13. LONG TERM ADEQUACY

13.1 Purpose of Rule

The purpose of this **rule** is to describe the means by which the **ISO** will monitor and report on the **LTA** of the Alberta electric energy market and if the analysis indicates a potential **LTA** issue may develop, the **rules** will indicate what steps the **ISO** may take to address the issue and how any costs for **ISO** action will be recovered.

13.2 Long Term Adequacy Metrics

13.2.1 Purpose of Rule

The purpose of this **rule** is to identify and describe the **LTA metrics** that will be created and published by the **ISO**. The **LTA metrics** are intended to provide information to stakeholders that will facilitate their assessments of **LTA**. The **LTA metrics** will also be used by the **ISO** to indicate if a potential **LTA** issue is developing.

13.2.2 Long Term Adequacy Metrics and Reporting

a) The **ISO** will establish, maintain and report on **LTA metrics** on a quarterly basis in accordance with this **rule** 13.2.2.

b) The **ISO** will make publicly available the following information:

i) 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. The metric will identify the following:

- generation projects under active construction, as determined by the **ISO**;
- generation projects which have received or have applied for government permits or approvals to proceed from the **EUB, AUC** or other Alberta agencies or which have an **interconnection** application before the **ISO**;
- generation projects which have been publicly announced and have an ongoing commitment to proceed, as determined by the **ISO**; and
- existing **generating assets** which are known to be retiring as indicated by the public announcements of the **owners** of such **assets** or by other publicly available sources of information.

The **ISO** may provide additional public project information as required regarding the magnitude of the impact of a project on **LTA** and may

identify potential impediments to the timely completion and interconnection of the projects if appropriate.

ii) A forecast reserve margin metric. The reserve margin metric calculation methodology will:

- be 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;
- utilize **ISO** load forecasts;
- utilize existing generation unit capacity information such as **maximum capability** and the new generation metric forecast capacity outlined in **rule** 13.2.2 b) i);
- adjust for "behind the fence" demand and generation capacity;
- exclude wind and adjust for hydro available at the time of system peak; and
- incorporate **interconnection** capacity.

The reserve margin metric will have a minimum five year forecast period and may reflect more than a single supply and demand scenario for the system.

iii) A supply cushion metric which provides a two-year forecast of available daily generation capacity and peak demand both measured in **MW**. The supply cushion metric calculation methodology will:

- incorporate generation unit capacity information such as the **maximum capability** of **generating units;**
- incorporate daily average planned **outages** and derates as reported by **pool participants** in their **outage** scheduling submissions as well as a nominal average **forced outage** rate;
- adjust for "behind the fence" demand and generation capacity;
- exclude wind and adjust for hydro available at the time of daily system peak;
- exclude **interconnection** capacity; and
- exclude existing generation that is contractually available but that does not participate in the energy market.

The supply cushion metric will illustrate the number, duration and magnitude of the forecast supply deficiencies on a deterministic basis. A

deficiency of supply to demand does not mean a **supply shortfall** exists as there may be other resources such as wind or imports available to meet demand. Any confidential information used in the metric is only shown in aggregate form.

iv) A two year probability of supply adequacy shortfall (2YRPSAS) metric which provides a probabilistic assessment of an **AIES supply shortfall** over the next two years. The 2YRPSAS metric calculation methodology will:

- utilize **ISO** load forecasts;
- utilize existing generation unit capacity information such as **maximum capability** and the new generation metric forecast capacity outlined in **rule** 13.2.2 b) i);
- incorporate hourly planned **outages** and derates as reported by **pool participants** in their **outage** scheduling submissions;
- incorporate **interconnection** capacity estimates;
- utilize a distribution of outcomes for the following inputs:
  - intermittent or energy limited resources (such as wind and hydro power)
  - cogeneration **asset's** net to grid production
  - **forced outages**

The 2YRPSAS metric provides information on potential energy **supply shortfall** events during the two year period in terms of expected number of hours of involuntary curtailments, largest expected energy **supply shortfall** hour in **MW**, and expected total **MWh** not served.

c) The **ISO** may establish other metrics deemed appropriate for the assessment of **LTA** in Alberta. The other metrics will not necessarily be added to the list in **rule** 13.2.2 b) or published in the quarterly report but would be used to assist the **ISO** in fulfilling its duties under this **rule** 13 and under the **EUA**.

d) The **ISO** will update the **LTA metric** methodology as appropriate. Without restricting the foregoing, the methodology will**:**

i) cover the key elements which directly or indirectly measure **LTA**;

ii) be relatively simple to understand and promote understanding of the energy market;

iii) to the extent possible, be based on publicly available and verifiable information; and

iv) provide an outlook on **LTA**.

13.3 Long Term Adequacy Threshold Determination and Use

13.3.1 Purpose of Rule

The purpose of the **rule** is to identify a **LTA threshold** based on the 2YRPSAS metric as per in **rule** 13.2.2 b) iv). The **LTA threshold** if exceeded will indicate that there is a potentially unacceptable likelihood of involuntary load curtailments in a subsequent two year period.

13.3.2 Long Term Adequacy Threshold Determination and Use

a) The **ISO** will establish a **LTA threshold** appropriate for the 2YRPSAS model as per in **rule** 13.2.2 b) iv). Initially, the **LTA threshold** will be an expected total of 1600 **MWh** not served in a two year period. The expected total **MWh** not served represents the cumulative total of **MW** of demand not served during each hour of all **supply shortfall** events modelled during the two year period.

b) Using the 2YRPSAS metric, the **ISO** will estimate on a quarterly basis the expected total **MWh** not served in a subsequent two year period. If the estimated total **MWh** not served exceeds the **LTA threshold** established at the time, the **ISO** will undertake further studies to verify the likely cause, magnitude and timing of the potential **adequacy** issue. If the **ISO** deems that the potential **adequacy** issue requires preventative action, the **ISO** may proceed to design and procure the **LTA threshold actions** in accordance with **rule** 13.4 or take other similar effective actions that may be available at that time.

c) The **ISO** will ensure that the **LTA threshold** is reviewed and appropriately updated when there are significant changes to the 2YRPSAS model as per in **rule** 13.2.2 b) iv). The **ISO** will also update the **LTA threshold** from time to time when there are significant changes to the system **MW** demand level, generation mix, **interconnection** capability or other major components of the system.

13.4 Long Term Adequacy Threshold Actions

13.4.1 Purpose of Rule

The purpose of the **rule** is to identify a set of **LTA** measures the **ISO** may choose to implement to remedy an actual or impending **LTA** issue, to provide criteria for the use of the **LTA** measures and to establish how any costs for **ISO** action will be recovered.

13.4.2 Long Term Adequacy Threshold Actions

a) In the event that the **LTA threshold** is exceeded as per **rule** 13.3.2 or the **ISO** deems that a potential **adequacy** issue requires preventative action, the **ISO** may procure the following three **LTA threshold actions**:

i) Load Shed Service - the **ISO** would contract with **pool participants** for the right to curtail load in certain circumstances and under specific terms and conditions.

ii) Self Supply and Back-Up Generation - the **ISO** would contract with the **owners** of self-supply and back-up **generating units** for the ability to call on such **generating units** to provide energy production to the system. The contracted **generating units** would normally only produce energy solely for use at the generation site, or would normally be available to provide back-up when there is an outage at the generation site and would not otherwise have been available to participate in the energy market.

iii) Emergency Portable Generation - the **ISO** would contract with the **owners** of emergency portable **generating units** for the ability to call on such **generating units** to provide energy production to the system. Emergency portable **generating units** are portable units that are not currently located in Alberta but which can be **interconnected** on short notice if a suitable site is available.

13.4.3 Procurement and Use of Long Term Adequacy Threshold Actions

a) The **ISO** will design and procure the **LTA threshold actions** using established **ISO** procurement procedures.

b) The **ISO** will use contracted **LTA threshold actions** service as part of **ISO Operating Policies and Procedures** to avoid involuntary curtailments.

c) Where possible and practical, the **ISO** will design the **LTA threshold actions** in a manner that will encourage competition between such **LTA threshold actions** to provide the required level of service.

d) **Generating unit** capacity that is under contract to provide **LTA threshold actions** service will not be eligible to offer energy into the energy market.

13.4.4 Recovery of Long Term Adequacy Threshold Actions Costs

a) If **LTA threshold actions** are procured by the **ISO**, the **ISO** will establish a methodology and institute a charge to load that will result in the recovery of the costs of **LTA threshold actions**.

b) The charge to load will be primarily directed to the **pool participants** who consume energy during higher priced hours as they are the ones who benefit from the **LTA threshold actions** being in place.