market for suppliers;
- Increase the system's ability to adjust to changing supply and demand dynamics;
- Attract low-cost, non-traditional capacity resources that are unlikely to be identified in the absence of a competitive auction; and
- Provide suppliers with an enduring and transparent mechanisms to get paid for capacity they can supply.

MRP Business Case

The IESO continues its work on the forthcoming MRP Business Case which will support the detailed design and implementation phases of the project. The MRP Business Case will be based on the net financial benefits associated with implementing the four High Level Designs developed with stakeholders, the operational and reliability impacts, and the benefits of supporting future market developments. While The Benefits Case took a top-down approach and scaled the benefits realized from similar initiatives in other jurisdictions to Ontario, by contrast, The MRP Business Case will take a bottom-up approach based on Ontario-specific analysis:

- Design as per the Ontario-specific market with the energy and capacity high-level designs implemented;
- Market simulation tools customized to generate market outcomes over time;
- Granular data assumptions based on existing assets and Ontario topology;

The MRP Business Case will quantify the economic benefits to the Ontario electricity market both from a total system efficiency perspective and from a consumer perspective. MRP will be assessed by comparing the MRP market design to an Alternative Case that would assume a continuation of the current energy market design and RFPs for system adequacy and energy needs. As well, Ontario specific information provided by stakeholders will be used to augment IESO data and assumptions during the development of the Alternative Case. The Business Case will undertake a cost-benefit analysis that will provide a detailed assessment of the MRP costs and benefits to derive a net benefits over time. The net benefits assessment will inform the Business Case narrative and be included as a standalone document in the MRP Business Case appendix. The cost-benefit analysis is being led by the IESO and supported by a third party consultant.

The cost-benefit analysis is assessing the net benefits of the four core MRP initiatives (SSM, DAM, ERUC and ICA), however the benefits and costs of these MRP initiatives will be estimated as a combined "package" given that a large portion of benefits overlap.

Parties with a substantial interest in the MRP Business Case can be involved in the stakeholder engagement process through the IESO's MRP Update Meetings. More information on that process is available on the IESO's website here.

More information on the benefits of MRP to customers and market participants is provided in the tables below.

Table 2
How Market Renewal Benefits Translate to Customer Benefits[18]

Benefit Category	Impacts on Customers
Fuel, Emissions, and O&M Cost Savings	• Reduced system variable costs will translate to lower energy plus uplift costs to customers
Reduced Curtailment/ Spilling of Clean Energy	• Improved utilization of non-emitting resources will enable displacing costlier gas-fired generation (reducing system and customer costs) or increased exports (reducing Global Adjustment costs to customers) • Environmental benefits materialized through either avoided CO_2e emissions, or lower clean energy investment costs to maintain the same level of CO_2e emissions
Increased Export Revenues and Reduced Import Costs	• Reduced costs as some expensive Ontario resources are replaced with lower cost imports • Potentially realize additional contributions to capacity costs through share of export revenues
Investment Cost Savings	• Customers will pay lower capacity prices under a competitive auction than current contract prices, materialized as lower Global Adjustment costs • Customers may share a portion of the revenues from capacity exports to offset Global Adjustment costs • Benefits will grow over time as contracts expire
Reduced Gaming Opportunities, Administrative Complexity, and Unwarranted Wealth Transfers	• Avoided excess payments from market gaming will reduce customer costs • Few direct impacts on customers from reduced complexity • Customers will materialize benefits through lower capacity payments (through Global Adjustment) and reduced uplift charges. Payments associated with intertie offer guarantees, CMSC payments, and day-ahead/real-time cost guarantees will be significantly reduced or eliminated
Supporting Competition and Innovation	• Competition and innovation will reduce system costs, translating to lower prices and customer costs • Customers wishing to participate as demand response, distributed resources, or prosumers will have enhanced opportunities
Alignment with Provincial Policy Goals	• A more dynamic and cost-effective market platform will enable lower-cost solutions for achieving or adapting to future policy goals, avoiding costlier solutions that customers would have to pay for

[18] Page 106, *The Benefits Case*, The Brattle Group, April 20, 2017

Table 3

How Market Renewal Benefits Impact Other Market Participants[19]

Benefit Category	Impacts on Other Market Participants
Fuel, Emissions, and O&M Cost Savings	• **Contracted Suppliers:** Kept whole to contract terms for the most part (until contracts expire). Updating contract terms with Market Renewal will introduce costs from contract amendments, and the details of any contractual change will introduce some favorable or unfavorable adjustments. Some may share benefits from incremental opportunities to provide operability services. • **Merchant Suppliers:** Suppliers will share in Market Renewal efficiency benefits on an aggregate basis (with avoided production costs exceeding the reductions in energy price/uplift payments), but individual suppliers may be better or worse off. Sellers that have assets with lower costs, greater flexibility, and in more favorable locations will benefit most; less economically competitive sellers are likely to be worse off. • **Fuel Sellers:** Likely reduction in gas sales.
Reduced Curtailment/ Spilling of Clean Energy	• **Clean Energy Suppliers:** Either equally well off (if not subject to curtailment risks or made whole through contracts) or better off (if losing revenue from curtailments). • **New Clean Energy Developers:** Either equally well off (if the same quantity of non-emitting resources is developed), or worse off (if avoided curtailments reduce the need for non-emitting resource investment).
Increased Export Revenues and Reduced Import Costs	• **Suppliers:** Realize additional contributions to capacity costs through share of export revenues; high-cost suppliers may be worse off as their power is more easily replaced by cheaper power from neighboring markets. • **Traders:** Better off from more cost effective intertie trading opportunities.
Investment Cost Savings	• **Contracted Suppliers:** Kept whole to contract terms until contract expiration. Some may share benefits from capacity exports. • **Merchant Suppliers:** Low-cost suppliers will benefit from selling capacity at a market price that exceeds their net going-forward costs; this may include new entrants and non-traditional supply types. Higher-cost suppliers will become less profitable and may retire. Sellers that have previously enjoyed contract payments exceeding costs and market value will be worse off.
Reduced Gaming Opportunities, Administrative Complexity and Unwarranted Wealth Transfers	• Market participants currently exploiting existing design flaws through gaming will be made worse off. Other non-customer market participants unlikely to be affected. • Most market participants will benefit from the reduced administrative complexity of a single-schedule system.
Supporting Competition and Innovation	• **New Entrants and Emerging Technologies:** Benefit from enhanced opportunities to compete and enter the market • **Less Competitive Existing Technologies:** Worse off if unable to compete with new entrants, potentially leading to lost profitability or retirements
Alignment with Provincial Policy Goals	• Alignment between policy goals and market design will reduce the regulatory risks associated with market intervention (which can be invited by lack of such alignment). All market participants will benefit from mitigating risks.

[19] Page 112, *The Benefits Case*, The Brattle Group, April 20, 2017

Systems Build & Acquisition

the rationale for decisions to build systems in-house versus acquiring existing systems (i.e. the make versus buy decision);

Energy - SSM, DAM & ERUC

For the purposes of developing the high-level design for the Energy market the MRP team elected to organize the effort into three initiatives, SSM, DAM, ERUC. The ICA high-level design was developed as a single comprehensive design. While this division of initiatives served well for the Energy high-level design, it is not effective to plan and execute the remainder of the design and implementation of the Energy market. Going forward, similar to the ICA, the Energy market planning and development will be based on the Energy market as a whole.

In concert with the development of the high-level designs for both Energy and ICA, assessments were made on the impact the designs would have on all existing IESO solution components that are part of the current markets. Potential new solutions were identified and these impacts will be reviewed and refined as necessary, as further details emerge from the detailed Energy and ICA market designs. However, the initial identification of the impacted solutions will remain a substantially accurate high-level view. This initial impact assessment identified approximately 35 affected solutions for Energy and approximately 15 for ICA, with some of the impacted solutions being common to both.

In the context of Market Renewal, a binary make versus buy decision is rarely applicable because most of the solutions used for the current markets are readily adaptable to support the new markets. Some solutions are vendor supplied and supported. Others are vendor supplied but now IESO supported. Still others are IESO developed and supported. Therefore, the real alternatives to consider are modify/enhance versus replace, with modify/enhance often meaning purchasing the services of the original vendor.

In evaluating how to move forward with the implementation of each solution for the new Energy and ICA markets, the following risk factors are being considered.

- How substantial are the required changes?
- How complex are the required changes?
- What are the integration details and complexities with other solution components?
- What would be the impact to market participants were a replacement solution component used?

- Is its architecture a significant impediment to future modifications/enhancements?
- Would a replacement decision be cost effective?

In examining the Energy solution components, only the Dispatch Scheduling and Optimization (DSO) emerged as warranting replacement. While baseline solutions are available from multiple vendors, no baseline or "off the shelf" solution will satisfy Ontario's unique market, or proposed changes to that market.

The DSO is and will be at the core of operating the current and future market. The current DSO solution has been in use since the original launch of the Energy market in 2002. While it has been enhanced to support new functions and features as the market evolved, its architecture has made these enhancements difficult. The new DSO requirements are significantly broader and deeper, having to optimize three dispatch timeframes, namely day-ahead (DAM), pre-dispatch (ERUC) and real-time (SSM). Considering the extensive changes needed to support the new Energy market design, and knowing that DSO-type solutions are no longer being developed in-house by any Regional Transmission Operators or Independent System Operators, procuring a replacement system built on a modern software platform with additional functionality, and architected for easier future additions, was determined to be the most cost effective path forward.

There are three or four mature vendors that supply DSO engines, providing an ideal landscape for a competitive procurement. While baseline solutions are available from these vendors, no baseline or "off the shelf" solution will fully satisfy Ontario's unique market, or proposed changes to that market. Any solution will involve purchase of a baseline product, and additionally purchasing direct vendor services to modify and customize that product to meet Ontario's market needs. A Request for Proposal (RFP) was issued on May 27th to procure a new DSO. The RFP includes purchasing the baseline solution, purchasing vendor services to modify the product, and purchasing vendor support for the product for the period after the new markets are operational. The evaluation of the RFP responses will consider which vendor's baseline solution most closely matches the new Ontario design and what additional costs will be incurred to enhance the baseline product to meet our requirements.

With the exception of the Commercial Reconciliation System (CRS) Replacement and Migration Project, applying the above risk assessment factors for all the remaining Energy market solution components has concluded the least cost, lowest risk approach is to modify/enhance them for the new market design. One or two new solution modules are known to be needed and a make versus buy decision on these will be made as detailed requirements become clear. As discussed above, CRS is unique in that its replacement project was independently approved and initiated prior to the commencement of MRP. Therefore, the required MRP modifications and enhancements to CRS are considered incrementally to the replacement of the CRS.

Capacity - ICA

For ICA, only the auction engine solution is considered to be net new. The DR auction engine is not considered a candidate for modification for the ICA because its functionality is too limited to be adaptable. It may lend itself to adaptation to the needs of the Transitional Capacity Auction (TCA), but it will not create a better solution for ICA. All other existing solutions can cost effectively be modified and enhanced to support the ICA. Research to date has not found any available standard auction engine product. The IESO will continue to research suitable alternatives; however, at this point findings indicate the decision will likely be to either hire a firm to build the auction engine or to develop it in-house.

The information presented reflects where the IESO is today in considerations for solutions for the new Energy and ICA markets. All hardware and software solution costs as a result of MRP will be addressed as part of The Business Case. Necessary adjustments will be made as the detailed market designs are developed, providing better information that might alter any current decisions.

Risk Assessment

a risk assessment and how risks are being mitigated;

Please see the response to APPrO Interrogatory 6 e) at Exhibit I, Tab 6.2, Schedule 11.06.

Project Governance

the governance of the project, and the involvement of the IESO's Board of Directors in that governance, including a response to KPMG's recommendation for ongoing IESO Board involvement;

The MRP established an internal management governance body – the Market Renewal Executive Steering Committee (MRESC), comprised of the executive members of the IESO's leadership team. The committee meets on a monthly basis, and provides direction, oversight, and approval for MRP strategies, budgets, schedules and levels of cross-organizational support. MRESC approved all the cost estimates for MRP that were included in the IESO's business plan for 2019-2021. MRESC materials have been provided to intervenors through the Board materials on MRP sought in response to SEC Interrogatory 16. The MRP is a standing item at the IESO Board of Directors' meetings. As part of those meetings, the MRP team prepares and discusses a dashboard report, which has also been provided to intervenors as part of the Board materials sought in response to SEC Interrogatory 16.

For strategic MRP decisions, the Board can be called upon to reaffirm MRESC decisions. For example, after MRESC approval, in August 2018, the IESO Board approved the initiation of the

detailed design phase of the MRP, as well as the MRP schedules and budgets for 2019 which are reflected in the IESO's 2019-2021 Business Plan.

KPMG Recommendation

As part of the risk assessment work done, KPMG recommended that the IESO establish an MRP Committee of the Board to assist the Board of Directors with the responsibility of supporting decisions regarding matters related to the design and development of market renewal. KPMG also recommended that the MRP Committee be supported by an independent advisory council with strong market, legal, regulatory public policy and IT experience.

IESO Management has pledged to work with the IESO Board to consider the creation of an MRP Committee of the Board. IESO Management will also work with the IESO Board to consider creating an Independent Advisory Council to support the MRP Committee of the Board. As noted in the management response to KPMG's recommendations found in the response to APPrO Interrogatory 6 e), the IESO has set a target date of September 1, 2019 for this recommendation.

The IESO further notes that the MRP is a standing item at IESO Board of Directors meetings and that MRP items, including dashboard reports that examine the KPMG identified risks are currently reviewed and discussed at IESO Board of Directors meeting.

MRP Costs: Professional & Consulting Services 2018 & 2019

Name	Workstream	Services Provided	Procurement Type	2018 Actuals Operating ($ Millions)	2018 Actuals Capital ($ Millions)	2019 Operating Budget ($ Millions)	2019 Capital Budget ($ Millions)
FTI Consulting Services	Energy	Consultant support for High Level Design - SSM	RVOR & RFP	$0.30			
FTI Consulting Services	Energy	Consultant support for High Level Design - DAM & ERUC	RVOR & RFP	$0.34			
FTI Consulting Services	Energy	Consultant support for Detailed Design	RVOR & RFP				$1.68
The Brattle Group	Energy	Consultant support for Detailed Design	RVOR & RFP				$1.20
SMS LLC	Energy	IT Integration Lead	Single Source		$0.11		$0.38
EMS Group NA, LLC	Energy	Design Integration Lead	Single Source		$0.11		$0.38
Charles River Associates	Energy	Review of MRPs impact on existing supply contracts	RFS	$0.31		$0.05	
Tory's LLP	Energy	Legal Support for MRP Designs, supply contract inputs & Governance	RVOR	$0.31			$0.25
Stikeman Elliot LLP	Energy	Legal Support for MRP Designs, supply contract inputs & Governance	RVOR	$0.13			$0.38
Oslers LLP	Energy	Legal Support for MRP Designs, supply contract inputs & Governance	RVOR	$0.08			$0.19
			Sub total	**$1.48**	**$0.22**	**$0.05**	**$4.44**
The Brattle Group	Capacity	Consulting Services High Level Design	RVOR & RFP	$0.82		$0.42	$0.00
SMS LLC	Capacity	IT Integration Lead	Single Source				$0.00
EMS Group NA, LLC	Capacity	Design Integration Lead	Single Source				$0.00
Charles River Associates	Capacity	Review of MRPs impact on existing supply contracts	RFS	$0.04		$0.05	
Stikeman Elliot LLP	Capacity	Legal Support for MRP Designs, supply contract inputs & Governance	RVOR	$0.09			$0.00
Oslers LLP	Capacity	Legal Support for MRP Designs, supply contract inputs & Governance	RVOR	$0.13			$0.00
			Sub total	**$1.07**		**$0.47**	**$0.00**
The Brattle Group	General	Consultant support for participating in Future Markets	RVOR & RFP	$0.64		$1.20	
KPMG	General	Risk Advisory Services for MRP	RFP	$0.19		$0.19	
Charles River Associates	General	Review of MRPs impact on existing supply contracts	RFS	$0.09		$0.05	
Navigant Consulting Limited	General	Stakeholder Education	RVOR & RFP	$0.03		$0.36	
Wilson CTS	General	Recruiting Services for MRP	RVOR & RFP	$0.08		$0.08	
Oslers LLP	General	Legal Support for MRP Designs, supply contract inputs & Governance	RVOR	$0.03			
Hunton Andrews Kuth LLP	General	Legal Support for MRP Designs, supply contract inputs & Governance	RVOR	$0.33			
Stikeman Elliot LLP	General	Legal Support for MRP Designs, supply contract inputs & Governance	RVOR	$0.04			$0.25
			Sub total	**$1.43**		**$1.89**	**$0.25**
			Total	**$3.97**	**$0.22**	**$2.42**	**$4.69**
			Annual Total	**$4.19**		**$7.11**	

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EDA INTERROGATORY 5

Issue 6.1

INTERROGATORY

EDA interrogatory 5

Reference: Exhibit C-2-1, Appendix A, pg., 1-2 and Attachment 1 and Attachment 2

Questions

a) Please provide an updated MRP project timeline.

b) Please discuss whether the appropriate activities and undertakings will occur in 2019 such that the renewed market can open and function effectively in 2022.

RESPONSE

a) For an updated response to this interrogatory please see the Update on Status of Incremental Capacity Auction, Exhibit C, Tab 2, Schedule 2.

The MRP's Baseline Schedules and Budget, filed as Exhibit C-2-1, Appendix A, Attachment 1 and Attachment 2, were provided on January 2, 2019 and is the latest timeline as of March 31, 2019.

b) For an updated response to this interrogatory please see the Update on Status of Incremental Capacity Auction, Exhibit C, Tab 2, Schedule 2.

The IESO is engaged in detailed design activities in 2019 in support of the renewed market launching in 2022.

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OEB STAFF INTERROGATORY 25

6.0 Market Renewal Program

6.2 Are the IESO's forecast 2019 operational costs for the Market Renewal Program appropriate in the context of the scope and timing of the overall project?

Staff IR #25

INTERROGATORY

Reference: Exhibit C-2-1, Pg. 10 of 15, Exhibit C-2-1, pg. 6 of 15

Preamble: The 2019 MRP budget of $11.7 million identified in Table 7: 2019 MRP Operating Budget by Work Stream represents a decrease of 3.3 million of the IESO's 2018 Forecast provided in Table 2: MRP results for 2018.

Questions:

a) Given the MRP activities are ramping up in 2019 and subsequent years why is the IESO seeking a decrease in its MRP operating budget for 2019?
b) How much of the forecasted 2019 MRP operating budget of $11.7 million does the IESO anticipate spending before the business case is finalized and approved?
c) How many MRP staff will be hired before the business case is finalized and approved?
d) If applicable, please explain why the IESO considers it reasonable to hire and spend prior to the finalization of the MRP's business case?
e) For both Energy and Capacity work streams what types of activities are associated with the Professional & Consulting cost category?
f) What types of operating budget activities are associated with the General work stream?

RESPONSE

a) As MRP transitions from high level design to detailed design, a large majority of the expenditure will be capitalized, and is therefore included in the capital budget.

b) The IESO estimates that approximately $6.4 million of the 2019 operating budget will be spent prior to the approval of the business case.

c) As of March 31, 2019 there were a total of 68headcount for MRP.[1] IESO is targeting to be at a headcount of 76 at the time the business case is finalized.

d) As part of launching MRP, the IESO hired a third party to assess whether a comprehensive market renewal program would yield benefits to the sector when compared to the expected costs. As such, the 2017 Benefits Case concluded that MRP is expected to deliver $3.4B in net benefits over a 10-year period based on costs of approximately $200M. The significant difference between the benefits and cost of the project provided the IESO with confidence that ongoing expenditure was warranted to develop the high level designs necessary to advance the project.

Findings from the 2017 Benefits Case are supported by a number of prior studies, including reports by the Market Surveillance Panel (MSP), the Auditor General (AG) and the Market Reform study that provide both quantitative and qualitative analyses of the benefits delivered by different elements of MRP.

Based on the high level design work that has been completed, the costs and benefits are currently being refined and reassessed and will be included in the 2019 Business Case which will be completed by the end of the year.

e) Please see the response to SEC Interrogatory 22, at Exhibit I, Tab 6.1, Schedule 10.22.

f) The types of operating budget activities associated with the General work stream include: general labour, which includes administrative and general oversight; staff expenses and training; recruiting services; the Participation in Ontario's Future Electricity report and stakeholder engagement; and rent.

[1] From time to time, MRP staff return to their home units. In June 2019, previously reported headcount numbers were updated based on confirmed dates when changes were made.

OEB STAFF INTERROGATORY 26

6.0 Market Renewal Program

6.2 Are the IESO's forecast 2019 operational costs for the Market Renewal Program appropriate in the context of the scope and timing of the overall project?

Staff IR #26

INTERROGATORY

Reference: Exhibit C-2-1, Page 11 of 15

Preamble:

Table 8: 2019 MRP Capital Budget by Work Stream

Questions:

a) Please describe each of the capital work initiatives within the Energy and Capacity work streams that the IESO anticipates completing in 2019 and their respective contribution to the $38 million capital cost budget.
b) Is the IESO on track to complete all projects described in response to part a) of this question as of April 9, 2019?
c) In 2019, MRP capital costs are forecast to increase from $4 million to $38 million. What are the major capital work stream initiatives anticipated by the IESO that will drive this budget increase?
d) How much of the forecasted 2019 MRP capital budget of $38.0 million does the IESO anticipate spending before the business case is finalized and approved?
e) If applicable, please explain why the IESO considers it reasonable to expend the capital budget prior to the finalization of the MRP's business case.

RESPONSE

a) For each of the Energy and Capacity work streams, the capital initiative is the development of a detailed design. The Energy detail design activities started in January 2019 and will continue throughout the remainder of the year. $25.9 million of the capital budget is allocated to Energy detailed design. $10 million of this capital budget has been allocated in Q4-2019 to an initial payment for the Dispatch Scheduling and Optimization (DSO) Engine.

b) Yes, the IESO on track to complete all projects described in response to part a) of this question as of April 9, 2019.

c) Please see a) above.

d) The IESO forecasts to spend approximately $8.7 million of the 2019 MRP capital budget prior to the approval of the business case.

e) Please see the response to OEB Staff Interrogatory 25 d), at Exhibit I, Tab 6.2, Schedule 1.2.

APPrO INTERROGATORY 6

6.0 Market Renewal Program

6.2 Are the IESO's forecast 2019 operational costs for the Market Renewal Program appropriate in the context of the scope and timing of the overall project?

6.3 Are the IESO's forecast 2019 capital costs for the Market Renewal Program appropriate in the context of the scope and timing of the overall project?

APPRO INTERROGATORY 6

Reference: Exhibit A-2-2 p 23

Preamble: Page 23 of the IESO Business Plan states that a "cost efficiency" risk is that "The Market Renewal Program is adversely affected by system dependencies, and/or a lack of resources with market design and implementation expertise"

Questions:

a) What is the potential impact of this risk on operational and capital budgets, for 2019 and in the context of the scope and timing of the overall project?

b) What is the potential impact of this risk on the operational and capital budgets related to the capacity work stream specifically, for 2019 and in the context of the scope and timing of the overall project?

c) What is the IESO doing to address this risk in relation to operational and capital budgets, for 2019 and in the context of the scope and timing of the overall project?

d) What is the IESO doing to address this risk in relation to operational and capital budgets related to the capacity work stream specifically, for 2019 and in the context of the scope and timing of the overall project?

e) Exhibit I, Tab 6.2 Sch 8.20 Attachment 17 p 1 filed in last year's EB-2018-0143 proceeding refers to KPMG being onboard as a risk consultant and working jointly with the MRP and Enterprise risk teams, who are working on the refinement of existing IESO risk assessment framework which includes gap analysis between the Project Risk Framework (PRF) and Enterprise Risk Management (ERM) and identifying leading best

practices to integrate with the PRF and ERM. Please provide all documents resulting from this process and relating to the MRP.

OEB Decision on Motion and Procedural Order No. 4 dated May 31, 2019

The IESO is required to file the further information discussed under the Market Renewal Program section including assessment and mitigation of risks.

APPrO 6(e)

For APPrO 6(e) the OEB requires the IESO to file the entire KPMG risk assessment report for the MRP. If there are aspects of this report that require confidential treatment, the IESO should seek such treatment with rationale for its confidentiality request.

ADDITIONAL RESPONSE
(per OEB Decision on Motion and Procedural Order No. 4 May 31, 2019)

a) b), c) and d) Please see the response to OEB Staff Interrogatory 12, at Exhibit I, Tab 1.3, Schedule 1.12.

b) For an updated response to this interrogatory please see the Update on Status of Incremental Capacity Auction, Exhibit C, Tab 2, Schedule 2.

The risks are the same for the Capacity workstream as for the project.

c) See a) above.

d) For an updated response to this interrogatory please see the Update on Status of Incremental Capacity Auction, Exhibit C, Tab 2, Schedule 2.

These risks will be addressed for the Capacity workstream in the same way as for the project.

e) Provided as Attachment 1 to this exhibit is KPMG's Risk Assessment Observations and Recommendations for the Market Renewal Program. The table below includes detailed IESO management responses to each KPMG recommendation for mitigation of the identified Systemic Risks.

Provided as Attachment 2 to this exhibit is management's April dashboard report to the IESO Board of Directors on the Key MRP Risks identified in the KPMG Report.

The IESO notes that the scope of KPMG's review is limited to its perspective as a third party opinion at a point in time of a complex multi-year project. These risks were reviewed by IESO management through its standard IESO impact and likelihood criteria which is aligned with the Enterprise Risk Management (ERM) framework. The ERM Framework was integrated within the Enterprise Planning framework, to support risk assessment, analysis, mitigation and monitoring. The framework identifies the classes of risk for each of the Strategic, Project and Operational Risk streams and establishes risk appetite and tolerances for each stream. Management's response to KPMG's risk mitigation recommendations provides context to the KPMG Report as it leverages KPMG's deep expertise in risk management of large scale, complex IT-based projects. The MRP continues to progress from high level design to detailed design in its various streams and risks are monitored, assessed and reported on by MRP management on an ongoing basis.

Systemic Risk 1 - There is a risk of inconsistent buy-in to the MRP as both a transformational market and organizational initiative. This is resulting in decision-making and resource allocation challenges.				
KPMG Recommendation		Management Response	Target Date	Action / Outcome
1	Explicitly define individual accountabilities for MRP success at all levels of the organization (including all IESO VPs and Directors)	Individual accountabilities for MRP success included in 2019 Performance Objectives for CEO and all directs reports to the CEO	Feb 28, 2019	CEO's 2019 Goals/ Objectives published internally for employee visibility and accountability
			May 15, 2019	2019 Goals/ Objectives of 8 CEO direct reports published internally
		An MRP Roles, Responsibilities and Accountabilities (RRA) document will be prepared for each Direct Report of the CEO. This activity will be driven by the Program Delivery Executive.	Sept 30, 2019	Eight RRA documents prepared and agreed to by MRP and each Direct Report of the CEO
2	Instill discipline, structure and accountability for achieving MRP objectives through the Market Renewal Executive Steering Committee (MRESC)	The MRESC terms of reference and membership will be reviewed and updated to instill discipline, structure and accountability for achieving MRP objectives.	Sept 30, 2019	Revised Terms of Reference for MRESC

Systemic Risk 1 - There is a risk of inconsistent buy-in to the MRP as both a transformational market and organizational initiative. This is resulting in decision-making and resource allocation challenges.				
KPMG Recommendation		Management Response	Target Date	Action / Outcome
3	Socialize the MRP Integrated project plan and key milestones with the MRESC and the Functional Business Units. This will build understanding and commitment for collective responsibility and accountability for achieving MRP objectives. The integrated plan and supporting communications should be a dynamic process with regular updates across the business.	The 2019 Program Execution Plan was approved by the Program Sponsor and CEO in August 2018. The plan formed the basis for the MRP inputs in the IESO's 2019 Business Plan, which was approved by the IESO BoD in August 2018. The Program Delivery Executive will drive the creation of a detailed and integrated schedule involving all IESO groups that directly contribute to delivering the process, tool, Market Rule, documentation and contract changes necessary for the Capacity and Energy streams of MRP, and enabling functions including stakeholder engagement, communications, government relations and regulatory affairs.	Nov 30, 2019	Completion of the 2020 Program Execution Plan
			Nov 30, 2019	Completion of the Integrated Program Plan covering remaining project timeframe.
4	As part of the MRP business case development, clearly define and socialize the MRP objectives and benefits at both the market and program work stream levels to reinforce consistent understanding across the IESO of the expected outcomes and values.	The MRP Business Case is scheduled to be completed and approved by the IESO by the end of Q3 2019, and provided to stakeholder by the end of Q4 2019	Dec 30, 2019	MRP Business Case approved by the IESO BoD at the August 2019 meeting

Systemic Risk 1 - There is a risk of inconsistent buy-in to the MRP as both a transformational market and organizational initiative. This is resulting in decision-making and resource allocation challenges.				
KPMG Recommendation		Management Response	Target Date	Action / Outcome
5	Increase the visibility and frequency of the executive leadership team's commitment to, and active support of the MRP through regular and recurring meetings (i.e. IESO town hall, divisional and department meetings) and communication across the organization on the progress and actions taken in relation to the MRP. MRP must be consistently viewed across the organization as a major priority at both the department and individual accountability levels.	An MRP Program Level Communications Plan has been developed which includes the following approaches: a) Ensuring employee communications activities are included in communications plans for major program milestones b) Ensuring MRP information on the HUB is current and links are provided to learn more c) Including information about MRP at key internal events such as the all-employee meeting and town halls	March 31, 2019	Rollout of MRP Communication Plan
6	Complete a high frequency employee MRP engagement and communications strategy. This is contingent on the implementation of recommendations 1-5.	Resources have been brought on-board the MRP team with the primary focus of robust and wide-ranging internal engagement, building on the effective internal engagement to enhance the quality of the Capacity and Energy High Level Designs. An internal engagement strategy for the Detailed Design phase will be developed: • by the end of June for the Energy stream • by the end of August for the Capacity stream.	Aug 31, 2019	Rollout of the internal engagement strategy

1

Systemic Risk 2 - There is a risk that the IESO does not have a consistent framework to support strategic, major operational, key stakeholder and resource allocation decisions for MRP. This impedes consistent and agile decision-making resulting in competing and conflicting resourcing priorities for both MRP and IESO initiatives.				
KPMG Recommendation		Management Response	Target Date	Action / Outcome
7	Establish an MRP Committee of the Board to assist the Board of Directors with the responsibility of supporting decisions regarding matters related to the design and development of market renewal. The MRP Committee should be supported by an independent advisory council with strong market, legal, regulatory public policy and IT experience. Refer to Appendix 1 for a recommended MRP Issue & Risk Governance Accountability and Reporting Structure.	IESO Management will work with the IESO BoD to consider the creation of an MRP Committee of the Board. IESO Management will work with the IESO BoD to consider creating an Independent Advisory Council to support the MRP Committee of the Board.	Sept 1, 2019	BoD decision on how to effectively support and oversee Market Renewal activities and decisions
8	Enhance the current PMO and Enterprise Risk Management methods with a leading practice decision framework. Elements of the framework include: i. Appropriate decision framing; ii. Creative, doable alternatives; iii. Meaningful and reliable information sources to support evidence based decision-making; iv. Clear values and trade-offs; v. Logically correct reasoning; and vi. Commitment to action including clearly defined accountabilities and delivery dates. Key decisions and follow-up status should be documented at each MRESC meeting.	The establishment of the Program Governance Framework, which will outline where types of decision should be made, will address this risk.	June 2019	Rollout of the Program Governance Framework with the corresponding decision flow.
9	Integrate the framework into all key decision processes for MRP including Board, ELT, and MRESC.	Management will incorporate any decision making framework established in response to recommendation 8 into the MRP.	TBD – subject to timing on recommendation 8	Implementation of the Program Governance Framework

1

Systemic Risk 3 - There is a risk that MRP currently does not have a strategic resourcing strategy that is aligned with the overall program objectives, key deliverables, and milestones. This may result in short-term or reactive resourcing decisions that may delay future phases of the program.				
KPMG Recommendation		Management Response	Target Date	Action / Outcome
10	Conduct an ongoing assessment of the minimum resource numbers and skills required to fulfill the requirements of MRP work streams including the immediate resource requirements to complete the detailed design phase. Resource requirements should be risk calibrated to support resource trade-offs and allocation decisions against the MRP critical path. A continuous risk-based assessment of the minimum resource numbers and skills required to fulfill the requirements of MRP work streams should be conducted with strict adherence to the mythical man-month principle as the MRP matures.	A re-assessment of minimum resource numbers to fulfill MRP detailed design phase needs will be completed.	June 30, 2019	Overall detailed design resource needs listing, including any identified gaps.
11	Adopt a portfolio management approach for all major IESO and MRP projects, initiatives and operational activities. This will increase the understanding of the interdependencies and resource requirement s for all major initiatives and operational requirements across the organization.	Portfolio management for projects is already in place, which includes MRP. The quarterly project prioritization process, facilitates the trade-off decisions needed to be made to regularly re-balance the project portfolio. In addition, the Divisional Plans for 2020-2022 are underway which identifies interdependencies between functional areas, including MRP	April 30, 2019 for the Divisional Plans. Quarterly for the project prioritization.	Completed Divisional Plans. Re-balanced project portfolio.

Systemic Risk 3 - There is a risk that MRP currently does not have a strategic resourcing strategy that is aligned with the overall program objectives, key deliverables, and milestones. This may result in short-term or reactive resourcing decisions that may delay future phases of the program.				
KPMG Recommendation		Management Response	Target Date	Action / Outcome
12	Address the longer term and fulfill the immediate needs of the MRP project, through the three (3) year human capital strategy.	A strategy will be developed to address the identified immediate and longer term resourcing needs of MRP, i.e. specific skill requirements, in the quantity needed. The strategy will include ways to source external candidates, attract them to the IESO/MRP project, and engage them in their new roles. Opportunities to further grow the capabilities of internal staff by utilizing the extensive skills, experience and knowledge of MRPs existing subject matter experts (SMEs) will also be identified.	Aug 31, 2019 (Based on item #10 being completed by June 30, 2019)	Identification of strategic approach to attract, hire, engage and retain new and existing resources.

APPrO INTERROGATORY 7

6.0 Market Renewal Program

6.2 Are the IESO's forecast 2019 operational costs for the Market Renewal Program appropriate in the context of the scope and timing of the overall project?

6.3 Are the IESO's forecast 2019 capital costs for the Market Renewal Program appropriate in the context of the scope and timing of the overall project?

APPRO INTERROGATORY 7

Reference: Exhibit B-3-1 p 3 and Exhibit C-2-1 p 12-13

Preamble: The Application states at B-3-1 that operating results for the MRP were $2.3 million above budget for 2018 while capital results were $2.7 under budget for 2018 due to delayed completion of high level designs. The Application further states at Exhibit C-2-1 p 12 that "Additional resources were added to the program in order to complete HLD (high-level design) within the current schedule"

Questions:

a) Please confirm that the $2.7 million underspending on capital will still need to be spent in future years.

b) Please confirm that the $2.3 million overspending on operations was due to high level designs taking more time and work than anticipated.

c) Please confirm that the $2.3 million overspending on operations will result in a $2.3 million overspending on the MRP overall (relative to previously estimated costs for the MRP).

d) Please confirm that per Exhibit C-2-1 p 7 line 14, the full $2.3 million overspending on operations for the MRP program in 2018 is $2.3 million overspending on the capacity work stream.

e) Why was so much more work required in relation to estimates for the capacity work stream?

f) Is the capacity work stream and the incremental capacity auction more complicated than anticipated?

g) Is overspending anticipated for the capacity work stream and the incremental capacity auction in 2019?

h) Exhibit I, Tab 6.2 Sch 8.20 Attachment 17 p 1 filed in last year's proceeding refers to delays in re-procuring a consultant to support the incremental capacity auction project. Please elaborate on this challenge and indicate whether it has been resolved. Please also confirm that this challenge did not result in additional costs.

i) Has the IESO conducted a review of its responsibility for the inefficiencies in the operation of the current market so that it can ensure that it does not repeat the problems that led to the need to expend hundreds of millions of dollars to fix the inefficacies in the market?

OEB Decision on Motion and Procedural Order No. 4 dated May 31, 2019

APPrO 7(i)

The IESO is required to file the further information discussed under the Market Renewal Program section including an assessment of the current inefficiencies or issues with the market.

RESPONSE

a) For an updated response to this interrogatory please see the Update on Status of Incremental Capacity Auction, Exhibit C, Tab 2, Schedule 2.

Capital planned but not spent in 2018 is included in the 2019 plan.

b) Expense overspend is related to high level design requiring additional time and effort to support the associated external stakeholder engagement, along with the additional work related to the Non-Emitting Resources Sub-Committee and associated external stakeholder engagement.

c) The IESO is not able to determine what impact, if any, this will have on the overall project estimate at this time.

d) The IESO confirms that the operating costs for Capacity in 2018 were $2.3 million overspent.

e) For an updated response to this interrogatory please see the Update on Status of Incremental Capacity Auction, Exhibit C, Tab 2, Schedule 2.

When the estimate was created a number of the auction features were undefined. Through the engagement on the auction design a number of features were carefully considered and analyzed such as multi-year commitments and adding seasonality to the auction. The IESO and stakeholders decided to pursue a unique Ontario design that required review of other jurisdictions, analysis and extensive engagement. The High Level of Design also includes a greater level of details such as demand curve analysis than was originally anticipated.

f) For an updated response to this interrogatory please see the Update on Status of Incremental Capacity Auction, Exhibit C, Tab 2, Schedule 2.

The capacity work stream is not more complicated than anticipated. It is a project that is designing and implementing an entirely new market structure for Ontario and as such requires extensive research, analysis and stakeholder engagement. The IESO is working diligently to ensure that best practices from other markets are examined and included, or built on, as appropriate. Now that high level design is complete more detailed information is available to determine a more precise schedule.

g) For an updated response to this interrogatory please see the Update on Status of Incremental Capacity Auction, Exhibit C, Tab 2, Schedule 2.

No. The IESO has provided its budget for 2019 for Capacity.

h) The IESO is subject to the Ontario Public Service Procurement Directive, December 2014 (the "Directive") as it applies to "Other Included Entities." The Directive sets out mandatory requirements related to the procurement of goods and services to ensure a fair, open and transparent process. To align with these principles, the IESO initiated a competitive procurement process to secure consulting services related to the Incremental Capacity Auction. Running a competitive procurement process does require additional time to complete, which resulted in delays; however, this process was completed successfully and the issue has been resolved. Additional incremental costs were not incurred as a result of this procurement.

ADDITIONAL RESPONSE
(per OEB Decision on Motion and Procedural Order No. 4 May 31, 2019)

i) Please see the response to SEC Interrogatory 21, at Exhibit I, Tab 6.1, Schedule 10.21.

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APPrO INTERROGATORY 8

6.0 Market Renewal Program

6.2 Are the IESO's forecast 2019 operational costs for the Market Renewal Program appropriate in the context of the scope and timing of the overall project?

6.3 Are the IESO's forecast 2019 capital costs for the Market Renewal Program appropriate in the context of the scope and timing of the overall project?

APPRO INTERROGATORY 8

Reference: Exhibit A-2-2 p 8 and Exhibit C-2-1 p 3

Preamble: Exhibit C-2-1 p 3 describes the Incremental Capacity Auction ("ICA") work stream and states at lines 11-13 that the ICA initiative will develop an enduring market-based mechanism that will secure incremental capacity to help ensure Ontario's reliability needs are met cost effectively. Exhibit A-2-2 p 8 states as follows (emphasis added):

> With new capacity expected to be required as early as 2023, the introduction of an incremental capacity auction – a key part of the work currently being undertaken by the IESO's Market Renewal Program – will be core to meeting future needs. When the market is redesigned, improved price signals will provide a clearer picture of what and where services are needed, and help drive decisions that ensure reliability.

Questions: Please elaborate on the timing of the incremental capacity auction and the ICA work stream. Specifically:

a) If the incremental capacity auction is a key part of meeting future needs including new 2023 capacity, how will the incremental capacity auction be undertaken in time given that MRP work is not scheduled to be completed until 2022 the earliest, and has already been delayed?

b) How does the IESO currently determine what and where services are needed?

c) Why has the IESO failed to-date to present a clearer picture of what and where services are needed?

d) How does the proposed incremental capacity market provide a clearer picture of what and where services are needed than the status quo?

e) What steps has the IESO taken to ensure that it will not continue to procure resources that it does not require?

f) How will the capacity market solve the problem described in question e) above?

g) How do the costs of a capacity market procurement compare to the costs of an RFP for resources?

RESPONSE

a) For an updated response to this interrogatory please see the Update on Status of Incremental Capacity Auction, Exhibit C, Tab 2, Schedule 2.

The IESO currently plans to hold the first ICA in late 2022 for the 2025/26 commitment period. A transitional capacity auction is being introduced to deliver capacity for each year from 2020 to 2024.
In the fall of 2018, the IESO released a forecast showing that Ontario is emerging from a capacity surplus to a period of system need. In particular, it is expected that there will be a signifiant increase in the need for capacity from 2022 to 2023, arising as a result of expiring long-term generation contracts, and nuclear units being refurbished or retired.

In order to ensure that we are able to reliably meet the expected capacity requirement, the IESO is developing an auction mechanism for acquiring capacity in advance of MRP's Incremental Capacity Auction (ICA), the first auction of which will deliver capacity in 2025

To meet capacity needs prior to 2025, the Transitional Capacity Auction (TCA) will evolve the existing Demand Response Auction (DRA) to enable competition between additional resource types, starting in December 2019. Introducing the TCA now creates an opportunity to phase-in some of the design features contemplated for the more comprehensive ICA, allowing both the IESO and participants to learn and adjust before the expected period of significant system need. At the same time, the increased competition fostered by the TCA is expected to continue to be cost effective, further benefiting ratepayers in the nearer term[1].

[1] Additional materials on the TCA are available at:
http://www.ieso.ca/en/Sector-Participants/IESO-News/2019/02/Meeting-Ontarios-Capacity-Needs-2020-2024-materials-now-available

b) The IESO currently identifies the system's long-term requirements through its planning processes which include planning outlooks, bulk transmission studies, regional plans and other studies, such as operability studies. These requirements inform infrastructure investments and asset management decisions for future market development.

c) For an updated response to this interrogatory please see the Update on Status of Incremental Capacity Auction, Exhibit C, Tab 2, Schedule 2.

The IESO conducts system planning as part of an ongoing process and has been reporting on system needs and requirements starting with the 2007 Integrated Power System Plan. More recently, the IESO has focused on evolving its planning processes to increase transparency and to align processes and outputs with the Market Renewal Program, including the ICA.

As discussed in the reponse to APPrO Interrogatory 1 b), at Exhibit I, Tab 1.1, Schedule 11.01 ,the IESO will be publishing its first annual planning outlook September 2019, as part of its evolution of planning processes, and communicating system needs on a regular basis. [2]

d) For an updated response to this interrogatory please see the Update on Status of Incremental Capacity Auction, Exhibit C, Tab 2, Schedule 2.

Part of the changes being introduced by the IESO to support competitiveness is to provide better information to the marketplace including regular, transparent long-term forecasts and outlooks. The ICA process introduces additional planning elements such as qualifying capacity, setting target capacities and executing a rules based process.

e) For an updated response to this interrogatory please see the Update on Status of Incremental Capacity Auction, Exhibit C, Tab 2, Schedule 2.

Please see b) above. Additionally, the IESO is in the process of formalizing its bulk planning process to ensure system needs are identified in a transparent manner and that the process is coordinated with market acquisition processes such as the Incremental Capacity Auction (ICA). System requirements identified through planning processes

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[2] Further context on how system needs have evolved and information on past publications can be found in the most recent IESO Planning Outlook engagement on Resource Adequacy, dated April 12, 2019: http://www.ieso.ca/-/media/Files/IESO/Document-Library/engage/20-year-planning-outlook/opo-20190412-presentation.pdf?la=en

will guide market acquisitions. In addition, market acquisition processes themselves can include mechanisms (e.g., the ICA's rebalancing auctions) to adjust acquisitions if system requirements change. Together, both planning and market acquisitions processes will ensure the IESO does not acquire resources it does not require.

f) For an updated response to this interrogatory please see the Update on Status of Incremental Capacity Auction, Exhibit C, Tab 2, Schedule 2.

The ICA is designed to ensure Ontario has adequate capacity and is focused on meeting that need. Annual auctions provide more flexibility to adjust capacity commitments in line with changes in demand as well as more flexibility in pursuing other market changes and efficiencies which can be difficult with long term contracts.

g) The 2017 Benefits Case report outlined in detail how the cost of procuring capacity through a capacity market compared to the cost of procuring capacity through RFPs. The report showed that operating a regular market for capacity, compared to periodic procurements can lead to significant cost savings both in both the short and longer term. The savings are mainly attributable to greater competition and better alignment with system needs.

APPrO INTERROGATORY 9

6.0 Market Renewal Program

6.2 Are the IESO's forecast 2019 operational costs for the Market Renewal Program appropriate in the context of the scope and timing of the overall project?

6.3 Are the IESO's forecast 2019 capital costs for the Market Renewal Program appropriate in the context of the scope and timing of the overall project?

APPRO INTERROGATORY 9

Reference: Exhibit C-2-1 p 2-3

Preamble: Pages 2 and 3 of Exhibit C-2-1 describe the four MRP initiatives which are grouped into two work streams, energy and capacity.

Questions: Please elaborate on the relationship between the energy and capacity work streams. Specifically:

a) Is it necessary, in 2019 and/or in the context of the scope and timing of the overall project, for the IESO to move forward with the capacity work stream at the same time as the energy work stream, as currently planned?

b) Is it cost efficient, in 2019 and/or in the context of the scope and timing of the overall project, for the IESO to move forward with the capacity work stream at the same time as the energy work stream, as currently planned?

RESPONSE

a) For an updated response to this interrogatory please see the Update on Status of Incremental Capacity Auction, Exhibit C, Tab 2, Schedule 2.

The capacity work stream is developing an Incremental Capacity Auction (ICA) in order to meet Ontario's future capacity needs. Timing for the ICA is driven by the need to have a mechanism in place to procure capacity in a flexible and cost effective manner. Furthermore, as stated in the 2017 Benefits Case, the effectiveness of investment signals through a capacity market will be higher if combined with more efficient pricing in energy and ancillary services markets. Hence, pursuing both energy and capacity at the same time will amplify the benefits.

b) For an updated response to this interrogatory please see the Update on Status of Incremental Capacity Auction, Exhibit C, Tab 2, Schedule 2.

There are cost efficiencies associated with designing and delivering the capacity work stream at the same time as the energy work stream. Incremental costs associated with delivering a significant project such as dedicated project space, IT infrastructure, project management and administration are shared. Both work streams will impact things such as internal and external processes, market rules, interfaces, hardware, software and infrastructure. Replacement or significant changes to these items incur costs, and those costs can be minimized by making the changes necessary for energy and capacity work stream scope at the same time as opposed to making one set of changes, then subsequently going back and making a second set of changes.

APPrO INTERROGATORY 10

6.0 Market Renewal Program

6.2 Are the IESO's forecast 2019 operational costs for the Market Renewal Program appropriate in the context of the scope and timing of the overall project?

6.3 Are the IESO's forecast 2019 capital costs for the Market Renewal Program appropriate in the context of the scope and timing of the overall project?

APPRO INTERROGATORY 10

Reference: Exhibit C-2-1 p 3 and Exhibit C-2-1 p 14

Preamble: Exhibit C-2-1 p 14 states that the Brattle Group report provided a benefit-cost analysis of the MRP in 2017. Exhibit C-2-1 p 3 describes the ICA work stream and states that the ICA initiative will develop an enduring market-based mechanism that will secure incremental capacity to help ensure Ontario's reliability needs are met cost effectively.

Questions:

a) Did the Brattle Group report provide analysis of the costs to the IESO if the IESO pursued another option (i.e., aside from the ICA) to obtain capacity in 2023? If so, please provide.

b) If no, how can the IESO know that pursuing the ICA in 2019 (and beyond) is the most cost-effective/appropriate manner to secure capacity needed for 2023?

RESPONSE

a) The cost assessment in the 2017 Benefits Case took a conservative approach and only considered costs arising from implementation of the Market Renewal design. The alternative case of maintaining status quo (i.e. the cost of administering and supporting large centralized supply procurements) was considered, however costs were not included in the analysis. Other alternatives to obtain capacity were not considered in this analysis.

b) For an updated response to this interrogatory please see the Update on Status of Incremental Capacity Auction, Exhibit C, Tab 2, Schedule 2.

The 2017 Benefits Case determined significant net benefits, inclusive of costs, from implementation of the Market Renewal design. Net benefits from Market Renewal are

expected to significantly overweigh the net benefits from the alternative case of maintaining status quo. The IESO's previous experience with demand response auctions and the experience of other jurisdictions with capacity auctions, led the IESO to pursue this option.

APPrO INTERROGATORY 11

6.0 Market Renewal Program

6.2 Are the IESO's forecast 2019 operational costs for the Market Renewal Program appropriate in the context of the scope and timing of the overall project?

6.3 Are the IESO's forecast 2019 capital costs for the Market Renewal Program appropriate in the context of the scope and timing of the overall project?

APPRO INTERROGATORY 11

Reference: Exhibit C-2-1 p 14

Preamble: Exhibit C-2-1 p 14 states that "the IESO will be better able to discuss the MRP's actual and projected cost savings, annually and cumulatively, by work stream" "with the development of the business case" expected to be completed Q4 2019. The IESO will also require "approval by the IESO Board of Directors" of the business case.

Questions:

a) How can the OEB be confident that the quarter of the IESO's proposed revenue requirement which is allocated to the MRP for 2019 is appropriate if the IESO cannot currently discuss the actual and project cost savings anticipated as a result of its current spending on the MRP?

b) Can the IESO complete the business case prior to the completion of the HLD process?

c) Please advise as to steps that the IESO can take in order to complete the business case sooner than Q4 2019.

d) What is the amount of resources that the IESO has committed to investment in Market Renewal to-date despite the lack of a business case?

e) Does the IESO expect that its Board of Directors will approve the business case?

f) If the IESO's Board of Directors does not approve the business case, what will be the next steps for the IESO?

g) Is the IESO using a consultant to help prepare the business case?

h) Please provide the terms of reference for the consultant

i) Exhibit I, Tab 6.2 Sch 8.23 SEC 23 filed in EB-2018-0143 lists the Brattle Group as consultant for various tasks in 2018. Is the Brattle Group is assisting the IESO in the development of the business case to be completed this year?

j) If the answer to the above interrogatory is yes, wouldn't it be preferable from an accuracy and risk perspective to use another consultant for the 2019 business case in order to ensure any oversights in the 2017 cost benefit analysis are corrected by a new set of eyes and perspective on MRP benefits and costs?

k) How will the IESO engage with stakeholders regarding the 2019 business case?

RESPONSE

a) Please see the response to OEB Staff Interrogatory 25 d), at Exhibit I, Tab 6.2, Schedule 1.25.

b) The business case is currently under development and stakeholders will be engaged in Q2 2019, prior to the start of the detailed design engagements for the work streams. The business case analysis will reflect the published HLDs.

c) The Business Case is tracking for completion in Q4 2019.

d) Please see the response to OEB Staff Interrogatory 14, at Exhibit I, Tab 1.3, Schedule 1.14.

e) Yes, the IESO expects that its Board of Directors will approve the business case.

f) The MRP business case is being developed in alignment with IESO's business planning processes, including stakeholder engagement, key risk assessment and mitigation and cost benefit analysis to fully inform IESO's Board. If any comments are provided by the Board as a condition of approval, these will be implemented.

g) The Business Case is being developed by the IESO, with analytical support from the Brattle Group for specific sections of the quantitative analysis to estimate the benefits from Market Renewal.

h) The analytical support provided by the consultant for the specific sections of the Business Case were procured as part of the RFP detailed in Attachment 1 to this response.

i) Please see g) above.

j) The IESO ran an open and competitive procurement to contract with a third party for analytical support for Future Market Evolution work, including the quantification of the Market Renewal benefits to inform the Business Case. Based on assessment of the submissions to RFP, the IESO selected the Brattle Group as the vendor that most appropriately met the selection criteria.

k) For an updated response to this interrogatory please see the Update on Status of Incremental Capacity Auction, Exhibit C, Tab 2, Schedule 2.

The IESO will engage stakeholders on MRP-wide items, including development of the Business Case through a series of MRP Stakeholder meetings, the first of which will be in early May 2019. The IESO intends to share the methodology, approach and findings with stakeholders in these meetings. The MRP meetings are open meetings that will run in parallel with the more specific, technical engagement sessions to support the development of the detailed designs for the Energy and Capacity streams. The MRP meetings will engage stakeholders on a range of cross-cutting issues, including the Business Case.

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APPrO INTERROGATORY 12

6.0 Market Renewal Program

6.2 Are the IESO's forecast 2019 operational costs for the Market Renewal Program appropriate in the context of the scope and timing of the overall project?

6.3 Are the IESO's forecast 2019 capital costs for the Market Renewal Program appropriate in the context of the scope and timing of the overall project?

APPRO INTERROGATORY 12

Reference: Exhibit A-2-2 p 17 and Exhibit C-2-1 p 12-14

Preamble: The IESO business plan states that total average FTEs for the IESO are expected to increase in 2019-2022 due to temporary resourcing required to support the MRP.

Exhibit C-2-1 p 13 states that in 2019, the MRP is continuing its staffing efforts.

Exhibit C-2-1 p 14 states that the Brattle Group report provided a benefit-cost analysis of the MRP in 2017.

Questions:

a) Please comment on how the IESO's goals of efficient operation are affected by the hiring of temporary staff for the MRP. Please address this question taking into account the complexity of the MRP and the fact that it is intended to address problems in the IESO's market which have been known since market opening (i.e., temporary staff will presumably be significantly less familiar with problems that have been known since market opening as compared to the IESO's non-temporary staff).

b) Please explain what is meant by the MRP continuing its staffing efforts. The IESO has referred to staffing challenges, please elaborate.

c) How does the IESO ensure that temporary staff is efficient?

d) Please provide the amount by which revenue requirement for 2019 is increased due to the need to train temporary staff.

e) Please confirm that according to table 10 at C-2-1 p 13, the IESO had to hire 24 more people than anticipated/budgeted for in 2018.

f) If the above is confirmed, please provide the impact to revenue requirement for 2019 of hiring 24 additional staff members.

g) Please advise as to whether Brattle group estimates in 2017 included the level of staffing for the MRP which the IESO proposes for 2019.

h) In light of staffing challenges and overspending on the capacity work stream in particular, would it be more efficient to focus the IESO's MRP resources in 2019 (and beyond) by focusing on only one of the two proposed workstreams – for example, focusing only on the energy work stream in the near future and address capacity needs in 2023 by another process?

RESPONSE

a) Temporary staff refers to resources that have joined the IESO on a contract basis for a fixed duration term. Temporary staff may work directly on the MRP, or alternately they may backfill vacancies in the IESO core operations while full time employees rotate onto the MRP for a fixed period of time. Resources obtained on a temporary basis bring various skills needed for the IESO's success, which can include direct electricity sector-specific skills and experience obtained in Ontario through a different employer or in different jurisdictions, or alternately they may bring discipline-specific skills (e.g. project management, business analysis, etc.) that are necessary for project work but not specific to the electricity sector.

b) Please see the response to OEB Staff Interrogatory 12, at Exhibit I, Tab 1.3, Schedule 1.12.

c) The use of temporary staff to support a project such as MRP ensures that the IESO does not over hire permanent resources that will not be required for regular business activities once the MRP concludes.

d) The revenue requirement for 2019 has not been increased with any specific amount for training of temporary staff. For regular staff, there was $0.1 million allocated to the program for external training costs. The expectation is that there is a significant amount of learning and development on the job and that external training requests will be minimal.

e) The IESO had to hire 24 more people than budgeted for in 2018.

f) For an updated response to this interrogatory please see the Update on Status of Incremental Capacity Auction, Exhibit C, Tab 2, Schedule 2.

All of the incremental resources hired in 2018 were also identified in the MRP staffing plans in order to support both the detailed design and the implementation phase of the program. The incremental cost of 24 resources is $4.2 million, with the majority budgeted under the capital budget.

g) The 2017 Benefits Case included a preliminary indication of implementation costs, but did not estimate staffing requirements. Staffing levels included in the 2019 Business Plan filing are based on the IESO's resourcing approach to implement MRP.

h) Please see the response to APPrO Interrogatory 9, at Exhibit I, Tab 6.2, Schedule 11.09 regarding cost efficiency. In terms of resources, there is not a direct overlap of skills and experience required between the energy and capacity work streams. The energy stream is making significant changes to existing processes and tools, and has a large IT component. The capacity stream is developing many new processes, and has a large resource planning component.

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AMPCO INTERROGATORY 21

6.2 Are the IESO's forecast 2019 operational costs for the Market Renewal Program appropriate in the context of the scope and timing of the overall project?

6.3 Are the IESO's forecast 2019 capital costs for the Market Renewal Program appropriate in the context of the scope and timing of the overall project?

AMPCO-21

INTERROGATORY

Ref: EB-2018-0143, Schedule 8.21 Sec 21 Updated October 2, 2018

Ref 2: C-2-1 Page 12

Preamble: In 2018, at reference #1, the IESO estimated the total MRP budget at $217.6 million. At reference #2, the IESO estimates the current total MRP budget at $246.9 million.

a) Please indicate if the 2019 budget estimate of $246.9 million includes the Operability workstream.

b) Please provide a cost variance analysis between the 2018 and 2019 MRP total budget estimates.

c) Please discuss any significant changes in scope between the two estimates.

RESPONSE

a) The 2019 budget estimate does not include an Operability work stream.

b) For an updated response to this interrogatory please see the Update on Status of Incremental Capacity Auction, Exhibit C, Tab 2, Schedule 2.

The operating budget for MRP has reduced by $1.0 million as resources will start to work on detailed design, which is a capital expense, in 2019. This was offset by work to enable participation in future markets, as well as legal and consulting support for the development of market rules.

The capital budget has increased by $34.0 million to support the development of detailed design and the start of the implementation phase at the end of 2019.

Budget (In $ millions)	2018	2019	Variance
Compensation & Benefits	7.4	5.7	(1.7)
Professional & Consulting	4.1	4.8	0.7
Operating & Administration	1.2	1.2	0.0
Operating Total	**12.7**	**11.7**	**(1.0)**
Compensation & Benefits	1.9	17.1	15.2
Professional & Consulting	1.4	7.1	5.7
Operating & Administration	0.7	13.8	13.1
Capital Total	**4.0**	**38.0**	**34.0**
Compensation & Benefits	9.3	22.8	13.5
Professional & Consulting	5.5	11.9	6.4
Operating & Administration	1.9	15.0	13.1
Program Total	**16.7**	**49.7**	**33.0**

c) As MRP continues to plan, engage and refine estimates, updates on estimate ranges will be provided. No additional scope has been included.

AMPCO INTERROGATORY 26

6.2 Are the IESO's forecast 2019 operational costs for the Market Renewal Program appropriate in the context of the scope and timing of the overall project?

6.3 Are the IESO's forecast 2019 capital costs for the Market Renewal Program appropriate in the context of the scope and timing of the overall project?

AMPCO-26

INTERROGATORY

Ref: C-2-1 Page 4

Preamble: The IESO indicates in 2019 a number of MRP milestones are expected to be achieved.

Please provide a table that sets out the key 2019 MRP milestones.

RESPONSE

For an updated response to this interrogatory please see the Update on Status of Incremental Capacity Auction, Exhibit C, Tab 2, Schedule 2.

The table below sets out the key MRP milestones for 2019:

MRP Key Milestones 2019							
Phase	**Milestone**	**Workstream**	**Target Date**	**Revised date**	**Actual date**	**Status**	**Comments**
High Level Design	Publish High Level Designs (DAM&ERUC)	Energy	31-Dec-18	N/A	22-Dec-18	Completed	
High Level Design	Approve High Level Designs (SSM,DAM&ERUC)	Energy	15-May-19	12-Jun-19		Planned	Aligned with June IESO Board of Directors Meeting
High Level Design	Publish ICA High Level Design	Capacity	01-Apr-19	N/A	22-Mar-19	Completed	
High Level Design	Approve ICA High Level Design	Capacity	01-Aug-19	28-Aug-19		Planned	Aligned with August IESO Board of Directors Meeting
High Level Design	MRP Business Case	General	30-Sep-19	28-Aug-19		Planned	Aligned with August IESO Board of Directors Meeting

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AMPCO INTERROGATORY 27

6.2 Are the IESO's forecast 2019 operational costs for the Market Renewal Program appropriate in the context of the scope and timing of the overall project?

6.3 Are the IESO's forecast 2019 capital costs for the Market Renewal Program appropriate in the context of the scope and timing of the overall project?

AMPCO-27

INTERROGATORY

Ref: C-2-1 Page 4

Preamble: The IESO indicates the business case will be provided to the IESO Board of Directors for approval in Q3 2019 and to stakeholders thereafter.

a) Please provide the current status of completion of the business case compared to plan.

b) Will stakeholders be provided with a draft business case for review and comment prior to IESO Board approval? If not, why not?

RESPONSE

a) The Business Case is currently under development and is on track to be completed in Q4 2019.

b) Please see the response to APPrO Interrogatory 11 k), at Exhibit I, Tab 6.2, Schedule 11.11.

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AMPCO INTERROGATORY 31

6.2 Are the IESO's forecast 2019 operational costs for the Market Renewal Program appropriate in the context of the scope and timing of the overall project?

6.3 Are the IESO's forecast 2019 capital costs for the Market Renewal Program appropriate in the context of the scope and timing of the overall project?

AMPCO-31

INTERROGATORY

Ref: C-2-1 Page 10 Table 6

a) Please provide the contingency amount included in the 2019 MRP budget and explain how it was derived.

b) Please explain how the cancellation of Cap and Trade affects the IESO's MRP projected savings.

RESPONSE

a) The table below includes the contingency amount included in the 2019 MRP budget. As operating expenditure was well defined and understood; a lower contingency percentage was applied. For capital costs there was greater risk exposure for professional and consulting estimates, and the initial payment for the Dispatch Scheduling and Optimization (DSO) Engine, and therefore a larger percentage of contingency was applied.

	Operating ($M)	**Capital ($M)**
BP Budget	$11.2	$23.2
Contingency	$0.4	$2.8
BP approved (incl Cont.)	$11.6	$26.0
% of Cont.	3.6%	12.1%

b) MRP net benefits will be modelled in the forthcoming Business Case to comply with the Federal Carbon Backstop as a proxy for future carbon costs which are, at this time, uncertain. The previous Provincial Cap and Trade program, now cancelled, will not be considered as part of the Business Case modelling exercise.

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AMPCO INTERROGATORY 33

6.2 Are the IESO's forecast 2019 operational costs for the Market Renewal Program appropriate in the context of the scope and timing of the overall project?

6.3 Are the IESO's forecast 2019 capital costs for the Market Renewal Program appropriate in the context of the scope and timing of the overall project?

AMPCO-33

INTERROGATORY

Ref: A-2-2 Appendix 3

Please provide a breakdown and description of MRP capital projects for 2019 to 2021.

RESPONSE

For an updated response to this interrogatory please see the Update on Status of Incremental Capacity Auction, Exhibit C, Tab 2, Schedule 2.

Please see the response to OEB Staff Interrogatory 26 a), at Exhibit I, Tab 6.2, Schedule 1.26.

Once the detailed designs are complete for each of the Energy and Capacity work streams, the capital spend will correspond to the implementation of those designs in any following years.

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ENERGY PROBE INTERROGATORY 20

Issue 6.3 Are the IESO's forecast 2019 capital costs for the Market Renewal Program appropriate in the context of the scope and timing of the overall project?

INTERROGATORY

EP-20

Reference: EB-2017-0143 Exhibit C, Tab 2, Schedule 1, page 5

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

Have additional business cases been completed in 2018 or 1Q 2019? If so, please provide these.

RESPONSE

The benefits case was completed in 2017. The Business Case will be completed in Q4 2019. No additional business cases have been completed.

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