



## Generator technical performance standards rule determination

### New rules on technical performance standards

The Commission has made a rule to change the way levels of technical performance are negotiated for equipment connecting to the power system, and improve the technical requirements for new generating systems. This rule responds to a rule change request submitted by the Australian Energy Market Operator (AEMO).

### Rule determination

The energy mix is changing. This is creating new challenges for managing the power system efficiently. In particular, keeping the power system in a secure operating state is becoming more difficult as older generating systems retire and are replaced by newer generating systems such as wind and solar, as well as distributed generation.

The energy mix will continue to change, and so will the way the system is managed. This rule supports these changes by improving and clarifying the negotiating process for new connections. Under the rule, negotiations can occur more efficiently so that each generating system that connects is required to have a level of performance that maintains system security and quality of supply at the lowest cost.

The rule also changes the requirements for connecting generators to be able to:

- control their active power output, to limit their contribution to frequency and voltage disturbances
- supply and absorb reactive power for the control of voltage, where this service is needed on the power system
- inject and absorb reactive current during disturbances
- maintain operation in the face of certain frequency and voltage disturbances (including faults and contingency events).

The rule will commence on 5 October 2018, with transitional arrangements ending on 1 February 2019 for projects that have a connection application already submitted on the commencement date.

### Background to the connection process and technical requirements

Under the connections framework in the National Electricity Rules (NER), connection applicants are able to negotiate with a network service provider (who is advised on some matters by AEMO) on the level of performance for the equipment they are seeking to connect to the power system. For each technical requirement, the negotiation occurs within a range provided by an automatic access standard (where a connection cannot be denied access on the basis of that technical requirement) and a minimum access standard (below which a connection must be denied access) that are each set out in the NER.

The NER currently allow network service providers and AEMO, in respect of its advisory matters, to refuse to agree to a proposed negotiated access standard if, among other things, the connecting equipment would adversely affect system security or the quality of power supply to other network users. Other mechanisms and tools are also available to AEMO to manage power system security and to network service providers to manage their networks in accordance with their obligations under the NER. This includes through the design and augmentation of networks and use of network support services, the operation of the power system and the constraints applied, and the use of ancillary services.

The access standards for generators connecting to the power system relate to a wide

range of technical requirements and are set out in Schedule 5.2 to the NER. These access standards relate to, among other things:

- the requirements for generating systems to be able to control their active and reactive power and reactive current response, which helps to keep the system stable during normal operation of the power system, and also when the system experiences unexpected frequency and voltage disturbances, and
- the requirements for generating systems to be able to maintain operation in the face of these unexpected disturbances (including faults and contingency events) that can lead to cascading failures and blackouts.

These access standards in the NER can therefore be viewed as the reference points used for negotiations between connection applicants, the network service provider and, where relevant, AEMO, to set the specific levels of technical performance of equipment that connects to the power system.

### Reasons for making the rule

In its rule change request, AEMO considered that the current process to negotiate access standards, and the access standards for generators, are no longer adequate to ensure the ongoing security of the evolving power system. AEMO therefore proposed changes to:

- the negotiating process used to set the levels of performance required of all equipment connecting to the power system, and
- a number of access standards for connecting generating systems, including those relating to active power capability and control, reactive power capability and control, reactive current response during disturbances, and the access standards related to the ability to maintain operation in the face of certain disturbances and low system strength conditions.

The Commission agreed with AEMO that a changing energy mix is creating new challenges. In particular, the ability to effectively control frequency and voltage on the power system is diminishing as synchronous generating systems exit the market and new asynchronous generating systems and distributed energy sources replace them.

The Commission accepted many of AEMO's proposed changes, and amended or rejected others where alternative approaches achieve the appropriate outcomes in a more efficient way. In coming to its decision, the Commission considered: the arrangements required to maintain power system security and the quality of supply at least cost to consumers, the allocation of costs and risks to those parties that are best placed to manage them, finding the right balance between regulatory certainty and flexibility in regulatory arrangements, and that access standards should not represent an inefficient barrier to entry for any technology type.

### Transitional arrangements

The rule commences on 5 October 2018. All new connection applications from that date must be based on the new rules.

As there are a significant number of connection applications currently before network service providers and AEMO, the rule includes transitional arrangements for these projects. If these projects have a full set of access standards agreed by 1 February 2019, they may proceed to connection based on the rules that were in force immediately prior to the commencement date.

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