8 November 2017

John Pierce
Chairman
Australian Energy Market Commission (AEMC)
PO Box A2449
SYDNEY SOUTH NSW 1235

By online submission.

Dear Mr Pierce

Generator technical performance standards –Consultation Paper (ERC0222)

Hydro Tasmania appreciates the opportunity to provide comment on the revision of the generator technical performance standards as proposed by the Australian Energy Market Operator (AEMO).

Hydro Tasmania has fifty registered hydro generating units with a capacity of over 2250 MW and is also the owner of AETV Pty Ltd with five registered gas generating units with a registered capacity of approximately 370 MW. Potential changes to generator technical performance standards are therefore a matter of significant interest to our business.

Hydro Tasmania agrees that as noted in AEMO's proposal, it is appropriate to review the generator technical performance standards. We believe this review is justified due to significant changes in the electricity system, particularly the increasing impact of asynchronous generation, as highlighted by issues in South Australia.

We broadly agree with the intent of the rule change to bring the technical standards for asynchronous generators more into line with the standards currently applied to existing synchronous generators as well as to address specific issues raised by the connection of (increasing levels of) asynchronous generation.

Hydro Tasmania however has the following concerns with the proposed rule change:

- The ambiguity of the drafting of some of the proposed clauses, for example *S5.2.5.5: Generating System Response to Disturbances Following Contingency Events,* which makes it hard to assess the potential impact of the proposed rule change.
- The standards are potentially incompatible for existing synchronous generators.
- The setting of standards (particularly related to frequency control) before the outcome of a number of related reviews are finalised. This includes the inertia rule change and the Frequency Control Frameworks review.

Hydro Tasmania believes that the way in which the proposed standards would apply to upgrading systems is unclear as some of the clauses are ambiguous. Hydro Tasmania is concerned that the application of the new standard to existing generators undergoing modifications may make the units technically inconsistent with the new standard or result in a material cost impact for generators. Hydro Tasmania estimates that the potential costs to the business of complying with the draft rules would be in the order of $100,000 to $1,000,000 per unit. Hydro Tasmania currently owns 50 hydro generating units in the market making plant upgrades potentially cost prohibitive if the proposed rules were accepted as drafted. Furthermore, Hydro Tasmania has concerns that for certain compliance obligations no amount of remedial work or expenditure would facilitate compliance to the rules as proposed. While Hydro Tasmania supports efforts to improve performance standards, Hydro Tasmania believes that applying the proposed new standards to existing generators will not lead to a materially improved outcome for system security but will impose potentially significant costs for generators and the market.

To address this issue, Hydro Tasmania believes that grandfathering of existing generators is required including grandfathering of assets for the regular ongoing upgrades (governor and protection) covered under Generator Connection Modification (NER 5.3.9). Grandfathering is critical to avoid considerable cost implications to generators and the market and is consistent with the stated intent of the rule change.

Hydro Tasmania's submission contains two appendices. Appendix A provides Hydro Tasmania's response to the questions noted in the AEMC's Consultation Paper. Appendix B provides more detailed technical commentary on the proposed rule change.

Further consideration

Hydro Tasmania would appreciate the opportunity to discuss these matters with the AEMC and AEMO.

If you have any queries on this submission or require further information please contact Ricky Beswick ((03) 6230 5581 or via email ricky.beswick@hydro.com.au) or Peter Palencia ((03) 6230 5798 or via email peter.palencia@hydro.com.au.)

Yours sincerely

John Cooper
Policy and Regulatory Analyst

Appendix A

Question 1: Assessment framework

Do you agree with the Commission's proposed approach to assessing whether the rule change request will, or is likely to, contribute to the achievement of the national electricity objective? If not, how should it be assessed?

In general the Commission's proposed approach is reasonable; however there are two issues that Hydro Tasmania draws attention to:

(a) The effect of these changes to existing generation units undergoing modification.

The current discussion has focussed primarily on the application of standards to new asynchronous generation. However even under the normal grandfathering arrangements, implementation of the relevant new standards will apply to any systems upgraded by existing generators under section 5.3.9 of the National Electricity Rules (Connection modifications).

Hydro Tasmania believes that the way in which the proposed standards would apply to upgrading systems is unclear as some of the clauses are ambiguous[1]. Hydro Tasmania is concerned that a number of the proposed changes to the standards, if applied to existing generators undergoing modifications and their ongoing control and protection systems refresh, may be technically inconsistent or require additional (unnecessary) investment. Also, this may potentially lead to less efficient running of generation. The uncertainty is of particular concern to Hydro Tasmania with a large number of generating units and with many of these units now undergoing an extensively planned and ongoing upgrade and refresh program requiring a material capital investment.

Hydro Tasmania therefore strongly believes that grandfathering of existing generators is required. This includes grandfathering of assets for the regular ongoing upgrades (governor and protection) covered under Generator Connection Modification (NER 5.3.9). Grandfathering is critical to avoid considerable cost implications to the generators and the market and is consistent with the stated interest of the rule change.

(b) The level of technical detail in the proposal and the potential of an "all or nothing" approach to implementation.

[1] See Appendix B for Hydro Tasmania's detailed response to the proposed rule change.

The difficulty in addressing the proposal is that it incorporates a considerable number of specific technical changes. While the principles articulated in the proposal are valid; assessing the impact of these proposed changes as mandated technical standards requires detailed technical assessment.

We note the request in item 1.3 of *AEMO's proposal* to act promptly, and as identified in item 1.4, that the Interim Technical Standards for Generating Systems in South Australia were the basis for these proposed rule changes.

Hydro Tasmania believes however that although some participants may have followed the ESCOSA consultation process (with potentially different standards, focussed on asynchronous generation in a single state) significant review is still required of these proposed generator technical standards to be applied across the NEM.

In light of the above points Hydro Tasmania requests consideration be given to limiting the rule changes to new connections only or, alternatively, allow sufficient time and opportunity to review and revise the proposed standards. Doing so will ensure they are unambiguous and do not impose unnecessary obligations on existing generators that would conflict with the National Electricity Objective principle of efficient investment in and operation of electricity services.

Question 2: Role of access standards

• *Do the current generator access standards require changes to help maintain power system security?*

Hydro Tasmania agrees with AEMO's proposition that the generator access standards, applied to the connection of asynchronous generation need to be more rigorous.

As outlined by AEMO, asynchronous generators connecting to the market, have not contributed significantly to non-energy services such as voltage control, frequency control, inertia and system strength. These services are essential to provide a secure and stable power system. If not managed in the future, potential shortage of these services may weaken the power system and increase the burden on existing synchronous generators to provide these non-energy services. In Hydro Tasmania's case, this means running additional generators as synchronous condensers with consequential increased wear and tear and maintenance costs.

Although other services are being considered, there are currently no available means (apart from FCAS) for existing generators to recover the costs of providing these non-energy services to support increasing levels of asynchronous generation.

As a matter of equity, Hydro Tasmania believes new generators connecting should be expected to directly provide these services, or contract the equivalent services. Doing so will ensure their connection will not weaken the system or unfairly impose extra requirements on other participants.

• *Would making changes to generator access standards represent the lowest cost approach to maintaining system security relative to other options?*

Hydro Tasmania agrees with the principle that appropriate generator access standards for new connections to ensure integration of the appropriate performance and functionality in the early stages of a project. This **may** be an efficient way to assist in maintaining system security.

This is particularly the case with respect to reactive power and voltage control. Apart from limited non-market Network Support and Control Ancillary Services (NSCAS), there are currently no mechanisms to incentivise or provide these services. Due to the local nature of voltage control, it would be expected that the general principle of not "materially and adversely affecting" other network users should always be incorporated in considerations of the Transmission & Network Service Provider (TNSP).

With respect to active power and frequency control (as outlined in 2.7 of *AEMO's proposal),* there are several significant reviews impacting on frequency control currently being undertaken.
Due to these reviews, as well as the current and evolving market mechanisms for sourcing frequency control, it is uncertain whether increasing technical requirements on new generators, or market supply of these services, or some combination of both, is the lowest cost approach without detailed modelling being undertaken. As such, Hydro Tasmania considers that the frequency control related standards may require further consideration.

• *Will mandating certain capabilities in generator access standards enable and support the establishment of ancillary services in future?*

In principle, Hydro Tasmania agrees that having the facility to provide ancillary services embedded in the generator access standards will at least allow for potential provision of ancillary services in the future.

It is also considered that if there is eventually a sufficient price signal, participants should be incentivised to offer a service to the market. Alternatively, if exposed to the costs of other participants supplying ancillary services, they may choose to offer these services to mitigate that risk.

Question 3: Proposed changes to generator access standards

For each of AEMO's technical recommendations set out in Appendix B:

A detailed response to the proposed standards is included in Appendix B of Hydro Tasmania's response.

Question 5: Mandating active power control

• *Do you agree with AEMO's analysis of the issue related to active power control?*

Hydro Tasmania agrees that it is logical that facilities for active power control are included for new generation to meet future needs.
However, despite these rule changes focussing on the generator technical standards, Hydro Tasmania is concerned that other key aspects of active power control, particularly the systems and processes used for centralised control of regulation FCAS from AEMO, also require attention to ensure that future active power control is managed efficiently.

The assumption that ensuring every generator's active power can be remotely controlled will ensure that the system is run efficiently and reliably is predicated on the effectiveness of the centralised control processes. This section should also be linked to the requirements of frequency control which should take priority, as noted in Appendix B.

Question 6: Reduction in system size thresholds

• *Do you agree with AEMO's view that standards should not consider generating system size in their application appropriate? If not, what alternatives are there?*

Hydro Tasmania is concerned that broadening the scope of the standards will increase the costs disproportionately for smaller generators. As noted in appendix B for instance applying the Remote Control and Monitoring requirements to w*ill add of the order of $100 000 to any upgrade this will be particularly significant for* current (<30 MW) non-scheduled hydro generators.

Consideration for less stringent standards for smaller units should be considered.

Question 7: Definition of continuous uninterrupted operation

• *Do you think the current definition of continuous uninterrupted operation raises issues for maintaining power system security?*

As noted in Appendix B, Hydro Tasmania is concerned about the impact of including the period of the duration of the fault in the proposed definition of *continuous uninterrupted operation.* This creates difficulties when the revised definition is applied to several standards.

Question 9: Technical standards relevant to the alteration of generating plant/system

• *Do you agree with AEMO's analysis of the issues related to the technical standards for alteration of generating plants or system?*

Hydro Tasmania notes the two items added to the requirements for consideration in the alteration of existing generation plant are:

Alteration of a voltage control system – S5.2.5.7 Partial load rejection

Alteration of a protection system – S5.2.5.10 Protection to trip plant for unstable operation

Hydro Tasmania agrees with the proposed changes that these matters are relevant and should be included in the assessment.

Question 10: Jurisdictional issues and harmonisation

• *How important is a consistent approach to generator access standards across regions?*

A consistent approach to generator access standards across the NEM is an important principle in maintaining a coherent power system and market. However, where there are clear and systematic differences where an identical approach is sub-optimal, appropriate flexibility or alternatives within the generator access standards should be included.

This is particularly the case for Tasmania which is not synchronously connected to the rest of the NEM. The Frequency Operating Standards (FOS) place different obligations on frequency standards for the NEM Mainland and Tasmanian power systems.

For example, given that the frequency standards are different in Tasmania there may be a case for a more tailored approach to the ROCOF (Rate of change of frequency) settings than the mainland standard.

Question 12: Rationale for a negotiating framework

• *Given the changing nature of connections to the power system, does the rational for a negotiating framework governing the connection process remain appropriate? Do you value the ability to negotiate and why?*

The ability to negotiate generator modifications should take into account local operational and plant issues. This is an important part of the connection process.

• *What are the appropriate respective roles of the automatic, minimum and negotiated access standards?*

Hydro Tasmania is concerned that the imposition of new minimum standards should recognise legacy issues when being applied to generator modifications. One example is Hydro Tasmania's Lemonthyme Power Station. Due to the hydraulic characteristics of the station, it does not have a governor.

Further, it would not be possible to install a governor and meet the proposed frequency control requirements in the standards. Therefore, Hydro Tasmania seeks to ensure that where an existing unit is not technically capable of meeting a performance standard, that unit should be exempt from that performance standard. The concern is that in future modifications, if there is no exclusion available in the minimum performance standard, then to modify other systems at the station may invoke a requirement to meet an unattainable standard.

Question 13: AEMO's proposed changes to the negotiating framework

• *AEMO proposes changing the negotiations so that the onus is on the connection applicant to prove that they cannot practicably meet an automatic access standard. Does this change strike the appropriate balance between security and costs?*

Hydro Tasmania agrees that in principle, the automatic access standards should be the aim for generators connecting to the market.

Question 15: AEMO's proposed transitional arrangements

• *What is the nature of the system security implications of an immediate transition to a new rule, as against a grandfathered transition?*

Hydro Tasmania notes AEMC's advice in 6.2.1 of the Consultation which notes that AEMC does not have the power to make retroactive rules.

It is unclear from the question as to what the meaning of an *immediate transition to a new rule* is. Although the intent appears to be for new generation, Hydro Tasmania would like to confirm that this does not mean applying new standards to existing market generators operating under current Generator Performance Standards. Hydro Tasmania also submits that grandfathering of existing

assets should include grandfathering of assets for their ongoing regular technology refresh (e.g. control and protection systems) that typically occur on a 15 to 20 year cycle.

• *What is the nature of the cost implications of an immediate transition to a new rule, as against a grandfathered transition, and could this vary for different technology types, or depending on the stage a project has reached?*

As noted in the cover letter the potential cost implications of an immediate transition to a new rule for existing generators would be significant.

Appendix B

NON-TECHNICAL MATTERS	Summary
5.3.4A : Negotiated Access Standards	Hydro Tasmania agrees that the starting point should be with Automatic Standards. However consideration should be for existing plant that is upgraded with legacy exemptions where the technology is incompatible with the new standards.
5.3.9: Procedures to be followed by a Generator proposing to alter a generating System.	Hydro Tasmania agrees with proposed changes that the inclusion of these clauses is appropriate. Inclusion of the additional requirements to meet when modifications are made to the following systems - Alteration of a voltage control system – S5.2.5.7 Partial load rejection - Alteration of a protection system – S5.2.5.10 Protection to trip plant for unstable operation.
5.8.4 : Commissioning Program	- Hydro Tasmania has no objections to this change.

SYSTEM STANDARDS	
S5.1a.4 : Power Frequency Voltage	Hydro Tasmania agrees that a move over time to the proposed standard, by lifting the voltage profile would have benefits in reducing system losses and improving power transfer characteristics. As some protection however (e.g. overfluxing) has been set based on the existing TOV (Temporary Over Voltage) standards, significant investigations and changes would be required to implement the proposed standard for existing generators. Therefore Hydro Tasmania would not support immediate introduction of these standards to existing generators. Hydro Tasmania would however support the standard being applied to new generation or generators modifying relevant systems under NER 5.3.9, which would over time implement the standard across the system. The use of a continuous curve capturing the specific values identified may more accurately represent the way protection systems would actually be implemented than the existing stepped curve.

Technical Requirements	
S5.2.5.1 : Reactive Power capability	The proposed minimum access standard is: *(b) The minimum access standard is a generating system operating at:* *(1) any level of active power output; and* *(2) any voltage at the connection point within the limits established under clause S5.1a.4* *without a contingency event,* *must be capable of supplying and absorbing continuously at its connection point an amount* *of reactive power of at least the amount required to enable the generating system to achieve* *the continuously controllable voltage setpoint range specified in the performance standard* *agreed under clause S5.2.5.13.* One of the practical operating issues that Hydro Tasmania requests consideration of is the option of operating units at unity power factor in the event of high storage and inflow conditions. At a number of stations, due to the limits of the MVA rating of the transformer or alternator, the maximum potential MW output would need to be reduced if the facility to supply the automatically required reactive power is required to be maintained at all times. A provision in the currently registered standards allows running at up to unity power factor to capture extra energy subject to reducing the active power if additional reactive power is required. This energy would otherwise be spilt and be not available to the market, the existing requirement to provide the reactive power if required, addresses operational requirements. Hydro Tasmania believes that this flexibility should remain under the proposed standards.

S5.2.5.3 : Generating System Response to Frequency Disturbances	Hydro Tasmania believes that, as per the standards below, a system should not have two Rate of Change of Frequency (RoCoF) limits, as all units designed to meet minimum standards will trip early, with the consequent loss of generation significantly accelerating the system towards the automatic access standard limit. Therefore either a consistent standard or other mitigation should be considered. Noting the different standards for automatic and minimum access standards. *Automatic Standards* *Unit must be capable of continuous uninterrupted operation …. Unless the rate of change of frequency is outside the range -4Hz to 4 Hz per sec for more than 0.25 s or outside -3 Hz to 3 Hz for more than 1 sec* *Minimum standards* *Unit must be capable of continuous uninterrupted operation …. Unless the rate of change of frequency is outside the range -2Hz to 2 Hz per sec for more than 0.25 s or outside -1 Hz to 1 Hz for more than 1 sec* A means of resolving this issue may be that all minimum standard units might contract independent interruptability capability to compensate for an early trip, however depending on the amount of generation subject to a minimum standard even this might not be a viable mitigation. Using two speed RoCoF limits i.e. Higher RoCoF limit for 0.25s than the RoCoF for 1 second may give more discrimination across the system, noting however the requirement for consistency as stated previously. If incorporated, the metering standard should also be modified to reflect any changes. It is noted that, as the Mainland and Tasmanian power systems are separate AC systems with different frequency standards, consideration needs to be given as to whether it is appropriate for a separate set of RoCoF standards, noting for example that an initial RoCoF of -3 Hz to 3 Hz initial RoCoF has been applied to some systems in Tasmania.
S5.2.5.4 : Generating System Response to Voltage Disturbances	Hydro Tasmania is concerned about the impact that the new definition of continuous uninterrupted generation, including the period of the disturbance has on this requirement. Although AEMO have provided additional comments there is still significant uncertainty around the actual impact of the proposed drafts.
S5.2.5.5 : Generating System Response to Disturbances Following Contingency Events	Hydro Tasmania notes that this standard refers to a number of issues with significant implications: **(1) Regarding disturbances:** Hydro Tasmania is concerned that in order to deal with the issue of protection systems with disturbance counters that it has implemented a broader standard that has wider inappropriate implications. Hydro Tasmania would recommend that this clause simply address the issue of protection systems with disturbance counters whereby an appropriate number be set in the standards. In the absence of disturbance counters, Hydro Tasmania recommends that the existing standards be maintained. The requirement for a generator to maintain uninterrupted operation for all possible scenarios of 15 disturbances in 5

	minutes (or any other combination) would be impossible to ensure and it is highly likely that in some situations protective action will correctly operate to protect the unit or ensure system instabilities do not further deteriorate (e.g. pole slipping due to extremely frequent transient events in the network). To implement the standards as they exist would impose a potentially unverifiable if not unattainable standard for existing generators if assessed under these standards for future upgrades. **(2) Regarding Current Injection:** Hydro Tasmania believes that the proposed changes appear to be focussed on asynchronous generation and do not appropriately recognise the operations of existing synchronous generation. Whilst it may be acceptable to put capability criteria on new units yet to be constructed, Hydro Tasmania contends machine capability of existing generators is an inherent function of machine design and construction and that recognition of machine capability should be the starting point for these standards. To propose any standards outside of the unit's fundamental capabilities would impose either technically impossible or economically unviable obligations. This clause should be around how and where the capability is defined and maximising capability rather than providing specific requirements that might be physically unattainable. In light of this, the reactive current requirements should be subject to the units specific capability and stability and other appropriate protection requirements. Currently the registered machine capability is only assessed at 90% and 110% voltage for capacitive and inductive operation (respectively). This clause would imply that capability is then needed to be provided at all voltages and it is unclear how the changing capability at different voltages is dealt with. For example, at V= 110% the reactive import capability is much higher than at V = 90%, and at greater than nominal Voltage is when reactive import is required, however for the purposes of a single capability statement, the reduced import capability at 90% is needed to be shown to ensure that the minimum limit for stability is not exceeded. If the unit was already operating at maximum reactive capability how does this clause then consider that the unit is unavailable for any additional current injection? **(b.2.B.iii) Regarding Active Power Recovery** How is it possible to meet the requirement for, "*from 1,000 milliseconds after disconnection of the faulted element, active power of at least 95% of the level existing immediately prior to the fault*." given that following a fault the revised frequency may cause the machine output to be outside of the 95% pre-fault level due to governor droop action. **(h) General Requirements**

	i(B) As noted previously we would re-iterate that the machine capability and its operational limits should be the fundamental parameters around which the performance is assessed, stating it can be limited to 250% of the rated current for a synchronous generating unit is redundant. If measurement of reactive capability may be assessed at the LV terminals, how does that reconcile with the assessment of current injection and capability at the connection point? The post fault voltage at the connection point is not entirely dependent on the generator at that point and so it may not be possible to provide sufficient reactive current injection to meet the required voltages.
S5.2.5.7 : Partial Load Rejection	Hydro Tasmania has no objections to this change.
S5.2.5.11 : Frequency Control	Clause S5.2.5.11 (b) (2) requires the unit to be capable of providing a proportional response to the frequency. Considering system security requirements the primary frequency response should not be specified as capability but as a requirement for at least automatic standard. Is the intent of this rule change that droop setting in the range of 2-10% should be changeable, or that facilities exist for it to be set within this range (similarly for the frequency dead-band)? As referred to in Hydro Tasmania's response to *S5.2.5.14 : Active Power Control ,* we believe there is a requirement to provide clarity around the potential conflicts between *S5.2.5.11 : Frequency Control* and *S5.2.5.14: Active Power Control.* It is noted that the Rules changes outline a ±1Hz dead band range, but it is not clear what the process is for determining these values. Currently there are existing synchronous generating units without governor control, including Lemonthyme Power Station, for which it would not be practical to provide this functionality, for the purpose of clarity Hydro Tasmania assumes that existing units without governor control would not subject to this clause. The simple description of frequency response as solely a proportional (droop) response seems to assume that this covers all the MASS (Market Ancillary Services Specification) definitions for ancillary services for FCAS. Hydro Tasmania notes that there are also a number of switching controllers registered with AEMO for FCAS either by tripping of generators or in some cases special governor control modes. The standards as they are presented don't appear to recognise these other modes of frequency control. Hydro Tasmania requests that this issue be considered so that there is recognition of other modes of frequency control in the standards.

S5.2.5.13 : Voltage and Reactive Power Control	As articulated in Hydro Tasmania's response to *S5.2.5.5: Generating System Response to Disturbances Following Contingency Events* Hydro Tasmania contends that the starting point of the generators performance is the inherent capability of the generator. The minimum standard under S5.2.5.13 makes no reference to the frequency and limiters on voltage regulation which would be active to ensure that the flux (V/Hz) limits of the plant are not exceeded, this function should be recognised in the standard. Regulation of voltage is critically dependant on connection point voltage and separation of the two cannot be done, so an absolute standard on the generator to regulate voltage at the connection point within a certain range may not be possible under certain conditions and is obviously subject to the inherent machine capability.
S5.2.5.14 : Active Power Control	Hydro Tasmania recommends that the interaction of Active Power Control and Frequency Control be clearly outlined in the standards. Currently the two standards are independent, but there may be times when the frequency response (governor) and Active Power response (response to AGC) will conflict. Due to the inherent time delays and uncertainties in the system, there will be times when the AGC signals (ramp or regulation) may be opposing the direction of the normal governor response to frequency changes. If such is the case the generator cannot meet both standards at the same time. Our understanding is that the frequency control (governor) response should take precedence over active power control. Hydro Tasmania recommends that the Active Power Control standard have a clause that excludes meeting that standard if it conflicts with the Frequency Control response. It is noted that the reference in item (a)(1)(iii) that the standard refers to AGC signals updated every 4 seconds, Hydro Tasmania notes that this is the case for AGC signals on the mainland but understands that in Tasmania AGC signals are delivered every 8 seconds, could this please be clarified.
S5.2.5.15 System Strength	Hydro Tasmania notes that as advised in AEMO's Supplementary Material to Rule Change Proposal that the metric of this standard is under review and that we may respond depending on the outcome of this review.
S5.2.6.1 : Remote Control and Monitoring	Hydro Tasmania notes the change from Remote Monitoring to Remote Control and Monitoring and the principle of more active intervention from AEMO. Hydro Tasmania notes that the estimated cost of implementing the additional monitoring and control functionality for existing units, for parameters not currently required {e.g. Monitoring: items (b) 6, 7, 8, 9 & 10, (d) and (e) and Control: item (c) and (f)} even during the opportune time of a connection modification may be of the order of $50 000 to $150 000.

	This will disproportionately affect smaller generators particularly those that are currently non-scheduled. Hydro Tasmania is also concerned about the general nature of some of the descriptions and seeks clarity on a number of issues, including the following under the *Minimum Access Standard*: <u>(7) in respect of an energy storage system, the available energy (in MWh);</u> - Does this apply to Hydro generators, noting that there are various other reporting mechanisms for energy availability? With the complexity of an interconnected Hydro Scheme how would this even be defined? <u>(8) in respect of a run-back scheme agreed with the Network Service Provider:</u> (i) run-back scheme status; and (ii) active power, reactive power or other control limit, as applicable; Hydro Tasmania notes that is a participant in a number of Special Protection Schemes whereby Generation can be reduced if required under certain conditions. Are such schemes regarded as runback schemes? If so consideration would need to be given to who supplies data to AEMO is noting that the schemes are run by the Transmission Network Service Provider (TNSP) with a Network overview.
Glossary	
Amended Definition : Continuous Uninterrupted Operation	Hydro Tasmania believes that the new definition of continuous uninterrupted operation, that includes the period during a fault, is not appropriate as it is not consistent with some of the rule clauses e.g. *S5.2.5.4: Generating System Response to Voltage Disturbances.*