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REVIEW OF TECHNICAL RULES

System Management is pleased to make this submission in response to the ERA's invitation to interested parties of 16 August 2011.

System Management as the System Operator of the South West Interconnected System (SWIS) is keen to ensure the correct frequency and voltage controls are in place so that it can fulfil its requirements to maintain System Security and Reliability.

In its review of the proposed rules it wishes to raise points that it hopes clarifies the obligations for users of the SWIS as set out below.

1. Classification of Generators Clauses 3.3.3.5 and 3.3.4.4

“3.3.3.5 Ramping Rates

(a) A *scheduled generating unit*, in a thermally stable state, must be capable of increasing or decreasing *active power generation* in response to a manually or remotely initiated order to change the level of generated *active power* at a rate not less than 5% of the *generator machine's nameplate rating* per minute.

(b) A *power station non-scheduled generating unit* that is not subject to dispatch by *System Management* must not increase or decrease its *active power generation* at a rate greater than 10MW per minute or 15% of the *power station's generator machine's aggregate nameplate rating* per minute, whichever is the greater, except when more rapid changes are necessary due to the strength of the *energy source moving outside the power station's design range*.

This requirement would normally be incorporated into the design of the *active power output controller*.”

“3.3.4.4(e) Control Range

(1) For dispatchable ~~synchronous~~ *generating units*:

(A) The overall response of a ~~dispatchable synchronous~~ *generating unit* for *power system frequency* excursions must be settable and be capable of achieving an increase in the *generating unit's active power* output of not less than 5% for a 0.1 Hz reduction in *power system frequency* (4% droop) for any initial output up to 85% of rated output.

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(B) A ~~dispatchable~~*synchronous* generating unit must also be capable of achieving a reduction in the *generating unit's active power* output of not less than 5% for a 0.1 Hz increase in system *frequency* provided this does not require operation below the *technical minimum*.

(C) For initial outputs above 85% of rated *active power* output, a *generating unit's* response capability must be included in the relevant *connection agreement*, and the *Generator* must ensure that the *generating unit* responds in accordance with that *connection agreement*.

(D) *Thermal generating units* must be able to sustain *load changes* of at least 10% for a *frequency* decrease and 30% for a *frequency* increase if *changes* occur within the above limits of output. Multiple fuel *generating units* must meet this requirement ~~have the same response to the system frequency changes~~ regardless of ~~the~~which fuel type they are using running at any given time.

(2) For non-dispatchable generating units, a generating unit must be capable of achieving a reduction in the generating unit's active power output for an increase in system frequency, provided the latter does not require operation below technical minimum."

System Management notes there is a difference in terms used in these two associated clauses. For steam turbines and gas turbines "dispatchable generating units" should be used. For wind, solar and most biomass generators "non-dispatchable generating units" should be used. It should be noted that all generating units are subject to dispatch by System Management albeit for wind generators it is only a reduction in output. To maintain consistency it is suggested that clause 3.3.3.5 be changed to:

"3.3.3.5 Ramping Rates

(a) A ~~scheduled~~ dispatchable *generating unit*, in a thermally stable state, must be capable of increasing or decreasing *active power generation* in response to a manually or remotely initiated order to change the level of generated *active power* at a rate not less than 5% of the *generator machine's nameplate rating* per minute.

(b) A ~~non-scheduled~~ *generating unit* ~~non-dispatchable~~ *generating unit* must not increase or decrease its *active power generation* at a rate greater than 10MW per minute or 15% of the power station's generator machine's aggregate nameplate rating per minute, whichever is the greater, except when more rapid changes are necessary due to the strength of the energy source moving outside the power station's design range.

This requirement would normally be incorporated into the design of the active power output controller."

2. Turbine Control Systems Clause 3.3.4.4

"3.3.4.4 Frequency Control

(a) All *generating units* must have an automatic variable speed load control characteristic. *Turbine control systems* must include *facilities* for both *speed* and *load* control.

(b) *Generating units* must be capable of operation in a mode in which they will automatically and accurately alter *active power* output (~~every four seconds~~) to allow for *changes* in ***associated loads*** and for *changes* in *frequency* of the *transmission and distribution system* and in a manner to sustain high initial response.

~~For steam generating units, this mode is known as the coordinated boiler follow mode.~~

(c) A *Generator* must, operate a *generating unit* in the mode specified in clause 3.3.4.4(b) unless instructed otherwise by *System Management* or the *Network Service Provider*, as the case requires.”

System Management notes that “*associated loads*” is not a defined term in the glossary and so it should not be italicised.

Further it understands that this was originally formulated for the Top up and Spill Market where a generator would follow its associated load.

As this form of market is no longer in place or envisaged it suggests the words be replaced with “the relevant dispatch level”. In essence as per the generator’s resource plan or dispatch instruction as per the current Wholesale Electricity Market Rules. It should be noted the concept of resource plan will no longer become relevant for this after the current Market Evolution Program Rules are in place.

The revised wording would be:

3.3.4.4 *Frequency Control*

(a) All *generating units* must have an automatic variable ~~*speed load*~~ control characteristic. *Turbine control systems* must include *facilities* for both speed and *load* control.

(b) *Generating units* must be capable of operation in a mode in which they will automatically and accurately alter *active power* output (~~every four seconds~~) to allow for *changes* in the relevant dispatch level ~~*associated loads*~~ and for *changes* in *frequency* of the *transmission and distribution system* and in a manner to sustain high initial response. ~~For steam *generating units*, this mode is known as the coordinated boiler follow mode.~~

(c) A *Generator* must, operate a *generating unit* in the mode specified in clause 3.3.4.4(b) unless instructed otherwise by *System Management* or the *Network Service Provider*, as the case requires.”

Given its responsibilities System Management is pleased to offer any assistance in the current or future reviews of the Technical Rules. Should you have any queries in regard to this submission please contact Brendan Clarke on 9427 5940.

Yours sincerely



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System Management