

# Update report Stakeholder feedback template:

## AEMO Review of technical requirements for connection

Stakeholders making a submission on the recommendations set out in the AEMO draft report may use the below template to provide feedback. Please consider the confidentiality disclaimer at the end of this document.

**Stakeholder: Siemens Gamesa Renewable Energy**

### Schedule 5.2 Conditions for Connection of Generators

NER Schedule 5.2 issue	Schedule 5.2 (Generators) – feedback on revised recommendations and relevant draft NER amendments
<b>NER S5.2.1 – Outline of requirements</b>	
<b>Application of Schedule 5.2 based on plant type instead of registration category and extension to synchronous condensers</b>	SGRE support these changes.
<b>NER S5.2.5.1 – Reactive power capability</b>	
<b>Voltage range for full reactive power requirement</b>	SGRE support these changes.
<b>Treatment of reactive power capability considering temperature derating</b>	SGRE support these changes.
<b>Compensation of reactive power when units are out of service</b>	SGRE suggest to increase the voltage deviation from 0.5% to 1% for a typical system impedance nominated by the Network Service Provider, the higher the voltage deviation is, the less will be the costs borne by the consumer. SGRE understand that the typical system impedance is as extracted form system normal snapshot considering the nearby voltage control by adjacent plants.
<b>S5.2.5.7, S5.2.5.8, S5.2.5.13</b>	
<b>Simplifying small connections</b>	SGRE support these changes.
<b>NER S5.2.5.2 – Quality of electricity generated</b>	
<b>Reference to plant standard</b>	SGRE support these changes.
<b>NER S5.2.5.4 – Generating system response to voltage disturbances</b>	
<b>Overvoltage requirements for medium voltage and lower connections</b>	SGRE support these changes.

NER Schedule 5.2 issue	Schedule 5.2 (Generators) – feedback on revised recommendations and relevant draft NER amendments
<b>Requirements for overvoltages above 130%</b>	SGRE suggest to remove the requirement for a voltage at the connection point above 1.30pu as Network users are incentivised to ensure their plant is capable of withstanding the required switching and lightning surges to maintain the integrity of their equipment.
<b>Clarification of continuous uninterrupted operation (CUO) in the range 90% to 110% of normal voltage</b>	SGRE support these changes.
<b>NER S5.2.5.5 – Generating system response to disturbances following contingency events</b>	
<b>Definition of end of a disturbance for multiple fault ride through</b>	SGRE support these changes.
<b>Form of multiple fault ride through clause</b>	<ul style="list-style-type: none"> <li>• SGRE Support these changes, with the understanding that the NSP will have the power to request additional studies (i.e. power system studies) to assess any potential limitation. However, that defining any hardware or prototype test specification in order to demonstrate a platforms capability will remain the responsibility of the OEM.</li> <li>• SGRE believe that the best approach would be for AEMO to release an assessment guideline showing a list of possible onerous multiple faults based on historical faults in NEM not specifically in a state, for example, incidents like in SA in 2016 or in QLD in 2021 could be good candidates for studying multiple fault ride through capability of a technology. The current issue that most OEMs are suffering because it is difficult to test the technology's performance/robustness for the totality of scenarios that fall under the AAS.</li> </ul>
<b>Number of faults with 200 ms between them</b>	SGRE support these changes.
<b>Reduction of fault level below minimum level for which the plant has been tuned</b>	SGRE support these changes.
<b>Active power recovery after a fault</b>	SGRE support these changes.
<b>Rise time and settling time for reactive current injection</b>	SGRE support these changes.
<b>Commencement of reactive current injection</b>	SGRE support these changes.
<b>Clarity on reactive current injection volume and location and consideration of unbalanced voltages</b>	SGRE support the recommended revisions to record unbalance fault in GPS. However, the assessment of volume of negative current injection in accordance with the negative voltage deviation could be difficult depending on the technology and may require significant additional effort during all connection stages. For example, with DFIG (similarly to synchronous machines) negative sequence current may be absorbed by the machine itself rather than as defined by a software control system so codifying the performance may not be clear and straightforward. SGRE also suggest to limit the matter of priority only to the positive sequence and active current vs reactive current.
<b>Metallic conducting path</b>	
<b>Reclassified contingency events</b>	
<b>NER S5.2.5.7 – Partial load rejection</b>	
<b>Application of minimum generation to energy storage systems</b>	

NER Schedule 5.2 issue		Schedule 5.2 (Generators) – feedback on revised recommendations and relevant draft NER amendments
Clarification of meaning of CUO for NER S5.2.5.7		
<b>NER S5.2.5.8 – Protection of generating systems from power system disturbances</b>		
<b>Emergency over-frequency response</b>		
<b>NER S5.2.5.10 – Protection to trip plant for unstable operation</b>		
<b>Requirements for stability protection on asynchronous generating systems</b>		SGRE request to define “the plant’s contribution to instability” in the draft rule to avoid any dispute for an unnecessary disconnection of a plant. This statement should define what “the plant’s contribution to instability” means regarding the duration, the deviation magnitude of voltage/active power/reactive power and etc. The current draft rule is vague and triggered conditions, thresholds and timeframes are immensely subjective.
<b>NER S5.2.5.13 – Voltage and reactive power control</b>		
<b>Voltage control at unit level and slow setpoint change</b>		SGRE support these changes.
<b>Realignment of performance requirements to optimise power system performance over expected fault level (system impedance) range – Voltage control</b>		
<b>Materiality threshold on settling time error band and voltage settling time for reactive power and power factor setpoints</b>		
<b>Clarification of when multiple modes of operation are required</b>		
<b>Impact of a generating system on power system oscillation modes</b>		
<b>Definition – continuous uninterrupted operation</b>		
<b>Recognition of frequency response mode, inertial response and active power response to an angle jump</b>		

### Schedule 5.3a Conditions for connection of MNSPs

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

<b>Issue</b>	<b>Schedule 5.3a (HVDC links) – feedback on revised recommendations and relevant draft NER amendments</b>
--------------	---

<b>NER S5.3a.8 – Reactive power capability</b>	
--	--

<b>Reactive power</b>	
-----------------------	--

<b>NER S5.3a.13 – Market network service response to disturbances in the power system</b>	
---	--

<b>Voltage disturbances</b>	
-----------------------------	--

<b>Frequency disturbances</b>	
-------------------------------	--

<b>Fault ride through requirements</b>	
--	--

<b>NER S5.3a.4 – Monitoring and control requirements</b>	
--	--

<b>Remote monitoring and protection against instability</b>	
---	--

<b>New standards</b>	
----------------------	--

<b>Voltage control</b>	
------------------------	--

<b>Active power dispatch</b>	
------------------------------	--

### Multiple Schedules

<b>Issue</b>	<b>Multiple schedules – feedback on revised recommendations and relevant draft NER amendments</b>
--------------	---

<b>NER Multiple clauses</b>	
-----------------------------	--

<b>References to superseded standards</b>	
---	--

### NER structural amendments

<b>Issue</b>	<b>NER structural amendments – feedback on revised recommendations and relevant draft NER amendments</b>
--------------	--

<b>NER structural amendments</b>	
----------------------------------	--

<b>Drafting principles</b>	
----------------------------	--

<b>Issue</b>	<b>NER structural amendments – feedback on revised recommendations and relevant draft NER amendments</b>
<b>Proposed approach</b>	

### Consequential amendments

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

### Confidentiality disclaimer

Under clause 5.2.6A(d)(2), AEMO is required to publish all submissions received about this Review on its website. Please identify any part of your submission that is confidential, which you do not wish to be published. Please note that if material identified as confidential cannot be shared and validated with other interested persons, then it may be accorded less weight in AEMO's decision-making process than published material. AEMO prefers that submissions be forwarded in electronic format.