23 August 2023

Sent via email: contact.connections@aemo.com.au.

Dear AEMO team

**Tesla response to AEMO review of technical requirements for connection – draft recommendations update report (Part 1) Schedules 5.2 and 5.3a of the National Electricity Rules (NER)**

Tesla Motors Australia, Pty Ltd (Tesla) welcomes the opportunity to provide AEMO with feedback on the AEMO review of technical requirements for connection – draft recommendations update report (Part 1) Schedules 5.2 and 5.3a of the National Electricity Rules (NER) (Update Report). Tesla appreciates the multiple rounds of engagement undertaken by AEMO during this process. It is a critical piece of reform and necessary to support the streamlined connection which is critical for achieving the energy transition at the rate that is needed.

Our detailed feedback on the individual recommendations is included below. We also make the following additional general points:

- While we acknowledge the work done by AEMO in running multiple forms of consultation already, we would caution against an expedited rule change process. The proposed changes to the National Electricity Rules (NER) are comprehensive and wide-reaching. AEMO's consultation process has been incredibly engaged, however this does not mean that industry has not missed potential issues; nor that unforeseen impacts of some of the proposed changes may not come up. An additional benefit of the AEMC running a standard rule change process is that the AEMC approach to considering the impacts of a Rule Change will also differ from the approach taken by AEMO, which may highlight different perspectives.
- Although it has not been specifically considered within the NER clauses proposed to be changed by AEMO, we would suggest that as this progresses to a Rule Change, AEMO should also update the language used in rule 5.3.4A(1A), specifically deleting the phrase "no less onerous". This wording is currently creating challenges in respect of BESS assets transitioning from grid following inverters to grid forming inverters.
    - Currently there is no special provisions or acknowledgment in the NER of the unique operating characteristics of grid forming assets They are treated the same, and subject to the same connection requirements as all asynchronous plant. However, they have different technical performance characteristics.
    - Industry would benefit from an update to rule 5.3.4A(1A) clarifying the intent is not to prevent the transition from grid following inverters to grid forming.

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Our specific feedback on the revised recommendations from AEMO is included in the table below. For more information on any of the information included in this response, please contact Emma Fagan (efagan@tesla.com).

Kind regards

Emma Fagan

Energy Policy Manager

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## Schedule 5.2 Conditions for Connection of Generators

| NER Schedule 5.2 issue | AEMO revised recommendation | Schedule 5.2 (Generators) – feedback on revised recommendations and relevant draft NER amendments |
|---|---|---|
| **NER S5.2.1 – Outline of requirements** | | |
| **Application of Schedule 5.2 based on plant type instead of registration category and extension to synchronous condensers** | Replace all the references to Generators or Integrated Service Providers in NER Schedule 5.2 with another defined term (e.g. 'Schedule 2 Participant'), to apply the schedule more generally, with appropriate interpretation clauses to confirm the meaning of the term in the context of the schedule14. Corresponding changes will be required elsewhere in the NER, to the extent the access standard schedules and associated performance standards are referenced elsewhere in Chapter 5 or in other defined terms. Amend NER S5.2.1 to extend the application of the schedule to synchronous condensers, with exceptions and modifications to be specified in the technical requirements as necessary | N/A |
| **NER S5.2.5.1 – Reactive power capability** | | |
| **Voltage range for full reactive power requirement** | Modify the AAS to include a voltage-dependent requirement for reactive power (with percentages based on nominal voltage):<br>Limit the requirement for full reactive power capability to a 10% voltage band around a centre point nominated by the NSP, where the centre point can be nominated in the range 95% to 105%<br>- For voltages within the 10% voltage band, require at least 0.395 x Pmax reactive injection and absorption.<br>- For voltages below the 10% voltage band down to 90%, require at least 0.395 x Pmax reactive injection. | Tesla is supportive of the final position proposed by AEMO. |

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| NER Schedule 5.2 issue | AEMO revised recommendation | Schedule 5.2 (Generators) – feedback on revised recommendations and relevant draft NER amendments |
|---|---|---|
| | - For voltage from the lower limit of the 10% voltage band to 90%, the requirement for reactive absorption decreases linearly with decrease in voltage from -0.395 x Pmax to 0 MVAr.<br>- For voltages above the 10% voltage band up to 110%, the requirement for reactive injection reduces linearly from 0.395 x Pmax to 0 MVAr.<br>- As bidirectional units can have different demand and active power capability, separate reactive power requirements can be established for injection and absorption of active power.<br>- Use active power capability definition instead of rated active power, as, because of the convention for nameplate rating of IBR, rated active power would represent MVA rating for IBR plant. | |
| **Treatment of reactive power capability considering temperature derating** | Clarify that for the purpose of NER S5.2.51, the rated active power or rated maximum demand may take account of the temperature dependency of the rating, and that the required Qmax and Qmin are functions of Pmax as derated. That is, Qmax (T) = 0.395 Pmax (T), and Qmin (T) = -0.395 Pmax(T) for operating temperature T at the connection point, for reactive power absorption, where at least these levels of reactive power injection and absorption apply.<br>Where there is derating, require the performance standards to document:<br>- Active power derating of production units as a function of temperature, if any. | Tesla is not supportive of the second dot point which would require reactive power derating as a function of temperature to be captured in the GPS. This data is commercially sensitive |

| NER Schedule 5.2 issue | AEMO revised recommendation | Schedule 5.2 (Generators) – feedback on revised recommendations and relevant draft NER amendments |
|---|---|---|
| | - Reactive power derating as a function of temperature of production units and any other reactive power facility, if any.<br>- Maximum operating temperature and minimum operating temperature of the generating system or IRS.<br>- Maximum operating temperature for which the plant is not derated.<br>- Reactive power performance requirement as a function of active power at the connection point at the maximum temperature for which the plant is not derated. Reactive power performance requirement as a function of active power at the connection point at the maximum operating temperature, where different.<br>- Reactive power performance requirement at the connection point as a function of temperature<br>- Any maximum operating temperature limit.<br>Note that there are three main variants for treatment of temperature derating. These are:<br>(1) To require the same reactive power regardless of temperature derating<br>(2) To require the same active power regardless of temperature derating<br>(3) To require the reactive power proportional to active power accounting for any temperature derating.<br>For the common situation of temperature derating associated with a current limit, there is a trade-off between provision of active and | |

| NER Schedule 5.2 issue | AEMO revised recommendation | Schedule 5.2 (Generators) – feedback on revised recommendations and relevant draft NER amendments |
|---|---|---|
| | reactive power. Option 1 prioritises provision of reactive power over active power, which is an advantage for power system voltage management. Option 2 prioritises provision of active power over reactive power, which is an advantage for maximising supply under high temperature conditions where a supply scarcity is more likely. The recommended Option 3 is a middle-ground where reactive power and active power both reduce proportionally when a temperature derating applies.<br><br>The NEO requires consideration of efficient investment in the NEM. There may be a high requirement for reactive power in some parts of the NEM during high temperature events, as demand is likely to be high, and some lines may be heavily loaded. Optimal location of reactive power may be at the generators' locations or at other locations distant from generators. Provision of reactive power for high demand periods would entail a cost to NSPs, which flows through to consumers. Provision of additional reactive power from generators involves additional capital expenditure and generator costs will also flow through to consumers. Active power supply requirements are also likely to be high during high temperature events, because of high demand. Reliability of supply must be considered under the NEO, and supply deficits lead to reliability impacts on consumers. The proposed Option 3 seeks to balance these considerations. AEMO welcomes further feedback on whether the proposed solution represents the most optimal solution considering the NEO. | |

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| NER Schedule 5.2 issue | AEMO revised recommendation | Schedule 5.2 (Generators) – feedback on revised recommendations and relevant draft NER amendments |
|---|---|---|
| **Compensation of reactive power when units are out of service**<br><br>**S5.2.5.7, S5.2.5.8, S5.2.5.13** | Amend as follows:<br>- Add a requirement to limit the impact on voltage to [0.5%] when the plant is not in service, compared with fully disconnecting the plant.<br>- Record in the performance standard how this requirement is to be met<br>- Where the voltage impact at the connection point is limited by means of a subset of production units operating to compensate reactive power through the connection point, reduced compliance requirements apply, provided the operating mode is a primary or secondary mode under S5.2.5.13. Compliance with S5.2.5.2 applies. Compliance with other clauses is not required.<br>- Clarify that maximum active power consumption of a generating system or integrated resource system in respect of auxiliary load and the range of permitted reactive power at the connection point to be specified as steady state values.<br><br>Note: AEMO has shown the 0.5% in square brackets and requests specific feedback on this number. The threshold provides a balance between provision of reactive compensation centrally by an NSP and provision by multiple connecting parties individually. Either way there will be costs borne by the consumer that are reflected in the price of electricity. The challenge is to set a threshold that achieves the overall minimum cost to consumers consistent with the NEO. | Tesla does not support the revised recommendation to limit the impact on voltage to 0.5% when the plant is not in service. This should be removed or increased to 5% as a more reasonable expectation. |

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| NER Schedule 5.2 issue | AEMO revised recommendation | Schedule 5.2 (Generators) – feedback on revised recommendations and relevant draft NER amendments |
|---|---|---|
| **Simplifying small connections** | Amend as follows:<br>- S5.2.5.7 AAS, MAS: Exempt production systems less than a threshold of 30 MW on the mainland and (effectively) 7 MW in Tasmania from this clause in both automatic and minimum access standards.<br>- S5.2.5.8 MAS: Apply consistent technology-neutral thresholds for the emergency overfrequency response requirements under this clause: 30 MW on the mainland, and (effectively) 7 MW in Tasmania<br>- S5.2.5.13 Apply consistent reduced requirements for some elements of the MAS across all technologies, with a 30 MW threshold on the mainland and (effectively) 7 MW in Tasmania<br>- The lower thresholds proposed for Tasmania are achieved by definition of a 'relevant system', where the threshold is set to the lesser of 30 MW (or MVA as relevant) and 5% of the largest credible contingency event defined in the Frequency Operating Standards. For Tasmania the largest credible contingency event has been defined as 144 MW.<br>AEMO advisory matter threshold to all technical requirements<br>- In the definition of AEMO advisory matters, exclude connections less than 30 MW. | Tesla has no additional comments on this revised recommendation. |
| **NER S5.2.5.2 – Quality of electricity generated** | | |

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| NER Schedule 5.2 issue | AEMO revised recommendation | Schedule 5.2 (Generators) – feedback on revised recommendations and relevant draft NER amendments |
|---|---|---|
| **Reference to plant standard** | Remove reference to AS1359.101(1997) in respect of a synchronous generating unit as a plant standard for harmonic voltage distortion. | Tesla remains supportive of this change |
| **NER S5.2.5.4 – Generating system response to voltage disturbances** | | |
| **Overvoltage requirements for medium voltage and lower connections** | Amend as follows:<br>- Amend the AAS to make the point of application of overvoltages the nearest HV transmission location, for connections below 66 kV and not through a transformer with an automatic onload tap changer.<br>- Remove the limit on negotiation based on size of plant. | Tesla remains supportive of this change |
| **Requirements for overvoltages above 130%** | Amend as follows:<br>- Require CUO for peak voltages greater than 184% (with reference to IEC 60071.1 waveforms)<br>- Apply an obligation on NSPs under S5.1.4(a1) to design its network and insulation coordination so that switching of network elements does not expose a Network User's plant to switching surges for voltages above those described in the system standards.<br>- Amend NER 5.7.2 so that a Registered Participant whose plant is affected by switching surges can request the NSP to undertake an assessment of the cause.<br>- Permit the plant to block for transient overvoltages that exceed 184% peak voltage at the connection point for less than 10 ms. | Tesla has some serious concerns with this recommendation.<br>• It is unclear to us how the 184% requirement was calculated based on IEC 60071.1)<br>• We are also unclear as to the implementation risks of including this requirement. Will this result in additional testing and compliance certifications?<br>• We are unclear what is meant by permitting the plant to "block" for transient overvoltages. Does this effectively require plant to ride through these peak voltage requirements.<br>Noting these concerns above, we do not support the revised change and remain supportive of our initial position provided in our previous submission to AEMO and extracted below: |

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|---|---|---|
| | - Clarify that for the voltages described in S5.2.5.4 (a) (2) to (8) and (b)(1) to (5) are power frequency root mean square voltages and the voltage described in S5.2.5.4(a)(1) refers to voltage waveforms described in IEC 60071.1. | "Tesla would suggest an alternative that could be considered is to delete S5.2.5.4(a)(1) which would effectively create an upper bound of 130%.<br><br>Alternatively we would be supportive of Option 4 which would see the introduction of an upper-voltage limit of 140%" |
| **Clarification of continuous uninterrupted operation (CUO) in the range 90% to 110% of normal voltage** | - Specify that for the purposes of NER S5.2.5.4(a)(6) reactive capability must be maintained, and active power not reduced other than for transient response, losses, energy source availability and any other factors the NSP and AEMO consider are reasonable in the circumstances, for voltages in the range 90 to 110% of normal voltage, for voltage variations up to 10%.<br><br>- Clarify that for voltage variations greater than 10% within the range 90% to 110% of nominal voltage, temporary active power output reduction and temporary reduction in reactive power capability, corrected by tap-changing transformer action are permitted. | Tesla is supportive of the revised AEMO recommendation. |
| **NER S5.2.5.5 – Generating system response to disturbances following contingency events** | | |
| **Definition of end of a disturbance for multiple fault ride through** | Specify that the end of a power system disturbance, for the purpose of multiple fault ride through (MFRT) assessment, is the time when, following fault clearance, the voltage recovers to and remains within the range 90 to 110% of normal voltage at the connection point for at least 20ms. | Tesla would suggest an additional change to the definition to refer to both voltage and frequency recovery. This would change the definition to "…following fault clearance, the voltage recovers to and remains within the range of 90 to 110% of normal voltage at the connection point for at least 20ms, **and frequency recovers to the PFR deadband for at least 20ms"** |

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| **Form of multiple fault ride through clause** | Amend as follows:<br>- Require the NSP, where requested by the Schedule 5.2 Participant, to provide connection-specific advice to the Connection Applicant about combinations of contingency events that might be onerous for CUO of the plant.<br>- Provide the NSP the flexibility to require additional studies only where it has reasonable grounds to believe there is an inadequately disclosed limitation<br>- Require documentation of the specific limitations in the performance standard. | As noted in our previous response, Tesla is not supportive of site-specific tests as we believe this will add cost and lengthy delays to projects. AEMO's revised recommendations will likely result in the NSP asking for multiple studies to be undertaken which would yield the same results.<br>As an alternative we would suggest an allowance for NSPs to stage faults during commissioning in reference to site specific concerns. Otherwise we believe that all MFRT requirements can be verified through modelling. |
| **Number of faults with 200 ms between them** | Retain for the MAS, up to six faults and 200 ms and combination but allow specific limitations such as technology-related limitations to be carved out of these requirements for modelled and non-modelled limitations. | Tesla remains supportive of AEMO's recommendation |
| **Reduction of fault level below minimum level for which the plant has been tuned** | Amend as follows:<br>- Carve out from the MFRT conditions for CUO, in both the AAS and MAS, conditions where fault levels fall below the lower bound of the fault level range for which the plant has been tuned.<br>- Require that the range of fault levels for tuning be advised by the NSP and recorded, in the RUG. Clarification on draft report – retuning of plant is already covered by S5.2.2. The changes in S5.2.5.5 make the conditions that might require retuning more transparent. | Tesla is supportive of the carveout provisions and the resulting inference that a retuning would not trigger a full 5.3.9. We would suggest that more detail is needed by the final comment that "the changes in S5.2.5.5 make the conditions that might require retuning more transparent" |

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|---|---|---|
| **Active power recovery after a fault** | Amend as follows:<br>- Amend the MAS to include reference to clause 4.4.2(c1) for primary frequency response (PFR) where S5.2.5.11 has been referenced in regard to a frequency disturbance, and include frequency response in the AAS.<br>- Apply consistent conditions for synchronous machines.<br>- Use the same definition of end of a disturbance as for MFRT. | As noted above, we suggest that the MFRT end of disturbance definition refers to frequency as well as voltage. This definitional change should also flow through to active power recovery. |
| **Rise time and settling time for reactive current injection** | Amend as follows:<br>- Omit the settling time requirement in the AAS<br>- Retain risetime, as per the existing AAS<br>- Use “adequately controlled” instead of “adequately damped”.<br>- Define “adequately controlled”.<br>- Qualify that risetime is to be assessed for steplike voltages (this will affect MAS and AAS)<br>- Add commencement time of no greater than 10 ms in the AAS, and clarify, in both AAS and MAS that this is for response opposing the voltage deviation. | Tesla is supportive of AEMO’s revised recommendations. |
| **Commencement of reactive current injection** | Specify that reactive current response to an undervoltage event commence above 85% of normal voltage at the connection point, and for an over-voltage event commence below 115% of normal voltage at the connection point. | Tesla remains supportive of this recommendation |

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|---|---|---|
| **Clarity on reactive current injection volume and location and consideration of unbalanced voltages** | Amend as follows for asynchronous plant:<br>- Retain in the AAS 4% and 6% levels for injection and absorption but with clarification that these levels apply for balanced voltage disturbances.<br>- Require the control strategy to minimise voltage deviation on each phase from predisturbance levels, for unbalanced faults.<br>- Require for unbalanced faults and overvoltages positive and negative sequence current to meet the control objective.<br>- For unbalanced faults record in the GPS: – The positive sequence reactive current response as a function of positive sequence voltage deviation and<br>- The negative sequence reactive current response as a function of negative sequence voltage, which may be different for different fault types<br>- The reactive current response on each phase, to phase unbalance, in % current per % voltage deviation, which may be different for different fault types; or<br>- other way of describing the negative phase sequence response agreed with AEMO and the NSP. – Priority (active current vs reactive, and/or positive vs negative sequence). | Tesla is supportive of AEMO's revised recommendations. |
| **Metallic conducting path** | N/A | N/A |

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| **Reclassified contingency events** | Expand the credible contingency reference, for both the AAS and MAS, by reference to credible contingency events selected by the NSP for the purpose of NER S5.1.2.1 (credible contingency events) with additional commonly reclassified contingencies likely to affect the connection point, noting that the power system is managed on the assumption that production units will remain in operation for any credible contingency as classified at any time unless AEMO. | Tesla would suggest additional wording in this clause that would also require the NSP to publish these additional commonly reclassified contingencies. If they are considered by NSPs, but not visible to developers and OEMs, it is unhelpful. |
| **NER S5.2.5.7 – Partial load rejection** | | |
| **Application of minimum generation to energy storage systems** | n/a | n/a |
| **Clarification of meaning of CUO for NER S5.2.5.7** | n/a | n/a |
| **NER S5.2.5.8 – Protection of generating systems from power system disturbances** | | |
| **Emergency over-frequency response** | Amend as follows:<br>- Convert the MAS to a AAS and MAS, with the AAS reflecting a proportional response, the MAS tripping and the NAS specifically including rapid reduction by 50% by means other than tripping. Express the remainder of the rule as a general requirement.<br>- Change the reference from “upper limit of the extreme frequency excursion tolerance limits” to “0.5 Hz less than the | Tesla remains supportive of this change. |

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|---|---|---|
| | upper limit of the extreme frequency excursion tolerance limits".<br>- Remove the reference from "not less than the upper limit of the operational frequency tolerance band".<br>- Allow for lags in a proportional response or fast ramp down which are longer than 3 seconds, as part of a negotiated access standard, considering the capability of the plant.<br>- Apply the same size threshold irrespective of nature of plant, being a threshold of 7 MW in Tasmania, and 30 MW on the mainland.<br>- Remove the reference to transmission-connected, for the AAS and MAS. | |
| **NER S5.2.5.10 – Protection to trip plant for unstable operation** | | |
| **Requirements for stability protection on asynchronous generating systems** | In the AAS, specify that a generating system or IRS, for its asynchronous units:<br>- Must have system that can detect an instability in voltage, reactive power and active power<br>- Must have a protection system capable of disconnecting for oscillatory behaviour<br>- On detection of oscillations, execute a hierarchy of actions based on configurable trigger conditions, thresholds and timeframes, agreed with the NSP and AEMO, where – Any | Tesla would suggest additional changes to the third dot point to confirm that the disconnection follows a signal from AEMO and is not automatic.<br>We remain concerned that the revised AEMO recommendation does not go far enough in confirming that the disconnection will not be automatic. |

| NER Schedule 5.2 issue | AEMO revised recommendation | Schedule 5.2 (Generators) – feedback on revised recommendations and relevant draft NER amendments |
|---|---|---|
| | action to disconnect is based on contribution to the oscillations – Actions are automatically and promptly actioned<br>- For synchronous and asynchronous production systems 100 MW or greater, must have a PMU and capability to receive information about contribution to oscillations from an AEMO central system (in a form nominated by AEMO)<br>The MAS requires:<br>- Where the plant, considering its reactive power range under S5.2.5.1, can change the voltage at the connection point, for system normal or planned outage conditions, by more than 1%,<br>o The plant must have capability to detect an oscillation of voltage, reactive power and, where relevant, active power<br>o For asynchronous production systems a process agreed with the NSP and AEMO to manage oscillations promptly<br>o For synchronous production units and synchronous condensers a protection system to disconnect the plant for sustained pole slipping, if required by the NSP<br>- If required by AEMO or the NSP, for production systems with active power capability 100 MW or greater and synchronous condensers 100 MVA a PMU, and capability to receive data on contribution to an oscillation in a form nominated by AEMO; | |

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|---|---|---|
| **NER S5.2.5.13 – Voltage and reactive power control** | | |
| **Voltage control at unit level and slow setpoint change** | Amend as follows:<br>- Specifically allow rate-limited setpoint change of the generating system. Permit bypass of setpoint rate limiting during testing to assess stability of the controls.<br>- Apply to voltage, reactive power and power factor modes.<br>The changes would apply to both synchronous and asynchronous plant. The slow setpoint change amendment would apply to voltage, power factor and reactive power modes. | N/A |
| **Realignment of performance requirements to optimise power system performance over expected fault level (system impedance) range – Voltage control** | In the AAS:<br>- Require a 2 second rise time of reactive power system voltage change up to 5% for the highest system impedance and typical system impedance level nominated by the NSP.<br>- Retain a 5 second settling time (5% step not into a limit) and 7.5 s settling time (5% step into a limit).<br>In the negotiated access requirements:<br>- Require that controls must be tuned to achieve the lowest reasonably achievable settling time for the highest apparent system impedance level, prioritising the primary operating mode. | N/A |

| NER Schedule 5.2 issue | AEMO revised recommendation | Schedule 5.2 (Generators) – feedback on revised recommendations and relevant draft NER amendments |
|---|---|---|
| | - If a settling time of 5 seconds cannot be met for the full range of apparent system impedances, then target achieving it for the range highest to typical apparent system impedance.<br>In the MAS:<br>- Allow a higher settling time longer than 7.5s to be agreed with the NSP for a voltage disturbance up to 5% (for both synchronous and asynchronous plant) General requirements<br>- In the general requirements, explain the concept of apparent system impedance (see note below) and require that the minimum, maximum and typical values be recorded in the RUG.<br>- The typical system impedance level should be reflective of typical unit commitment | |
| **Materiality threshold on settling time error band and voltage settling time for reactive power and power factor setpoints** | AEMO proposes to retain the draft report recommendation with the following revisions to:<br>- Apply a materiality threshold of 3MW, below which the calculation of settling time for active power excursions is not required, and<br>- Apply a settling time error band that is the larger of ±0.5 MW and the value calculated under the settling time definition, for voltage steps in any mode or setpoint change in voltage control. | N/A |

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| NER Schedule 5.2 issue | AEMO revised recommendation | Schedule 5.2 (Generators) – feedback on revised recommendations and relevant draft NER amendments |
|---|---|---|
| **Clarification of when multiple modes of operation are required** | N/A | N/A |
| **Impact of a generating system on power system oscillation modes** | Amend as follows:<br>- Modify the MAS to require the plant not to reduce the damping of any oscillation that is not adequately damped.<br>- Where a Schedule 5.2 Participant has elected to pay the system strength charge (under NER 5.4.3B(b1)), require that assessments take into account the performance required to be provided by the SSSP at the relevant system strength node. | Tesla is supportive of this revised recommendation. |
| **Definition – continuous uninterrupted operation** | | |
| **Recognition of frequency response mode, inertial response and active power response to an angle jump** | Modify the CUO definition or relevant clauses to:<br>- Carve out inherent or programmed responses opposing rate of change of frequency (inertial response) and opposing phase angle jumps, and operation in accordance with PFR requirements. | Tesla remains supportive of this recommendation |

## Schedule 5.3a Conditions for connection of MNSPs

| Issue | Schedule 5.3a (HVDC links) – feedback on revised recommendations and relevant draft NER amendments |
|---|---|
| **NER S5.3a.1a Introduction to the schedule** | |
| **Alignment of schedule with plant-type rather than registration category** | |

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| Issue | Schedule 5.3a (HVDC links) – feedback on revised recommendations and relevant draft NER amendments |
|---|---|
| **NER S5.3a.8 – Reactive power capability** | |
| **Reactive power** | |
| **NER S5.3a.13 – Market network service response to disturbances in the power system** | |
| **Voltage disturbances** | |
| **Frequency disturbances** | |
| **Fault ride through requirements** | |
| **NER S5.3a.4 – Monitoring and control requirements** | |
| **Remote monitoring and protection against instability** | |
| **New standards** | |
| **Voltage control** | |
| **Active power dispatch** | |

## Multiple Schedules

| Issue | Multiple schedules – feedback on revised recommendations and relevant draft NER amendments |
|---|---|
| **NER Multiple clauses** | |
| **References to superseded standards** | |

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## NER structural amendments

| Issue | NER structural amendments – feedback on revised recommendations and relevant draft NER amendments |
|---|---|
| **NER structural amendments** | |
| **Drafting principles** | |
| **Proposed approach** | |

## Consequential amendments

| Issue | Consequential amendments – feedback on revised recommendations and relevant draft NER amendments |
|---|---|
| **Definitions** | |
| **Definitions changes** | |
| **Technical changes** | |
| **Incorporating synchronous condensers** | |
| **Additions to information provision** | |
| **Relevant system – in relation to small plants exempt from some requirements** | |
| **S5.2.5.8 Over-frequency emergency generation reduction requirements** | |
| **S5.2.5.8 Protection settings and relationship to ride through clauses** | |
| **S5.2.5.8 Conditions for which the plant may trip and recording of conditions** | |
| **S5.2.5.8 Network Service Provider liability** | |
| **S5.2.5.11 Minimum operating level** | |
| **S5.2.5.11 Response direction for bidirectional units taking power from the system** | |

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| Issue | Consequential amendments – feedback on revised recommendations and relevant draft NER amendments |
|---|---|
| **Drafting changes** | |
| **Drafting changes** | |