

## DRAFT –Version 3

### Transmission Planning and Enhancement

#### 9.2 Transmission Loss Factors

##### 9.2.1 Purpose of Rule

The purpose of this rule is to describe the means by which the ISO's determines annual transmission **loss factors** to result in the reasonable cost recovery of transmission line losses in accordance with the requirements of the Transmission Regulation.

##### 9.2.2. Definitions

**In this section:**

**“ISO load forecast”** means a twenty-year load forecast for the AIES established and updated by the ISO not less than once each year;

**“calibration factor”** means an adjustment to the **loss factors** ensuring that the actual cost of losses is reasonably recovered through charges and credits under the ISO tariff on an annual basis.

**“compressed loss factor”** means the **loss factors** determined by applying compression to the annualized **loss factors** using the approved compression methodology to comply with the loss factor limitations described in the Transmission Regulation Section 19(2)(f);

**“generic stacking order”** means the annual prediction of the operational dispatch of generation and their respective power blocks based on historical data and expressed on a seasonal basis.

**“loss factors”** means a number determined by the ISO:

- for each generating unit connected to **the interconnected electric system**, which when multiplied by the MW output of the unit reasonably represents the generator's impact on average transmission system losses,
- for each demand opportunity service connected to **the interconnected electric system**, which when multiplied by the MW demand reasonably represents the load's impact on transmission system losses,
- for each opportunity import and export transaction scheduled on **the interconnected electric system**, which when multiplied by the MW demand of the transaction reasonably represents the impact on transmission losses, and

- for firm import transactions (service not currently available) scheduled on **the interconnected electric system**, which when multiplied by the MW demand of the transaction reasonably represents the import transaction’s impact on average transmission system losses.

“**loss factor methodology**” means the detailed methodology for determining **loss factors** set forth in Appendix 8;

“**raw loss factor**” means the loss factor calculated for each generator for each base case load flow condition prior to applying a shift factor or compression.

“**transmission system average loss factor**” means the total energy of transmission system losses divided by the total net to grid energy produced for a given calendar year for **the interconnected electric system**; and

“**transmission system losses**” means, for each year, the total of the transmission system losses on **the interconnected electric system**.

### 9.2.3 Establish and Maintain Loss Factors

- .1 The ISO must establish and maintain annual **loss factors** in accordance with this Rule.
- .2 Despite Rule 9.2.3.2, if the ISO determines that, in its opinion, an enhancement or upgrade to the transmission system materially affects **loss factors** it may adjust the **loss factors** in accordance with this Rule 9.2.3.
- .3 The ISO must post on its web site the following:
  - a. A list of annual **loss factors** for:
    - all generators directly connected to the interconnected electric system, and
    - firm imports (service not currently available).
  - b. A list of seasonal **loss factors** for :
    - demand opportunity service, and
    - opportunity import and export transmission service.
  - c. The effective date of establishment of the **loss factors** and the period of time they are in force pursuant to Rules 9.2.3.2;
  - d. A list of estimated **loss factors** (non-binding) for the fifth year forward for all generators directly connected to **the interconnected electric system**.
- .4 The ISO must follow the **loss factor methodology** to determine **loss factors**. Without restricting the foregoing, the **loss factor methodology** must have regard for the following:

- a. **Loss factors** must be determined for each location on the transmission system as if no abnormal operating conditions exist;
  - b. The loss factor in each location must be representative of the impact on average transmission system losses by each respective generating unit or group of generating units relative to load;
  - c. **Loss factors** must be one number at each location that does not vary, except as a result of revisions referred to in clause (b) or the reapplication of **loss factors** under clause (a);
  - d. After determining which **loss factors** result in a charge or credit, every loss factor must be multiplied by a common number in order to limit the **loss factors** as follows:
    - (i) **loss factors** associated with a charge must not exceed 2 times the average transmission system loss factor, and
    - (ii) **loss factors** associated with a credit must not exceed one times the average transmission system loss factor.
- .5 The ISO must make rules with respect to the designation of **loss factors** in any place in Alberta where a generating unit is not located, and on request, determine a loss factor with respect to a generating unit that a person proposes to construct.

- .6 A request pursuant to Rule 9.2.3.6 by a market participant must be in writing and must comply with the following:

The applicant must fill out a “Preliminary Loss Factor Calculation Application” available on the ISO’s website. The application requires that the applicant provide facility information including proposed interconnection location, interconnection voltage, proposed STS contract level, and proposed commissioning date. The application also requires the applicant to pay a fee as noted on the application document.

- .7 The ISO may amend the **loss factor methodology** by providing a written notice of its intention to do so, not less than 3 months prior to the proposed date of amendment. Any amendment to this Rule will be considered a Class One amendment.
- .8 An amendment to Appendix 8, “Transmission Loss Factor Methodology and Assumptions” will be treated as an amendment to this Rule.

#### 9.2.4 Recovery of Costs of Transmission Losses

- .1 The ISO must establish each year with respect to each loss factor, charges or credits which if applied, would result in the recovery of the forecast costs of transmission system losses for such year .

- .2 In accordance with the Rules, **loss factors** may be adjusted by a **calibration factor** to ensure that the actual cost of losses is reasonably recovered through charges and credits under the ISO tariff on an annual basis.
- .3 If the actual cost of losses is over or under recovered in one year, the over or under recovery must be collected or refunded in the next year or subsequent years.
- .6 The ISO must follow the methodology set forth in the ISO's Tariff, Rider E, to determine the **calibration factor**.
- .7 Subject to Rule 9.2.4.8, the owner of a generating unit must pay the charges, and is entitled to the credits, determined by the ISO in accordance with Rule 9.2.3.
- .8 A market participant who is the importer of electric energy under a firm service arrangement, must pay the charges, and is entitled to the credits, determined by the ISO in accordance with Rule 9.2.3.
- .9 A market participant receiving transmission service under an interruptible service arrangement for load, import or export must pay location-based loss charges that recover the full cost of losses required to provide this service.
- .10 A market participant receiving transmission service for merchant transmission lines connected to **the interconnected electric system**, internally or intra-control area, will be treated the same as the existing inter-tie lines from Alberta to Saskatchewan and British Columbia. For merchant lines not connected to **the interconnected electric system**, no **loss factors** will be accrued.
- .11 The payment of charges and entitlement to credits pursuant to Rules 9.2.4.7 – 9.2.4.10 inclusive, will be administered in accordance with the ISO Rules.
- .12 The ISO shall include in the ISO tariff a means whereby charges and credits that are determined as a result of the application of the **calibration factor** are recovered pursuant to the ISO tariff.

#### **9.1.5.1 Loss Factor Modeling and Assumption Details**

A description of the **loss factor methodology** and the assumptions used to calculate **loss factors** are described in a document titled "Transmission Loss Factor Methodology and Assumptions". This document can be found in Appendix 8 of the ISO Rules.