

Sebastien Henry  
Australian Energy Market Commission  
L6, 201 Elizabeth Street  
Sydney NSW 2000

By online submission

Thursday, 27 March 2014

Dear Sebastien,

**Generator ramp rates and dispatch inflexibility in bidding: Ref ERC0165**

GDF Suez Australian Energy (GDFSAE) appreciates the opportunity to respond to the Australian Energy Regulator (AER) Rule change request which proposes a requirement for generator ramp rates and dispatch inflexibility profiles to reflect the technical capabilities of generating plant.

GDFSAE agrees that it is important that AEMO have at all times, access to sufficient generator ramping capability to ensure that the power system operation remains within its secure limits. GDFSAE also agree that when generator ramping capability becomes scarce, the economic efficiency of the NEM can be impaired and result in issues such as counter price flows, as identified in the AEMC consultation paper.

Although GDFSAE agree that a review of the current Rules which enable generators to limit their ramping capability is appropriate, we are not supportive of the proposed solution which would require generators to provide their full technical ramping capability at all times. In this submission we have set out the reasons that we do not support the proposed Rule change, and provided some alternative suggestions.

**Flexible generation is important**

GDFSAE is mindful of the fact that to ensure the security of the interconnected power system, it is important that AEMO have access to sufficient ramping capability from flexible generating plant. Scheduled generator dispatch targets are calculated at every 5-minute dispatch interval in response to changes in the electricity demand and the output of other scheduled and non-scheduled generators.

GDFSAE understands that the amount of ramping capability required for secure power system operation varies throughout the day. Typically, the times in the day when demand for ramping capability are at a maximum are in the mornings when electricity demand is increasingly quickly, and in the late afternoons when demand falls away.

As well as these time-of-day variations in the need for ramping capability, network constraints can impose a requirement for ramping capability in specific geographic areas within the NEM. In these cases, the ramping requirement is localised to the specific generating units that are constrained by the network limit.

In addition to being important for maintaining power system security, generator ramping capability is also sometimes required to achieve the most efficient economic market outcome. For example, if a low cost generator has a relatively slow ramp rate, then a more expensive generator will need to be increased to

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meet a rising demand, which will be less efficient than if the cheaper generator could be ramped up more quickly.

In general, generators have an incentive to offer high ramp rates so that when the pool price exceeds their bid price, they can have their output increased quickly and thus, maximise their pool revenue. Equally, when the pool price falls below the generators bid price, the generator would generally want to ramp down as quickly as possible, to avoid being dispatched beyond their desired market level.

However, the NEM design and its interaction with network constraints can at times mean that generators are not incentivised to provide a high ramp rate. For example, when a low cost generator is being constrained off during a period of relatively high pool price, the generator has an incentive to bid its energy at a low or even a negative price, and may also restrict its ramping capability, so as to avoid being dispatched to a lower level. This can result in AEMO finding it difficult to maintain power system operation within secure limits, and can also lead to inefficient market outcomes.

GDFSAE notes that the issue with constrained generator bidding would be resolved by the implementation of the optional firm access model, where constrained generators would not have the same incentive to maximise their output, as they would be financially exposed to the local node price, which would be lower when the node is behind a binding constraint.

In summary, GDFSAE acknowledge that the NEM does not always provide a strong incentive for generators to offer high ramping capability, with the result that power system security issues and economic inefficiencies can arise.

### **Mandating a service is not desirable**

As a general principle, GDFSAE does not support regulatory measures being imposed on the NEM which seek to mandate the provision of a product or service which is not a technical condition for generator connection.

Generator ramping capability has not to date been regarded as a technical condition for connection, since it is generally in the generators commercial interests to ramp up and down with changing pool price. If there were to be an obligation placed on generators with regard to their ramping capability, then it would seem to be more appropriate that this be achieved by including a new item in schedule 5.2.1 of the Rules, which deals with technical conditions of connection for generators.

However GDFSAE believes that mandating ramping capability from generators is not a practical approach since the actual ramping capability of a generator at any particular point in time is a function of many variables. As a result, the task for generators to continually update their current ramping capability, and for the regulator to monitor compliance, would become unnecessarily burdensome.

A specific point of concern for GDFSAE regarding the proposed Rule change is the suggestion that the AER would revise their Rebidding and Technical Parameters Guideline to explain how the proposed new Rule would be enforced. This makes it very difficult for stakeholders to comment on the proposal, as the pivotal issue of how the proposed Rule would be enforced will not be known until a later time.

GDFSAE also suggests that there may be a practical issue associated with the proposed Rule change since the generator ramping value used by NEMDE for every 5-minute dispatch interval is the lowest of the SCADA value and the participant bid value. In general, the SCADA figure, which is typically controlled by the power station operators, has the potential to vary throughout the day as operating conditions change. This is not an issue at present, as the SCADA figure is normally higher than the NEMDE figure, and so is not normally the limiting value.

However if the generator is obliged to provide its maximum ramping capability at all times, then it will be more practical for the generator to set the bid value at the highest nominal value, and then allow the SCADA value to set the actual operational limit at any given moment. However the obligation to include a reason for any changes in ramp rate capability would then require the power station operator to be aware of when the SCADA ramp rate figure was changing, and ensure that the trading team then entered a reason to AEMO for the re-bid. This would be a significant change in responsibilities for power station operators for many generator participants.

## Alternative proposal

Although GDFSAE does not support the proposed Rule change, we do recognise that the current arrangements are somewhat deficient for the reasons outlined earlier, and therefore propose the following alternative.

Although GDFSAE does not support the proposal to mandate that generators provide their full technical ramping capability at all times, we do support the current provisions which mandate a minimum ramping capability on all scheduled generators. At present, this minimum ramping requirement is set to 3 MW/minute or 3% of capacity for units less than 100 MW. GDFSAE understands that AEMO have in the past, indicated that this minimum level of ramping capability is sufficient for meeting power system security requirements.

GDFSAE would support a re-consideration by AEMO of whether this minimum level is still appropriate and if not, a process to re-set the minimum level. However, the level should not be simply set to the technical maximum for all generators.

If there are circumstances such as network congestion which lead to localised ramping shortfalls, then GDFSAE believes that a more localised solution should be sought. Ultimately OFA might provide this, but in the interim, perhaps the relevant TNSP could negotiate a form of network agreement with the relevant generator(s) to provide additional ramping capability on a fee-for-service arrangement.

GDFSAE believes that the current arrangements for aggregated generators should be changed so that the minimum ramp capability that aggregated generators must provide be calculated based on the number of physical units within the aggregated set. For example, if an aggregated generating unit contains 6 physical units, then the minimum ramp rate should be 6 x 3MW (or 6 x 3% of the physical units if they are less than 100 MW each).

## Fast start inflexibility profile

A generators fast start inflexibility profile (FSIP) is essentially intended to represent the technical limitations of a fast start generator in starting up, increasing its output, and minimum run time. However it is also true that in establishing values for each of the parameters that make up a generating unit's FSIP, a participant will ultimately need to choose values that give an appropriate balance between maximising the potential for commercial returns, and operating within the generating units technical capabilities.

GDFSAE agrees that having established the values for a generating units FSIP, they should only be changed by a participant for a legitimate technical reason, and not be allowed to be changed in dispatch time for purely commercial reasons.

GDFSAE has some concerns however with regulatory changes that would require that the FSIP at all times reflect the maximum technical capability, as it is likely that this will be subject to numerous operational and technical considerations, and may therefore need to change frequently.

GDFSAE would prefer that the FSIP parameters which are bid one day in advance represent the participant's assessment of their best balance between their commercial and technical considerations. Having lodged their FSIP bid for the following day, GSDFAE agrees that a participant should then only be able to subsequently re-bid the FSIP values if there are legitimate technical reasons for doing so.

The AER would have the ability to ask generators to confirm / demonstrate the legitimacy of any FSIP re-bids provided within 24 hours of dispatch time.

## Recognising value of flexible plant

GDFSAE believes that this Rule change proposal which seeks to mandate the provision of ramping capability from flexible generators raises an issue that is becoming increasingly important, not only with the Australian NEM, but in many other electricity markets around the world. The issue is that as the penetration of intermittent and distributed (non-flexible) generation increases, there is an increased requirement for flexible generating plant to ensure that sufficient ramping capability is available.

The issue is compounded by the fact that non-flexible generation output is often poorly correlated with changes in electricity demand. For example, distributed solar PV generation typically rises in the mid to late morning when demand is typically steady, and then solar PV generation falls away rapidly in the late

afternoon, when demand is rising rapidly. These poorly correlated movements in non-flexible generation impose an even greater ramping requirement on the remaining flexible generators.

With increasing amounts of energy provided by inflexible generation, and a generally lower value being placed on the energy that is provided by flexible plant, it is appropriate to consider whether there are adequate market signals to ensure that sufficient flexible generation sources are available at all times. GDFSAE believes that the appropriate way to manage this would be to introduce measures into the NEM which recognise the value that ramping service brings to the market.

GDFSAE recognise that consideration of this would be outside of the scope of the current Rule change proposal, but suggests that it might be an idea worthy of further consideration in a broader context.

We hope that the comments provided in this submission are helpful to the AEMC in its deliberations on this matter, and would be very happy to discuss further if required.

Yours sincerely,



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