

ISO Rules

Part 200 Markets

Division 202 Non-Routine Conditions in the Markets

Section 202.6 Adequacy of Supply



Applicability

- 1 Section 202.6 applies to:
- (a) the ISO.

Requirements

Adequacy Assessments

2 The ISO must, in order to assist in determining whether to cancel a **planned outage** ~~or unplanned, delayed forced outage of generation, or automatic forced outage~~ under ~~section~~Section 306.5 of the ISO rules, *Generation Outage and Reporting and Coordination*, assess the **adequacy** of supply by, at a minimum, completing a supply and load forecast using the peak demand hour of every day for a ~~two~~ (minimum 2) year period, calculated as the sum of the following:

- (a) the **maximum capability** from all **generating units** ~~in Alberta~~ and aggregated generating facilities with a **maximum capability** equal to or greater than 5 MW, ~~excluding wind aggregated generating facilities and solar aggregated generating facilities~~;
plus
- ~~(b)~~ (b) on-site generation that supplies behind-the-fence load and submits available capability as a net-to-grid value;
plus
- ~~(b)(c)~~ (c) an estimate of the output from wind aggregated generating facilities and solar aggregated generating facilities;
plus
- ~~(e)(d)~~ (d) import **available transfer capability** on interconnections with a program that increases **available transfer capability**;
minus
- ~~(d)(e)~~ (e) declared derates for generating unit derates units and aggregated generating facilities;
minus
- ~~(e)(f)~~ (f) any capacity of **generating units** ~~which~~ and aggregated generating facilities that are affected by **transmission market constraints**;
minus
- ~~(f)(g)~~ (g) anticipated derates for generating unit derates units and aggregated generating facilities;
minus
- ~~(g)(h)~~ (h) the daily forecast **Alberta internal load**;
minus
- ~~(h)(i)~~ (i) **operating reserves** requirements;
plus
- ~~(i)(j)~~ (j) price responsive load;
plus
- ~~(j)(k)~~ (k) aggregate **planned outage**, ~~unplanned outage and forced outage~~ records for load;

plus

~~(*)~~(1) load for **demand opportunity service**.

Short Term Adequacy Assessments

3 The **ISO** must, every hour, assess the short term **adequacy** of supply by, at a minimum, completing a real time **adequacy** assessment for each **settlement interval** of the current **day** and for the ~~six~~ **(6)** remaining **days** of the **forecast scheduling period** on the **day** preceding that current **day**, calculated as the sum of the following:

(a) **available capability** from all **generating ~~source assets in Alberta~~ units and aggregated generating facilities** with a **maximum capability** equal to or greater than 5 MW₁ with a start-up time less than or equal to ~~one~~ **(1)** hour or with a submitted start time at or before the period being assessed, **excluding wind aggregated generating facilities and solar aggregated generating facilities**;

plus

(b) ~~estimated~~ **an estimate of the** output from **wind aggregated generating facilities and solar aggregated generating facilities**;

plus

(c) ~~estimated~~ **an estimate of the** amount of price responsive load;

plus

(d) ~~estimated~~ **an estimate of the** amount of **demand opportunity service** load that is to be curtailed;

plus

(e) on-site generation that supplies behind-the-fence load and submits **available capability** as a net-to-grid value;

plus

(f) import **available transfer capability** on the **interties**;

minus

(g) the peak forecast load from the day-ahead forecast of **Alberta internal load**;

minus

(h) the **ISO's spinning reserve** requirement;

minus

(i) constrained down generation, with the exception of constrained down **wind aggregated ~~generation~~ generating facilities and solar aggregated generating facilities**.

Long Term Adequacy Metrics and Reporting

4(1) The **ISO** must establish, maintain and report on **long term adequacy** metrics on a quarterly basis in accordance with this ~~section~~ **Section** 202.6.

(2) The **ISO** must make publicly available the following **long term adequacy** metrics:

(a) an Alberta electrical generation projects and retirements metric which is a non-confidential project list indicating such relevant information as the project name, the project proponents,

- the MW size of the project and the estimated year of project completion;
- (b) a forecast reserve margin metric, including a reserve margin metric which must have a minimum ~~five (5)~~ year forecast period and be calculated using a methodology that:
 - (i) is a measure, expressed in percentage terms, representing the amount of generation capacity at the time of system peak that is in excess of the annual peak demand;
 - (ii) utilizes **ISO** load forecasts;
 - (iii) utilizes existing **generating unit** capacity information such as **maximum capability** and the generation metric forecast capacity published as part of the Alberta electrical generation projects and retirements metric;
 - (iv) accounts for behind-the-fence load and generation capacity;
 - (v) excludes wind and solar generation and adjusts for hydro generation available at the time of system peak;
 - (vi) incorporates **interconnection** capacity; and
 - (vii) may reflect more than a single supply and load scenario for the system;
 - (c) a supply cushion metric which provides a ~~two (2)~~ year forecast of available daily generation capacity and peak demand both measured in MW which must be calculated using a methodology that:
 - (i) incorporates **generating unit** capacity information such as the **maximum capability of generating units**;
 - (ii) utilizes **ISO** load forecasts;
 - (iii) incorporates daily average **planned outages** and derates as reported by **pool participants** in their **planned outage** scheduling submissions as well as a nominal average **unplanned outage** and **forced outage** rate;
 - (iv) accounts for behind-the-fence load and generation capacity;
 - (v) excludes wind and solar generation and adjusts for hydro generation available at the time of daily system peak;
 - (vi) excludes **interconnection** capacity; and
 - (vii) excludes existing generation that is contractually available but that does not participate in the energy market;
 - (d) a ~~two (2)~~ year probability of supply **adequacy** shortfall metric which provides a probabilistic assessment of a state of **supply shortfall** over the next ~~two (2)~~ years and which must be calculated using a methodology that:
 - (i) utilizes **ISO** load forecasts;
 - (ii) utilizes existing **generating unit** capacity information such as **maximum capability** and the generation metric capacity published as part of the Alberta electrical generation and retirements metric;
 - (iii) incorporates hourly **planned outages** and derates as reported by **pool participants** in their **planned outage** scheduling submissions;
 - (iv) incorporates **interconnection** capacity estimates; and
 - (v) utilizes a distribution of outcomes for the following inputs:

- (A) intermittent or energy limited resources; and
- (B) **unplanned outages and forced outages.**

Long Term Adequacy Threshold Determination and Use

5(1) The ISO must, for the ~~two (2)~~ year probability of supply **adequacy** shortfall metric model set out in subsection 4(2)(d), use a **long term adequacy** threshold which:

- (a) represents the equivalent impact of the probability of having a system supply shortfall occur once every ~~ten (10)~~ years; and
- (b) is calculated as the ~~one (1)~~ hour average **Alberta internal load** for a year divided by ~~five (5)~~; (c) being the level which, if exceeded, would indicate a need for the ISO to consider taking preventative action.

(2) The ISO must, using the ~~two (2)~~ year probability of supply **adequacy** shortfall metric, estimate on a quarterly basis the expected total system MWh not served in a subsequent ~~two (2)~~ year period.

(3) The ISO must, if the estimated total system MWh not served exceeds the **long term adequacy** threshold established at the time, undertake further studies to verify the likely cause, magnitude and timing of the potential **adequacy** issue.

Long Term Adequacy Threshold Actions

6 The ISO may, if the **long term adequacy** threshold is exceeded and the ISO deems that a potential **adequacy** issue requires preventative action, procure any one ~~(1)~~ or more of the following services:

- (a) load shed;
- (b) self-supply and back-up generation that would not otherwise be available to participate in the energy market; and
- (c) emergency portable generation;

being **long term adequacy** threshold actions.

Procurement of Long Term Adequacy Threshold Actions

7 The ISO must procure **long term adequacy** threshold actions using established ISO procurement procedures and, where possible and practical, in a manner that encourages competition.

Recovery of Long Term Adequacy Threshold Actions Costs

8(1) The ISO must, if it procures **long term adequacy** threshold actions, establish a methodology that results in the recovery of the costs of **long term adequacy** threshold actions.

(2) The ISO must institute a charge to load, primarily directed to the **pool participants** who consume energy during higher priced hours, which recovers the costs of **long term adequacy** threshold actions.

Revision History

Date	Description
<u>xxxx-xx-xx</u>	<u>Revised subsections 2 and 3 to reflect current outage definitions, generation from aggregated generating facilities, and generation that supplies behind-the-fence load; and administrative revisions.</u>

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2018-09-01	Revised references to “wind aggregated generating facilities” to “aggregated generating facilities”; replaced “wind” with “wind and solar generation”; administrative revisions.
2014-10-01	Amendment to the short term adequacy assessments calculation to include the ISO’s spinning reserve requirement.
2013-12-20	Initial release