

Engagement Session – Nov. 4, 2021 Comments

Stakeholder comments on Nov. 4, 2021 Engagement Session [Posted Dec. 1, 2021]

1. AltaLink Management Ltd. (AML)
2. Capital Power Corporation
3. ENMAX Corporation
4. Greengate Power Corporation
5. Heartland Generation Ltd. (HGL)
6. Industrial Power Consumers Association of Alberta (IPCAA)
7. Market Surveillance Administrator (MSA)
8. MATL Canada L.P. & MATL LLP (MATL)
9. NaturEner USA, LLC
10. Powerex Corp.
11. Suncor Energy Inc.
12. TC Energy Corp. (TCE)
13. TransAlta Corporation

Stakeholder Comment Matrix – Nov. 4, 2021

Evaluation of Most Severe Single Contingency (MSSC) Stakeholder Engagement Session



Comment period:	Nov. 4, 2021 to Nov. 30, 2021	Contact:	Richard Boulton
Comments from:	AltaLink	Phone:	403-850-5699
Date:	2021/11/30	Email:	Richard.boulton@altalink.ca

Instructions:

1. Please fill out the section above as indicated.
2. Please respond to the questions below and provide your specific comments.
3. **Please submit one completed comment matrix per organization.**
4. **Stakeholder comment matrices will be published to aeso.ca, in their original state.**
5. Email your completed comment matrix to stakeholder.relations@aeso.ca by **Nov. 19, 2021**.

The AESO values stakeholder feedback and invites all interested stakeholders to provide their comments on the Evaluation of MSSC Engagement Session. Please be as specific as possible with your responses. Thank you.

Questions		Stakeholder Comments
1.	Please comment on the Evaluation of MSSC session hosted on Nov. 4, 2021. Was the session valuable? Was there something the AESO could have done to make the session more helpful?	AltaLink appreciates the AESO hosting the Information Session and creating the opportunity to provide comments on this important topic.
2.	Are there other considerations that the AESO should include, exclude or modify in its decision making on MSSC?	AltaLink agrees with the AESO that reliability/technical and economics/market are two important aspects in evaluating the MSSC issue. AltaLink recommends the AESO consider the following key principles in making its decision regarding the MSSC issue: <ol style="list-style-type: none">(1) Any changes in MSSC and related mitigations should result in lower overall electricity costs for customers.(2) Any changes in MSSC and related mitigations should be consistent with the policy, legislative and regulatory framework in Alberta.

Questions	Stakeholder Comments
	<p><u>Ensuring Lowest Overall Cost to Customers</u></p> <p>As MSSC is very closely coupled with inertia capacity, changes to MSSC cannot be properly evaluated without also evaluating changes in inertia capacity. Not only do changes with one impact the other, certain mitigation solutions which enable higher MSSC can also potentially enable greater inertia capacities and address other system problems such as the degradation of dynamic (frequency) response. For this reason, the decision to determine whether or not to increase MSSC and, if yes, to what level cannot be properly made without a comprehensive evaluation of a range of scenarios characterized by different levels of MSSC and their impact on the capacity (both TTC and more importantly ATC) of the existing inertias, and a range of potential mitigation solutions. Such an analysis should help inform what size of MSSC and inertia capacity delivers customers the lowest overall cost of electricity bearing in mind the broad range of potential market and transmission solutions which can address the underlying complex and interrelated technical issues. AltaLink would characterize this techno-economic analysis as a Supply Capacity Optimization study.</p> <p><u>Consistent with Alberta's Legislative and Regulatory Framework</u></p> <p>AltaLink recommends that the decision regarding potential changes on MSSC and related mitigation solutions should take into account the AESO's obligations under the T-Reg and EUA relating to inertia restoration, facilitating market access and the use of Non-Wire Alternatives.</p> <p>Alberta's Transmission Policy explicitly recognizes that inertias are essential to a well-functioning market structure and Alberta is integrated with the electric systems of its neighbours. Consistent with this policy direction, section 16(1) of the Transmission Regulation requires the AESO to restore the capacity of the Alberta/BC existing inertia to its path rating level; section 15(1)(e) requires the AESO plan the transmission system to accommodate in-merit energy, including inertia exchanges. These obligations should be carefully considered in the AESO's decision making regarding MSSC change and related mitigation solutions.</p> <p>The MSSC issue is fundamentally a transmission problem. In evaluating potential solutions, AltaLink encourages the AESO to consider regulated transmission solutions as well as market based Non-Wires Solutions (NWS) such as services provided by market-based storage including Fast Frequency Response Services. AltaLink recommends AESO select the option with the highest value for customers while preserving FEOC principles and adhering to Transmission Regulations regarding the use of NWS under section 15(3).</p>

Questions	Stakeholder Comments
<p>3. Are there other considerations that the AESO should include, exclude or modify in its assumptions?</p>	<p>The Supply Capacity Optimization study should include a fulsome economic evaluation from the customers perspective of various market and technical solutions which can mitigate the effects of higher MSSC and intertie capacity. The economic evaluation should drive for an optimal solution and include:</p> <ul style="list-style-type: none"> • Various future load and generation development scenarios. (i.e. The study needs to determine what is optimal given the evolving needs of the grid. As such, it needs to be forward looking and not simply be a counterfactual analysis of the past.) • Include the benefit (to customers) of larger and, presumably, more economic generation connected to the grid. • Include the benefit (to customers) of more efficient use of existing transmission assets and more efficient development of transmission going forward. • Include the benefit (to customers) of increased ATC during periods of generation scarcity. • Consider different intertie TTC levels to optimize the use of the ultimate capacity of the intertie assets on a go forward basis. • Consider the characteristics of market and transmission solutions which can enable increased MSSC and/or intertie capacities especially when it comes to maintaining power system reliability and unfettered access of the most economic sources of energy into the market.
<p>4. Are you supportive of any of the following potential future MSSC limit changes? Why or why not?</p>	<p>AltaLink is supportive of any changes which result in a lower overall cost of electricity for customers. The results of a fulsome techno-economic evaluation of the Supply Capacity Optimization Study should determine what is the optimal level of MSSC.</p>
<p>(i) Status Quo</p>	<p>See above</p>
<p>(ii) Increase MSSC marginally</p>	<p>See above</p>
<p>(iii) Increase MSSC substantially</p>	<p>See above</p>

	Questions	Stakeholder Comments
5.	If the MSSC limits are increased, who should bear the cost and why?	Providing changes in MSSC and related mitigations result in lower overall electricity costs for customers (AltaLink Recommended Principle #1), then, it is fair and reasonable for electricity customers to bear the cost of implementing the changes. If changes don't result in a lower overall electricity cost for customers, then, no changes should be made.
6.	Do you have additional questions that need to be answered to assist your understanding?	AltaLink has no additional questions at this time
7.	Do you have additional comments that would assist the AESO in its decision making on MSSC limits?	<p>As decarbonization progresses, grid authorities in many other jurisdictions are looking to expand their interties to achieve emission targets. Any change that results in lower intertie capacity negatively effects decarbonization goals, is counter to the industry trend and does not align with the AESO's strategy (which AltaLink supports) of maximizing the use of existing transmission facilities.</p> <p>For many years, imports through interties have been heavily constrained. In fact, AltaLink's analysis of the AESO's published ATC and Intertie Capability Report revealed that for almost 40% of all hours over the past year, \$0/MWh energy from importers was prevented from entering Alberta's market due to lack of intertie capacity, resulting in multiple \$100Ms of additional costs to all consumers. AltaLink believes it would be extremely detrimental for AESO to make any change which further restricts the interties. If the AESO decides to increase MSSC, AltaLink strongly recommends that no change be made before the intertie capacity constraints have been first addressed. Removing intertie constraints will enable \$0/MWh imports to reach the market with clear benefits to customers. Conversely, increasing MSSC may possibly benefit customers but it is much less certain if and how much of the anticipated benefit will materialize as the outcome depends on the tradeoff of multiple factors. Therefore, it is AltaLink's view that the AESO's priority should be directed to debottlenecking the interties first.</p>

Thank you for you input. Please email your completed matrix to: stakeholder.relations@aeso.ca

Stakeholder Comment Matrix – Nov. 4, 2021

Evaluation of Most Severe Single Contingency (MSSC) Stakeholder Engagement Session



Comment period:	Nov. 4, 2021 to Nov. 30, 2021	Contact:	Matthew Davis
Comments from:	Capital Power	Phone:	403.540.6087
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Instructions:

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The AESO values stakeholder feedback and invites all interested stakeholders to provide their comments on the Evaluation of MSSC Engagement Session. Please be as specific as possible with your responses. Thank you.

Questions	Stakeholder Comments
1. Please comment on the Evaluation of MSSC session hosted on Nov. 4, 2021. Was the session valuable? Was there something the AESO could have done to make the session more helpful?	<p>Capital Power appreciates the AESO holding the MSSC session. While the session was valuable, the AESO should have been more pro-active in informing industry of its increasing MSSC concerns over the past years as the imposition of a limit now restricts supply options that could otherwise contribute to reliability, reduce consumers costs, and increase competition in the market.</p> <p>Capital Power believes that the AESO should have provided more background information on its evolving position to impose a MSSC limit, how (if at all) it is applied and governed in other jurisdictions, and the broader policy implications of creating a limit on the size / configuration of generation that developers can pursue. Comments on these issues are provided below.</p>
2. Are there other considerations that the AESO should include, exclude or modify in its decision making on MSSC?	<p>The AESO's new definition of the MSSC effectively creates a means for it to impose a size limit on new generation development</p> <p>The AESO indicated at the session that the MSSC limit has been a feature of the market for some time. Capital Power disagrees. The current MSSC level is 466 MW, a level that was established based on the size of the largest single generator developed in Alberta, Genesee 3. A MSSC level is, however, distinct from a MSSC limit. The former is simply a fact indicating what element on the system is the single largest contingency whereas the latter is a deliberate restriction on the size of any single system contingency.</p>

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	<p>While the term “contingency” is defined in the AESO’s Consolidated Authoritative Document Glossary (“CADG”), MSSC is not. In 2015, the AESO explained that:</p> <p style="padding-left: 40px;"><u>MSSC refers to the most severe single contingency generator or supply loss on the AIES which may occur as a result of a generator trip or the loss of a transmission line that subsequently leads to the simultaneous loss of generation.</u>¹ (Emphasis Added)</p> <p>The AESO now appears to have unilaterally changed the meaning of MSSC from being a description of a particular contingency on the system to one that now attributes that contingency as a system limitation. The expansion in the scope of MSSC meaning is evident when comparing the AESO’s previous explanation to the one it presented in the November 2021 session. The AESO now defines MSSC to mean:</p> <p style="padding-left: 40px;"><u>...the Most Severe Single loss of supply Contingency that the power system can absorb without impacting reliability and tripping customer load.</u>² (Emphasis Added)</p> <p>The AESO is now clearly stating that there is a size limit on new generators. Neither the definition of “contingency” nor the AESO’s 2015 explanation infer any size limitation. In fact, the AESO’s own 2015 document expressly stated that it “has not placed any size restrictions on new generator proponents” in relation to the MSSC.³ The AESO is now doing exactly that with the new MSSC definition, a significant departure from previous guidance. This limit marks only the second time that the AESO has imposed a development limitation in the market (the other being the 900 MW limit on wind interconnections between 2006 and 2007).</p> <p>Capital Power also understands that the AESO’s approach to imposing a limit on new generation development based on an MSSC limit differs from how other jurisdictions determine and apply the MSSC value. It should be noted that one of the objectives behind the FERC approved Reliability Standard BAL-002-2 was to ensure objectivity of the reserve measurement process by guaranteeing a Commission sanctioned continent-wide reserve policy. Given this objective, Capital Power submits that the AESO should determine and apply the MSSC value in a manner consistent with FERC’s intentions for BAL-002-2. In response to BAL-002-2 taking effect in January 2018, other ISOs (including CAISO and ERCOT) engaged stakeholders and initiated an annual review of the MSSC value.^{4,5} These jurisdictions have taken the approach of revising the MSSC value in response to new developments (including interties) as opposed to imposing a MSSC limit and restricting new developments. For example, ERCOT issued a notice in January 2020 stating that it reviewed its MSSC as required under NERC Reliability Standard BAL-002-3, Requirement R2, and increased the MSSC value to 1,430 MW from the former value of 1,375 MW to more accurately reflect the expected impact of the loss of either of the South Texas Project nuclear generating units.</p>

¹ AESO (June, 2015) [Most Severe Single Contingency \(MSSC\) Impacts on Alberta Balancing Authority Area Operation](#), page 3.

² AESO (Nov. 4, 2021) [Most Severe Single Contingency \(MSSC\) Evaluation for Alberta](#), slide 11.

³ AESO (June, 2015), page 5.

⁴ CAISO (November 2017), [Implementation of BAL-002-2](#)

⁵ ERCOT (January 2020), Market Notice: Update to ERCOT’s Most Severe Single Contingency (MSSC)

Questions	Stakeholder Comments
	<p>Further, in accordance with BAL-002-2, the AESO’s Reliability Standard BAL-002-AB-3 states that “The ISO must develop, review, and maintain annually, and implement an operating process as part of its operating plan to determine its most severe single contingency and make preparations to have contingency reserve equal to, or greater than the ISO’s most severe single contingency available for maintaining system reliability.” Capital Power understands this to mean that the AESO should be reviewing its MSSC annually which would be consistent with other jurisdictions and the intent behind BAL-002-2 to have a consistent continent-wide reserve policy. Given that this is the first engagement on the MSSC issue since 2015, Capital Power requests that the AESO initiate annual reviews that include engagements with stakeholders.</p> <p>Stakeholder engagement and due process on any MSSC limit is necessary</p> <p>Capital Power is concerned that the change in the AESO’s views on the MSSC, and the AESO’s decision to now use the MSSC level as a limit on generation size, were made by the AESO without any meaningful engagement with stakeholders. This is particularly concerning given what Capital Power believes are significant implications of this decision for the FEOC operation of Alberta’s market.</p> <p>This troubling pattern is also evidenced by the AESO’s unilateral creation of a limit when the province is islanded through its modification of ID#2011-001R (Available Transfer Capability and Transfer Path Management) on August 6, 2021.</p> <p>While appreciative of the concerns that reliability-related issues are present, and the need for the AESO to be able to ensure appropriate rules, standards and guidelines can be reviewed in a timely manner to address emerging issues, Capital Power believes the AESO’s processes must always ensure opportunities for meaningful stakeholder input. This is particularly the case when the changes under consideration, such as the MSSC, stand to have significant and direct impacts on generator investment dynamics. The AESO needs to provide clarity to stakeholders on how it will manage the MSSC going forward.</p> <p>The AESO must demonstrate how imposing a MSSC limit is consistent with the legislative scheme</p> <p>The imposition of a MSSC limit must be considered relative to the AESO’s obligations under the <i>Transmission Regulation</i> (“T-Reg”) and the <i>Electric Utilities Act</i> (“EUA”).</p> <p>A MSSC limit at the current level may run counter to the AESO’s obligations under the T-Reg to plan and operate a constraint-free grid. The AESO itself has indicated that the MSSC limitation, when binding, effectively creates N-0 / Category A congestion. To the extent that these incidents can be forecasted to occur in planning studies, the AESO is required by the T-Reg to remedy such cases whether through transmission development or other means.⁶ While transmission development may not necessarily allow for the increase of the MSSC, the AESO can evaluate the use of</p>

⁶ For example, in its PENV NID, the AESO stated that with wind development in the area, RAS schemes may exceed the current MSSC resulting in a need for curtailments under category A condition (page 11). Further the AESO’s CETO NID’s Appendix C indicates that it measures “Category A-MSSC congestion” as part of its congestion assessment and that it is planning with to develop transmission when planning levels of congestion are expected to reach 0.5% annually.

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	<p>non-wires alternatives such as ancillary services (“AS”) to address the reliability risks associated with an increase in the MSSC in certain circumstances (e.g., shorter implementation time, lower cost, etc.).</p> <p>In addressing N-0/Category A constraints, the AESO has previously noted that it could deploy tools such as ISO Rule 302.1 - Real Time Transmission Constraint Management (the “TCM Rule”) to manage system performance issues if they materialize.⁷ The TCM Rule, however, was not intended to address issues related to MSSC and system frequency response deficiencies in particular. Reliance on the TCM Rule in this way would dampen the price signal and fails to encourage future investment in enhanced frequency response. Therefore, Capital Power submits that any reliance on the TCM Rule or any similar constructs (e.g., RAS schemes) be pursued as a temporary measure until more appropriate means are put in place.</p> <p>A MSSC limit also unnecessarily impedes market access. The EUA not only requires the AESO to operate the grid reliably, but also to provide a reasonable opportunity for market participants to connect and transact in openly competitive and efficient wholesale markets. Here, the AESO has the potential to use non-wires alternatives (i.e., AS) in raising the MSSC. This would reduce barriers to entry for larger projects, allowing the system to realize benefits from greater economies of scale. The AESO is unencumbered in this regard as the EUA defines an AS as “...those services required to ensure that the interconnected electric system is operated in a manner that provides a satisfactory level of service with acceptable levels of voltage and frequency.” As Capital Power highlights above, an AS developed to mitigate frequency concerns related to MSSC would meet such a definition and serve as a direct mechanism to promote investment in resource characteristics required to ensure grid resilience.</p> <p>The AESO’s preliminary economic analysis is flawed and fails to consider the benefits of an increased MSSC</p> <p>The AESO’s initial assessment focuses only on the potential costs incurred as a result of an increase to the MSSC reducing the import available transfer capability (“ATC”) and increasing the volumes of contingency reserves carried. Capital Power notes that this analysis fails to introduce any new generation that would have triggered the need for an increase to the MSSC. A more comprehensive assessment is required as this analysis is very rudimentary and does not reflect the drivers of changing the MSSC nor the full suite of benefits in doing so. Further, the analysis is relatively opaque in how it was performed as the AESO did not provide in writing all the provisos that would be necessary to validate its analysis.</p> <p>Capital Power believes a more robust complete review of the costs and benefits of increasing the MSSC is required. Importantly, any MSSC increase will facilitate one or more MWs of intra-Alberta generation that is subject to must-offer, must-comply, and likely to be in-merit as it would either be high-efficient firm generation, or renewables. The introduction of this new supply would more than offset the impact that the AESO presents which is limited to periods where an opportunity service, imports, choose to participate in the market. The AESO’s analysis, however, stops short of this fundamental element assessing only the impact of the reduced import opportunity on the market. This overstates the</p>

⁷ See, for example, p.8 of the AESO’s Paintearth Wind Project Connection Amended Needs Identification Document (3 Dec 2020).

Questions	Stakeholder Comments
	<p>cost of raising the MSSC. Recognizing that the AESO’s analysis is preliminary, Capital Power recommends that it be updated to include the addition of intra-Alberta generation sufficiently large to prompt an increase in MSSC as well as the benefits.</p> <p>Inability to support current MSSC indicates reduced grid resilience & reliability. The AESO must progress this, and related issues as the transformation of the grid is accelerating</p> <p>Capital Power suggests that the ability to increase the MSSC is a measure of a grid’s resilience and capability to operate it reliably. The grid is evolving quickly and the AESO’s forecasting has been conservative with the pace of change. This is starting to manifest in the AESO being more reactive and less proactive on the transformation of the grid issues. Pursuing options to increase the MSSC will enable transformation and demonstrate the AESO’s ability to support a broad range of generating technologies in the market.</p> <p>The AESO does not currently procure all requirements for reliability as many attributes (e.g., inertia / reactive power / fast (primary) frequency response, ramping) have not been scarce in the past. As the grid evolves, the AESO must become more proactive and evaluate potentially new AS products required to manage reliability and develop competitive markets or solicitations that allow an equal opportunity for competition between competitive suppliers that qualify to provide the service. As such, the AESO should begin contemplating what types of fast frequency response products could be pursued to remove any barrier to entry created by a MSSC limit while ensuring reliability as part of its 2022 initiatives. Capital Power emphasizes that the AESO must not limit its MSSC evaluation to only reflect its current concerns with grid performance, but also consider the long-term sustainability and development of the grid and market.</p>
<p>3. Are there other considerations that the AESO should include, exclude or modify in its assumptions?</p>	<p>The updated analysis should be forward-looking and account for the MSSC’s long-term market impact</p> <p>The AESO’s assessment appears to be focused on the near term, and its analysis is based on a historical counterfactual, that as mentioned above fails to ascribe any benefits that an increase in the MSSC would have. As described above, a more robust assessment of the costs and benefits of increasing the MSSC needs to be undertaken. The AESO could do this work by leveraging its long-term forecasting capabilities and evaluate the long-term dynamics of the market. Capital Power would be happy to further discuss this type of modelling with the AESO.</p> <p>The AESO should further consider the use of fast frequency support to facilitate a higher MSSC</p> <p>The loss of the B.C. and Montana interties were previously considered as “a single contingency.”⁸ To mitigate the impact this contingency on the system, the AESO noted the following in 2015</p> <p style="padding-left: 40px;"><u>The value of MSSC could also be larger if the MSSC is associated with a large import on the AC interconnections.</u> However, depending on the availability and effectiveness of load shed service</p>

⁸ AESO (June, 2015), page 4

Questions	Stakeholder Comments
	<p>for Imports (LSSi), <u>the effect of the loss of a large import can be mitigated through the application of LSSi (i.e., if the frequency drops below the LSSi trip setting) and shift the MSSC from being the AC interconnections to being a large generating source within the AIES.</u>⁹</p> <p>From a technical standpoint, it is unclear why a frequency response product (similar in purpose to LSSi) could not be implemented to support intra-Alberta generation. Employing such a contingency reserve product would remove barriers to entry for large scale, low-cost and efficient generation without the need to reduce import ATC. This could also serve as a non-wires alternative for the AESO in addressing concerns related to RAS schemes cumulatively greater than the MSSC as well as double circuit contingencies. This would defer the potential need for costly transmission infrastructure and reduce the need for the AESO to trigger the TCM Rule. The AESO has recently introduced a pilot for a mirror product, fast frequency response (“FFR”), that alternatively supports higher levels of imports through energy storage and potentially other providers.</p> <p>While the AESO appears willing to procure an AS to ensure that a contingency on the intertie does not result in the loss of firm load, the AESO has not expressed any similar steps to ensure generation developers in Alberta are treated similarly. Capital Power believes intra-Alberta generation should be afforded the same level of support.</p> <p>In the stakeholder session, it was indicated that a fast frequency response type service may prove to facilitate a higher MSSC. Capital Power suggests that the AESO should explore this idea further.</p> <p>The AESO should evaluate what level it reasonably expects possible for the MSSC</p> <p>The AESO’s new MSSC definition indicates that it is a system limit, and not a result of any individual developments. While Capital Power appreciates the challenges with the technical modelling required, the AESO should perform and present more studies on what level of contingency event the system is reasonably capable of enduring. At the stakeholder session, when discussing the event where there was a loss of 670 MW, it was indicated that a slightly smaller contingency (say ~600 MW) would not have triggered the RAS on MATL. While not an exhaustive study, Capital Power views this as valuable and relevant information and suggests that the AESO evaluate how the system would perform under higher MSSC levels to ensure that an increase does not unduly increase reliability risks to consumers, and if it did, what types of mitigation approaches are feasible.</p>
4.	<p>Are you supportive of any of the following potential future MSSC limit changes? Why or why not?</p> <p>Capital Power believes that the AESO must accommodate reasonable increases to the MSSC as part of its duties to provide a reasonable opportunity to connect and operate a fair, efficient and openly competitive market.</p> <p>There are efficiencies in developing larger generators, and the AESO should not foreclose the market’s ability to develop large generating facilities. Imposing a limit runs counter to Alberta’s “Open for Business” approach and could have long-term negative implications for investment in large-scale generation that is an essential part of ensuring a</p>

⁹ AESO (June, 2015), page 5.

	Questions	Stakeholder Comments
		reliable, competitive wholesale market. By not fully evaluating the need for future MSSC limit changes, the AESO is effectively imposing inflexible regulations resulting in unnecessary red tape for potential future developments contrary to AESO's commitment to reducing burdensome regulatory requirements in alignment with Alberta's <i>Red Tape Reduction Act</i> .
	(i) Status Quo	Capital Power does not support this option and believes a decision to maintain the status quo would be contrary to the AESO's obligations to operate and maintain a FEOC market. To the extent the current MSSC level and limit would remain in effect pending the AESO's determination of the schedule and increments for increasing the MSSC, the AESO needs to develop strategies to address the limitations on existing investments when the province is islanded. Doing so will the level playing-field between intra-Alberta generation, which currently is not supported by a fast-frequency response product, and imports, that are an opportunity service but are supported via LSSi and the FFR pilot.
	(ii) Increase MSSC marginally	Capital Power is uncertain how the AESO is defining "marginally" / "substantially" but does believe that the AESO must work to accommodate requests that would result in an increase to the MSSC. Most obvious is to evaluate the MSSC with new generation developments, but secondarily, the AESO should evaluate if the MSSC should be higher to reduce the potential for N-0 pre-curtailments to prevent a RAS from becoming the MSSC. This latter evaluation should be aligned with an understanding to what level of MSSC the AESO can accommodate.
	(iii) Increase MSSC substantially	Capital Power also believes that the AESO must evaluate both the ATC approach discussed above, and any potential AS that would support increasing the MSSC.
5.	If the MSSC limits are increased, who should bear the cost and why?	<p>Nothing has changed in the policy framework regarding cost allocation of AS required by the AESO to reliably operate the system</p> <p>In the event that import ATC is reduced, Capital Power suggests that the AESO's analysis is flawed and indicates a cost that would be more than offset by the facilitation of intra-AB generation development. As such, Capital Power is concerned that the AESO has framed its analysis and this question to promote an answer that cannot and should not be made until a proper benefit-cost analysis is performed.</p> <p>As an increase to the MSSC would result in some increase in contingency reserves volumes, it is well established that this cost would be paid for by consumers as part of the transmission tariff.</p> <p>Should the AESO pursue a new AS product, Capital Power notes that the AESO already procures LSSi at a cost to consumers of ~\$30 M/yr. This service effectively allows for imports to operate at a higher level than would be allowed absent the service. A more generic fast frequency response service would facilitate larger developments in Alberta, and</p>

	Questions	Stakeholder Comments
		<p>likely provide a more constant level of support enabling imports along with supporting the broader need for primary frequency response.¹⁰</p> <p>Capital Power submits that as the MSSC is increased, only in certain hours would contingency reserves have to increase as the AESO regularly procures more than the current MSSC due to system conditions. The AESO should evaluate its options for increasing contingency reserves volumes and consult with stakeholders to ensure the market for procuring these volumes is efficient and effective. This would be consistent with the CAISO's approach where it determined a need to increase its operating reserve requirement to implement BAL-002-2, which in turn necessitated modification of the operating reserve target procurement. CAISO initiated stakeholder consultation to solicit feedback on different options. The AESO should do likewise.</p>
6.	Do you have additional questions that need to be answered to assist your understanding?	<p>Details are required regarding the AESO's decision-making process and the governance around the MSSC limit</p> <p>Capital Power appreciates that recent underfrequency load shed events experienced on the provincial grid in 2020 and 2021 has brought forward immediate reliability concerns that were not present in 2015 when the AESO last communicated on the MSSC and acknowledges that a MSSC limit may be necessary from time to time to ensure system reliability. However, given the importance of the issue, proper process and governance is required, particularly if the AESO chooses not to pursue an increase to the MSSC. This is imperative not only to ensure investor confidence, but also to ensure that any such limit is not technically deficient and is in the public interest. Capital Power requests that the AESO provide more details on how it will manage the MSSC going forward and how it will engage stakeholders in that process.</p>
7.	Do you have additional comments that would assist the AESO in its decision making on MSSC limits?	<p>As previously mentioned, Capital Power suggests that the AESO make plans to regularly evaluate this limit, just as the AESO has previously reviewed its price cap and floor on numerous occasions. In addition, the AESO should ensure a fair and transparent approach to evaluating and determining the MSSC on a regular basis. Capital Power notes that, unlike other jurisdictions, the AESO did not consult with stakeholders when implementing BAL-002-2 requirements. Lastly, the AESO should consult with stakeholders in establishing an appropriate definition of MSSC that is consistent with other jurisdictions and include the definition in its CADG / ISO Rules to ensure due process and governance.</p>

Thank you for your input. Please email your completed matrix to: stakeholder.relations@aeso.ca

¹⁰ See Alberta MSA (2018) [Q2 Report](#) which documents examples of the effectiveness of LSSi.

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Comment period:	Nov. 4, 2021 to Nov. 30, 2021	Contact:	Randy Stubbings
Comments from:	ENMAX Corporation	Phone:	403-689-6377
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1.	Please comment on the Evaluation of MSSC session hosted on Nov. 4, 2021. Was the session valuable? Was there something the AESO could have done to make the session more helpful?	ENMAX appreciates the opportunity to participate in the discussions. The presentation was well organized and helpful.
2.	Are there other considerations that the AESO should include, exclude or modify in its decision making on MSSC?	Subject to our comment under #3, ENMAX believes that the AESO has considered the relevant factors, namely the reliability risk to Alberta consumers and the economic cost/benefit to the province (i.e., both suppliers and consumers).
3.	Are there other considerations that the AESO should include, exclude or modify in its assumptions?	Based on the information provided by the AESO, there seems to have been no assessment of the consumer costs that would arise from potentially lower system reliability. The value of lost load must be considered in any economic assessment.
4.	Are you supportive of any of the following potential future MSSC limit changes? Why or why not?	

Questions	Stakeholder Comments
(i) Status Quo	<p>We assume that, by “status quo,” the AESO means 466 MW normally and 425 MW during isolated operation. ENMAX believes the status quo is appropriate until a more compelling case for increasing the MSSC emerges. Based on the AESO’s counterfactual analysis, the total, consumer, and producer surpluses changed by at most \$10 million for the period 2016-2020. Relative to the costs of energy and ancillary services, the numbers are small. Adding in the fact that several alternative assumption sets were possible and the effort that the AESO anticipates will be needed to raise the MSSC (including collaboration with neighbouring jurisdictions), there is no compelling case for either consumers or producers to proceed with a change.</p> <p>Regarding the 466 MW and 425 MW MSSCs, ENMAX understands that these values may be revised based on a review of the underfrequency events of 2020 and 2021. Before the AESO concludes that material revisions of these values may be necessary, ENMAX urges the AESO to fully consider other options, such as increased AS volumes or new AS products. To the extent that system inertia may be a limiting factor during hours with high penetration of renewables, the AESO should consider making inertia an ancillary service and paying providers for it. ENMAX understands that the AESO will be reviewing the AS market in 2022, and that review would seem to be a good time to consider this and other potential new ancillary services.</p>
(ii) Increase MSSC marginally	Please see (i).
(iii) Increase MSSC substantially	Please see (i).
5. If the MSSC limits are increased, who should bear the cost and why?	In ENMAX’s view, the attribution of costs is properly dealt with in the context of the AESO’s tariff applications. We do not believe it is appropriate to provide an answer in isolation. This is particularly the case given the legislature’s recent move to approve unlimited self-supply and export subject to those market participants paying a fair and reasonable share of transmission costs.
6. Do you have additional questions that need to be answered to assist your understanding?	None at this time.
7. Do you have additional comments that would assist the AESO in its decision making on MSSC limits?	As already noted, ENMAX supports the status quo, subject to further investigation by the AESO and any planned responses to what the AESO calls the “growing frequency response challenge” in Alberta. This subject is likely to become even more important in coming months as the volume of intermittent, low-or-no-inertia generation increases.

Thank you for your input. Please email your completed matrix to: stakeholder.relations@aeso.ca

Stakeholder Comment Matrix – Nov. 4, 2021

Evaluation of Most Severe Single Contingency (MSSC) Stakeholder Engagement Session



Comment period:	Nov. 4, 2021 to Nov. 30, 2021	Contact:	Scott Perry
Comments from:	Greengate Power Corporation	Phone:	403.519.6194
Date:	2021/11/30	Email:	scott@greengatepower.com

Instructions:

1. Please fill out the section above as indicated.
2. Please respond to the questions below and provide your specific comments.
3. **Please submit one completed comment matrix per organization.**
4. **Stakeholder comment matrices will be published to aeso.ca, in their original state.**
5. Email your completed comment matrix to stakeholder.relations@aeso.ca by **Nov. 19, 2021**.

The AESO values stakeholder feedback and invites all interested stakeholders to provide their comments on the Evaluation of MSSC Engagement Session. Please be as specific as possible with your responses. Thank you.

Questions		Stakeholder Comments
1.	Please comment on the Evaluation of MSSC session hosted on Nov. 4, 2021. Was the session valuable? Was there something the AESO could have done to make the session more helpful?	The session was valuable in understanding the AESO's considerations in adjusting the MSSC level. It would have been more valuable if the AESO could work to quantify the benefits and costs to Market Participants of raising the level (such as some projects potentially offering more power in the short term and larger projects getting connected to the grid).
2.	Are there other considerations that the AESO should include, exclude, or modify in its decision making on MSSC?	It would be beneficial to understand the timing for a conclusion on the need for change. As the AESO progresses, when will it be determined if there is a need for a change and with an increase, how long will this process take? This will help project developers in planning future projects.
3.	Are there other considerations that the AESO should include, exclude, or modify in its assumptions?	The pool price impact of some assets increasing output in the short term following an increase in the MSSC should be analyzed and measured against the associated costs. Also, the AESO should estimate how many new projects will connect with a higher output and the resulting pool price impact in the short term.

Questions		Stakeholder Comments
4.	Are you supportive of any of the following potential future MSSC limit changes? Why or why not?	Projects benefit from economies of scale and therefore a higher limit may enable an increase in renewable generation, lowering the pool price as a result of increased \$0/mwh offers.
	(i) Status Quo	Greengate recommends that the MSSC level be maintained only if the all in, delivered cost of energy for customers is higher as a result of the MSSC increase.
	(ii) Increase MSSC marginally	The level of increase in the MSSC must be discussed both from an economic perspective as well as system reliability. The net benefits to consumers should determine the size of the MSSC increase.
	(iii) Increase MSSC substantially	The level of increase in the MSSC must be discussed both from an economic perspective as well as system reliability. The net benefits to consumers should determine the size of the MSSC increase.
5.	If the MSSC limits are increased, who should bear the cost and why?	Load customers bear most transmission costs in Alberta, as outlined in legislation. This should continue with changes in MSSC. However, the AESO should only implement this change if it brings a net benefit (pool price and transmission cost changes) to load customers.
6.	Do you have additional questions that need to be answered to assist your understanding?	The AESO methodology on assessing pool price impacts from larger and more immediate additions needs to be clarified with stakeholders.
7.	Do you have additional comments that would assist the AESO in its decision making on MSSC limits?	The AESO may want to interview developers of large generation projects that approach the MSSC level to understand the quantum of additional capacity that may have been added to the projects if the MSSC level was higher.

Thank you for your input. Please email your completed matrix to: stakeholder.relations@aeso.ca

Stakeholder Comment Matrix – Nov. 4, 2021

Evaluation of Most Severe Single Contingency (MSSC) Stakeholder Engagement Session



Comment period:	Nov. 4, 2021 to Nov. 30, 2021	Contact:	Kurtis Glasier
Comments from:	Heartland Generation Ltd. (“Heartland Generation”)	Phone:	(587) 228-9617
Date:	[2021/11/30]	Email:	Kurtis.Glasier@heartlandgeneration.com

Instructions:

1. Please fill out the section above as indicated.
2. Please respond to the questions below and provide your specific comments.
3. **Please submit one completed comment matrix per organization.**
4. **Stakeholder comment matrices will be published to aeso.ca, in their original state.**
5. Email your completed comment matrix to stakeholder.relations@aeso.ca by **Nov. 19, 2021**.

The AESO values stakeholder feedback and invites all interested stakeholders to provide their comments on the Evaluation of MSSC Engagement Session. Please be as specific as possible with your responses. Thank you.

Questions		Stakeholder Comments
1.	Please comment on the Evaluation of MSSC session hosted on Nov. 4, 2021. Was the session valuable? Was there something the AESO could have done to make the session more helpful?	The AESO should provide historical analysis on the purpose and original justification for setting the current MSSC limit at 466 MW. This may provide insight on the overall intent or need for change to the MSSC limits.
2.	Are there other considerations that the AESO should include, exclude or modify in its decision making on MSSC?	<p>The AESO should justify the legislative support for their decision to restrict commercial sizing/configurations of assets based on the MSSC limit. Heartland Generation understands that the current 466 MW limit was originally set based upon the historical largest contingency in the province; however, the AESO is proposing commercial limitations on generators based on a historic level of MSSC.</p> <p>It is Heartland Generation’s understanding that the MSSC should not be a hard limit, but that the AESO should react and procure the necessary ancillary services to accommodate for the largest observed single contingency. There may be the ability for market participants and the AESO to informally discuss alternative options that may ultimately reduce MSSC (and therefore the cost of ancillary services).</p>

Questions	Stakeholder Comments
	<p>The AESO should provide legislative analysis that allows for a limitation to the commercial sizing decisions of market participants; this should include the potential impact to the FEOC operation of the market by allowing a potential barrier to economies of scale and/or limiting competitive response.</p>
<p>3. Are there other considerations that the AESO should include, exclude or modify in its assumptions?</p>	<p>The economic analysis presented in the session has noted limitations. Stakeholder feedback was provided during the session and is anticipated by multiple parties as part of their comment matrices. Some preliminary comments are provided below.</p> <p>Heartland Generation denotes that the economic analysis is skewed due to the limitation of domestic competitive response to import limits. Intertie capacity, like other outages and weather conditions, is a key parameter that market participants use to model market conditions. A sustained change to the import capacity because of changes to the MSSC limits would have an impact on market participants expectations and result in domestic competitive response (e.g., changes to offer behavior, market entry, etc.). While Heartland Generation notes that modelling the exact competitive response under these hypothetical conditions may be difficult or cost prohibitive, the conclusions from the more simplistic model need to be adjusted given this expected market response.</p> <p>Further, as commented on in the session, the AESO's economic modelling does not account for the economies of scale of a unit larger than the current MSSC level. The commercial sizing decision is largely made due to the impact of economies of scale, and this will have an impact on total surplus. A unit larger than the MSSC may be able to provide more efficient access to lower cost electricity and therefore increase consumer surplus. However, economies of scale are largely individualized and therefore ambiguous or difficult to generalize for the type of analysis conducted by the AESO.</p> <p>Competitive response and the efficiencies from economies of scale need to be accounted for in any decisions based on the AESO's analysis. When taken collectively, the economic analysis as presented will provide little efficacy as the assumptions presuppose that the costs of increasing the MSSC limit will outweigh the limited benefits included. To say this another way, the AESO has provided more analysis on the <i>costs</i> of increasing MSSC, while not being able to produce the same level of analysis on the <i>benefits</i>.</p>
<p>4. Are you supportive of any of the following potential future MSSC limit changes? Why or why not?</p>	<p>Heartland Generation understands that the MSSC limit should be largely reactionary to the commercial decisions of domestic generators and the grid operation/composition. The AESO is able to make the economic decisions inclusive of MSSC limits when assessing transmission planning; this central planning of commercial decision should not extend to the competitive electricity generation market. While it may be prudent for the AESO to evaluate the costs and benefits of increasing MSSC limits with regard to a new transmission line and</p>

Questions	Stakeholder Comments
	its impact on Ancillary Services, it is not appropriate given the prevailing market design, for the same analysis to limit the investor decision relating to the size and configuration of a generation asset.
(i) Status Quo	See comments above in response to Question Number 4.
(ii) Increase MSSC marginally	See comments above in response to Question Number 4.
(iii) Increase MSSC substantially	See comments above in response to Question Number 4.
5. If the MSSC limits are increased, who should bear the cost and why?	<p>Most of the mitigation solutions for a higher MSSC limit being proposed are ancillary services (e.g., increased contingency reserves). If these assumptions hold, then Heartland Generation understands that the ancillary services would be paid for by load, as mandated by the Alberta legislative framework. Like the other Ancillary Services these would facilitate the reliable operation of the competitive wholesale market without undue limitation or unlawful barriers on the FEOC operation of that market.</p> <p>If, however, the AESO is instead proposing a MSSC limit mitigation that is not included in the definition of ancillary services, then it is more ambiguous on which party should bear the cost.</p>
6. Do you have additional questions that need to be answered to assist your understanding?	<p>Heartland Generation is interested in an assessment of options/recommendations that the AESO has explored regarding ancillary services products (e.g., Fast Frequency Response (FFR), sustained frequency products, tie-line limitations, etc.). As noted in the presentation, the presented economic analysis regarding a limitation on imports was only one option; what other options is the AESO considering?</p> <p>Further, the AESO has begun consultations on underfrequency response and Operating Reserves Market review. Heartland Generation is interested with how these parallel consultations could potentially impact conclusions/recommendation made as a part of the evaluation of MSSC (e.g., would changes to the Operating Reserves Markets change the cost of ancillary services procurement with regard to MSSC? Could new Operating Reserves products alleviate frequency response issues with regard to both underfrequency reliability events and increasing MSSC limits?).</p>
7. Do you have additional comments that would assist the AESO in its decision making on MSSC limits?	The AESO should explore further products and services that could be competitively procured from deregulated entities to decrease the overall ancillary services costs. The current FFR pilot should be reviewed as part of a broader exploration of a sustained frequency response product, which would be available to more competitive asset owners.

Thank you for your input. Please email your completed matrix to: stakeholder.relations@aeso.ca

Stakeholder Comment Matrix – Nov. 4, 2021

Evaluation of Most Severe Single Contingency (MSSC) Stakeholder Engagement Session



Comment period:	Nov. 4, 2021 to Nov. 19, 2021	Contact:	Richard Penn
Comments from:	Industrial Power Consumers Association of Alberta (IPCAA)	Phone:	403 903 7693
Date:	2021/11/22	Email:	Richard.Penn@IPCAA.ca

Instructions:

1. Please fill out the section above as indicated.
2. Please respond to the questions below and provide your specific comments.
3. **Please submit one completed comment matrix per organization.**
4. **Stakeholder comment matrices will be published to aeso.ca, in their original state.**
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The AESO values stakeholder feedback and invites all interested stakeholders to provide their comments on the Evaluation of MSSC Engagement Session. Please be as specific as possible with your responses. Thank you.

Questions		Stakeholder Comments
1.	Please comment on the Evaluation of MSSC session hosted on Nov. 4, 2021. Was the session valuable? Was there something the AESO could have done to make the session more helpful?	IPCAA would like to thank the AESO for the MSSC session and its discussion of potential outcomes. At this time, until the AESO has explored all options IPCAA is not in a position to comment on future direction.
2.	Are there other considerations that the AESO should include, exclude or modify in its decision making on MSSC?	<p>It would be useful if the AESO could confirm that under the Act it cannot limit the size of new generation.</p> <p>Prior to making its decision on MSSC, the AESO should examine all practical options to enhance efficiency such as:</p> <ol style="list-style-type: none">1. A Back-to-Back scheme on MATL2. The applicability of RAS schemes3. Alter the reliability standards of new generation for frequency response and ride-through capabilities.

Questions	Stakeholder Comments
	<p>4. Potentially other sources of Fast-Frequency Response</p> <p>5. Financial solutions in other transmission constrained jurisdictions such as dynamic tariffs or flexibility contracts.</p> <p>The AESO should undertake a series of cost-benefit analyses to discern the appropriate solution.</p>
3.	<p>Are there other considerations that the AESO should include, exclude or modify in its assumptions?</p> <p>No comment at this time.</p>
4.	<p>Are you supportive of any of the following potential future MSSC limit changes? Why or why not?</p> <p>It is still too early to consider what MSSC limit changes should occur. At this stage, the AESO should examine all options that are available to raise, lower or keep the same limit and the costs and benefits associated with each option.</p>
	<p>(i) Status Quo</p> <p>No comment at this time.</p>
	<p>(ii) Increase MSSC marginally</p> <p>No comment at this time.</p>
	<p>(iii) Increase MSSC substantially</p> <p>No comment at this time.</p>
5.	<p>If the MSSC limits are increased, who should bear the cost and why?</p> <p>If the MSSC limit were to be increased for the benefit of larger generators, the generators should bear the cost to limit load's loss.</p>
6.	<p>Do you have additional questions that need to be answered to assist your understanding?</p> <p>Not currently. Likely once all options are considered by the AESO and the options costed and laid out for further discussion.</p>
7.	<p>Do you have additional comments that would assist the AESO in its decision making on MSSC limits?</p> <p>At this stage, until all the options and potential solutions are explored and costed it is too early for the AESO to decide on MSSC limits. The AESO may want to consider developing an options paper with a preferred recommendation for stakeholders to consider. This has been done for market stakeholder engagements.</p>

Thank you for your input. Please email your completed matrix to: stakeholder.relations@aeso.ca

Stakeholder Comment Matrix – Nov. 4, 2021

Evaluation of Most Severe Single Contingency (MSSC) Stakeholder Engagement Session



Comment period:	Nov. 4, 2021 to Nov. 19, 2021	Contact:	Mark Nesbitt
Comments from:	Market Surveillance Administrator	Phone:	
Date:	2021/11/17	Email:	Mark.nesbitt@albertamsa.ca

Instructions:

1. Please fill out the section above as indicated.
2. Please respond to the questions below and provide your specific comments.
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Questions		Stakeholder Comments
1.	Please comment on the Evaluation of MSSC session hosted on Nov. 4, 2021. Was the session valuable? Was there something the AESO could have done to make the session more helpful?	The MSA found the November 4 th stakeholder session helpful in clarifying the issue and providing an overview of possible next steps. The MSA provides no comment regarding the substance of the consultation issue at this time, but will monitor the consultation and reserves the right to comment in future.
2.	Are there other considerations that the AESO should include, exclude or modify in its decision making on MSSC?	
3.	Are there other considerations that the AESO should include, exclude or modify in its assumptions?	
4.	Are you supportive of any of the following potential future MSSC limit changes? Why or why not?	

Questions		Stakeholder Comments
	(i) Status Quo	
	(ii) Increase MSSC marginally	
	(iii) Increase MSSC substantially	
5.	If the MSSC limits are increased, who should bear the cost and why?	
6.	Do you have additional questions that need to be answered to assist your understanding?	
7.	Do you have additional comments that would assist the AESO in its decision making on MSSC limits?	

Thank you for your input. Please email your completed matrix to: stakeholder.relations@aeso.ca

Stakeholder Comment Matrix – Nov. 4, 2021

Evaluation of Most Severe Single Contingency (MSSC) Stakeholder Engagement Session



Comment period:	Nov. 4, 2021 to Nov. 19, 2021	Contact:	Sharmen Andrew
Comments from:	MATL Canada L.P. & MATL LLP	Phone:	403-818-0058
Date:	30-Nov-2021	Email:	Sharmen.andrew@bhe-canada.ca

Instructions:

1. Please fill out the section above as indicated.
2. Please respond to the questions below and provide your specific comments.
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The AESO values stakeholder feedback and invites all interested stakeholders to provide their comments on the Evaluation of MSSC Engagement Session. Please be as specific as possible with your responses. Thank you.

Questions		Stakeholder Comments
1.	Please comment on the Evaluation of MSSC session hosted on Nov. 4, 2021. Was the session valuable? Was there something the AESO could have done to make the session more helpful?	The session held on November 4, 2021 was helpful.
2.	Are there other considerations that the AESO should include, exclude or modify in its decision making on MSSC?	<ol style="list-style-type: none"> 1. Private capital has been invested to develop, permit, and construct merchant interties to the Alberta Interconnected Electric System. These investments are secured with long term contracts for transmission scheduling rights, in accordance with the Negotiated Rate Authority granted to MATL by the Federal Energy Regulatory Commission under section 205 of the Federal Power Act (FPA). 2. Increasing the MSSC will adversely impact MATL's long term transmission customers, impact its rate authority as granted by adjacent jurisdictions, and have impacts to commercial agreements that secure the investment. In particular, increasing the MSSC will have a material impact on the transmission reliability margin and therefore change the utilization of these private investments and associated

	Questions	Stakeholder Comments
		<p>commercial contracts. Capacity will no longer be used for the intended merchant purposes as approved by the Alberta Utilities Commission (and by adjacent jurisdictions), and instead will be used by the Alberta Interconnected Electric System for reliability purposes.</p> <p>3. When changing the use of the interties, the AESO should consider all adjacent jurisdictions, the consequential impact to commercial agreements in those jurisdictions, and the impact its decisions have on adjacent transmission authorities. If the AESO chooses to make unilateral decisions without due process it may lower future investment and stagnate current investment.</p> <p>4. Given its public interest mandate, the AESO should also consider and include electricity affordability and market efficiency when making its decision on MSSC.</p>
3.	Are there other considerations that the AESO should include, exclude or modify in its assumptions?	See answer to Question 2
4.	Are you supportive of any of the following potential future MSSC limit changes? Why or why not?	<p>1. MATL's view is that any reductions to available transfer capacity on interties will result in higher prices to Alberta electricity consumers.</p> <p>2. MATL will be unsupportive of a framework that changes the use of interties without a fair and reasonable mechanism for affected parties (including the parties of all long term contracts for northbound transmission service on the Montana Alberta Tie Line) to recover or allocate its costs.</p>
	(i) Status Quo	Yes. See above.
	(ii) Increase MSSC marginally	No. See above.
	(iii) Increase MSSC substantially	No. See above.
5.	If the MSSC limits are increased, who should bear the cost and why?	The cost associated with increasing the MSSC should be paid for by the parties that benefit from the increase.

	Questions	Stakeholder Comments
6.	Do you have additional questions that need to be answered to assist your understanding?	<ol style="list-style-type: none"> 1. Based on the AESO presentation on November 4, 2021, an increase in the MSSC will result in the reallocation of transmission capacity on interties. Since the owners of transmission scheduling rights on adjacent transmission systems will no longer be able to utilize its rights for merchant purposes as intended (and as approved by the Alberta Utilities Commission), will the AESO recognize the costs that parties have invested in transmission infrastructure both within Alberta and outside of Alberta? 2. Will there be a mechanism for affected parties to recover or allocate its costs? If so, please provide the details of the proposed mechanism. If not, why not?
7.	Do you have additional comments that would assist the AESO in its decision making on MSSC limits?	<ol style="list-style-type: none"> 1. Given that there will be market impacts, it is the view of MATL Canada and MATL LLP that any material changes in the use of interties ought to be reviewed and approved by the Alberta Utilities Commission. 2. Private capital has invested in a merchant intertie to Alberta, taken financial risk, and has contributed to an efficient market with lower cost to electricity consumers. If the system is looking to take the benefit of those risks there should be a fair and reasonable mechanism in place for cost allocation or cost recovery. 3. Any proposed impacts to the operation of the Montana Alberta Tie Line may be in violation of the Fair, Efficient and Open Competition Regulation, and of international agreements including the United States Mexico Canada Agreement (USMCA).

Thank you for you input. Please email your completed matrix to: stakeholder.relations@aeso.ca

Stakeholder Comment Matrix – Nov. 4, 2021

Evaluation of Most Severe Single Contingency (MSSC) Stakeholder Engagement Session



Comment period:	Nov. 4, 2021 to Nov. 30, 2021	Contact:	Dwayne Howard
Comments from:	NaturEner USA, LLC	Phone:	561-944-6139
Date:	2021/11/30	Email:	dhoward@naturener.us

Instructions:

1. Please fill out the section above as indicated.
2. Please respond to the questions below and provide your specific comments.
3. **Please submit one completed comment matrix per organization.**
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The AESO values stakeholder feedback and invites all interested stakeholders to provide their comments on the Evaluation of MSSC Engagement Session. Please be as specific as possible with your responses. Thank you.

Questions		Stakeholder Comments
1.	Please comment on the Evaluation of MSSC session hosted on Nov. 4, 2021. Was the session valuable? Was there something the AESO could have done to make the session more helpful?	The MSSC session held on Nov 4, 2021, contained valuable information regarding the methodology and calculations used to propose a Static MSSC limit increase.
2.	Are there other considerations that the AESO should include, exclude or modify in its decision making on MSSC?	<p>The current AESO rules regarding MSSC limits were established only after active stakeholder engagement and due process. Any changes to the MSSC limit based on restricting the TTC on the interties will have a severe and unacceptable negative economic impact on generators relying on the interties to transmit power to the AESO. The AESO should not make changes to the MSSC limits by restricting the TTC on the interties without first engaging in a fair and open stakeholder process.</p> <p>The AESO should consider the negative impact to open competition within the AESO due to reducing the TTC on interties, including the negative financial impact to transmission customers who utilize the interties to import energy into the AESO.</p>

Questions		Stakeholder Comments
		Consideration should be given to the potential for increased energy costs to AESO consumers due to the reduced amount of TTC on the interties.
3.	Are there other considerations that the AESO should include, exclude or modify in its assumptions?	The need for modification of the MSSC limits arises due to the increased size of individual generators. Consideration should be given to requiring the new generators connected to the AIES to bear the costs of changes to the MSSC limits through limitations on the volumes approved for individual generators, configurations of substations or other equipment of the individual generators, and for adjustments to the LSSi program before requiring the interties to assume the negative impacts of changes to the MSSC limits. At a minimum new and existing generation should share in the costs so that if restrictions are imposed on the interties, the interties and their customers should be entitled to compensation provided by the new generators or other system stakeholders.
4.	Are you supportive of any of the following potential future MSSC limit changes? Why or why not?	<p>NaturEner USA, LLC does not support a potential MSSC limit change if it will have a negative impact on the TTC on interties into the AESO. If any increase to the MSSC results in an equal reduction in TTC on the interties into AESO, there will be severe and unacceptable economic implications to NaturEner USA, LLC, the holder of the northbound transmission rights on MATL.</p> <p>Raising the MSSC limit will have a negative impact on intertie transmission customers and customers who have commercial agreements in place. A higher MSSC would reduce intertie access for transmission customers and negatively impact customers with commercial agreements with the tie line owner.</p> <p>Raising the MSSC limit to address declining system inertia and the increased number of renewables on the system, sets a challenging precedent. Intertie capacity will no longer be used for the intended merchant import purposes. Reducing the interties available transfer capability could result in higher electricity prices for AESO consumers. As a result, raising the MSSC limit does not appear to be a fair and equitable resolution to resolve the potential system reliability frequency risk in the AESO</p>
	(i) Status Quo	Yes
	(ii) Increase MSSC marginally	No
	(iii) Increase MSSC substantially	No
5.	If the MSSC limits are increased, who should bear the cost and why?	The new generation requiring an adjustment to the MSSC limits

Questions		Stakeholder Comments
6.	Do you have additional questions that need to be answered to assist your understanding?	No
7.	Do you have additional comments that would assist the AESO in its decision making on MSSC limits?	No

Thank you for your input. Please email your completed matrix to: stakeholder.relations@ieso.ca

Stakeholder Comment Matrix – Nov. 4, 2021

Evaluation of Most Severe Single Contingency (MSSC) Stakeholder Engagement Session



Comment period:	Nov. 4, 2021 to Nov. 30, 2021	Contact:	Connor Curson
Comments from:	Powerex	Phone:	604-891-6028
Date:	2021/11/29	Email:	connor.curson@powerex.com

Instructions:

1. Please fill out the section above as indicated.
2. Please respond to the questions below and provide your specific comments.
3. **Please submit one completed comment matrix per organization.**
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The AESO values stakeholder feedback and invites all interested stakeholders to provide their comments on the Evaluation of MSSC Engagement Session. Please be as specific as possible with your responses. Thank you.

Questions		Stakeholder Comments
1.	Please comment on the Evaluation of MSSC session hosted on Nov. 4, 2021. Was the session valuable? Was there something the AESO could have done to make the session more helpful?	Powerex appreciates the AESO holding public sessions on the Evaluation of MSSC and looks forward to future participation in these discussions.
2.	Are there other considerations that the AESO should include, exclude or modify in its decision making on MSSC?	The AESO should consider the Intertie Restoration obligations and what effect any changes to the MSSC would have on meeting those obligations. Any increase to the MSSC may have subsequent impacts on commercially available space on the intertie.
3.	Are there other considerations that the AESO should include, exclude or modify in its assumptions?	
4.	Are you supportive of any of the following potential future MSSC limit changes? Why or why not?	

Questions		Stakeholder Comments
	(i) Status Quo	
	(ii) Increase MSSC marginally	Powerex is not supportive at this time of an increase to MSSC due to the potential impacts to the inertia.
	(iii) Increase MSSC substantially	Powerex is not supportive at this time of an increase to MSSC due to the potential impacts to the inertia.
5.	If the MSSC limits are increased, who should bear the cost and why?	The allocation of costs and benefits should follow cost causation principles; those incurring the costs should bear the costs, and those providing the benefits should be compensated for providing those benefits.
6.	Do you have additional questions that need to be answered to assist your understanding?	
7.	Do you have additional comments that would assist the AESO in its decision making on MSSC limits?	

Thank you for your input. Please email your completed matrix to: stakeholder.relations@aeso.ca

Stakeholder Comment Matrix – Nov. 4, 2021

Evaluation of Most Severe Single Contingency (MSSC) Stakeholder Engagement Session



Comment period:	Nov. 4, 2021 to Nov. 30, 2021	Contact:	Horst Klinkenberg
Comments from:	Suncor	Phone:	(403) 819-7125
Date:	2021/11/30	Email:	horst.klinkenberg@suncor.com

	Questions	Stakeholder Comments
1.	Please comment on the Evaluation of MSSC session hosted on Nov. 4, 2021. Was the session valuable? Was there something the AESO could have done to make the session more helpful?	<p>The session was useful in providing initial information. The session would have benefitted from more background information, for example when and why the AESO changed its previous position regarding the MSSC limit, and why there are inconsistencies between generator and inertia treatment. An analysis of the AESO's obligations regarding generator connections would also have been helpful.</p> <p>The presentation of the analysis on the other hand seemed premature. If an analysis of this kind turns out to be useful at a later stage, the scenarios to be analyzed and the assumptions for the analysis should be developed together with stakeholders.</p>
2.	Are there other considerations that the AESO should include, exclude or modify in its decision making on MSSC?	<p>Suncor is concerned about the apparent change from past practice where the MSSC limit was simply the largest generator on the system and the AESO managed the reliability accordingly. The fact that the current MSSC limit equals the size of the largest unit is testament to this past approach. Suncor is not convinced that the current approach is not in violation of the AESO's obligations as Suncor is not aware of any section in legislation that would allow the AESO to deny the connection of a generating unit based on its size. On the contrary, Section 15 of the <i>Transmission Regulation</i> directs the AESO to plan the transmission so that all in-merit electric energy can flow under normal system conditions. It seems that any generator that is approved by the Commission is allowed to connect and the AESO would be obligated to allow the output from the unit to flow onto the system up to the units maximum capability – at least under system-normal conditions.</p> <p>Suncor is further concerned that the MSSC limit seems to be inconsistent and not be based on an actual analysis of what the system can handle. For example, when islanded, the MSSC limit for Alberta generators is 425 MW. On the other hand, LSSi is not getting armed until imports exceed 450 MW. Since an inertia trip would result in both the islanding of Alberta and a loss of 450 MW, there seems to be an inconsistency to the detriment of Alberta generators. In fact, the LSSi arming table raises significant questions around the appropriateness of the current MSSC limit.</p>

	Questions	Stakeholder Comments
		The existence and use of LSSi further raises the question as to why a similar, or potentially the same, ancillary service is not utilized to increase the MSSC limit for Alberta generators.
3.	Are there other considerations that the AESO should include, exclude or modify in its assumptions?	One main consideration should be the original purpose of the inertia. To Suncor's knowledge, the inertia was first and foremost developed as a reliability measure (for frequency stabilization) with an agreement that to the extent that additional benefit could be gained through energy exchanges, the associated profits would be split. Since deregulation, the mutual benefit from energy exchanges has devolved into a wealth transfer to importers with a detrimental impact to Alberta reliability (in the form of reduced reserve margins). While this second reliability impact should be addressed in a different forum, the existence of the wealth transfer seems to cloud advocacy positions to the point that the original frequency stabilizing role of the inertia is getting challenged.
4.	Are you supportive of any of the following potential future MSSC limit changes? Why or why not?	Suncor is not supportive of either approach. While the AESO should be in conversation with generation developers around avoiding larger single contingencies, Suncor believes that the AESO should accommodate any proposed generation development by raising the MSSC-limit to the extent necessary.
	(i) Status Quo	Not supportive; see above
	(ii) Increase MSSC marginally	Not supportive; see above
	(iii) Increase MSSC substantially	Not supportive; see above
5.	If the MSSC limits are increased, who should bear the cost and why?	If the MSSC limit is increased through upgrades to the transmission system or through ancillary services, the costs would have to be borne by consumers according to legislation. If the MSSC limit is increased via the inertia, there are no incremental costs.
6.	Do you have additional questions that need to be answered to assist your understanding?	Not at this time
7.	Do you have additional comments that would assist the AESO in its decision making on MSSC limits?	Not at this time

Stakeholder Comment Matrix – Nov. 4, 2021

Evaluation of Most Severe Single Contingency (MSSC) Stakeholder Engagement Session



Comment period:	Nov. 4, 2021 to Nov. 30, 2021	Contact:	Mark Thompson
Comments from:	TransCanada Energy Ltd. (TCE)	Phone:	403-589-7193
Date:	2020/11/30	Email:	markj_thompson@tcenergy.com

Instructions:

1. Please fill out the section above as indicated.
2. Please respond to the questions below and provide your specific comments.
3. **Please submit one completed comment matrix per organization.**
4. **Stakeholder comment matrices will be published to aeso.ca, in their original state.**
5. Email your completed comment matrix to stakeholder.relations@aesocanada.com by **Nov. 30, 2021**.

The AESO values stakeholder feedback and invites all interested stakeholders to provide their comments on the Evaluation of MSSC Engagement Session. Please be as specific as possible with your responses. Thank you.

Questions		Stakeholder Comments
1.	Please comment on the Evaluation of MSSC session hosted on Nov. 4, 2021. Was the session valuable? Was there something the AESO could have done to make the session more helpful?	<p>TCE submits that all consultation is valuable. In this case, it was valuable to understand the AESO's current thinking regarding MSSC.</p> <p>However, TCE suggests that the consultation in this instance was premature, particularly since the AESO does not intend to further consult on this matter (under "Next Steps" in the presentation, the AESO stated that it would have a follow-up session in Q1 2022 to share its decision. In light of this, it would have been more helpful for the AESO to have presented analysis on all of the options for increasing the static MSSC rather than just one involving reducing TTC on the AB/BC intertie, and for that analysis to have been more thorough.</p>
2.	Are there other considerations that the AESO should include, exclude or modify in its decision making on MSSC?	<p><u>MSSC</u></p> <p>The AESO's November 4, 2021 presentation defined MSSC as:</p> <p>"[t]he Most Severe Single <u>loss of supply</u> Contingency that the power system can absorb without impacting reliability and tripping customer load.</p> <p>This definition differs from the AESO's June 2015 paper titled <i>Most Severe Single Contingency (MSSC) Impacts on Alberta Balancing Authority Area Operation: Observations and Information Sharing</i> ("June 2015 Paper") in which the AESO defined MSSC as follows:</p>

Questions	Stakeholder Comments
	<p><i>MSSC refers to the most severe single contingency generator or supply loss on the AIES which may occur as a result of a generator trip or the loss of a transmission line that subsequently leads to the simultaneous loss of generation.</i></p> <p>The difference between the two definitions is the AESO’s apparent treatment of the MSSC as a variable. In the June 2015 paper, the AESO treats the MSSC as an independent variable in the sense that the MSSC is an input to the AESO’s operation. In other words, the AESO would identify the element within the AIES that could cause the most severe single contingency, whatever that element may be, and operate the AIES accordingly. If elements in the AIES were to change, whether due to the connection of a new larger generator, the retirement of the then-largest generator, or other such changes, the MSSC may increase or decrease. This is consistent with TCE’s understanding of the use of MSSC in other jurisdictions and in Alberta, historically.</p> <p>In the November 4, 2021 presentation, the AESO appears to re-define MSSC and treat it as a dependent variable that they can modify regardless of changes to elements within the AIES. The MSSC is a well-established term throughout NERC jurisdictions in North America and is frequently referenced in reliability literature and discussions. TCE is concerned that re-defining this term for Alberta would be inconsistent and create confusion. TCE recommends that the AESO continue to treat MSSC as it has historically by modifying it as needed based on changes to elements within the AIES.</p> <p>TCE understands that the AESO needs to maintain the reliability of the AIES, and that over time changes to the supply fleet may require new approaches to maintaining reliability. However, it is not clear why the AESO would need to artificially increase the MSSC. If the AESO were to determine that in order to meet its reliability mandate it needed to procure more or faster contingency reserves or reduce TTC on the AB/BC intertie, why could it not do so without changing the MSSC?</p> <p><u>Consultation</u></p> <p>Any modifications to the MSSC, or commensurate changes to the TTC of the AB/BC intertie or contingency reserves, will have a significant impact on the market. Moreover, the AESO may not require Commission approval when making such modifications. This potential impact and reduced oversight make it critical that the AESO fully consult with stakeholders to ensure there are no unintended consequences even if consultation is not mandated.</p> <p>TCE submits that the consultation conducted on November 4, 2021, was inadequate to provide stakeholders sufficient confidence that the AESO will make an appropriate MSSC decision because the analysis was limited to “directional” analysis on only one of the available options.</p>

Questions	Stakeholder Comments
	<p>TCE recommends that the AESO consider the following process:</p> <ol style="list-style-type: none"> 1. conduct a full analysis of all the options; 2. publish the analysis in an options paper; 3. consult with stakeholders on the options paper; 4. publish a recommendation paper based on stakeholder feedback; and 5. consult with stakeholders on the recommendation paper. <p><u>Incentives & FEOC</u></p> <p>The consideration of incentives is important to achieving efficiency and a FEOC market. Changes to the market structure will cause changes to the incentives of market participants. As such, the options must ensure that the resulting incentives align with the desired behaviour.</p> <p>The AESO is considering its options to address its concerns that there is an inadequate frequency response from generators within Alberta. One option the AESO is considering is reducing the TTC on the AB/BC intertie. This will not encourage the development of fast frequency response assets within Alberta. Indeed, it may create the opposite incentive for generators if the solution reduces competition from imports.</p> <p>Developing a fast frequency response market in Alberta would have the opposite effect and would not reduce competition from imports. It may even increase competition. For these reasons, TCE recommends that the AESO consider options other than reducing the TTC on the intertie to address its reliability concerns.</p>
<p>3. Are there other considerations that the AESO should include, exclude or modify in its assumptions?</p>	<p>Yes. While TCE is concerned that the AESO only presented analysis on a single option, we also have concerns regarding the analysis that was completed. This analysis studied the impact of reducing TTC on AB/BC and MATL interties.</p> <p>TCE's first concern is with respect to the exclusion of hours where the pool price exceeded \$100. The assumption was that behavioural changes from generators would counteract import volumes and that 98-99% of the hours were included. TCE submits that this assumption is unreasonable and will distort the results, particularly with respect to the impact to importers.</p> <p>The rationale for the behavioural changes from generators is that a higher pool price from reducing import volumes will incent off-line generators to come on-line and may encourage new supply over the long-term. TCE submits that these are secondary effects to the primary effect of a higher pool price. It is unreasonable to assume that the secondary effects will negate the primary effect. If it was the case that the secondary effects negated the primary</p>

Questions	Stakeholder Comments
	<p>effect, Alberta would not import when the pool price was greater than \$100. Clearly this is not true, because the secondary effects are small.</p> <p>Moreover, it is well understood that in Alberta's energy-only market, the high-value hours are critical to the success of this market design. Omitting 1-2% of the hours from the analysis is significant and will distort the results. TCE is concerned that a major decision will be made on the basis of such analysis.</p> <p>TCE also has transparency concerns since this assumption that caused the exclusion of the high-value hours was not included within the presentation. Why was the AESO not more forthcoming? We also note that the years selected include two of the lowest priced years in the historical record. Stakeholders need more detailed yearly analysis to see whether the results are driven entirely from these two years.</p> <p>TCE recommends that the AESO re-work its analysis and publish it for the benefit of stakeholders.</p>
4. Are you supportive of any of the following potential future MSSC limit changes? Why or why not?	
(i) Status Quo	TCE supports the status quo where the MSSC value is amended only in response to changes to elements within the AIES that cause a change to the most severe single contingency. Please refer to the MSSC section in the response to Question #2.
(ii) Increase MSSC marginally	No. Please refer to the MSSC section in the response to Question #2.
(iii) Increase MSSC substantially	No. Please refer to the MSSC section in the response to Question #2.
5. If the MSSC limits are increased, who should bear the cost and why?	For the reasons expressed above, TCE submits that the MSSC should not be increased. In any event, importers that connect to the system on a non-firm basis should not bear the cost.
6. Do you have additional questions that need to be answered to assist your understanding?	Please refer to the question asked in the response to Question #2 above.
7. Do you have additional comments that would assist the AESO in its decision making on MSSC limits?	TCE has no further comments at this time.

Thank you for your input. Please email your completed matrix to: stakeholder.relations@aeso.ca

Stakeholder Comment Matrix – Nov. 4, 2021

Evaluation of Most Severe Single Contingency (MSSC) Stakeholder Engagement Session



Comment period:	Nov. 4, 2021 to Nov. 19, 2021	Contact:	Akira Yamamoto
Comments from:	TransAlta Corporation	Phone:	403-267-7304
Date:	2021/11/19	Email:	akira_yamamoto@transalta.com

Instructions:

1. Please fill out the section above as indicated.
2. Please respond to the questions below and provide your specific comments.
3. **Please submit one completed comment matrix per organization.**
4. **Stakeholder comment matrices will be published to aeso.ca, in their original state.**
5. Email your completed comment matrix to stakeholder.relations@aeso.ca by **Nov. 19, 2021**.

The AESO values stakeholder feedback and invites all interested stakeholders to provide their comments on the Evaluation of MSSC Engagement Session. Please be as specific as possible with your responses. Thank you.

Questions	Stakeholder Comments
1. Please comment on the Evaluation of MSSC session hosted on Nov. 4, 2021. Was the session valuable? Was there something the AESO could have done to make the session more helpful?	<p><i>The session was helpful but didn't provide a real framework for making decisions on MSSC</i></p> <p>TransAlta appreciates the session and the initiation of stakeholder consultation on MSSC.</p> <p>We appreciate the information and analysis provided; however, it would have been more helpful to canvass stakeholders on the framework and analytical framework as a first step rather than present what appears to be the AESO's conclusions (and its leaning on a decision).</p> <p>TransAlta suggests that the AESO should more closely adhere to its engagement principles of inclusive and accessible, transparency and timely, or customized and meaningful by creating a clear problem statement, canvassing for input into the analysis to be done, reviewing the analysis with stakeholders, all of which are appropriate steps before it arrives at its conclusions. The AESO should not create intractable position at the outset of stakeholder consultation, which impacts open consultation. These impacts create even greater burdens in subsequent regulatory proceedings of having to revisit the stakeholder consultation record and whether it was conducted properly (and in adherence with the AESO's engagement principles).</p>

Questions	Stakeholder Comments
<p>2. Are there other considerations that the AESO should include, exclude or modify in its decision making on MSSC?</p>	<p><i>The AESO analysis should quantify the benefits of an increase in MSSC</i></p> <p>The AESO analysis excludes any real consideration of the benefits of an increase in MSSC and, consequently, it is not a cost-benefit analysis and of little value in decision making. The AESO noted on slide 13 of its presentation under its “reasons to increase” that an increase in the MSSC Limit could enable “large single connection projects” and “larger coal-to-gas conversion projects” but none of these benefits are quantified or considered in its economic evaluation.</p> <p>At a minimum, the AESO should consider the benefit of increased competition from brownfield gas-fired generation that have significantly lower capital costs, lower interconnection and transmission costs, and can achieve higher efficiencies and provide the system with lower cost generation. The AESO will preclude any of these benefits from being realized and stands to strand transmission investment by limiting static MSSC.</p> <p>The AESO should have also quantified the benefits of permitting more generation on a single line. The static MSSC limits the amount of renewable (and other) generation that can share a single line and, consequently, increases the cost of interconnection, drives more transmission development, poorly utilizes existing infrastructure, and impedes increased competition. The transmission cost differences between keeping the current MSSC limit and increasing it should be included in the economic analysis. The AESO should also quantify the benefit of higher renewable penetration in terms of its low cost of production and the impact on price from greater competition as well as the environmental benefit of displacing fossil fuel generation.</p> <p><i>The AESO should assess the fair, efficient and open competition (FEOC) implications associated with MSSC</i></p> <p>TransAlta recommends that the AESO’s analysis should be guided by and consider the legislative and regulatory framework, which specifically include the <i>FEOC Regulation</i> and <i>Transmission Regulation</i>. These frameworks do not discriminate on generation size and require all source of supply to be accommodated.</p> <p>The AESO indicated during its presentation that the MSSC only applies to internal Alberta generation, and that the intertie is never the MSSC. As noted in the AESO’s paper, Most Severe Single Contingency (MSSC) Impacts on Alberta Balancing Authority Area Operation Observations and Information Sharing, “The value of MSSC could also be larger if the MSSC is associated with a large import on the AC interconnections. However, depending on the availability and effectiveness of load shed service for Imports (LSSi), the effect of the loss of a large import can be mitigated through the application of LSSi (i.e., if the frequency drops below the LSSi trip setting) and shift the MSSC from being the AC interconnections to being a large</p>

Questions	Stakeholder Comments
	<p>generating source within the AIES.”¹ Further, “The AESO has historically operated the AIES whereby following a trip of the AC interconnections at high imports, the AESO will reestablish frequency through the use of contingency reserve and other measures such as LSSi.”² It is clear from the AESO paper that the AESO currently procures additional contingency reserve and a specific fast frequency response product – load shed service for imports (LSSi) – to facilitate the joint BC/MATL lines as the MSSC.</p> <p>TransAlta requests that the AESO consider an analysis of the costs and benefits of procuring a similar service to LSSi for internal generation. Furthermore, the analysis should reflect the benefits in terms of resource adequacy and reliability associated with sources that are not an opportunity service and have a firm “Must Offer Must Comply” requirement.</p>
3.	<p>Are there other considerations that the AESO should include, exclude or modify in its assumptions?</p> <p><i>The AESO should reflect the fundamental change in supply-demand associated with MSSC change and should revise its assumption that imports are free</i></p> <p>The AESO stated during its presentation that it quantified the consumer and producer surpluses with the assumption that imports are zero variable cost while it used the data it has from historical merit orders to quantify the producer surplus. It is obvious that any analysis that starts with an assumption that imports are free and any intra-Alberta generation that is used to replace imports has a cost that reflects its historical offers will conclude there is a wealth transfer between consumers to intra-Alberta producers. However, this result and conclusion is entirely driven by the starting assumptions and is not a realistic or reliable analysis to assess directional impacts.</p> <p>No generation resource is free even if those resources are cross subsidized by ratepayers or earn some revenues in their native jurisdiction. At a minimum, the AESO should reflect the opportunity cost of selling that power in its native jurisdiction (e.g., Mid-C) as importers are motivated by profit and engage in import transactions to arbitrage differences in price. In addition to the cost of power, the importer is also incurring other transaction costs including transmission tariff costs to transport power from one jurisdiction to another.</p> <p>Furthermore, the AESO’s starting assumption that a counterfactual analysis using historical data is useful to draw conclusions about the directional economic impacts of an MSSC limit increase is flawed. Supply and demand dynamics are the fundamental underpinning of Alberta’s energy market. It is unreasonable to assume that intra-Alberta supply will not respond</p>

¹ Page 3, Most Severe Single Contingency (MSSC) Impacts on Alberta Balancing Authority Area Operation Observations and Information Sharin, AESO, June 2015.

² Page 4, Idem.

Questions	Stakeholder Comments
	<p>to something as impactful as changing the amount of imports. However, this is exactly the assumption that the AESO has applied in its economic analysis. In contrast to the AESO's modelling assumptions, dispatchable intra-Alberta generators will likely run at higher capacity factors and their offers will reflect this significant change in their operating profile. Moreover, the market will likely respond with more generation development and increase intra-Alberta competition.</p>
4.	<p>Are you supportive of any of the following potential future MSSC limit changes? Why or why not?</p>
	<p>(i) Status Quo</p> <p><i>The status quo approach to MSSC is unworkable and creates too much regulatory uncertainty</i></p> <p>TransAlta is unclear about the emergent need to change the MSSC but understand the importance of a framework under which the market can provide more certainty that the MSSC will be permitted to reasonable be adjusted over time. As such, we do not think it is workable to continue with a status quo framework where the AESO considers changes to the MSSC as one-off assessments or unilaterally makes decisions about when or how it pursues these changes.</p>
	<p>(ii) Increase MSSC marginally</p> <p><i>The AESO needs to explain its assessment of significance</i></p>
	<p>(iii) Increase MSSC substantially</p> <p>The AESO has not specified what it considers “marginal” or “substantially” but TransAlta supports a framework under which MSSC can change over time.</p>
5.	<p>If the MSSC limits are increased, who should bear the cost and why?</p> <p><i>Cost responsibility is well established and should not change based on the direction of the MSSC limit change</i></p> <p>TransAlta is unclear about the costs that the AESO is referring to or why an increase (versus a decrease or keeping the same limit) would necessitate a change to the current cost responsibilities.</p> <p>A reduction in import capacity does not drive costs up but does reduce the opportunity to import power. The reduction in Load Shed Service for Imports (LSSi) decrease consumer but reduce the opportunities for current providers to sell LSSi service. The increase in contingency reserves procurement volumes increase Alberta Interconnected Electricity System (AIES) consumer costs under the ISO tariff.</p>

Questions	Stakeholder Comments
<p>6. Do you have additional questions that need to be answered to assist your understanding?</p>	<p><i>The AESO should provide its thresholds for assessing significance and also provide more information about how WECC evaluates MSSC change and if there are significance thresholds that they also apply</i></p> <p>TransAlta requests the AESO provides a reasonable construct for evaluating MSSC changes including the threshold under which the AESO evaluates the significance of the impacts. At present, the AESO assessment creates the unreasonable framework where it appears that no change should ever be permitted to MSSC. For example, a 1 MW change to the MSSC would, under the AESO's economic assessment approach, increase costs.</p> <p>The AESO should not approach this issue in this inflexible way as it treats MSSC as a one-off issue (where it has to be periodically revisited) rather than a framework which can provide some certainty about how MSSC change is evaluated over time. TransAlta would like that framework to include information about how WECC and neighbouring jurisdictions evaluate MSSC changes and whether there are thresholds that if breached cause greater concern. For example, the process for a 1 MW change to MSSC is likely very different than a 300 MW change.</p>
<p>7. Do you have additional comments that would assist the AESO in its decision making on MSSC limits?</p>	<p><i>The AESO should conclude its 2022 Long Term Plan consultation before it reconsults on MSSC</i></p> <p>TransAlta recommends the AESO to revisit the MSSC limit change after it has conducted its consultation on the 2022 Long Term Plan in Q1 2022, which we understand will identify reliability thresholds and may also discuss the potential benefits of reliability products to meet future reliability needs. More specifically, the studies may identify future reliability needs that may require additional ancillary service procurement in any event. If this is the case, MSSC may not be the only driver for increased contingency reserves procurement and that consideration should be reflected in the AESO's economic assessment.</p>

Thank you for your input. Please email your completed matrix to: stakeholder.relations@aeso.ca