

Stakeholder Comment & AESO Response Form

Changes to Transmission Loss Factors Methodology

1. Loss Factor calculation methodology (HVDC) solution – method #1:

Stakeholder	Comment	AESO Response
TransCanada Energy Ltd	<p>While this method may be the simplest method to implement with minimal change to the modeling, it could distort the shift factor and may not provide an appropriate locational based signal for generators.</p> <p>In the current loss factor modeling method, a relatively low shift factor means that the model is more indicative of actual transmission system losses and is therefore fairly accurate. By including DC losses in the shift factor, the AESO and stakeholders will not know if the shift factor is high due to DC losses or inaccuracies in the loss factor modeling. TransCanada recommends that the AESO use the shift factor as intended to account for the difference between actual and modeled loss factors and not include the impact due to DC loss factors.</p> <p>The AESO has also implied in the description of</p>	<p>The AESO has identified three solution methods to be studied and specified high level assumptions. The AESO also asked the stakeholders if they want more methods to be studied. The stakeholders did not propose any additional methods for this study.</p> <p>The AESO will initiate the study work for the HVDC Loss Factor solution based on the 3 proposed methods. The results will be communicated to the stakeholders as per the schedule mentioned in the discussion paper (please use the following link for details) -</p> <p>http://www.aeso.ca/downloads/Changes_to_Transmission_Loss_Factors_Methodology_Discussion_Paper.pdf.</p> <p>The AESO mentioned high level estimation on the methods and will inform the stakeholders the detailed impact of each method on loss recovery as well as on the shift factor. The AESO is committed to continue the transparent processes and</p>

method #1 that this methodology may not provide an appropriate locational signal to generators. The AESO has also noted that this method is correct if the DC line is operated at a fixed power level independent of individual generation. While this may be correct, TransCanada is concerned that this assumption is not realistic. The generation levels from individual generators are constantly changing throughout the year due to varying outputs in response to market conditions and due to generator maintenance. While TransCanada will await the test model data to be provided by the AESO later this year, method #1 does not appear to be the preferred alternative.

communication in future.

The assumptions to be used for each method will be included in the detailed study report.

TransAlta Corporation	Use in the interim until the more correct Method #3 is developed.
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Capital Power Corporation	It appears that this option may not be reflective of actual DC operations and could result in less accuracy in loss factors. For this reason this option is not as aligned to the goal of loss factors. We are skeptical about this approach given the AESO's comments during the stakeholder presentation that the system operators did not know how the DC line would be operated. If however the AESO were able to provide greater transparency about the future operations of the DC line then we may be convinced that this approach is prudent.
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2. Loss Factor calculation methodology (HVDC) solution – method #2:

Stakeholder	Comment	AESO Response
TransCanada Energy Ltd	TransCanada is interested in reviewing the test model data to be provided by the AESO later this year before providing our final comments on method #2. What is not clear is whether this replacement of a circuit with identical power flow losses will reflect the actual operation of the DC lines as they respond to generation levels of individual generators or whether the levels will be fixed in all hours for each of the 12 periods being modeled. TransCanada would be concerned if it is the latter circumstance from an accuracy perspective. However, this method may have some transparency advantages when validating the study results by third parties.	The method 2 was developed for the interim solution to deliver the 2014 Loss Factor estimates. The AESO will need to spend much time on this method as the process is already in place. The result along with the assumption used for this method will be shown in the methodology report . Please also see the AESO response for issue # 1.
TransAlta Corporation	Conceptually wrong. I would suggest spending the AESO's time developing Method #3 and using Method #1 in the interim.	
Capital Power Corporation	If modeling the DC line as an AC circuit will not result in any significant or material difference in loss factor calculations then this may be an acceptable approach. Conceptually, it is difficult to understand how modeling a DC line as an AC circuit would not result in inaccuracy but we have no way to judge this without further information from the AESO.	

3. Loss Factor calculation methodology (HVDC) solution – method #3:

Stakeholder	Comment	AESO Response
TransCanada Energy Ltd	More information from the small test system is needed before any final comments on this methodology can be provided by TransCanada. TransCanada can see merit in this alternative because it appears to offer the closest representation of reality. TransCanada is unclear on why	Method 3 is a full blown solution and is preferred by the stakeholders based on high level assumptions. The detail study report will provide the implementation cost of each

extensive modifications to the loss factor calculation model are required and what additional time is required to make these modifications. There are numerous systems world-wide that incorporate HVDC transmission lines into their AC system models. If the difficulty is in revisions to the current model (50% Area Load Method), then TransCanada would support the AESO obtaining a cost estimate from its consultant to perform this work. TransCanada is also interested whether method #3 will maintain the same (or better) level of transparency to third party reviews of the model as exists with the current model.

methods accompanied by their performance in terms of loss recovery, minimizing shift factor and implementation plan.

Please also see the AESO response for issue # 1.

TransAlta Corporation	This would be TransAlta's preferred approach as it appears to be the most conceptually correct method.
Milner Power Inc.	Milner's view is that Loss Factor method #3 should be adopted as it is the most accurate and flexible and should be best able to model how the AESO actually operates the line in the future. It is anticipated that this method will also retain the location based signal for losses by accurately reflecting the portion of the losses that are constant and the portion of the losses that change with changes in various generator outputs.
Capital Power Corporation	CPC encourages the AESO to develop a methodology for DC such that it could be accurately reflected in loss factor calculations.

4. Loss Factor calculation methodology (HVDC) solution should be studied:

Stakeholder	Comment	AESO Response
TransCanada Energy Ltd	<p>TransCanada would like to see the results of the small test system before making final comments on a preferred alternative.</p> <p>While the methodology is important to the accuracy of the loss factor calculation, the input assumptions in the models may have a large impact on the loss factors. The AESO statement that "DC is likely to be operated to minimize system losses subject to system constraints" noted in the</p>	Please see the AESO response for issue # 1.

description of method 3 requires a number of assumptions which may not reflect that actual use of the DC transmission line once it is in operation. Although TransCanada supports the concept of operating the DC transmission line to minimize losses to the extent possible, TransCanada recommends that historical DC flows be used in the models once the DC transmission line has been in operation for one or two years. TransCanada would prefer to use historical input data for whichever method is selected. Before historical data is available, the AESO will need to forecast the operation of the DC line based on discussions with AESO operating staff.

TransAlta Corporation	Yes, see comment three above.
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5. Transmission Must Run (TMR) changes:

Stakeholder	Comment	AESO Response
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TransCanada Energy Ltd	TransCanada supports the use of historical information for the modeling of TMR generation when the transmission system or the contractual arrangements have been in place for the past year and are not expected to change in the coming year. If the AESO is aware that the TMR generation contract expires due to TMR generator retirement or the construction of new transmission negates the need for TMR generation, the AESO should adjust the TMR generation output in the loss factor models. Similarly if new TMR generation is to be added in the following year, the AESO should take into account the increased operation of the TMR generation from historical trends. TransCanada does not support replacing TMR generators and treating them as a transmission facility using forecast data.
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Currently, The AESO uses historical data for generator dispatch. The AESO changed its process for TMR in 2008 (please use the link below for details) -

http://www.aeso.ca/downloads/GSO_TMR_changes_2009.pdf

The current process uses historical TMR instruction and total dispatch. The process is aligned with the treatment of other generators. The Loss Factor process takes historical TMR and energy dispatch separately into its model. If the TMR becomes zero in future it will be

TransAlta	Treat TMR as transmission as this is its role in being dispatched and
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Corporation running.

Milner Power Inc.

The AESO is referred to Milners previous comments on this issue. Milner asked the AESO to reflect forecast reductions in TMR in the GSO used for loss factor calculations in its comments of July 16, 2008. The issue was again raised in Milners letter to the AESO of July 23, 2009. The AESO discussed this issue at the October 27, 2009 loss factor meeting and subsequently received further comments from Milner. Following this the AESO issued a letter on December 11, 2009 asking stakeholders to again comment on the treatment of Transmission Must Run in the loss factor calculation methodology by January 8, 2010. Milners comments and letters and the AESO's responses are given at,

http://www.aeso.ca/downloads/2008-08-19_Final_AESO_Response_to_Milner_Power_Inc.pdf

http://www.aeso.ca/downloads/Response_to_July_23_2009_Milner_Power_Inc_Letter_on_2010_GSO.pdf

http://www.aeso.ca/downloads/Comments_to_the_AESO_from_Milner_Power_Inc_following_the_October_27_-_Loss_Factor_Meeting.pdf

http://www.aeso.ca/downloads/GSO_TMR_New_Gen_DC_Loss_changes_20091211.pdf

In the discussion paper posted on July 12, 2010 the AESO is asking stakeholders to provide comments on this issue for a third time.

"The AESO welcomes feedback from stakeholders on how TMR changes should be incorporated into Loss Factor methodology. Suggested options are to treat TMR as existing generators using historical data, or to treat them as a transmission facility using forecasted data."

Milners opinion remains that TMR dispatches should be removed from the GSO as they are forecast to be no longer necessary. This is further detailed in our October 30, 2009 letter to the AESO.

At the June 23, meeting the AESO indicated it had an updated forecast of TMR requirements in the NW. Could the updated forecast be posted?

Because of the importance of TMR to loss factors in the NW area of the

automatically reflected in the Loss Factor

process as the total dispatch will be assigned from the energy component where as TMR will be assigned to zero.

The AESO prefers to use historical data for both parameters (TMR instruction and total dispatch) for consistency.

The following table shows the updated maximum TMR forecast for Northwest (Rainbow and Grand Prairie) area.

	Northwest Rainbow Lake	Northwest Grand Prairie
2010	170	133
2011	170	133
2012	170	133
2013	55	133
2014	55	133
2015	0	0
2016	0	0
2017	0	0
2018	0	0
2019	0	0

It is to be noted that the amount of TMR that will be dispatched in the northwest at any given time is governed by OPP 501.

province the AESO should provide an updated forecast of TMR requirements annually. To facilitate the five year forecast of loss factors, the forecast of TMR requirements should, at a minimum, cover the anticipated requirements for the next five years

Capital Power Corporation	The ramifications of treating a TMR resource as an existing generator using historic data or treating them as a transmission facility using forecasted data is not clear. This impact is germane to the question about appropriate treatment. We would expect that treating a TMR resource as an existing generator may be appropriate if the unit is expected to be utilized in the same way in the future. If however a TMR unit is expected to be utilized more (or less) in the future, treating it as a transmission facility and using forecasted data may be more appropriate. Given that the AESO forecasts and dispatches TMR, it is in the best position to determine which approach would result in the most accurate forecast of loss factors.
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6. Addition of new generation facilities:

Stakeholder	Comment	AESO Response
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TransCanada Energy Ltd	The AESO and the owner of new generation should reach agreement on the estimated output during the first year of operation. Output from the generator(s) should be based on the owners estimate and AESO judgment, based in part on the output of similar generation added to the Alberta grid. TransCanada is not aware of the extent of any distortions that have arisen from using the existing methodology. Absent that information and an estimate of the improvement of accuracy in refining the existing method, TransCanada is unable to support the use of arbitrary values of 1/3, 2/3 or zero MW generator output.	The issue arises when a new generator is added in the middle of a year and the new generator was not part of the annual loss factor calculation. This may trigger the 0.25% rule depending on the area the generator will be connected. In general, if the generator comes on or before the middle of the season it will be included in the season, else it will be included in the next season. This inclusion process works well unless the generator's in-service date is after October 15th (which is the middle of the last season, fall). In 2009, the addition of few new generators caused other generators' loss factors to change by over 0.25% this change required
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TransAlta Corporation	Use the 1/3 or 2/3 inclusion.
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Milner Power Inc.	Please see Milner's comments of October 30, 2009 at http://www.aeso.ca/downloads/Comments_to_the_AESO_from_Milner_
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Power_Inc._following_the_October_27-_Loss_Factor_Meeting.pdf

Capital Power Corporation

We understand the difficulty of factoring in new generation facilities given the challenges of accurately forecasting project completion. The current approach appropriately attempts to factor in the risk of delay in project completion; however, it appears that Rule 9.2 factors in the risk of a six-month delay which may be too conservative. It may be more appropriate to factor in a three-month delay, which would imply that a project expected to come on in the last quarter of a future year is modeled into the next season. This approach could allow the proration on the inclusion of new generation based on an assumed delay of a quarter.

the loss factor to be reissued twice due to the 0.25% rule (Please see the link below for details):

http://www.aeso.ca/downloads/Stakeholder_Notice_on_Loss_Factor_Changes_20090930.pdf

http://www.aeso.ca/downloads/Stakeholder_Notice_on_Loss_Factor_Changes.pdf

The AESO will conduct tests based on several scenarios and the results will be communicated with the stakeholders along with the HVDC results mentioned earlier in this letter.

7. Treatment of new Demand Opportunity Services (DOS):

Stakeholder	Comment	AESO Response
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TransCanada Energy Ltd

TransCanada supports the incorporation of stakeholder feedback on the capacity factor for the DOS loss factor model calculation. The AESO and the DOS user should reach agreement on the estimated output in the loss factor models. In the absence of any reliable information, the AESO could consider the use of historical values of other DOS customers. However, TransCanada is concerned about the use of historical forecasts of DOS capacity factors for other customers because a DOS load is highly customer specific, impacted by their specific industry and will depend on factors such as customer operations and the economics of alternative energy sources or curtailment of production.

AESO Response

The AESO will try to get the anticipated usage factor from the customer and in absence of any data, the average DOS usage data will be used.

Capital Power Corporation

It would be helpful to understand the potential impact that DOS would have on loss factors. We understand that there are relatively few DOS customers; therefore, the impact to loss factors should be relatively small. Based on this assumption, using the average of existing DOS loads may be the best methodology in terms of ease of calculation and availability of

information.
