



AESO Recommendation Paper

Transmission Regulation Section 18

December 19, 2007

Transmission Regulation AR 86/2007 – Section 18 Rules Recommendation Paper

1.0 Executive Summary

Section 18 of Transmission Regulation AR 86/2007 requires that, by April 2008, the AESO make rules respecting directions it may give to generators that are not operating or scheduled to operate for any reason, as well as rules to implement a load curtailment priority plan in the event of a supply shortfall. Related context and guidance is found in the Department of Energy's (DOE) policy paper, "Alberta's Electricity Policy Framework: Competitive – Reliable – Sustainable" of June 6, 2005. The AESO's recommended approach to Outage Coordination, Reliability Unit Commitment and Load Curtailment is summarized in this recommendation paper. Generator directives related to the provision of ancillary services will be addressed separately and will take into account the discussions the AESO has had and the agreements that were reached with stakeholders pursuant to the Article 11 Negotiated Settlement Process.

Outage Coordination

Generators schedule outages guided by an AESO-facilitated process that provides the market a forward-looking view of total planned maintenance over an extended period of time. This approach is intended to allow outage schedules to be determined by market forces while ensuring AESO can continue to assess any conditions that may jeopardize an adequate source of supply. This section of the paper identifies criteria for providing information to the market so that generator owners have the time to respond to outage information and adjust outage plans to avoid a supply shortfall condition. Further, a process whereby the AESO directs generators to cancel or re-schedule outages is outlined in the event that generator owners do not respond to market information or direct communication from the AESO regarding potential supply shortfall conditions. Outage coordination rules apply in the timeframe that begins 24 months ahead and ends several hours before (determined by the start time of the affected generator) the delivery hour. The rules will describe fair compensation for eligible generators.

Reliability Unit Commitment (RUC)

The AESO's RUC rule recommendation relies on generator "intention to start"¹ information submitted to the AESO in response to market conditions including the AESO forecast of short term supply adequacy conditions. Should the AESO conclude that a supply shortfall is likely in the upcoming delivery hours, and that there are generators that are available but have not communicated their intention to start, the System Controller will direct the generator to start in accordance with the proposed Reliability Unit Commitment rules. This section of the paper describes associated timelines, actions and subsequent compensation provisions for eligible generators.

Directives for Ancillary Services

¹ These requirements are outlined in the ISO Rule 3.5.3.4 as implemented with the pending market changes.

Section 18 of the Regulation also provides authority for the AESO to direct units if required to provide ancillary services. The rules associated with this authority are already outlined in ISO Rules 6.5 and 6.7. While TMR directive compensation has been addressed through the Article 11 negotiations further discussion is required to address other ancillary services procurement and compensation. A separate process will be initiated to deal with these issues.

Load Curtailment

This section describes conditions that entail the curtailment of either distribution customers or large industrial and commercial customers. The AESO's current practices are generally aligned with direction given by the DOE, however, further discussion and analysis could result in a broader plan, that would encourage greater load participation in the energy market.

The AESO welcomes feedback on this paper and through the subsequent rule development process.

2.0 Introduction

On April 11, 2007 the Transmission Regulation (AR 86/2007) (the “Regulation”) was enacted. Among other things, it specifies certain rule making requirements of the AESO. This paper focuses on Section 18 of the Regulation which requires the AESO to make rules respecting directions it may give to generators as well as rules to implement a load curtailment priority plan. Specifically, this paper will address AESO recommendations pertaining to:

- Directions it may give to the owner of a generating unit that is not operating or scheduled to operate for any reason, including as a result of a planned or forced outage when it is required for reliable system operation; and
- Implementation of a load curtailment priority plan which, in the event of a generation supply shortfall or transmission issue, will provide for the interruption of service to customers in a priority ranking.

Guided by the direction provided in the Electricity Policy Framework of June 6, 2005, this paper describes options for addressing the requirements set out in Section 18 of the Regulation along with a recommended option for developing rules and Operating Policies and Procedures (OPPs). The alignment of the AESO rule recommendations with policy is outlined in section 5.

The AESO must make rules for these items no later than one year after the Regulation came into force, which is April 11, 2008². The normal rule process will be followed to meet the noted timeline and comments are welcome.

3. Recommendation regarding Generator Coordination

Section 18(1) of the Regulation provides direction with respect to the following scenarios:

- Generator Outage Scheduling – in event of forecast supply shortfall to ensure unit availability³
- Reliability Unit Commitment – advance energy dispatches to available long lead time generating assets.⁴
- Generator Directives for Ancillary Services (AS)⁵
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Each of these scenarios is discussed below.

3.1 Advanced Generator Outage Scheduling (18(1))

The AESO interprets section 18(1) to require rules to be developed respecting outage coordination of generating units. The timeline under consideration for outage coordination is 24 months from delivery, consistent with generator outage forecasting

² Transmission regulation AR 86/2007 s18(1) and (2)

³ Transmission regulation AR 86/2007 s18(1)

⁴ Transmission regulation AR 86/2007 s18(1)b

⁵ Transmission regulation AR 86/2007 s18(1)a

obligations, up to the delivery hour or the lead time of an individual generating asset if the asset has a lead time greater than one hour. Subsections (a) and (b) of 18(1) clarify under what conditions the AESO may give directions to owners of a generator that would affect their outage plans.

While it is not the intent or mandate of the AESO to centrally plan generator outages and owners of generators are expected to manage their own outage scheduling, the AESO must be conscious of supply shortfall conditions that jeopardize the reliability of the electrical system and accordingly prepare operating plans to mitigate this risk.⁶ With sufficient notice, it is expected that market forces will dictate unit outage schedules and that generators will naturally move outages in response to changing market opportunities should time and crew scheduling allow. That is, generator owners may have time to respond to forecast supply shortfall conditions reflected in forward market signals and adjust their outage plans to be available during scarce supply periods.

To the extent the market does not respond to outage information that indicates a forecast supply shortfall condition, either in the planning phase or in response to a forced outage, the AESO proposes an escalation procedure to ensure the potential supply shortfall can be avoided. The purpose of the escalation procedure would be to ensure that market participants are aware of a potential shortfall situation so that they may take mitigative steps without being directed by the AESO. In the unlikely event that participants do not take action on their own, the AESO will direct them to cancel or re-schedule outages in order to avoid a supply shortfall situation. Steps are taken at these early stages to ensure that sufficient generation is made available from the existing fleet to participate in the market to avoid short term adequacy problems.

The proposed procedure would follow this ordered sequence skipping ineffective steps if there is insufficient time for response:

1. In the forward planning timeline (up to 24 months), the AESO will assess planned outage volumes.
2. If the outage volume exceeds an acceptable threshold during any period, the AESO will notify market participants via the AESO web page. An “acceptable threshold” will be defined as ensuring an acceptable residual supply cushion. The AESO proposes to use the design principle defined in the Electric Policy Framework which states, “to ensure system reliability supply offered to the market should be sufficient to meet forecast load requirements plus reserves, plus the single largest contingency”⁷. This approach is intended to cover derates and outages that may occur closer to real-time.
3. Normally, the outage information will be posted for one week before the AESO takes any action, however, if outage schedules change within three months or less of the delivery hour, the noted process may be expedited and an outage

⁶ Alberta’s Electric Policy Framework: Competitive-Reliable-Sustainable; June 2005; Section 4.2.1(7) page 25

⁷ Alberta’s Electricity Policy Framework: Competitive-Reliable-Sustainable, June 6, 2005; Section 4.2, Page 20

may be immediately cancelled to ensure there are sufficient resources made available to the market.

4. If the market information has been posted for the designated time and the outage volume has not been reduced to a point where there is sufficient residual supply cushion as defined above, the AESO will contact all designated generator owner personnel scheduled to be on outage or derate for the period in question and request that they review their plans and make efforts to re-schedule.
5. If the notification process does not result in a reduction of the outage volume to ensure an acceptable residual supply cushion, communication will escalate to the AESO VP Operations & Reliability in consultation with VP Market Services. Based on their assessment, the AESO may direct the owner of a generating unit to cancel or reschedule an outage and therefore operate in order to maintain adequate system supply.

Although not specified in the Regulation, the AESO proposes that the rules will describe fair compensation for generating units affected by the directives described above⁸. It is expected that the generator owner will have some ability in an advanced timeframe to move an outage schedule without incurring costs. Should moving an outage due to an AESO directive create costs associated with scheduling crews or material, or demonstrable contract costs, the AESO will review these “keep-whole” costs and the generator will be compensated accordingly. Lost opportunity due to change in market operation timelines and contribution to fixed costs will not be deemed acceptable costs and accordingly will not be compensated.

Notification of directives to participants to change their outage schedule will be forwarded to the Market Surveillance Administrator (MSA) for their consideration.

3.2 Reliability Unit Commitment (RUC)

The Regulation requires the AESO to make rules respecting directions it may give to generators that are not operating or scheduled to operate. The distinction between outage scheduling and reliability unit commitment is that the former applies to a asset that is expected to be off for an outage and is not available to the market; whereas the latter applies to a asset that is not scheduled near to the delivery hour but may be available to the market. This would typically apply to assets that have lead times greater than one hour and whose energy does not show up in the merit order unless they have indicated that they are going to start. Directives may be given to start an available unit or “commit a unit” for adequacy purposes, commonly known as “Reliability Unit Commitment” or “RUC”. The AESO has these authorities and rules today. This section outlines how the current rules will be amended with respect to Must Offer Must Comply obligations impacting long lead time assets.

Throughout this section the term “advance dispatch” is used and is considered synonymous with the term “directive” as it applies to the energy market. The Regulation

⁸ Electric Utilities Act S32(b) The ISO must “pay incremental generation costs that are owing to the owner of a generating unit if the (ISO) directs that a generating unit must continue to operate ...”

uses the term directive, however, under Must Offer Must Comply rules there is no distinction.

The Regulation specifies the conditions under which the AESO would direct generating units⁹. Section 18(1) (b) of the regulation specifies that the rules will apply to situations where there is an “immediate or unexpected need on a short term basis for services provided by a generating unit to maintain a level of generation supply that provides Albertans with a level of service that is safe, adequate and reliable”. In a Must Offer Must Comply market, units must make start decisions consistent with AESO forecasts of market conditions thereby minimizing the requirement for the AESO to commit a unit. The need for RUC only exists should the unit owner/operator not start when the supply adequacy information indicates that it is required by the system. This is discussed further below.

For implementation purposes, the rules need to define a *level* of supply that provides for safe, adequate and reliable operation of the system. Consistent with the Electric Policy Framework short term adequacy design principle the AESO proposes that supply offered should be sufficient to meet forecast load plus reserves¹⁰. While this amount is less than that described in the policy design principle and is also less than the threshold described earlier in section 3.1 Advanced Outage Scheduling, the AESO sees this as appropriate given the proximity to real time and the increased accuracy in forecasting supply and demand during that timeframe.

These RUC rules are intended to apply to generators that are not immediately dispatchable, i.e., they have start-up lead times greater than one hour or are unable to provide their full output to the market in less than one hour.

In order to efficiently commit units for adequacy purposes, and to avoid committing units that were planning to participate in the energy market, the AESO requires visibility of the physical characteristics of a generator and information on the generators’ intention to start before initiating start-up. Generators must show they are eligible to be compensated for RUC based on their unit start-up lead time. To ensure the AESO obtains the required information, the existing ISO rules will apply:

- Rule 3.5.3.4 which requires Pool Participants to submit operating constraints information for each generation asset, including the Initial Start-up time (hr).
- Rule 6.3.5 which applies to long lead time energy dispatches and requires Pool Participants with generating assets that have a lead time one hour or greater to declare to the AESO the time of day at which they intend to be synchronized to the AIES. Given the Must Offer, Must Comply rules, it is expected that participants with long lead assets will indicate their intention to start when market

⁹ Transmission Regulation AR 86/2007 s18(1)

¹⁰ Alberta’s Electric Policy Framework: Competitive-Reliable-Sustainable; June 6, 2005; Section 4.2 page 20

signals indicate that the residual supply is tight and their asset may be required for adequacy.

- Rule 3.5.3.1 requires that the available capacity is stated for each source asset.

If a unit has not submitted an initial start up intention prior to the lead time for their asset, and does not intend to start (as indicated in the price/quantity offers submitted for must offer/must comply provisions¹¹), the AESO may advance dispatch the unit to start¹². The Must Offer Must Comply rules require that any time a unit is given an advanced dispatch reflecting their start up limitations; the unit must start and make the volumes fully available during the delivery timeline. Given that the AESO is responsible for system adequacy, the system controller will advance dispatch any unit that fails to start on its own and is forecasted to be required to meet demand.

Should an advance dispatch not occur (and the unit did not start on their own), and system conditions change within the lead time constraint, e.g., T-4 hours, the AESO may still advance dispatch a unit to start. All approved rules related to Must Offer Must Comply, T-2, and payments to suppliers on the margin will apply.

While an advance dispatch may be required because the generator has a different view of the market than the System Controller, an advance dispatch is still considered “in-market” in that the market will be operational and the prices will reflect the market conditions. The System Controller will base the decision to advance dispatch the long lead time units on the volume required to meet the demand and price will not be a determining factor. Given that advanced dispatch is expected to be for in merit energy for the upcoming delivery hours, it is expected that a generator will normally be able to recover start-up costs from the market as the supply conditions in such an event would be reflected in high Pool Prices.

The AESO seeks input on two options for compensating long lead time assets that have received an advance dispatch:

1. The in merit receipts are sufficient for assets that have received an advance dispatch. Once the assets have been dispatched, costs are expected to be managed through energy market offers and compensation will be calculated the same as for a unit that did not receive an advance dispatch. This option offers no incentives for the unit to remain out of the market and wait for an advance dispatch and the participant with the long lead time asset receives no advantage over other participants.
2. A second option is to offer a keep whole payment such that if a long lead time asset receives an advanced energy market dispatch and the all in variable costs submitted in advance are not recovered over the entire run time, the AESO could

¹¹ ISO Rule 3.5.3.1 ISO Rules Effective December 3, 2007

¹² Alberta's Electricity Policy Framework: Competitive-Reliable-Sustainable, June 6, 2005, Section 4.2.1 (2) pg 23 of 51

make a keep whole compensation payment. The keep whole compensation would include consideration for start up, minimum stable generation and minimum run costs. To ensure that an generator owner does not simply wait for an advance dispatch offer control rules would be required that might include offering minimum stable volumes at variable costs and offering the balance of plant at the price cap.

To implement the second option, information is required from all long lead time assets regarding their variable costs such as, variable cost information related to start up and minimum run operations. The details regarding the type of information would be included as part of the ISO Rules developed for this option. The specific generator information would be kept confidential by the AESO

The AESO seeks participant feedback on these options and welcomes any additional options that participants would like to have considered.

3.3 Directives for Ancillary Services (18(1)(a))

In section 18(1)(a) of the Regulation, the AESO is given authority to direct units during abnormal conditions for the provision of ancillary services as required. The rules associated with this authority are already outlined in ISO Rule 6.7 wherein the system controller “will issue directives to market participants as required to prevent a threat to system security or to return the AES to a safe and reliable state.”

Recently the AESO arrived at a negotiated settlement with stakeholders regarding Article 11 of the AESO’s tariff. Article 11 outlines compensation for conscripted ancillary service providers. The AESO at this time is waiting to hear from the AEUB on their decision regarding this negotiated settlement. As part of this settlement agreement the AESO committed to engaging stakeholders in 2008 in developing an ISO Rule around the procurement process of ancillary services. Also, a commitment was made by the AESO to review offering greater transparency around ancillary service dispatches and directives. These discussions will take place through a separate process.

4.0 Load Curtailment Priority Plan

Section 18(2) of the Regulation requires the AESO to “make rules to implement a load curtailment priority plan which, in the event of a generation supply shortfall, will provide for the interruption of service to customers in a priority ranking.” The Electricity Policy Framework stipulates “In the event of a capacity shortage, which is sufficiently severe to require involuntary load curtailment, large industrial and commercial consumers should be the first to be interrupted¹³.” Further the policy indicates that “these groups maintain that the existing market design is generally successful; recognizing that these groups

¹³ Alberta’s Electricity Policy Framework: Competitive – Reliable – Sustainable, June 6, 2005, Section 4.3.3, page 33 of 51

have been the principle beneficiaries of restructuring so far, it is appropriate that they bear the principle risks associated with any market failure¹⁴.”

The current load curtailment priority plan, described within AESO’s OPP’s includes that the AESO will direct the Distribution Facility Owner (DFO) to shed load within 10 minutes¹⁵. Considering the short amount of time required to respond to a directive, the DFO will shed load that will have the greatest impact in helping to stabilize the system in the shortest amount of time, which usually results in shedding load at certain substations that primarily impacts large industrials or commercial consumers but also impacts distribution connected residential customers.

Upon further clarity/direction from the DOE, the AESO’s understanding is as follows:

In the event of a transmission constraint that usually occurs in real time and requires immediate action, the System Controller will direct the curtailment of load that would result in the most immediate and effective response in helping to alleviate the transmission constraint and stabilize the system. .

At present the AESO has various load curtailment plans reflected in OPP 801 Supply Shortfall, such as detailed firm load curtailment plans with discos, the voluntary load curtailment plan and the curtailment of opportunity loads such as DOS loads. While this approach has been successful, it is noted that there are some synergies from the implementation of the DOE policy including greater participation of loads in the market and the opportunity for load related products and services including Load Shed Service (LSS), or provision of Interruptible Load Remedial Action Scheme (ILRAS).

The AESO proposes to immediately pursue consultations with transmission connected loads, industrial and large commercial loads and distribution companies to develop a plan to curtail industrial and large commercial loads in line with the direction set out in the Electricity Policy Framework. The consultation would explore:

- The amount of loadshed required,
- The amount of loadshed required by each industrial or large commercial load,
- The automation and infrastructure that would be required and
- The timeline for implementation of the plan
- Examination of alternative design structures (like Dispatch Down Service) to achieve similar objectives.

5.0 Policy Coherence: Section 18 Requirements

Section 18 of the Regulation is very specific on the matters noted and provides the AESO the authorities required for these rule recommendations. Section 18(1) of Transmission Regulation AR 86/2007 states specific rule making requirements respecting directions given to generators:

¹⁴ Alberta’s Electricity Policy Framework: Competitive – Reliable – Sustainable, June 6, 2005, Section 4.3.3, page 33 of 51

¹⁵ ISO Operating Policies and Procedures (OPP) 801 & 802

18(1) In exercising its duties under section 17(h) of the Act, the ISO must, not later than one year after this Regulation comes into force, make rules respecting directions it may give to the owner of a generating unit that is not operating or scheduled to operate for any reason, including as a result of a planned or forced outage, requiring that the generating unit operate, exchange electric energy or provide ancillary services, or be made available to operate, exchange electric energy or provide ancillary services,

- (a) during abnormal operating conditions, including conditions where transmission facilities are out of service due to an emergency, an urgent need for transmission facility maintenance arises that cannot be coordinated with generating unit outages or another emergency exists, or*
- (b) if the ISO determines that there is an immediate or unexpected need on a short term basis for services provided by a generating unit to maintain a level of generation supply that provides Albertans with a level of service that is safe, adequate and reliable.*

Further requirements are set out in section 18(2) with respect to load curtailment:

(2) In exercising its duties under section 17(h) of the Act, the ISO must, not later than one year after this Regulation comes into force, make rules to implement a load curtailment priority plan which, in the event of a generation supply shortfall, will provide for the interruption of service to customers in a priority ranking.

Section 18(2) requires rules for a load curtailment priority plan. These are rules that would specify types of load that would be required to be curtailed during a supply shortfall event.

Additionally, the market policy work provided consistent direction on these matters as noted:

Section 4.2.1(7) of the Electricity Policy Framework sets guidelines for determining the rules required by section 18 of the regulation. *The Department recommends generators manage their own outage scheduling until the amount of supply scheduled off-line exceeds a pre-determined level. At that point the ISO would use predetermined criteria to coordinate generation outages. To the extent there are costs incurred as a result of the ISO restricting or rescheduling an outage, the ISO and the affected generation owner shall negotiate in good faith regarding the payment of such costs. The generation owner shall also, in good faith, minimize such costs to the extent possible.*

Section 4.3.3 of the Electricity Policy Framework provides direction on Load Curtailment priority protocols. The DOE Policy Framework stipulates the following: *In the event of a capacity shortage, which is sufficiently severe to require involuntary load curtailment, large industrial and commercial consumers should be first to be interrupted.*

Further, section 4.3.4, Recommendations states *...establish a load curtailment priority plan which, in the event of supply shortfalls, would allow for the interruption of supply to*

industrial and large commercial customers, and not allow supply interruptions to residential customers.

These sections along with the overall duties and authority of the ISO as per the Electric Utilities Act (EUA) indicate that the ISO's recommendations are consistent with policies.

6.0 Implementation

The AESO has worked with the DOE to ensure that the interpretation of the relevant policies is accurate and reasonable. The AESO welcomes feedback on the recommendations and outstanding design considerations outlined in this paper. Feedback is welcome on both the interpretation and the recommended rules.

To implement these rules, the AESO will follow the normal rule process. It is expected relevant OPPs will be updated to reflect dispatch and direction provisions, and ISO Rules will be drafted to include eligibility for compensation as discussed within the paper. Feedback on this paper is welcome before January 16, 2008. Rules are targeted, depending on participant comments on this paper, to be drafted and posted by January 28, 2008 and feedback will be welcomed at that stage as well.