

Consultation paper - System services rule changes

STAKEHOLDER SUBMISSION TEMPLATE

The template below has been developed to enable stakeholders to provide their feedback on specific questions that the AEMC has identified in the Consultation paper for the System services rule changes.

The rule changes discussed in the system services consultation paper are:

- AEMO – *Primary frequency response incentive arrangements* (ERC0263)
- Hydro Tasmania — *Synchronous services markets* (ERC0290)
- Infigen Energy — *Operating reserves market* (ERC0295)
- Infigen Energy — *Fast frequency response market ancillary service* (ERC0296)
- TransGrid — *Efficient management of system strength on the power system* (ERC0300)
- Delta Electricity — *Capacity commitment mechanism for system security and reliability services* (ERC0306)
- Delta Electricity — *Introduction of ramping services* (ERC0307)

This template is designed to assist stakeholders provide valuable input on the questions the AEMC has identified in the consultation paper. However, it is not meant to restrict any other issues that stakeholders would like to provide feedback on.

Given the breadth of issues discussed in the consultation paper, it is not expected that all stakeholders respond to all the questions in this template. Rather, stakeholders are encouraged to answer any and all relevant questions.

Stakeholder submission template

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2 July 2020

SUBMITTER DETAILS

ORGANISATION:

Maoneng Australia

NAME:

CONTACT

EMAIL:

PHONE:

CHAPTER 5 – THE RULE CHANGE REQUESTS

Question 7: Section 5.1 – Infigen – Fast frequency response ancillary service market

1) What are stakeholders' views on the issues raised by Infigen in its rule change request, Fast frequency response market ancillary service?	FFR market of sub 2 seconds is a good proposal. It is important to rescue the RoCoF early as the power system will have less inertia going forward. However, implementation would need clear bidding and settlement criteria, and level of reserve required for traditional FCAS.
2) Do stakeholders agree with Infigen's view that a change to the NER is required to encourage efficient provision of FFR services in the NEM following contingency events?	Yes. An overall change in NER relating to how each of the market service or off market service works would be required to ensure seamless support of the network. It cannot be a piecemeal change in the NER.
3) What are stakeholders' views on if there are any other issues or concerns in relation to frequency control in the NEM as levels of synchronous inertia decline?	FFR or any frequency control services would still require a base level of inertia in the current power system architecture. However, a deeper study is required to understand the dynamics of fast acting generators versus slow acting generators to ensure we have the right balance.
4) Do stakeholders consider there are alternative solutions that could be considered to improve the frequency control arrangements in the NEM for managing the risk of contingency events as the power system transforms?	To reuse the retired generators to provide inertia and short fault current.
5) Do stakeholders consider that 5-minute markets for FFR ancillary services likely to be effective and efficient in the global interconnected NEM and on a regional basis?	Please clarify, a 5 minute FCAS market already exists.

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6) Do stakeholders consider Infigen's proposal will provide adequate pricing signals to drive efficient investment in FFR capability in the NEM?	No. FFR market alone, if it is anything like the ever-decreasing price for FCAS, will not stack up financially. It is not clear how FFR would work together with PFR requirements.
7) What are stakeholders' views on, if introduced, how the costs associated with any new FFR market ancillary services should be allocated?	It is not clear to us at this stage who will be paying for FFR service. Is the service to be shared with the current FCAS service pool, or is it a separate pool? If this is a separate pool, is there a new causer pay charge, etc...?
8) What do stakeholders consider to be the likely costs associated with establishing two new ancillary service markets for FFR in the NEM?	Further market study is needed before FFR can be fully understood from a market point of view.
9) What are stakeholders' views on how the proposed solution may result in any substantial adverse or unintended consequences in the NEM?	Further studies are needed before FFR can be fully understood from a power systems effect point of view. At the moment we believe it is a good concept from a system security perspective, but we do not know how FFR will interact with other generators and loads on the network.
10) Are there specific issues with FFR that stakeholders think should be addressed in the NEM as part of the establishment of markets for FFR services?	A concern is who would be responsible for the control coordination between different FFR service providers. It is expected some providers are not far from each other. If the FFR service is triggered by local signals, without coordination it could be difficult for inverters to avoid over-compensation for the frequency control.

Question 8: Section 5.2 – Infigen – Operating reserves market

1) Do stakeholders agree with Infigen that tight capacity conditions and increasing uncertainty in market outcomes are problems that an operating reserve would address?	No. Firmed capacity will not be an issue moving forward in the future. Responding and recovering from a contingency is a problem due to decreasing system inertia. There is not enough time for power plants to respond to a change in system frequency which is a problem of mixed technology generation full of tripping schemes.
2) Are there alternative solutions that could be considered to address tight capacity conditions and increasing uncertainty in market outcomes?	Change in market condition that would encourage renewable project development and battery energy storage. There needs to be a transparent network tenders for network system strength support to be signed with a firm energy provider.
3) Do stakeholders consider Infigen's proposal would provide adequate pricing signals to drive efficient use of and investment in operating reserve services now and in the future?	A detailed market study would be required to comment
4) How do stakeholders think separate operating reserves arrangements would affect available capacity in the spot, contracts and FCAS markets now and in the future?	A detailed market study would be required to comment
5) How do stakeholders think separate operating reserves arrangements would affect prices in the spot, contracts and FCAS markets now and in the future?	A detailed market study would be required to comment
6) How could the design of an operating reserve market (e.g. criteria for eligible capacity) best support competitive outcomes both in the operating reserves market but also energy and FCAS markets?	Maoneng is unable to comment as there are too many unknown variables at the moment in terms of how reserve signal is received and how many hours in advance. Bidding strategies would change current FCAS markets, so unintended consequences must be addressed in a careful study.

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7) What are the factors that should be considered when seeking to set and procure efficient levels of operating reserve?	As per AEMO's RIS Stage 1 proposal regarding information/data gathering and advanced simulations. Foresight on DPV generation profile and characteristics of aggregated generators need to be fully monitored and fully understood.
8) Would Infigen's proposed operating reserve market result in any substantial adverse or unintended consequences in the NEM?	A detailed market study would be required to comment.
9) What are the costs associated with establishing an operating reserve market in the NEM? If introduced, how should these costs be allocated?	A detailed market study would be required to comment.
10) What kind of incentive/penalty arrangements would be necessary to be confident the operating reserves procured are available when needed?	A strong incentive is needed to ensure reserve is actually being reserved and not being utilised in other markets. Penalties need to be considered carefully, as there will be times when the FCAS market is \$14K/MWhr and the plant operator would rather pay a penalty rather than reserve the volume.

Question 11: Section 5.5 – Hydro Tasmania – Synchronous services markets

1) Do stakeholders consider this rule change proposal presents a viable model for the provision synchronous services? a) Could this proposed model be used to provide the essential levels of system strength (and / or inertia and voltage control) needed to maintain security and the stable operation of non-synchronous generation? b) Could this proposed model be used to provide levels of system strength (and / or inertia and voltage control) above the essential level required for security?	Maoneng believes this proposal needs to also consider synthetic inertia, to ensure there are incentives for renewable generators to provide this service, where level inertia can be programmable and adaptable to most grid conditions, where as traditional inertia can only be set when the power plant is built, and very hard to change the setting.
2) Do stakeholders consider that the creation of a synchronous services market could have any adverse impacts on other markets in the NEM? If so, what are these impacts?	A detailed market study would be required to comment.
3) Would the proposed model set out in the rule change request efficiently price and allocate costs for synchronous services in the NEM?	A detailed market study would be required to comment.
4) Do stakeholders consider the model set out in the rule change request to be capable of sending price signals sufficient to encourage new investment in synchronous capacity?	A detailed market study would be required to comment.
5) Do stakeholders consider the rule change provides an appropriate incentive mechanism for existing synchronous generators to make operational decisions to provide synchronous services?	A detailed market study would be required to comment.
6) Do stakeholders consider the rule change provides the appropriate locational signals for the provision of synchronous generators to provide synchronous services?	A detailed market study would be required to comment.
7) What do stakeholders see as the primary opportunities / limitations of the mechanism as proposed by Hydro Tasmania?	A detailed market study would be required to comment.

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8) Would the model proposed in the rule change request enable effective competition in the market for the provision of synchronous services?	A detailed market study would be required to comment.
9) What suggestions do stakeholders have in relation to the first order changes that would be required in NEMDE to facilitate this proposal and any second order changes that may be required as a result of this rule change proposals' implementation?	A detailed market study would be required to comment.
Question 12: Section 5.6 – TransGrid – Efficient management of system strength on the power system	
1) Do stakeholders consider that TransGrid’s approach addresses all issues related to system strength currently experienced in the NEM?	Maoneng believes that TransGrid’s approach does not address all issues related to system strength. However, it does give clarity to proponents upfront at the time of the connection enquiry stage in relation to how much capex a proponent is required to invest, rather than finding these details out later during the assessment process.
2) Do stakeholders consider that a system strength planning standard met by TNSPs would effectively and pro-actively deliver adequate system strength?	<p>Yes. Further, Maoneng believes that TNSPs should be responsible to plan for system strength and responsible to procure equipment to provide system strength, and to ensure projects do not suffer curtailment.</p> <p>Perhaps the cost can later be attributed to projects looking to connect to the network via annuity, but it would be more sustainable if governments contributed to an annual “network fund” rather than requiring a rigorous RIT-T process.</p>
3) Do stakeholders consider TransGrid’s proposal will provide useful and timely locational and financial signals to new entrants?	Yes, as long as there is a clear capex commitment between parties upfront and there is no curtailment.
4) Do stakeholders agree that the 'do no harm' obligations should be removed? a) If so, do stakeholders consider an alternative mechanism is required to regulate or incentivise the minimisation of a new connecting generator's impact on the local network and proximate plant?	<p>Maoneng believes that removing the 'do not harm' obligations would be suitable.</p> <p>In this respect, Maoneng believes that the responsibility to maintain the network and ensure stability should shift away from generators towards TNSPs. To this end, TNSPs should be forward thinking about new projects connecting to the NEM by looking 12- 24 months ahead (TNSPs are in control of this, as they know how many connection enquiries are being made, how many proponents are serious (bonds), and should have the right to refuse applicants to connect).</p> <p>Further, Maoneng believes that the DO NO HARM obligation must go together with “LIMITED ACCESS” rather than the “OPEN ACCESS” requirements under the current NER framework.</p>
5) What are stakeholder's views regarding generators' being required to make a financial contribution for provision of system strength services?	Maoneng believes that the financial burden must be shared with TNSPs, rather than borne only by developers. Further, the responsibility of these system strength services should be made clear upfront and outlined in a detailed and transparent way.

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6) Would stakeholders be supportive of the ownership of existing private system strength assets being transferred to TNSPs, as suggested in TransGrid's rule change request?	Maoneng believes that a project's assets should only be transferred to TNSPs by agreement, and if a project is transferring its assets to TNSPs the project needs certainty that no other project can connect at the same point without consent from the original project.
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CHAPTER 6 – SYSTEM STRENGTH

Question 13: Section 6.1 – Evolving the regulatory definition of system strength

1) Do stakeholders consider that the AEMC's working description of the effects of system strength, and related problem description of system strength and its components accurately represents all elements of system strength, as experienced in the NEM?	Maoneng does not believe that the AEMC's working description of the effects of system strength fully captures all elements of system strength problems in the NEM.
2) If not, are there other components of system strength that the AEMC should include?	<p>Maoneng recommends including SCR and static voltage stability in the description of system strength, as generator stability contributes to system strength.</p> <p>SCR is an indicator of static voltage stability. SCR can be used to indicate the electrical distance between a generator and the equivalent system in the NEM. If the SCR is large, that means the electrical distance is short and the generator is more capable of maintaining a stable operation with sufficient margins. If the SCR is small, however, the electrical distance is greater which may lead the generator to lose stability even under a minor contingency.</p> <p>Maoneng believes that SCR should be used to measure static voltage stability in Preliminary Impact Assessments to better understand a generator's impact on system strength.</p>
3) What measures might be used to define system strength? Is fault level the only measure that can be used practically, or are other measures available?	<p>System strength based on fault level is a practical measure in relation to the Preliminary Impact Assessment (PIA).</p> <p>In addition, the SCR calculation based on available fault level is technically strict for grid-forming inverters, which can help renewables to maintain operation or to ride through the faults in a weak system, such as ESCRI-Dalrymple. Grid-forming inverters behave like synchronous generators, but they are treated as grid-following inverters for PIA. This limits the application of grid-forming inverters at the weak connection points across the NEM.</p> <p>Maoneng believes it would be more practical to use the synchronous generator fault level of the worst case, instead of available fault level, for PIA of grid-forming inverters, or any other assessment that is more suitable for grid-forming inverters.</p>

Question 14: Section 6.2 – Mechanisms to provide system strength above the essential levels that are necessary for security

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1) Do stakeholders consider the centrally coordinated model, as proposed by TransGrid, is the preferable option for providing system strength above the essential levels required for secure operation?	Yes.
2) Do stakeholders consider the decentralised, market-based model proposed by HydroTasmania to be the preferable option for providing system strength above the essential levels required for secure operation?	No.
3) Could a hybrid of these models be used to deliver system strength above the essential level?	Yes.
4) What do stakeholders perceive to be each model's strengths and weaknesses?	<p>The centrally coordinated model:</p> <ul style="list-style-type: none">● strengths<ul style="list-style-type: none">○ reliable: the NSPs are the ones who are familiar with the system. They are in the best position to provide remediation solutions;○ economic: the planning of the system level is supposed to reduce the total cost based on by case by case;○ attractive: a robust system could increase the confidence of investors and developers, which in turn would assist Australia in reducing our carbon footprint ASAP● weaknesses<ul style="list-style-type: none">○ Lack of transparency of the planning. It could be technically difficult for people to understand.
5) Do stakeholders consider there are other, alternative models for delivering system strength above the minimum levels required for secure operation?	No.
6) What do stakeholders perceive to be the biggest benefits and risks to introducing a mechanism to deliver system strength above the minimum levels required for secure operation?	Maoneng believes that if a mechanism to deliver system strength above the minimum levels is not introduced, it may be difficult for the system to maintain reliable and secure operation.