Independent Electricity System Operator
EB-2020-0230
2020-2021 Rates

Interrogatories of Environmental Defence

Interrogatory # 4.0-ED-1

Reference: Exhibit G-2-1, Attachment 1, Page 8 & 14

Preamble:

> Page 8: "A thorough financial assessment of the new market design has concluded that the program is financially viable, delivering at least $750 million in net financial benefits to Ontario consumers over the first 10 years of implementation."
>
> Page 14: "the Net Present Value for the Market Renewal Program Energy Stream has been assessed at $290 million - $450 million with a Benefits-to-Costs Ratio of 2.7 - 4.3"

Questions:

(a) Please describe in detail the degree to which the forecast $750 million in benefits from MRP are related to and dependent on continued use of gas-fired power generation.
(b) Approximately what percent of the benefits of MRP are related to and dependent on gas-fired power generation?
(c) Please re-estimate the benefits of MRP if the output of Ontario's gas plants is capped at a level that would produce 2.5 Mt CO2e per year and completely phased out by 2030. Please provide a response on a best efforts basis, making and stating assumptions and caveats as necessary. Please re-estimate both the gross benefits ($750 million), the net present value figures, and the benefits-to-costs ratio.

Interrogatory # 4.0-ED-2

Reference: Exhibit G-2-1, Attachment 1

Questions:

(a) What are the expected ongoing costs for MRP that would persist annually beyond 2030? Please provide a breakdown of these by type.
(b) What are the expected ongoing benefits for MRP that would persist annually beyond 2030? Please provide a breakdown of these by type.
(c) What expected ongoing benefits would persist annually beyond 2030 for MRP if gas-fired generation is eliminated by the end of 2030, all else equal? Please provide a breakdown of these by type.

Interrogatory # 4.0-ED-3

Reference: Exhibit G-2-1, Attachment 1, Page 9

Questions:

(a) Please describe qualitatively how MRP will likely impact the output of Ontario's gas plants as a share of Ontario's electricity supply, all else equal. Please also estimate the impacts, if any, as a % change and kWh change annually in Ontario's gas plant output in comparison to what would occur without MRP.
(b) Please describe qualitatively how each specific element of MRP (the single schedule market, the day-ahead market, and the enhanced real-time unit commitment project) will likely impact the output of Ontario's gas plants as a share of Ontario's electricity supply, all else equal. Please also estimate the impacts, if any, as a % change and kWh change annually in Ontario gas plant output in comparison to what would occur without MRP.

To address uncertainties, please make and state assumptions, simplifications, and caveats as necessary.

Interrogatory # 4.0-ED-4

Reference: Exhibit G-2-1, Attachment 1, Page 35

Preamble:

> "Improved price signal for flexibility: under the current two-schedule design, price signals for resources to provide flexibility by ramping up or down to meet demand fluctuations are muted and based on an unconstrained system. With the introduction of SSM, the use of actual resource ramp rates and consideration of system constraints will produce accurate and transparent prices that will better value flexibility and incentivize resources to respond and invest to meet ramping needs."

Questions:

(a) Please describe how the change described above will impact each resource type in general (e.g. gas, wind, solar, storage, etc.). In particular, please address whether the change will in general or in aggregate cause that resource type to be dispatched more or less often.
(b) Will the change described above cause resource types that are easier to dispatch quickly to be dispatched more often?

Interrogatory # 4.0-ED-5

Reference: Exhibit G-2-1, Attachment 1, Page 36

Preamble:

"Resource commitment plays an important role in the electricity market as it provides time and certainty to NQS resources, such as a combined-cycle gas turbine facility, to make necessary arrangements to produce energy. As explained previously, the current commitment process does not take all this information into account when making commitments, leading to inefficient resource selections. The more efficient commitment process will be designed to consider all resource costs and respect individual operational characteristics over multiple hours of the day. As a result, the inefficiency costs associated with today's commitment process will be eliminated."

Questions:

(a) Please describe how the change described above will impact each resource type in general (e.g. gas, wind, solar, storage, etc.). In particular, please address whether the change will in general or in aggregate cause that resource type to be dispatched more or less often.
(b) Will the change described above cause resource types that are easier to dispatch quickly to be dispatched more often?
(c) Because resource commitment provides time and certainty to NQS resources, such as a combined-cycle gas turbine facility, to make necessary arrangements to produce energy, will this change likely result in an increase in output from combined-cycle gas facilities on an annual basis? If yes, by approximately how much (% and MWh)?

Interrogatory # 4.0-ED-6

Reference: Exhibit G, Tab 2, Schedule 1, Plus Attachment(s), Page 3
Exhibit G-2-1, Attachment 1, Page 8 & 12

Preamble:

Page 3: "The business case estimates $800 million in net system benefits expected to be realized in the first 10 years after implementation"

Page 8: "A thorough financial assessment of the new market design has concluded that the program is financially viable, delivering at least $750 million in net financial benefits to Ontario consumers over the first 10 years of implementation."

Page 12: "Better scheduling and commitment of resources in the real-time operating timeframe delivering system-wide efficiency benefits of over $500 million over the first 10 years of operating the new market design.

Elimination of approximately $450 million of unnecessary Congestion Management Settlement Credits over the first 10 years of operating the new market design. These benefits will accrue directly to Ontario consumers."

Questions:

(a) Please reconcile the three different benefits estimates cited above. Please include a table with a breakdown of the reconciliation.

Interrogatory # 4.0-ED-7

Reference: Exhibit G-2-1, Attachment 1, Page 8 & 12

Preamble:

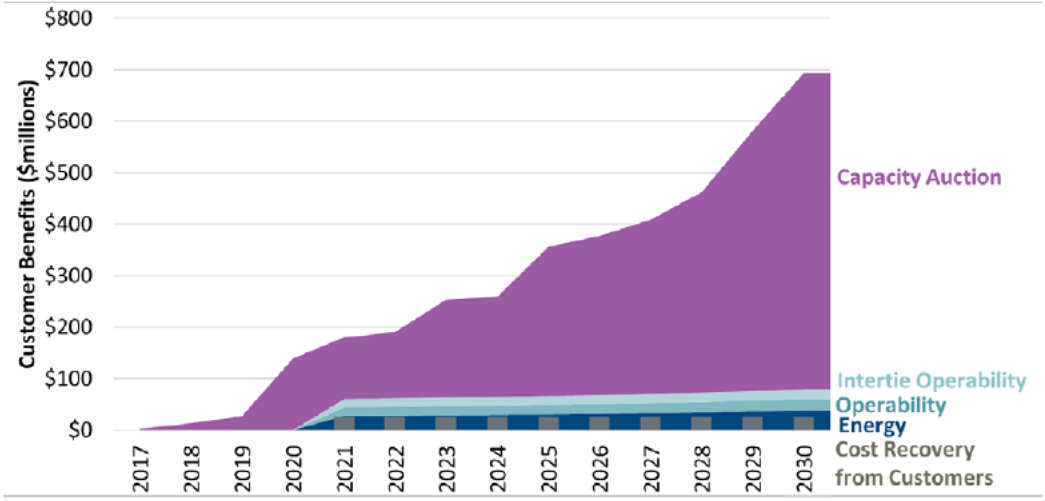
> Page 8: "A thorough financial assessment of the new market design has concluded that the program is financially viable, delivering at least $750 million in net financial benefits to Ontario consumers over the first 10 years of implementation."
>
> Page 12: "Better scheduling and commitment of resources in the real-time operating timeframe delivering system-wide efficiency benefits of over $500 million over the first 10 years of operating the new market design.
>
> Elimination of approximately $450 million of unnecessary Congestion Management Settlement Credits over the first 10 years of operating the new market design. These benefits will accrue directly to Ontario consumers."

Questions:

(a) Will all of the $750 million in net financial benefits accrue to energy consumers?
(b) If not, please estimate the benefits ($) that will accrue to energy consumers and recalculate the NPV based only on those benefits accruing to energy consumers.
(c) Will a portion of the $750 million in net financial benefits accrue to resource/generation owners? If yes, approximately how much?
(d) According to the Brattle Group report[1] (p. 26), "The day-ahead settlement also allows natural-gas generators to procure much of their fuel on a day-ahead basis, which reduces fuel-related intra-day balancing costs." Approximately how much of the $750 in net financial benefits is attributable to this factor? Will this benefit accrue to gas plant owners or consumers? Please explain and estimate the division between beneficiaries.
(e) Page 108 of the Brattle Group report identifies the share of monetized efficiencies that will accrue to customers (pasted below). Please (i) reconcile these figures with the IESO figures, (ii) explain the difference in estimates, (iii) produce and updated figure with the IESO's best estimates.
(f) Please file the Brattle Group report for ease of reference by an exhibit number in this proceeding.

[1] Brattle Group, *The Future of Ontario's Electricity Market: A Benefits Case Assessment of the Market Renewal Project*, prepared for the IESO, April 20, 2017.

Figure 24
Estimated Customer Share of Efficiency Benefits from Market Renewal
(Excludes Customer Benefits from Avoided Transfer Payments, Gaming, and Other Unquantified Benefits)



Notes:
Capacity exports start in 2017 and the capacity auction begins in 2020. Energy and operability reforms begin in 2021. Once Projects come into service, the IESO recovers costs based on expected life of the investment. Cost recovery is small compared to large sector benefits.

Interrogatory # 4.0-ED-8

Reference: Exhibit G-2-1, Attachment 1, Page 8 & 12

Preamble:

> Page 8: "A thorough financial assessment of the new market design has concluded that the program is financially viable, delivering at least $750 million in net financial benefits to Ontario consumers over the first 10 years of implementation."
>
> Page 12: "Better scheduling and commitment of resources in the real-time operating timeframe delivering system-wide efficiency benefits of over $500 million over the first 10 years of operating the new market design.
>
> Elimination of approximately $450 million of unnecessary Congestion Management Settlement Credits over the first 10 years of operating the new market design. These benefits will accrue directly to Ontario consumers."

Questions:

(a) The Brattle Group report[2] found that "assume that only 66–72% of the potential benefits from energy and internal operability enhancements estimated in Sections III and IV will

[2] Brattle Group, *The Future of Ontario's Electricity Market: A Benefits Case Assessment of the Market Renewal Project*, prepared for the IESO, April 20, 2017.

be achieved under Market Renewal, absent amendments to existing contracts and regulated rate structures." (see p. 85). Does the IESO agree? If not, please provide its estimate.

(b) Will all of the $750 million in net financial benefits accrue to energy consumers absent amendments to existing contracts and regulated rate structures as described in the Brattle Group report? If not, please quantify the amount that would not be realized.

(c) Is the IESO implementing the "amendments to existing contracts and regulated rate structures" as described in the Brattle Group report on page 85? Please list each amendment needed and whether they are being implemented.

Interrogatory # 4.0-ED-9

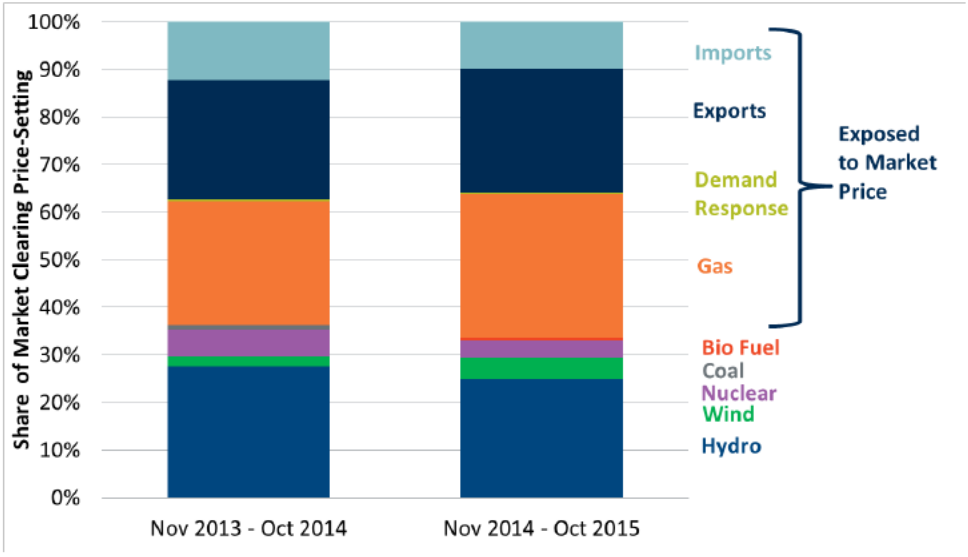
Reference: Exhibit G-2-1, Attachment 1, Page 8 & 12

Questions:

(a) Do the estimated $750 million in net benefits relate to resources exposed to market prices? If not, (i) please explain why not, (b) estimated the percent of benefits attributable to resources exposed to market prices, and (c) explain how benefits can be attributable to resources not exposed to market prices that recoup their costs minus HOEP through the GA.

(b) The Brattle Group report[3] describes includes a chart of resources that are and are not exposed to market prices on page 85 (pasted below). Does the IESO believe this is accurate? Please recreate this for 2019 and forecast for 2030, making and stating assumptions, simplifications, and caveats as necessary.

Figure 19
Marginal Price-Setting Resources on an Hour-Ahead Basis in Ontario



Sources and Notes:
Hour-ahead marginal resources, adapted from Ontario Energy Board (2016b), Figure 1-7.

[3] Brattle Group, *The Future of Ontario's Electricity Market: A Benefits Case Assessment of the Market Renewal Project*, prepared for the IESO, April 20, 2017.

Interrogatory # 4.0-ED-10

Reference: Exhibit G-2-1, Attachment 1, Page 8 & 12

Preamble: The Brattle Group report states the following at page 100:

> "**Reduced curtailment and spilling of non-emitting resources.** Certain frictions in the current market design, including intertie scheduling, preclude the IESO from fully utilizing all resources with flexibility on the system. Moreover, incentives for flexible resources are insufficient and not market-driven. This results in the unnecessary curtailment and spilling of non-emitting low-marginal-cost resources such as hydro, wind, and nuclear generation. The curtailed output from these resources cannot be utilized to meet energy needs. Compared to an alternative design that absorbs this energy for productive use, the current design increases production costs and carbon emissions, or results in forgone export market revenues. Market Renewal will increase the extent to which Ontario can utilize its non-emitting resources without curtailments by better enabling system flexibility."[4]

Questions:

(a) MRP has been developed further since that report. Will the current iteration of MRP capture the benefit described above? Please explain in detail, including a discussion of whether all or part of this benefit will be realized.
(b) Other things equal, will MRP increase or decrease the non-emitting resources as a proportion of Ontario's electricity supply? Please estimate the proportion change (%) on a best-efforts basis.

Interrogatory # 4.0-ED-11

Reference: Exhibit G-2-1, Attachment 1

Preamble: The Brattle Group report forecasts a "likely reduction in gas sales" on page 112.[5]

Questions:

(a) Was this forecast reduction attributable to the energy, operations, or capacity projects as described by Brattle Group?
(b) Is the IESO still forecasting a reduction in gas sales due to MRP (all other things equal)? If yes, by approximately how much (m3)? If not, why not and what has changed?

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[4] Brattle Group, *The Future of Ontario's Electricity Market: A Benefits Case Assessment of the Market Renewal Project*, prepared for the IESO, April 20, 2017.
[5] Brattle Group, *The Future of Ontario's Electricity Market: A Benefits Case Assessment of the Market Renewal Project*, prepared for the IESO, April 20, 2017.

Interrogatory # 4.0-ED-12

Reference: Exhibit G-2-1, Attachment 1

Preamble: The Brattle Group report states as follows on page 114:

> **What Is the Role of Electricity Markets in Curbing Carbon Emissions?**
>
> Wholesale electricity markets and capacity auctions offer a powerful tool for policymakers intent on reducing carbon emissions from the electric sector. Market-based carbon policies, including carbon taxes and cap-and-trade regimes, attempt to accurately reflect the societal costs of carbon in the price of any commodity whose production creates carbon emissions.
>
> Electricity is one such commodity. Wholesale electricity markets can be harnessed to reduce carbon emissions from power plants. Electricity markets naturally complement cap-and-trade policies by integrating carbon allowance costs into the energy offer prices that fossil plants submit to the system operator. These offers therefore accurately reflect production costs, including the cost of carbon emissions. The system operator then dispatches the plants that minimize total cost to meet load and maintain reliability. Plants with high emission rates run less as their costs increase relative to plants with lower emission rates. Thus, the energy market efficiently reduces carbon emissions in the lowest-cost manner. Capacity markets offer an opportunity to enhance carbon policy effectiveness through long-term investment and retirement decisions. Suppliers offering into a capacity auction take into account their expected carbon costs and energy market net revenues. This makes lower-emitting resources more competitive compared to higher-emitting resources. Over time this incentivizes high-emitting resources to retire and be replaced by lower-emitting resources.
>
> However, electricity markets on their own will not necessarily achieve emissions reductions in the absence of a market-based carbon policy. If no carbon pricing exists or carbon prices are too low to achieve the desired level of emissions reductions, then the wholesale electricity market will simply minimize other costs without fully considering the public policy value of avoiding carbon emissions.[6]

Questions:

(a) Please describe the extent to which this goal will be achieved in the current iteration of MRP.
(b) Please describe any aspects of MRP as conceived at the time of the Brattle Group report that would allow markets to reduce carbon emissions in the lowest-cost manner that are no longer being pursued in the current iteration of MRP.
(c) If a policy decision were made in the future to decarbonize electricity by 2030, how would MRP contribute to achieving that policy, if at all?

---

[6] Brattle Group, *The Future of Ontario's Electricity Market: A Benefits Case Assessment of the Market Renewal Project*, prepared for the IESO, April 20, 2017.

(d) Please describe in detail how carbon prices are incorporated in the prices of different resource options (if at all) and the IESO's expectations on how carbon prices will be incorporated in 2025 and 2030?

Interrogatory # 4.0-ED-13

Reference: Exhibit G-2-1, Attachment 1

Preamble: According to a report published by the Ontario Clean Air Alliance:

> "1. EV batteries with bi-directional chargers are cheaper than gas plants for peak power
> 2. EVs are an enormous opportunity to lower electricity rates & carbon emissions
> 3. By 2030, EVs will have more than twice the capacity of Ontario's gas plants
> 4. When all cars are electric, their gross discharge capacity (GW) will be more than 6 times Ontario's total peak demand
> 5. Technical barriers to bi-directional charging have largely disappeared (with more bi-directional-capable cars and chargers and million+ mile batteries)"[7]

Questions:

(a) How will MRP impact the cost-effectiveness or potential for vehicle-to-building integrations that offset building loads at the time of peak demand with a car's battery, if at all?
(b) How will MRP impact the cost-effectiveness or potential for vehicle-to-grid integrations that offset grid loads at the time of peak demand with a car's battery, if at all?
(c) Can customers or third-party aggregators providing peak demand reductions through vehicle-to-building technology participate in current or future IESO capacity auctions? If not, when is that expected to be available?
(d) Can customers or third-party aggregators providing peak power through vehicle-to-grid technology participate in current or future IESO capacity auctions? If not, when is that expected to be available?
(e) When are the next IESO capacity auctions scheduled for and how much capacity will be procured in each?
(f) Has the IESO worked with Peak Power or other providers of vehicle-to-grid/building technology to ensure the removal of market barriers for the provision of capacity, peak energy, and other services through V2X?

Interrogatory # 4.0-ED-14

Reference: Exhibit G-2-1, Attachment 1

Preamble: The Brattle Group report states as follows on page vi states:

[7] https://www.cleanairalliance.org/wp-content/uploads/2021/08/Vehicle-to-Building-and-Grid-for-Peak-Needs-August-3-2021.pdf.

"As shown, we estimate that Market Renewal will produce benefits with a present value of approximately $510 million from energy market reforms, $580 million from operability reforms, and $2,530 million from capacity auction reforms."[8]

Questions:

(a) Is it correct to say that the "energy market reforms" and "operability reforms" are being pursued in the current iteration of MRP before the OEB in this proceeding?
(b) Has the IESO already implemented some or all of the capacity auction reforms as described in the Brattle Group report? If yes, please list which are and are not being implemented.
(c) In light of the large benefits to the capacity market reforms indicated in the Brattle Group report, please describe each capacity market reform that is not being pursued and explain why.

Interrogatory # 4.0-ED-15

Reference: Exhibit G-2-1, Attachment 1, Page 11

Preamble: "The new design will ensure a greater share of system costs are reflected in market prices, eliminating the need for most out-of-market payments."

These questions will help to explain the challenges that MRP is attempting to resolve. For the answers to the below questions, the IESO may wish to focus on a recent representative year, such as 2018 or 2019 (which are pre-pandemic).

Questions:

(a) What share of supply costs are currently reflected in market prices? Please provide a detailed answer, including appropriate references to the Global Adjustment ("GA") and Hourly Ontario Electricity Price ("HOEP").
(b) When the IESO refers to costs being reflected outside of market prices, are these costs reflected in the GA, either wholly or partially? If only partially, what percent of these costs are reflected in the GA versus elsewhere, and where else are those costs reflected?
(c) Please describe at a qualitative level the percent of energy costs that are reflected outside of market prices (i.e. outside of HOEP). Please also estimate the approximate percent of energy costs reflected outside of market prices (i.e. outside of HOEP).
(d) Please describe at a qualitative level the percent of operating costs that are reflected outside of market prices (i.e. outside of HOEP). Please also estimate the approximate percent of operating costs reflected outside of market prices (i.e. outside of HOEP).
(e) Please complete this table to the best of the IESO's ability, making and stating assumptions, simplifications, and caveats as necessary:

Breakdown of Total Electricity Supply Costs				
	Operating costs	Capital costs	Return/profit	Total

[8] Brattle Group, *The Future of Ontario's Electricity Market: A Benefits Case Assessment of the Market Renewal Project*, prepared for the IESO, April 20, 2017.

% reflected in HOEP				100%
% reflected in GA				100%
% elsewhere				100%
Total	100%	100%	100%	

(f) Please complete this table to the best of the IESO's ability, making and stating assumptions, simplifications, and caveats as necessary:

Breakdown of Total Electricity Supply Costs			
	Energy costs	Capacity costs	Total
% reflected in HOEP			100%
% reflected in GA			100%
% elsewhere			100%
Total	100%	100%	

Interrogatory # 4.0-ED-16

Reference: Exhibit G-2-1, Attachment 1, Page 11

Preamble: "The new design will ensure a greater share of system costs are reflected in market prices, eliminating the need for most out-of-market payments."

Questions:

(a) Currently, what share of system costs are reflected in market prices?
(b) After MRP is completed (e.g. in 2030), approximately what share of system costs will be reflected in market prices.

To address future uncertainties, please make and state assumptions, simplifications, and caveats as necessary.

Interrogatory # 4.0-ED-17

Reference: Exhibit G, Tab 2, Schedule 1, Plus Attachment(s), Page 1

Preamble:

> "MRP high level design began with two streams: the energy stream and the capacity stream (known as the Incremental Capacity Auction (ICA)). In July 2019, further work on the ICA portion of the program was stopped as a result of updated planning assumptions and in response to stakeholder feedback."

Questions:

(a) Please describe in detail the updated planning assumptions that resulted in the stoppage of the ICA portion of the program. Please include the specific data points with respect to the updated assumptions. Please also describe how the assumptions resulted in the stoppage.
(b) Please describe in detail the stakeholder feedback that resulted in the stoppage of the ICA portion of the program. Please summarize the feedback and attribute each item to the specific stakeholder or stakeholder type (e.g. generator, customer, LDC, etc.).

Interrogatory # 4.0-ED-18

Reference: Exhibit G-2-1, Attachment 1, Page 13

Preamble:

> "The Single Schedule Market design changes will ensure that costs are transparently reflected in price thereby enabling resources, including new technologies such as energy storage and demand response, to more actively participate in the market and make more informed decisions when supplying and withdrawing energy."

Questions:

(a) Please elaborate on how MRP will allow storage and demand response to more actively participate in the market.

Interrogatory # 4.0-ED-19

Reference: Exhibit G-2-1, Attachment 1, Page 33, 35

Preamble: Page 33 describes a new kind of hydro modelling. Page 35 notes that "Reduced spilling from hydro resources should also increase taxpayer revenues from hydro rental charges."

Questions:

(a) Does the hydro modelling included in MRP present an opportunity to reap additional benefits from MRP?
(b) Please confirm that hydro rental charges are currently treated as a variable operating cost as part of a hydro facility's Gross Revenue Charge ("GRC"). If not, please explain.
(c) Please confirm that hydro facilities are currently expected to spill water when the price is below their GRC?
(d) In the quote above from page 35, the IESO notes that hydro rental charges result in taxpayer revenues. Please describe how hydro rental charges are different from other variable operating costs from the perspective of society as a whole.
(e) Once MRP has been implemented, could the hydro modelling be set such that hydro facilities will only spill when the price is below their variable operating costs excluding hydro rental charges?

(f) Please provide a best-efforts order-of-magnitude estimate of additional hydro rental charges that might be generated if the MRP hydro modelling were to be done in accordance with (e) above.
(g) What kinds of resources provide bids in the range of $0 to $14 / MWh?
(h) Under the current market structure, are gas plants ever operating when a hydro facility that could serve the same load is spilling? If yes, how often and approximately for how much energy (MWh)?

Interrogatory # 4.0-ED-20

Reference: Exhibit G-2-1, Attachment 1, Page 36

Preamble:

> "As a proxy of the inefficiency costs of today's commitment process, over 1,300 historical resource commitments were individually inspected. A re-dispatch of resources to meet demand was undertaken with each individual resource commitment removed and replaced by resources that were available and not previously scheduled. The total costs to meet demand from the re-dispatched case were compared against the total costs with the original commitment and its start-up costs. If the redispatched costs were lower, the inefficiency cost of the commitment was the difference between the two values, otherwise, the commitment was efficient."

Questions:

(a) Please provide the underlying documentation in which this comparison was made. Please also provide any internal summaries of this comparison.
(b) For the aggregate of all time periods deemed in efficient, please provide a breakdown of the (i) original commitment and (ii) the re-dispatched commitment, by MW per generator type (gas, wind, solar, nuclear, etc.).

Interrogatory # 4.0-ED-21

Reference: Exhibit G-2-1, Attachment 1, Page 36

Preamble:

> "Resource commitment plays an important role in the electricity market as it provides time and certainty to NQS resources, such as a combined-cycle gas turbine facility, to make necessary arrangements to produce energy."

Questions:

(a) Please provide a list of which resource types are and are not NQS (gas, wind, solar, nuclear, etc.).

(b) NQS resources "can take significant time to start-up and must remain online for a minimum amount of time to avoid damaging equipment." Please provide the approximate range of start-up times and minimum operating times for the different resource types.

Interrogatory # 4.0-ED-22

Reference: Exhibit G-2-1, Attachment 1, Page 38

Preamble:

> "The assessment indicated that on average 9% and 13% of net exports to MISO and the New York Independent System Operator respectively have been inefficient.
>
> …Projecting the inefficiency costs of net exports avoided with improved pricing at the interties, a total of approximately $285 million is expected to be saved over the first 10 years MRP is in operation."

Questions:

(a) Will the elimination of the inefficiencies described above lead to greater or lesser net exports. Please calculate the change in % and MWh. The IESO may wish to use the data from 2015 to 2018 used to calculate the inefficiencies.
(b) For the years used by the IESO to answer (a), please provide a breakdown of Ontario's energy imports and exports (MWh) by resource type and trading partner (i.e. State or Province).
(c) Will the elimination of the inefficiencies described above likely increase or decrease the gas-fired electricity consumed in Ontario? Please estimate the likely change (% and MWh).
(d) Will MRP likely result in an increase or decrease in imported gas-fired generation on an annual basis, all else equal?

Interrogatory # 4.0-ED-23

Reference: Exhibit G-2-1, Attachment 1, Page 70

Preamble:

> "For the Decentralized Future scenario, … the financial benefits from improved commitment and competition could be lower than expected as the expansion of distributed resources reduces the role of traditional generators from which these benefits are attributable."

Questions:

(a) Please provide a breakdown of what the IESO would include in the category of "traditional generators" in the above reference.
(b) Please provide an approximate breakdown of the benefits of MRP according to the resource type they are attributable consistent with the above reference.

Interrogatory # 5.2-ED-24

Reference: Exhibit G, Tab 2, Schedule 3

Preamble: The IESO commissioned a study on the IESO Regulatory Scorecard by John Todd of Elenchus and filed it in EB-2017-0150, Exhibit C-1-1, Attachment 1. It stated at page 36:

> "[S]ince system losses are important to Ontario's electricity users it is reasonable to suggest that a comprehensive metric would be a useful indicator of the performance of the industry with respect to optimizing the various types of investment and grid management opportunities that impact on transmission system losses. …
>
> It may be reasonable to give further consideration to including a measure of the cost efficiency of transmission losses in the IESO scorecard in the future. Factors to consider include the degree of control that the IESO has over transmission losses and the division of responsibilities between the IESO and transmission owner/operators. In addition, further work would be needed to develop an acceptable methodology for calculating transmission loss metrics that factors in cost optimization."

Questions:

(a) Does the IESO agree with John Todd that "system losses are important to Ontario's electricity users."?
(b) Does the IESO agree with John Todd that "a comprehensive metric would be a useful indicator of the performance of the industry with respect to optimizing the various types of investment and grid management opportunities that impact on transmission system losses."?
(c) Has the IESO given further consideration to including a measure of the cost efficiency of transmission losses in the IESO scorecard and if not, when does it believe it would be the appropriate time to do so?
(d) Please provide a table with the following data for the most recent five years that this data is available:
    i. Annual transmission losses (MWh);
    ii. Annual transmission losses as a percent of annual demand;
    iii. The ratio of the figure in (ii) to the peak demand (peak hour); and
    iv. Transmission losses at the time of system peak demand as a percentage of system peak demand (peak hour).