# Stakeholder Comment and AESO Replies Matrix

## Proposed Amended ISO rule – Section 501.10, *Transmission Loss Factors*

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| **Date of Request for Comment** | 2018-10-18 | | |
| **Period of Comment:** | 2018-10-18 | through | 2018-11-05 |
| **Comments From:** | **ATCO** | | |

| S. | Proposed language | Stakeholder Comments | AESO Replies |
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| **6 (1)** | The **ISO** must calculate **loss factors** using hourly historical metered volume and **merit order** data for all **source assets** connected to the **transmission system** that are included in the system topologies created in subsection 7 below, for the calendar year for which **loss factors** are being determined, by:<br>(a) using hourly historical data for the calendar year two (2) years prior to the calendar year for which **loss factors** are being determined;<br>(b) including, in the following order, the following volumes for each **source asset**, including for the eleven (11) locations at which hydro **generating units** on the Bow River system are connected to the **transmission system**:<br>(i) all **metered energy** for **source assets** that do not submit price-quantity **offers** in the energy market;<br>(ii) all dispatched **operating blocks** for **source assets** that submit price-quantity **offers** in the energy market, in **merit order** first by price and then by size;<br>(iii) all undispatched **operating blocks** offered in the energy market for **source assets** that submit price-quantity **offers** in the energy market, in **merit order** first by price and then by size;<br>(iv) all volumes for **source assets** that the **ISO** | | |

| S. | Proposed language | Stakeholder Comments | AESO Replies |
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| | accepts for **dispatch** for **contingency reserve**, in **merit order** first by price and then by size; and<br>(v) all **available transfer capability** which is not scheduled for imports over **interties**;<br>(c) incorporating any change to **maximum capability** or **contract capacity** associated with a connection project, behind the fence project or contract capacity change project for a **source asset** included in the historical data by increasing or decreasing the **source asset**'s historical volumes in subsection 6(b) above in proportion to the change in maximum capability or **contract capacity**, as appropriate;<br>(d) incorporating any return to service for a **source asset** that was subject to a **mothball outage** or a **planned outage** for one or more entire **months** during the historical year, by reasonably adjusting the historical volumes of the **source asset** for the months affected by the **mothball outage** or **planned outage** in the historical year;<br>(e) incorporating any new **source asset** not included in the historical data but which has an expected in-service date by the end of the calendar year for which **loss factors** are being determined, by assigning such new **source asset** an hourly data profile after its expected in-service date reflecting the hourly data profile that is, for the same period:<br>(i) the average of all **source assets** of the same technology owned by the same **market participant** in the historical data;<br>(ii) if no **source asset** of the same technology is owned by the same **market participant** in the historical data, the average of all **source assets** of the same technology owned by any **market** | | |

| S. | Proposed language | Stakeholder Comments | AESO Replies |
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| | **participant** in the historical data; and<br>(iii) if no **source asset** of the same technology is owned by any **market participant** in the historical data, determined by the **ISO** in conjunction with the **legal owner** of the new **source asset**.<br>and<br>(f) excluding any **source asset** during a **month** when, for the entirety of that **month** of the calendar year for which **loss factors** are being determined:<br>(i) the **market participant** has notified the **ISO** that the **source asset** is planned to be subject to a **mothball outage** or a **planned outage**; or<br>(ii) the **system access service** for the **source asset** is planned to have been terminated. | | |
| **6(2)** | The **ISO** must calculate **loss factors** using hourly historical **metered energy** data for all **sink assets** connected to the **transmission system** that are included in the system topologies created in subsection 7 below, for the calendar year for which **loss factors** are being determined, by:<br>(a) using hourly historical data for the calendar year two (2) years prior to the calendar year for which **loss factors** are being determined;<br>(b) including all **metered energy** for each **sink asset**;<br>(c) incorporating any change to **contract capacity** associated with a connection project, behind the fence project or a **contract capacity** change project for a **sink asset** included in the historical data by increasing or decreasing the **sink asset**'s **metered energy** in subsection 6(b) above in proportion to the change in **contract capacity**;<br>(d) incorporating any new **sink asset** not included in the | | |

| S. | Proposed language | Stakeholder Comments | AESO Replies |
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| | historical data but which has an expected in-service date by the end of the calendar year for which **loss factors** are being determined, by assigning such new **sink asset** an hourly data profile reflecting the average hourly data profile of all **sink assets** included in the historical data after the expected in-service date of the new **sink asset**;<br>(e) excluding any **sink asset** during a **month** when, for the entirety of that **month** of the calendar year for which **loss factors** are being determined, the **system access service** for the **sink asset** is planned to have been terminated; and<br>(f) prorating all hourly **metered energy** for **sink assets** included in subsection 6(2)(b) above such that the total of the **metered energy** from the prorated **sink assets** plus the **metered energy** from the unprorated new **sink assets** included in subsection 6(2)(c) above is equal to the forecast **system load** annual volume for the calendar year for which **loss factors** are being determined. | | |
| **7(5)** | < subsection removed > | | |
| **8(8)** | The **ISO** must exclude an hour from the remaining calculations to determine a final **loss factor** for a single location if, for that location in that hour:<br>(a) for **system access service** provided under Rate STS or Rate IOS, the volume for **metered energy** or dispatched **operating blocks** for the location results in a net supply to the **transmission system** of less than 1.00 MW; or<br>(b) for **system access service** provided under Rate DOS, the volume for **metered energy** for the location results in a net demand to the **transmission system** of less than 1.00 MW. | | |

| Item # | | Stakeholder comments | AESO Replies |
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| 1 | whether you are of the view that amended ISO rule – Section 501.10, *Transmission Loss Factors* relates to the capacity market and why or why not | This proposed amendment to the ISO Rule does not directly relate to the capacity market. However, since the ISO Rule does address forecasting generation offers in a future period using historic data and modelling assumptions, the AESO may have to contemplate whether further amendments to this ISO Rule are necessary during the years where the electricity market is in transition from an energy-only market to the capacity market. Loss factors for the 2021 and 2022 years of the capacity market will use historic data from the 2019 and 2020 years of the energy-only market. | The AESO acknowledges ATCO's comment. At this time the AESO does not anticipate that implementation of the capacity market will require amendments to section 501.10. The AESO will continue to monitor and assess whether implementation of the capacity market will impact section 501.10. |
| 2 | if the answer to item #1 is yes, whether you agree that amended ISO rule – Section 501.10, *Transmission Loss Factors* should or should not be in effect for a fixed term and why or why not | | |
| 3 | whether you understand and agree with the objective or purpose of amended ISO rule – Section 501.10, *Transmission Loss Factors* and whether, in your view, Section 501.10, *Transmission Loss Factors* meets the objective or purpose | The AESO indicates that part of the objective is to "ensure that loss factors reasonably recover the cost of losses". ATCO submits that the Transmission Loss Factors ISO Rule approved by the Commission, not including the proposed amendment, must already satisfy this requirement; the AESO has not put forward how this ISO Rule without these proposed amendments does not reasonably recover the cost of losses.<br><br>ATCO agrees that the proposed amendments may add further clarification and transparency to the AESO process of calculating loss factors. The AESO should not, however, allow the proposed amendments to unnecessarily delay the publication and implementation of loss factors that are compliant with the Commission approved Transmission Loss Factors ISO Rule. | The AESO notes that, prior to the use of 2017 data to create forecast energy market merit order data for the calculation of 2019 loss factors, no source asset has returned to service from a mothball outage. Therefore, ATCO's observation that loss factors have to date been calculated without a provision addressing a generating unit's return from mothball outage is no relevance to the need for the proposed amendment to address a generating unit's return from a mothball outage.<br><br>As well, as discussed in the letter of notice for the proposed amendments, the AESO implemented the practice of including increases or decreases to volumes for existing source assets and sink assets for the calculation of loss factors for 2017 and 2018. This practice was discussed with stakeholders at technical meeting during those years. The practice was implemented to ensure section 501.10 resulted in loss factors that reasonably recovered the cost of losses, and the proposed amendments are intended to formally reflect the practice in section 501.10.<br><br>With respect to potential impacts on the schedule for loss factor activities, please see the AESO Replies to comments from Powerex. |

| Item # | | Stakeholder comments | AESO Replies |
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| 4 | how, in your view, amended ISO rule – Section 501.10, *Transmission Loss Factors* affects the performance of the capacity market and the electricity market | ATCO's comments do not pertain to the specific amendments requested but rather to the timing and method of consultation surrounding the proposed amendments. The AESO has known about multiple issues for an extended period, which could have been addressed by amendments to the ISO Rule. By the AESO's own admission in its Letter of Notice some of the issues were known in June 2017. Since the time these issues were identified to stakeholders in 2017, the AESO has not proposed specific amendment language nor asked for stakeholder feedback until now.<br><br>During the technical meeting on October 14, 2018, the AESO indicated that this rule amendment process could, and likely would, delay the publication and implementation of 2019 loss factors. Without rule amendments, ATCO understands that compliant 2019 loss factors could be calculated by the AESO and would be published to meet the "fifth business day of November prior to the calendar year in which loss factors will apply" deadline found in the ISO Rule.1<br><br>ATCO is of the view that the 2019 loss factors should not be delayed in publication and/or implementation by a rule amendment process. If the AESO is seeking rule amendments to provide clarity and transparency of loss factor calculations and to further refine the Transmission Loss Factors ISO Rule, these amendments should be applied on a prospective basis and the effective date should not impact 2019 loss factors. | With respect to potential impacts on the schedule for loss factor activities, please see the AESO Replies to Powerex.<br><br>The AESO recently published a notice to stakeholders on its website advising that it encountered unanticipated issues while preparing the input data and updating the software for the 2019 loss factor calculations and is unable to publish 2019 loss factors by the deadline of November 7, 2018, established in section 501.10. These delays are unrelated to the process for approving the proposed amendments to section 501.10. As discussed in the AESO Replies to Powerex, the AESO has decided to proceed with calculating loss factors for 2019 prior to the completion of the application review process for these amendments. |
| 5 | your views on any analysis conducted or commissioned by the AESO supporting amended ISO rule – Section 501.10, *Transmission Loss Factors* | | |
| 6 | whether you agree with amended ISO rule – Section 501.10, *Transmission Loss Factors* taken together with all ISO rules and in light of the principle of a fair, efficient and openly competitive market | | |

| Item # | | Stakeholder comments | AESO Replies |
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| 7 | whether you would suggest any alternatives to amended ISO rule – Section 501.10, *Transmission Loss Factors* | | |
| 8 | if the answer to item #1 is yes, whether you agree that the proposed provisional rule supports ensuring a reliable supply of electricity at a reasonable cost to customers and why or why not | | |
| 9 | whether you agree that the proposed provisional rule supports the public interest and why or why not | | |

# Stakeholder Comment and AESO Replies Matrix

## Proposed Amended ISO rule – Section 501.10, *Transmission Loss Factors*

**Date of Request for Comment** 2018-10-18

**Period of Comment:** 2018-10-18 through 2018-11-05

**Comments From:** **Capital Power**

| S. | Proposed language | Stakeholder Comments | AESO Replies |
|---|---|---|---|
| **6 (1)** | The **ISO** must calculate **loss factors** using hourly historical metered volume and **merit order** data for all **source assets** connected to the **transmission system** that are included in the system topologies created in subsection 7 below, for the calendar year for which **loss factors** are being determined, by:<br>(a) using hourly historical data for the calendar year two (2) years prior to the calendar year for which **loss factors** are being determined;<br>(b) including, in the following order, the following volumes for each **source asset**, including for the eleven (11) locations at which hydro **generating units** on the Bow River system are connected to the **transmission system**:<br>(i) all **metered energy** for **source assets** that do not submit price-quantity **offers** in the energy market;<br>(ii) all dispatched **operating blocks** for **source assets** that submit price-quantity **offers** in the energy market, in **merit order** first by price and then by size;<br>(iii) all undispatched **operating blocks** offered in the energy market for **source assets** that submit price-quantity **offers** in the energy market, in **merit order** first by price and then by size;<br>(iv) all volumes for **source assets** that the **ISO** | Capital Power understands that the AESO is proposing the inclusion of subsection 6(c) and (d) with the intent of having the ability to adjust historical data to be more reflective of a source asset's production volumes in the forthcoming year. As specified in new subsection 6(c), the historical volumes of an asset would be adjusted proportionately to a change in maximum capability ("MC") or contract capacity ("CC"). At new subsection 6(d), an adjustment would be made to incorporate a return to service from an extended outage (e.g. mothball outage, planned outage, etc.) that is not expected to occur prospectively.<br><br>Capital Power is not opposed with the intent of the proposed amendments as, in principle, the volume adjustments could lead to loss factors more reflective of a source asset's prospective contribution to line losses. However, Capital Power has at least 2 issues. First, the proportionate volume adjustment due to a change in MC or CC may not be reflective of the expected production volumes for a source asset in all instances. For example, a change in MC to reflect a new duct burner at a combined cycle gas-fired generating facility may not equate to a proportionate change in its production volume. Second, it remains unclear how the AESO would incorporate a return of service by "reasonably adjusting historical volumes" of a source asset.<br><br>Consequently, Capital Power recommends the following:<br>1) The AESO should be required to inform the affected market participant(s), as legal owner, that historical volume adjustments are necessary for the determination of the | The AESO considers that increasing or decreasing an existing source asset's historical volumes in proportion to a change in maximum capability or contract capacity is comparable in approach to the existing rule provision for the incorporation of a new source asset. For a change to maximum capability or contract capacity of an existing source asset, the "template" used is simply the pre-change hourly data profile of the existing source asset rather than an hourly data profile reflecting the source assets of the same technology owned by the same market participant. The AESO therefore considers the proposed amendmend provision to be appropriate.<br><br>The AESO considers that the forecast volumes for a source asset returning from an extended outage should be determined on a case-by-case basis. The current history of source assets returning from extended outages provides limited guidance to establish a methodology that would be expected to be appropriate for all source assets that may return from an extended outage in the future. The AESO agrees that it is reasonable to allow the market participant to review and comment on the volumes developed for a source asset returning from an extended outage. |

| S. | Proposed language | Stakeholder Comments | AESO Replies |
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| | accepts for **dispatch** for **contingency reserve**, in **merit order** first by price and then by size; and<br>(v) all **available transfer capability** which is not scheduled for imports over **interties**;<br>(c) incorporating any change to **maximum capability** or **contract capacity** associated with a connection project, behind the fence project or contract capacity change project for a **source asset** included in the historical data by increasing or decreasing the **source asset**'s historical volumes in subsection 6(b) above in proportion to the change in maximum capability or **contract capacity**, as appropriate. Should such an adjustment be determined as appropriate, the AESO shall;<br>(i) notify the legal owner of the **source asset** that adjustments will be made**;**<br>(ii) coordinate with the legal owner of the **source asset** to confirm the reasonableness of the assumptions used to determine adjustments to the historical volumes; and<br>(iii) provide the legal owner of the **source asset** the replacement volumes to be used as the adjustment to the historical volumes;<br>(d) incorporating any return to service for a **source asset** that was subject to a **mothball outage** or a **planned outage** for one or more entire **months** during the historical year, by reasonably adjusting the historical volumes of the **source asset** for the months affected by the **mothball outage** or **planned outage** in the historical year. Should such an adjustment be determined as appropriate, the AESO shall;<br>(i) notify the legal owner of the source asset that adjustments will be made;<br>(ii) coordinate with the legal owner of the source asset to confirm the reasonableness of the assumptions | source asset's loss factors. Revisions to the proposed rule language in this respect is provided in the adjacent cell.<br>2) The AESO should describe in its published calculation procedure document how it will determine whether adjustment to the historical volume data for a source asset is "appropriate" or "reasonable" as well as outlining the adjustment methodology associated with subsections 6(c) and (d).<br>• As Capital Power noted above, adjusting historical volumes in proportion to changes in MC or CC may not always be appropriate. In some instances, such an adjustment may reduce data quality and produce forecast volumes less reflective of expected production. In these cases, the adjustment as proposed at 6(c) should not be considered appropriate. This highlights the need for the AESO to clarify how it will determine when (beyond simply a change in MC or CC) the proportioning adjustment will be applied.<br>• Proposed subsection 6(d) provides no detail regarding the approach the AESO expects it will take in adjusting historical volumes to reflect the return to service of an asset in the upcoming year and whether these adjustments are reasonable. For these reasons, process steps for this adjustment should be outlined in the AESO calculation procedure document. | |

| S. | Proposed language | Stakeholder Comments | AESO Replies |
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| | used to determine adjustments to the historical volumes; and<br>(iii) provide the legal owner of the source asset the replacement volumes to be used as the adjustment to the historical volumes;<br><br>(e) incorporating any new **source asset** not included in the historical data but which has an expected in-service date by the end of the calendar year for which **loss factors** are being determined, by assigning such new **source asset** an hourly data profile after its expected in-service date reflecting the hourly data profile that is, for the same period:<br>(i) the average of all **source assets** of the same technology owned by the same **market participant** in the historical data;<br>(ii) if no **source asset** of the same technology is owned by the same **market participant** in the historical data, the average of all **source assets** of the same technology owned by any **market participant** in the historical data; and<br>(iii) if no **source asset** of the same technology is owned by any **market participant** in the historical data, determined by the **ISO** in conjunction with the **legal owner** of the new **source asset**.<br>and<br>(f) excluding any **source asset** during a **month** when, for the entirety of that **month** of the calendar year for which **loss factors** are being determined:<br>(i) the **market participant** has notified the **ISO** that the **source asset** is planned to be subject to a **mothball outage** or a **planned outage**; or | | |

| S. | Proposed language | Stakeholder Comments | AESO Replies |
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| | (ii) the **system access service** for the **source asset** is planned to have been terminated. | | |
| **6(2)** | The **ISO** must calculate **loss factors** using hourly historical **metered energy** data for all **sink assets** connected to the **transmission system** that are included in the system topologies created in subsection 7 below, for the calendar year for which **loss factors** are being determined, by:<br>(a) using hourly historical data for the calendar year two (2) years prior to the calendar year for which **loss factors** are being determined;<br>(b) including all **metered energy** for each **sink asset**;<br>(c) incorporating any change to **contract capacity** associated with a connection project, behind the fence project or a **contract capacity** change project for a **sink asset** included in the historical data by increasing or decreasing the **sink asset**'s **metered energy** in subsection 6(b) above in proportion to the change in **contract capacity**;<br>(d) incorporating any new **sink asset** not included in the historical data but which has an expected in-service date by the end of the calendar year for which **loss factors** are being determined, by assigning such new **sink asset** an hourly data profile reflecting the average hourly data profile of all **sink assets** included in the historical data after the expected in-service date of the new **sink asset**;<br>(e) excluding any **sink asset** during a **month** when, for the entirety of that **month** of the calendar year for which **loss factors** are being determined, the **system access service** for the **sink asset** is planned to have been terminated; and<br>(f) prorating all hourly **metered energy** for **sink** | Capital Power has no comments at this time. | |

| S. | Proposed language | Stakeholder Comments | AESO Replies |
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| | **assets** included in subsection 6(2)(b) above such that the total of the **metered energy** from the prorated **sink assets** plus the **metered energy** from the unprorated new **sink assets** included in subsection 6(2)(c) above is equal to the forecast **system load** annual volume for the calendar year for which **loss factors** are being determined. | | |
| **7(5)** | < subsection removed > | Capital Power has no comments at this time. | |
| **8(8)** | The **ISO** must exclude an hour from the remaining calculations to determine a final **loss factor** for a single location if, for that location in that hour:<br>(a) for **system access service** provided under Rate STS or Rate IOS, the volume for **metered energy** or dispatched **operating blocks** for the location results in a net supply to the **transmission system** of less than 1.00 MW; or<br>(b) for **system access service** provided under Rate DOS, the volume for **metered energy** for the location results in a net demand to the **transmission system** of less than 1.00 MW. | Capital Power has no comments at this time. | |

| Item # | | Stakeholder comments | AESO Replies |
|---|---|---|---|
| 1 | whether you are of the view that amended ISO rule – Section 501.10, *Transmission Loss Factors* relates to the capacity market and why or why not | Capital Power has no comments at this time. | |
| 2 | if the answer to item #1 is yes, whether you agree that amended ISO rule – Section 501.10, *Transmission Loss Factors* should or should not be in effect for a fixed term and why or why not | Capital Power does not see any rationale for prescribing a fixed term for the proposed amended rule and, as such, believes that the proposed amended rule should not be in effect for a fixed term. | The AESO acknowledges Capital Power's comment. |
| 3 | whether you understand and agree with the objective or purpose of amended ISO rule – Section 501.10, *Transmission Loss Factors* and whether, in your view, Section 501.10, *Transmission Loss Factors* meets the objective or purpose | Capital Power generally agrees with the objective or purpose of the proposed amendments to the rule which it understands as ameliorating the process for calculating loss factors by, among other things, improving the quality of the underlying data to be used. However, Capital Power has identified at least 2 issues and provides recommendations to address these concerns. Please see the above comments regarding subsection 6(c) and (d). | The AESO acknowledges Capital Power's comment. Please see the AESO Replies above. |
| 4 | how, in your view, amended ISO rule – Section 501.10, *Transmission Loss Factors* affects the performance of the capacity market and the electricity market | Please see Capital Power's comments above in response to subsection 6(c) and (d). | Please see the AESO Replies above. |
| 5 | your views on any analysis conducted or commissioned by the AESO supporting amended ISO rule – Section 501.10, *Transmission Loss Factors* | Capital Power has no comments at this time. | |
| 6 | whether you agree with amended ISO rule – Section 501.10, *Transmission Loss Factors* taken together with all ISO rules and in light of the principle of a fair, efficient and openly competitive market | Capital Power has no comments at this time. | |
| 7 | whether you would suggest any alternatives to amended ISO rule – Section 501.10, *Transmission Loss Factors* | Please Capital Power's comments above in response to subsection 6(c) and (d). | Please see the AESO Replies above. |

| Item # | | Stakeholder comments | AESO Replies |
|---|---|---|---|
| 8 | if the answer to item #1 is yes, whether you agree that the proposed provisional rule supports ensuring a reliable supply of electricity at a reasonable cost to customers and why or why not | Capital Power has no comments at this time. | |
| 9 | whether you agree that the proposed provisional rule supports the public interest and why or why not | Capital Power has no comments at this time. | |

# Stakeholder Comment and AESO Replies Matrix

## Proposed Amended ISO rule – Section 501.10, *Transmission Loss Factors*

| | | | |
|---|---|---|---|
| **Date of Request for Comment** | 2018-10-18 | | |
| **Period of Comment:** | 2018-10-18 | through | 2018-11-05 |
| **Comments From:** | **City of Medicine Hat** | | |

| S. | Proposed language | Stakeholder Comments | AESO Replies |
|---|---|---|---|
| **6 (1)** | The **ISO** must calculate **loss factors** using hourly historical metered volume and **merit order** data for all **source assets** connected to the **transmission system** that are included in the system topologies created in subsection 7 below, for the calendar year for which **loss factors** are being determined, by:<br>(a) using hourly historical data for the calendar year two (2) years prior to the calendar year for which **loss factors** are being determined;<br>(b) including, in the following order, the following volumes for each **source asset**, including for the eleven (11) locations at which hydro **generating units** on the Bow River system are connected to the **transmission system**:<br>(i) all **metered energy** for **source assets** that do not submit price-quantity **offers** in the energy market;<br>(ii) all dispatched **operating blocks** for **source assets** that submit price-quantity **offers** in the energy market, in **merit order** first by price and then by size;<br>(iii) all undispatched **operating blocks** offered in the energy market for **source assets** that submit price-quantity **offers** in the energy market, in **merit order** first by price and then by size;<br>(iv) all volumes for **source assets** that the **ISO** | The City of Medicine Hat (the "City") supports the principle that the AESO should build its forecast of future generation and load activity using the best available information at the time of making the forecast. If the historical (two-year lagged) data is inconsistent with future expectations, the historical data should be adjusted.<br><br>The City does not object to the proposed amendments in subsection 6, but notes that the proposed subsection 6(1)(d) and 6(1)(f) both relate to the assumptions for source assets subject to extended outages. The City submits that it would be less confusing and more transparent if these two clauses were combined under a single subsection. (The phrase "incorporating a change" can refer to an increase as well as a decrease in volumes.) | The AESO considers that maintaining separation of the proposed amended subsection 6(1)(d) and 6(1)(f) is appropriate and consistent with the existing order in subsection 6(1) of treatment of existing assets, inclusion of new assets, and exclusion of terminated assets. The AESO also considers it unlikely that the provisions respecting a source asset starting an extended outage and returning from an extended outage would apply to the same asset in the same year, such that there is no strong basis to link those provisions.<br><br>The AESO agrees that the "or similar extended outage" phrase should be included in subsection 6(1)(f).<br><br>The AESO notes that subsection 6(1)(f) already states that the outage must last "for the entirety of that month" and does not consider further revision is required to address Medicine Hat's comment, |

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| | accepts for **dispatch** for **contingency reserve**, in **merit order** first by price and then by size; and<br>(v) all **available transfer capability** which is not scheduled for imports over **interties**;<br>(c) incorporating any change to **maximum capability** or **contract capacity** associated with a connection project, behind the fence project or contract capacity change project for a **source asset** included in the historical data by increasing or decreasing the **source asset**'s historical volumes in subsection 6(b) above in proportion to the change in maximum capability or **contract capacity**, as appropriate;<br>(d) incorporating any return to service for a **source asset** that was subject to a **mothball outage** or a **planned outage** for one or more entire **months** during the historical year, by reasonably adjusting the historical volumes of the **source asset** for the months affected by the **mothball outage** or **planned outage** in the historical year;<br>(e) incorporating any new **source asset** not included in the historical data but which has an expected in-service date by the end of the calendar year for which **loss factors** are being determined, by assigning such new **source asset** an hourly data profile after its expected in-service date reflecting the hourly data profile that is, for the same period:<br>(i) the average of all **source assets** of the same technology owned by the same **market participant** in the historical data;<br>(ii) if no **source asset** of the same technology is owned by the same **market participant** in the historical data, the average of all **source assets** of the same technology owned by any **market** | The blackline proposed subsection 6(1)(d) refers to "planned outage or similar extended outage" and "for one entire month or longer during the historical period" | |

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| | **participant** in the historical data; and<br>(iii) if no **source asset** of the same technology is owned by any **market participant** in the historical data, determined by the **ISO** in conjunction with the **legal owner** of the new **source asset**.<br>and<br>(f) excluding any **source asset** during a **month** when, for the entirety of that **month** of the calendar year for which **loss factors** are being determined:<br>(i) the **market participant** has notified the **ISO** that the **source asset** is planned to be subject to a **mothball outage** or a **planned outage** or similar extended outage; or<br>(ii) the **system access service** for the **source asset** is planned to have been terminated. | Use the same phrase as proposed subsection 6(1)(d). "or extended outage for one entire month or longer." | |
| **6(2)** | The **ISO** must calculate **loss factors** using hourly historical **metered energy** data for all **sink assets** connected to the **transmission system** that are included in the system topologies created in subsection 7 below, for the calendar year for which **loss factors** are being determined, by:<br>(a) using hourly historical data for the calendar year two (2) years prior to the calendar year for which **loss factors** are being determined;<br>(b) including all **metered energy** for each **sink asset**;<br>(c) incorporating any change to **contract capacity** associated with a connection project, behind the fence project or a **contract capacity** change project for a **sink asset** included in the historical data by increasing or decreasing the **sink asset**'s **metered energy** in subsection 6(b) above in proportion to the change in **contract capacity**; | | |

| S. | Proposed language | Stakeholder Comments | AESO Replies |
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| | (d) incorporating any new **sink asset** not included in the historical data but which has an expected in-service date by the end of the calendar year for which **loss factors** are being determined, by assigning such new **sink asset** an hourly data profile reflecting the average hourly data profile of all **sink assets** included in the historical data after the expected in-service date of the new **sink asset**;<br>(e) excluding any **sink asset** during a **month** when, for the entirety of that **month** of the calendar year for which **loss factors** are being determined, the **system access service** for the **sink asset** is planned to have been terminated; and<br>(f) prorating all hourly **metered energy** for **sink assets** included in subsection 6(2)(b) above such that the total of the **metered energy** from the prorated **sink assets** plus the **metered energy** from the unprorated new **sink assets** included in subsection 6(2)(c) above is equal to the forecast **system load** annual volume for the calendar year for which **loss factors** are being determined. | | |
| **7(5)** | < subsection removed > | No comment. | |
| **8(8)** | The **ISO** must exclude an hour from the remaining calculations to determine a final **loss factor** for a single location if, for that location in that hour:<br>(a) for **system access service** provided under Rate STS or Rate IOS, the volume for **metered energy** or dispatched **operating blocks** for the location results in a net supply to the **transmission system** of less than 1.00 MW; or<br>(b) for **system access service** provided under Rate DOS, the volume for **metered energy** for the location results in a net | The City objects to the proposed removal of subsection 8(8)(c) and recommends the AESO proceed with the June 6, 2017 proposed amendments to subsection 8(7), which are consistent with the exclusion provisions the AESO represented to the Commission and stakeholders in the Module B compliance filing proceeding.<br>In the AESO Notice to Stakeholders of June 6, 2017, the AESO stated that subsection 8(7) and 8(8) contained redundant language and the proposed remedy was to redraft subsection 8(7) to reflect the original intent of subsection 8(7). Specifically, the June 6, 2017 AESO Notice stated: | The AESO acknowledges that it has changed the position it stated during the Module B process and also stated when it proposed the amendment to subsection 8(7) of section 501.10 in June 2017.<br>The AESO further observes that other parties, including Medicine Hat, commented on the exclusion provisions the AESO had proposed in the draft rule. The Commission did not comment on the exclusion provisions in subsection 8(7) and 8(8) when it approved the final rule, although the redundant language existed in the version of the rule that was approved. |

| S. | Proposed language | Stakeholder Comments | AESO Replies |
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| | demand to the **transmission system** of less than 1.00 MW.<br><br>~~(c) it is not possible to calculate, with reasonable effort, **transmission system** losses for either the initial state in subsection 8(4) above or the redispatched state in subsection 8(5) above.~~ | "The AESO proposes to amend subsection 8(7) **to reflect the original intent contemplated by the AESO during the development of existing Section 501.10.** It was the AESO's intent that subsection 8(7) of existing Section 501.10 address two specific occurrences:<br>(a) when losses could not be calculated in the initial state, which would prevent loss factors from being calculated for all locations; and<br>**(b) when insufficient supply prevented losses from being calculated in either the initial state or the re-dispatched state, which could introduce bias into results if not excluded**.<br>However, subsection 8(7) of existing Section 501.10 was written in such a way as to exclude calculations for all locations if "for any location in that hour, it is not possible to calculate … losses for either the initial state … or the re-dispatched state … for any reason …" which would result in subsection 8(8)(c) never taking effect." [Bolding and underlining added.]<br><br>The AESO made representations to the Commission and stakeholders during the Module B compliance filing that the language used in subsection 8(7) and 8(8) would have the effect of only excluding an hour for all locations under the two specific conditions cited above and it further represented that in the event of an unsolved redispatch case for a single location, only the single location would be excluded, per subsection 8(8). This representation was first made in the initial implementation plan and last made in the AESO's reply argument.<br><br>• Paragraphs 32-33, Exhibit 790-X0452, AESO Implementation Plan to Develop a Revised Loss Factor Rule in Compliance with Decision 790-D03-2015 (February 1, 2016)<br>• Paragraphs 36-41, Exhibit 790-X0526, AESO Response to Reply Submissions Regarding the [Module B] Compliance Filing, (October 28, 2016) | Since the proposed amendment of June 2017, the AESO has considered the comments provided by stakeholders in the process, as well as the submissions in the current Module C Methodology compliance filing process. The AESO has also examined the exclusion of hours during the calculation of loss factors for 2017 and 2018, and for 2015 and 2016 in Module C.<br><br>On balance, the AESO has concluded that concerns about potential bias arising from the exclusion of certain generators from hourly loss factor calculations outweighs the potential "distortion" from the exclusion of certain hours for all generators identified by Medicine Hat.<br><br>With respect to Medicine Hat's analysis of variances between different exclusion scenarios, the AESO considers that the analysis does not demonstrate which scenario provides the most accurate loss factors using an hourly incremental loss factor methodology. For example, removal of a bias introduced by one scenario may result in greater variance but may also result in more accurate loss factors.<br><br>With respect to Medicine Hat's proposal that the AESO limit the number of excluded hours, the AESO does not see any practical way to do so while simulating approximately 500,000 system conditions in a manner that treats all generating units similarly. The AESO reiterates that an automated process, implemented without manual intervention, remains the only practical approach to calculating hourly loss factors using an incremental loss factor methodology. |

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| | | The City submits that the Commission approved the Loss Factor Rule on the basis of the AESO's representation in the Module B proceeding as to the effect and import of the then specified language of the Rule. Accordingly, the City submits that the AESO must now interpret subsection 8(7) and 8(8) in the same manner that it represented to the Commission in the Module B proceeding until such time as the AESO seeks the Commission's approval to change the interpretation of subsection 8(7) and 8(8).<br><br>The AESO knows, or ought to know, that the AESO's current (and unapproved) practice respecting subsection 8(7) and 8(8) – which the AESO proposes to make permanent – has a material distortionary impact on the value of annual loss factors as compared to the AESO's original intended exclusion provision. Given the Commission's position* in the Module B compliance filing decision that resolution of issues raised with respect to subsection 8(4) to 8(8) are best dealt with empirically on a "case-by-case basis" the AESO should have supported its proposal with an empirical examination of the impact of differing exclusion provisions. In the absence of such analysis, the City submits that the AESO has failed to show that its proposal has no material deviation from the principle of cost causation in the calculation of loss factors or any other ratemaking principles underpinning a rate design proposal. [*para. 104, Decision 790-D05-2016]<br><br>In the absence of the AESO's empirical analysis, the City has prepared an empirical analysis to measure and compare the effect on loss factors of three different exclusion provisions:<br>(1) In the event of an unsolved redispatch case for a single location, exclude the hour for all-locations, per the AESO's unapproved current practice (All-location Exclusion or the "**ALE**" method);<br>(2) In the event of an unsolved redispatch case for a single location, exclude only the hour for the single location, per the AESO's original representation to the Commission in the Module B compliance filing, (Single Location Exclusion or the "**SLE**" method); and | |

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| | | (3) In the event of an unsolved redispatch case for a single location, replace the blank loss factor for the single location with the simple average raw loss factor for the same location as calculated from the solved hours during the year. (Single Location Exclusion with Fill in the Blank or the "**FITB**" method)<br><br>To measure the impact of the different exclusion provisions, the City prepared a benchmark "base case" calculation of annual loss factors using only the "live" hours from the AESO 2015 Workbook (published July 27, 2018). The live hours are those that contain data for Initial Volumes, Redispatch Volumes and raw loss factors. The scrubbed hours coincide to those hours with the following exclusion codes: XA-MISSIN, XAUNSOL1 and XA-UNSOL2. (Note, no hours had exclusion codes for insufficient supply.) The resulting "live" hours provide a clean sub-set of hours to calculate benchmark "base case" loss factors without interference from the effect of subsection 8(7) and 8(8) exclusions.<br><br>Next, the City calculated loss factors after imposing certain exclusion events. This was accomplished in two ways: (A) by imposing predefined exclusions similar to those in the AESO 2015 Workbook and (B) by imposing randomly determined exclusions. The results are attached herein. The Workbooks are stored at the following links:<br><br>Workbook A: https://drive.google.com/file/d/1gMTiLd9a_Tld0EQiQZf5937gudA06Kl-/view?usp=sharing<br>Workbook B: https://drive.google.com/file/d/1XsXxfidDMjIzniRC0jJm5En_Rekjj2rF/view?usp=sharing<br><br>In Workbook A, the impact of the three exclusion provisions is calculated by imposing subsection 8(7)/8(8) exclusions at certain hours. These hours equate to the first hour preceding any XA-UNSOL2 coded hour (or sequence of hours) in the AESO 2015 Workbook. The single location exclusion equates to the first single | |

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| | | location bearing anXS-UNSOL2 code in the aforementioned XA-UNSOL2 coded hours (or sequence of hours) in the AESO 2015 Workbook. In other words, the pattern of exclusions generally coincides with the timing and location of exclusions in the AESO 2015 Workbook. Loss factors are then calculated using the ALE, SLE and FITB methods and the results are then compared to the benchmark base case loss factors.<br><br>In Workbook B, the exclusion hours and single locations for exclusion are determined randomly. The Workbook calculates the loss factors for the ALE and SLE method and compares these to the benchmark base case loss factors. (The FITB method was not used as it gave results similar to the SLE approach in the static model.)<br><br>The appendices attached herein summarize the variance between the benchmark base case loss factors and the loss factors using each exclusion method. The variance summaries demonstrate that the ALE method consistently has the largest variances from the benchmark base case annual volume weighted loss factor (AVWLF). The variances of the SLE method to the base case AVWLFs are consistently materially *de minimis*. These variances are not unwound by the annual shift factor and therefore carry through to the final annual loss factors that are used to determine loss charges.<br><br>Based on its analysis, the City submits that an objective empirical analysis of the exclusion methods will demonstrate that the ALE method – which the AESO currently uses and proposes to make permanent – creates a greater distortion in annual loss factors than the SLE method relative to the benchmark loss factors calculated consistently with the Commission approved cost causation methodology. Accordingly, the City submits that it cannot be said that the ALE method is consistent with the cost causation principles underpinning the loss factor method and, therefore, it cannot be said that the ALE method is just and reasonable. | |

| S. | Proposed language | Stakeholder Comments | AESO Replies |
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| | | To address the notional redundancy in the language of subsection 8(7) and 8(8), the AESO should amend section 8(7) to reflect the original intention (and approved) method for excluding hours. To do so, the AESO should propose to amend subsection 8(7) as it did in the June 6, 2017 Notice to Stakeholder. Specifically, amend subsection 8(7) as follows:<br>**(7)** The **ISO** must exclude an hour from the calculations in subsections 8(8) through 11 below to determine final **loss factors** for all locations if, for any location in that hour, it is not possible to calculate **transmission system** losses ~~for either the initial state in subsection 8(4) above or the redispatched state in subsection 8(5) above for any reason, including~~:<br>(a) for the initial state in subsection 8(4) above for any reason, including missing or otherwise unavailable historical data for every **source asset** or every **sink asset** connected to the **transmission system** during that hour; or<br>(b) due to insufficient **source assets** to balance the **transmission system** in either the initial state in subsection 8(4) above or the redispatched state in subsection 8(5) above.<br><br>When preparing its comments, the City spoke with other stakeholders about the exclusion methods and the City came to appreciate that some stakeholders previously supported the ALE method on the view that the AESO would not let stand the loss factor calculations subject to a large number of excluded hours. In such instances, they expected the AESO to engage in so-called "manual intervention" to adjust the power flow models and to rerun the power flow models with the aim of reducing the number of unsolved cases and therefore the number of all-location excluded hours.<br><br>While the City agrees with these stakeholders that the best possible outcome is for the AESO to solve all initial and redispatch cases, the City maintains that the exclusion provisions in subsection 8(7) and 8(8) offers no motivation for the AESO to | |

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| | | adjust power flow models with the aim of minimizing unsolved cases and therefore exclusions. To the contrary, these subsections grant the AESO permission to ignore the extent of unsolved cases without concern.<br><br>The City submits that the appropriate means for ensuring that the AESO minimizes the number of exclusion events is to amend the AESO Procedures document for calculating loss factors. Specifically, the City recommends:<br><br>(1) To ensure no single location is unfairly harmed by a high incidence of unsolved redispatch cases, the Procedures should limit the incidence of unsolved cases for any single location at no more than 1% of potentially solvable hours.<br>(2) To ensure no temporal unfairness, the Procedures should limit the incidence of unsolved cases for any single hour at not more than five (5) unsolved single locations.<br>(3) If either threshold is breached, the Procedures should compel an adjustment of the power flow models until such time that the above thresholds are no longer breached.<br><br>The City maintains that the combination of (a) capping the incidence of unsolved cases and (b) the single location exclusion method will provide for materially *de minimis* distortions in the calculation of loss factors. | |

| Item # | | Stakeholder comments | AESO Replies |
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| 1 | whether you are of the view that amended ISO rule – Section 501.10, *Transmission Loss Factors* relates to the capacity market and why or why not | The City is not of the view that the Transmission Loss Factor rule relates to the capacity market. | The AESO acknowledges Medicine Hat's comment. |
| 2 | if the answer to item #1 is yes, whether you agree that amended ISO rule – Section 501.10, *Transmission Loss Factors* should or should not be in effect for a fixed term and why or why not | No comment. | |
| 3 | whether you understand and agree with the objective or purpose of amended ISO rule – Section 501.10, *Transmission Loss Factors* and whether, in your view, Section 501.10, *Transmission Loss Factors* meets the objective or purpose | The City understands the objective of the proposed amendments. With respect to subsection 8(8), the theoretical purpose is to clarify notionally redundant language. The City does not agree with the proposed amendments to subsection 8(8). The proposed amendment amounts to a material and substantive change to the calculation of loss factors for which the AESO has not sought or obtained Commission approval. To the contrary, the proposed amendment is materially different than the method proposed and approved by the Commission in Module B. Moreover, the proposed amendment leads to unwarranted material distortions in the calculation of loss factors. | The AESO acknowledges Medicine Hat's comment. Please see the AESO Replies provided above. |
| 4 | how, in your view, amended ISO rule – Section 501.10, *Transmission Loss Factors* affects the performance of the capacity market and the electricity market | The propose amendments to subsection 8(8) leads to material distortions in the calculation of loss factors, inconsistent with cost causation. This leads to an unnecessary distortion in loss charges. | The AESO acknowledges Medicine Hat's comment. Please see the AESO Replies provided above. |
| 5 | your views on any analysis conducted or commissioned by the AESO supporting amended ISO rule – Section 501.10, *Transmission Loss Factors* | The City is not aware of any empirical analysis performed by the AESO to support the proposed amendment of subsection 8(8). The City's empirical analysis demonstrates the AESO's proposal to permanently use the ALE method creates unnecessary distortions in the calculation of loss factors. | The AESO acknowledges Medicine Hat's comment. Please see the AESO Replies provided above. |

| Item # | | Stakeholder comments | AESO Replies |
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| 6 | whether you agree with amended ISO rule – Section 501.10, *Transmission Loss Factors* taken together with all ISO rules and in light of the principle of a fair, efficient and openly competitive market | The proposed amendment to subsection 8(8) is not consistent with the cost causation principles in the design of rates, will lead to unjust and distorted rates, is accordingly inconsistent with economic efficiency and therefore harms the fair, efficient and openly competitive market. | The AESO acknowledges Medicine Hat's comment. Please see the AESO Replies provided above. |
| 7 | whether you would suggest any alternatives to amended ISO rule – Section 501.10, *Transmission Loss Factors* | The City recommends the AESO amend subsection 8(7) to reflect the original intention for the exclusion provision when the loss factor cannot be solve for a single location. The impact of the single location exclusion method is materially *de minimis* when compared to the ideal loss factor calculation and is therefore most closely align with the cost causation principle in the design of rates and accordingly support and uphold the fair, efficient and openly competitive market. | The AESO acknowledges Medicine Hat's comment. Please see the AESO Replies provided above. |
| 8 | if the answer to item #1 is yes, whether you agree that the proposed provisional rule supports ensuring a reliable supply of electricity at a reasonable cost to customers and why or why not | No comment. | |
| 9 | whether you agree that the proposed provisional rule supports the public interest and why or why not | The City does not believe the proposed amendment is in the public interest because the AESO's calculation of loss factors using the allocation exclusion method leads to material distortions in calculated loss factors. | The AESO acknowledges Medicine Hat's comment. Please see the AESO Replies provided above. |

# Stakeholder Comment and AESO Replies Matrix

## Proposed Amended ISO rule – Section 501.10, *Transmission Loss Factors*

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| **Date of Request for Comment** | 2018-10-18 | | |
| **Period of Comment:** | 2018-10-18 | through | 2018-11-05 |
| **Comments From:** | **Milner Power Inc.** | | |

| S. | Proposed language | Stakeholder Comments | AESO Replies |
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| **6 (1)** | The **ISO** must calculate **loss factors** using hourly historical metered volume and **merit order** data for all **source assets** connected to the **transmission system** that are included in the system topologies created in subsection 7 below, for the calendar year for which **loss factors** are being determined, by:<br>(a) using hourly historical data for the calendar year two (2) years prior to the calendar year for which **loss factors** are being determined;<br>(b) including, in the following order, the following volumes for each **source asset**, including for the eleven (11) locations at which hydro **generating units** on the Bow River system are connected to the **transmission system**:<br>(i) all **metered energy** for **source assets** that do not submit price-quantity **offers** in the energy market;<br>(ii) all dispatched **operating blocks** for **source assets** that submit price-quantity **offers** in the energy market, in **merit order** first by price and then by size;<br>(iii) all undispatched **operating blocks** offered in the energy market for **source assets** that submit price-quantity **offers** in the energy market, in **merit order** first by price and then by size;<br>(iv) all volumes for **source assets** that the **ISO** | Milner proposes no changes to subsections 6(1) (a) and (b).<br><br>Concerning the AESO's proposed changes to subsections 6(1)(c) to (f), Milner notes that the AESO's proposed amendments add complexity to a rule that the AESO has not been able to successfully apply since its inception in 2017. Any delays in the calculation of compliant loss factors (either past or future) are not in the public interest. The proposed amendments are not needed to address any risk, urgent or otherwise, to the reliable supply of electricity or the safe and reliable operation of the electric system. The AESO has not provided any analysis of the impact of these amendments on loss factors applied to individual generators or any detailed assessment of timelines to successfully integrate these amendments into loss factor calculations. In Milner's opinion, amendments to section 6 should apply at the earliest to 2020 loss factors following Commission approval.<br><br>It appears that the proposed amendments in section 6(1) are to apply to all assets where the capacity in a given period is expected to materially differ from that which was historically available. When new generators are anticipated to come on line, provision must be made to assign a loss factor to the new asset. When there is a permanent expected increase or decrease in capacity to existing units it makes sense to incorporate the change in capacity into the forecast loss factors when that change is expected to occur.<br><br>However, the existing rule views transient variations in historical outages to existing suppliers as normal and below a threshold of materiality. This suggests that it is only when historical or | The AESO is unable to estimate the impact of the proposed amendments without completing the loss factor calculations using the proposed amended provisions. The AESO considers that the substantive changes included in the proposed amended rule address circumstances not currently addressed in the rule which are likely to impact the loss factors calculated under the rule.<br><br>As discussed in the AESO Replies to Powerex, the AESO has decided to proceed with calculating loss factors for 2019 prior to the completion of the application review process for these amendments. The proposed amended rule would therefore apply for the first time to the calculation of loss factors for 2020, as suggested by Milner Power.<br><br>The proposed amendments address circumstances not currently addressed in the rule. The AESO considers that much of the language recommended by Milner Power goes beyond addressing gaps in the rule and instead modifies existing rule provisions which were reviewed during the Module B process in which the rule was initially approved. The AESO is not proposing amendments at this time to existing rule provisions which were reviewed on a substantive basis by the Commission during the Module B process.<br><br>The AESO considers that the provisions of subsection 6(1)(f) already apply generally to a mothball outage or a planned outage with a minimum duration of one month. The proposed provisions of subsection 6(1)(d) similarly apply generally to a mothball outage, a planned outage or a similar extended outage for one entire month or longer. |

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| | accepts for **dispatch** for **contingency reserve**, in **merit order** first by price and then by size; and<br>(v) all **available transfer capability** which is not scheduled for imports over **interties**;<br>(c) incorporating any change to **maximum capability** or **contract capacity** associated with a connection project, behind the fence project or contract capacity change project for a **source asset** included in the historical data by increasing or decreasing the **source asset**'s historical volumes in subsection 6(b) above in proportion to the change in maximum capability or **contract capacity**, as appropriate;<br>(d) incorporating any return to service for a **source asset** that was subject to a **mothball outage** or a **planned outage** for one or more entire **months** during the historical year, by reasonably adjusting the historical volumes of the **source asset** for the months affected by the **mothball outage** or **planned outage** in the historical year;<br>(e) incorporating any new **source asset** not included in the historical data but which has an expected in-service date by the end of the calendar year for which **loss factors** are being determined, by assigning such new **source asset** an hourly data profile after its expected in-service date reflecting the hourly data profile that is, for the same period:<br>(i) the average of all **source assets** of the same technology owned by the same **market participant** in the historical data;<br>(ii) if no **source asset** of the same technology is owned by the same **market participant** in the historical data, the average of all **source assets** of the same technology owned by any **market** | anticipated outages are unusually long that the difference in outages anticipated in a future year and recorded in an historical year should be considered material.<br><br>There is no need to specifically single out suppliers returning from a mothball outage. Extended outages can be expected for other reasons, e.g. when coal to gas conversions occur. A more general approach should apply to all suppliers for whom the outage in the historical year or an outage anticipated for the forecast year exceeds a threshold duration. This would allow the rule to apply to a wider range of outages of situations (rather than limiting the rule to units returning from mothball outages and to units with planned maintenance that extends over an entire calendar month).<br><br>To maintain an equal treatment with other suppliers the AESO should only incorporate synthesized offers for suppliers in the forecast year for periods during which the historical outage exceeds the threshold duration. For example, if a unit was on mothball outage for 24 weeks in the historical year from which merit order offers are used to determine future loss factors, and the threshold duration for ignoring variations in planned outages is six weeks, then six of the 24 weeks should be modelled with the unit out of service and offer data synthesized for the remaining 18 weeks. All synthesized offer data should be adjusted to reflect normal unavailability due to forced outages.<br><br>To be balanced, if the rule adjusts forecast production by removing extended historical outages from the offer data used to calculate loss factors for future years, then the rule should also adjust forecast production to include anticipated outages of extended duration in the offer data used to calculate loss factors in a forecast year. In both cases the threshold of materiality should be the same.<br><br>In choosing when to modify the historical offer data used for calculating loss factors in a future year, the ISO should consider that choosing to adjust for outages of short duration would require | Please see the AESO Replies to comments from TransAlta for additional information on the proposed amendments. |

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| | **participant** in the historical data; and<br><br>(iii) if no **source asset** of the same technology is owned by any **market participant** in the historical data, determined by the **ISO** in conjunction with the **legal owner** of the new **source asset**.<br><br>and<br><br>(f) excluding any **source asset** during a **month** when, for the entirety of that **month** of the calendar year for which **loss factors** are being determined:<br><br>(i) the **market participant** has notified the **ISO** that the **source asset** is planned to be subject to a **mothball outage** or a **planned outage**; or<br><br>(ii) the **system access service** for the **source asset** is planned to have been terminated. | the AESO to extensively modify the historical merit order data when constructing merit orders for a forecast year. To avoid significant changes to the historical merit order data and to minimize added complexity, it is suggested that the threshold beyond which a historical or planned outage is considered extended be lengthened so revisions to historical offers and production are required less frequently.<br><br>The proposed amendments will target and apply to very few generators in any year. In the past when charged with forecasting volumes for new generators the AESO has overforecast generation, often to the detriment of the affected generators. Since the assumptions made can materially impact the loss factors assigned to the targeted generators it is imperative that the assumptions of timing and magnitude of increased or decreased capacity and the anticipated offers associated with any anticipated change in capacity be determined by the owners of the affected source assets who are the best informed regarding the expected operation of their assets.<br><br>Unless the AESO can establish the owners' expectations are unreasonable there is no basis for the AESO to utilize data other than the expectations of the owners for the timing of and magnitude of changes in capacity and offers associated with any changes.<br><br>Milner proposes that subsections 6(1) (c) to (f) read:<br><br>Replace 6(1) (c) to (f) with the following:<br><br>(c) incorporating any change to maximum capability or contract capacity associated with a connection project, behind the fence project or contract capacity change project for a source asset included in the historical data by assigning such change in capacity an hourly data profile after its expected in-service date reflecting the hourly data profile that is determined by the ISO in conjunction with the legal owner of the new source asset. | |

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| | | (d) incorporating any return to service for a source asset that was subject to an outage for six weeks or more during the historical year, by assigning such change in capacity an hourly data profile after its expected in-service date reflecting a six week outage an hourly data profile for the remaining period that is determined by the ISO in conjunction with the legal owner of the new source asset.<br><br>(e) incorporating any new source asset not included in the historical data but which has an expected in-service date by the end of the calendar year for which loss factors are being determined, by assigning such new source asset an hourly data profile after its expected in-service date reflecting the hourly data profile that is determined by the ISO in conjunction with the legal owner of the new source asset.<br><br>(f) excluding any source asset for<br>(i) periods which the system access service for the source asset is planned to have been terminated. Or<br>(ii) periods in excess of six weeks when the market participant has notified the ISO that the source asset is planned to be subject to an extended outage.<br><br>Add the following as subsections 6 (2) to (4):<br><br>(2) The ISO must use the hourly data profile referenced in subsections 6 (1) (c), (d) and (e) above unless the ISO can show the assumed offer data provided by the legal owner is unreasonable. If the ISO does not utilize a data profile provided by the legal owner of the asset the ISO must provide the reasons it did not do so and provide the basis on which it created the data profile.<br><br>(3) Where ISO does not utilize a data profile provided by the legal owner of the asset the ISO may consider such factors as (i) the average of all source assets of the same technology owned by the | |

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| | | same market participant in the historical data; and if no source asset of the same technology is owned by the same market participant in the historical data, (ii) the average of all source assets of the same technology owned by any market participant in the historical data.<br><br>(4) It is recognized that actual market prices and conditions will vary from forecast prices and conditions and that the legal owner is not bound by the assumed offer data provided to the ISO and that the actual offer data of the legal owner is expected to vary source asset operation in response to prevailing market prices and conditions. | |
| **6(2)** | The **ISO** must calculate **loss factors** using hourly historical **metered energy** data for all **sink assets** connected to the **transmission system** that are included in the system topologies created in subsection 7 below, for the calendar year for which **loss factors** are being determined, by:<br><br>(a) using hourly historical data for the calendar year two (2) years prior to the calendar year for which **loss factors** are being determined;<br><br>(b) including all **metered energy** for each **sink asset**;<br><br>(c) incorporating any change to **contract capacity** associated with a connection project, behind the fence project or a **contract capacity** change project for a **sink asset** included in the historical data by increasing or decreasing the **sink asset**'s **metered energy** in subsection 6(b) above in proportion to the change in **contract capacity**;<br><br>(d) incorporating any new **sink asset** not included in the historical data but which has an expected in-service date by the end of the calendar year for which **loss factors** are being determined, by assigning such new **sink asset** an hourly data profile reflecting the average hourly data profile of all **sink assets** included | Renumbering is necessary to accommodate the addition of the above proposed subsections (2) to (4). | For the reasons provided above, the AESO does not propose to adopt Milner Power's recommendation for new proposed subsections 6(2) to 6(4). |

| S. | Proposed language | Stakeholder Comments | AESO Replies |
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| | in the historical data after the expected in-service date of the new **sink asset**;<br>(e) excluding any **sink asset** during a **month** when, for the entirety of that **month** of the calendar year for which **loss factors** are being determined, the **system access service** for the **sink asset** is planned to have been terminated; and<br>(f) prorating all hourly **metered energy** for **sink assets** included in subsection 6(2)(b) above such that the total of the **metered energy** from the prorated **sink assets** plus the **metered energy** from the unprorated new **sink assets** included in subsection 6(2)(c) above is equal to the forecast **system load** annual volume for the calendar year for which **loss factors** are being determined. | | |
| **7(5)** | < subsection removed > | Milner is not opposed to removing section 7(5) | The AESO acknowledges Milner Power's endorsement of this proposed amendment. |
| **8(8)** | The **ISO** must exclude an hour from the remaining calculations to determine a final **loss factor** for a single location if, for that location in that hour:<br>(a) for **system access service** provided under Rate STS or Rate IOS, the volume for **metered energy** or dispatched **operating blocks** for the location results in a net supply to the **transmission system** of less than 1.00 MW; or<br>(b) for **system access service** provided under Rate DOS, the volume for **metered energy** for the location results in a net demand to the **transmission system** of less than 1.00 MW. | | |

| Item # | | Stakeholder comments | AESO Replies |
|---|---|---|---|
| 1 | whether you are of the view that amended ISO rule – Section 501.10, *Transmission Loss Factors* relates to the capacity market and why or why not | No. This amendment relates to an existing Rule that is independent of the capacity market. | The AESO acknowledges Milner Power's comment. |
| 2 | if the answer to item #1 is yes, whether you agree that amended ISO rule – Section 501.10, *Transmission Loss Factors* should or should not be in effect for a fixed term and why or why not | n/a | |
| 3 | whether you understand and agree with the objective or purpose of amended ISO rule – Section 501.10, *Transmission Loss Factors* and whether, in your view, Section 501.10, *Transmission Loss Factors* meets the objective or purpose | Milner believes that it understands the purpose of the AESO's proposed amendments. However, Milner disagrees with the proposed wording of the amendments and in Milner's view, the amendments, as proposed, fail to reasonably, fairly and efficiently meet the AESO's objective. (See Milner's response to item 7 below.) | The AESO acknowledges Milner Power's comment. Please see the AESO Replies above. |

| Item # | | Stakeholder comments | AESO Replies |
|---|---|---|---|
| 4 | how, in your view, amended ISO rule – Section 501.10, *Transmission Loss Factors* affects the performance of the capacity market and the electricity market | The proposed amendments will target and apply to very few generators in any year. In the past when charged with forecasting volumes for new generators the AESO has chronically over-forecast generation often to the detriment of the affected generators.<br><br>Since the assumptions made can materially impact the loss factors assigned to the targeted generators, it is imperative that the assumptions of timing and magnitude of increased or decreased capacity and the anticipated offers associated with any anticipated change in capacity be determined by the owners of the affected source assets who are the best informed regarding the expected operation of their assets.<br><br>It is Milner's position that, unless the AESO can establish the owners' expectations are unreasonable, the AESO must utilize the expectations of the owners for the timing of and magnitude of changes in capacity and offers associated with any changes.<br><br>Anticipating changes in capacity differs from anticipating how any increase or decrease in capacity would translate into offers into the market. Simply scaling historical offers to match new capacities is unacceptable as the offers in a future year could and likely will be quite different from those two years earlier. After returning from a mothball or other extended outage units may face different capabilities and/or costs which the AESO is not privy to and only the owner is in a position to determine. (See Milner's proposed changes to the wording of the AESO's proposed amendments at item 7 below.) | The AESO acknowledges Milner Power's comment. Please see the AESO Replies above. |
| 5 | your views on any analysis conducted or commissioned by the AESO supporting amended ISO rule – Section 501.10, *Transmission Loss Factors* | The AESO has not provided any analysis of the impact of these amendments on loss factors applied to individual generators or any detailed assessment of timelines to successfully integrate these amendments into the loss factor calculations. | The AESO acknowledges Milner Power's comment. Please see the AESO Replies above. |
| 6 | whether you agree with amended ISO rule – Section 501.10, *Transmission Loss Factors* taken together with all ISO rules and in light of the principle of a fair, efficient and openly competitive market | Milner does not agree with the proposed amendments. Milner does not agree that the proposed amendments will further the principle of a fair, efficient and openly competitive market. Milner recommends subsections 6(1)(c), (d), (e) and (f) be revised as shown in response to item 7 below. | The AESO acknowledges Milner Power's comment. Please see the AESO Replies above. |

| Item # | | Stakeholder comments | AESO Replies |
|---|---|---|---|
| 7 | whether you would suggest any alternatives to amended ISO rule – Section 501.10, *Transmission Loss Factors* | Concerning the AESO's proposed changes to subsections 6(1)(c) to (f), Milner notes that the AESO's proposed amendments add complexity to a rule that the AESO has not been able to successfully apply since its inception in 2017. Any delays in the calculation of compliant loss factors (either past or future) are not in the public interest. The proposed amendments are not needed to address any risk, urgent or otherwise, to the reliable supply of electricity or the safe and reliable operation of the electric system. The AESO has not provided any analysis of the impact of these amendments on loss factors applied to individual generators or any detailed assessment of timelines to successfully integrate these amendments into loss factor calculations. In Milner's opinion, amendments to section 6 should apply at the earliest to 2020 loss factors following Commission approval.<br><br>It appears that the proposed amendments in section 6(1) are to apply to all assets where the capacity in a given period is expected to materially differ from that which was historically available. When new generators are anticipated to come on line, provision must be made to assign a loss factor to the new asset. When there is a permanent expected increase or decrease in capacity to existing units it makes sense to incorporate the change in capacity into the forecast loss factors when that change is expected to occur.<br><br>However, the existing rule views transient variations in historical outages to existing suppliers as normal and below a threshold of materiality. This suggests that it is only when historical or anticipated outages are unusually long that the difference in outages anticipated in a future year and recorded in an historical year should be considered material.<br><br>There is no need to specifically single out suppliers returning from a mothball outage. Extended outages can be expected for other reasons, e.g. when coal to gas conversions occur. A more general approach should apply to all suppliers for whom the outage in the historical year or an outage anticipated for the forecast year exceeds a threshold duration. This would allow the rule to apply to a wider range of outages of situations (rather than limiting the rule to units returning from mothball outages and to units with planned maintenance that extends | The AESO acknowledges Milner Power's comment. Please see the AESO Replies above. |

| Item # | | Stakeholder comments | AESO Replies |
|---|---|---|---|
| | | over an entire calendar month).<br><br>To maintain an equal treatment with other suppliers the AESO should only incorporate synthesized offers for suppliers in the forecast year for periods during which the historical outage exceeds the threshold duration. For example, if a unit was on mothball outage for 24 weeks in the historical year from which merit order offers are used to determine future loss factors, and the threshold duration for ignoring variations in planned outages is six weeks, then six of the 24 weeks should be modelled with the unit out of service and offer data synthesized for the remaining 18 weeks. All synthesized offer data should be adjusted to reflect normal unavailability due to forced outages.<br><br>To be balanced, if the rule adjusts forecast production by removing extended historical outages from the offer data used to calculate loss factors for future years, then the rule should also adjust forecast production to include anticipated outages of extended duration in the offer data used to calculate loss factors in a forecast year. In both cases the threshold of materiality should be the same.<br><br>In choosing when to modify the historical offer data used for calculating loss factors in a future year, the ISO should consider that choosing to adjust for outages of short duration would require the AESO to extensively modify the historical merit order data when constructing merit orders for a forecast year. To avoid significant changes to the historical merit order data and to minimize added complexity, it is suggested that the threshold beyond which a historical or planned outage is considered extended be lengthened so revisions to historical offers and production are required less frequently.<br><br>The proposed amendments will target and apply to very few generators in any year. In the past when charged with forecasting volumes for new generators the AESO has over-forecast generation, often to the detriment of the affected generators. Since the assumptions made can materially impact the loss factors assigned to the targeted generators it is imperative that the assumptions of timing and magnitude of increased or decreased capacity and the anticipated offers associated with any anticipated change in capacity be determined by the owners of the affected source assets who are the best informed regarding the | |

| Item # | | Stakeholder comments | AESO Replies |
|---|---|---|---|
| | | expected operation of their assets.<br><br>Unless the AESO can establish the owners' expectations are unreasonable there is no basis for the AESO to utilize data other than the expectations of the owners for the timing of and magnitude of changes in capacity and offers associated with any changes.<br><br>Milner proposes that subsections 6(1) (c) to (f) read:<br><br>Replace 6(1) (c) to (f) with the following:<br><br>(c) incorporating any change to maximum capability or contract capacity associated with a connection project, behind the fence project or contract capacity change project for a source asset included in the historical data by assigning such change in capacity an hourly data profile after its expected in-service date reflecting the hourly data profile that is determined by the ISO in conjunction with the legal owner of the new source asset.<br><br>(d) incorporating any return to service for a source asset that was subject to an outage for six weeks or more during the historical year, by assigning such change in capacity an hourly data profile after its expected in-service date reflecting a six week outage an hourly data profile for the remaining period that is determined by the ISO in conjunction with the legal owner of the new source asset.<br><br>(e) incorporating any new source asset not included in the historical data but which has an expected in-service date by the end of the calendar year for which loss factors are being determined, by assigning such new source asset an hourly data profile after its expected in-service date reflecting the hourly data profile that is determined by the ISO in conjunction with the legal owner of the new source asset.<br><br>(f) excluding any source asset for<br><br>(i) periods which the system access service for the source asset is planned to have been terminated. Or<br><br>(ii) periods in excess of six weeks when the market participant has notified the ISO that the source asset is planned to be subject to an extended outage. | |

| Item # | | Stakeholder comments | AESO Replies |
|---|---|---|---|
| | | Add the following as subsections 6(2) to (4):<br><br>(2) The ISO must use the hourly data profile referenced in subsections 6 (1) (c), (d) and (e) above unless the ISO can show the assumed offer data provided by the legal owner is unreasonable. If the ISO does not utilize a data profile provided by the legal owner of the asset the ISO must provide the reasons it did not do so and provide the basis on which it created the data profile.<br><br>(3) Where ISO does not utilize a data profile provided by the legal owner of the asset the ISO may consider such factors as (i) the average of all source assets of the same technology owned by the same market participant in the historical data; and if no source asset of the same technology is owned by the same market participant in the historical data, (ii) the average of all source assets of the same technology owned by any market participant in the historical data.<br><br>(4) It is recognized that actual market prices and conditions will vary from forecast prices and conditions and that the legal owner is not bound by the assumed offer data provided to the ISO and that the actual offer data of the legal owner is expected to vary source asset operation in response to prevailing market prices and conditions. | |
| 8 | if the answer to item #1 is yes, whether you agree that the proposed provisional rule supports ensuring a reliable supply of electricity at a reasonable cost to customers and why or why not | n/a | |
| 9 | whether you agree that the proposed provisional rule supports the public interest and why or why not | This is not a provisional rule. | The AESO acknowledges Milner Power's comment. |

# Stakeholder Comment and AESO Replies Matrix

## Proposed Amended ISO rule – Section 501.10, *Transmission Loss Factors*

**Date of Request for Comment** 2018-10-18

**Period of Comment:** 2018-10-18 through 2018-11-05

**Comments From:** **Powerex Corp.**

| S. | Proposed language | Stakeholder Comments | AESO Replies |
|---|---|---|---|
| **6 (1)** | The **ISO** must calculate **loss factors** using hourly historical metered volume and **merit order** data for all **source assets** connected to the **transmission system** that are included in the system topologies created in subsection 7 below, for the calendar year for which **loss factors** are being determined, by:<br>(a) using hourly historical data for the calendar year two (2) years prior to the calendar year for which **loss factors** are being determined;<br>(b) including, in the following order, the following volumes for each **source asset**, including for the eleven (11) locations at which hydro **generating units** on the Bow River system are connected to the **transmission system**:<br>(i) all **metered energy** for **source assets** that do not submit price-quantity **offers** in the energy market;<br>(ii) all dispatched **operating blocks** for **source assets** that submit price-quantity **offers** in the energy market, in **merit order** first by price and then by size;<br>(iii) all undispatched **operating blocks** offered in the energy market for **source assets** that submit price-quantity **offers** in the energy market, in **merit order** first by price and then by size;<br>(iv) all volumes for **source assets** that the **ISO** | Powerex has reviewed the AESO's notice and understands that it is proposing two "substantive" amendments and three "clarification" amendments to ISO Rule – Section 501.10. While Powerex supports the AESO's consultation efforts and its stated goals of accuracy and transparency, Powerex remains concerned with the ongoing delays and technical problems the AESO continues to encounter in trying to implement the loss factor methodology and calculate final loss factors. Powerex is therefore concerned that implementation of the proposed amendments adds a level of complexity that, at this juncture, will almost certainly cause delay to the calculation of loss factors and/or other Module C activities.<br>Based on the record and information provided to date, it is not clear to Powerex the extent to which these amendments will impact the loss factors applied to individual generators or how long it will take the AESO to integrate the amendments into the loss factor calculations. This analysis and an updated schedule which accounts for implementation of the proposed amendments and resulting impact on other Module C activities must form part of the stakeholder and Commission review. | The AESO is managing its initiatives and resources to minimize the impact on loss factor calculations for 2019, the Module C compliance filing, and other Module C activities.<br>As a result, the AESO has decided to proceed with calculating loss factors for 2019 prior to the completion of the application review process for these amendments. The changes included in this proposed amended rule are not expected to affect the calculation of loss factors for the historical Module C years of 2006-2016. The AESO will publish an updated schedule of activities in the near future. |

| S. | Proposed language | Stakeholder Comments | AESO Replies |
|---|---|---|---|
| | accepts for **dispatch** for **contingency reserve**, in **merit order** first by price and then by size; and<br>(v) all **available transfer capability** which is not scheduled for imports over **interties**;<br>(c) incorporating any change to **maximum capability** or **contract capacity** associated with a connection project, behind the fence project or contract capacity change project for a **source asset** included in the historical data by increasing or decreasing the **source asset**'s historical volumes in subsection 6(b) above in proportion to the change in maximum capability or **contract capacity**, as appropriate;<br>(d) incorporating any return to service for a **source asset** that was subject to a **mothball outage** or a **planned outage** for one or more entire **months** during the historical year, by reasonably adjusting the historical volumes of the **source asset** for the months affected by the **mothball outage** or **planned outage** in the historical year;<br>(e) incorporating any new **source asset** not included in the historical data but which has an expected in-service date by the end of the calendar year for which **loss factors** are being determined, by assigning such new **source asset** an hourly data profile after its expected in-service date reflecting the hourly data profile that is, for the same period:<br>(i) the average of all **source assets** of the same technology owned by the same **market participant** in the historical data;<br>(ii) if no **source asset** of the same technology is owned by the same **market participant** in the historical data, the average of all **source assets** of the same technology owned by any **market** | | |

| S. | Proposed language | Stakeholder Comments | AESO Replies |
|---|---|---|---|
| | **participant** in the historical data; and<br>(iii) if no **source asset** of the same technology is owned by any **market participant** in the historical data, determined by the **ISO** in conjunction with the **legal owner** of the new **source asset**.<br>and<br>(f) excluding any **source asset** during a **month** when, for the entirety of that **month** of the calendar year for which **loss factors** are being determined:<br>(i) the **market participant** has notified the **ISO** that the **source asset** is planned to be subject to a **mothball outage** or a **planned outage**; or<br>(ii) the **system access service** for the **source asset** is planned to have been terminated. | | |
| **6(2)** | The **ISO** must calculate **loss factors** using hourly historical **metered energy** data for all **sink assets** connected to the **transmission system** that are included in the system topologies created in subsection 7 below, for the calendar year for which **loss factors** are being determined, by:<br>(a) using hourly historical data for the calendar year two (2) years prior to the calendar year for which **loss factors** are being determined;<br>(b) including all **metered energy** for each **sink asset**;<br>(c) incorporating any change to **contract capacity** associated with a connection project, behind the fence project or a **contract capacity** change project for a **sink asset** included in the historical data by increasing or decreasing the **sink asset**'s **metered energy** in subsection 6(b) above in proportion to the change in **contract capacity**;<br>(d) incorporating any new **sink asset** not included in the | | |

| S. | Proposed language | Stakeholder Comments | AESO Replies |
|---|---|---|---|
| | historical data but which has an expected in-service date by the end of the calendar year for which **loss factors** are being determined, by assigning such new **sink asset** an hourly data profile reflecting the average hourly data profile of all **sink assets** included in the historical data after the expected in-service date of the new **sink asset**;<br>(e) excluding any **sink asset** during a **month** when, for the entirety of that **month** of the calendar year for which **loss factors** are being determined, the **system access service** for the **sink asset** is planned to have been terminated; and<br>(f) prorating all hourly **metered energy** for **sink assets** included in subsection 6(2)(b) above such that the total of the **metered energy** from the prorated **sink assets** plus the **metered energy** from the unprorated new **sink assets** included in subsection 6(2)(c) above is equal to the forecast **system load** annual volume for the calendar year for which **loss factors** are being determined. | | |
| **7(5)** | < subsection removed > | | |
| **8(8)** | The **ISO** must exclude an hour from the remaining calculations to determine a final **loss factor** for a single location if, for that location in that hour:<br>(a) for **system access service** provided under Rate STS or Rate IOS, the volume for **metered energy** or dispatched **operating blocks** for the location results in a net supply to the **transmission system** of less than 1.00 MW; or<br>(b) for **system access service** provided under Rate DOS, the volume for **metered energy** for the location results in a net demand to the **transmission system** of less than 1.00 MW. | | |

| Item # | | Stakeholder comments | AESO Replies |
|---|---|---|---|
| 1 | whether you are of the view that amended ISO rule – Section 501.10, *Transmission Loss Factors* relates to the capacity market and why or why not | | |
| 2 | if the answer to item #1 is yes, whether you agree that amended ISO rule – Section 501.10, *Transmission Loss Factors* should or should not be in effect for a fixed term and why or why not | | |
| 3 | whether you understand and agree with the objective or purpose of amended ISO rule – Section 501.10, *Transmission Loss Factors* and whether, in your view, Section 501.10, *Transmission Loss Factors* meets the objective or purpose | | |
| 4 | how, in your view, amended ISO rule – Section 501.10, *Transmission Loss Factors* affects the performance of the capacity market and the electricity market | | |
| 5 | your views on any analysis conducted or commissioned by the AESO supporting amended ISO rule – Section 501.10, *Transmission Loss Factors* | | |
| 6 | whether you agree with amended ISO rule – Section 501.10, *Transmission Loss Factors* taken together with all ISO rules and in light of the principle of a fair, efficient and openly competitive market | | |
| 7 | whether you would suggest any alternatives to amended ISO rule – Section 501.10, *Transmission Loss Factors* | | |

| Item # | | Stakeholder comments | AESO Replies |
|---|---|---|---|
| 8 | if the answer to item #1 is yes, whether you agree that the proposed provisional rule supports ensuring a reliable supply of electricity at a reasonable cost to customers and why or why not | | |
| 9 | whether you agree that the proposed provisional rule supports the public interest and why or why not | | |

# Stakeholder Comment and AESO Replies Matrix

## Proposed Amended ISO rule – Section 501.10, *Transmission Loss Factors*

| | | | |
|---|---|---|---|
| **Date of Request for Comment** | 2018-10-18 | | |
| **Period of Comment:** | 2018-10-18 | through | 2018-11-05 |
| **Comments From:** | **TransCanada Energy Ltd. (TCE)** | | |

| S. | Proposed language | Stakeholder Comments | AESO Replies |
|---|---|---|---|
| **6 (1)** | The **ISO** must calculate **loss factors** using hourly historical metered volume and **merit order** data for all **source assets** connected to the **transmission system** that are included in the system topologies created in subsection 7 below, for the calendar year for which **loss factors** are being determined, by:<br>(a) using hourly historical data for the calendar year two (2) years prior to the calendar year for which **loss factors** are being determined;<br>(b) including, in the following order, the following volumes for each **source asset**, including for the eleven (11) locations at which hydro **generating units** on the Bow River system are connected to the **transmission system**:<br>(i) all **metered energy** for **source assets** that do not submit price-quantity **offers** in the energy market;<br>(ii) all dispatched **operating blocks** for **source assets** that submit price-quantity **offers** in the energy market, in **merit order** first by price and then by size;<br>(iii) all undispatched **operating blocks** offered in the energy market for **source assets** that submit price-quantity **offers** in the energy market, in **merit order** first by price and then by size;<br>(iv) all volumes for **source assets** that the **ISO** | The AESO is contemplating a change to ISO rule 6(1)(d) to incorporate a source asset that is returning to service due to mothballing or an extended outage. Historically source asset outages due to routine maintenance have not adjusted historical volumes. The reasoning was that routine maintenance or turnarounds are part of the normal operation of generators. TCE recommends that routine maintenance outages be exclude from this rule. | The AESO considers that the phrase “a mothball outage or a planned outage for one or more entire months during the historical year” would exclude outages due to routine maintenance. As well, the proposed amendment provides for “reasonably adjusting the historical volumes of the source asset”, which would allow outages for routine maintenance to be retained to reasonably reflect normal operation of generating units. |

| S. | Proposed language | Stakeholder Comments | AESO Replies |
|---|---|---|---|
| | accepts for **dispatch** for **contingency reserve**, in **merit order** first by price and then by size; and<br>(v) all **available transfer capability** which is not scheduled for imports over **interties**;<br>(c) incorporating any change to **maximum capability** or **contract capacity** associated with a connection project, behind the fence project or contract capacity change project for a **source asset** included in the historical data by increasing or decreasing the **source asset**'s historical volumes in subsection 6(b) above in proportion to the change in maximum capability or **contract capacity**, as appropriate;<br>(d) incorporating any return to service for a **source asset** that was subject to a **mothball outage** or a **planned outage** for one or more entire **months** during the historical year, by reasonably adjusting the historical volumes of the **source asset** for the months affected by the **mothball outage** or **planned outage** in the historical year;<br>(e) incorporating any new **source asset** not included in the historical data but which has an expected in-service date by the end of the calendar year for which **loss factors** are being determined, by assigning such new **source asset** an hourly data profile after its expected in-service date reflecting the hourly data profile that is, for the same period:<br>(i) the average of all **source assets** of the same technology owned by the same **market participant** in the historical data;<br>(ii) if no **source asset** of the same technology is owned by the same **market participant** in the historical data, the average of all **source assets** of the same technology owned by any **market** | | |

| S. | Proposed language | Stakeholder Comments | AESO Replies |
|---|---|---|---|
| | **participant** in the historical data; and<br>(iii) if no **source asset** of the same technology is owned by any **market participant** in the historical data, determined by the **ISO** in conjunction with the **legal owner** of the new **source asset**.<br>and<br>(f) excluding any **source asset** during a **month** when, for the entirety of that **month** of the calendar year for which **loss factors** are being determined:<br>(i) the **market participant** has notified the **ISO** that the **source asset** is planned to be subject to a **mothball outage** or a **planned outage**; or<br>(ii) the **system access service** for the **source asset** is planned to have been terminated. | | |
| **6(2)** | The **ISO** must calculate **loss factors** using hourly historical **metered energy** data for all **sink assets** connected to the **transmission system** that are included in the system topologies created in subsection 7 below, for the calendar year for which **loss factors** are being determined, by:<br>(a) using hourly historical data for the calendar year two (2) years prior to the calendar year for which **loss factors** are being determined;<br>(b) including all **metered energy** for each **sink asset**;<br>(c) incorporating any change to **contract capacity** associated with a connection project, behind the fence project or a **contract capacity** change project for a **sink asset** included in the historical data by increasing or decreasing the **sink asset**'s **metered energy** in subsection 6(b) above in proportion to the change in **contract capacity**;<br>(d) incorporating any new **sink asset** not included in the | | |

| S. | Proposed language | Stakeholder Comments | AESO Replies |
|---|---|---|---|
| | historical data but which has an expected in-service date by the end of the calendar year for which **loss factors** are being determined, by assigning such new **sink asset** an hourly data profile reflecting the average hourly data profile of all **sink assets** included in the historical data after the expected in-service date of the new **sink asset**;<br>(e) excluding any **sink asset** during a **month** when, for the entirety of that **month** of the calendar year for which **loss factors** are being determined, the **system access service** for the **sink asset** is planned to have been terminated; and<br>(f) prorating all hourly **metered energy** for **sink assets** included in subsection 6(2)(b) above such that the total of the **metered energy** from the prorated **sink assets** plus the **metered energy** from the unprorated new **sink assets** included in subsection 6(2)(c) above is equal to the forecast **system load** annual volume for the calendar year for which **loss factors** are being determined. | | |
| **7(5)** | < subsection removed > | | |
| **8(8)** | The **ISO** must exclude an hour from the remaining calculations to determine a final **loss factor** for a single location if, for that location in that hour:<br>(a) for **system access service** provided under Rate STS or Rate IOS, the volume for **metered energy** or dispatched **operating blocks** for the location results in a net supply to the **transmission system** of less than 1.00 MW; or<br>(b) for **system access service** provided under Rate DOS, the volume for **metered energy** for the location results in a net demand to the **transmission system** of less than 1.00 MW. | | |

| Item # | | Stakeholder comments | AESO Replies |
|---|---|---|---|
| 1 | whether you are of the view that amended ISO rule – Section 501.10, *Transmission Loss Factors* relates to the capacity market and why or why not | Not related | |
| 2 | if the answer to item #1 is yes, whether you agree that amended ISO rule – Section 501.10, *Transmission Loss Factors* should or should not be in effect for a fixed term and why or why not | | |
| 3 | whether you understand and agree with the objective or purpose of amended ISO rule – Section 501.10, *Transmission Loss Factors* and whether, in your view, Section 501.10, *Transmission Loss Factors* meets the objective or purpose | | |
| 4 | how, in your view, amended ISO rule – Section 501.10, *Transmission Loss Factors* affects the performance of the capacity market and the electricity market | | |
| 5 | your views on any analysis conducted or commissioned by the AESO supporting amended ISO rule – Section 501.10, *Transmission Loss Factors* | | |
| 6 | whether you agree with amended ISO rule – Section 501.10, *Transmission Loss Factors* taken together with all ISO rules and in light of the principle of a fair, efficient and openly competitive market | | |
| 7 | whether you would suggest any alternatives to amended ISO rule – Section 501.10, *Transmission Loss Factors* | | |

| Item # | | Stakeholder comments | AESO Replies |
|---|---|---|---|
| 8 | if the answer to item #1 is yes, whether you agree that the proposed provisional rule supports ensuring a reliable supply of electricity at a reasonable cost to customers and why or why not | | |
| 9 | whether you agree that the proposed provisional rule supports the public interest and why or why not | | |

# Stakeholder Comment and AESO Replies Matrix

## Proposed Amended ISO rule – Section 501.10, *Transmission Loss Factors*

| | | | |
|---|---|---|---|
| **Date of Request for Comment** | 2018-10-18 | | |
| **Period of Comment:** | 2018-10-18 | through | 2018-11-05 |
| **Comments From:** | TransAlta Corporation | | |

| S. | Proposed language | Stakeholder Comments | AESO Replies |
|---|---|---|---|
| **6 (1)** | The ISO must calculate **loss factors** using hourly historical metered volume and **merit order** data for all **source assets** connected to the **transmission system** *that are included in the system topologies created in subsection 7 below*, for the calendar year for which **loss factors** are being determined, by:<br><br>(a) using hourly historical data for the calendar year two (2) years prior to the calendar year for which **loss factors** are being determined;<br><br>(b) including, in the following order, the following volumes for each **source asset**, including for the eleven (11) locations at which hydro **generating units** on the Bow River system are connected to the **transmission system**:<br><br>(i) all **metered energy** for **source assets** that do not submit price-quantity **offers** in the energy market;<br><br>(ii) all dispatched **operating blocks** for source assets that submit price-quantity **offers** in the energy market, in **merit order** first by price and then by size;<br><br>(iii) all undispatched **operating blocks** offered in the energy market for **source assets** that submit price-quantity **offers** in the energy market, in **merit order** first by price and then by size;<br><br>(iv) all volumes for **source assets** that the ISO accepts for **dispatch** for **contingency reserve**, in **merit order** first by price and then by size; and | In section 6(1)(d), the phrase "reasonably adjusting the historical volumes of the source asset" is unclear and vague. The AESO has not explained how it will adjust the historical volumes and what data will be used to adjust the historical volumes. Any adjustment to the historical volumes will change which asset is on the margin and will result in changes to loss factors for all assets under the re-dispatch methodology. The AESO must define this methodology and/or should allow for the market participants to review and comment on the adjusted historical volumes. The data used to develop the adjusted historical volumes should be added to the list of information the AESO provides publicly under section 3 of the rule.<br><br>The AESO has not defined the term "similar extended outage" and it is unclear why this term is needed in proposed section 6(1)(d) and 6(1)(f). The AESO has not explained what types of outages would extend beyond a month and would not be captured by under mothball outages or planned outages. The AESO has not explained what similar extended outages have occurred historically that are of concern to the AESO and circumstances or scenarios where this may apply.<br><br>The proposed section 6(1)(d) is also misaligned with section 6(1)(f) because there is a difference between when a source asset will be excluded from a month under section 6(1)(f) and when a source asset will have data adjusted under section 6(1)(d). Section 6(1)(d) proposes to make adjustments to any month that is affected by an outage, and a month could be affected by a single outage hour for an outage that spans two or more months. In contrast, section 6(1)(f) is only removing a | The AESO considers that the forecast volumes for a source asset returning from an extended outage should be determined on a case-by-case basis. The current history of source assets returning from extended outages provides limited guidance to establish a methodology that would be expected to be appropriate for all source assets that may return from an extended outage in the future. The AESO agrees that it is reasonable to allow the market participant to review and comment on the volumes developed for a source asset returning from an extended outage.<br><br>The AESO agrees that mothball outages and planned outages should comprise all extended outages that source assets are currently subject to. However, in light of the changes currently underway in the Alberta electricity market, including the procurement of new renewable generation capacity and the implementation of a capacity market, the AESO considers it reasonable to allow for additional categories of outages through the wording "or a similar extended outage".<br><br>The difference in the periods captured in subsections 6(1)(d) and 6(1)(f) is intentional. In each subsection, the period captured is intended to ensure that loss factors reflect expected operation during the month.<br>• In subsection 6(1)(d), for a source asset returning from an extended outage, the AESO considers it appropriate to replace volume data in months during which the source asset was previously on outage during part of the month to ensure expected operation during the month is included such that loss factors reflect operation during that month.<br>• In subsection 6(1)(f), for a source asset starting an extended |

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| | (v) all **available transfer capability** which is not scheduled for imports over **interties**;<br><br>*(c) incorporating any change to **maximum capability** or **contract capacity** associated with a connection project, behind the fence project or contract capacity change project for a **source asset** included in the historical data by increasing or decreasing the **source asset**'s historical volumes in subsection 6(b) above in proportion to the change in **maximum capability** or **contract capacity**, as appropriate;*<br><br>*(d) incorporating any return to service for a **source asset** that was subject to a **mothball outage**, a **planned outage** or a similar extended outage for one entire **month** or longer during the historical year, by reasonably adjusting the historical volumes of the source asset for the months affected by the **mothball outage**, **planned outage** or similar extended outage in the historical year;*<br><br>(e) incorporating any new **source asset** not included in the historical data but which has an expected in-service date by the end of the calendar year for which **loss factors** are being determined, by assigning such new **source asset** an hourly data profile after its expected in-service date reflecting the hourly data profile that is, for the same period:<br><br>(i) the average of all **source assets** of the same technology owned by the same **market participant** in the historical data;<br><br>(ii) if no **source asset** of the same technology is owned by the same **market participant** in the historical data, the average of all **source assets** of the same technology owned by any **market participant** in the historical data; and<br><br>(iii) if no **source asset** of the same technology is | source asset from the loss factor calculations when it is on outage for the entirety of the month, which means that a one month outage that spans across two calendar months would not result in removing the source asset from either calendar month. These two sections should be aligned to adjust historical data or exclude certain periods of time in the loss factor calculations on a consistent basis. | outage, the AESO considers it appropriate to retain volume data in months during which the source asset operates for part of the month, again to ensure expected operation during the month is included such that loss factors reflect operation during that month.<br><br>The AESO considers the asymmetric inclusion of months in subsections 6(1)(d) and 6(1)(f) maximize the inclusion of expected volumes for the affected source asset in the loss factor calculations. |

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| | owned by any **market participant** in the historical data, determined by the ISO in conjunction with the **legal owner** of the new **source asset**. and<br><br>(f) excluding any **source asset** during a **month** when, for the entirety of that **month** of the calendar year for which **loss factors** are being determined:<br><br>(i) the **market participant** has notified the **ISO** that the **source asset** is planned to be subject to a **mothball outage**, a **planned** ***outage*** *or a similar extended outage*; or<br><br>(ii) the system access service for the source asset is planned to have been terminated. | | |
| **6(2)** | The ISO must calculate **loss factors** using hourly historical **metered energy** data for all **sink assets** connected to the **transmission system** *that are included in the system topologies created in subsection 7 below*, for the calendar year for which **loss factors** are being determined, by:<br><br>(a) using hourly historical data for the calendar year two (2) years prior to the calendar year for which **loss factors** are being determined;<br><br>(b) including all **metered energy** for each **sink asset**;<br><br>(c) *incorporating any change to* ***contract capacity*** *associated with a connection project, behind the fence project or a* ***contract capacity*** *change project for a sink asset included in the historical data by increasing or decreasing the* ***sink asset****'s* ***metered energy*** *in subsection 6(b) above in proportion to the change in contract capacity;*<br><br>(d) incorporating any new **sink asset** not included in the historical data but which has an expected in-service date by the end of the calendar year for which **loss factors** are being determined, by assigning such new **sink asset** an hourly data profile reflecting the average hourly data | | |

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| | profile of all **sink assets** included in the historical data after the expected inservice date of the new **sink asset**;<br><br>(e) excluding any **sink asset** during a **month** when, for the entirety of that **month** of the calendar year for which **loss factors** are being determined, the **system access service** for the **sink asset** is planned to have been terminated; and<br><br>(f) prorating all hourly **metered energy** for **sink assets** included in subsection 6(2)(b) above such that the total of the **metered energy** from the prorated **sink assets** plus the **metered energy** from the unprorated new **sink assets** included in subsection 6(2)(c) above is equal to the forecast **system load** annual volume for the calendar year for which **loss factors** are being determined. | | |
| **7(5)** | < subsection removed > | | |
| **8(8)** | The **ISO** must exclude an hour from the remaining calculations to determine a final **loss factor** for a single location if, for that location in that hour:<br><br>(a) for **system access service** provided under Rate STS or Rate IOS, the volume for **metered energy** or dispatched **operating blocks** for the location results in a net supply to the **transmission system** of less than 1.00 MW; or<br><br>(b) for **system access service** provided under Rate DOS, the volume for **metered energy** for the location results in a net demand to the **transmission system** of less than 1.00 MW. | | |

| Item # | | Stakeholder comments | AESO Replies |
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| 1 | whether you are of the view that amended ISO rule – Section 501.10, *Transmission Loss Factors* relates to the capacity market and why or why not | | |
| 2 | if the answer to item #1 is yes, whether you agree that amended ISO rule – Section 501.10, *Transmission Loss Factors* should or should not be in effect for a fixed term and why or why not | | |
| 3 | whether you understand and agree with the objective or purpose of amended ISO rule – Section 501.10, *Transmission Loss Factors* and whether, in your view, Section 501.10, *Transmission Loss Factors* meets the objective or purpose | | |
| 4 | how, in your view, amended ISO rule – Section 501.10, *Transmission Loss Factors* affects the performance of the capacity market and the electricity market | | |
| 5 | your views on any analysis conducted or commissioned by the AESO supporting amended ISO rule – Section 501.10, *Transmission Loss Factors* | | |
| 6 | whether you agree with amended ISO rule – Section 501.10, *Transmission Loss Factors* taken together with all ISO rules and in light of the principle of a fair, efficient and openly competitive market | | |
| 7 | whether you would suggest any alternatives to amended ISO rule – Section 501.10, *Transmission Loss Factors* | | |

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| 8 | if the answer to item #1 is yes, whether you agree that the proposed provisional rule supports ensuring a reliable supply of electricity at a reasonable cost to customers and why or why not | | |
| 9 | whether you agree that the proposed provisional rule supports the public interest and why or why not | | |