



AESO Recommendation Paper

Rule 6.6 Review

October 30, 2008

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1. Introduction

ISO Rule 6.6, Pool Participant Non-Compliance with Energy Market Dispatch and Directives (the “Rule”) establishes expectations and an allowable dispatch variance for Pool Participants supplying energy to the energy market. The Rule, in its present state, has been questioned by market participants and stakeholders in light of the new legislation that came into force on January 1, 2008, being the Alberta Utilities Commission Act (“AUC Act”) as well as certain consequential changes to the Electric Utilities Act (“EUA”).

Among other things, this legislation transferred ISO Rule enforcement function to the Market Surveillance Administrator (MSA) and enabled the creation of AUC Rule 019 i.e. the ‘penalty matrix’, which specifies the penalties that may be imposed on market participants for the contravention of ISO Rules. The new legislation requires the AESO to refer suspected¹ non-compliance events to the MSA, and as such the AESO will continue to monitor compliance. The MSA, however, has the authority to determine what the appropriate action may be (including applicable sanctions) in the event of non-compliance.

The Rule was originally established in the context that the AESO would be able to exercise discretion and consider operational, logistical, and environmental factors in the assessment of an event of non-compliance. Stakeholders argue that where those considerations are now not permitted, the Rule is now technically deficient and unreasonable.

The AESO has initiated a process to examine revisions to the Rule, and this discussion paper summarizes the discussions and recommendations to date.

Additionally, three complaints have been made to the AUC pursuant to Section 25 of the EUA regarding the Rule (“Complaints”). The AUC commenced Proceeding ID 65 on June 9, 2008, to deal with the Complaints.

2. Background

The AESO has heard from stakeholders that the Rule does not promote a fair, efficient and openly competitive (or “FEOC”) market and is technically deficient. The AESO has considered comments received from stakeholders, including the Complaints. A stakeholder session was held on June 24, 2008 to gain a better understanding of stakeholder concerns and to explore possible solutions.

In addition to providing an overview of the current compliance monitoring process this paper attempts to balance the concerns and suggestions offered by stakeholders and the AESO’s concerns for reliability and market issues related to the Rule. Recommendations for amending the Rule are offered for the consideration of stakeholders.

¹ Electric Utilities Act section 21.1

2.1 Rule History

The Rule establishes expectations and allowable dispatch variance for pool participants supplying energy to the energy market. A pool participant may only supply energy if it has received either an energy market dispatch or a directive. ISO Rule 3.5 requires that pool participants submit valid offers and must be prepared to comply with the dispatches associated with those offers.

Originally made effective December 7, 2004, the Rule allows a dispatch variance of ± 5 MW, which was reduced from the previously allowed dispatch variance of +10 MW or +10% of a given unit's Maximum Capability Rating. This change to the Rule was identified earlier that year by the Short Term Adequacy sub-committee that was established as part of the Wholesale Market Policy Review. The Department of Energy, the AESO and a number of market participants were represented on the sub-committee. The normal ISO Rules stakeholder consultation process was employed and topics discussed included the dispatching of units on the margin, price chasing and the price signal. The 10 MW or 10% rule was seen as a contributor to problems related to these items and tighter dispatch tolerance was viewed as desirable from both a market and a system operation perspective.

Some stakeholders, particularly the generators on the margin, would have preferred the allowable dispatch variance to be even further reduced in order to ensure that they would not be bumped off the margin by generators using the allowable variance to generate more energy than their dispatch level during higher price periods. Dispatch variance of no more than 2 MW or 2% was suggested.

Other stakeholders argued that the existing allowable dispatch variance levels were too tight given the type and size of the generation fleet in Alberta and that the rule did not sufficiently take into account issues such as the Power Purchase Arrangements ("PPA") that affect many participants.

2.2 The Compliance Monitoring Process

The Rule has been in place for approximately four years; however, starting in January 2008 and in accordance with ISO Rule 12 the AESO determines which ISO Rules it suspects have been violated and the suspected violations are referred to the MSA as required by legislation.

ISO Rule 12 establishes the principles and guidelines for this compliance monitoring. In making this determination, the AESO will gather information by analyzing available data or data received via information requests to the appropriate market participants.

As noted in the process outlined below, the AESO continues to assess relevant circumstances in its evaluation of possible non-compliance events and only refers events it "suspects" are non-compliant to the MSA. The overview of the compliance monitoring process with reference to ISO Rule 12 is as follows:

1. AESO actively monitors compliance events and flags specific events for further review. This is done on a monthly basis, based on pre-set criteria. Events are also referred to the AESO Compliance Monitoring group by the MSA, System Controller (“SC”) and other groups within the AESO.
2. The AESO reviews the specific events and identifies any relevant contributing factors such as problems with data reliability, AESO systems problems or unit operational problems. The AESO also takes into account reasonable communication delays and ramping characteristics for each unit. By validating events with any Mitigating Factors as stated in ISO Rule 12.6.5, as well as with any relevant contributing factors the compliance monitoring group selects events of interest for further investigation.
3. All identified events of interest are discussed with the MSA at a regular monthly meeting. One of the results of this discussion is a priority ranking of the events of interest identified by the AESO.
4. High priority cases identified in step 3 are then assessed in a preliminary manner by the AESO. All other events of interests are not pursued further. Through an information request the AESO may request additional information from the relevant market participant to carry out this assessment.
5. On completion of the preliminary assessment of the high priority events of interest, the AESO will determine, as required by the legislation, if it suspects that an ISO Rule has been contravened. If not, then the AESO will notify the participant that no further action will be taken.
6. If the AESO “suspects” that an ISO Rule has been contravened, the AESO must refer the matter to the MSA. As part of this process the AESO will discuss the event in detail with the MSA
7. The MSA is given statutory authority over the enforcement process for all suspected contraventions of ISO Rules, including the imposition of a specified penalty, where applicable.

2.3 Rationale for Changing the Rule

The new legislation places an obligation on the AESO to refer suspected non-compliance events to the MSA. As well, the change in roles and responsibilities has prompted stakeholders to request a review of the Rule since it may be applied differently under this new regime, in which the MSA has the authority to apply discretion and forebear on any non-compliance event.

As the Rule was originally established on the premise that the AESO would exercise discretion and consider operational, logistical, and environmental factors in the assessment of an event, stakeholders argue that where those considerations are no longer permitted, the Rule is technically deficient and unreasonable and must be revised. At the

same time, however, the Rule must continue to be enforced in order for the energy market to operate.

As noted in section 2.2 above, the AESO compliance monitoring practices have been in place for some time. However, the AESO believes that additional definition and clarity would benefit participants and the market in the long run and intends to incorporate the sort of discretionary considerations used in the past in a revised Rule 6.6. It is not expected or intended that the underlying purpose of the rule will be changed.

The recommendations for change set out below also include technical changes that the AESO believes are appropriate in light of the change in enforcement regime and the views of stakeholders.

The AESO proposes that the amended Rule should clearly set out the discretion that is available to the AESO when monitoring dispatch variances. This discretion will factor into the AESO's determination of whether a contravention of the Rule is suspected, this requiring that the matter be referred to the MSA in accordance with section 21.1 of the EUA.

The proposals are intended to preserve or improve a FEOC market and a reliable system while respecting practical limitations of generating assets.

2.4. Issue Identification

Three market participants, EPCOR, TransCanada and TransAlta, have submitted formal complaints to the AUC about the current Rule. Please refer to the AUC website for each participant's complaint as submitted. In summary, the issues raised in the complaints are:

- The Rule, as constructed does not take into account the separation of the PPA buyer and the PPA owner and this results in compliance obligations beyond the control of the pool participant,
- The ± 5 MW dispatch variance allowed under the Rule is too onerous,
- The Rule does not incorporate the time required to communicate or evaluate a dispatch instruction,
- The Rule does not incorporate the time required to ramp a generation unit,
- The Rule does not allow for the normal fluctuations in output from generation units,
- System conditions require governor action that would put units out of compliance during frequency excursions,
- The Rule does not recognize the operational challenges present when ramping from 0 MW to minimum stable output.

These issues were discussed at the AESO's June 24, 2008 stakeholder session. Since that time further informal discussion have taken place with several stakeholders.

In addition to proposals to address issues raised by stakeholders, the AESO has identified other amendments to the Rule that it believes to be necessary. These changes are:

- A generating asset requires time to position itself in order to provide operating reserves,
- There should be a greater onus on pool participants to comply with small volume offers that are less than the acceptable dispatch variance.

3. Rule Revision Recommendations

The Rule establishes, and will continue to establish, expectations and allowable dispatch variance for pool participants supplying energy to the energy market. A pool participant may only supply energy if it has received either an energy market dispatch or a directive. It is expected that pool participants who submit offers in accordance with Rule 3.5 are submitting valid offers and are prepared to comply with the dispatches associated with those offers.

The following high level considerations underlie the Rule:

- Intentional deviation from dispatch levels as well as dispatch variance as a result of a lack of due diligence must be discouraged.
- At the same time, the practical limitations of the generating units must be taken into account and unreasonable expectations should not be placed on participants or their assets.
- Appropriate tolerances are required in the Rule to help ensure market integrity and a reliable electric system.

The following sections identify and discuss issues raised and conclude with the AESO's recommendation.

3.1 Pool participants are responsible for compliance with the ISO Rules.

This issue as presented by some stakeholders is specifically related to the Power Purchase Agreements (PPA). A party, when applying to become a pool participant, agrees to be bound by ISO Rules.² There is no such agreement with PPA owners or counterparties to other arrangements that pool participants may have. Therefore, it is appropriate that pool participants are held accountable for the assets in respect of which they have energy rights and are associated with by registering with the AESO as a pool participant. The AESO should not be required to look beyond the Pool Participant Agreement³ to determine the obligations of parties.

The Rule, therefore, properly places the compliance obligations on the PPA buyer, as the pool participant. The Rule does not attempt to address commercial arrangements between parties with respect to the operation of generating assets. Since the AESO is not

² ISO Market Participation Rules 1.1c)

³ ISO Market Participation Rules Appendix 2 – Pool Participant Agreement

a party to these agreements and is not mandated to regulate or participate in these agreements, the current rules approach is appropriate.

This reasoning also applies to other situations where agents are involved on behalf of the pool participant.

Recommendation: Rule 6.6 should continue to directly apply to the pool participant notwithstanding any other contractual arrangements. Commercial arrangements that such pool participants may have with third parties should not be dealt with directly in the ISO Rules. This approach is consistent throughout the ISO Rules and is the fairest approach in that it puts all pool participants on the same footing.

3.2 The ± 5 MW allowable dispatch variance should be increased for units operating at their dispatch level.

Participants have pointed out that, in their view, the ± 5 MW allowable dispatch variance is unreasonable and that it is similarly unreasonable to expect a large generator to adhere to the same dispatch variance requirements as a small generator.

The MSA has observed that, "...[t]here are generators who routinely generate very close to the limit of compliance – if they can control the output that closely, they should be encouraged to be closer to the actual dispatch level."⁴

The AESO is also concerned that inappropriately increasing the allowable dispatch variance would erode market integrity; in the case of over-generation, by pushing marginal units off the margin and lowering pool price, and in the case of under-generation, by not providing the offered volume and elevating pool price, both of which effectively undermine the intent of the rule change of December 2004.

A tight allowable dispatch variance aligns with reliability standards. Control Performance Standard 2 (CPS2), which requires a balancing authority to maintain their intertie schedules within certain tolerances, is better managed if generators comply closely with their dispatch. The Transmission Reliability Margin (TRM) on the interties can also be minimized allowing more room for imports and exports. In short, it makes for more efficient and reliable operation of the system.

Participants have suggested that "considerable tuning and tightening is required" for a large generating asset to operate within the ± 5 MW limit. It seems appropriate that the allowable dispatch variance should encourage good tuning and maintenance of generators, their controls and metering.

The AESO has undertaken a study of dispatchable units in Alberta. Excluded from the study are any non-dispatchable assets such as wind and generators that have a different meter point for dispatch and energy. The study looked at meter volumes compared to dispatch levels for the period November 1, 2007 through July 31, 2008, a period of nine

⁴ MSA Report Dispatch Compliance, March 18, 2004

months. Specific data is not shown here for confidentiality reasons. Also not included in the study were:

1. Any hours where an asset received an energy dispatch. This is done to remove any effect of ramping.
2. Any hours where an asset is dispatched for TMR. This is done because the dispatched energy may be 0 MW and the actual output of the unit may be > 0 MW due to a TMR dispatch.
3. Any hours where an asset was dispatched to provide regulating reserve. This is done to remove any effects that AGC would have.

This leaves only hours where the unit was running at a steady state in the energy market

There are hours included in the study where the unit continued to ramp in response to a dispatch received in the preceding hour. This occurs when energy dispatches are issued near the top of hour in order to balance demand or ancillary services and is a source of error that would indicate non-compliance when in fact the generator was ramping in compliance with a dispatch.

The study included a review of generating assets of all sizes together as well as generating assets 0 to 100 MW, 100 to 200 MW and greater than 200 MW. The results are shown in figures 1 through 4 respectively.

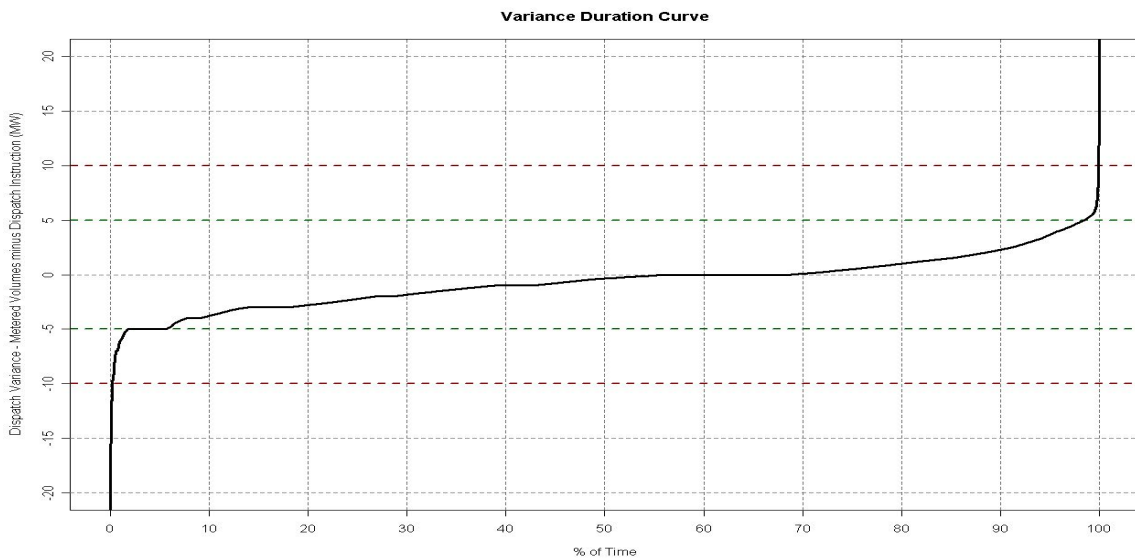


Figure 1

The underlying assumption is that most participants have tried to comply or have complied with the dispatches and that with the volume of dispatches included in the study the outcome should give a reasonable indication of how capable generators are of complying within a ± 5 MW allowable dispatch tolerance. None of the graphs are conclusive on their own.

Figure 1 shows the results from all the units in the study and indicates that approximately 2% of the time generators produce over the dispatch level by greater than 5 MW and approximately 3% of the time they generate under their dispatch level by greater than 5MW. It also shows a definite plateau at 5 MW under the dispatch level.

Figure 1 supports the proposition that there is strong compliance capability within a ± 5 MW acceptable dispatch variance.

Figure 2 compares the size of units and the fuel type. Looking at the ± 5 MW tolerance statistics at the top of the table we see:

- Smaller coal and cogeneration units appear to comply better than larger ones.
- Interestingly, the larger gas units appear to comply better than the smaller gas units

This difference is greatly diminished when we move to the ± 10 MW tolerance statistics in the bottom part of the table. This suggests that smaller units, at least gas and cogen, might be more capable of remaining within the ± 5 MW allowable dispatch tolerance and that larger units would benefit from a ± 10 MW available dispatch tolerance

Figure 3 compares age and size of generating assets.

± 5 MW						
		Asset Size				
		< 100 MW	< 200 MW	> 200 MW	Total	Hours
Fuel Type	Coal		98.33%	97.18%	97.39%	91,345
	Cogen	94.38%	90.07%		93.55%	30,042
	Gas	95.85%	98.39%		96.17%	50,503
	Hydro	99.79%	100.00%	99.40%	99.71%	12,211
Total		95.85%	96.73%	97.26%	96.58%	184,101
Count		77,330	29,549	77,222	184,101	
± 10 MW						
		Asset Size				
		< 100 MW	< 200 MW	> 200 MW	Total	Hours
Fuel Type	Coal		99.67%	99.64%	99.64%	91,345
	Cogen	99.61%	96.64%		99.03%	30,042
	Gas	99.88%	99.84%		99.87%	50,503
	Hydro	99.96%	100.00%	99.68%	99.89%	12,211
Total		99.80%	99.11%	99.64%	99.62%	184,101
Count		77,330	29,549	77,222	184,101	

Figure 2- Fuel Type versus Asset Size

Here we see:

- That the larger the pre-1990 units the less they have complied but in the new units, age is not such a factor.
- Again increasing the tolerance from 5 to 10 MW, for the most part, negates these differences.

± 5 MW						
		Asset Size			Total	Hours
		< 100 MW	< 200 MW	> 200 MW		
Asset Age	pre 1990	99.98%	98.36%	96.94%	97.43%	82,198
	1990-2000	94.36%		98.34%	95.92%	23,419
	post 2000	95.85%	94.43%	98.77%	95.85%	72,129
Total		95.85%	96.73%	97.26%	96.58%	177,809
Count		74,122	28,583	75,104	177,089	
± 10 MW						
		Asset Size			Total	Count
		< 100 MW	< 200 MW	> 200 MW		
Asset Age	pre 1990	99.98%	99.68%	99.62%	99.66%	84,078
	1990-2000	99.41%		99.72%	99.53%	24,300
	post 2000	99.88%	98.32%	99.67%	99.61%	75,027
Total		99.80%	99.11%	99.64%	99.62%	183,405
Count		77,176	29,287	76,942	183,405	

Figure 3 – Asset Size versus Asset Age

In figure 4 we have a comparison of each unit’s compliance within various tolerance levels.

This chart shows reasonable ability to operate within the ± 5 MW tolerance level but also shows that most units respond within a ± 9 MW of dispatch level.

The AESO’s analysis of the above data suggests that there may be correlation between the age and the ability of a unit to comply with a dispatch.

Operation with respect to fuel type seems to vary.

There is some correlation between the operation and unit size although this does not hold for co-gens. This could be due to a smaller sample available for co-gens during the period of the analysis.

It is evident, however, that increasing the acceptable dispatch variance from ± 5 to ± 10 MW smoothes out the differences and reflects current operations.

Figure 4 suggests that ± 9 MW would see almost all units 99% compliant during the test period.

Tolerance Level (MW) vs Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Number in Analysis
A	37.8%	51.4%	64.4%	76.9%	87.0%	92.8%	94.1%	95.4%	96.3%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	6,382
B	9.1%	10.4%	19.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	453
C	35.4%	60.5%	72.8%	85.9%	96.1%	98.8%	99.9%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	6,078
D	71.5%	84.3%	90.9%	95.6%	98.3%	99.7%	99.9%	99.9%	99.9%	99.9%	99.9%	99.9%	99.9%	99.9%	99.9%	5,245
E	80.1%	96.8%	98.8%	99.7%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	342
F	47.4%	76.1%	90.3%	95.9%	99.3%	99.7%	99.8%	99.8%	99.8%	99.9%	99.9%	99.9%	100.0%	100.0%	100.0%	1,232
G	36.0%	71.4%	89.1%	95.4%	97.8%	98.6%	99.0%	99.2%	99.3%	99.4%	99.5%	99.6%	99.6%	99.7%	99.7%	5,419
H	58.3%	86.0%	94.5%	97.5%	98.6%	99.2%	99.4%	99.7%	99.8%	99.8%	99.8%	99.8%	99.8%	99.8%	99.9%	5,830
I	57.2%	82.8%	91.2%	94.7%	96.7%	98.2%	98.8%	99.1%	99.3%	99.4%	99.5%	99.6%	99.6%	99.6%	99.6%	4,665
J	97.9%	98.1%	98.4%	99.1%	99.5%	99.5%	99.5%	99.5%	99.5%	99.5%	99.6%	99.6%	99.6%	99.6%	99.6%	1,607
K	3.6%	5.2%	6.3%	9.9%	22.1%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	5,774
L	22.2%	33.8%	40.9%	83.2%	98.0%	99.5%	99.8%	99.8%	99.9%	99.9%	99.9%	99.9%	99.9%	99.9%	100.0%	2,663
M	44.9%	74.1%	91.1%	97.6%	99.4%	99.7%	99.7%	99.8%	99.8%	99.9%	99.9%	99.9%	99.9%	99.9%	99.9%	6,078
N	35.7%	62.9%	85.7%	95.7%	99.1%	99.7%	99.9%	99.9%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	6,060
O	46.8%	72.9%	89.4%	96.1%	98.8%	99.3%	99.4%	99.5%	99.6%	99.7%	99.7%	99.7%	99.8%	99.8%	99.8%	5,998
P	7.8%	63.7%	80.8%	90.7%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	5,791
Q	7.3%	17.0%	32.9%	50.1%	65.1%	77.9%	91.8%	98.1%	99.1%	99.2%	99.3%	99.4%	99.4%	99.4%	99.5%	6,164
R	53.7%	74.3%	89.0%	95.9%	98.5%	99.3%	99.6%	99.7%	99.7%	99.8%	99.8%	99.8%	99.8%	99.8%	99.8%	5,713
S	76.9%	90.6%	97.5%	98.6%	98.8%	99.4%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	1,175
T	43.8%	59.4%	81.2%	89.7%	92.2%	94.8%	96.2%	96.8%	96.9%	96.9%	96.9%	97.0%	97.6%	98.3%	98.8%	2,410
U	26.9%	51.3%	77.0%	93.0%	98.3%	99.4%	99.6%	99.7%	99.8%	99.8%	99.8%	99.8%	99.8%	99.8%	99.8%	4,606
V	29.3%	56.5%	82.3%	95.6%	99.0%	99.5%	99.6%	99.7%	99.7%	99.7%	99.7%	99.8%	99.8%	99.9%	99.9%	4,928
W	44.6%	48.4%	65.9%	89.3%	99.9%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	5,776
X	37.5%	63.4%	65.6%	99.9%	99.9%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	5,989
Y	67.7%	68.8%	98.1%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	6,133
Z	6.7%	8.8%	11.0%	12.9%	93.4%	94.0%	99.0%	99.1%	99.1%	99.1%	99.1%	100.0%	100.0%	100.0%	100.0%	6,022
AA	64.6%	78.7%	89.2%	96.6%	98.6%	99.2%	99.5%	99.6%	99.7%	99.8%	99.8%	99.8%	99.8%	99.8%	99.8%	3,749
BB	99.5%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	6,367
CC	5.5%	89.9%	99.4%	99.9%	99.9%	99.9%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	2,380
DD	14.4%	14.7%	99.7%	99.9%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	5,427
EE	96.7%	97.9%	98.6%	99.8%	99.8%	99.8%	99.8%	99.8%	99.8%	99.8%	99.8%	99.8%	99.8%	99.8%	99.8%	424
FF	70.1%	94.2%	97.4%	98.9%	99.3%	99.6%	99.6%	99.6%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	274
GG	46.9%	61.8%	73.6%	82.6%	88.5%	92.1%	93.9%	95.1%	95.9%	96.6%	97.0%	97.4%	97.6%	97.7%	97.8%	3,423
HH	29.7%	50.7%	69.5%	83.8%	92.1%	96.8%	98.6%	99.2%	99.5%	99.6%	99.7%	99.8%	99.8%	99.8%	99.8%	5,117
II	52.2%	68.8%	82.1%	91.4%	95.7%	97.9%	98.7%	99.1%	99.3%	99.5%	99.6%	99.7%	99.7%	99.8%	99.8%	5,347
JJ	33.0%	60.2%	79.7%	91.2%	96.6%	98.1%	98.8%	99.2%	99.4%	99.5%	99.6%	99.7%	99.7%	99.7%	99.7%	4,883
KK	32.5%	54.7%	71.5%	83.3%	91.3%	95.2%	97.6%	98.8%	99.4%	99.5%	99.6%	99.6%	99.6%	99.7%	99.7%	4,928
LL	41.5%	67.7%	85.3%	95.1%	98.3%	99.2%	99.7%	99.8%	99.8%	99.9%	99.9%	99.9%	100.0%	100.0%	100.0%	4,208
MM	37.9%	63.0%	80.4%	91.4%	96.3%	97.8%	98.6%	99.0%	99.1%	99.2%	99.4%	99.4%	99.5%	99.6%	99.7%	3,875
NN	56.6%	81.5%	92.5%	95.5%	97.7%	98.3%	98.7%	98.9%	99.1%	99.2%	99.4%	99.5%	99.7%	99.7%	99.7%	3,998
OO	51.0%	78.3%	92.8%	95.9%	97.0%	98.3%	98.8%	98.9%	99.2%	99.3%	99.4%	99.5%	99.5%	99.6%	99.7%	3,527
PP	24.3%	59.5%	99.7%	99.7%	99.7%	99.7%	99.7%	99.7%	99.7%	99.7%	99.7%	100.0%	100.0%	100.0%	100.0%	1,488
QQ	8.0%	12.6%	79.1%	94.3%	96.5%	98.3%	99.5%	99.9%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	5,806
RR	1.8%	2.8%	6.9%	23.8%	75.5%	98.3%	99.6%	99.7%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	5,788
SS	74.4%	75.9%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	332
TT	51.7%	81.4%	94.3%	98.7%	99.8%	99.9%	99.9%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	6,165

Figure 4 – Unit compliance with tolerance levels (red $\leq 95\%$, blue $> 95\% \leq 99\%$, green $> 99\%$)

Recommendation: Given the assumption that most participants have tried to comply or have complied with the dispatches, and having regard to the volume of dispatches included in the study, the results are considered to provide a reasonable indication of the capability of generators to comply with various allowable dispatch tolerances. Based on these results, it appears that a reasonable dispatch tolerance level may be ± 9 MW for a generator that has reached its dispatch level.

However, the AESO is concerned that smaller units will have even less incentive to comply with an increased allowable dispatch variance.

Therefore the AESO considered proposing that generating assets should be allowed the greater of ± 5 MW or 2.5% of the assets Maximum Capability. By way of example, for a 400 MW unit this would mean a ± 10 MW allowable dispatch tolerance and for any unit under 200 MW a ± 5 MW allowable dispatch tolerance.

This proposal, however, raises a concern that if very large new units were to connect to the Alberta system, they would then be allowed a very large allowable dispatch variance.

The AESO does not see this as appropriate considering that such units would have the latest technology and would be able to control to very tight tolerances.

Therefore the AESO recommends that the allowable dispatch variance be revised in the Rule and defined as the greater of ± 5 MW or 2.5% of the assets Maximum Capability up to a maximum of 10 MW for a generator that has reached its dispatch level.

The AESO is concerned that increasing the tolerance level as recommended will result in generator operation closer to the increased tolerance level. In other words, the increase in tolerance level may result in a change in participant behaviour that would see operation of their generators closer to the increased allowable dispatch variance level. This would be an unintended consequence since, as stated earlier, it is not expected or intended that the underlying purpose of the rule will be changed. The AESO makes the preceding recommendations after analyzing recent historical data that is indicative of the participant behaviour. The AESO is concerned that if the behaviour were to change as a result of these recommendations the market and reliability benefits described earlier in this section would be adversely affected. The AESO therefore also recommends that language would be included in the Rule that would see incidents of continual operation by a generator at the allowable dispatch variance limit, particularly when it correlates to a pool price, referred to the MSA for investigation.

3.3 The Rule must take into account time required for communication and ramping of a unit in response to a dispatch.

Stakeholders have raised concerns that in strict terms, the Rule requires instantaneous response to a dispatch. This is a literal interpretation of the Rule but historically it has not been the expectation. To date the AESO has taken time required for communications into account when enforcing the Rule but stakeholders are concerned that the AESO will no longer have the ability to exercise this type of discretion. Time to communicate, adjust the unit and ramp the unit in response to a dispatch are reasonable allowances that are currently considered when compliance to the Rule is considered.

Stakeholders have suggested that time is required for evaluation of a dispatch instruction. It is unclear to the AESO what sort of evaluation participants need to do on receipt of the dispatch instruction but it is expected that this time would be minimized by evaluating the validity of offers before receiving a dispatch and by being prepared to respond immediately on receipt of a dispatch instruction. If the available capability of a generating asset has changed for an acceptable operational reason then the participant must restate the available capability as soon as reasonably practical⁵. The intent is not to wait for a dispatch instruction.

It is expected that evaluating dispatch conditions ahead of time and ensuring that offers are submitted accurately would not only minimize the time necessary for evaluation at the time of dispatch but is also aligned with ISO Rule 3.5.3 that requires an accurate offer and an acceptable operational reason if available capability does not equal maximum

⁵ ISO Rules 3.5.3.1 and 3.5.3.2

capability. Therefore the AESO does not propose to amend the Rule to provide a time period in which to evaluate a dispatch.

The AESO has analyzed data from the thermal generation units on the Alberta system. In order to develop the tolerances for ramping and communication time the AESO studied dispatch and ramping responses for the period January 1st, 2007 to September 1st, 2008. The study included almost 50,000 dispatches. To avoid distortion delay times of greater than 20 minutes were removed from the study. Hydro plants were not included in the study because their fast and variable ramping capability would skew the ramping analysis. Zero ramps and outliers were removed by using a 95% confidence factor.

To establish a reasonable allowable time delay for responding to a dispatch, the AESO determined the average of one standard deviation for all delay times noted in the study. Figure 5 shows the summary of this analysis. Again, this approach seems appropriate if you assume that most participants attempt to comply with their dispatch. With the exception of gas units ramping down, one standard deviation from the mean would be less than seven minutes.

Fuel Type		Mean	Standard Deviation	1 SD from Mean
Coal	Ramping Down	3.17	3.01	6.18
	Ramping Up	3.01	3.03	6.05
	Overall Rate	3.10	3.06	6.15
Gas	Ramping Down	4.40	3.80	8.20
	Ramping Up	3.73	3.27	7.00
	Overall Rate	4.04	3.67	7.71
Overall		3.63	3.40	7.03

Figure 5 – Delay Times by Fuel Type (Min)

A similar analysis was performed to determine the ramping allowance but this time the standard deviation was calculated in percentage terms for each unit to account for the different ramping capabilities. The summary for this analysis is shown in figure 6. For both coal and gas units one standard deviation from the mean is $\leq 140\%$.

The data suggests that the Rule should include allowances similar to those currently made for communicating and ramping a unit in response to a dispatch instruction. The analysis used above reflects normal behaviour over a large sample and should reflect normal compliant behaviour.

Fuel Type		Mean	Standard Deviation	% 1 SD
Coal	Ramping Down	4.23	1.48	135
	Ramping Up	4.19	1.40	134
	Overall Rate	4.21	1.45	135
Gas	Ramping Down	3.37	1.29	140
	Ramping Up	3.37	1.14	135
	Overall Rate	3.37	1.24	139
Overall		3.74	1.33	137

Figure 6 – Ramp Rates by Fuel Type (MW/Min)

Recommendation: The AESO proposes to include in the rule a seven minute time period from the issuance of any energy market dispatch in which the generating asset must demonstrate progress in responding to the dispatch. Response is characterized by a change in output of the generating asset in the direction expected by the dispatch. Allowances would be made in the rule for units that are required to synchronize to the grid in response to a dispatch.

Additionally, the participant will be allowed the time required to ramp in response to the dispatch based on the ramp rate entered in the Energy Trading System (ETS) $\pm 40\%$. See Figure 7 below.

A participant would be in non-compliance if at the end of this total time period they were not within their allowable dispatch variance or if their unit did not begin to respond to the dispatch within seven minutes.

The plus or minus requirement on the ramp rate is necessary to help ensure realistic ramp rates are submitted into ETS.

It is likely that pool participants will be required to update the ramp rates they have indicated in ETS for their assets. The AESO would provide mean ramp information for assets if required for this purpose.

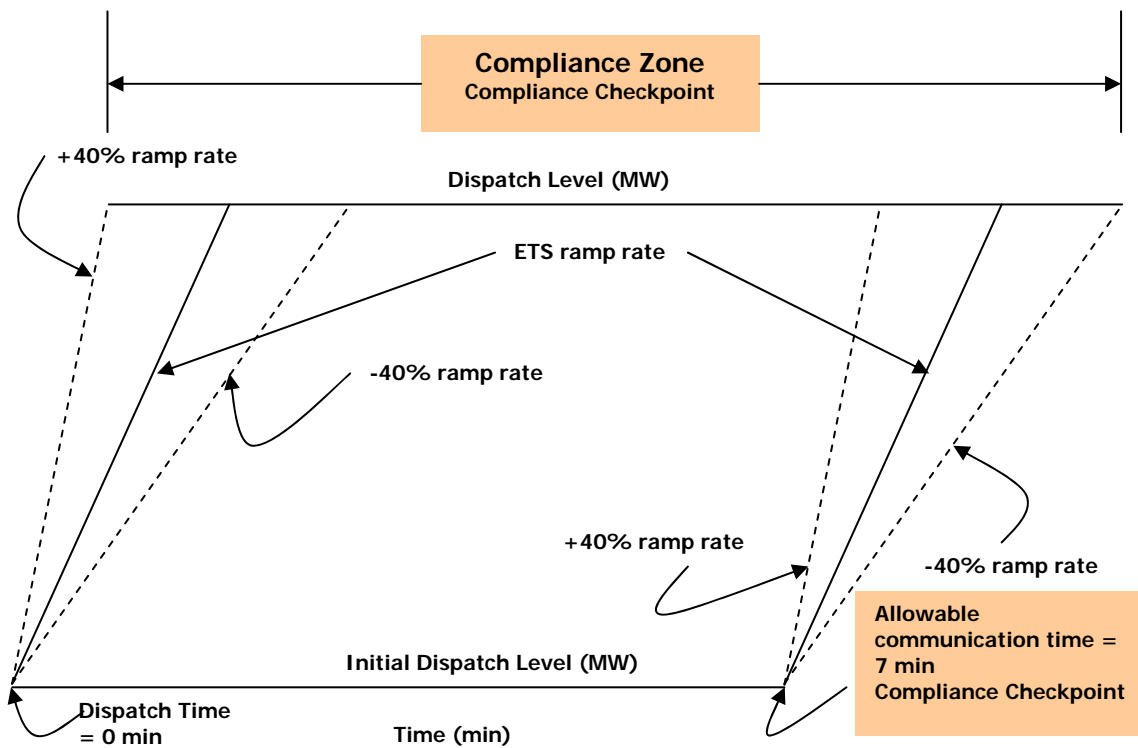


Figure 7

3.4 The Rule should allow for normal fluctuations in output from generating units.

The proposed allowable dispatch variance in the Rule is wide enough to allow for normal fluctuations in the output of a generating unit. Data collected by the AESO supports this position.

However, it is reasonable to expect that generating assets may deviate for short periods of time from the dispatch level. Under the existing Rule, if taken literally, these deviations would create an immediate non-compliance event.

Recommendation: It is therefore proposed that the AESO would consider momentary deviations for reasonably unavoidable operational reasons in the proposed Rule. The intent is to identify deviations that are avoidable, intentional or due to lack of due diligence and to refer these incidents to the MSA as suspected non-compliance cases.

The Rule would include the ability of the AESO to consider factors that may lead to momentary deviations from dispatch level. Included would be such things as fuel supply problems, unavoidable operational issues, force majeure events and a requirement to notify the System Controller of their intentions with respect to the deviation. Deviations that were attributable to these items would not be considered suspect and would not be referred to the MSA.

3.5 Preparation to provide Operating Reserves must be considered.

The Rule does not make allowance for positioning a unit to provide operating reserves. Operating reserves are typically dispatched for the top of the hour and the participant begins to ramp its unit into position in the 15 minutes before the top of the hour. The energy market dispatch, however, is not issued until the top of the hour potentially putting the participant out of compliance in the energy market while it is positioning its unit to provide operating reserves.

Recommendation: Provision will be made in the Rule for positioning of generating assets in the 15 minutes that they are ramping into position in response to a dispatch or directive in the ancillary service market. The change in output must be in the direction required by the ancillary service dispatch.

3.6 There must be allowance for governor action during frequency excursions.

Generating assets that are connected to the Alberta Interconnected Electric System are required to respond to abnormal frequency conditions on the system through governor action. A generating unit's governor, which senses an over or under frequency condition on the system, will react by automatically reducing or increasing the output of the generator. This action is important to protect the generator and the electrical system.

Recommendation: The Rule will be clarified to provide that a participant whose generating asset output changes because it is automatically and appropriately responding to abnormal frequency conditions will not be considered non-compliant.

3.7 The Rule must recognize the operational challenges when ramping between 0 MW and minimum stable output.

Generating assets are sometimes required to operate below their indicated minimum stable generation level. Operating below minimum stable generation typically occurs when a generating asset is taking an outage or returning from an outage. Operating below minimum stable generation level is not generally desirable, efficient or predictable.

Recommendation: The Rule will be revised to permit consideration and allowance to be given to generating assets operating below minimum stable generation level if the generating asset is going off line or is returning from an outage. A participant will not be suspected of non-compliance if:

- i) for a generating asset coming on line, its available capability submitted is equal to their minimum stable generation level and they have received a dispatch for this volume.
- ii) for a generating asset going off line it has been dispatched below its minimum stable generation level and its available capability submitted is equal to zero.
- iii) a generating asset is unable to follow normal ramp times to their minimum stable generation level and a verbal plan is submitted to the system controller indicating the expected plan for ramping to minimum stable generation level. The plan must be updated for deviations of greater than 15 minutes or 50 MW.
- iv) a generating asset that stops at an output level below minimum stable generation level for more than 15 minutes for an operational reason has its available capability restated accordingly.

3.8 Participants must comply with small offer block volumes

The current rule, with the ± 5 MW allowable dispatch variance, allows generators of 10MW size or less to submit a 5MW offer and remain in compliance regardless of the generating asset's output. In some cases generating assets do not even synchronize to the electrical system in response to a dispatch and remain in compliance.

Similarly, larger units can submit offer blocks of 5MW or less and remain in compliance with a dispatch for that energy without changing the generating asset's output.

This problem will be exacerbated if the allowable dispatch variance is increased, as is recommended.

Recommendation: The AESO will revise the Rule so that generating assets that do not respond in the appropriate direction to a dispatch of any volume may be referred to the MSA for non-compliance. This would include synchronization to the grid when dispatched to provide energy and desynchronizing from the grid when dispatched to zero MW.

4. Policy Adherence

The current Rule was approved in December of 2004. The Alberta Electricity Policy Framework referenced the 2004 changes to the Rule⁶ and supports the intent of the Rule to improve the price signal that motivates behaviour to provide a reliable electricity market.

Further, the AESO has authority under section 17(1.1) of the EUA to monitor the compliance of market participants with rules made under section 20 of the EUA.

Section 20 of the EUA allows the AESO to make rules respecting a number of items related to the operation of the electric system and the power pool including “the operation of the power pool and the exchange of electric energy through the power pool”.

EUA Section 20(3) requires market participants to comply with the ISO rules.

The current recommendations for changes are not intended to alter the Rule’s effect on the market or the reliability of the system, thereby leaving the policy objective unaltered. Rather the recommendations would provide the clarity that stakeholders have requested and will better define the criteria that the AESO will apply in determining whether it suspects there has been a contravention of an ISO Rule.

4.1 The recommendations support a fair, efficient and openly competitive market

The Rule must be fair to all generator types and the restriction set out in the Rule must be reasonably attainable by the generators to which it applies. The Rule should promote proper maintenance and tuning of generating assets. The allowable dispatch variance must be wide enough to allow participants to operate their units properly yet narrow enough to discourage price-chasing and self-dispatching, and result in an inefficient price signal. For example, the Rule is intended to discourage participant action or behaviour in which units generate at the dispatch level plus the allowable dispatch variance on a regular basis. If the allowable dispatch variance is broad enough this can have the effect of displacing generators on the margin. Additionally, the extra energy generated by this behaviour could seriously affect the supply demand balance and the price signal if the allowable dispatch variance is too great. The recommendations set out in this paper strive to find this balance as the Rule has done since 2004 while maintaining the proper price signal referred to in the Electricity Policy Framework.

4.2 The recommendations are technically sound

The primary reason for revising the allowable dispatch variance from 10MW or 10% in 2004 down to ± 5 MW was the impact that price-chasing and self-dispatching was having on merit order stability. Generating assets had the ability, given the wide allowable dispatch variance in place at the time, to over or under generate which had significant impacts on the marginal unit and the merit order stability. Moreover, as stated in the March 18, 2004 report issued by the MSA: “[o]ne of the effects of over generation (but

⁶ Alberta’s Electricity Policy Framework page 21

usually within tolerance) is that there are many small blocks of ‘phantom’ energy in the upper reaches of the merit order that are simply not there for the SC to call on when needed.”⁷

Reliability concerns also led to the decreasing of the allowable dispatch variance in 2004. The Alberta Interconnected Electric System is interconnected to the Western Electricity Coordinating Council (“WECC”) reliability area through British Columbia. This interconnection has many benefits but also comes with certain obligations. Alberta must maintain the Area Control Error within certain standards set by North American Electric Reliability Corporation (“NERC”). The closer the suppliers generate to their dispatch level the greater the ability to meet these standards.

Also a generator that is over/under generating relative to its dispatch creates uncertainty for the System Controller’s in terms of what the unit is and will be doing; will it eventually correct and get to its proper dispatch level or will it stay where it is?

The AESO has taken these factors and available historical data into account when developing its recommendations, which it believes are technically sound.

4.3 The recommendations are in the public interest

The changes that are being recommended are in the public interest. The changes would maintain the improvements to the price signal and the operation of the system that were achieved with the Rule approval in December 2004. Additionally, the recommendations take into account practical considerations of generating assets. Dispatch stability is in the public interest.

5. Implementation Considerations

5.1 Rules

Rule 6.6 would require re-drafting and then the consultation process would be followed. It is estimated that the revised rule could be submitted to the ERC for approval in April 2009.

It is not anticipated that any other rules or OPPs would need revision to support this rule change.

5.2 Tools

Compliance monitoring tools would need to be adjusted to accommodate any changes to the rules. In particular the new ramp rate methodology would require revision to the current monitoring tools.

6. Summary of Recommendations

The AESO has recommended the following revisions to the Rule:

⁷ MSA Report Dispatch Compliance, March 18, 2004

1. No change in rule accountability. The AESO does not see it as appropriate that ISO Rules deal with issues related to the PPAs. It is appropriate that the pool participant who has the energy rights for an asset is held accountable for compliance with ISO rules.
2. Increase the allowable dispatch variance for steady state operation to the greater of ± 5 MW or 2.5% of the assets Maximum Capability up to a maximum of 10 MW.
3. Include seven minutes for units to begin to respond to a dispatch and the time $\pm 40\%$ necessary to ramp to the dispatch level based on the submitted ETS ramp rate.
4. Allow for normal fluctuations in output from generating units within the rule language.
5. Allow for deviations from the dispatch level for a generating asset that is positioning to provide ancillary services as directed or dispatched by the system controller.
6. Allow for deviations from dispatch level caused by proper generator response to abnormal frequency conditions
7. Make allowances for generators during start up and shutdown between 0MW and minimum stable generation level.
8. Pool participants must comply with small offer block volumes

7. Next Steps

The steps listed below may be modified to coordinate with AUC proceeding timelines.

October 30, 2008 - issue recommendation paper. Follow normal ISO rules process.

November 18, 2008 – deadline for stakeholder comments on recommendation paper

January 15, 2009 – draft rule to the ERC for approval to consult

February 27, 2009 – deadline for stakeholder comments on draft rule

April 16, 2009 - approved by the ERC for filing with AUC

Following Filing – Commission process as required.

Modify compliance tools to fit new Rule

Appendix 1 – Current Rule 6.6

6.6 Pool Participant Non-Compliance with Energy Market Dispatch and Directives

A pool participant may only supply energy if it has received either an energy market dispatch or a directive. A pool participant who has not received an energy market dispatch or a directive and supplies energy may be subject to sanction.

Pool participants must only deliver energy to the **AIES** pursuant to a **dispatch** or a **directive** issued by the **system controller**. **Pool participants** must not deliver energy to the **AIES** when the **system controller** has not issued a **dispatch** or a **directive** to do so.

In any circumstance where an **energy market dispatch** is not followed, the **pool participant** will be considered in non-compliance with the **energy market dispatch**. The **pool participant** must advise the **system controller** as soon as practical that the **energy market dispatch** will not be complied with and the **pool participant** will as soon as practicable submit a new **offer** or **bid** restating the status of the **asset** to reflect the non-acceptance of the **energy market dispatch**.

The **pool participant** must ensure that the **generating asset** is operated to the quantity (**MW**) **dispatched** or directed. The **pool participant** is in non-compliance when the quantity (**MW**) delivered varies by greater than +5 **MW** from the highest **energy market dispatch** quantity (**MW**) or the **directive** quantity (**MW**). In the case of a **generating asset** that is supplying **regulating reserve**, the **pool participant** is non-compliant when the quantity (**MW**) delivered is less than the **energy market dispatch** quantity (**MW**) minus 5 **MW** or greater than the **energy market dispatch** quantity (**MW**) plus the regulation range plus 5 **MW**.

The **pool participant** is responsible for coordinating their energy and **ancillary services** submissions to ensure that such **pool participant** is able to comply with an **ancillary service dispatch** or **energy market dispatch** issued pursuant to such submissions

Any non-compliance with an **energy market dispatch** or a **directive** is subject to review and may be subject to sanction by the **ISO**.

As an exception, energy delivered to the **AIES** while a **pool participant** is testing and/or **commissioning**, a **generating unit** will be considered compliant, provided however, that the **pool participant** has complied with the **ISO** Operating Policies and Procedures and has received approval from the **system controller**.