Date of Request for Comment: October 5, 2015  
Period of Consultation: October 5, 2015 through October 26, 2015

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<td>a) New</td>
<td>ATCO Power Ltd. (ATCO Power)</td>
<td>1. Agreed, the change in the voltage ride through requirements is consistent with current industry norms, as reflected in NERC PRC-024. The AESO will propose that proposed New Section 502.5 become effective one year after filing with the Alberta Utilities Commission (“Commission”).</td>
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The AESO is seeking comments from stakeholders with regard to the following matters:

1. Do you agree or disagree with the proposed New Section 502.5? If you disagree, please provide comments.

ATCO Power provides the following comments:

1. First, subsection 7 includes a significant change in the voltage ride-through requirements from the previous requirements contained in the Generation and Load Interconnection Standard published in 2006. In fairness to developers that are actively working on projects now, the AESO should consider setting the effective date of the new rule in the future (i.e. with an effective date six months to a year in the future) so as not to negatively impact those projects.

2. Subsection 9(1) states that a generating unit must be designed to be free to respond to frequency changes and controlling the response to frequency changes as measured at the generator stator winding terminals. The measurement point (e.g. generator stator winding terminals) is an issue that ATCO Power has received exceptions for in the past because certain units can only comply with these requirements at the power plant level and not at the steam and combustion turbine generator stator winding terminal levels. Given that compliance cannot be met as described in section 9(1), ATCO Power does not agree with the change unless it can be confirmed that the previous exceptions will be accepted for compliance purposes.

2. Subsection 9(1) of proposed New Section 502.5 is equivalent to subsection 3.2 of the AESO’s existing Generation and Load Interconnection Standard (“G&L Standard”).

As noted in AESO reply #1, the AESO will propose that proposed New Section 502.5 become effective one year after filing with the Commission. During the one year period, market participants will have the opportunity to advise the AESO of any technical variances to the G&L Standard that were previously granted by the AESO in writing, and to request that the AESO provide any new variances under section 2(2) of proposed New Section 502.5. The AESO will review any previous variances and new variance requests and will determine whether a
3. Third, ATCO Power notes that subsection 15 references the International Electrochemical Commission 61000-3-7. Electromagnetic compatibility (EMC) – Part 3-7: Limits - Assessment of emission limits for the connection of fluctuating installations to MV, HV and EHV power systems (“IEC EMC”), which is written more broadly than just outlining specifications as suggested in subsection 15. For example, IEC EMC describes other types of obligations of “owners”, “customers” and “system operators”. Is the AESO’s intent to require generation owners to demonstrate compliance to IEC EMC?

3. Part 3-7 of the IEC 61000 series of standards (“Part 3-7”) defines two entities: “customer” and “system operator or owner”. “Customer” is defined as “a person, company or organization that operates an installation connected to, or entitled to be connected to, a supply system by a system operator or owner”; “system operator or owner” is defined as an “entity responsible for making technical connection agreements with customers who are seeking connection of load or generation to a distribution or transmission system”.

For the purposes of proposed New Section 502.5, a generation owner is considered to be a “customer”, while the AESO is considered to be the “system operator or owner”. The responsibilities of a “customer” and a “system operator or owner” are stated in Section 5.4 (Responsibilities) of Part 3-7. A “customer” is expected to comply with flicker emission limits established by a “system operator or owner” at a specified point of evaluation (the AESO has established these limits and has specified the point of evaluation in subsection 15(a) of proposed New Section 502.5). In addition, a “customer” is expected to (a) work with the “system operator or owner” as required to determine methods for reducing flicker reductions, and (b) make appropriate design choices to achieve flicker emission reductions.

Generators will be required to comply with Part 3-7 to the extent that it is referenced in proposed New Section 502.5.
4. Fourth, the constituents described in IEC EMC do not neatly fit with the definitions used in the ISO Rules. For example, IEC EMC describes obligations for “owners” and “customers” which are not the same terms as legal owners of generation assets or transmission facilities. ATCO Power request the AESO provide guidance on the requirements that apply to generation owners.

5. Fifth, ATCO Power does not have access to all of the information we require to assess compliance with the short and long term flicker limits set out in Table 1 of subsection 15. More specifically, ATCO Power requires data about the existing flicker levels for the transmission system. ATCO Power requests the AESO to provide this information.

6. Sixth, ATCO Power requests that the AESO clarify the methodology(ies) that a generation owners can use to demonstrate compliance with flicker and harmonics requirements. For example, compliance can be assessed with a modeling study or a test. Can the AESO provide guidance about the methodologies that are acceptable for assessing compliance and, to the extent applicable, the circumstances in which a prescribed methodology must be used?

7. Seventh, demonstrating compliance with flicker limits is potentially an onerous obligation upon generators, particularly cogeneration owners in that the collection of data to demonstrate compliance requires the generating unit to be shut down and disconnected from host processes. This can be disruptive to operations and very costly. Furthermore, generators attenuate voltage flicker and serve to reduce rather than increase flicker. Given the significant cost of collecting the flicker data and the low likelihood that a generator contributed to system flicker, ATCO Power requests that the AESO only require generators to collect flicker data when requested to do so by the AESO.

8. Eighth, subsection 15(c) requires that a generator does not introduce resonance to the transmission system. ATCO Power requests further guidance by way of an information document or technical standard that explains how this can be assessed.

4. Refer to AESO reply #3 above.

5. If during the design process or at any other time the legal owner of a generating unit has a concern regarding flicker limits, the legal owner of a generating unit can arrange to collect system data from the legal owner or operator of the interconnected transmission facility.

6. It is the responsibility of a generating unit owner to determine how it will ensure compliance with the provisions of 502.5. The AESO will assess any power quality concerns on a case by case basis and determine an appropriate course of action to resolve the concern.

7. See AESO reply #5. The AESO agrees that there is a low likelihood of a generating unit contributing to flicker. Flicker data will only be requested by the AESO when investigating a power quality concern.

8. This is common practice for substation design and the AESO does not believe further clarity is required.
9. Ninth, subsection (c) does not clarify which party would be responsible for remediying issues when resonance is added to the transmission system when the issue may not result from the action of a generator. For example, the addition or change in a transmission facility may result in a generating unit introducing resonance. In such circumstances, the generator may not be aware of the change in resonance. Should the generator be responsible for remediying the issue which it did not cause?

10. Tenth, ATCO Power wishes to clarify the requirements in subsection 18 with respect to collecting recordings of synchrophasor measurement system data. Is the requirement to collect and retain data related to generating unit fault events only as described in subsection 19 or to collect 24-7 data? What resolution does the AESO expect the data to be captured at?

11. Finally, ATCO Power notes that there is a typographical error in subsection 17(2)(a). The text was changed to “ground falsh density” and should be corrected to “ground flash density”.

**Capital Power Corporation (Capital Power)**

12. Capital Power has no issues with the proposed changes to New Section 502.5 at this time.

**ENMAX Corporation (ENMAX)**

“19(1) Subject to subsection 19(4), a generating unit must have an internal sequence of event monitoring system that initiates an event record for every event that results in a trip of the generating unit, or for the status of key components, including if present:

(a) a governor system trip;
(b) an automatic voltage regulator trip, including:
   (i) over-excitation limiter action; and
   (ii) under-excitation limiter action;
(c) a medium and low voltage switchgear and motor control centre protection trip;
(d) the status of key auxiliary components, including:

9. As new facilities are added to the transmission system, studies will be conducted during the connection process to confirm that resonance concerns are not created. If resonance does occur, an investigation will be undertaken by the AESO and costs will be allocated appropriately.

10. The detailed requirements for synchrophasor measurements are contained in Section 502.9 of the ISO rules, *Synchrophasor Measurement Unit Technical Requirements*. The data is to be retained in accordance the proposed New Sections 502.5 and 502.6.

11. The AESO agrees. Please see the corrected wording in subsection 17(2)(a).

12. The AESO acknowledges Capital Power’s comment.
induced draft and forced draft fans; 
(ii) boiler feed water pumps; 
(iii) turbine inlet valves; 
(iv) medium and low voltage switchgear and motor control centres; and"

13. a) Please remove references to induced draft and forced draft fans as they are not applicable to simple cycle, cogeneration facilities using HRSGs, and combined cycle power plants.

13. b) Please rewrite this clause as there are a number of events that can occur that would result in a trip of the generating unit that are initiated from a continuously changing analog sensor which are integrated with other process control systems and not included within the Sequence of Events systems. These analog sensors and associated transmitters cannot be monitored by a sequence of events monitoring system that would be time stamping the value at a 1 millisecond resolution.

13. c) The inclusion of referencing the status from the low voltage switchgear and trips motor control centres within the sequence of events system is not practical due to the normal practice of separating the plant electrical systems into A & B buses and partitioning critical devices on dedicated buses.

The requirement includes the phrase “including if present”. If one of the listed components it is not present in the facility, then that component is not required to be monitored.

The requirement to use a sequence of event monitoring system therefore necessarily excludes the initiation of an event record for analog values. Accordingly, no changes have been made to proposed New Section 502.5 in response to this comment.

The AESO replied to a similar comment on a previous version of Section 502.5 on November 29, 2012, as follows (see reply 177):

Sequence of events recorders only record change in status of discreet equipment (e.g. on/off, auto/manual, etc.) and are not intended to record the analog values.

The AESO disagrees that the inclusion of the status from the low voltage switchgear and motor control centre protection trip would not be practical for the reasons proposed by ENMAX. Additional wiring may be necessary in order to provide the status of the circuit breakers associated with medium and low voltage switchgear and motor control centres to the sequence of event recorder. Note that event records are only required for those events that result in a trip of a generating unit.

13.c) The AESO does not agree that the inclusion of the status from the low voltage switchgear and motor control centre protection trip would not be practical for the reasons proposed by ENMAX. Additional wiring may be necessary in order to provide the status of the circuit breakers associated with medium and low voltage switchgear and motor control centres to the sequence of event recorder. Note that event records are only required for those events that result in a trip of a generating unit.

14. The Sequence of Events (SOE) monitoring system reporting will

“19(2) The legal owner of the generating unit must design a sequence of event monitoring system that is capable of downloading and retaining the recordings set out in subsection 19(1) for a period of not less than one (1) calendar year from the date of the initial recording.”

14. The AESO agrees with ENMAX’s understanding of a sequence

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only display results based upon a change of state triggered by any one of the configured SOE points and identify points that changed state during that time.

TransCanada Energy Ltd. (TCE)

15. a) TCE requests that the AESO develop the process for evaluating and granting variances to Rule 502.5 prior to filing with the AUC for approval.

15 b) Further, TCE requests that the AESO clarify that variances can be granted in cases where a functional specification document has not yet been issued.

16. TCE notes that some sections of the rule explicitly state that they apply only to generating units that exceed a specific MARP while other sections do not explicitly state a MARP threshold. TCE requests that the AESO confirm that if a MARP threshold is not explicitly stated in a particular section, the section should be interpreted to apply to all generating units.

17. Maximum Authorized Real Power

Section 4(2) requires the legal owner of a generating unit to consider the turbine and stator winding capability and other limitations under optimal conditions when determining the Maximum Authorized Real Power (MARP) for the generating unit. TCE is of the view that the list of considerations is unnecessary. Generating unit owners do not have an incentive to set a MARP of events monitoring system. Accordingly, no changes have been made to proposed New Section 502.5 in response to this comment.

15.a) As stated in proposed New Section 502.5, subsection 2(2), the AESO approves variances based on its discrete analysis of any one or more of the technical, economic, safety, operational and reliability requirements of the Alberta interconnected electric system related to the specific connection project. In general, variances will only be granted on specified terms and for a specific purpose. The AESO will develop a uniform process for reviewing and responding to requests for variances to all ISO rules that expressly allow for variances to be granted, including proposed New Section 502.5.

15.b) As part of the connection process variances may be requested prior to the development of the functional specification as part of the connection process. If granted by the AESO, such variances will be documented in the draft functional specification for the project.


17. The AESO agrees with TCE’s comment and has revised the wording in subsection 4(2) accordingly.
that would not respect the limitations of the generator itself. Further, TCE considers it inappropriate to include only a partial list of constraints.

18. Section 4(3) states that the ISO must deem the MARP for a generating unit to be the "maximum authorized MW" the ISO previously approved in writing or in the functional specification. For assets that do not have a functional specification or a written approval specifically stating the "maximum authorized MW" would the AESO consider the MARP to be the Maximum Capability of the generating unit as approved in writing by the AESO?

18. No. In accordance with subsection 2(1) of proposed New Section 502.6, the AESO will develop a functional document containing details including maximum authorized real power (“MARP”). The functional document will be developed in advance of proposed New Section 502.5 coming into effect.

19. Voltage Ride Through Requirements for Existing Generation Units: Section 6(2) requires that for the purposes of determining the voltage ride-through requirements the generating unit owner must determine the voltage value at the high voltage side of the step-transformer. However, in Section 7 Voltage Ride Through Requirements for New Generating Units, Section 7(2) does not specify the measurement point as the high voltage side of the step-up transformer. TCE requests that the AESO confirm if this discrepancy is intentional or if it is a typo.

19. The AESO has revised subsection 7(2) to specify the measurement point as the high side of the transmission system step up transformer.

20. Section 10 Power System Stabilizer (PSS) requires that if a generating unit is greater than 27 MW (or 67.5 MW if the generating unit is part of a complex) then a PSS must be installed and section 10(5) sets out the design requirements for the PSS.

Section 18 Synchrophasor Measurement Unit (PMU) states that if a generating unit owner replaces the protection system the generating unit owner must install a PMU and sections 18(2)-(3) sets out the design requirements for the PMU.

TCE requests that the AESO confirm that in both cases the design requirements apply only to PSSs and PMUs that are installed after this rule becomes effective and that the design requirements do not apply to existing PSSs and PMUs.

20. Subsection 10 of proposed New Section 502.5 reflects the requirements in subsection 3.3 of the existing G&L Standard, and the WECC policies that are referred to in that section. Accordingly, these requirements are applicable to existing generating units with power system stabilizers.

Subsection 18 of proposed New Section 502.5 applies only to existing units that replace the protective relays on a planned basis and to new units with a functional specification referencing subsection 18. The synchrophasor measurement system requirements in subsection 18 do not apply until the effective date of proposed New Section 502.5.
21. Generating Unit Disconnection and Interrupting Devices

TCE notes that section 13(2) requires generating unit owners to ensure the circuit breaker design must account for the present and future fault current contributions. TCE is concerned that generating unit owners will not have knowledge of future fault current contributions. TCE requests that the AESO clarify that a generating unit owner would be notified by the AESO if the fault current contributions changed such that the circuit breaker design needed to change. Further, TCE requests that the AESO clarify that in cases where the fault current contribution changes as a result of changes on the system outside the control of the generating unit owner that any costs associated with the changing the circuit breaker design would not be borne by the generating unit owner.

22. TCE notes that in the previous consultation the AESO had also released Information Document 2011-012R Generating Unit Technical Requirements. Is the AESO planning to finalize this Information Document as part of this consultation?

Turning Point Generation (TPG)

23. While we realize that it is outside of the scope of this consultation process (consulting only on changes implemented in the latest revision) TPG takes exception to rule 502.5 section 10(4) – Power system stabilizer for Pumped Hydro Energy Storage (PHES) units.

For background TPG has PHES projects in Alberta currently in development. TPG will gladly offer this service during the pumping cycle and agrees with the requirement remaining in this rule. However, recent tariff definitions on energy storage rules have classified PHES units to be load (during pumping cycle) and generation (during generating cycle).

Corresponding with that, PHES units are required to pay DTS and STS charges. Should the rule remain as is, consideration to the value of power system stabilization should be reflected in charges.
or tariffs such as DTS and STS charges.

The rule, as stated either unfairly treats PHES which pays full DTS and STS charges or indicates that in the eyes of the AESO, PHES is NOT just load and NOT just generation.

Providing Frequency regulation during load cycle is a classic example of additional services that energy storage units can (and perhaps should) efficiently provide to the system.

24. TPG further disagrees with singling out PHES for this purpose. Many energy storage technologies (compressed air, batteries, fly-wheels) have the ability to provide this or similar service. PHES should not be the only energy storage technology required to provide this service, or should be given a credit on DTS charges for providing this service.

25. Therefore, we call on AESO to revisit the classification of PHES units as load and generation and create a separate class of assets – Energy Storage Assets. Energy Storage Assets are now technologically proven and commercially viable and should be on equal footing with Transmission Assets, Generation Assets and Distribution Assets when considering system needs. A separate set of market and technical requirement rules should be developed for this new asset classification.

TransAlta Corporation (TransAlta)

Thank you for the opportunity to provide comments to proposed version 3.0 of Section 502.5 and proposed version 2.0 of Section 502.6 of the ISO Rules. Please note that some of these comments have been raised in previous opportunities for comments, however, we feel that the AESO has not fully addressed TransAlta's concerns and therefore we are choosing to reiterate them to allow the AESO an opportunity to provide further clarity.

TransAlta's main concerns relate to:
  a) The Need for Clarity Regarding Variances;
  b) Disregard for Historical Context; and
  c) Framework for provisioning of Reactive Power.
TransAlta will outline the specifics of each of these broader concerns below, and will also outline specific technical concerns regarding the proposed rules.

The Need for Clarity Regarding Variances

26. The AESO's process for granting variances pursuant to subsection 2(2) of proposed section 502.5 of the ISO rules and subsection 2(2) of proposed section 502.6 of the ISO rules is not described in the proposed rules. This creates significant uncertainty and risk for generators. TransAlta submits that the rule must incorporate clear guidelines for the basis of granting variances and that the AESO must grant variances for existing units prior to filing the proposed rules with the AUC. Otherwise, legal owners are left in a grey area with regard to how to obtain exemptions from strict compliance with the proposed rules, particularly for vintage units and units approaching end of life.

27. TransAlta considers variances critical to this rule as there is likely different need for reactive power in different areas of the province. Furthermore, generation is diverse both in age and size. For these reasons, TransAlta's opinion is that allowances for variances for the proposed technical requirements must be readily available and the criteria for obtaining a variance need to be better understood. The following are some of the items that remain unclear to TransAlta:

28. Small Generators

TransAlta maintains that there should be a minimum MW size requirement with regard to reactive power capability and AESO compilation of functional documents. It is not clear to TransAlta whether or not the AESO has done the necessary studies to demonstrate that the contribution of reactive power by small size generators is actually needed or impact the system in any meaningful way, or that such contribution would materially improve system reliability in the province. If such studies have not been completed, these requirements impose an unnecessary burden on
small generators not only from a technical perspective, but also from an administrative perspective as there are multiple reporting requirements with regard to AESO compilation of functional documents which were not in place before. TransAlta notes that most of the other sections in these proposed rules have MW thresholds.

29. **Old Units**

There are generators in the province which were commissioned many decades ago. In the event that such units cannot comply with the proposed requirements, the necessary upgrades to reach compliance may be very costly. TransAlta's view is that significant expenditures should not be made on generating units that are close to retirement, particularly if there are less costly alternative wires solutions that will last for many decades.

TransAlta submits that economic efficiency requires that the AESO choose the most efficient expenditure of capital for the achievement of its reliability goal, if there is a clear need in an area that contains a geriatric unit.

30. **Availability of System Studies**

The proposed approach for applying for variances would require market participants to have access to system studies in order to demonstrate that a variance is warranted. To better understand the AESO's view on this matter, TransAlta asks the following questions:

- Will the AESO make available information to allow market participants to demonstrate that reliability of the system is not at risk if there is a compliance gap with one or more of the proposed requirements?
- Will the AESO articulate what the reliability thresholds are in various parts of the province, in order to qualify to a variance?

29. Except as specifically stated, proposed New Section 502.5 applies to all generating units to ensure the reliability of the Alberta interconnected electric system. As the electrical system changes from day to day (for example, due to transmission line and generating unit outages) and over extended periods (for example, due to the decommissioning of generating units and the addition of loads), the AESO applies minimum requirements to all generating units regardless of location, size or vintage. Regarding the process and criteria for granting variances to the requirements of proposed New Section 502.5, please see AESO reply #2 and reply #15.

30. In general, the AESO will provide available system data upon request, except where that data constitutes Critical Energy Infrastructure Information or where there are confidentiality or security concerns.

However, as the electrical system changes from day to day (for example, due to transmission line and generating unit outages) and over extended periods (for example, due to the decommissioning of generating units and the addition of loads), the AESO applies minimum requirements to all generating units regardless of location. Due to the dynamic nature of the interconnected electric system, the AESO will not be articulating minimum reliability thresholds. Regarding the process and criteria for granting variances to the requirements of proposed New Section 502.5, please see AESO reply #2 and reply #15.
Disregard for Historical Context

31. The AESO's proposed rules also have no regard for the historical context in the market development in this province, where Power Purchase Arrangement ("PPA") units were in some cases assigned much lower reactive power requirements by the Independent Assessment Team ("IAT"), and where the former EUB made it clear that certain future requirements should be considered system costs.

Reactive power requirements were expressly considered by the IAT in developing the PPAs. Specific reactive power requirements were included in Appendix B of each of the thermal PPAs. Changing these reactive power requirements through a proposed AESO Rule has the practical effect of changing the PPA regulations previously passed by the Alberta legislature. This is not only outside of the AESO's jurisdiction, but undermines the extensive work that was done by the IAT in developing Alberta's market design.

This issue could be addressed by granting variances, however there is no clarity on this process at this time. TransAlta reiterates its request for variances to be granted prior to the filing of this rule.

Framework for provisioning of Reactive Power

32. TransAlta notes that in most other jurisdictions, reactive power requirements include either grandfathering provisions for existing facilities, or have only been required where system studies conducted by the Independent System Operator in a given area indicate that additional reactive power is required in an area. Other jurisdictions have also provided for payment for reactive power in certain circumstances.

TransAlta's opinion is that the AESO has not articulated clearly why the proposed framework (firm requirements for all generators to provide reactive power) is the most Fair, Efficient, Open, Competition (FEOC) approach for Alberta. TransAlta would appreciate a better understanding of how the AESO landed on this determination.

31. Please see AESO replies 58, 68, 69 and 74 from New Section 502.5 Generating Unit Technical Requirements ("New ISO Rules Section 502.5") AESO Replies to Stakeholder Comments: 2012-11-29

The reactive power requirements in proposed New ISO Rule Section 502.5 are the same as those in the G&L Standard and were conveyed to legal owners in the 2006/2007 reactive power letters. This requirement has been, and continues to be, applied consistently across the industry.

Regarding the process and criteria for granting variances to the requirements of proposed New Section 502.5, please see AESO reply #2 and reply #15(a).

32. As previously stated, the electrical system changes from day to day (for example, due to transmission line and generating unit outages) and over extended periods (for example, due to the decommissioning of generating units and the addition of loads). Accordingly, the AESO applies minimum requirements to all generating units regardless of location, size or vintage. The process and criteria for granting variances to the requirements of proposed New Section 502.5 are described in AESO reply #2 and reply #15(a).

Requiring all market participants to provide reactive power achieves a FEOC outcome and does not impact efficiency (i.e., siting, dispatch or investment signals) because there is no market for reactive power. The location-specific requirements for reactive power make a centralized market a less appropriate
Other Technical Issues

33. a) The AESO is proposing in rule 502.6 that all generators, regardless of the size, could be subject to providing information to the AESO in order for the AESO to compile functional documents. In order to provide such information in an accurate manner, these units would have to go through baseline testing. However, baseline testing is only required for units with a MARP of 9 MW or greater according to requirement 9 in proposed rule 502.6. Baseline testing has never been a requirement for generators below 9 MW in the past. TransAlta’s view is that the AESO is indirectly requiring generators with MARP below 9 MW to perform baseline testing by seeking to compile functional documents for these units. TransAlta’s opinion is that functional documents should only be required consistent with section 9 of proposed ISO Rule 502.6.

33. b) TransAlta asks for clarity on whether or not generators without a functional specification would qualify for variances for section 6 of proposed rule 502.6 “Voltage Ride-Through Requirements for Existing Generating Units” as Section (2) of proposed ISO Rule 502.6 describes generators with a functional specification only.

33. c) TransAlta notes that industry practice is that suitable margins to the generator capability curves are allowed in setting the AVR UEL and OEL curves. Documentation related to this can be found in the “Coordination of Generation Protection with Generator Excitation Control and Generator Capability” report by IEEE working group J-5 of the Rotating Machinery Subcommittee, Power System Relay Committee, 2007. TransAlta asks that the AESO consider these margins as part of subsection 5(3) of proposed rule 502.5.

Mechanism for procurement, as there is no ability to create open competition at each location. Only contestable products such as energy and operating reserves are priced.

33.a) Proposed New Section 502.6 does not require baseline testing on any units below 9 MW. The information the AESO will require to compile functional documents can also be determined through engineering assessments. A similar process is used for the collection of data during the connection process for new units. Engineered data is provided by the legal owners of generating units, but validation (testing) of the data is only required for those generating units that meet the size requirements.

33.b) The AESO assumes that the subsections referenced are subsection 6, “Voltage Ride-Through Requirements for Existing Generating Units” and subsection 2 “Functional Specification” of proposed New Section 502.5 (not proposed New Section 502.6). Any variances granted for generating units without a functional specification will be set out in the functional document described in subsection 2 of proposed New Section 502.6.

33.c) The margins described by TransAlta are considered in subsection 5 of proposed New Section 502.5. Subsections 5(3) and 5(4) require that such margins are taken into account when determining the MARP value for a generating unit. For example, if a legal owner wants a MARP of 100 MW, then the owner must be able to achieve:

(a) zero point nine (0.9) power factor, over-excited; and
(b) zero point nine five (0.95) power factor, under-excited; at 100 MW inclusive of the margins.
33. d) TransAlta’s opinion is that the word “complex” in section 7(1)(b) is not clear and should be defined.

33. e) The applicability section of the 2006 Generation Load Interconnection Standard (“the standard”) states “Sections 2 and 4 will be applied on a go forward basis; that is the new requirements in this Standard shall not be used as justification to retrofit or change facilities presently connected to the AES that are not compliant”. It is not clear whether applicability of components of Section 2 of the standard such as Voltage Fluctuations (Flicker), Harmonics, and Isolating Devices which are included in proposed rule 502.5 follow the same applicability as the one stated in the standard for generators without a specification document. Could you please clarify the applicability of components of Section 2 of the standard that are included in proposed Rule 502.5? For units without a functional specification, does the “go forward” applicability in the standard remain in effect?

33. f) Could the AESO clarify whether baseline testing would be required under subsection g) even if there is a “like for like” component change?

33. g) With regard to section 18(1) of proposed ISO Rule 502.5. It is TransAlta’s understanding that the modifications regarding replacing the protection system means replacement of a number of generator protective relays only and not the following items defined under “protection system” in the AESO glossary: (i) Communications systems necessary for correct operation of protective functions, (iii) voltage-sensing and current-sensing devices providing inputs to protective relays, (iv) station direct current supply associated with protective functions including station batteries, battery changes and non-batter-based direct current.

33.d) The AESO does not agree that the word “complex” is unclear, and has determined that it is unnecessary to define this term.

33.e) Unless otherwise stated, the requirements of proposed New Section 502.5 will apply to all generating units going forward as of the effective date. In accordance with subsection 2 of proposed New Section 502.6, the AESO will develop a functional document for those generating units without a functional specification.

33.f) The AESO assumes that TransAlta is referring to subsection 10 of proposed New Section 502.6. The AESO has added subsection 10(3) to clarify that, where the legal owner determines that there are no changes to the modelled behavior, base line testing is not required.

33.g) Confirmed. The AESO has revised the wording of subsections 18(1) and (4) of proposed New Section 502.5.
supply; and (v) control circuit associated with protective functions through the trip coils of the circuit breakers or other interrupting devices. TransAlta requests that the AESO confirm whether TransAlta's understanding is accurate.

TransAlta appreciates the AESO's consideration of our requests in the interest of due process and a meaningful consultation process. This letter is to be considered TransAlta's comments for proposed Rules 502.5 and 502.6.