

Market Renewal

Response to Stakeholder Feedback

Following the December 19 stakeholder meeting, the IESO asked stakeholders to provide their feedback, comments and questions on the preliminary results of the Benefits Case on December 19.

The IESO received feedback from:

Powerful Solutions
Power Advisory LLC
EDF EN Canada
Association of Major Power Consumers of Ontario (AMPCO)
Association of Power Producers of Ontario (APPrO)
Energy Storage Ontario
EnerNOC
ITC Holdings
Enbridge

This feedback has been posted on the IESO stakeholder webpage for this engagement.

Introduction

The IESO appreciates all of the feedback it has received from stakeholders, both public and private, in relation to the preliminary findings that will underpin the Benefits Case.

We have already begun work with stakeholders to address some key themes identified in the responses below. For example, in January we held a Market Renewal Working Group (MRWG) meeting to discuss stakeholder engagement for Market Renewal as well as how governance impacts the project. The IESO will continue to engage on these topics with stakeholders to make sure we get them right.

On other topics, such as the desire to revisit objectives and principles for the project and the need to expand our work on the interaction between the project and contracts, the IESO will continue to work with stakeholders as we move forward on this project. In particular, we will be revisiting the objective and principles with both the MRWG and Market Renewal SE on February 24.

We also received substantial commentary on specific design elements and options. While these are generally not directly tied to the development of the benefits case, we are taking note of them for future consideration and discussion. We look forward to engaging on these topics over the coming months.

Finally, we received a number of substantive comments related to the Benefits Case and the analysis therein. This feedback has been extremely useful to stress test the approach taken with the Benefits Case. It is helping to ensure that the report provides a robust high-level assessment of the range of benefits and costs that could reasonably be expected to be realized through Market Renewal.

The Benefits Case represents a significant milestone for the Market Renewal project. A compelling Benefits Case is necessary to advance the project and commence design discussions for each of the workstreams within Market Renewal. During the design phase, which is expected to take place throughout 2017, the details of each design element will be explored with stakeholders. This process will be a collaborative effort between the IESO and stakeholders in order to ensure important design decisions are made that collectively provide the greatest benefit to Ontario.

Summary of Feedback

#	Issue Area	Company	Feedback	IESO Response
1	Engagement	EDF	In order to fully understand all of the proposed changes, along with the impacts on generation contracts, both the Market Renewal Working Group (MRWG) and the wider stakeholder community will require more time to consult with the IESO via in-person public meetings and potentially via 1:1 meetings.	The IESO agrees with the need for fulsome discussion of topics within different stakeholder forums over time. The design discussions will take place within respective stakeholder engagements for each workstream. The IESO will present an overall engagement framework for Market Renewal at a future meeting. As mentioned at the last meeting, the IESO is also open to one-on-one discussions as needed.
	Engagement	Power Advisory	The timeline to finalize the Benefits Case is too fast. Considering that the scope of the Market Renewal Initiative (i.e., energy, operability, capacity, and consideration of contracts) is sufficiently broad and impactful, and covers nearly all aspects of the IAM, we	It is important to clarify that the Benefits Case is not the final phase of engagement for Market Renewal, nor is it meant as a design document or a guide for implementation. Further, many of the design changes assessed in the Benefits Case have been explored in the past by the MSP, through stakeholder engagements, and various other avenues such as the Electricity Market Forum.

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			believe more time is needed to properly develop and consult on the Benefits Case. Therefore, more MRWG and broader stakeholder meetings are needed.	The purpose of the Benefits Case is to provide a high-level assessment of the magnitude of benefits and costs. We believe that the Benefits Case assessment provides a strong case to move forward with the development of a high-level design for the workstreams identified in the report. Design options and decisions will be extensively stakeholdered prior to finalizing high-level designs.
	Engagement	Enbridge	We believe that there needs to be more attention to the Stakeholder feedback, adequately address concerns, (IESO) demonstrate how the concerns were addressed and the proposed solutions did in fact take into account all “constructive” inputs.	The IESO is also committed to having an effective engagement framework that will support the Market Renewal project. The IESO makes a best effort to consider and respond to any and all feedback that is received. Please let us know if you feel a question has been missed or not fully answered and IESO will review and respond accordingly.
	Engagement	APPrO	IESO should undertake a lessons learned exercise regarding why previous attempts to evolve Ontario’s market design did not succeed. Such an exercise will better inform all stakeholders of the magnitude of the initiative and potentially avoiding some issues from past efforts.	The IESO agrees that lessons learned is an important consideration looking forward and should be part of the workplan. Many of these experiences have been documented in previous engagement efforts and were part of the IESO’s work prior to the launch of the engagement. The IESO also presented and discussed a retrospective at the outset of this engagement to provide context for Market Renewal going forward. The presentation is available here . Brattle identified a number of lessons from other jurisdictions as they conducted their jurisdictional scan and these will help inform the next phase of the project.
	Engagement	APPrO	To be pragmatic, APPrO recommends that priority Market Renewal initiatives (e.g., inefficiencies within the real-time wholesale energy market) should be addressed first and then focus on other initiatives that are less pressing (i.e. capacity market) and/or require more time to work through.	The IESO believes that a holistic, integrated approach to Market Renewal is the most effective way to deliver this project. In past engagements stakeholders have stressed the need for a holistic approach rather than looking at one or two elements in isolation which can lead to seams issues and more challenging implementation. There are also timing considerations for a variety of design elements which support the case for moving forward with the various workstreams in parallel. For example, in order to capture the full benefits of a capacity auction, the IESO believes it would be prudent to design and implement an incremental capacity auction in advance of the need for new capacity, which is currently forecasted to emerge in the early 2020s.
	Engagement	APPrO	As a result of the large scope of potential market design changes, and the importance of future decisions, more	IESO agrees with the need for regular stakeholder meetings to share information and collectively assess options and discuss design considerations. These

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			frequent stakeholder meetings are needed along with additional membership and greater generator representation with the MRWG	meetings are expected to occur more frequently during the design phases and the IESO intends to make efforts to ensure all segments of the market are fairly represented. In addition, the IESO will be reviewing membership and the Terms of Reference for the MRWG to ensure it has balanced membership between incumbents and new market entrants and also loads/consumers and generators.
	Governance	APPrO	<p>A more effective governance framework than currently exists must be adopted to better ensure that accountability, transparency, and workability of the IESO-administered market going forward. The framework must include consideration of how rules should be made. This process should address:</p> <ul style="list-style-type: none"> • the mandates and roles for the different parties involved in rule making processes (SAC, TP, Board, Staff, market participants, others); • the criteria by which rules are evaluated, e.g., cost benefit both prospectively and look back; • the transparency of the process: the record upon which decisions are made (e.g. board minutes, after SAC, TP and other meetings). • relationship between rules and other policy instruments, e.g. market manuals; interpretation bulletins, etc.) • the conduct of and approach to market appeals; • enforcement issues, e.g., treatment of information between MACD and rest of IESO; conflicts of interest in process; and • How other jurisdictions manage their rule making process 	The IESO agrees that governance issues will need to be considered as part of Market Renewal. To this end, the IESO held an initial discussion with the MRWG on this topic on January 20, 2017. In the short term, addressing governance issues will involve enhancing the engagement framework and the role of MRWG in helping to guide the Market Renewal project and improving coordination between the WG and the Technical Panel. Moving forward, the IESO will continue to work with the MRWG on governance-related issues.
	Contracts	EDF, APPrO	Based on preliminary feedback received under the MRI, the IESO has only recently added a fourth Work Stream,	The goal of Market Renewal is to increase the efficiency of the wholesale markets while minimizing disruption to market participants, and in so doing deliver

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			<p>the Contracts Work Stream, to take into consideration issues related to IESO generation contracts and their interactions with the electricity market. Since generation supply in Ontario is primarily contracted by the IESO, this new work stream will have a significant impact on the overall cost-benefit analysis of the MRI.</p> <p>There needs to be greater acknowledgement and understanding of how key contract provisions may be triggered and addressed resulting from potential planned changes to Ontario's wholesale electricity market design and subsequent rule changes.</p>	<p>reliable electricity at the lowest possible cost. We understand the linkages between Market Renewal and the contracts. The IESO will work with stakeholders to make sure we move ahead in a cohesive fashion. If stakeholders have specific concerns that they would like to raise, the IESO would appreciate hearing those comments so we can move the discussion forward.</p> <p>While there is still significant work to be done on this topic, the Benefits Case does account for the impact of contracted and regulated facilities on the achievable benefits under Market Renewal. The approach taken is illustrated in slides 17-22 of the preliminary Benefits Case findings report (available here) and is discussed in greater detail in the draft Benefits Case report.</p>
	Contracts	ITC	<p>Under the contracts stream, IESO should put more emphasis on enabling the 'unlocking' of environmental attributes (EAs) and facilitate the trade of renewable generation and these environmental products over interties to support climate change policies. Ontario should develop a tracking system for unit-specific imports from non-imports from various markets, as is done in other markets.</p>	<p>Managing the interaction of environmental attributes with Market Renewal will be a key area for discussion as the project moves into the design phase. We appreciate your comments and look forward to working with stakeholders to tackle this question as we move ahead.</p>
	Capacity Auction	EDF	<p>Long term Power Purchase Agreements (PPA) for a term of 20-40 years is the best mechanism to acquire renewable electricity. With the continued declining capital costs, increasing useful operational life (capital costs can be amortized over a longer period) and increasing efficiencies for most renewable energy generating technologies, including wind and solar, significant downward pressure on energy costs are making renewables more affordable for the ratepayer.</p>	<p>The primary goal of a capacity auction is to meet Ontario's incremental capacity needs to maintain reliability at lowest cost. The megawatts associated with renewable generation (existing and post contract) were not considered incremental capacity in the analysis. For clarity, no assumptions were made about how renewable energy would be procured in the future upon the expiry of existing contracts.</p> <p>In broader terms, how a capacity auction mechanism can best integrate and work alongside with existing mechanisms (contracts and regulation) and other potential options to meet broader policy goals (which go beyond reliability and</p>

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			It is unclear how a 'technology agnostic design' is possible when the government must meet the objectives of the Climate Change Action Plan. Therefore, EDF EN recommends that the capacity market should incorporate specific design elements to enable the success of all resource types.	resource adequacy) will be an important discussion during the design phase of Market Renewal.
	Capacity Auction	Energy Storage Ontario	IESO should look at forms of commitment which would enable suitable for financing projects, and which would lower costs that can be passed on to ratepayers.	The capacity workstream will be the primary forum that will address the question of how to adequately accommodate investments and financing. These design decisions will be discussed in the engagements.
	Capacity Auction	ITC, EDF	<p>IESO should look to other jurisdictions, particularly those in the Northeast such as the PJM Interconnections and NYISO for evaluation of best practices and in order to inform market design changes for Ontario that have been successful in other markets.</p> <p>Mexico's newly designed capacity market should be added to the list of jurisdictions to be reviewed by IESO/Brattle Group. In short, Mexico's market offers both short-term and long-term capacity contracts, and non-performance penalties are based on aggregate performance during the 100 hours of the lowest reserve margin over the prior year, and not on an hour-to-hour basis. These market design features are unique and allowed for competition to bring on renewable resources.</p>	A key part of the design work will be to review and consider the experience and best practices of other jurisdictions. IESO will also look to stakeholders with any knowledge and experience to bring these to bear in design discussions. We will be open to one-on-one meetings to discuss your experience or views on other markets and will seek to provide opportunities for market participants to present their views through various engagement forums.
	Capacity Auction	ITC	As the IESO designs market rules and operating protocols for capacity export and import, they should be designed to support transactions with PJM as well.	This is a design discussion that could best be managed through the capacity workstream stakeholder engagement. The IESO will flag this item for future consideration and discussion.
	Capacity Auction	APPrO	We recommend further scrutiny on using the 2014 IESO capacity benefits study used in the Benefits Case in light	The assessment of potential benefits from a capacity auction in both the 2014 study (which was independently verified by NERA Economic Consultants) as

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			of the significant magnitude of benefits the major departure from how the Ontario electricity market has functioned over the past decade.	well as the updated assessment in the Benefits Case illustrate the very significant benefits that could be realized in Ontario. We remain open to stakeholder feedback to refine the range of benefits. However, we believe the value of this mechanism vs. the status quo has been thoroughly demonstrated in other jurisdictions and the concept is further supported by the experience of Ontario's demand response auction.
	Intertie Scheduling Frequency	ITC	ITC recommends increasing the intertie scheduling frequency to match real-time settlement intervals and reduce pre-scheduling requirements to no more than 20 min. with an allowance to use dynamic real-time scheduling for controllable HVDC ties.	There will be different forums within which we will address the specific nature and timeframe of intertie transactions. Design discussions will be addressed in those engagements.
	Intertie Scheduling Frequency	ITC	ITC supports design changes that would allow for import and export of ancillary services with neighbouring systems including PJM.	The IESO will flag it for future consideration and discussion in the different design engagements.
	Linkages to other initiatives	EDF, Power Advisory	MRI must integrate into its design current Ontario government policy.	The IESO agrees that good market outcomes necessitates good alignment between market and government policy and warrants ongoing discussion with stakeholders.
	Linkages to other initiatives	AMPCO	Has Brattle considered some of the other current Ontario initiatives in evaluating the benefits? For example, in the IESO's 2016 Operability Assessment, certain recommendations were made (in respect of variable generation) that could potentially impact the benefits calculations.	Brattle has worked closely with the IESO to understand how the design elements contemplated in the Benefits Case interact with established market constructs in Ontario as well as with constructs that are emerging or evolving (including capacity exports, the demand response auction, and the need for system flexibility). More specifically, the 2016 Operability Assessment was focused on operability needs through 2020. These are interim needs that may require action prior to Market Renewal being implemented. The benefits assessed by Brattle consider the potential for enduring market based solutions that would be implemented after this timeframe.
	Linkages to other initiatives	AMPCO	Programs and products that load customers currently participate in and/or provide to the system should be preserved and expanded, where practical. They should only be modified in a way that does not create barriers	We look forward to working with consumers through the design phase towards minimizing barriers to participation in Ontario's wholesale markets.

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			to participation.	
	Electricity Pricing	Powerful Solutions	A rate plan should be developed for Commercial and Institutional consumers that provides fixed rates for energy based on peak, mid-peak and off peak energy consumption - similar to the plan in effect for residential consumers. By having fixed rates, adjusted quarterly, facility owners, energy managers and other professionals can develop the business case for conservation and efficiency measures that will reduce peak electricity usage and shift consumption to off peak periods to reduce costs and enable more efficient use of energy by these consumers. On a broader basis, these measures will reduce peak demands on the electricity system every day of the year, not just summer and winter peak days, to mitigate costs and make better use of electricity generation resources	Developing rate plans is out of scope of the market renewal project. However, a key element of Market Renewal is to provide transparent, efficient price signals that provide accurate information to allow suppliers and consumers to make effective decisions for themselves as well as information for planners, regulators and policy makers who may use that information when considering pricing policies. The IESO will work with stakeholders to define a mechanism that works for Ontario.
	Energy Storage	Energy Storage Ontario	The Market Renewal process should determine the means to attribute value for performance (including speed of response) and multi-function/service characteristics of energy storage (i.e., appropriately value the stacking of benefits that can be provided).	We look forward to working with the storage community during the design phase for Market Renewal towards minimizing barriers to participation in Ontario's wholesale markets.
	Goals and Objectives	AMPCO, APPrO, Power Advisory	AMPCO is still uncertain as to what the overall goals and objectives are for the project. At this point in the process, a clear statement should exist that sets out what the destination is, and how it will be recognized once it is reached. IESO restatement and endorsement of a cost control goal would be very helpful to all stakeholders and would provide much needed direction and clarity to the Market Renewal initiative.	The IESO first presented and asked for stakeholder feedback on proposed principles and objectives for Market Renewal at the stakeholder meeting in April 2016. This is an opportune time to revisit and discuss these principles with stakeholders given the progress to date. This will be an agenda item at the February 24 meeting.

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			Principles to guide the evolution of the IAM that are in-line with Ontario's resource mix, energy and related policies and objectives (e.g., environmental, etc.), and Ontario's market structure and governance, should be developed and agreed to. This will provide directional guidance towards development of the Benefits Case and then the Market Renewal Workplan (which will define the initiatives to evolve the IAM over the next several years).	
	Goals and Objectives	Enbridge	Your stated objective is to create a more balanced and dynamic marketplace by establishing clear and transparent mechanisms for suppliers and consumers to meet system needs cost effectively. We are surprised that "efficiency" is missing this approach.	The IESO sees clear and transparent mechanisms for suppliers and consumers to meet system needs cost effectively as being synonymous with – rather than separate from – the idea of efficiency. The IESO plans to review and discuss objectives going forward with stakeholders at the February 24 meeting.
	Quantification of Benefits	Power Advisory, APPrO	<p>The IESO should consider expanding the analysis to support the Benefits Case. To date, there has been heavy reliance on analysis involving a review and application of previous IESO studies and studies from other U.S. jurisdictions. We generally support this analysis to filter options for inclusion in the to-be developed Market Renewal Workplan and prioritize plans for further analysis; however, before any final decisions are made we feel updated and Ontario-specific analysis should be carried out.</p> <p>The IESO should develop a modelling approach on a forward looking basis incorporating 'lessons learned' from other jurisdictions that completed comparable market evolution projects and have the benefit of a retrospective look back analysis.</p>	<p>The Benefits Case draws on past IESO studies and the experience of other jurisdictions to illustrate a reasonable range of benefits that Ontario can expect to realize from implementing Market Renewal. While the range of benefits is quite large, any point in that range outweighs the costs of the project many times over. As such, the Benefits Case assessment provides a compelling case to move forward with the development of a high-level design for the workstreams identified in the report.</p> <p>As the high-level designs are developed there will likely be a need to quantitatively assess the relative merits of design options. We look forward to engaging with stakeholders on these topics over the coming months.</p>

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	Quantification of Benefits	APPrO	Regarding the assumption that price setting resources were marginal 71% of the time, it is not clear how this was determined by contract type.	<p>Based on stakeholder feedback Brattle has reviewed and updated their methodology, resulting in an assessment of 66%-72% from 2021-2030.</p> <p>This assumption is derived from historical marginal resource data, after adjusting for future capacity additions, and contract expiration schedules. The starting point for this is Brattle’s assessment that over Nov 2013 - Oct 2015, price-sensitive resources were marginal in the hour-ahead pre-dispatch schedule approximately 65% of the time. Brattle arrived at this 65% estimate by reviewing MSP data on the fuel type of marginal price-setting resources, and reviewing contracts data to determine what fraction of each resource type is incentivized to respond to market prices (from the May 2015-October 2015 MSP report). This 65% estimate reflects a finding that merchant resources, demand response, gas plants, and interties are mostly incentivized to respond to market prices while hydro, renewables, and nuclear plants are mostly not incentivized by the market price. Brattle updated this historical metric to future conditions using contract expiration data and the 2016 Ontario Power Outlook. As the contracts expire, Brattle assumes that resources previously unresponsive to prices will become price responsive. Brattle relies on the same methodology to determine the percentage of time price responsive resources will be on the margin through 2030. Specifically they:</p> <ol style="list-style-type: none"> 1. Assume that the <u>fraction of hours each fuel type is on the margin</u> stays constant over time, exactly as in Nov 2013 - Oct 2015 , with: <ul style="list-style-type: none"> ▪ Gas, DR, and interties assumed always to be responsive to price: 66% of hours ▪ Nuke, hydro, and renewables are not responsive to price to start: 34% of hours 2. Assume that as contracts roll off (or nuclear plants go offline), a greater fraction of each resource type is exposed to market prices (based on data from the Ontario Planning Outlook):

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				<ul style="list-style-type: none"> ▪ For example, in 26% of hours hydro is on the margin in 2013-2015. By 2030, 13% of hydro capacity will have expired contracts and therefore be exposed to prices, so an additional 3% (26% x 13%) of hours will have prices set by resources exposed to market incentives. ▪ When nuclear units go offline their share of marginal hours is reduced proportional to their capacity, and replaced with price-responsive resources. For example, nuclear in marginal about 5% of hours in 2013-2015, but by 2030 30% of nuclear capacity will be offline. Therefore an additional 1% (5% x 30%) of hours will have prices set by resources exposed to market incentives. <p>This topic will be further addressed at the February 24 meeting.</p>
	Quantification of Benefits	AMPCO	We would also like to see more information on how the scaling of benefits in ‘high’ and ‘low’ scenarios was determined.	<p>Brattle acknowledges there is an uncertainty range around their base estimates of benefits. In the forthcoming draft report, Brattle will provide more documentation of the “high” and “low” estimates which vary by workstream, and can respond to any specific questions that are posed.</p> <p>For the energy market workstream, the “high” scenario assumes that Ontario could capture a greater portion (but still not all) of the benefits that were achieved in other markets. These benefits grow over time using the 2016 Ontario Power Outlook’s (OPO) Outlook D for load. On the other hand, the “low” scenario assumes Ontario will only capture the benefits identified in prior analyses of Ontario’s market (based on studies conducted for IESO in SE-114 and SE-21). These benefits grow over time using the OPO’s Outlook A for load.</p> <p>For the operability workstream, the “high” and “low” estimates of Ontario-internal operability benefits reflect uncertainties around the scope of potential operability enhancements and the value of those enhancements to address</p>

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				<p>Ontario’s specific flexibility challenges. Like in the energy market workstream, these benefits grow using the OPO’s Outlooks D and A. The “high” scenario for intertie operability benefits scales the observed energy imbalance market (EIM) benefits to the Ontario context using total interchange capacity between Ontario and NYISO, and Ontario and MISO. The “low” scenario for intertie benefits includes only those benefits calculated in IESO’s prior analyses of Ontario’s market (in SE-115). These benefits grow with inflation.</p> <p>For the capacity auction workstream, Brattle relies on the future capacity needs projected by the OPO’s Outlook D to estimate the benefits under the “high” scenario. Outlook D produces the greatest benefits from the incremental capacity auction because a larger quantity of supply is covered under the capacity auction. In the “low” scenario, Brattle uses the future capacity needs as projected by the OPO’s Outlook B. Outlook B produces the lowest benefits because it has low load growth and the least re-contracting of excess capacity.</p>
	Quantification of Benefits	APPrO	<p>APPrO would appreciate if the Brattle Group could</p> <ul style="list-style-type: none"> • Define both efficiency benefits and customer benefits and provide further explanation as to the methodology to allocate benefits to the respective participant groups; • Provide further granularity on how the overall benefits flow down to the proposed design modules between customers and other participants; • Provide further details as to how the \$0.6 billion benefit to other market participants is likely to be realized in each of those proposed design modules. 	<p>Efficiency benefits are welfare gains to Ontario as a whole. Specifically: reductions in production costs, reductions in investment costs, and increased net revenues to the province from off-system energy or capacity sales. Efficiency benefits are created when a system serves load and maintains reliability at a lower overall cost than it currently does. In the case of Market Renewal, these savings will come from an improved ability to commit and dispatch generating resources in a least-cost manner, better balancing of intermittent wind and solar output with other system resources, attracting or retaining the most cost-effective supply for resource adequacy, and effectively coordinating and trading with neighboring systems. These savings ultimately flow to the province as a whole, and may materialize as lower costs to customers or enhanced profitability to other market participants.</p> <p>Customer benefits are created when the total cost of energy paid by customers is reduced. Under Market Renewal, customers will benefit in two ways: (1) by</p>

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				<p>sharing a portion of the <i>efficiency benefits</i> described above, and (2) by benefitting from <i>avoided gaming opportunities and inappropriate transfer payments</i> that are embedded within the current market design. The scope of the quantitative estimates within Brattle’s Benefits Case analysis only includes the first of these customer benefit types. Customer benefits will flow through to all customer classes as a reduction in the total cost of energy, out-of-market uplift payments, and Global Adjustment.</p> <p>Brattle’s draft Benefits Case report will provide an expanded discussion of how individual classes of market participants may be affected by the distribution of efficiency benefits, and what classes of market participants may be worse off under Market Renewal. However, quantifying specific estimates of how benefits flow through to each class within the other market participants group is outside the scope of Brattle’s report. This question will be addressed in the February 24 stakeholder meeting.</p>
	Quantification of Benefits	APPrO	<p>Stakeholders need a better understanding of how differences between Ontario’s market and other markets have been ‘scaled’ to better approximate the benefits to Ontario. Also, what other options were considered to account for differences between Ontario and other markets.</p> <p>If different assumptions or methodologies were used to scale the results from other jurisdictions toward being more Ontario-centric, the range could drastically change. Therefore the results of the Benefits Case appear to be rather subjective.</p>	<p>Brattle acknowledges that differences between markets play an important role in determining the specific benefit levels in each respective market. For the energy market workstream, Brattle therefore uses historical data on market reform scope, the marginal cost range, and intermittent resource penetration level in each market to compare other markets to what is expected in Ontario under Market Renewal. The scope of reforms implemented affects the level of benefits that can be achieved because similar starting and ending points in the market design will incentivize similar improvements in the granularity and accuracy of prices, and consequently will cause similar types of behavior changes. The marginal cost range in each market influences efficiency benefits because it measures the extent to which energy market reforms can replace energy from expensive resources with that of cheaper resources; a system with all resources at similar costs will not achieve as much efficiency gain as will a system that has all resources over a wider range of costs. Finally, the intermittent resource penetration also impacts benefits due to the complexities these resources create</p>

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				<p>for the system. As more and more intermittent resources are added to a system, they introduce more uncertainty and variability in the system, creating more need for efficient resource optimization to manage these uncertainties. Thus, a positive relationship exists between penetration levels and efficiency benefits, as illustrated in several studies that Brattle reviewed. Using these data points, Brattle determines the degree to which benefits observed in other markets apply to Ontario and adjust these values accordingly to complete the translation. Brattle scaled the measured benefits in terms of \$/TWh of served load to compare across markets, but acknowledges that other reasonable approaches could be considered.</p> <p>This translation process is discussed in detail in the forthcoming draft report.</p>
	Quantification of Benefits	AMPCO, Power Advisory, APPrO	<p>AMPCO is uncertain how benefits were quantified given the differences between markets (see the point set out above), and the potential interactions between the various design elements that Brattle is considering. We would like more information and clarity on how this was carried out.</p> <p>There is no other market that shares a similar structure to Ontario. Further, the circumstances that existed in these other markets at the time of their studies with respect to supply mix, supply margin, capacity versus energy, etc. could all have been very different than the set of circumstances that currently exists within Ontario. AMPCO would like to have a better understanding of the data that is being relied upon and how it has been modified to be relevant to the Ontario context.</p> <p>The 'uniqueness' of Ontario's electricity market needs to</p>	<p>Ontario's electricity sector reflects a unique combination of policy objectives, fleet makeup, and market fundamentals that make it different from every other market. At the same time, there is no one aspect of Ontario's market that is unique by itself, and in many ways the similarities are greater than the differences. Ontario's electricity system runs fundamentally the same types of mechanical equipment and according to the same physical laws and economic principles as other electricity markets around the world. Due to these commonalities, Brattle expects Market Renewal to create benefits similar to those that were created by reforms in other markets, both in terms of type and size. In fact, Brattle's review of studies shows that very different markets with their own unique features, fleet makeup, and regulatory context have achieved very similar benefits to each other from similar design changes despite significant differences. For example MISO and CAISO have very different fleet characteristics (with CAISO being more like Ontario than like MISO) but yet the realized benefits from similar design changes are of a similar magnitude. Based on their review, Brattle determined that the differences are largely explained by the scope of design changes, steepness of supply curve, and level of intermittent resource penetration (all factors that Brattle considers when interpreting and translating</p>

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			be more effectively acknowledged and incorporated within the Benefits Case. We would like to understand any of these differences matter; if not why not, if yes then do these differences not need to be addressed in order for Ontario's wholesale electricity market to realize similar benefits under market evolution when compared to other jurisdictions with different market characteristics?	<p>results to Ontario).</p> <p>Brattle acknowledges that there is judgement and uncertainty involved in interpreting the exact proportion of benefits that should be expected in Ontario compared to other markets. However, the similarity of findings across several markets provides a strong basis for supporting the plausible range of potential benefits. Further, that plausible range of benefits outweighs the costs of implementing Market Renewal many times over providing a strong case for moving forward to the design phase of the project.</p>
	Quantification of Benefits	APPrO	The Benefits Case should also in some way address Ontario's proportionately larger share of baseload supply (i.e. nuclear, hydro, wind, solar, cogen) as compared to other jurisdictions analyzed.	See response above. Brattle acknowledges that the resource mix matters in terms of how benefits materialize in different markets. Therefore, Brattle compares the marginal cost range across the markets studied and Ontario. This comparison helps determine whether or not benefits observed in other markets need adjustment before being applied to the Ontario context. In general, Brattle expects that the significant proportion of relatively inflexible nuclear supply creates greater need for (and value of) operability enhancements in Ontario compared to other markets with similar levels of intermittent resources. This expectation is supported by the large share of negative or zero price hours in Ontario compared to other markets with similar levels of intermittent resource penetration. However, Brattle primarily considered this incremental expected value in the high-end benefits estimate for operability rather than in the base or low end estimate, resulting in a relatively more conservative result.
	Quantification of Costs	AMPCO	Irrespective of the benefit-cost ratio, modifications to the market should not result in higher costs to consumers as a result of intended or unintended consequences of the changes.	A key principle for Market Renewal is greater efficiency through competition to provide needed services at lowest cost. In keeping with this principle the IESO expects all consumers to benefit from the cost reductions identified in the benefits case although individual benefits will not be uniform as different consumers pay varying amounts depending on their load profile and class of consumer. When considering costs, the IESO would encourage stakeholders to consider the total bill impact rather than focusing on individual components. Consumers will play an essential role in both the engagement and the working

#	Issue Area	Company	Feedback	IESO Response
				group to ensure their views are reflected in market designs.
	Quantification of Costs	AMPCO, Enbridge	<p>Prior to any decisions being made, all costs need to be assessed whether they are attributable to generators, loads or the system operator, since ultimately these costs will be borne by loads.</p> <p>It is hard to understand how one could establish “Net Benefits” reliably without proper or reasonably reliable input for one of the most important area “Costs”. This one area of query is not addressed at all. Items quantified at a very high level by the presenters were challenged, not sure if the responses were adequate and justifiable with hard numbers.</p>	<p>Brattle and Utilicast were asked to develop a bottom-up estimate of what the implementation costs of Market Renewal would be to the IESO. A detailed assessment of costs to individual market participants is outside the scope of the Benefits Case study.</p> <p>However, in response to this feedback and similar feedback in prior stakeholdering sessions, Brattle and Utilicast are working to provide additional qualitative discussion of the implementation costs that may be faced by stakeholder groups. This information will be incorporated in the forthcoming draft Benefits Case report.</p>
	Quantification of Costs	APPrO	It is unlikely that an ‘off the shelf’ product (so as to simply adapt existing US style wholesale electricity market designs and platforms on like-for-like bases) will be a realistic option for Ontario. As a result, implementation costs for the IESO and all market participants will almost certainly be higher than any present estimates. The IESO should factor this point more effectively within the Benefits Case.	Although Utilicast’s cost analysis is informed by experience from other markets, it was conducted as a bottom-up estimate of Market Renewal costs and the Ontario context specifically. The estimates consider detailed business information from IESO, including expected allocated staff needs, known vendor rates, and specific IT components affected. The assessment reflects the fact that customization will be needed in Ontario as it is in all markets. In response to stakeholder feedback, the draft Benefits Case report will reflect a higher contingency for the project (moving from 15% - 20%) and more conservative resourcing assumptions.
	Quantification of Costs	Enbridge	We requested if it is possible to get answers from SPP Market designers how exactly were the changes made to Wind farms and what typical changes were required and what where the typical cost to owner / operators. We would like answers to these questions.	Brattle and Utilicast are following up directly with Enbridge to address this feedback. New information that will be of general interest to other market participants will be included in the forthcoming Benefits Case report.