

AESO Rule 6.6 Recommendation Update Paper
Stakeholder Comment Response Matrix
March 24, 2009

1. Steady state compliance is based on the unit integrated average MW output for each clock 10 minute period

Stakeholder	Stakeholder Comment	AESO Response
AltaGas Ltd.	AltaGas supports this recommendation	Acknowledged
ENMAX	<p>If the average unit outputs over specific 10-minute intervals (say, hh:00 to hh:09, hh:10 to hh:19, ... hh:50 to hh:59) are used as a metrics, situations could arise in which one, but not the other, of two units exhibiting identical deviations from their dispatch levels is flagged for a rule violation. An example is provided in Chart 1 at the end of our comments, which shows the (obviously contrived) minute-by-minute deviations of two units from their respective steady state dispatch levels. Except for the time shift, the two sets of deviations are identical. However, the blue unit's 10-minute averages (which are not shown in the chart) are all zero, while the red unit's averages (shown as red squares) oscillate from above to below the tolerance level. Thus, the red unit is flagged as violating the rule while the blue unit is not.</p> <p>The clock-time dependence of the 10-minute averages can be removed by using a 10-minute moving average, as shown in Chart 2. In this case both units are seen to be moving in and out of the tolerance band by the same amount, so the one-but-not-the-other problem is eliminated. Since increasing the length of the moving average to 15 minutes eliminates the violations (Chart 3), the choice of the averaging interval is important. Some of the methods suggested in our previous comments, such as determining zero-crossing times or counting consecutive measurements above or below the dispatch level, might also be useful.</p> <p>Another disadvantage of a fixed-interval average is that the status of a unit is updated only every interval-length minutes. A moving average may therefore provide a more responsive mechanism for the system controller to determine whether a unit is moving back</p>	<p>The output of generating assets is updated every 4 seconds and the System Controller has this visibility of most units on the system. The System Controller will not be monitoring a generating asset' output against the 10 minute fixed interval. Monitoring is carried out after the fact by the AESO's compliance monitoring group.</p> <p>While not disputing that a rolling average would also be effective, the AESO believes the 10 minute fixed interval average establishes an appropriate compliance level, encourages appropriate performance, is easier for participants to monitor and is less expensive and faster to implement.</p> <p>The AESO recognizes the situation described by ENMAX, however, we don't view this extra margin allowed suppliers as problematic from a market or system operational point of view.</p> <p>We also don't see suppliers taking advantage of this restarting of the clock, to intentionally deviate from their dispatch level because the 10 minute interval is too short. We expect that suppliers will use the time to keep their generating asset's output within appropriate levels.</p> <p>Additionally, the AESO points out that the Control Performance Standard 2, which is one of the measures of how well the Balancing Authority is maintaining the supply demand balance, uses the same timeframe. While these measures are not intended to be the same and are intended to measure different things, aligning the timeframe seems appropriate since the end objectives are related.</p>

into compliance.

A simple moving average is a particular type of digital filter. Various digital filter design techniques can be used to create other filters (essentially *weighted* moving averages) that may be better suited to the detection of dispatch variances and the avoidance of “false positives.” ENMAX would be happy to discuss these with the AESO and other stakeholders. (Given the rather technical nature of the design techniques, this comment matrix is not the right forum for such a discussion.)

Chart 1: Deviations from the dispatch level for the Red and Blue Units and the Red Unit’s 10-minute, fixed-interval average deviations. (The values are illustrative only and not intended to relate to the final rule.)

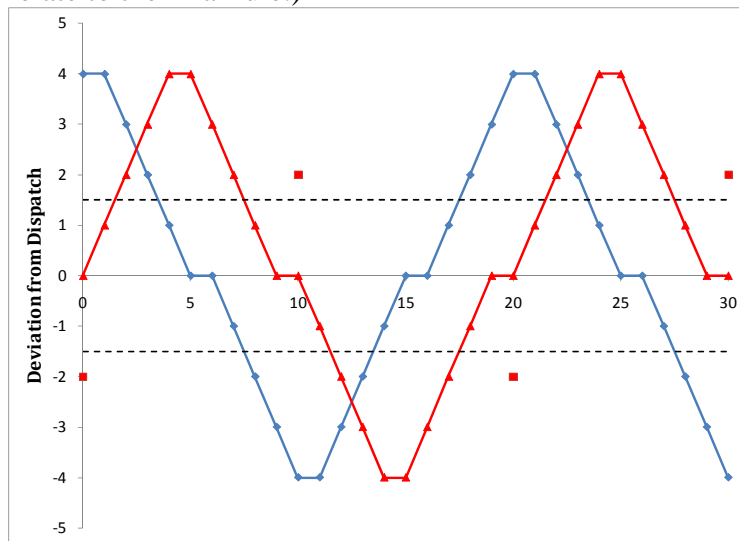


Chart 2: The Red and Blue Units' 10-minute moving average deviations

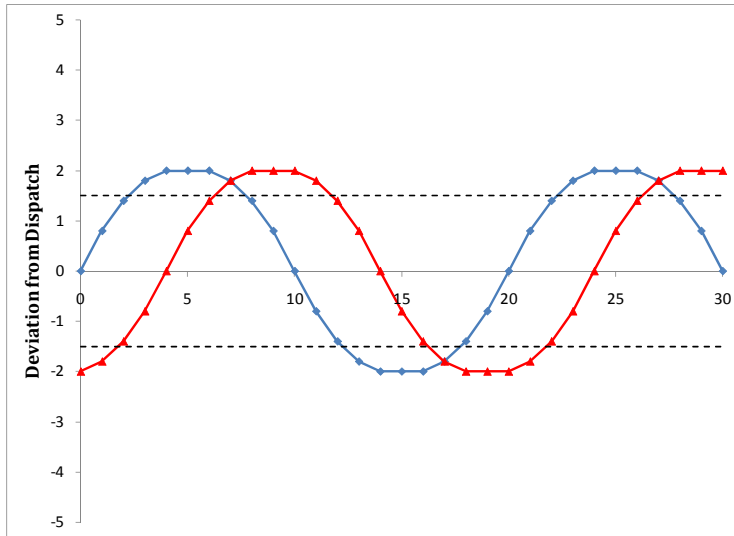
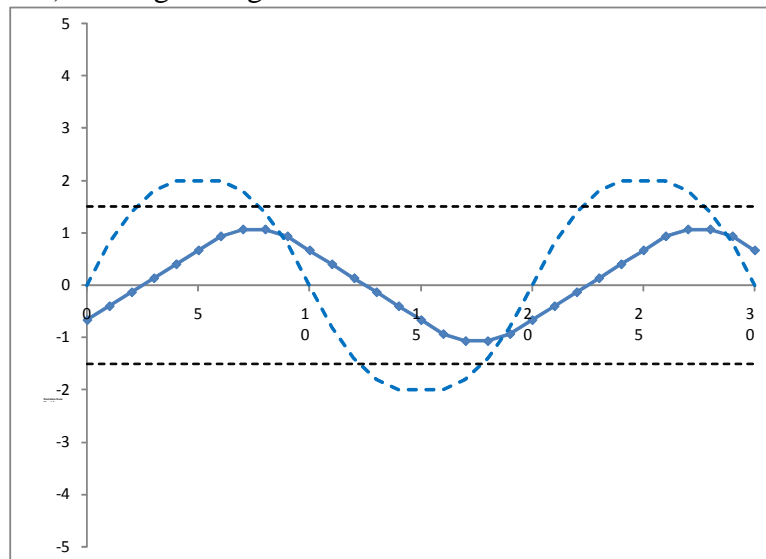


Chart 3: Comparing 10-minute (dashed line) and 15-minute (solid line) moving averages for the Blue Unit.



<p>EPCOR</p>	<p>We are pleased that the AESO is planning to continue with a tolerance level of “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”.</p> <p>EPCOR would support the use of a 10 min. rolling window in which an average net MW production value is compared to dispatch. However, 10 minute segments of time, as proposed by the AESO in the presentation on January 29, does not provide warning of a potential non-compliance event. A real-time operator looking at a 10 minute rolling time frame would be able to identify if the unit is meeting the required dispatch level and take appropriate steps in real time to bring the unit into compliance or inform the AESO of potential operational issues; the 10 minute segments proposed by the AESO would not allow this real time response.</p>	<p>The rule requires generating asset output to target the dispatch level and not an average output level within a range. The AESO expects that participants would respond if their instantaneous output was not at the dispatch level and that they will strive to provide the dispatch amount at any given time and not the dispatch level plus or minus the acceptable dispatch variance</p> <p>It is the AESO’s view that a rolling 10 minute fixed average is able to warn participants of potential non-compliance as well as a 10 minute rolling average.</p> <p>The rolling average would require the participant to assess the last 10 minutes at regular intervals to determine if the unit is out of compliance or approaching the out of compliance level.</p> <p>The 10 minute fixed average method would require the participant to monitor the output of generating asset during the fixed 10 minute period and compare that to the dispatched amount.</p> <p>Either method requires the participant to develop mathematical formulas to track the average output against the expected output.</p>
<p>Industrial Power Consumers Association of Alberta (IPCAA)</p>	<p>No comment</p>	<p>Acknowledged</p>
<p>NEXEN</p>	<p>Nexen feels the AESO’s approach is reasonable as the 10 minute average accommodates for the operational fluctuations a generating unit may experience as a result of various external or internal factors.</p> <p>During the January 29, 2009 stakeholder session several participants suggested a rolling 10 min approach rather than distinct 10 min blocks would not only be simpler to implement but would also reduce the compliance / non-compliance “cliffs” associated with the 10 min blocks. Nexen submits this approach has merit and suggests the AESO investigate the technical</p>	<p>We believe that the 10 minute clock window approach can be implemented faster from an IT perspective than the rolling clock period. The AESO is attempting to strike a balance by recommending a 10 minute static window for the steady state averaging. Using a 10 minute clock window will reduce the amount of processing and storage required by a factor of 10, but primarily we don’t see that monitoring generator compliance more closely will result in noticeable improvement to compliance. Additionally, the 10 minute window correlates well with time periods to which the system controller operates.</p>

	requirements associated employing a 10 min rolling average and include the approach in the ISO Rule if the implementation hurdles are reasonable.	
TransAlta	<p>TransAlta would suggest a 15 minute clock period rather than a 10 minute time clock period.</p> <p>If the AESO switched to use a clock 15 minute period, they would be aligned with the Alberta Metering standard which also uses a 15 minute clock period</p>	The 10 minute fixed interval was chosen because it aligns with the timeframe that the Balancing Authority works within to balance the system. Also the 10 minute fixed interval is short enough time period to discourage gaming and long enough to allow for the operational deviations that participants were concerned about.
TransCanada	<div style="border: 1px solid black; padding: 10px;"> <p>It was discussed at the stakeholder session that there would be allowance provisions, during steady state operations, for legitimate deviations based on the plant’s operating characteristics at that time. TransCanada requests that the allowance provisions definition be robust enough to capture circumstances in which a physical or operational constraint causes a generating asset to deviate from the allowable tolerance band but the generating asset is still reasonably expected to return to its energy market dispatch level.</p> <p>At the stakeholder session it was confirmed that the tolerance band (set at the maximum of 5MW or the greater of 2.5% of MCR and 10MW) continues to be recommended by the AESO and TransCanada supports this. However, for simplicity, it may be beneficial to utilize MCR ranges to determine the allowable tolerance band for a generating asset. For instance, generators with MCR below 200MW would have a tolerance band of +/- 5MW and generators with MCR at or above 200MW would have a tolerance band of +/-10MW.</p> <p>However, TransCanada wishes to reiterate that these two components (new tolerance band and allowance provisions for normal and expected deviations of a short duration due to plant operating characteristics) work together to substantially resolve the steady state operational issue.</p> </div>	<p>For clarity, the tolerance band uses the generating asset’s Maximum Capability (MC), not MCR.</p> <p>The AESO will consider TransCanada’s suggestion to change the steady state tolerance band to ± 5 MW for a generating asset with an MC of 200 MW or less and ± 10 MW tolerance band for a generating asset with an MC greater than 200 MW.</p>

2. The maximum delay time to start ramping should be increased to 10 minutes

Stakeholder	Stakeholder Comment	AESO Response
AltaGas Ltd.	AltaGas supports this recommendation	Acknowledged
ENMAX	ENMAX supports allowing 10 minutes for a ramp to start. We note, however, that due to random fluctuations in unit output, detecting a single up or down movement (depending on whether the dispatch level is to rise or fall) is generally not an effective method for determining whether the a unit has started to ramp.	<p>The AESO would monitor to determine if the generators output has been altered directionally in response to the dispatch. A generator that has been dispatched up should not be generating less than at the time of dispatch and a generator that has been dispatched down should not be generating more than at the time of dispatch.</p> <p>The inclusion of a compliance check at this point is important to ensure that there is some rigour included in the development of the ramp profiles and to avoid the last minute ramps at high rates to meet the dispatch level.</p> <p>The AESO is interested in suggestions that would improve measurement of the response after the initial 10 minute period.</p>
EPCOR	The +/- 40% tolerance for ramping is reasonable for dispatches above MSG, if this were combined with the proposed 10 minute delay time to start ramping.	<p>In our October 30, 2008 Recommendation Paper the AESO suggested a single participant submitted ramp rate with a $\pm 40\%$ tolerance band. In light of the single ramp rate submitted, the $\pm 40\%$ tolerance band was intended to account for the variations in the generator ramping throughout its output range</p> <p>The revised AESO proposal relies on a participant submitted ramp profile for each generator. Participants would still be allowed a period of time from the time of dispatch in which to begin to respond (increased from 7 to 10 minutes) and compliance will be based on the ramp profile that participants submit. While the ramp profile will be static (for compliance integrity reasons frequent changes cannot be accommodated) participants will be allowed to submit different ramp rates for the various stages of a generating assets output.</p> <p>Starting when the dispatch is issued, generating assets</p>

		<p>must reach the dispatch level plus or minus the allowable dispatch variance in the time calculated using the ramp profile, to reach the dispatch level plus the initial 10 minute delay period allowed for ramping. Ramping may start any time within the initial 10 minute delay period but the unit must not reach the dispatch level plus or minus the allowable dispatch variance any sooner than the time indicated by the ramp profile with no initial delay time.</p>
<p>Industrial Power Consumers Association of Alberta (IPCAA)</p>	<ul style="list-style-type: none"> Given the increased time lapse allowed before response to a dispatch, does the AESO intend to monitor generators who consistently approach the maximum delay time? Will there be an analysis of the cost implications of generators delaying their ramping after receiving dispatch instructions? 	<ul style="list-style-type: none"> The AESO intends to monitor all generators for compliance. If new rules result in unanticipated or undesirable behavioural changes the AESO may consider further rule changes. It should also be noted that inappropriate behaviour can be investigated by the MSA without changes to the rule. It should be noted that the proposed changes are based on a study of significant volumes of historical data. The delay period that we are proposing in the rules, which was not previously defined, was determined based on a study of this data. The delay period is a reflection of past behaviour which was considered to be acceptable.
<p>NEXEN</p>	<p>Nexen submits the AESO's approach is reasonable if the different components of the energy market generally work in unison. Nexen submits, currently the different components of the real-time market do not operate in reasonable unity. For instance if a generator is participating in both the energy and DDS markets, at the top of the hour a generating unit may receive a dispatch to produce more energy and then 10-20 minutes later that same generator may receive a dispatch for DDS therefore required to ramp down.</p> <p>The quick ramping up and down of the generating unit causes extreme wear and tear on the unit and is highly undesirable. Nexen submits the AESO should investigate methods of improving the real-time operation of the market to effectively manage events such as these. That being said Nexen recognizes</p>	<p>The AESO acknowledges that as part of the energy only market design in Alberta generating assets are at times required to perform multiple ramps in a short period. This has been part of the market design in Alberta for a number of years and is quite distinct from the co-optimization model that exists in other jurisdictions.</p> <p>We also recognize that this can contribute to wear and tear on a generating asset.</p> <p>Over the years a number of rule changes have been implemented to help address this issue, including the T-2 rules for offering and restating and the Payments to suppliers on the margin.</p>

	<p>improvements to ETS and other systems can be challenging, and suggests in the interim that the rule take into consideration circumstances where delays in a system controller dispatches which may direct a unit to quickly ramp up and down (and its impact on the operators equipment).</p>	
<p>TransAlta</p>	<p>TransAlta supports the AESO in providing 10 minutes communication time to begin ramping. What happens after the communication time, however, is problematic. Once a generator begins its ramp, the AESO plans to place a compliance check to confirm that the ramp commenced within the allowed 10 minute period. From that check point, the AESO will then do a compliance check from when the unit commenced its ramp to when the unit finished its ramp. The AESO plans to compare this ramp rate (measured in time) to that of the unit's declared ramp rate in ETS. If the full 10 minutes given for communication is used for communication, a problem arises. The ramp rate used by the AESO is a single number, and thus the facility will be required to meet that exact ramp rate to be considered in compliance. Each ramp is unique and it is unlikely the unit will meet the given AESO ramp rate exactly each time. In other words, it is unlikely to have a 'perfect ramp'. How are Market Participants supposed to deal with an advanced energy dispatch? Currently the AESO has a definition for advanced energy dispatch but this definition is not mention in any of rules. The current definition is: "advanced energy dispatch" means a dispatch of one or more blocks of energy for a specified future time. Does this mean that you must begin ramping so you meet the dispatch at the stated time or does it mean that you cannot begin ramping until the stated time. Now with the additional clarity in rule 6.6 it is unclear how this 10 min period will be applied to an advanced dispatch.</p>	<p>The AESO is not proposing a single number for the ramp profile. We are proposing that generating assets are allowed different ramp rates for different output levels produced by the generating asset. For example, a generating asset dispatched from 100 to 200 may have previously submitted three ramp rates: 100 to 150 = 2MW/min, 151 to 175 = 3 MW/min and, 176 to 200 = 1 MW/min. The AESO does not intend to check the exact ramp rate as the output of a generator changes in response to a dispatch. Rather we would check the expected achieve time based on the ramp profile against the actual achieve time. If a unit took the full 10 minutes for communication and ramped at 3MW/min or at 2MW/min they would not have had a perfect ramp but would still be in compliance with the dispatch. If the same generating asset was ramping from 180 to 200 they would have a single ramp rate. If the generating asset ramped at less than 1 MW/min it may be out of compliance. The AESO will allow the time to get to the dispatch level but will only require the generating asset to achieve the dispatch level less the allowable dispatch variance. This would result in this generating asset having an additional 5 to 10 minutes to ramp and still be in compliance. If the dispatch was to decrease output the generating asset would only have to achieve the dispatch level plus the allowable dispatch variance in the time required to meet the dispatch level. Participants should deal with advance energy dispatches in a similar fashion. The rule will require that the response to a dispatch begins within 10 minutes of the time stated in the dispatch. For example, if the system controller issues a dispatch at 09:47h for 10:00h, 10:00h is the time stated in</p>

	<p>With the proposed rule, if the advanced dispatch is considered communication time, a participant with an advanced dispatch could not ramp a minute early or late without technically breaking the rule. Similar problems arise with an advanced dispatch inside the 10 minute window.</p> <p>TransAlta would suggest that the AESO make allowances that recognize that units cannot always perform perfectly to the ramp rate profile. In addition, we suggest that allowances be made in the case of an advanced dispatch that if the facility started a few minutes early or a few minutes later than the specified time that it not be considered out of compliance in this circumstance.</p>	<p>the dispatch and that is when the timing starts for dispatch monitoring. The generating asset should start to adjust its output no sooner than 10:00h.</p>
<p>TransCanada</p>	<div data-bbox="331 613 1176 828" style="border: 1px solid black; padding: 5px;"> <p>TransCanada suggests combining the 10-minute delay time with the ramp profile (according to recommendation #3) to calculate and issue the energy market dispatch in volume (MW) and time. In other words, if a generator’s ramp profile is 5MW/minute and the AESO dispatched the unit for 50MW, then the dispatch would be “50MW within 20 minutes”. (10 minutes</p> </div> <div data-bbox="331 868 1176 1425" style="border: 1px solid black; padding: 5px;"> <p>allowance for set up and communication and 10 minutes for ramping). Once the ramp profiles are provided to the AESO, it would be mathematically simple to calculate the range of times (Minimum and maximum) to bring generation output within the new dispatch tolerance band.</p> <p>Also, during the stakeholder session, the AESO provided a sample graph for an energy market dispatch and suggested three compliance check points. One to ensure the dispatch volume did not come on too early (Labeled as “min ramp time”), one to determine whether the unit began to ramp within the 10 minute allowance (Labeled as “max delay time”) and one to determine that the dispatch was achieved within the allowable time (Labeled as “max ramp time”).</p> <p>TransCanada submits that with the suggestion provided above (dispatch given in MW and range of time allowed), the compliance check point at the “max delay time” would become</p> </div>	<p>The AESO has considered the approach suggested by TransCanada but our view is that the “Max Delay Time” is necessary for the following reasons.</p> <p>The purpose of the Max Delay Time is to ensure that there is sufficient rigour put into the development of the ramp profiles.</p> <p>More importantly without the check for the Max Delay Time the generating asset could delay significantly longer than the 10 minutes before providing any response to the dispatch and still be in compliance with the dispatch. This would be particularly problematic with large volume dispatches and slow ramp profiles where the energy would be provided (or removed) in a lump at the end of the dispatch compliance period. This can create operating concerns.</p> <p>The AESO welcomes suggestions to deal with these issues.</p> <p>The draft rule 6.6.4 is intended to allow for operational deviations while ramping. .</p>

	<p>redundant and should therefore be eliminated. Also, determining when a ramp has begun would often be difficult to differentiate from normal output fluctuations. (I.e. how would the AESO, pool participant and/or the plant operator determine that the unit has begun to ramp if the generating asset's output is fluctuating as it often does?)</p> <p>Additionally, TransCanada suggests that pool participants be allowed to rely upon the allowance provisions reference above if the unit is experiencing temporary operational difficulties and not meeting its expected dispatch level within the required time. The key to success with this process is to ensure the System Controller is apprised of the operational difficulty as early as possible and assists in determining if a restatement is required.</p>	
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3. Participants submit a ramp profile for each of their generating assets

Stakeholder	Stakeholder Comment	AESO Response
AltaGas Ltd.	AltaGas supports this recommendation	Acknowledged
ENMAX	ENMAX supports having the ability to submit a ramp profile for each unit. Appropriate leeway is required around that profile, however, because ramping can take place under a wide range of operating conditions and the units do not necessarily respond the same way in every case.	Please refer to the responses to TransAlta and TransCanada in section 2. The proposed rule is intended to provide appropriate ramping flexibility.
EPCOR	<p>EPCOR would not support the use of ramp profiles, as multiple ramp profiles would be required to accurately inform the AESO of the unit’s capabilities. Participants would likely need to submit ramp profiles that differ for different operating conditions, such as cold starts, warms starts or hot starts.</p> <p>EPCOR agrees with the proposal that the rule recognize operational challenges between 0 MW and MSG. However, EPCOR is concerned that the rule, as proposed, may not properly address operational challenges that arise when MSG at a particular unit is required to be increased above the amount that has been entered into the AESO’s ETS system. MSG is currently a single fixed value entered into the AESO’s ETS system. EPCOR believes that the responsible market participant should have the ability to restate the MSG (rather than offers) in appropriate circumstances. This would enable the system controller to properly understand the operating characteristics of the affected unit and allow the market participant to avoid being non-compliant with the AESO rule.</p>	<p>There are advantages to the participant submitted ramp rates. It allows participants more flexibility than the current method which is the input of a single ramp rate for each unit. The AESO is proposing that the participants be allotted three ramp rates for both ramping up and ramping down providing considerable room for different operating conditions.</p> <p>In the future it may be possible to provide better dispatch information for participants using ramp profiles, e.g., expected achieve times.</p> <p>Minimum Stable Generation is intended to be a single number that would rarely change without a physical change to the generator/turbine. Allowing this value to be changed has implications to congestion management, DDS and supply surplus rules and procedures which are outside the scope of rule 6.6 discussion.</p>
Industrial Power Consumers Association of Alberta (IPCAA)	<ul style="list-style-type: none"> This needs to be auditable by a knowledgeable third party as the tendency will be to use conservative ramp rates to avoid violations 	The rule as proposed includes a three check points for ramping; minimum ramp time, maximum delay time and maximum ramp time. These check points are expected to provide an indication of whether or not the ramp profiles are realistic. The minimum ramp time will discourage inappropriately conservative ramp profiles and it is expected that participants will generally want to respond

		<p>appropriately to the price signals sent through dispatching the merit order.</p> <p>The MSA or the AESO are able to audit ramp rates based on the data available through the compliance monitoring process.</p>
<p>NEXEN</p>	<p>It is Nexen’s understanding that the AESO has proposed that generators provide a ramp profile and the +/- 40% criterion is no longer required. Nexen has several concerns regarding the use of ramp profile rather than using the +/- 40% variance criterion originally proposed.</p> <p>Nexen submits that employing a ramp profile rather than a tolerance window will complicate rather than simplify the Rule. There are a number of environmental factors along with the unique operating characteristics of the generating unit that cannot be adequately captured in a single ramp profile. For instance some generating units can operate in different modes such as simple or combined cycle. The time of year (i.e. ambient temperature), can also significantly impact the ramp capabilities of the unit. These two factors alone would require several if not multiple ramp profiles to be considered by the AESO. Nexen would also submit that even if the AESO intended to somehow take these considerations into account as part of new generator ramp profile proposal it would greatly increase the complexity and compliance administration of the Rule. Nexen submits the approach outlined in the October 30, 2008 paper would be a much more reasonable approach.</p> <p>Nexen also submits seeing as Alberta is a competitive market where multiple players with different generating technologies (with different ramp rates) participate in the market, the +/- 40% tolerance window seems to be more in aligned with this sort of tolerance. It appears to Nexen that measuring compliance on a stringent single ramp profile seems contrary to the balance between market obligations, flexibility and stakeholder equity this</p>	<p>The AESO acknowledges that the ramp profile approach to compliance may be more complicated than a tolerance window but it also is expected to be more representative of the units ramping abilities than a single ramp rate with a large tolerance. The ramp profile offers participants the ability to provide different ramp rates across the range of outputs for their units.</p> <p>It is appropriate to monitor ramping compliance (with suitable margins) as well as steady state generation as ramping also impacts the market and dispatches to other participants.</p> <p>There is also tolerance built into the ramp profile. Please refer to the responses to TransAlta and TransCanada in section2.</p>

	Rule is striving to achieve.	
TransAlta	<p>TransAlta has concerns with the ramp rate profiles as proposed. The AESO’s proposal of submitting a ramp rate profile is an improvement from the single ramp rate currently provided but still does not address an important issue. The ramp rate profile we provide will be an average ramp. Each ramp is unique and will not be equivalent to the average ramp rate. If it takes the facility the full 10 minutes to start ramping, then the facility will now be required to perform a perfect ramp in order to be considered in compliance. For example, if the ramp rate is 10 MW per minute, the facility receives a 100 MW dispatch and it takes the full 10 minutes to start ramping, then the facility has exactly 10 minutes to complete its ramp. If on this day the facility performs an 11 MW per minute ramp it will now be considered out of compliance. This is a likely outcome that may not be for any specific operational reason but is reflective of the unit’s historical performance and thus is reasonable and should be acceptable. We believe further changes are required here. We would suggest provision of a ramp rate range for each ramp rate provided. For example the above facility would be expected to perform at a ramp rate between say 8 and 12 instead of exactly at 10.</p> <p>A further concern is the ability of an operator to accurately calculate and restate a new ramp rate while simultaneously attempting to safely ramp the unit. For example if the same example is used as above, if the ramp is occurring but is slightly slow, when should the operator inform the AESO it is having an issue with the ramp? As soon the calculated average ramp rate for the 10 minutes falls below the 10 MW’s per minute average? At this point the operator will only be able to say the ramp is a little slow and will likely not have a definite reason for this or be able to provide an accurate revised ramp rate. Further, ramps can occur over just a few minutes. Given that the operator has other activities besides watching his ramp rate if a ramp is supposed to take 4 minutes but instead take 6 minutes, it is likely that the</p>	<p>The AESO proposed a ramp rate range in its October 30th recommendation paper but the idea received little support. Under the new proposal the participant can submit the ramp profile that best represents how the unit will perform. Please refer to the response to TransAlta in section 2 for an explanation of the flexibility that is built into the current proposal.</p> <p>The revised rule will set out the timelines for notification to the system controller by the pool participant under the various circumstances listed. Communication is expected by telephone for short duration deviations but if the problems persist then a restatement by the pool participant is expected before the end of the next 10 minute clock period after the problem developed.</p> <p>The AESO believes that the draft rules 6.6.3 and 6.6.4 on the AESO’s website are clear with respect to the conditions that require communication along with the timelines and other actions that may be necessary.</p> <p>We look forward to TransAlta’s comments on the draft rule.</p>

	<p>variance may not be caught until after the ramp is complete. Ramp rates are a combination of design specifications and historical operational data. Ramp rates are a technical estimate and should only be used as an estimate, not a guarantee of unit performance. Thus a range for a ramp rate is needed.</p> <p>The rule also must incorporate time or allowance for the steps below which an operator takes in assessing the unit’s ability to achieve a declared ramp. Once an operator has established that there is an issue with the ramp that may affect the status of the current ramp (this alone can take 5mins or more), an operator must:</p> <ol style="list-style-type: none"> 1) Communicate to plant staff to investigate perceived problem 2) Wait for results of plant staff investigation 3) Calculate new ramp rate given estimated maintenance time 4) Communicate to trading or operations desk 5) Communicate with AESO <p>What happens if the operator is only able to ascertain a problem towards the end of the ramp?</p> <p>What happens if the allowable ramp time ends before the above process is completed?</p> <p>We would suggest that a phone call to the AESO would suffice to communicate a change in a ramp if outside a certain range. If an operator needs to be recalculating ramp rates in real time while simultaneously ramping this is an unnecessary burden that will take away from the operator’s focus on reaching the new dispatch level in a safe manner.</p>	
<p>TransCanada</p>	<p>In its January 29, 2009 Rule 6.6 Recommendation Paper Update; the AESO suggested that pool participants submit seven ramp “blocks”. Four profiles for ramping up with the first one expected to be zero to minimum stable generation with the ramp rate set to a dash meaning “not applicable” and three profiles for ramping down. TransCanada supports this concept.</p>	<p>The AESO acknowledges the support and points out that the seven ramp block profile approach presented at the January 29th stakeholder session was intended to be illustrative. We are open to suggestions to help develop the ramp profile.</p>

4. The rule will contain language that prohibits intentional deviation from the dispatch level. Checks for intentional non-compliance include deviation and price correlation, synchronization to the grid, intentionally operating at a different level than the dispatch level.

Stakeholder	Stakeholder Comment	AESO Response
<p>AltaGas Ltd.</p>	<p>AltaGas appreciates the AESO choosing to move away from its original recommendation of enforcing compliance of small offer blocks, but remains concerned about unintended consequences on small (<10MW) generators under this recommendation. While AltaGas supports the prohibition on ‘gaming’ the system and altering the price signal, the language of the recommendation leaves no room for small generators who are simply operating within the limitations of their business infrastructure.</p> <p>If, due to this rule change, natural gas peaking plants are forced to operate a 24/7 trading desk or outsource trading operations, the cost of doing business goes up considerably. This may result in operators leaving the industry altogether, reducing system diversity and degrading system integrity. It may also lead to a consolidation of trading operations into fewer hands, raising competition and insider information concerns.</p> <p>AltaGas Ltd. would note that, under this recommendation, operations of these plants would only be slightly altered, but operating costs would climb considerably. AltaGas Ltd. would question the benefit of monitoring and pursuing small generators for dispatch violations that other market participants have termed ‘noise’ in return for a marginal improvement to system integrity. AltaGas would also remind the AESO that notwithstanding dispatch tolerance rules, all market participants have an obligation to conduct themselves in a manner consistent with FEOC principles and are subject to the scrutiny of the MSA. Therefore, they are already prohibited from any “gaming” activities and consequently, specific language in rule 6.6 regarding intentional deviation from dispatch levels may not be necessary.</p>	<p>The AESO appreciates the reminder. In the January 15, 2009 updated recommendations the AESO contemplated including in the rule additional language to prohibit intentional deviation from dispatch. After assessing stakeholder feedback the AESO did not include such provision in the draft rule because it was considered redundant to rule 1.10 regarding behaviour and it would have created an unintended distinction between intentional and unintentional non-compliance.</p> <p>The AESO agrees with the concerns regarding a barrier to the operation of small generators but notes that compliance is still required within the stated ranges.</p>

<p>ATCO Power</p>	<p>ATCO Power made an earlier suggestion that two new mitigating factors be added to Rule 12.6.5. The two mitigating factors are:</p> <ul style="list-style-type: none"> • Actions or inactions that are consistent with the physical capability of the asset operating in accordance with good electric operating practice; and • An acceptable operational reason as defined in the definition <p>ATCO Power acknowledges the AESO's response that Rule 12.6.5 was recently approved and confirmed and our suggestion may be helpful in developing part of the rule recommendation in section 3.4 of the paper. ATCO Power believes the two additional mitigating factors should pertain to all aspects of Rule 6.6 not just section 3.4 of the original recommendation paper. The new mitigating factors could be added directly into either Rule 6.6 or Rule 12.6.5; ATCO Power views these mitigating factors as a necessary aspect of Rule 6.6.</p>	<p>The AESO believes that ATCO Power's suggestions have been incorporated into the draft rule that is currently posted on our website. We look forward to ATCO's comments on the draft rule.</p>
<p>BowArk Energy Ltd.</p>	<p>BowArk Energy does not have a 24 hour trading desk and our 6 MW generating facility is staffed only during on-peak hours. As such, we require the +/- 5MW margin to stay within compliance of our standing bid. Requiring our very small operation to comply with bid without sufficient margin on a 24 hour by 7 day basis would cause considerable financial hardship. Our revenues from such a small operation can not support the overhead costs such rule changes require and would force small generators like ourselves out of the market. The current flexibility afforded by +/- 5 MW margin must not be restricted for small generators in any way. BowArk believes for units <10MW be exempt or grandfathered from any rule changes which would judge the generator non-compliant for not responding to dispatch signal.</p>	<p>The draft rule that is currently posted on our website recommends an allowable dispatch variance of plus or minus 5 MW for generating assets with a maximum capability of 200 MW or less. Please refer to the response to AltaGas in this section 4.</p>
<p>ENMAX</p>	<p>ENMAX supports prohibiting intentional deviations from the dispatch level. We also support having a "due diligence" defense to any violations, and we remain concerned about the potential for a PPA Buyer to be held accountable for actions taken or not taken by PPA Owners.</p> <p>The suggested metrics for non-compliance, such as price correlations, require further discussion before we can state whether</p>	<p>The AESO agrees with the need for good communication during and after an event and even before the event if possible. Recent decisions by the AUC have indicated that the due diligence defense is acceptable. If the pool participant can demonstrate that they have performed due diligence with respect to dispatches they may not be held accountable for non-compliance events. The MSA has the authority to investigate the conduct of market participants including</p>

	<p>or not we support them. Regardless of which metrics are ultimately selected, however, we believe it is important for the AESO and the market participant to communicate during and after any suspected dispatch violation and to work cooperatively to resolve them. Given the number of dispatches in a year, the statistical likelihood of zero violations is small, even if the participant is using good electric operating procedures, so it is important that the AESO check out any operational reasons for violations before determining that a rule violation has occurred.</p>	<p>PPA owners rule 6.6 notwithstanding.</p> <p>Please refer to the response to AltaGas in this section 4. We look forward to ENMAX comments on the draft rule posted on the AESO's website which we believe addresses the concerns expressed here by ENMAX.</p>
EPCOR	<p>EPCOR supports a rule which prohibits intentional deviation from the dispatch level. We believe that a rule that dealt with only this element of non-compliance would be sufficient and that the AESO would not need any additional elements to the rule if only intentional non-compliance were addressed.</p>	<p>Please refer to the response to AltaGas in this section 4.</p>
Industrial Power Consumers Association of Alberta (IPCAA)	<ul style="list-style-type: none"> • IPCAA would prefer that the AESO keep loads financially neutral from all ramp rates; however, the addition of deviation and price correlations is a positive step and is endorsed by IPCAA • The Rule needs to be definitive and place the onus on the generator to prove that they are not in violation rather than the AESO having to prove a violation occurred 	<p>Please refer to the response to AltaGas in this section 4. The AESO no longer intends to include deviation and price correlations in the revised rule.</p> <p>Investigation into a rule violation is the responsibility of the MSA. The AESO is responsible for monitoring and referral of suspected non-compliance events to the MSA.</p>
NEXEN	<p>There are two comments Nexen would like to offer regarding this enhancement.</p> <p>Nexen seeks additional clarity regarding 'synchronization to the grid' and how that relates to non-compliance. Some generating units have the ability of not being synced to the grid but can sync to the grid quickly (within 1 minute) to provide energy/DDS/AS (all within compliance of the appropriate AESO Rule and OPSS). Is it expected that the generating units will be required to be synced with the system at all times? If so please provide any supporting rationale.</p> <p>While Nexen understands and generally supports the AESO's</p>	<p>Please refer to the response to AltaGas in this section 4. The AESO no longer intends to include deviation and price correlations in the revised rule.</p>

	<p>recommendation regarding the delineation of intentional versus unintentional non-compliance events, it is unclear how this delineation will impact the non-compliance outcome. If a non-compliance event is determined to be unintentional versus intentional how will this change the AESO’s actions? How will this be communicated to the MSA? Does the MSA intend to “penalize” these events differently? If so how? Nexen suggests additional clarity either in the Rule or from the MSA is necessary.</p>	
<p>Northstone Power Corp.</p>	<p>Northstone Power agrees with the comment submitted by Bowark on Jan 19, 2009 but would prefer the grandfathering for small generators be for units <15MW to ensure we can keep our focus on reliable operations. We believe the unintended consequence of the rule change will result in increased administration and associated costs to small producers. We often discover these rule changes occur to address certain generators who engage in gaming and questionable procedures...the small generator should not have to pay the price for rule changes that are intended to stop specific actions of specific generators, especially during an economic crisis.</p> <p>As a note, it was very difficult for us or any small generator to determine that Rule 6.6 pertained to our operations. The AESO may have followed normal review procedures but small generators will not always have sufficient staffing to catch these items. As far as we can determine not one small generator picked up on this rule change. We believe that flags should have been raised within the AESO when no small producers responded to or participated in the consultation process, especially when the AESO is aware the rule change being proposed has a impact to small generators. As a result we feel blindsided by the rule change and upset we were not able to comment on the recommendation paper issued in October 2008. In addition, because we missed the early review process we cannot be entirely sure we fully understand the complete impact the rule change will have on our organization.</p>	<p>Please refer to the response to AltaGas in this section 4.</p> <p>The AESO points out that we did receive feedback from the owner of small generators on our October 30th recommendations. This feedback is included with the stakeholder comments received and is posted on our website.</p> <p>We welcome suggestions and other feedback you may have for improvements to our rules and/or consultation process. Please submit them to stakeholder.relations@aeso.ca.</p> <p>We trust that conversations between the Northstone and the AESO have clarified the impact of the rule change on your organization.</p> <p>The AESO does not agree with grandfathering generators sized <15MW. Small generators have compliance obligations under the existing rule and the revised rule is not intended to make compliance more difficult for generators. It is intended to clarify how generators are expected to comply and sets out the expectations when they cannot.</p> <p>We also welcome any comments that Northstone would like to submit on the draft rule 6.6 which is currently on our website.</p>

TransAlta	TransAlta supports this initiative. We look forward to providing comments on the rule language as it is developed.	Please refer to the draft rule currently posted on the AESO website.
TransCanada	<div data-bbox="323 285 1192 570" data-label="Text"> <p>The AESO, pursuant to section 17(m) of the <i>Electric Utilities Act</i> , and the MSA, pursuant to section 46 of the <i>Alberta Utilities Commission Act</i> and Alberta Regulation 266/2007 already provide the authority to investigate potential intentional deviations from the energy market dispatch level without the need for further ISO Rules on the matter. In addition, because the AESO’s proposed indicia of “intentional non-compliance” may not ultimately reflect intentional deviations, any new “checks” or audits must contain clear criteria.</p> </div> <div data-bbox="323 610 1192 716" data-label="Text"> <p>Regardless, TransCanada would be willing to examine the wording that the AESO proposes to use and supports the concept of prohibiting intentional deviation from the energy dispatch level.</p> </div>	<p data-bbox="1203 245 1944 277">Please refer to the response to AltaGas in this section 4.</p>

6. Next steps

Stakeholder	Stakeholder Comment	AESO Response
ENMAX	<p>Following a final decision on the metric(s) that will be used to measure compliance, the detailed wording of the rule must be developed. That wording is critical, and ENMAX cannot “sign off” on its support for the rule until that task is completed.</p> <p>As a final comment, ENMAX appreciates the level of consultation that the AESO has undertaken on this rule.</p>	Please refer to the draft rule currently posted on the AESO website.
NEXEN	Nexen has no concerns with the proposed next steps.	Acknowledged.
Industrial Power Consumers Association of Alberta (IPCAA)	It is important to understand the implications of these Rule changes with respect to the AUC proposed Hearings on Rule 6.6 challenges by EPCOR and TransAlta.	Acknowledged.

8. Other Comments

Stakeholder	Stakeholder Comment	AESO Response
<p>EPCOR</p>	<p><u>Other Meter Sources of Data used for Compliance Monitoring.</u></p> <p>EPCOR is very concerned about the multiplicity of sources of information from which compliance information is drawn. If the AESO continues to be of the view that the “pool participant” is the appropriate party for compliance purposes, a single, transparent data source is an essential component of the compliance framework. This data source should be available to and used by all parties (including the operator, the pool participant (if different than the operator) and the AESO) for compliance monitoring purposes.</p> <p>The AESO’s Current Supply and Demand page is the closest information to a common data source of which EPCOR is aware. This report is currently subject to the following disclaimer: <u>“Report Disclaimer</u> <i>The above information is presented as a reasonable estimate of the Alberta supply & demand status at the time indicated above. With the exception of MCR, all information presented is based on SCADA data as received by the AESO. Certain events such as SCADA errors may result in erroneous values.”</i></p> <p>Parties should be able to rely on the chosen data source when subjected to compliance inquiries and sanctions. There have been occasions when incorrect information (eg. unit trips) has been displayed on this page. We have inquired with the AESO about the accuracy of the information and its effect on the trading market and have referred to this disclaimer. The errors and disclaimer makes it unlikely that a party could rely on this report in compliance proceedings.</p>	<p>The CSD page is not used for compliance monitoring but uses the same information that the AESO uses for compliance monitoring. Any SCADA errors that show up on the CSD page will also show up in the monitoring data and will be questioned and confirmed accordingly. The AESO would not consider pool participant to be non-compliant because the output of their unit is not aligned with an erroneous meter reading.</p>

<p>NEXEN</p>	<p>Nexen would like to take this opportunity to make the following general comments which do not expressly fall into the comments boxes provided above.</p> <p>Nexen has reviewed the October 30, 2008 Section 6.6 Recommendation Paper and the January 15, 2009 comment matrix which included the AESO remarks. Nexen agrees with stakeholders and the AESO that further clarity around the evaluation criteria on non-compliance events is valuable and will provide transparency to industry participants on this important matter. While Nexen appreciates the AESO’s efforts in this matter, it is not clear if and when the AESO will continue to apply discretion in the application of Section 6.6. The AESO notes in several places in their responses in the stakeholder comment matrix that details outlined in the ISO Rule will provide greater guidance and clarity. The AESO also notes that there are also a number of operating considerations which may impact the decision on whether or not an “event” will be forwarded to the MSA. Nexen requests that the AESO provide some clarity on how the different operating considerations will be used in the evaluation process. Do these “operating considerations” work in cooperation with the AESO’s discretion in the application of the Rule or has the ability for the AESO to apply discretion in relation to Section 6.6 been removed from the Rule entirely and replaced with the “operating considerations”? If some element of discretion is intended to continue, the ASEO may consider making that clear when drafting the new Section 6.6 Rule.</p> <p>Nexen also acknowledges that the AESO is trying to address a number of issues related to dispatch compliance in the proposed rule and developing a Rule such as this can be a very difficult. Nexen would like to caution that making further “accommodations” to the Rule will dilute the Rules desired outcome. Nexen appreciates that AESO Rules should accommodate some of the unique characteristics of market participants but the AESO should not lose</p>	<p>The AESO appreciates the concerns expressed by NEXEN. The draft rule 6.6 that is currently on our website has been revised to provide more clarity in the areas that Nexen has identified. A primary driver for revising the rule was to provide this clarity.</p> <p>We believe that the draft rule 6.6, which is on our website, provides answers to your questions and we look forward to your comments.</p>
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	<p>sight that Alberta is a competitive market. Much like the pool price, AESO Rules can also send a reasonable “price signal” to industry participants regarding capital investment and their desire to participate in the market. Nexen submits if the Rule is “softened” any further this could create inequity between generating units. More lenient compliance thresholds not only open the potential for larger amounts of excess energy on the AIES, it also means units that invested significant capital in their control and other equipment did so needlessly. As these units are now required to recover this incremental capital cost in a market which has potentially more excess energy on the AIES and compete against units that incurred no such capital expense.</p> <p>As noted above Nexen generally (except for the proposed ramp rate approach) feels the AESO’s proposal reasonably accommodates the current needs of industry participants and looks forward to the next phase i.e. ISO Rule consultation.</p>	
<p>TransAlta</p>	<p><u>Human Error</u> Human error is an inevitable event. The AESO rule has not acknowledged that there is an acceptable rate of human error. We believe it is reasonable that this should be included. Even when exercising due diligence, human error will occur. We would suggest the use of a human error rate for every X number of dispatches. As each dispatch represents a point where human error could occur, this would provide a level playing field across generating units and recognize that there is an acceptable rate of human error that needs to be recognized. Human error is recognized in all aspects of the industry especially in areas of hazard, compliance and safety analysis. The goal of root cause analysis is improvement and reduction of human error. TransAlta supports that where human error exists a non-punitive approach to improving compliance be adopted and that a root cause analysis and remediation process be adopted. This analysis should</p>	<p><i>Human Error –</i> The draft rule 6.6 which is posted to our website takes into account human error. The 10 minute averaging of the allowable dispatch variance and the ability to start ramping within 10 minutes allow for variation in every dispatch. In addition it is expected that during the investigation stage performed by the MSA there will be an avenue to discuss and consider the cause of the event. The AESO encourages all participants to use root cause analysis to understand all incidents they may encounter. However, while the draft rule does not require participants to undertake such analysis or submit their findings to the AESO this may be important information to provide if the AESO investigates a potential non-compliance event. <i>Metering Issues -</i></p>

not be overly burdensome on the market participants and there needs to be recognition that human error can never completely be eliminated at any cost. The proposed AESO rules must take human error into account and the AESO should incorporate human error as an Acceptable Operational Reason for non-compliance events and make it incumbent upon the market participant to report the root cause and submit it to the AESO. The AESO can identify potential negligence, willful misconduct, intention and so on and take the appropriate action by referring the event to the MSA in those events.

Metering Issues on a go forward

Basis

Problem: AESO’s current data published through the CSD page & the Dispatch Variance Notification (DVN) tool is inaccurate with the Point of Supply Meters. In many circumstances particularly when units are ramping or starting, this results in inaccurate information on generation output being supplied to the market in real time.

Impact:

This information is relied on by market participants for real time knowledge of how facilities are actually running and for managing compliance. We believe the AESO has an obligation to provide more accurate data than is currently being provided. This inaccurate data does affect participants’ behavior and can result in unnecessary changes or incorrect changes being made to a unit’s output. This also creates many unnecessary phone calls between the owners and the buyers of PPA units. Use of this data can create false signals to the market which may be relied on by participants in the following ways:

- Used by participants to analyze what is going in the market
- Used by buyers to manage compliance
- Use by participants when there are issue with their own data to ensure compliance.

Compliance is managed in real time so the real time signals

The metering data published on the CSD page and utilized in the DVN is sourced from participant supplied unit net generation metering or a unit net generation calculation utilizing other participant supplied metering meeting the AESO’s SCADA Metering Standard. This net generation value is the data utilized by the System Controller in monitoring the system and dispatching the market. As well as the specific requirements that need to be met for the SCADA metering, the SCADA Metering Standard, along with its predecessor document OPP 003.1 Electric Facility Data and Communications for the Alberta Control Area, states that the preference is for participants to supply direct metering of unit net generation (ie Point of Supply). Where participants do not have unit net metering, a calculation for net generation from the metering of unit gross generation, unit load and station service is described. The Standard also states it is the facility owners' responsibility to provide all necessary hardware, software, and make all necessary arrangements so that the visibility points will be collected and transmitted to the AESO. As noted to TransAlta in previous communications about the differences between their calculation of net generation from revenue metering at the Point of Supply used at their plants versus the net generation value derived from the SCADA Unit Gross Metering posted to the CSD page, the AESO is investigating the feasibility and technical requirements to utilize the revenue meter for SCADA purposes. Should that investigation prove feasibility, the AESO will be pleased to work with TransAlta as TransAlta makes the necessary hardware, software and communication arrangements to supply that data to the AESO.

As mentioned above DVN is utilizing SCADA data in monitoring of generating units. As this data is used in calculation of unit net generation this may be from time to time be subject to calculation approximation simplifications. Dispatch Variance Notification (DVN) messages were put into place to assist participants in monitoring their assets relative to dispatch levels. It is

<p>provided must be accurate. We cannot correct compliance issues ex-poste; the only opportunity we have to correct them is in real time. Participants do use the CSD page as a basis for corrections. AUC Decision 2008-114 said EPCOR should rely on the CSD page. The data on this page must be accurate.</p> <p>Fix: Provide Data from Point of Supply Meters and use the AESO rule Meter Point Definition Record Formula along with accurate time clocks that use a minimum of 5 second data with one minute averages. Inaccurate data that is not updating must be flagged as such to the pool participant of the specified generating unit. This data would be used in real time.</p> <p>Specific Issues</p> <p>1) Approximations of low side meters to high side meters result in inaccuracies.</p> <p>a. During unit start up station service factors used by the AESO are wrong</p> <p>1. AESO formula divides station service by number of units. This is an inaccurate approximation that will lead to the CSD page and the DVN tool showing non-compliance.</p> <p>2) AESO data does not take enough snap shots and is not time weighted over the minute—this results in very different numbers being provided for ramping.</p> <p>a. Example: a unit which ramps 12 MW’s per minute is asked to ramp 50 MW’s.</p> <p>1. Likely AESO data – the AESO data published is not a time weighted average of the minute. It is not clear it is even taken every minute so it can be inaccurate on a ramp – for example, it could show 0 MW performance on a ramp when the unit is actually at 36 MW</p> <p>2. Scada data being used by the AESO provides more snap shots than what is used by the AESO. The AESO should pull data from scada system more often.</p> <p>3. High side meter takes more snap shots so would provide much</p>	<p>worth noting that not all generating units are monitored by the DVN since not all pool participants have signed for this service.</p> <p>The AESO is currently engaged in an IT project which will attempt to address the timelines issues (i.e., performance) of DVN messages.</p> <p><i>If we lose an 80 MW mill -</i> The AESO recognizes that there will be sudden changes in generator output such as described by TransAlta. The draft rule 6.6.4 is intended to balance the needs of system controller to operate the electrical system and the plant operator to maintain the operation of the generating unit. The draft rule makes allowances for such deviations. We look forward to your comments on the draft rule which is posted on our website.</p> <p><i>Zero to min stable –</i> The AESO appreciates the complexity of operating a generating unit any time and especially below the minimum stable generation level. The draft rule is intended to balance the responsibilities placed on a plant operator when operating the unit below its minimum stable generation level and the responsibilities placed on the system controller to operate the electrical system which includes managing generators that are operating below their minimum stable generation level. Draft rule 6.6.5 is intended to find this balance. We look forward to your comments on the draft rule which is posted on our website.</p> <p><i>2.5% to max 10 MW –</i> The AESO no longer intends to include any additional language regarding intent in rule 6.6. as this is covered in 1.10 and we expect to see it in the pending FEOC behavioral guidelines. Please refer to the response to AltaGas in section 4.</p>
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better data for ramping.
3) Meter Data used by the AESO regularly stops reading the new data and remains stuck at the same level.
a. There is no way for a participant to know that the data is stuck. A flag or message should be provided when the data is stuck to inform the participant that there is an issue with the data.

If lose an 80 MW mill.....need a process to inform without provided

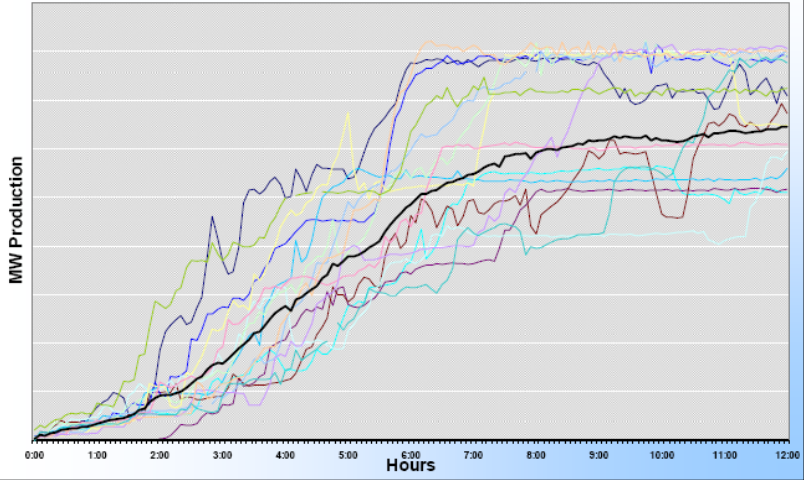
When we have a mill trip it would be typical to see an 80 MW drop in the facility. When this occurs the 10 minute proposed time clock period would still view this facility outside of compliance. It may take some time to determine what is wrong and/or attempt to return to the dispatch. At this point the operator is trying to stabilize the unit. The operator can tell the AESO, or the AESO can tell itself what the current actual generation is. What can't be determined is the facility's new capability without time to determine the problem and the necessary fix. The rule also must incorporate time or allowance for the steps below which an operator takes in assessing the unit's new capability. Once an operator has established that there is an issue with the facility (this alone can take 5mins or more), an operator must:

- 1) Communicate to plant staff to investigate perceived problem
- 2) Wait for results of plant staff investigation
- 3) Calculate new ramp rate given estimated maintenance time
- 4) Communicate to trading or operations desk
- 5) Communicate with AESO

We believe the AESO needs to make allowances in the rule for this circumstance. We would suggest that the generator must restate the facility once it has enough information to know the new capability. We respect and support the system operator's need for the best available information but also need the AESO to understand that sometimes it takes time to provide this information. We cannot provide information we do not have.

Zero to Min Stable

The startup of a thermal unit, unlike a gas fired or hydro unit comprises of several complex processes and systems requiring special, focused resources and skills to achieve minimum stable generation. During this time frame equipment is operating at or near critical limits and requires extra operating diligence and intervention. There are literally thousands of components that contribute to or hinder a successful startup and loading to minimum stable generation. Because of these factors a thermal unit operator cannot reasonably predict with a high degree of accuracy the time required or the rate at which a unit can get from 0 MW to minimum stable generation. Normal TransAlta resource levels dictate that a single operator manages a pair of units. As such, this operator is fully utilized during start up and loading to minimum stable generation levels. As such the operator is fully utilized and does not have additional time to provide many electronic restatements to the AESO. TransAlta proposes that the AESO rules state that a unit operator (Pool Participant) is required to verbally communicate the unit's estimated time to reach minimum stable generation. This would provide the AESO with the best available information at the time it is known about the unit's ramp to minimum stable. As provided in our earlier objection letter, TransAlta Unit "A's" ramp from zero to full load is quite variable. This is reflected in each unit's historical performance and thus needs to be considered compliance with in the rule.

	<p style="text-align: center;">TransAlta Unit "A"</p>  <p>— Average</p> <p><u>2.5% to max 10MWs</u> TransAlta believes the proposed tolerance band of 2.5% or 10MWs is still too tight given the AESO plans to incorporate the use of "intent" into Rule 6.6. By increasing the band to 2.5% with a maximum of 15MWs, there would be less unnecessary administrative burden for plant operators without sacrificing Reliability Standards.</p>	
<p>TransCanada</p>	<p>TransCanada has taken the liberty of inserting “other” comments and concerns in this section although not explicitly provided for in the response matrix.</p> <p>1. Personnel Accuracy</p> <p>TransCanada suggests it is appropriate to set a level of accuracy for human activities. Attached to this submission is a study (Human</p>	<p><i>Personnel Accuracy -</i> The AESO considered the study submitted by TransCanada and the suggestion to include human error rate in rule 6.6. The draft rule 6.6 which is posted to our website takes into account human error. The 10 minute averaging of the allowable dispatch variance and the ability to start ramping within 10 minutes allow for variation in every dispatch. In addition it is expected that during the investigation stage performed by the MSA</p>

	<p>Error and Available Time in SPAR-H) conducted for a nuclear power plant which clearly demonstrates that humans carrying out operational activities can expect to experience errors. The report cites the many factors such as stress, number of required steps an operator must conduct, complexity of the activity etc that contribute to the level of accuracy that is achievable by a human operator. According to the report, error rates for cognitively engaging tasks, such as diagnosis which TransCanada believes relates to activities of AESO System Controllers, exhibit a base human error rate of 1 in 100. Yet Alberta’s system currently maintains reliability even with this expected error rate. The report further suggests that for tasks that are more action oriented, which relates to dispatch and plant operators, the base human error rate in 1 in 1,000.</p> <p>TransCanada suggests utilizing a target of 99.8% accuracy rate consistent with the report’s findings. (Equates to two human error event for every 1,000 dispatches because there are typically two steps in the dispatch process, the first step is to the dispatchers and the second is to the plant operator)</p> <p>Enforcement of this type of performance target would reduce the administrative burden of investigating every innocent and unavoidable error (which would be necessary with a zero tolerance rule). In addition, the performance based target would be more fair than a zero tolerance approach which would impose a new risk and cost on participants.</p>	<p>there will be an avenue to discuss and consider the cause of the event.</p> <p>The AESO notes that the report focuses a good deal of attention on the relationship of time available and human error rate, suggesting that the less time allowed for a task the greater the chance of human error. In that regard the draft rule provides more time, compared to the existing rule, in the area of steady state and generator ramping compliance monitoring which, according to the study, should help to reduce human error.</p> <p><i>Restatement for Dispatch time lag –</i> The AESO appreciates that there can be a time lag between the time a restatement is submitted and the time the dispatch is issued. This delay can occur for a number of reasons including data transfer and system operation requirements. In any case, the AESO points out that compliance is monitored based on the dispatch and directive instruction and not on the restatement. This is clearly stated in the draft rule 6.6.1a.</p> <p><i>Compliance Measurement Transparency –</i> Please refer to the response to TransAlta in this section 8.</p>
	<p>TransCanada notes that dispatch risks already exist in the market and a zero tolerance approach to human errors would add to those risks. In addition, only price responsive suppliers that participate in the market bear these risks. Adding further risks to these participants could discourage market participation which is contrary to the AESO mandate.</p> <p>Concerns that human error rates pose a system reliability concern are unfounded. Given that the current error (or non-compliance) rate in total is less than 1%, the likelihood of simultaneous errors that could be problematic for system reliability is statistically improbable. It is also important to recognize that dispatches are for relatively small MW quantities compared to the size of contingency</p>	

that the system is required to safely withstand. (Single largest contingency requirements)

Regardless, TransCanada endeavors to achieve a high standard of operator performance but achieving 100% accuracy given the human nature of operating complex equipment is virtually impossible.

2. Restatement for Dispatch time lag

Another issue that TransCanada wishes to raise is when a generating asset has been restated, there may be a delay in receiving the corresponding dispatch from the System Controller. During that delay, the pool participant is non-compliant through no fault of their own. TransCanada submits that such an event should be considered an event covered under the allowance provisions.

3. Compliance Measurement Transparency

TransCanada also requests that a consistent metering point be utilized for real time operations and compliance monitoring. Some plants may rely on meters on the low side of the transformer, others on the high side and settlement is done based on 15-minute interval averages. Additionally, the methods of handling energy taken from the grid as station service during start up often leads to disagreement about the output of the unit between the AESO and

pool participant. In order to effectively monitor compliance in real time, industry, including the AESO, requires a consistent measurement point and polling frequency. TransCanada requests the AESO address the metering discrepancy issues directly and, while they are doing so, make available the metering values that are being used to screen for compliance issues to the participants.