



Mr John Pierce
Australian Energy Market Commission
Level 6, 201 Elizabeth Street
Sydney NSW 2000
Lodged via www.aemc.gov.au

Friday, 11 August 2017

Dear Mr Pierce,

RE: Draft Determination – managing power system fault levels (ERC0211)

ENGIE appreciates the opportunity to comment on the Australian Energy Market Commissions (AEMC) draft determination on managing power system fault levels (draft determination).

ENGIE understands that the key features of the draft rule determination would require:

- AEMO to establish guidelines for calculating connection point short circuit ratios,
- Existing generators to agree to a registered short circuit ratio at their connection point,
- AEMO to identify locations where system strength is, or is likely to be, below registered minimum levels,
- Network service providers to maintain registered short circuit ratio's,
- Network service providers to use existing planning and regulatory arrangements to procure required system strength services,
- New connecting generators to 'do no harm' to the existing minimum level of system strength, as assessed by network service providers and the Australian Energy Market Operator (AEMO), and
- New connecting generator to fund any necessary remediation work required to maintain system strength above agreed minimum levels.

ENGIE supports the aims of the draft rule determination which are to ensure that sufficient levels of system strength are maintained across the NEM to ensure that the power system and all connected plant is able to operate in a secure manner.





ENGIE also supports many elements of the proposed framework for the management and procurement of system strength services, with one notable exception. ENGIE does not support the proposal that network service providers would have responsibility for maintaining minimum levels of system strength.

ENGIE believes that a more preferable approach would be to assign responsibility for maintaining minimum levels of system strength to the independent power system and market operator – AEMO.

There are several reasons that ENGIE believes lead to the conclusion that AEMO is more suited to managing system strength than network service providers. In summary these reasons can be classified as roles and responsibilities, competition versus regulation and practical considerations. These are discussed in turn below.

Roles and responsibilities

ENGIE believes that responsibility for maintaining system strength fits more appropriately with the roles and responsibilities of AEMO as defined in the national electricity law (NEL). ENGIE refers to the NEL clause 49 - AEMO's statutory functions and in particular, and notes clause 49(1)(e) in which AEMO is assigned the function to "maintain power system security". In contrast, the NEL defines network service providers as having responsibility to "... own, control or operate a transmission or distribution system that form part of the interconnected national electricity system".

In restricting network service providers' responsibilities to ownership, control and operation of the transmission system, the NEL has excluded network service providers from responsibilities for management of power system security services such as system strength. Furthermore, in specifically allocating the much broader power system security responsibility to AEMO, the NEL has ensured clear demarcation of responsibilities between network service providers and AEMO.

In addition to the NEL, the national electricity rules (NER) in clause 4.3.1 sets out AEMO power system security responsibilities in additional detail, prescribing AEMO with responsibility to (in summary):

- maintain power system security,
- operate within the technical envelope,
- operate all plant within appropriate limits,
- assess impact of plant on the power system,
- determine and assess impact of constraints, and
- utilise ancillary services to maintain satisfactory power system operation.

Furthermore, the NER in clause 4.6.1 assigns to AEMO specific responsibilities for management of power system fault levels (system strength) in the NEM. Admittedly this clause currently refers to the issue of fault levels exceeding the limits, and not to the issue of lower fault levels. ENGIE believes however that the principle that AEMO be responsible for management of fault levels is clearly established by this clause.

ENGIE believes that by assigning responsibilities for system strength procurement to network service providers, the AEMC would be moving outside of the policy and regulatory framework established by the NEL and NER. If



such a step is to be taken, then the fundamental principle of power system security management being assigned to one entity (AEMO) will be undermined. This is a step that should not be taken lightly, as it is vital that there remain an unambiguous allocation of responsibility for the critical function of maintaining power system security. This will be especially important as the power system transitions towards new technical and regulatory challenges where clear accountability will be of even greater importance.

Competition versus regulation

As well as the above policy and regulatory concerns, ENGIE also believes that by assigning responsibility for fault level management to the network service providers, the AEMC are in effect proposing that system strength become part of the regulated framework of services provided by network service providers. ENGIE believes that it is more desirable that the procurement of system strength services be carried out within a competitive framework, as this is more likely to deliver efficient outcomes.

The regulated network framework was established at the commencement of the NEM when it was realised that the network was a natural monopoly and was therefore not suited to being exposed to competitive forces. System strength services are able to be provided by a range of service providers and therefore cannot be regarded as monopoly services.

Another possible justification that might be applied for regulating the procurement of system strength services could be that a competitive regime had been trialled, but there was evidence of market failure, necessitating the imposition of a regulated solution. Given that there has been no effort to implement a competitive solution however, this justification cannot be applied at this time.

Practical considerations

System strength is dependent on, amongst other things, the number of synchronous generators that are online at any particular time. Network service providers have no direct involvement in the operation of the national electricity market which determines the commitment and dispatch of scheduled generators. AEMO on the other hand, as the independent market and power system operator, have a number of powers and mechanisms available which could be utilised in managing system strength.

One of these existing mechanisms available to AEMO are constraint equations which AEMO utilises within the NEM dispatch engine to ensure that dispatch outcomes remain within the secure technical envelope. In early July this year, AEMO introduced a new set of constraint equations specifically to maintain adequate system strength levels within South Australia (see AEMO market notice 58783 dated 3 July 2017). AEMO continued to refine the operation of these system strength constraints and on the 19 July 2017, AEMO announced (via market notice 58845) that the system strength constraints had been automated, so that it would only apply when there was insufficient synchronous generation online.

At a recent NEM wholesale forum, AEMO confirmed that they are continuing to work on the newly developed system strength constraints, and are hoping to introduce some further developments and refinements to their application towards managing system strength levels.



These developments by AEMO in designing and applying new forms of constraints to manage system strength is an example of the fact that the management of system strength is within AEMO's area of responsibility, and that it is capable currently of responding to this need.

As well as constraint equations, there are additional tools and mechanisms available to AEMO to respond to the need to manage system strength. One of these is procurement of ancillary services. Under the national electricity rules, AEMO is able to procure network support and control ancillary services (NSCAS) under the provisions of NER clauses 3.11.3 and 3.11.5. Admittedly, the current arrangements in clause 3.11.3 does require that, having identified an NSCAS need, AEMO may (not must) request the relevant network service providers to advise if and when it will be in a position to resolve the need. Clause 3.11.3 then requires AEMO to assess the adequacy of the network service provider's response, and if AEMO believes that there remains a risk to power system security and / or reliability, then AEMO must use reasonable endeavours to meet the NSCAS need.

These NSCAS arrangements make it clear that AEMO bears the ultimate responsibility for the adequate procurements of these services, and this can easily be applied to procurement of system strength services.

ENGIE believes that the existing mechanisms of constraint equations and ancillary service procurement could be developed and refined to allow AEMO to have greater control over the management of system strength, leading to more effective and efficient overall outcomes.

Specific comments

As well as the above general comments on the draft determination, ENGIE has a few specific comments to make, and these are included below.

ENGIE notes that the draft determination uses both terms *system strength* and *short circuit ratio* and seems to apply between these two terms interchangeably. These are in fact very distinct terms with system strength being an absolute measure of the fault level at a particular point in the power system, whereas short circuit ratio is a derived quantity being the quotient of system strength in MVA and the local generation capacity in MW.

One example of where the draft determination seems to confuse these two terms is in the summary of the draft rule on page 1, which describes the requirement on new connecting generators to 'do no harm' to the minimum level of system strength to nearby connection points. This is confusing – a new generator cannot reduce the system strength – the worst it can do is contribute no fault current. In the draft rule in new clause 5.3.4B however, the obligation on connecting generators is described not in terms of system strength, but in terms of the short circuit ratio. So there appear to be an inconsistency between the draft determination and the draft rule itself.

Another concern with the draft determination relates to the practicality of using the short circuit ratio as a suitable measure for the purposes described in draft rule 5.3.4B. For example, the draft rule requires AEMO to 'ensure that there are processes in place' to identify where the short circuit ratio at a connection point is or is likely to be below a registered level, and if so, notify the relevant network service provider and registered participant. ENGIE's concern with this approach is given that short circuit ratio is a function of the MW capacity of the connected generators at the connection point, as generators are brought on and off line as part of the normal dispatch process, the short circuit ratio will rise and fall. At some connections points, this variation is likely to be quite



dramatic. It is therefore difficult to envisage how a potentially volatile measure such as short circuit ratio will be suitable as a registered standard.

ENGIE trusts that the comments provided in this response are of assistance to the AEMC in its deliberations. Should you wish to discuss any aspects of this submission, please do not hesitate to contact me on, telephone, 03 9617 8331.

Yours sincerely,

A handwritten signature in black ink, appearing to read "Chris Deague".

Chris Deague
Wholesale Regulations Manager