11 August 2017

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Chief Executive
Australian Energy Market Commission
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Managing the rate of change of frequency (ERC0214) and Managing power system fault levels (ERC0211) Draft Determination and Rules

Energy Networks Australia welcomes the opportunity to make a combined submission to the Australian Energy Market Commission's (AEMC) two draft determinations and draft rules on the South Australian Minister for Mineral Resources and Energy's 'Managing the rate of change of frequency' and 'Managing power system fault levels' rule change proposals.

Energy Networks Australia is the national industry body representing businesses operating Australia's electricity transmission and distribution and gas distribution networks. Member businesses provide energy to virtually every household and business in Australia.

Energy Networks Australia and its members are generally supportive of the direction and the allocation of responsibilities outlined in in these draft determinations. We are also encouraged by the AEMC's willingness to engage with stakeholders (including our member businesses) in managing what is a very complex and leading edge aspect of the transforming energy sector. At a high level, the AEMC's new plan for power system security, envisages, amongst other things:

- Network Service Providers (NSPs) providing minimum levels of inertia where inertia shortfalls are identified by AEMO.
- Enabling NSPs to contract with suppliers of inertia substitutes like fast frequency response services from emerging technologies, when providing these minimum levels, if AEMO agrees.
- Making NSP's responsible for maintaining a minimum level of system strength for each connected generator at generating system connection points [1] above an agreed minimum level under a defined range of conditions.
- Requiring new connecting generators to pay for remedial action if they cause breaches to minimum system strength for other generators. This "do no harm" concept currently envisages applying the minimum level of system strength being provided to any nearby

[1] The AEMC at p.28 of the Draft Determination on 'Managing power system fault levels' argues this is a similar function to existing obligations to manage the quality of supply to all their network users, including both generators and customers – see National Electricity Rules clause 5.1.3(d).

generating system connection points. The new generator is required to fund the costs associated with the provision of any required system-strength services to address the impact on the affected Short Circuit Ratios (SCR) of other generators. This obligation would only apply at the time the connection is negotiated, and

» Having 'system strength' related work and expenditure treated as a regulated service for TNSPs recovered through Transmission Use of System charges, and at a distribution level as a standard control service and be recovered through Distribution Use of System charges.

Key Points

- In assessing, power system fault levels, and system strength, the use of Short Circuit Ratios is a 'necessary' measure. However, it is not of itself a fulsome proxy or complete measure for, or of, system strength. A full examination of system strength involves assessing how the network physically and functionally operates and responds. This in turn requires assessment of: supply quality, protection systems' performance in clearing faults under different conditions, as well as fault ride through, and whether low 'system strength' outcomes could result in power system stability issues.
- The AEMC must establish appropriate governance, regulatory and competitive protections under the National Electricity Rules for NSPs in addressing new risks that may arise in the procurement of any new system security market and service arrangements.
- Connection process arrangements will need to be considered in establishing supporting frameworks as more parties engage and negotiate with NSPs at both a transmission and distribution level in the transforming energy sector.
- Given the potential lead times in providing solutions and related consultations, the AEMC must adopt adequate transitional arrangements and timeframes. This includes Regulatory Investment Test processes (or preferably expedited economic assessment processes) with a more logical commencement date for the new services of 1 July 2019.
- There may be ways to amend and streamline the Regulatory Investment Test – Transmission (RIT-T) and Regulatory Investment Test – Distribution (RIT-D) to address system strength and inertia/frequency issues. Similarly, a better understanding of the mechanisms to ensure that the new generator 'do no harm" concept can be practically implemented would be welcomed by stakeholders.
- Conducting a tripartite workshop with the Australian Energy Market Operator (AEMO), the AEMC and Network Service Providers would be a useful way to assess the full range of issues on these matters, ahead of the finalisation of these crucial AEMC rule determinations.

The AEMC in assessing these rule change proposals under the National Electricity Objective should:

a. Be consistent (for e.g. application of the Regulatory Test for Investment, application to non-network investment) and as complementary as reasonable possible so that they do not lead to inadvertent and perverse outcomes.
b. Seek an optimal balance between the level of prescription in the Rules and associated guidelines and flexibility in the framework so that it can adapt to changing market developments.
c. Provide clarity on the roles, responsibilities and accountabilities of market institutions and NSPs. (This may also include a clear delineation of such matters e.g. for oversight of potential contracting arrangements and accountabilities in the Victorian jurisdiction).
d. Implement mechanisms and establish criteria with a view to enhancing locational signalling for investment by potential connecting parties.
e. Ensure that the AEMC's imminent Final Determination on AEMO's rule change proposal on the Generating System Model Guidelines, is consistent with the objectives of these rule change proposals in achieving better system security outcomes for the NEM.
f. Address in its Final Determinations that both the entry and exit of generation will require analysis, and
g. Explain that these rule change proposals will affect both generation and (industrial) loads.

Overall, the Rule changes appear overly focused on the long-term framework, without sufficient regard to the immediate practical implementation issues (such as service procurement, contracting, etc.) which are acutely evident in South Australia at present. More consideration may be required to ensure that adequate transitional timeframes and implementation arrangements have been established.

A number of Energy Networks Australia members will also be providing their individual submissions to these rule changes and will be providing additional insights and perspectives.

Energy Networks Australia looks forward to further engagement with interested stakeholders, the wider industry and the AEMC to progress new arrangements that are practical and aligned with the long-term interests of consumers.

Should you have any queries, please contact Norman Jip, Energy Network Australia's Senior Program Manager – Transmission on (02) 6272 1521 or njip@energynetworks.com.au.

Yours sincerely

John Bradley
Chief Executive Officer

Managing power system fault levels (ERC0211) and Managing the rate of change of frequency (ERC0214) and Draft Determination and Rules

Submission to AEMC – 11 August 2017

Energy Networks Australia

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Executive Summary

- In assessing, power system fault levels, and system strength, the use of Short Circuit Ratios is a 'necessary' measure. However, it is not of itself a fulsome proxy or complete measure for, or of, system strength. A full examination of system strength involves assessing how the network physically and functionally operates and responds. This in turn requires assessment of: supply quality, protection systems' performance in clearing faults under different conditions, as well as fault ride through, and whether low 'system strength' outcomes could result in power system stability issues.
- The AEMC must establish appropriate governance, regulatory and competitive protections under the National Electricity Rules (NER) for NSPs in addressing new risks that may arise in the procurement of any new system security market and service arrangements.
- Connection process arrangements will need to be considered in establishing supporting frameworks as more parties engage and negotiate with NSPs at both a transmission and distribution level in the transforming energy sector.
- Given the potential lead times in providing solutions and related consultations, the AEMC must adopt adequate transitional arrangements and timeframes. This includes Regulatory Investment Test processes (or preferably expedited economic assessment processes) with a more logical commencement date for the new services of 1 July 2019.
- There may be ways to amend and streamline the Regulatory Investment Test – Transmission (RIT-T) and Regulatory Investment Test – Distribution (RIT-D) to address system strength and inertia/frequency issues. Similarly, a better understanding of the mechanisms to ensure that a new generator 'do no harm" concept can be practically implemented would be welcomed by stakeholders.
- Conducting a tripartite workshop with the Australian Energy Market Operator (AEMO), the AEMC and Network Service Providers would be a useful way to assess the full range of issues on these matters, ahead of the finalisation of these crucial AEMC rule determinations.

Overall, Energy Networks Australia observes that the AEMC appears to have taken a longer-term focus on establishing a potential framework for these system strength and frequency/inertia issues. However, due regard to the immediate operational, technical and commercial practical implementation issues is just as important. This submission attempts to highlight some of these immediate concerns and the need for an adequate and reasonable set of transitional timeframes and implementation arrangements for the AEMC's due consideration.

Energy Networks Australia would also like to remind the AEMC that it is also imperative upon them to fully explain how these potential new arrangements are likely to impact consumers and pricing going forward.

1. System Strength and System Fault levels

Energy Networks Australia considers that the proposed Short Circuit Ratio (SCR) is a relatively simplistic approach to measuring 'system strength'. It is a worthwhile proxy, and a useful screening mechanism that should trigger more detailed analyses and modelling[1], as it is likely to be quite a dynamic measure over-time. A full examination of system strength involves assessing how the network physically and functionally operates and responds, which in turn requires assessment of:

- supply quality;
- protection systems' performance in clearing faults under different conditions, and fault ride through; and
- whether low 'system strength' outcomes could result in stability issues emerging, with areas of particular concern being:
  - 'synchronous' and 'non-synchronous' plant stability
  - whether there will be the correct operation of protection systems, and
  - voltage control issues

Related concerns on System Strength/Fault Levels

Service definitions - What available machines/generators should be considered dispatched when assessing minimum system strength and under what circumstances should these be allowed to change or be accounted for?

Who is the **appropriate entity** to manage volume risk in the case where the service is over or under-utilised? Or impacted by potential gas supply shortfalls

What **payment structure options should be utilised**? Should pricing be dynamic or fixed?

Energy Networks Australia cautions that:

- Estimating and negotiating SCRs at every generator connection point amplifies the risk of over-investment in network and connection assets and equipment to address unproven system strength issues; and
- The likely framework needs to be as flexible as possible to accommodate changing market conditions.

An obligation to assess SCRs at every generation connection point is likely to be onerous and problematic. One option that the AEMC should consider is to require that NSPs maintain a workable minimum fault current level at major system nodes determined in conjunction with AEMO. Maintaining system strength is likely to require a combination of synchronous generator operation and network augmentation to efficiently optimise the thermal capacity of the network.

It is also important to have robust processes applied when identifying network

[1] The AEMC should be mindful that such additional analysis should not be stymied by a restrictive and inconsistent Final Determination on AEMO's Generating System Model Guideline rule change proposal.

locations where SCR and system strength requirements are not being met. This is due to the dynamic characteristics that influence system strength (e.g. entry and exit of generation) and the extent to which the relevant section of the network is becoming more congested or constrained.

Consequently, AEMO's proposed SCR guidelines should be realistic and allow for regular periodic review. As the issues surrounding localised system strength are rapidly changing, the application of such guidelines should be expected to evolve over time. Similarly, the Rules should not be overly stringent while providing high-level principles. Having the key issues in a guideline would allow for the release of a timely AEMC Final Determination, but also allow more time for the AEMO SCR guideline to be produced, to achieve better outcomes following more fulsome consultation processes.

This approach would offer a quicker route to any necessary 'fit-for-purpose' amendments from time to time. This could be undertaken in a similar way to the scope that applies for variations in Negotiated Access Standard Frameworks contained in the NER.

The proposed system strength 'do no harm' obligations on new generating systems should be informed by detailed electromagnetic transient (EMT) analysis. The level of investment associated with remedial works warrants this additional analysis. Amongst other things, this approach mitigates the potential risk that generators may strategically attempt to negotiate higher minimum SCRs to discourage other generators from connecting in a particular area.

2. Appropriate governance, regulatory and competitive protections under the Rules for NSPs in addressing new system security related risks

Both draft determinations establish new system operation obligations for transmission and distribution network service providers. It is important that appropriate arrangements are established, which support any new roles and responsibilities, created.

For TNSPs to meet the new minimum inertia requirement at least cost, it is advantageous if procurement is supported by provisions that ensure a level of genuine competitiveness and robust processes.

It is important for the AEMC determinations to establish appropriate arrangements, which support any new roles and responsibilities, created, including for (T)NSPs.

Specifically, the framework should enable efficient outcomes when TNSPs procure system security services in what may be a limited market for such services, by providing adequate protections and governance under the Rules.

Currently, there appears to be no explicit protections in the event that a TNSP procuring for new services faces a non-competitive tender response. This apparent gap is evident, when compared against NER sub-clauses of 3.11.5, which apply when AEMO tenders for network support and control ancillary services. These clauses provide for:

- negotiating in good faith;
- reasonable terms and conditions; and
- access to a dispute adviser.

Energy Networks Australia suggests that a thorough examination of all the potential obligations on TNSPs and the manner in which they must be discharged is required. For example, in relation to each obligation, is it the AEMC's intention that the obligations are: absolute, on a reasonable endeavours basis, or conditional based on other factors within an NSP's control?

The AEMC's framework should put beyond doubt the legal context and explain what are the likely protections, limitations or immunities from liability that will apply in relation to the provision (or failure to provide) the new mandated service requirements. This will be particularly important compared to what is currently afforded to AEMO in its market-related functions under existing legislation.

Competitive protections for inertia services procured from third parties

(a) If the option given to TNSPs under the Draft Inertia Rule to procure inertia services from third parties is to enable:

  (i) TNSPs to procure inertia services from third parties on a genuinely competitive, low cost basis; and
  (ii) without exposing TNSPs to the risk of failing to meet their obligations in the timeframes required, then the following recommendation is made.

Recommendation 1: The Final Rule should include additional provisions similar to those applicable to AEMO for its procurement of Network Support Control Ancillary Services under Rule 3.11.5.

An important priority is for AEMO to formalise the completion of any tender or contracting process outcomes. AEMO may either formally accept or endorse these outcomes as addressing the specific needs and service requirements it has identified earlier.

This may require the adoption of a threshold 'economic test' or a set of unambiguous AEMO statement of principles that will need to be applied. Relatedly, NSPs also need some criteria or principles to determine the point at which a tender process is deemed to be uneconomic and should then revert to an AEMO procurer of last resort process and/or invoke directions, as is the case in the wholesale market, if such a tool is required. If this is not suitably addressed, the risks to TNSP's will rise, and there is the potential for less competitive outcomes, which will result in likely costs to customers.

Liability protections, limitations or immunities

The Draft Rules impose upon both NSPs and AEMO a fundamentally important new set of new system security related functions and obligations, to address significant system security needs in the NEM. Yet there is no provision made for, nor any discussion of the possibility of appropriate liability immunities, protections, or limitations for NSPs in connection with the performance of these functions.

The clear legislative intent of sections 119(2) & (3) NEL and clause 13(2) of the NEL Regulations is to ensure that NSPs are afforded the same reasonable level of statutory protection from liability in negligence, for performing key system security related obligations imposed on them under the NER , which is afforded to AEMO under sections 119(1) & (3).

There is a possibility of extending the existing statutory civil liability protections (by simple amendment to clause 13(2) of the NEL Regulations) to also cover these new system security obligations being imposed on NSPs under the Draft Rule changes.

Recommendation 2 (a): The AEMC seek from the South Australian Government an amendment to clause 13 of the NE Regulations, so as to extend the existing section 119 NEL(2) statutory limitation on liability for NSPs undertaking system security related functions so as to cover the new obligations placed on them under these Draft Rule Changes[2].

Recommendation 2 (b) The commencement of the Draft Rule Changes coincide with the commencement of that amending regulation or (alternatively) that transitional liability limitation provisions to the same effect be included as transitional Rule changes in NER Chapter 11.

Suitability of Cost Recovery Mechanisms

» The AEMC must address the material cost recovery and cash flow issues under the Rules to avoid exposing TNSPs to unmanageable risks.

Despite TNSPs:

(b) not being required to apply a RIT-T where inertia services are procured from a third party service provider; and

(c) being entitled to pass thorough inertia service payments to third parties as network support payments under Rule 6A.7.2,

TNSPs are nevertheless still required to comply with the new overall obligation to procure the **least cost option** to satisfy their minimum inertia availability obligations. As a matter of practicality, particularly given the lack of a robust framework to ensure a competitive third party services tendering process, it will be difficult to demonstrate that TNSPs have satisfied the least cost obligation in the absence of undertaking a RIT-T.

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[2] Refer to accompanying Annexure as provided by Ashurst Australia.

At this stage, members have reservations as to how these arrangements may negatively impact cash flows. There are no specific network support allowances in place at present for the new services or regulatory allowances. TNSPs should be entitled to full and timely pass through of those costs to be efficiently incurred in meeting the new service obligations, consistent with the revenue and pricing principles under the National Electricity Law. To this end the AEMC, should:

- Confirm that contract service payments for both system strength and inertia should fully qualify for cost recovery as network support pass through; and
- Address through appropriate mechanisms, the material cash flow risks of unfunded network support payments for up to two years at a time. Options for consideration include the provision to seek pass through of forecast costs (for e.g. linked to one of the existing cost pass through provisions under the Rules) or another appropriate revenue and pricing adjustment.

It is proposed that potential amendments to the Draft 'Inertia' Rule would have the following effect:

Recommendation 3 (a): A TNSP will be taken to have satisfied its obligation to procure the least cost option to satisfy its minimum inertia availability obligations, in respect of any inertia services payments made by a TNSP under an inertia services agreement with a service provider following completion of a competitive tender process.

Recommendation 3 (b): That a TNSP have the ability to pass through contract payments on a timely basis under the Rules, recognising the two-year delay in recovery of network support payments for what could be significant amounts that are also completely unfunded under current NSP Revenue or Pricing Determinations.

Recommendation 3 (c): The AEMC should determine whether there should be a similar approach in adopting a revised 'network support' definition for system strength, as currently envisaged by the AEMC for inertia and frequency purposes.

- Give further consideration to appropriate commercial incentives based on a risk-weighted return for NSPs to pursue non-network solutions.
- Specify that AEMO is responsible for the enablement and dispatch of contracted system security services. This is a natural extension of its market operator functions and that it is the party best placed to make all unit commitment and dispatch decisions for contracted scheduled units on the basis of 'prioritised costs' that are advised by NSPs.

In relation to addressing investment certainty, we are concerned as to how AEMO's ability to amend or remove a regional inertia requirement (with 12 months' notice) may impact upon investment certainty requirements. At face, this could lead to the potential for contract premium uplifts for a particular inertia service from a small number of potential service providers.

Given these substantive challenges, adequate transitional arrangements (such as an expedited economic assessment processes) and revised timeframes are likely to be

required. Given the lead times involved (including the implications for RIT-T processes), the AEMC should consider adopting a commencement date for all the new system security services of 1 July 2019. This may also allow for any developments from the potential establishment of an inertia ancillary services market as proposed by AGL to be established concurrently.

3. Connection process arrangements

NSPs ensure an open access regime and a stable power system under credible and protected contingencies. It is important for NSPs to minimise connection costs, which can be as key barrier for generators connecting to the network.

Ultimately, NSPs try to inform connecting parties of what the NER require from them during the negotiation process. In doing so, they can provide:

- A better understanding of what the problems are;
- What a connecting parties contributions are during protection events and their responsibilities; and
- What additional works may need to be potentially undertaken to ensure connecting generators are able to remain technically stable and not affect other plant.

Members face a pipeline of potential connecting parties and instances of multiple applications being received in close succession or almost simultaneously. The importance of sharing models and information amongst proponents and between them and NSPs and AEMO is becoming more critical due to the rapid change in the energy and generation mix connecting to the system.

Energy Networks Australia considers having access to such models and data will help to underpin and address potential clusters or Renewable Energy Zones as recommended in the Independent Review into the Future Security of the National Electricity Market (Finkel) Final Report of June 2017. Conceivably, if there is more than one potential connecting party, it might be more economic and optimal for the development of the network to consider these applications together (with one solution). Such an approach would be heavily reliant on the willingness or obligation of potential connecting parties to participate and collaborate.

Whilst we understand that the AEMC has attempted to progress its thinking based on existing processes, there may be a need to examine the issues of 'queueing' and 'open-season' processes that has been functioning in other jurisdictions and sectors for connecting parties. This could be addressed either in this rule change or in a subsequent process. A key step in examining this 'queuing' issue, would involve some potential guidance and understanding of a consistent set of criteria where a mechanism could be triggered to allow an NSP to cluster or undertake a combined analyses of connection applications.

The existing NER confidentiality related clauses prohibit the disclosure of what is

happening between the parties. A significant issue is getting first movers to share models at the appropriate time so that businesses and AEMO can better assess, plan and connect the cluster/zone options.

Energy Networks Australia acknowledges that consistency across different jurisdictions has been an issue for some parties. Energy Networks Australia is developing new, and refreshing superseded, connection guidelines over the next year.

4. Adequate transition arrangements and timeframes

At this stage of the consultation process, Energy Networks Australia considers there is insufficient clarity as to how key aspects of the regulatory framework will work in practice. A key concern is the unresolved uncertainty that risks leading to inefficient solutions for addressing potential localised system strength and inertia needs. Such risks apply whether the solution relies on non-network or network options.

As the AEMC is aware, the existing procedures and consultation processes for conducting a RIT-T are lengthy and it is unlikely a full RIT-T could be completed within 12 months. Current processes are also likely to prolong the optimal installation of a synchronous condenser to be constructed and commissioned.

Energy Networks Australia considers that each alternative should be subject to the similar level of economic evaluation. This concern could be addressed by either reducing the steps for a RIT-T, for example, following an AEMO statement of need so that it is practically achievable within 12 months or lengthening the minimum time for a response to a notice from AEMO to allow for the most efficient solution to be delivered following the completion of a RIT-T process, particularly for inertia and frequency/inertia requirements.

Other scenarios where a full RIT-T or RIT-D would be problematic include where there is either a lack of options through a competitive procurement process, or as a result of a retirement of a generator within say six months leaving insufficient time to run a thorough RIT process. Generator retirements with minimal notice have been seen recently in South Australia and Victoria (and are recommended to be addressed by the Finkel Review).

It may be prudent to align the commencement dates, so new arrangements could commence on 1 July 2019, to allow for a fulsome new guideline and adequate thinking to evolve around the frameworks for system strength that are reasonable, proportionate and practical to implement. This is particularly in relation to the TNSP obligations to maintain minimum inertia and system strength standards.

It may also be appropriate for the AEMC to consider the merits of a revisit of the new arrangements say two to three years after the effective introduction of the new rule.

Proposal as to how the Regulatory Investment Tests could be amended

Energy Networks Australia is also proposing that the AEMC consider amending clauses in the Rules dealing with the RIT-T. This is particularly pertinent if the system strength or inertia need has been identified independently by AEMO and a potential network solution needs to be assessed in a more streamlined manner to address the identified minimum inertia or system strength need in a short time-frame.

In these circumstances, it may be appropriate to codify in the NER, any exemptions from the RIT-T (e.g. for shortfalls in system security services declared by AEMO) or alternative streamlined assessment processes that should apply to such requirements. Such an approach could be treated on a similar basis to existing NER RIT-T provisions for identified needs relating to: reliability corrections; or an urgent and unforeseen *network issue*.

In particular, such an approach might be applied to specifically address inertia or system strength requirements, which, if not addressed, could *materially adversely affect* the *transmission network.*

Such an option may be an efficient and flexible approach to address these matters.

5. Further clarification of the "Do No Harm" obligation

Energy Networks Australia seeks further clarity as to how the generator "do no harm" obligation would be interpreted under a range of different examples and scenarios.

Energy Networks Australia does not want to see an outcome where any new system strength 'do no harm' obligation may result in significant additional costs for new non-synchronous generators (both for non-scheduled and semi-scheduled), which could be avoided by larger, solutions that exhibit economies of scale.

Energy Networks Australia would also highlight that the 'do no harm' provisions will need to be cognisant of the Open Access nature of the NEM. Often, system strength shortfalls can be (and are) effectively managed in the NEM despatch process. Energy Networks Australia understands that this a difficult process and can complicate assessments as to whether the system is secure or not. Nevertheless, it is important that the 'do no harm' principles in any proposed system strength arrangements are amenable to the existing intent of the Open Access regime underpinning the NEM. For example, there may be situations where it is most efficient for transient system strength issues to be managed in the existing NEM despatch processes through constraint equations.

If implemented appropriately, the arrangements would correctly allocate to new generators the management of the risks and costs of any impact caused by their project, and the proposed framework provides a strong locational signal, encouraging generators to connect in stronger, uncongested parts of the network. This should drive the efficient use of network assets that would suitably meet the National

Electricity Objective.

It is also considered important for DNSPs that an appropriate and realistic threshold/limit on the size of Distributed Energy Resources should be applied. For example, we understand that this would not be feasible for household photovoltaic systems. Such an obligation may require more detailed assessment of the following matters:

- fault ride through under credible fault conditions
- contribution to fault levels at a particular node
- impact on protection performance and whether generator needs to take action to resolve, and
- does the new generator interact with other scheduled generation operating in the proximate zone/region at that time to determine "do no harm".

There are a number of generating plants that are marginally below the 30 MW threshold for scheduled generator registration. It will be crucial for the AEMC to clearly recognise the growing number of semi-scheduled generators' significant impact on system strength at this level. There could be the scope for an expert technical assessment to determine an appropriate solution.

It may be plausible for the AEMC to commence the new generator connection 'do no harm' requirements of the rule changes to say 1 July 2018 or whatever date the AEMC considers best aligns with any new arrangements that arise from its Final Determination on AEMO's Generating System Model Guidelines rule change proposal.

6. Next Steps

Energy Networks Australia is concerned that the AEMC envisages implementation of new arrangements under an untested framework within short timeframes with its Final Determinations proposed for 19 September 2017. Members consider further discussion amongst participants (including AEMO, the AEMC and NSPs) is necessary before any new arrangements are finalised.

Given the need to holistically understand the complexities and technical factors, caution is advised. Greater industry agreement on final definitions, technical and design specifications, assessment processes, operationalisation, deployment arrangements underpinned by appropriate governance and regulatory frameworks would be important.

Consequently, the AEMC should conduct workshops with interested stakeholders ahead of its Final Determinations, applying a similar approach to that taken by the AEMC to the recent Council of Australian Government Energy Council's Transmission Connections and Planning Arrangements rule change proposal applied in the first Quarter of 2017. This approach was also applied to the Metering replacement rule change proposal (albeit in that case, the additional engagement process was conducted ahead of the release of the AEMC's Draft Determination).

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Report to Energy Networks Australia

AEMC Draft Rule Determinations (Managing rate of change of power system frequency) (Managing power system fault levels)

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1. BACKGROUND

The Australian Energy Market Commission (**AEMC**) recently released its Draft Rule Determinations and Draft Rule Changes for each of the following:

- *The National Electricity Amendment (managing the rate of change of power system frequency) Rule 2017* (the **Draft Inertia Rule**); and
- *The National Electricity Amendment (managing power system fault levels) Rule 2017* (the **Draft System Strength Rule**).

Energy Networks Australia (**ENA**) has asked us to review the above documents and advise the ENA in relation to the following issues:

1) whether the Draft Rules provided adequate competitive protections for Transmission Network Service Providers (**TNSPs**) compared to those currently afforded to the Australian Energy Market Operator (**AEMO**) in its market-related functions (eg Network Support and Control Ancillary Services (under Rule 3.11.5);

2) an assessment of any protections, limitations or immunities from liability that might apply to TNSPs under the new proposals;

3) an assessment of whether the proposed cost recovery mechanisms are suitable; and

4) the potential application of the Regulatory Investment Test – Transmission (**RIT-T**) under the Draft Rules.

Set out below is an executive summary of our advice followed by our more detailed advice on each of these four issues.

1. EXECUTIVE SUMMARY

Competitive protections for inertia services procured from third parties

(a) If the option given to TNSPs under the Draft Inertia Rule to procure inertia services from third parties is to enable:

(i) TNSPs to procure inertia services from third parties on a genuinely competitive, low cost basis; and

(ii) without exposing TNSPs to the risk of failing to meet their obligations in the timeframes required,

then it should be supported by additional provisions similar to those applicable to AEMO for its procurement of NSCAS under Rule 3.11.5.

(b) Additional provisions to the following effect could be included for greater oversight and certainty of outcome for a TNSP's third party procurement process:

(i) The TNSP being required to apply to AEMO to determine whether or not AEMO considers that any third party procurement the TNSP proposes to accept would satisfactorily meet the minimum required level of inertia.

(ii) Also, where a TNSP decides not to pursue or continue a third party procurement, on the basis the TNSP considers it is unlikely to:

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(iii) achieve the minimum required level of inertia; or

(iv) achieve it in a sufficiently cost effective or timely manner, having regard to any criteria specified in guidelines issued by AEMO,

then a TNSP may apply to AEMO to determine if AEMO endorses the TNSP's decision, having regard to the matters referred to above.

Liability protections, limitations or immunities

(c) The Draft Rules impose upon both NSPs and AEMO a fundamentally important new set of new system security related functions and obligations, to address significant system security need in the NEM. Yet there is no provision made for, nor any discussion of the possibility of appropriate liability protections, for NSPs in connection with the performance of these functions.

(d) The clear legislative intent of sections 119(2) & (3) NEL and clause 13(2) of the NE Regulations, is to ensure that NSPs are afforded the same reasonable level of statutory protection from liability in negligence, for performing key system security related obligations imposed on them under the Rules, that is afforded to AEMO under sections 119(1) & (3).

(e) We therefore recommend that ENA submit to the AEMC that:

(i) The AEMC seek from the SA Government an amendment to clause 13 of the NE Regulations, so as to extend the existing section 119 NEL(2) statutory limitation on liability for NSPs undertaking system security related functions so as to cover the new obligations placed on them under these Draft Rule Changes.

(ii) The commencement of the Draft Rule Changes coincide with the commencement of that amending regulation or (alternatively) that transitional liability limitation provisions to the same effect be included as transitional Rule changes in NER chapter 11.

Cost recovery mechanisms and proposed application of the RIT-T

(f) Under both Draft Rules, investment made by a TNSP in its own network to meet the TNSPs new regulatory obligations will be covered by the existing economic regulatory framework under NER chapter 6A and by the requirement for a TNSP to apply a RIT-T under Rule 5.16.3.

(g) However there are some additional provisions included under the Draft Inertia Rule that will apply where a TNSP procures inertia services from a third party:

(i) the TNSP will not need to apply a RIT-T;[1] and

(ii) the TNSP may use the network support pass through process in clause 6A.7.2 to recover network support payments that exceed those that are included in their revenue allowance for the relevant regulatory year.[2]

[1] Draft Rule 5.15.3(a)(9)

[2] Draft Rule 5.20B.4(h)

(h) Nevertheless TNSPs are still required to also comply with the new overall obligation to procure the least cost option to satisfy their new inertia obligations.

(i) Additionally:

(i) The pass through of inertia service payments to third parties under Rule 6A.7.2 will involve a delay of up to 2 years between the cost being incurred and the cost being recouped.

(ii) Where a TNSP implements its own network solution during a regulatory control period that is underway when the rule commences, the TNSP will only be able to use the existing clause 6A.7.3 cost pass through, which is subject to a materiality threshold of 1 % of the TNSP's MAR for the regulatory year.

(j) We therefore recommend the ENA seek amendments to the Draft Inertia Rule that:

(i) Provide that a TNSP will be taken to have satisfied its obligation to procure the least cost option to satisfy its minimum inertia availability obligations, in respect of any inertia services payments made by a TNSP under an inertia services agreement with a third party service provider, following completion of a competitive tender process.

(ii) Allow for the proposed cost recovery mechanism for pass through of inertia service payments to provide for the pass through of inertia service payments for the year in which the costs are incurred.

(iii) Enable TNSPs to pass through their full costs of a network investment solution made by them to meet their new inertia obligations (after applying a RIT-T) during a regulatory control period that is underway when the new Rule changes commence.

2. COMPETITIVE PROTECTIONS FOR TNSPS UNDER THE DRAFT RULES

2.1 Relevant proposed Rule Changes

Under the Draft Inertia Rule (among other things):

(a) The relevant TNSP (as the "Inertia Service Provider") must make continuously available minimum required levels of inertia determined by AEMO (where AEMO has identified an inertia shortfall in a sub-network).[3]

(b) The Inertia Service Provider must identify and procure the least cost option or combination of options that will satisfy its obligation to provide inertia network services by the date specified by AEMO.[4]

(c) In addition to investing in its own network, the TNSP may contract with third-party inertia service providers (via inertia services agreements) as a means of meeting its obligation to provide the minimum required levels of inertia.[5]

2.2 Analysis

For a TNSP to be best placed to meet its new minimum inertia availability obligations at least cost, it is clearly advantageous (for the TNSP and for market participants who will ultimately bear these costs, via regulated TUOs charges) for the TNSP to have the option available to it of procuring inertia services from third party service providers.

However, this right to procure inertia services from third parties does not include a supporting framework of provisions designed to ensure that these services can in fact be procured through a genuinely competitive and robust process, which will be more likely to deliver an effective, low cost outcome in a timely manner. This potentially places a TNSP in a difficult position where it may be faced with a need to meet an inertia shortfall quickly (with potential liability exposure, if it is not met in time), but the TNSP has no means of ensuring that the running of a competitive tender process has a reasonable chance of producing a satisfactory and timely outcome. Yet (on the other hand) if the TNSP does not first attempt to competitively procure the service, then the TNSP may be exposed to the criticism that it has not pursued a potentially lower cost option that may have been available from the market.

This is in direct contrast to the more robust set of protections afforded to AEMO to enable it to competitively source Network Support and Control Ancillary Services (**NSCAS**) from third parties under existing Rules 3.11.3 and 3.11.5.

Under Rule 3.11.3, AEMO is required to use reasonable endeavours to acquire Network Support and Control Ancillary Services (**NSCAS**) from the market to meet any "NSCAS Gap" to prevent an adverse impact on power system security and reliability of supply of the transmission network. Rule 3.11.5 then sets out a number of protections for AEMO which enable it to ensure it can in fact competitively procure these services. These include the following.

(a) If AEMO proposes to acquire NSCAS, AEMO is entitled to call for offers from p**ersons who are in a position to provide the network support and control ancillary service** in accordance with the NSCAS tender guidelines.

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[3] Draft Rule 5.20B.4(b)

[4] Draft Rule 5.20B.4 ((f)

[5] Draft Rule 5.20B.4(d))

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(b) A requirement for AEMO to publish **NSCAS tender guidelines** which contain (among other things):

(i) a requirement for AEMO to call for NSCAS expressions of interest,

(ii) timeframes over which AEMO's assessment of NSCAS expressions of interest will occur,

(iii) requirements for tenderers to provide data models and parameters of relevant plant; and

(iv) the terms of conditions of the ancillary services agreement that a successful tenderer would expect to enter into with AEMO.

(c) An express provision that AEMO is not under any obligation to accept the lowest priced NSCAS tender or any NSCAS tender in response to an NSCAS invitation to tender.

(d) An obligation on AEMO and tenderers to negotiate in good faith in respect of an NSCAS tender.

(e) A procedure for AEMO to determine whether tenders for NSCAS are competitive, and if the tenders are not deemed to be competitive, then AEMO and NSCAS preferred tenderers must negotiate in good faith to agree reasonable terms and conditions for the supply of the of NSCAS, having regard to the need to minimise the overall cost of that service and the need to appropriately remunerate the service providers.

(f) A right for AEMO to issue the NSCAS preferred tenderer a written notice to negotiate if AEMO and an NSCAS preferred tenderer cannot agree on the terms and conditions for the supply of NSCAS.

(g) If the parties cannot resolve the terms and conditions of the proposed supply of NSCAS within 21 business days from delivery of that notice, either AEMO or the NSCAS preferred tenderer may refer the matter to the dispute resolution advisor for the determination in accordance with clause 8.2 of the NER.

2.3 Recommendation

If the option given to TNSPs under the Draft Inertia Rule to procure inertia services from third party service providers is to operate:

(a) effectively as an option by which TNSPs can genuinely procure inertia services from third parties on a low cost, competitive basis; and

(b) without exposing TNSPs to the risk of failing to meet their obligation to actually make effective inertia services available in the timeframes required,

then it should ideally be supported be a set of provisions similar to those outlined above for AEMO, in respect of AEMO's procurement of NSCAS under Rule 3.11.5.

Additionally, to provide an appropriate level of oversight and greater certainty of outcome in relation to a TNSP's third party tender process, additional provisions to the following effect could be included:

(c) Prior to proceeding with any proposed outcome resulting from such a process, the TNSP could be required to apply to AEMO to determine whether or not AEMO considers that the proposed outcome would satisfactorily meet the minimum required level of inertia.

(d) Also, where a TNSP decides not to pursue, or continue with, a third party tender process, on the basis that the TNSP considers that a third party tender process is unlikely to:

(i) achieve the minimum required level of inertia; or

(ii) achieve it in a sufficiently cost effective or timely manner, having regard to any criteria specified in guidelines issued by AEMO for the purposes of this provision,

then a TNSP may apply to AEMO for AEMO's to determine whether or not AEMO endorses the TNSP's decision, having regard to the matters referred to in sub-paragraphs (i) and (ii) above.

AEMO should be required to determine any such application by a TNSP within a specified period of time (say 28 days) of receiving the application together with any additional information requested by AEMO within (say) 7 days of the application.

3. LIABILITY PROTECTIONS, LIMITATIONS OR IMMUNITIES FOR NSPS

3.1 Relevant proposed changes

It is clear that both the **Draft Inertia Rule Draft System Strength Rule** impose upon both NSPs and AEMO a comprehensive and fundamentally important set of new system security related functions and obligations, to address issues that are currently jeopardising the secure and reliable operation of the NEM system.

Neither of the Draft Rules provide for any immunities, protections or limitations on liability for NSPs in relation their performance of these new system security related functions. That is perhaps not so surprising as the Rules do not currently provide such protections for NSPs in respect of their existing system security related functions and obligations.

However, what is perhaps surprising is that the Draft Determinations do not address at all the possibility of **extending** NSPs' **existing** statutory civil liability protections, for the performance of their **existing** system security related functions under:

(a) section 119(2) of *National Electricity Law* (**NEL**);

(b) clause 13(2) of the *National Electricity Regulations* (**NE Regulations).**

These could and, in our view, should be extended (by simple amendment to clause 13(2) of the NE Regulations) so as to **also** cover the these new system security obligations being imposed on NSPs under the Draft Rule Changes.

In the absence of such an extension, NSPs will have a significantly increased level of liability risk exposure in connection with these new system security obligations, in comparison to their current level of liability risk exposure for their existing system security related obligations. For these new obligations NSPs will not have the protection of any statutory maximum liability cap for claims arising from the performance of these functions.

3.2 Analysis

The issue of providing an appropriate level of statutory liability protection to **both**:

- AEMO, in connection with the performance of its market operation and system security functions under the Rules; and
- NSPs in connection with the performance of their system security functions under the Rules,

was a matter of extensive policy review by COAG in the first 5 years following the initial establishment of the NEM, culminating in the amendment of the NEL to expressly include (what is now) section 119 of the NEL.[6]

The clear legislative intention of sections 119(1) to (3) of the NEL (on a plain and ordinary reading) is that:

- **neither AEMO** (in the performance of any of its functions); **nor**
- **NSPs**, in performing "system operation functions" conferred on them under the Rules (and which are identified in Regulations made under the NEL),

should be exposed to potentially unlimited liability.

Accordingly, section 119 provides that each of AEMO and NSPs (in performing these statutorily conferred functions) are to be:

(a) permitted to contractually limit their liability in relation to the performance of these functions; and

(b) protected from liability in negligence above a prescribed maximum amount.[7]

Under section 119(7) NEL, the "system operation functions" for which NSPs are entitled to receive the benefit of this statutory liability limitation protection for negligence, are left to be prescribed under the NEL Regulations. The Regulations do this in clause 13(2) by identifying the key system security obligations imposed on NSPs under the Rules, as at the date of the Regulation. This mechanism is clearly intended to provide flexibility to allow for the Regulations to be updated to reflect any changes or additions to the system security related obligations imposed on NSPs under the Rules.

3.3 Recommendations

The clear legislative intent of sections 119(2) & (3) NEL and clause 13(2) of the NEL Regulations, is to ensure that NSPs are afforded the same reasonable level of statutory protection from liability in negligence for performing key system security related obligations imposed on them under the Rules, that is afforded to AEMO under sections 119(1) & (3).

We therefore recommend that ENA submit to the AEMC that:

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[6] The provision was originally inserted as section 77A, but following the new version of the NEL established under the *National Electricity (South Australia) (New National Electricity Law) Amendment Act 2005* the provision, in the same terms, was moved to what is now section 119 of the current NEL.

[7] The maximum liability amount for negligence for each of AEMO and TNSPs performing system operation functions is set out in clause 14 of the Regulations under the NEL.

(a) the AEMC seek from the South Australian Government (in accordance with relevant Energy Council protocols) an amending Regulation under the NEL: to amend clause 13(2) of the existing NEL Regulation, so as to include in clause 13(2) a reference to each of the proposed new Draft Rule Changes which place new (inertia and system strength) obligations on NSPs, as more specifically itemised in the **attached Annexure**; and

(b) the commencement of the Draft Rule Changes be timed to coincide with the commencement of the amending regulation or (if that is not possible), that transitional liablity limitation protections to the same effect be included as a transitional provision in NER chapter 11, pending the making of an amending Regulation.

4. SUITABILITY OF COST RECOVERY MECHANISMS

4.1 Relevant proposed changes

Under both Draft Rules, investment made by a TNSP in its own network to meet the TNSPs new regulatory obligations will be covered by the existing economic regulatory framework under NER chapter 6A and by the requirement for a TNSP to apply a RIT-T under Rule 5.16.3.

However there are some additional provisions included under the Draft Inertia Rule, to the following effect:

(a) As indicated in section 2 above, in addition to investing in its own network, the TNSP may contract with third-party inertia service providers (via inertia services agreements) as a means of meeting its obligation to provide the minimum required levels of inertia.[8]

(b) Where the TNSP does contract with a third party inertia service provider, then:

(i) the TNSP will not need to apply a RIT-T to the identified need (ie the need to meet the minimum inertia obligation) for which the inertia services are being procured;[9] and

(ii) the TNSP is permitted to use the existing network support pass through process in Rule 6A.7.2 to recover network support payments that exceed those that are included in their revenue allowance for the relevant regulatory year.[10]

(c) However, when procuring from a third party service provider, the TNSP will still need to comply with the new overall obligation to identify and procure the **least cost option or combination of options** that will satisfy its obligation to provide inertia network services by the date specified by AEMO.[11]

4.2 Analysis

Despite TNSPs:

[8] Draft Rule 5.20B.4(d))

[9] Draft Rule 5.15.3(a)(9)

[10] Draft Rule 5.20B.4(h)

[11] Draft Rule 5.20B.4 ((f)

(a) not being required to apply a RIT-T where inertia services are procured from a third party service provider; and

(b) being entitled to pass thorough inertia service payments to third parties as network support payments under Rule 6A.7.2,

TNSPs are nevertheless still required to also comply with the new overall obligation to procure the **least cost option** to satisfy their minimum inertia availability obligations. As a practical matter (particularly given the lack of a robust framework for TNSPs to ensure a competitive third party services tendering process), it will therefore be difficult to demonstrate that they have satisfied this obligation in the absence of undertaking a RIT-T.

Additionally:

(a) The pass through of inertia service payments to third parties under Rule 6A.7.2 will involve a delay of up to 2 years between the cost being incurred and the cost being recouped. This means that there may be significant amounts of unfunded expenditure required to be incurred by TNSPs, for these significant new system security related requirements, which will remain unfunded throughout that time.

(b) where a TNSP does determine to make a capital investment in its network as the optimal least cost solution during a regulatory control period that is underway when the rule commences, the TNSP will only be able to use the regulatory change event cost pass through under clause 6A.7.3 of the Rules, where the investment meets the materiality threshold of one per cent of the maximum allowed revenue for the regulatory year.

4.3 Recommendations

We recommend that the ENA seek amendments to the Draft Inertia Rule to the following effect:

(a) A TNSP will be taken to have satisfied its obligation to procure the least cost option to satisfy its minimum inertia availability obligations, in respect of any inertia services payments made by a TNSP under an inertia services agreement with a service provider following completion of a competitive tender process.

(b) The proposed cost recovery mechanism for pass through of inertia service payments be amended to provide for the pass through of inertia service payments for the year in which the costs are incurred.

(c) That a TNSP be entitled to pass through its full costs of a network investment solution made to meet the minimum inertia availability requirement (after applying a RIT-T) during a regulatory control period that is underway when the rule commences. This Rule could be made as a transitional measure.

5. CHANGES TO THE RIT-T

We have addressed how the RIT-T is proposed to be applied under the new Rules as part of our analysis and recommendations in relation to the economic regulatory framework under section 4 above.

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ANNEXURE NSP INERTIA AND SYSTEM STRENGTH OBLIGATIONS FOR INCLUSION IN THE NE REGULATIONS

(a) The obligation of NSPs under clause 4.3.4(j) of the Draft Inertia Rule to make *inertia network services* available to AEMO.

(b) The obligation of NSPs under clause 4.3.4(k) of the Draft Inertia Rule to give AEMO information about *inertia network services* made available under clause 5.20B.6.

(c) The obligation of Registered Participants providing an *inertia network service* to comply with an instruction given by AEMO under clause 4.4.4 of the Draft Inertia Rule.

(d) The obligation of NSPs under clause 4.9.9C of the Draft Inertia Rule to notify AEMO of any event which has changed the availability of any *inertia network service*.

(e) The obligations of NSPs to make *inertia network services available* and related obligations under clause 5.20B.4 of the Draft Inertia Rule.

(f) The obligations of NSPs under clause 5.20B.5 of the Draft Inertia Rule to give AEMO information in relation to a request to approve certain activities related to the *inertia sub-network*, and to obtain AEMO's approval in relation to the request (where this is required by the rules) .

(g) The obligation of NSPs under clause 5.20B.6(a) of the Draft Inertia Rule to prepare and give to AEMO a schedule containing information about the *inertia network services* available.

(h) The obligation of NSPs under clause 5.20B.6(b) of the Draft Inertia Rule to register inertia generating units.

(i) The obligations of NSPs under clauses 5.20B.6(c)-(d) of the Draft Inertia Rule to give AEMO certain information related to *inertia networks* and *inertia network services*.

(j) The obligation of NSPs under clause 5.20B.6(f) of the Draft Inertia Rule to obtain AEMO's approval before the *inertia network service* is first made available (or before a change comes into effect).

(k) The obligation of NSPs to amend any request made under clause 5.20B.6(e) of the Draft Inertia Rule in relation to which AEMO has advised of changes that AEMO requires to be made.

(l) The obligation of NSPs under clause 11.99.4(c) of the Draft Inertia Rule to make *inertia network services* available in response to AEMO's notice and provide information about the activities it proposes to undertake to satisfy its obligation to make *inertia network services* available.

(m) The obligation of NSPs under clause 4.3.4(c) of the Draft System Strength Rule to use reasonable endeavours to maintain system strength in satisfaction of the requirements of clause S5.1.14.

(n) The obligation of *Registered Participants* to comply with a direction given by AEMO under clause 4.6.1 of the Draft System Strength Rule.

(o) The obligation of an NSP to comply with any terms and conditions of a connection agreement in relation to a *system strength remediation scheme* under clause 5.2.3(g)(7) of the Draft System Strength Rule.

(p) The obligation of an NSP to respond to a connection enquiry in accordance with clauses 5.3.3(b4) and 5.3.3(c)(2) of the Draft System Strength Rule.

(q) The obligation of an NSP to consult with AEMO in relation to a proposed *minimum short circuit ratio* or *system strength remediation scheme* under clause 5.3.4B(h) of the Draft System Strength Rule.

(r) The obligation of an NSP to accept or reject a proposal referred to in clause 5.3.4B(h) under clause 5.3.4B(j) of the Draft System Strength Rule.

(s) The obligations of an NSP to reject a proposed *minimum circuit ratio* in certain circumstances and advise the value that an NSP will accept under clauses 5.3.4B(k)-(l) of the Draft System Strength Rule.

(t) The obligation of an NSP to reject a proposed *system strength remediation scheme* and give reasons under clause 5.3.4B(o) of the Draft System Strength Rule.

(u) The obligation of an NSP under clause 5.3.5(d)(4) of the Draft System Strength Rule to, in preparing the offer to connect, specify in reasonable detail any system strength connection works to be undertaken by the NSP.

(v) The obligation of an NSP under clause S5.1.14 of the Draft System Strength Rule to use reasonable endeavours to maintain system strength.

(w) The obligations of a Registered Participant under clause 11.101.2 of the Draft System Strength Rule which relate to registration of the minimum short circuit ratio for a facility to which the rule applies.

(x) The obligations of Registered Participants and NSPs in relation to the determination of the minimum short circuit ration under clause 11.101.3 of the Draft System Strength Rule.

(y) The obligations of NSPs to apply the interim short circuit ratio guidelines in accordance with clause 11.101.5 of the Draft System Strength Rule.