

Changes to the Loss Factor Rule Related to the 2007 Transmission Regulation

2007 Regulation Reference*	Issue/Date	Discussion	Proposed Treatment/Timeline	Status
31(1)	Generator LF. 2007-05-30	<ul style="list-style-type: none"> No Change from existing practices 	<ul style="list-style-type: none"> None required 	Under 31(1)(a) is the AESO not required to at least produce loss factors for export paths, import paths, etc.
36 (b) + (c)	Import LF. 2007-05-30	<ul style="list-style-type: none"> LF – pays for average impact rather total impact 36 (c) Loss – pays for average tie line loss 	<ul style="list-style-type: none"> LF – treated as a generator Loss – average loss from a look up table? 	See above
36 (b) + (c)	Export LF. 2007-05-30	<ul style="list-style-type: none"> LF – does not apply Loss – pays for average tie line loss 	<ul style="list-style-type: none"> LF – no calculation required Loss – average loss from a look up table 	
36 (d)	DOS LF. 2007-05-30	<ul style="list-style-type: none"> LF – pays for average impact rather total impact 	<ul style="list-style-type: none"> LF – treated as negative generator 	
	Tie Line Loss. 2007-05-30	<ul style="list-style-type: none"> Recovered by Export/Import 	<ul style="list-style-type: none"> A table or graph of tie line losses against the tie flows 	
	Treatment at Inter-Tie, opportunity services	<ul style="list-style-type: none"> How to treat inter-tie regarding imports and exports. For example, net I/E, treat as ISD, Generator and load, etc Placement of Opportunity service in GSO New/Preliminary generation location in GSO 	<ul style="list-style-type: none"> Draft loss factors calculated for June 18 2007. 	
31 (2) (g)	Charges/Credits. 2007-05-30	<ul style="list-style-type: none"> Limits have changed to +/- 12% 	<ul style="list-style-type: none"> Implement as stated 	
31 (3)	Abnormal Operation	<ul style="list-style-type: none"> Explicitly stated 	<ul style="list-style-type: none"> Implemented previously 	

	2007-05-30			
	Clarifications - DOE	<ul style="list-style-type: none"> If clarifications are required on Regulation, the DOE will be notified 	<ul style="list-style-type: none"> As required 	
31(1)(e) and 33(1)	Calibration Factor	<ul style="list-style-type: none"> Treat CF consistently on loss factor results and not losses 	<ul style="list-style-type: none"> Apply to opportunity services 	
Comment #1				
	<p>Item 76: 2007 Transmission Regulation ('T-Reg')</p>	<ul style="list-style-type: none"> The discussion was initiated to interpret the T-Reg with the intent of achieving a practical Rule. The timely application of the Regulation is primary – any other Rule changes are secondary. (Please refer to #75.) <p>Issues examined that TransCanada has comments on:</p> <ul style="list-style-type: none"> Treatment of import could be reflected as a price taker in the GSO <p>TransCanada comment:</p> <p>Treating imports as price takers for loss factor calculations should be tied to rule changes for imports becoming price takers in the energy markets.</p> <ul style="list-style-type: none"> Consultation request – the stakeholders request the draft Rule as presented within AESO <p>TransCanada comment:</p> <p>TransCanada requests that the AESO publish the draft Rule along with reasons for accepting or rejecting recommendations of participants. This will allow stakeholders to understand the AESO's position and provide for meaningful discussions during the stakeholder process. Going from the</p>	<ul style="list-style-type: none"> Stakeholders requested to provide comments on the Regulation as related to losses by June 10. The AESO will capture the comments in a simple format, attached. June 18 meeting to consider T-Reg changes in more depth. Further meetings will be booked as required. 	Ongoing

		<p>listening stage to the final decision stage with no opportunity for further discussion is a suboptimal stakeholder process.</p> <ul style="list-style-type: none"> • Base case preparation – options to supply load in the event supply is not sufficient <p>TransCanada comment;</p> <p>TransCanada understands this matter to include the process that will be followed when congestion occurs and other options must be pursued to supply the load. TransCanada expects the AESO to identify all the options considered with their advantages and disadvantages as well as the preferred option.</p> <ul style="list-style-type: none"> • Multi-year GSO – stakeholders would prefer a method to allow a way to choose how to use historical data in the GSO <p>TransCanada comment:</p> <p>In the case of developing the best GSO for forecast purposes, an average of several years of history may not be as accurate as using the most current year with historical data. A GSO will be impacted by recent economic conditions and the most recent data will likely be a better predictor of the future than historical averages of several previous years. The turnaround issue discussed below in determining production forecasts is not applicable to GSO forecasts.</p>		
Comment #2				
ALBERTA REGULATION	Harmonization of the loss factor	Among other things, the new Transmission Regulation indicates that,	Proposed Treatment: Milner urges the AESO to harmonize the loss factor	

<p>86/2007</p> <p>Electric Utilities Act</p> <p>TRANSMISSION REGULATION</p> <p><u>Part 6</u> <u>Transmission System Losses, Charges and Credits</u></p> <p><u>Determination of transmission loss factors on and after January 1, 2009</u></p> <p>Section 36 (a), (b), (c) and (d)</p> <p><u>Determination of transmission loss factors until December 31, 2008</u></p> <p>35(1)(a) and (b) and 35(2)</p> <p><u>Transmission system loss factors</u></p> <p>31(1) (a)</p>	<p>treatment of generators and imports</p>	<p>beginning on January 1, 2009. the loss factors must be determined so that,</p> <p>(a) <i>the owner of a generating unit must pay location-based loss charges or receive credits,</i></p> <p>(b) <i>importers of electric energy must pay location-based loss charges or receive credits</i></p> <p>(i) <i>determined in the same manner as for generating units, and</i></p> <p>(ii) <i>determined at the point where the import path, referred to in section 31(1)(a)(iii), connects to the remainder of the interconnected electric system,</i></p> <p>(c) <i>importers and exporters of electric energy must pay transmission line loss charges representing the average level of losses incurred in transporting electric energy on an import path or export path referred to in section 31(1)(a)(ii) and (iii), and</i></p> <p>(d) <i>a person that receives opportunity service where the ISO determines that a line</i></p>	<p>treatment of generators and opportunity service imports, exports and DOS by extending to generators in 2009 the loss factor methodology that has been applied to opportunity service customers in 2006 and 2007.</p> <p>Timing: Prior to January 1, 2009.</p>	
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loss factor applies under section 31(1)(a)(iv) must pay losses or receive credits that are determined in a similar manner as the losses and credits determined for owners of a generating unit.

Prior to January 1, 2009 the loss factors must be determined so that,

- (a) the owner of a generating unit must pay location-based loss charges or receive credits, and*
- (b) importers of electric energy under a firm service arrangement must pay location-based loss charges or receive credits.*

(2) A person receiving transmission service under an interruptible service arrangement for load, import or export must pay location-based loss charges or receive credits that recover the full cost of losses required to provide this service.

Both prior to, and after January 1, 2009 the AESO must make rules to,

- (a) reasonably recover the*

		<p><i>cost of transmission line losses on the interconnected electric system by establishing and maintaining loss factors</i></p> <ul style="list-style-type: none"><i>(i) for each generating unit,</i><i>(ii) for each export path or group of export paths, as those terms are defined in the ISO rules respecting line losses,</i><i>(iii) for each import path or group of import paths, as those terms are defined in the ISO rules respecting line losses, and</i><i>(iv) for any other opportunity service customer in respect of whom the ISO determines a loss factor is to apply,</i> <p><i>based on their respective locations and their respective contributions, if at all, to transmission line losses,</i></p> <p>The requirements of the new Transmission Regulation to harmonize the loss factor treatment of generators and opportunity service imports, exports and DOS in 2009 can be met effectively if the methodology</p>		
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		<p>applied to opportunity service customers in 2006 and 2007 is applied to generators as well.</p> <p>Such treatment will accurately reflect the cost causation of transmission losses and in so doing will provide an effective locational signal.</p> <p>For total transmission loss recovery to match the total transmission losses that actually occur it is axiomatic that generators as well as opportunity service imports, exports and loads must pay for the total losses their transactions cause. To provide effective locational signals and to accurately reflect cost-causation, generator loss factors should be reflective of the losses caused by generators on a generator specific basis.</p>		
	<p>Representation of exports and imports in load flow cases in 2009</p>	<p>In 2006 the AESO indicated they had changed the way load was represented in the load flow cases used to calculate loss factors. The change was explained by the AESO in the 2006-10-24 stakeholder meeting notes.</p> <p><i>The basic principle reflected in the calculation of loss factors is generators are charged for all losses including those</i></p>	<p>Proposed Treatment: Prior to making a decision on how exports and imports should be modeled in 2009 the AESO should present to stakeholders the loss factors that would ensue to all generators in both alternatives.</p> <p>Timing: The AESO should present to stakeholders the loss factors that would ensue to all generators in both</p>	

		<p><i>caused by loads. For 2006 loss factor calculations, losses created by all loads were assumed to be charged to all generators. For 2007 loss factor calculations, the loss factor software has been refined such that losses caused by behind the fence loads are factored into the loss factors that are determined for their associated generators.¹</i></p> <p>The changes made by the AESO made no change to the amount of losses on the system but the difference in modeling did affect a change in the cost responsibility for these losses.</p> <p>At the May 30, 2007 meeting a discussion ensued on whether exports should be modeled separately or netted against imports before determining import loss factors. As with the changes the AESO made to the way it represented certain loads, it is expected that the two methods will not affect the forecast losses on the system but will result in different cost accountability for the losses.</p>	<p>alternatives in the summer of 2007.</p> <p>The consultation with stakeholders and agreement on how to appropriately represent exports and imports in load flow cases should be completed in time to be included in rule changes for 2009.</p>	
<p>ALBERTA REGULATION 86/2007</p> <p>Electric Utilities</p>	<p>Treatment of Imports in the GSO in 2009</p>	<p>Beginning in 2009, importers of electric energy must pay location-based loss charges or receive credits that are determined in the same manner as for generating units. This means that imports</p>	<p>Proposed treatment: Since Imports are offered at \$0 (are price takers), they should be dispatched in the GSO alongside other price takers.</p>	

¹ [http://www.aeso.ca/files/2006-10-24_LossFactor_Meeting_notes_final_\(2\).pdf](http://www.aeso.ca/files/2006-10-24_LossFactor_Meeting_notes_final_(2).pdf)

<p>Act TRANSMISSION REGULATION</p> <p><u>Part 6</u> <u>Transmission</u> <u>System Losses,</u> <u>Charges and</u> <u>Credits</u></p> <p><u>Determination</u> <u>of transmission</u> <u>loss factors on</u> <u>and after</u> <u>January 1, 2009</u></p> <p>36(b)</p>		<p>will have to be modeled in the load flow cases used to calculate loss factors for generators and these cases will no longer reflect zero interchange.</p>	<p>Timing: The consultation with stakeholders and agreement on how to appropriately treat imports in the GSO should be completed in time to be included in Rule changes for 2009. The proposal should be integrated into the GSO for 2009.</p>	
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* - all references are to the 2007 Transmission Regulation

Changes to the Loss Factor Rule Not Related to the 2007 Transmission Regulation

Issue/Date	Discussion	Proposed Treatment/Timeline	Status
Load or Generation Scaling in Base Case 2007-05-30	<ul style="list-style-type: none"> Merits of modifying load or generation to meet base case solution 	<ul style="list-style-type: none"> May be less of an issue as the tie lines will be able to move with load variations. Other alternatives? 	
Clearer Criteria for Tie-line or Generation additions 2007-05-30	<ul style="list-style-type: none"> For base cases in the next/fifth year additions, do clearer rules for asset additions need be considered? 	<ul style="list-style-type: none"> 	
Historical Data for GSO	<ul style="list-style-type: none"> For base cases in the next/fifth year additions, do clearer rules for asset additions need be considered? 	<ul style="list-style-type: none"> The H values as defined will be difficult to address in a multi-year treatment. Further historical data is being used already 	
Threshold for Changes in LF 31 (2) (b) 2007-05-30	<ul style="list-style-type: none"> The threshold for changes to the loss factors is not appropriate 	<ul style="list-style-type: none"> Increase to 1% to ensure only truly large effects are acted on. AESO has discretion to address any changes 	<p>31(2)(b) appears to TransAlta to be entirely appropriate and gives the AESO significant leeway in making necessary changes. Not sure we need to specify a percentage.</p>
Comment #1			
<p>Item 74: 2011 Loss Factors</p>	<p>The AESO requested input on whether more or less detail should be pursued in preparing 5 year forecasts of losses.</p> <p>TransCanada comment:</p> <p>TransCanada considers these forecasts are useful (1) for generation developers who need an estimate of the losses they can expect in a particular area of the Province, (2) for budget purposes and (3) when parties are involved in buying or selling longer term hedges (such as beyond the year for which losses are fixed). Given these purposes, the timeliness of these forecasts should not be materially sacrificed.</p>	<p>Stakeholders asked to consider for June 18 their preference for more or less detail in the fifth year results.</p>	<p>Stakeholders to respond by June 18 regarding more or less detail in the fifth year loss factors.</p>

	<p>Given that 10 year transmission system plans and 20 year outlooks may not be available until year end or shortly thereafter, TransCanada recommends the 5 year losses forecast should be published as soon as possible in the fall of any given year but no later than March 31 of the following year. If the AESO obtains updated forecast information after March 31 that will materially impact losses, TransCanada recommends the AESO publish a new 5 year forecast when that information becomes available. TransCanada believes this recommendation reasonably balances the need for timely information with the value of an accurate forecast.</p>		
<p>Item 75: Rule Change Options for 2007</p>	<p>The Transmission Regulation was updated in April 2007. Other AESO loss factor Rule changes can possibly be made while the Rule is open, as long as the secondary changes do not affect the implementation of the Regulation.</p> <p>TransCanada Comment:</p> <p>TransCanada considers the alternatives to scaling load when the GSO is exhausted are still a priority item in the development of loss factor rules. While the AESO needs to comply with the Transmission Regulation, this longstanding request for an improvement to the GSO should not be set aside when developing new rules. TransCanada also believes that developing clearer criteria for inter-tie and generator additions is an important component of rule changes.</p> <p>Regarding using longer periods of historical data, TransCanada is less concerned about this matter if the AESO requires generators to adopt their previous year's historical data rather than allowing existing generators (other than new generators) to modify their historical data for forecast purposes. TransCanada</p>	<p>Changes under consideration include:</p> <ul style="list-style-type: none"> o Alternatives to scaling load when the GSO is exhausted, o Clearer criteria for inter-tie and generator additions o Longer periods of historical data under consideration (see #71) 	<p>A request has been made to stakeholders for input to these and other issues</p>

	<p>still sees value in using historical averages to average out years where major turnarounds occur and thereby improve the forecast. Until the AESO has completed a report (item 49) on the impact of using historical data compared to forecast data on individual generator losses, stakeholders cannot assess how material this issue is. Stakeholders will be able to offer more objective comments when this report is complete.</p>		
<p>Treatment of Preliminary Generation in GSO</p>	<p>In response to a question on the 2007 GSO the AESO indicated,</p> <p><i>Generators are preliminary if they have an ISD for the next year. The unit may or may not connect. If the unit has a CCA, and construction has commenced, then the unit is added into the GSO rankings as per its' generation type. Actual connection dates may or may not correspond with the latest information used in the development of the GSO.</i></p> <p>In both the 2006 and 2007 GSO, generators that are considered preliminary are positioned at the end of the generation stacking order regardless of the generation type. This disregards the likely order in which these generators will be dispatched in the system.</p> <p>In 10 of the 12 base cases that were developed for the calculation of the 2007 loss factors the generation in the GSO was inadequate to meet the forecast load. In these cases the order of dispatch in the GSO is of no consequence because all of the generation in the GSO is dispatched. However, in cases where the GSO is not fully</p>	<p>Proposed Treatment: Any new generator, preliminary or otherwise, that has an ISD for the next year and is included in the GSO should be added into the GSO rankings as per its generation type and not arbitrarily added to the end of the GSO.</p> <p>Timing: This should be reflected in the GSO for the 2008 loss factors.</p>	

	<p>dispatched, (as may be the case in 2009 when imports are included) the order of generation dispatch matters and can have a significant effect on the loss factors of individual units. In these cases it is important that new generation is included in the GSO rankings appropriately.</p>		
<p>Utilization of multi-year historical production from generators to determine volumes in GSO</p>	<p>In 2006 stakeholders suggested using multiple years of historical generation data to determine the generation volumes in the GSO to mitigate the need to consider forecasts of generation volumes in certain circumstances.</p> <p>Forecasts of generation production may be advanced when individual participants anticipate that the historical production from their generators is not the best estimate of future production. However, some stakeholders are opposed to the use of forecasts because it could result in generators gaming their forecast to achieve lower loss factor charges or higher credits.</p>	<p>Proposed Treatment: Milner urges the AESO to use a minimum of three years of historical generation data to determine the generation volumes in the GSO to mitigate concerns of stakeholders.</p> <p>Timing: The GSO used for the 2008 loss factors should utilize multi-year historical generation data to determine the generation volumes.</p>	
<p>Consider in the GSO existing generation capacity that was not dispatched in the past year</p>	<p>The AESO currently evaluates generator loss factors based on load flow cases containing no imports or exports and using a forecast of Alberta load. In electrical power systems, generation plus imports less exports must equal load plus transmission losses. If the province was a net importer of energy in the previous year, the generation from the previous year will be less than the load plus transmission losses forecast for the following year.</p>	<p>Proposed treatment: The AESO should, <i>in consultation with stakeholders, appropriately</i> quantify the existing generation capacity that was not dispatched historically and consider including this capacity as a single energy block at the end of the dispatch order in the GSO.</p> <p>Timing: The consultation with</p>	

	<p>In 10 of the 12 base cases that were developed for the calculation of the 2007 loss factors the generation in the GSO was inadequate to meet the forecast load. The generation in the 2006 GSO was inadequate to meet the forecast load in 2 out of the 12 base cases used in the loss factor calculations.</p> <p>Previously the AESO suggested that any generation shortfall can be addressed in the load flow cases used to determine loss factors by either scaling down the load (the approach chosen by the AESO) or scaling up the generation. Both of these approaches depart significantly from the way the system is operated.</p> <p>Scaling the load down fails to recognize load growth and understates transmission flows. The lower transmission flows result in forecast lower losses and consequently lower raw loss factors. This necessitates the application of a higher shift factor applied to all generators to recovery the actual anticipated losses in the following year. The lower levels of transmission flows also mute the differences in loss factors among generators.</p> <p>Scaling the generation up can result in some generators producing above their capability while existing generators that were not dispatched historically are not dispatched.</p> <p>In 2006 stakeholders suggested that existing</p>	<p>stakeholders and agreement on how to appropriately quantify existing generation capacity that was not dispatched historically should be completed by the fall of 2007 in time to be included in rule changes this year. At the latest, the proposal should be integrated into the GSO for 2009.</p>	
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	<p>generation capacity that was not dispatched historically could be included as a single energy block at the end of the dispatch order in the GSO. This suggestion was flagged by the AESO for possible consideration for a rule change for 2008.</p> <p>Capacity that has not run historically is still available and would presumably run if prices were high enough. Hence this capacity (properly adjusted for expected forced outage rates, derates and planned maintenance) should be reflected in the GSO after all generation that ran historically has been dispatched.</p>		
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Legend:

- Yellow Highlighting means item has been completed, and will be removed from the next version of notes.
- Bolding means item is incomplete or has been updated with new information.
- Action list includes submissions related to changes to the Loss Factor Rule
- Red is stakeholder input by June 29 2007