

March 3, 2015

Milner Power Inc.

Complaints regarding ISO Transmission Loss Factor Rule and Loss Factor Methodology Applications 1606494 and 1608563

ATCO Power Ltd.

Complaint regarding ISO Transmission Loss Factor Rule and Loss Factor Methodology Application 1608709

Proceeding 790 Phase 2 Module B

AUC ruling on AESO implementation plan and response to clarification requests

1. On November 26, 2015, the Commission issued Decision 790-D03-2015 in Phase 2 Module B of this proceeding. In paragraph 182 of that decision, the Commission directed the AESO to file by February 1, 2016, a plan (including a timeline) to develop a revised line loss rule that implements the Commission's findings in this decision.¹
2. On January 15, 2016, the AUC set a schedule for submissions with respect to the AESO's implementation plan, which included deadlines for submissions from parties (February 16, 2016), response submissions from the AESO (February 23, 2016) and a round table discussion (if necessary) scheduled for February 25, 2016.²
3. On January 15, 2016, the AESO submitted a letter requesting clarification of certain findings in Decision 790-D03-2015 and identifying certain assumptions upon which the AESO proposed to base its implementation plan. The AESO requested that the Commission respond to its requests for clarification by March 31, 2016.³
4. On February 1, 2016, the AESO submitted its implementation plan, and according to the schedule set by the Commission, parties made submissions regarding the plan. On February 25, 2016, the Commission hosted a round table discussion attended by the parties to this proceeding to discuss the AESO's implementation plan and clarification requests. As noted at the round table, the discussions were on a without prejudice basis with respect to any appeal or review applications and, while there were no transcripts of the meeting, notes were taken, reviewed by parties, and filed on the record in this proceeding.⁴
5. In Decision 790-D03-2015, the Commission issued directions to the AESO regarding the development of a compliant loss factor methodology and loss factor rule. The Commission

¹ AUC Decision 790-D03-2015, issued November 26, 2015.

² Exhibit 790-X0443, AUC letter re Module B process, January 15, 2016.

³ Exhibit 790-X0445, AESO motion requesting clarification, January 15, 2016.

⁴ Exhibit 790-X0466, Round table notes, February 25, 2016.

recognises the complexities involved in developing a new line loss rule and appreciates the AESO's efforts in preparing its implementation plan.

AESO clarification requests

6. The AESO identified certain findings in Decision 790-D03-2015 that, in its view, required further clarification from the Commission as summarized below. All other matters raised in the AESO's January 15, 2016 clarification letter are addressed elsewhere in this ruling.

Calculation of raw loss factors

7. In the decision, the Commission described the calculation of raw loss factors in two different ways. The AESO stated that since loss factors calculated for a service will ultimately be multiplied by the metered energy supplied for that service, the corresponding value to use in the loss factor calculation should be the dispatch volume, not total system losses. The AESO stated that, unless otherwise directed by the Commission, it would base its implementation plan on using the dispatch volume of the service (rather than total system losses) as the denominator in the equation to determine loss factors.⁵

8. The Commission confirms that the use of dispatch volume as the denominator is the correct approach.

Single point for system access and source asset supply

9. The AESO stated that it expects there will be circumstances in which the system access point may not correspond to the energy market supply point. In particular, it pointed to the following two circumstances: (1) when a generating unit is connected to an electric distribution system, and (2) when one or more generating units are connected within an industrial system. The AESO proposed to address this issue in its implementation plan, and did so.⁶ The Commission addresses this issue in its discussion of the AESO's implementation plan later in this ruling.

Hourly merit orders

10. The AESO submitted that merit orders may change during any given hour and, as a result, it compiles significantly more than 8,760 merit orders during a year. The AESO stated that it would base its implementation plan on the use of a single merit order for each hour of the year. In this regard, the AESO requested clarification that the existence of multiple merit orders in an hour does not affect the overall findings in Decision 790-D03-2016.⁷

11. The Commission confirms that the use of a single merit order for each hour of the year complies with the Commission's decision.

Averaging of raw loss factors

12. The AESO submitted that the use of a simple average of 8,760 raw loss factors eliminates the need for duration weighting, but does not eliminate the need for volume weighting. The AESO provided an example of how a simple average of hourly raw loss factors

⁵ Exhibit 790-X0445, AESO request for clarification, January 15, 2016, page 3, paragraphs 11-12.

⁶ Exhibit 790-X0445, AESO request for clarification, January 15, 2016, page 4, paragraphs 14-18.

⁷ Exhibit 790-X0445, AESO request for clarification, January 15, 2016, pages 4-5, paragraphs 20-21.

would not recover the correct amount of losses, and proposed to use a volume-weighted average loss factor in the loss factor methodology.⁸

13. The Commission confirms that the use of volume-weighted average loss factors as proposed by the AESO complies with the Commission’s decision.

Application of clip and shift process

14. The AESO referenced the Commission’s direction in Decision 790-D03-2015 that application of collars and the clip and shift process should be done at the end of each year. The AESO stated that it expects the calculation of loss factors to include 8,760 hours but to run from mid-year to mid-year.⁹ The AESO seeks confirmation from the Commission that its approach is acceptable.

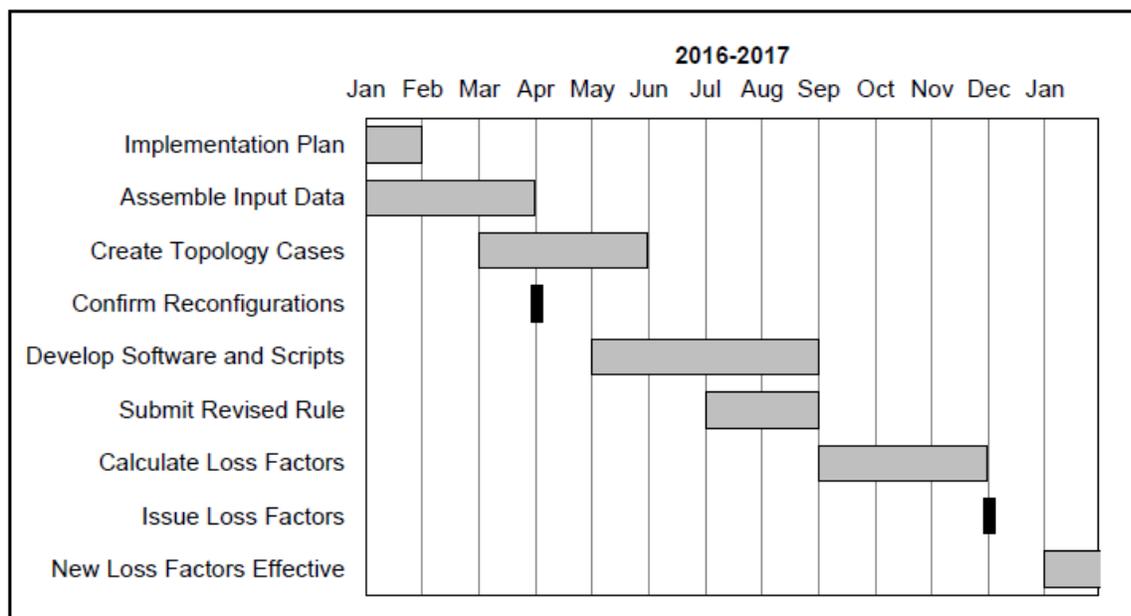
15. The Commission is satisfied that the use of a mid-year to mid-year approach is consistent with Decision 790-D03-2015 and approves the AESO’s approach.

AESO implementation plan

16. The AESO’s implementation plan addressed the matters which the AESO considered necessary to develop a compliant loss factor rule for submission to the Commission in late August 2016 with a view to implementing the new loss factors by January 1, 2017. Parties commented on the AESO’s implementation plan, both in writing and at the round table discussion. These matters are discussed below with rulings from the Commission as necessary.

Proposed timeline to develop data, topology and scripts

17. The AESO provided the following estimated timeline for the implementation of a revised loss factor rule and effective date for new loss factors:¹⁰



⁸ Exhibit 790-X0445, AESO request for clarification, January 15, 2016, pages 5-6, paragraphs 22-26.

⁹ Exhibit 790-X0445, AESO request for clarification, January 15, 2016, page 7 paragraphs 30-31.

¹⁰ Exhibit 790-X0452, AESO implementation plan, February 1, 2016, page 9, figure 1.

18. There was some discussion at the round table about when input data could be made available to parties and when the AESO expects to provide draft raw and final loss factors. The AESO responded that it would try to maintain the estimated timeline by providing input data to parties prior to the end of March, if possible, and draft raw loss factors by the end of August 2016.¹¹

19. The Commission finds the AESO's estimated timeline to be reasonable.

Treatment of operating reserves, non-offered energy and the interties using ILF

20. The ILF model calculates line loss factors by notionally removing a source asset from the system and then notionally rebalancing the system by moving up the merit order to replace the removed source asset. For modelling purposes, the AESO stated: (1) where blocks of available capacity are offered as operating reserves, those blocks will be included at the top of the merit order; (2) if a source asset does not submit operating blocks then a single block representing actual production will be used instead; and (3) available transfer capacity which is not scheduled over the interties will be added as an import block at the top of the merit order. The AESO submitted that these approaches should generally result in a merit order that resembles that which the AESO uses in the actual operation of the transmission system.¹²

21. Powerex and Milner requested further clarification of how the AESO plans to treat operating reserves and the interties in the merit order.¹³ For modelling purposes, the AESO confirmed that operating reserves will be dispatched from lowest to highest price, followed by unused intertie capacity.¹⁴ The AESO clarified that when it is operating the system there are a number of options available to it to maintain system reliability during times of supply shortfall including dispatching ancillary services, curtailing demand opportunity services and exports, calling on remaining intertie capacity and, finally, curtailing firm load.¹⁵

22. The Commission finds that the AESO's modelling approach is consistent with its operation of the system and is reasonable.

Topology, historical generation and load data, and forecasts

23. The AESO stated that historical load data will be adjusted to incorporate the addition of new loads and known changes at individual points of delivery (terminations, reductions, and increases in capacity), and that load volumes will be increased or decreased proportionally in every hour such that total load, in MWh, matches forecast system load, in MWh, for the forecast loss factor year.¹⁶

24. The AESO stated that new source assets will be inserted into the energy market merit order based on the average of price-quantity blocks offered by source assets of similar technology.¹⁷

¹¹ Exhibit 790-X0466, Round table notes, February 25, 2016.

¹² Exhibit 790-X0452, AESO implementation plan, February 1, 2016, page 5, paragraph 20.

¹³ Exhibit 790-X0457, Powerex submission, February 16, 2016, pages 1-2; 790-X0460, Milner submission, February 16, 2016, page 3; Enmax during the round table.

¹⁴ Exhibit 790-X0463, AESO reply letter, February 23, 2016, page 9 of comment response matrix.

¹⁵ Exhibit 790-X0466, Round table notes, February 25, 2016.

¹⁶ Exhibit 790-X0452, AESO implementation plan, February 1, 2016, page 6, paragraph 21.

¹⁷ Exhibit 790-X0452, AESO implementation plan, February 1, 2016, page 12, paragraph 63.

25. Milner asked whether the AESO intends to maintain its past practices regarding the forecast for new generation. If so, Milner proposed that the AESO instead leave forecast new generation out of the merit order used for modeling ILF until that new generation actually starts producing.¹⁸

26. Medicine Hat requested more robust criteria for the inclusion of new projects in the topology cases and input data, and provided several suggestions towards this end.¹⁹

27. The Commission finds that the AESO's approach is reasonable because it is consistent with how the AESO actually administers the operation of the system.

Publication of input data

28. The AESO explained that hourly data at individual measuring points is commercially sensitive because the provision of such information could harm a market participant's competitive position by disclosing patterns and trends that could be used to the advantage of a competitor. The AESO stated that hourly input data for the loss factor calculation will not be made publicly available.²⁰

29. The AESO stated that the 12 monthly topology cases will be provided as 12 monthly power flow base cases, which will continue to be considered Critical Energy Infrastructure Information (CEII) data and will therefore be treated as confidential. The topology cases will only be available to persons who have demonstrated a legitimate need and have executed a non-disclosure agreement (NDA).²¹

30. The AESO uses several different types of information to develop line loss factors. The AESO proposes to make some of that information public while other information may be disclosed only to parties who have signed a non-disclosure agreement and still other information may not be disclosed at all. Several parties objected to the AESO holding some, or even any, information in confidence.²² They submitted that it would deny them access to information necessary to make business decisions and to replicate the AESO's calculations.

31. The AESO responded that it would provide an excel file of raw-to-final loss factors in Q4 2016, hourly merit order data, software and scripts. The AESO maintained that load data is commercially sensitive and will remain confidential, but that it will provide a sample of 100 random hours to enable parties to test the raw loss factor calculations.²³ There was some discussion at the round table about the distribution of the 100 (or up to 144) random hours such that they would be representative of different system states and all source assets.

32. The Commission recognizes that some of the information requested by parties is more competitively and operationally sensitive than other information, and considers the AESO's

¹⁸ Exhibit 790-X0460, Milner submission, February 16, 2016, pages 2-3.

¹⁹ Exhibit 790-X0455, City of Medicine Hat submission, February 16, 2016, paragraphs 11 and 15.

²⁰ Exhibit 790-X0452, AESO implementation plan, February 1, 2016, page 6, paragraph 24.

²¹ Exhibit 790-X0452, AESO implementation plan, February 1, 2016, page 7, paragraph 28.

²² Exhibit 790-X0454, Enmax submission, February 16, 2016, pages 1-2; 790-X0456, TransAlta submission, February 16, 2016, paragraphs 14-15 and 18; 790-X0457, Powerex submission, February 16, 2016, pages 2-3; 790-X0459, TransCanada submission, February 16, 2016, page 3; 790-X0455, Medicine Hat submission, February 16, 2016, paragraphs 13, 19 and 40; 790-X0460, Milner submission, February 16, 2016, page 4.

²³ Exhibit 790-X0463, AESO response, February 23, 2016, page 3 of comment response matrix.

approach to determining what information can be disclosed, to whom and on what terms to be reasonable.

The decision to aggregate or disaggregate source assets

33. The AESO proposed to allow generators the choice of how to aggregate their facilities.²⁴ The AESO stated that in order to finalize the merit order tables, it will require all requests for aggregation or disaggregation by March 31, 2016 for the calculation of the 2017 loss factors. The AESO stated that aggregation will be addressed by combining similarly-priced operating blocks for the source assets being aggregated and vice versa for disaggregation.²⁵ The AESO also provided a table with a preliminary assessment of which units are eligible for possible aggregation.²⁶

34. The AESO stated that market participants will be responsible for any direct costs or impacts arising under the ISO tariff as a result of any aggregation or disaggregation, including impacts on: the substation fraction used for billing of associated services under Rate DTS; construction contributions; generating unit owners' contributions and annual refunds; and system access service agreements.²⁷

35. The Commission finds that the AESO's approach is reasonable and consistent with AUC Decision 790-D03-2015.

Exclusion of hours and data with no solution

36. The AESO expects that when large source assets are notionally disconnected as part of the loss factor calculation and the system is notionally rebalanced by dispatching up the merit order, there will be hours when supply is insufficient to balance load. The AESO believes that reducing load to rebalance the system will inherently reduce losses and distort the loss factor calculations, so the AESO proposes to exclude such hours from the loss factor calculation for all generators.²⁸ Also, the AESO proposes that any hour in which the PSS/E software is unable to simulate a solution within tolerance, which the AESO expects will be randomly distributed across hours and generators, will be excluded from the loss factor calculation for that generator.²⁹ The AESO expects that both scenarios will be relatively infrequent in the context of 8,760 raw loss factors, and will monitor and record the frequency of both types of unsolvable hours.³⁰

37. Several parties requested further reporting from the AESO regarding the number of hours excluded, for whatever reason.³¹ TransAlta also expressed a concern that generators with small dispatches may receive anomalous loss factors.³²

38. The AESO stated that it will not know the frequency of excluded hours until Q4 2016 when it has calculated the loss factors for 2017.³³ Regarding the treatment of generators with

²⁴ Exhibit 790-X0452, AESO implementation plan, February 1, 2016, paragraph 58.

²⁵ Exhibit 790-X0452, AESO implementation plan, February 1, 2016, page 6, paragraph 23.

²⁶ Exhibit 790-X0453, AESO implementation plan – appendix, February 1, 2016.

²⁷ Exhibit 790-X0463, AESO response, February 23, 2016, page 12, paragraphs 59-60.

²⁸ Exhibit 790-X0452, AESO implementation plan, February 1, 2016, page 7, paragraph 32.

²⁹ Exhibit 790-X0452, AESO implementation plan, February 1, 2016, page 6, paragraph 33.

³⁰ Exhibit 790-X0452, AESO implementation plan, February 1, 2016, page 7, paragraph 34.

³¹ Exhibit 790-X0454, Enmax submission, February 16, 2016, page 2; 790-X0456, TransAlta submission, February 16, 2016, paragraph 12; X0455, Medicine Hat submission, February 16, 2016, paragraph 20; Milner during the round table.

³² Exhibit X0456, TransAlta submission, February 16, 2016, paragraph 9; TransAlta during the round table.

small dispatch and the potential for anomalous loss factors, the AESO stated that it could discard those hours (if they were infrequent) or tighten up tolerance ranges in PSS/E, both of which will be explored as the loss factors are calculated.³⁴ The AESO stated that it expects to provide an excel workbook with raw loss factors for each hour for each source asset and a code to indicate why it was not included for a given hour (for example, unit not dispatched, not enough supply in the merit order, PSS/E non-solution, or raw loss factor was unreasonable).³⁵

39. The Commission finds that the AESO's approach is reasonable and consistent with AUC Decision 790-D03-2015.

Stakeholder engagement and updates

40. The AESO stated that it would provide the Commission with quarterly updates regarding the implementation plan.³⁶

41. TransAlta expressed the view that quarterly updates are insufficient and requested monthly updates instead.³⁷ The AESO responded that preparing monthly updates would be too time consuming and would divert resources from advancing the development of the loss factor rule and methodology.³⁸

42. TransCanada suggested an informal consultation by way of a technical working group,³⁹ to which the AESO responded by proposing to hold technical meetings "at appropriate points during the implementation activities" and by continuing to provide quarterly updates.⁴⁰

43. Milner asked the AESO to provide the dates upon which the AESO plans to file the quarterly updates and what information the updates will include.⁴¹ The AESO responded that it expects to file updates near the end of each calendar quarter, that is, near March 31, June 30, September 30 and December 31, and that the schedule may be adjusted based on the significance of findings during implementation and to comply with related regulatory deadlines.⁴²

44. The Commission finds that the AESO's approach is reasonable and consistent with AUC Decision 790-D03-2015

Criteria to be eligible for aggregation

45. In its implementation plan, the AESO stated that it proposes to include provisions in the revised line loss rule that will allow a generating facility to connect to an electric distribution system and also offer into the market as a source asset. It also proposed to add provisions that will address hydro systems.⁴³

46. In its implementation plan, the AESO stated that generating units will be eligible for aggregation of their outputs if they are: a) at a single location; b) owned or controlled, managed,

³³ Exhibit 790-X0463, AESO response, February 23, 2016, page 2 of comment response matrix.

³⁴ Exhibit 790-X0466, Round table notes, February 25, 2016.

³⁵ Exhibit 790-X0466, Round table notes, February 25, 2016.

³⁶ Exhibit 790-X0452, AESO implementation plan, February 1, 2016, page 9, paragraph 44.

³⁷ Exhibit 790-X0456, TransAlta submission, February 16, 2016, paragraph 13.

³⁸ Exhibit 790-X0463, AESO reply, February 23, 2016, page 2 of comment response matrix.

³⁹ Exhibit 790-X0459, TransCanada submission, February 16, 2016, page 2.

⁴⁰ Exhibit 790-X0463, AESO reply, February 23, 2016, page 2 of comment response matrix.

⁴¹ Exhibit 790-X0460, Milner submission, February 16, 2016, pages 5-6.

⁴² Exhibit 790-X0463, AESO reply, February 23, 2016, page 10 of comment response matrix.

⁴³ Exhibit 790-X0452, AESO implementation plan, February 1, 2016, page 11 paragraphs 54-55.

and operated by the same entity; and c) part of a single economic enterprise or undertaking and not independent, standalone businesses. Further, the AESO stated that the generating facility will have to satisfy the one-to-one correspondence set out below, and that the correspondence between measurement point and energy market supply point does not require that they be at the same physical point, but requires that a single measurement point be associated with one and only one energy market supply point:⁴⁴

1 1 1 1 1 1 set of
loss = measurement = generating = energy market = source = price-quantity
factor point facility supply point asset pairs

47. The AESO stated that:

- Generating units will be considered to be at the same physical location when they are connected to the transmission system at the same electrical bus, and any direct costs of physically connecting generating units at the same bus will be borne by the market participant.⁴⁵ Non-compliance will be possible where severe hardship or unnecessary costs will otherwise be imposed.⁴⁶ The market participant will be responsible for any direct costs or impacts arising under the ISO tariff as a result of any aggregation or disaggregation of generating units.⁴⁷
- A single physical location includes generating units within an industrial system (while the units may be some physical distance apart), generating units on an electric distribution system downstream of a single point of delivery, and generating units within the City of Medicine Hat.⁴⁸

48. Medicine Hat expressed its disagreement with the Commission's decision to allow aggregation of generating units according to the criteria described in Decision 790-D03-2015 arguing that application of the aggregation criteria opens the door for the re-introduction of socialized loss factors symptomatic of the MLF/2 methodology. Medicine Hat called up Diagram #1 in Decision 2014-110 in order to support its point.⁴⁹ As stated at paragraph 85 of Decision 2014-110, the diagram in question represented the AIES in which *all* load is supplied by a *single* generating unit, such that at zero output, total line losses would be zero. The result would be the same whether the MLF/2 methodology or ILF methodology were used.

49. As stated in paragraph 99 of Decision 2014-110, the Commission found that MLF/2 socialized positive externalities that are created whenever new generating units lower average system losses by locating closer to load. The Commission, of course, was mindful of its analysis in Decision 2014-110 (including that underpinning Diagram #1 therein) when it issued its determinations in Decision 790-D03-2015. However, just because that diagram shows that in one improbable fact situation MLF/2 and ILF will produce the same loss factors does not mean that because MLF/2 causes the socialization of losses ILF must also cause the socialization of losses. Regardless of the size of the generating facility, the Commission found at paragraph 61 of Decision 790-D03-2015 that an ILF methodology, by definition, provides a measure of both the

⁴⁴ Exhibit 790-X0452, AESO implementation plan, February 1, 2016, page 10, paragraphs 48-50.

⁴⁵ Exhibit 790-X0452, AESO implementation plan, February 1, 2016, page 10, paragraph 51.

⁴⁶ Exhibit 790-X0452, AESO implementation plan, February 1, 2016, page 11, paragraph 56.

⁴⁷ Exhibit 790-X0452, AESO implementation plan, February 1, 2016, page 12, paragraph 60.

⁴⁸ Exhibit 790-X0452, AESO implementation plan, February 1, 2016, page 11, paragraph 52.

⁴⁹ Exhibit 790-X0455, Submission of the City Medicine Hat, February 16, 2016, page 19.

direct and indirect line losses and line loss savings of each generating facility across the full range of its output and produces line loss factors that are representative of the impact on average system losses precisely because it measures the difference in average system line losses with and without each generating facility. As the record shows, MLF/2 does not. The Medicine Hat argument that the diagram to which it refers can be used to demonstrate or infer anything about the Commission's aggregation policy is without merit.

50. The Commission finds Medicine Hat's concerns about aggregation to be unwarranted for two additional reasons. First, Medicine Hat's claim that an ILF methodology that permits aggregation poses a danger of "socializing losses" (to the detriment of line loss savers and the benefit of line loss causers) appears to be based either on faulty assumptions or a misapprehension of the fundamental meaning of the concept of socialization. Line losses (or savings) are socialized when they are assigned (either specifically or arbitrarily such as when the MLF/2 methodology is employed) to generating facilities on other than a causal basis. The line loss regulation requires that line loss responsibility be determined on a causal basis (contribution and impact). The fact that line loss factors are likely to change for individual generating facilities when an *unlawful* line loss rule is replaced by a *compliant* line loss rule, especially if those changes ultimately prove less advantageous than desired or more disadvantageous than anticipated, does not mean that losses will have been socialized. To the contrary, it means that losses are no longer being socialized.

51. Medicine Hat's principal concern, however, seems to be that generators will be able to choose whether or not to aggregate and that, as a result, some generators with a number of large units at a single location will be able to aggregate them into one large unit. Medicine Hat stated:⁵⁰

[T]he City is concerned that the AESO's preliminary proposal to adopt the Commission's criteria without further refinement will lead to an "ownership privilege" – where an owner can aggregate existing and new generation facilities into extraordinary large source assets at one location (a "location hotspot") – that will be unfairly advantageous and be inconsistent with the Commission's stated principles for economic efficiency, the avoidance of a biased advantage arising from regulatory rules and the rate-making principle of cost causation. Moreover, the City is concerned that this "ownership privilege" may pose a deleterious risk to the competitive market in ways that have yet to be considered by the Commission.

52. Medicine Hat appears to use the AESO's initial estimates of loss factors based on a different model than that ordered by the Commission to offer some factual basis for its view that loss factors for large aggregated generating units will be unfairly advantageous. It offers no other analysis, merely assertions, that the result will be economically inefficient or the rule will produce a biased result. In the Commission's view, the AESO's initial estimates may or may not be similar to, or directionally consistent with, what the Commission ordered. The result cannot be said to be biased if it is based on a compliant rule. If the rule is non-compliant (such as MLF/2) then it produces a biased result, or more properly, a result that is unjustly discriminatory. What Medicine Hat requests is that the AESO interpret the Commission's decision in a manner contrary to what the Commission expressly ordered by restricting the ability of generators to make market-based decisions on whether and how much to aggregate. The Commission will not accept aggregation rules that are inconsistent with the Commission's stated principles.

⁵⁰ Exhibit 790-X0455, Submission of the City Medicine Hat, February 16, 2016, page 15, paragraph 56.

53. Regarding PPAs, the AESO explained that generating units held by a single PPA Buyer will be eligible for aggregation, but generating units held by different PPA Buyers will not be eligible for aggregation even if those generating units are subject to common offer control.⁵¹ TransCanada supported the AESO's treatment of PPA units, with the exception of the requirement to limit aggregated large units to one set of price quantity pairs, because this may result in market distortions and operational challenges.⁵² Medicine Hat requested that the AESO reconsider how the definition of a single generating facility applies to PPA units and to avoid what Medicine Hat characterizes as the unfair socialization of losses contrary to the principle of cost causation.⁵³ At the round table meeting, Capital Power raised a concern about updates to the PPA units. The AESO stated that it is unsure how to address the situation but it would appear that the principles enunciated by the Commission did not contemplate dividing a unit into multiple sets of price/quantity pairs.⁵⁴

54. TransCanada proposed that generators be permitted to aggregate generating units while at the same time retaining more than one set of price quantity pairs for the aggregated units. The Commission expressly determined that generators could not have multiple sets of price quantity pairs for aggregated facilities or for individual units. The Commission ruled that generators must select one the following three alternatives based on their own assessment of competitive market conditions: (1) choose to aggregate units and lose price quantity pairs; (2) disaggregate units and gain price quantity pairs; or (3) maintain their current configuration. This is consistent with ISO rules. TransCanada's proposal might necessitate a change to ISO rule Section 201.5: *Block Allocation*, which requires the AESO to allocate seven operating blocks to each source asset. The AESO's Consolidated Authoritative Document Glossary defines 'source asset' as meaning "one (1) or more aggregated generating facilities, generating units, or import assets." The result is that once a unit is defined by the AESO as an 'aggregated generating facility' it can only be allocated seven price quantity pairs (also referred to as operating blocks). To do otherwise as TransCanada has suggested, would likely contravene ISO rule Section 201.5.

55. Regarding hydro units, the AESO proposed that the Bow River Hydro System continue to be offered as one source asset in the energy market, while receiving a separate loss factor at each of the 11 hydroelectric plants that comprise the Bow River Hydro System.⁵⁵ TransAlta supported the AESO's proposed treatment of the Bow River Hydro System and stated that the AESO's proposal would resolve one of the main issues raised by TransAlta in its review application. TransAlta also commented that the proposed treatment "does not give TransAlta any benefits with respect to loss factors."⁵⁶ While there was discussion at the round table about hydro plants providing operating reserves, concerns about wet versus dry years, and the ability to deliver power from a hydro source asset for a continuous hour, the AESO stated that it would continue using the historical merit order for stand-alone hydro assets like Big Horn and Brazeau, and is still assessing, with the assistance of TransAlta, how to allocate the offers from the aggregated facility to each individual unit of the Bow River Hydro System.⁵⁷

⁵¹ Exhibit 790-X0452, AESO implementation plan, February 1, 2016, page 11, paragraph 53.

⁵² Exhibit 790-X0459, TransCanada submission, February 16, 2016, page 5.

⁵³ Exhibit 790-X0455, Medicine Hat submission, February 16, 2016, paragraphs 5 and 66-68.

⁵⁴ Exhibit 790-X0466, Round table notes, February 25, 2016.

⁵⁵ Exhibit 790-X0452, AESO implementation plan, February 1, 2016, page 11, paragraph 54.

⁵⁶ Exhibit 790-X0456, TransAlta submission, February 16, 2016, paragraph 22.

⁵⁷ Exhibit 790-X0466, Round table notes, February 25, 2016.

56. The Commission finds that the AESO's proposed approach to dealing with the Bow River Hydro System under the ILF methodology ordered by the Commission is reasonable given the configuration and operating circumstances of this hydro system.

57. Several parties raised concerns about the benefits of aggregation and the treatment of facilities with multiple generating units, multiple connections to the transmission system, and behind-the-fence generation and load at industrial systems, distribution connected source assets and the City of Medicine Hat.⁵⁸ The AESO responded at the round table that it has identified and is aware of these issues and is working toward a solution to address them.

58. The Commission will await the AESO's proposals on how to deal with these remaining unresolved matters, and will issue any determinations that may be required at that time.

Energy market merit order

59. The AESO proposed to use the merit order that existed at 30:00 minutes past the hour, sometimes referred to as the "bottom of the hour."⁵⁹ In its reply to stakeholders, the AESO revised this approach and indicated it would use the merit order that existed at 59:59 minutes past the hour in the settlement interval, as this would be consistent with the end-of-hour standard for merit order data.⁶⁰

60. The Commission finds the AESO's approach reasonable and not inconsistent with AUC Decision 790-D03-2015.

Steps for loss factor calculation methodology

61. The AESO proposed to take the following steps in arriving at final loss factors: (1) calculate raw loss factors for each source asset in each of the 8,760 hours; (2) calculate the volume weighted average loss factor for each source asset; (3) apply a single annual shift factor to all average loss factors to recover the forecast annual transmission system losses; (4) use an iterative clip and shift process to apply the collars; and (5) include provisions for adjusting final loss factors when the final loss factor for a source asset or for the transmission system changes by 0.25 or more.⁶¹

62. ENMAX submitted that an annual shift factor should be rejected as it would be too high in some hours and too low in others, such that it would effectively shift losses from some hours into others, but not all generators will be online in a statistically equivalent set of hours.⁶² The AESO responded that there is no difference in shift factors applied hourly or annually as long as volume weighting is used.⁶³ This notwithstanding, at the round table meeting, the AESO stated that it was prepared to explore the issue further with ENMAX before selecting its preferred approach⁶⁴

⁵⁸ Exhibit 790-X0454, Enmax submission, February 16, 2016, page 6; 790-X0456, TransAlta submission, February 16, 2016, paragraph 4; 790-X0457, Powerex submission, February 16, 2016, page 2; 790-X0455, Medicine Hat submission, February 16, 2016, paragraph 68; and Medicine Hat, ATCO Power, TransCanada at the round table.

⁵⁹ Exhibit 790-X0452, AESO implementation plan, February 1, 2016, page 12, paragraph 64.

⁶⁰ Exhibit 790-X0463, AESO reply, February 23, 2016, page 3.

⁶¹ Exhibit 790-X0452, AESO implementation plan, February 1, 2016, pages 12-13, paragraphs 65-66.

⁶² Exhibit 790-X0454, Enmax submission, February 16, 2016, page 4, and during the round table.

⁶³ Exhibit 790-X0463, AESO response, February 23, 2016, page 8 of comment response matrix.

⁶⁴ Exhibit 790-X0466, Round table notes, February 25, 2016.

63. At the round table meeting, Milner raised concerns about the timing of recalculating loss factors when (1) any facility's loss factor changes by more than 0.25 or (2) any errors are identified after loss factors have been assigned. The AESO responded that it is unsure how to deal with adjustments during a year until it has gone through the loss factor calculation cycle at least once. The AESO added that if its forecast is inaccurate there may not be a remedy as loss factors are set on a go-forward basis. And finally, the AESO observed that if there is an error in its calculations it would be obliged to correct the data to be in compliance with its own rule.⁶⁵

64. The Commission finds the AESO's proposed steps to calculate loss factors to be reasonable subject to any determinations the Commission may make based on the outcome of the AESO's further discussions with ENMAX concerning the use of hourly versus annual shift factors. With respect to Milner's concerns about the timing of recalculating loss factors, the Commission finds the AESO's proposed approach to be reasonable in the circumstances and encourages the AESO to develop processes that will provide generators sufficient time to verify its preliminary calculations before new loss factors are implemented.

Summary of Commission findings regarding the AESO implementation plan

65. The Commission approves the AESO's implementation plan subject to the qualifications and clarifications noted above. The AESO is directed to submit its compliance filing for Commission review and approval in accordance with the timeline provided in the AESO's implementation plan, and earlier if possible.

66. In addition, from February 5 to March 31, 2016, Measurement Canada is conducting a public consultation regarding loss compensation metering and related metering equipment standards (for more information follow this link: https://www.ic.gc.ca/eic/site/mc-mc.nsf/eng/h_lm00012.html). While the Commission recognized that the *measurement* of transmission system losses is different from the *allocation* of transmission system losses, the Commission expects the AESO will work with industry participants to identify and address any inconsistencies and concerns, if they arise, between the requirements to calculate loss compensation values, as set by Measurement Canada, and the methodology to allocate transmission line losses pursuant to the AESO's pending transmission line loss rule compliance filing.

67. The undersigned has been authorized to communicate these directions on behalf of the Commission.

Yours truly,

(sent electronically)

JP Mousseau
Commission Counsel

⁶⁵ Exhibit 790-X0466, Round table notes, February 25, 2016.