

ASMC Response to Generator Performance Standards Rule Change

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1. Background

The Australian Sugar Milling Council (ASMC) members rely heavily on the electricity system in their milling activities. The members are subject to the National Electricity Rules (NER) for their interaction with the National Electricity Market (NEM) for electricity purchasing, generation and sales. This is significant for those sugar mills that have electricity generation systems that run synchronised with the National Grid (Grid).

The co-generation plant operated by the sugar millers provides significant value to the economy through:

- Energy productivity based on using waste from the milling process to generate renewable energy;
- Support for the local network operation - particularly in areas where the mills are connected to weak network in relatively isolated parts of the system; and
- Providing diversified energy sources - particularly renewable energy.

The co-generation plant represented by the sugar mill operations is classified as non-scheduled under the NER and this is important recognition of the integral nature of the steam and electricity generation with the production of sugar from the mills.

The AEMO proposed rule changes are important for the ASMC members and therefore considerable effort has been put into responding to the ASMC questions as part of the rule change consultation.

The ASMC responses to the specific AEMC questions are set out in the following section of this document.



2. AEMC Questions & the ASMC Response

This section provides the ASMC response to each of the 15 questions raised by AEMC in its consultation on the proposed rule changes. In each subsection of this section, the AEMC question is raised and the proposed ASMC response is then presented.

2.1 Question 1 Assessment framework

AEMC Question

Do you agree with the Commission's proposed approach to assessing whether the rule change request will, or is likely to, contribute to the achievement of the national electricity objective? If not, how should it be assessed?

Response to Q1

The ASMC considers that the assessment framework is appropriate because it recognises the need for flexibility and technology neutrality to ensure cost-effective outcomes. This needs to translate into explicit recognition of the value of non-scheduled generation - particularly based on the use of energy by-products / waste in co-generation operations. The value of this energy productivity needs to be considered in the value-for-money / sustainable / efficient cost objectives of the NEO.

It is also important that the AEMC quantify the potential impacts and interactions between the system capability provided by the proposed rule changes and the market outcomes for both energy, frequency control ancillary services (FCAS) and emerging system support services (Fast Frequency Response (FFR) etc). This analysis should be based on a set of realistic scenarios for the regulatory framework covering energy and security including through the National Electricity Guarantee mechanism.

2.2 Question 2 Role of access standards

AEMC Question

Do the current generator access standards require changes to help maintain power system security?

Would making changes to generator access standards represent the lowest cost approach to maintaining system security relative to other options?

Will mandating certain capabilities in generator access standards enable and support the establishment of ancillary services in future?

Response to Q2

The ASMC supports the concept of refining generator access standards to increase the power system security provided that:



- 1 the costs of such changes are reasonable compared to other solutions and
- 2 a flexible approach to application of the new standards is adopted to ensure that investment in generation based around energy productivity is not made uneconomic.

ASMC members have a history of providing local system support because a large proportion of their synchronous generation assets are in weaker parts of the system. The ASMC considers that the application of the new standards to the emerging distributed generation model of the future supply system will assist in increasing the security of the whole system.

As recognised by AEMO and AEMC, the market frameworks for ancillary services (and potentially energy through the dispatch-ability and emissions guarantees) will be affected by changes to the generator access standards. The ASMC considers that the process of the rule changes assessment should provide information on the potential impacts on the energy and ancillary services markets.

The ASMC acknowledges the potential for generator access standards to provide the most cost-effective mechanism for ensuring the availability of the technical services required for maintaining the security of supply. The ASMC considers that the cost effectiveness of the technical services such as FCAS and FFR must be judged against the wider value created by specific generation, specifically where that generation is not the primary function - co-generation. It will be important to distinguish the different classes of generators (scheduled / semi-scheduled / non-scheduled) when applying the new standards.

2.3 Question 3 Proposed changes to generator access standards

AEMC Question

For each of AEMO's technical recommendations set out in Appendix B:

Do you agree with AEMO's analysis of the issue in relation to the proposed change to the access standard?

Would the proposed change address the issue raised by AEMO? If not, what alternative solutions are there?

Does the proposed change represent an unnecessary barrier to entry, having regard to the costs imposed by the change and the technical capabilities of different technologies?

Can you provide an indication of the costs associated with the proposed change?

Response to Q3

The ASMC considers AEMO's approach to be reasonable; the approach, in the ASMC's view, is an important element of the issue of security, reliability and cost effectiveness of the supply system. It is only one element of the solution and needs to be complemented with:

- Improved modelling capability within AEMO to improve the reliability of short-term dispatch and forecasting;
- Market developments that ensure appropriate diversity of influence rather than the risk of market dominance by a small number of participants within the markets for both energy and ancillary services; and



- Reasonable negotiating approaches by the network service providers (NSPs) that recognise the balance between higher generator performance standards and more cost-effective delivery of the changing requirements for network performance and system security.

2.4 Question 4 System strength access standard

AEMC Question

Do you agree with AEMO's analysis of the issue related to system strength?

Would the proposed changes address these issues, particularly in light of the Commission's managing system fault levels rule change final determination? If not, what alternative solutions are there?

Would the proposed changes relating to system strength represent an unnecessary barrier to entry, having regard to the costs imposed by the change and the technical capabilities of different technologies?

Response to Q4

The key concern of the ASMC is the fact that the standards that apply to the system do not always recognise the variation in strength of the system and particularly the local network capability in the network areas at the extremes of the Grid. Most ASMC members are connected to relatively weak transmission or distribution systems because they are in relatively sparsely populated regional areas and are located a long electrical distance from major other generation. Some milling connections may struggle with maintaining operation with a short circuit ratio of 3.0 as proposed so exemption / grandfathering for existing plant is important.

It is important that the value of synchronous non-scheduled generation as represented by sugar mill based generators is recognised for its contribution in the weaker parts of the networks where it generally operates.

2.5 Question 5 Mandating active power control

AEMC Question

Do you agree with AEMO's analysis of the issue related to active power control?

Would the proposed changes address these issues? If not, what alternative solutions are there?

Would the proposed changes relating to active power control represent an unnecessary barrier to entry, having regard to the costs imposed by the change and the technical capabilities of different technologies?

What are the risks associated with mandating active power control capabilities?

What impacts would a mandated active power control capability have on competition in FCAS markets, and therefore FCAS prices?



Response to Q5

The ASMC does not object to the AEMO approach of ensuring there is adequate supply of active power control which distorts / bypasses the market driven investment signals in the FCAS market.

The ASMC considers the proposed changes to the automatic access standard and the minimum access standard will have an acceptable impact on future investment in co-generation facilities in sugar industry. This is because modern generation plant and controls have the capabilities for active power control being sought through this rule change at little or no additional capital costs. There are some risks that the costs of the appropriate communications pathways can be prohibitive for some of the more remote generator installations.

There needs to be some flexibility and a basis for a judgement by AEMO, the NSP and the co-generator if the costs of the communications system required to meet automatic standards risk the viability of the investment in energy productivity contributed by the co-generation plant. The discretion to accept a lower standard of communications needs to account for the size of the co-generation and hence its impact on the wider system, the value of the co-generation plant for its normal contribution to the strength of the local system and the wider value of energy productivity. This may outweigh the risk associated with lower-performing active power controls than can be achieved in more meshed parts of the system.

It is important that existing plant is protected from any retrospective application of the new standards because of the high cost of retrofitting in the highly integrated process and generation facilities in sugar mills.

2.6 Question 6 Reduction in system size thresholds

AEMC Question

Do you agree with AEMO's view that standards should not consider generating system size in their application appropriate? If not, what alternatives are there?

Would the proposed changes to the thresholds for certain generator access standards represent an unnecessary barrier to entry, having regard to the costs imposed by the change and the technical capabilities of different technologies?

Can you provide an indication of the costs associated with the proposed changes?

Response to Q6

The ASMC does not consider that synchronous generators with capacities less than 5MW should be required to meet performance standards. This is because the risk to the security of the system is low and the value of the synchronous generation is valuable under all operating conditions. The AEMO proposal recognises that it is not practical to apply Automatic Governor Control (AGC) conditions to non-scheduled generators; the ASMC endorses this approach.

The expansion of the remote monitoring facilities is acceptable for new sites in general. It is important that sites that may be modified such that the site requiring alteration of the connection agreement should not be sufficient to trigger the up-grading of remote



monitoring. There should be a process for the generator to agree with the NSP that upgrading the existing remote monitoring is inappropriate. This would be where the costs of such an upgrade of remote monitoring are additional to the proposed changes to the site being considered by the mill and are considered unreasonable in magnitude.

2.7 Question 7 Definition of continuous uninterrupted operation

AEMC Question

Do you think the current definition of continuous uninterrupted operation raises issues for maintaining power system security?

Would the proposed change to the definition of continuous uninterrupted operation address the issues raised by AEMO? If not, what alternatives are there, for example what materiality thresholds should apply?

Would the proposed change to the definition of continuous uninterrupted operation represent an unnecessary barrier to entry, having regard to the costs imposed by the change and the technical capabilities of different technologies?

Response to Q7

The ASMC agrees that the current definition of ‘continuous uninterrupted operation’ creates uncertainty for connecting parties negotiating with AEMO and the NSP. Removing the threshold description of “substantially” maintaining the generator’s active and reactive response will assist with resolving the uncertainty.

In particular, the ASMC does not consider the new definition of ‘continuous uninterrupted operation’ as an investment hurdle for the co-generation plant that is considered likely to be useful in developing the improved energy productivity sought by ASMC members. The ASMC also supports how the performance standards are met. It should be open to the generator to either:

- provide the continuous uninterrupted generation within its plant / site; or
- contract for services that deliver the effective continuous uninterruptible operation electrically on the local network - not necessarily at the generator connection point.

2.8 Question 8 Negotiated access standard requirements under specific clauses

AEMC Question

Do you agree with AEMO’s analysis of the issues in relation to negotiated access standard requirements?

Would the proposed changes address the issues raised by AEMO? If not, what alternatives are there?

Would the proposed changes represent an unnecessary barrier to entry, having regard to the costs imposed by the change and the technical capabilities of different technologies?



Response to Q8

The AEMO proposal has reasonable capability to contribute to the security of the system. The 100MW limit on reduction of generation in the system seems arbitrary. In the ASMC's view, AEMO's proposal is prescriptive, when it does not have to be. The security of the system needs to be managed with dynamic limits, based on the high-quality modelling that AEMO can undertake because of the quality of information it has. The limits should be able to be reduced as the AEMO modelling improves and the level of generator control increases with the installation of new plant, consistent with the other changes proposed by AEMO.

Raising the negotiated access standard for generating system response to disturbances following contingency events (Cl S5.2.5.5) is reasonable for greenfield sites. However, the exemptions for existing plant should be maintained for the life of that plant given the integration of the generating plant with the core site milling process.

2.9 Question 9 Technical standards relevant to the alteration of generating plant/system

AEMC Question

Do you agree with AEMO's analysis of the issues related to the technical standards for alteration of generating plants or system?

Would the proposed change address the issues identified by AEMO? If not, what alternatives are there?

Would the proposed changes to standards relevant to the alteration of generating systems or plant represent an unnecessary barrier to investment, having regard to the costs imposed by the change and the technical capabilities of different technologies?

Response to Q9

The ASMC is concerned that the mandatory nature of the increased performance obligation triggered by changes to an existing voltage control system and protection system.

In general, the ASMC members have plant where the generation is a by-product of the milling process and is focused on the core production on the site - which is not electricity. The production of electricity is related to energy productivity, which is based on employing waste products from the sugar production process.

The ASMC considers there should be some discretion for the NSP or AEMO to limit the application of the revised standards if the generator can demonstrate that the costs of meeting the revised standard for existing plant are unreasonable in light of the energy productivity value created. The criteria to be applied should recognise the impact on the core production process for co-generation plants.

2.10 Question 10 Jurisdictional issues and harmonisation

AEMC Question

How important is a consistent approach to generator access standards across regions?



Are AEMO's proposed changes sufficient to manage system security across all areas of the power system so that jurisdictional arrangements (such as ESCOSA's licensing conditions for connecting generators in South Australia) are not required?

Are there changes in addition to those proposed by AEMO that stakeholders consider necessary to avoid the need for jurisdictional specific arrangements?

Response to Q10

The ASMC supports the principle of consistency of access standards across the NEM. However, the ASMC's position is subject to the recognition of the various categories of generation and their technical and energy productivity contribution to the system and the wider economy.

It is important to recognise the role and value of co-generation and the non-scheduled category of generation as contributing to the wider economic value through energy productivity via the use of waste energy to produce electricity. There does need to be continued discretion for AEMO and the NSPs to negotiate standards as close as practical to the nationally consistent automatic access standards.

2.11 Question 11 Issues with the current negotiating framework

AEMC Question

Do AEMO and NSPs have adequate powers under the NER to require connection applicants to set performance standards at levels that do not negatively impact power system security? Are there other factors that may impact the effectiveness of the negotiating process?

How does the negotiating process operate in practice for participants? Is AEMO's view that connection applicants generally aim for the minimum access standards, and negotiate away from that position, an accurate representation of most negotiations?

What are the costs of the current negotiating framework for market participants and AEMO?

Response to Q11

The ASMC's industry experience is that the volume of applications for connection of generation in recent years has strained the resources of the NSPs and AEMO. Given this, the ability for NSPs and AEMO to respond using the negotiating framework has been inadequate and bureaucratic.

In market-focused systems, parties will adopt the minimum standards available / required to reduce costs / liabilities, even when there is minor additional costs in delivering greater capability. Therefore, the minimum standards are generally the target contractual position unless it is expedient to take a higher standard.

The powers of AEMO and the NSPs under the current negotiating framework are adequate. However, the implementation of the negotiation process would be assisted by a more "customer focused" culture within some parts of AEMO and some NSPs being conscious of / consistent with the permissive nature of the NER. In this context, the negotiating



framework needs to encourage AEMO and NSPs to ensure that the security objectives under the NER are achieved but the mechanism for delivering that electrical outcome should be versatile.

2.12 Question 12 Rationale for a negotiating framework

AEMC Question

Given the changing nature of connections to the power system, does the rationale for a negotiating framework governing the connection process remain appropriate? Do you value the ability to negotiate and why?

What are the appropriate respective roles of the automatic, minimum and negotiated access standards?

Response to Q12

The changing nature of the supply system - with a large number of much smaller generators compared with a small number of very large connected generating systems - requires more flexibility in the way the AEMO and participants maintain key objectives, including system security.

This diversity of supply (both size and geography) combined with diversity of technologies requires greater flexibility in assessment of impact of the proposed connection and tends to increase the inherent authoritative role of AEMO and NSPs. It is important to balance the AEMO / NSP's dominant negotiating position with the availability of detailed data, system limitations and constraints or concerns for security identified by AEMO and the appropriate NSP. This transparency is very important for achieving an appropriate balance in the negotiation of standards.

The proposed AEMO position of encouraging the automatic standard as the “notional” starting point (rather than the minimum standard) is reasonable, provided the negotiation process is flexible enough to manage the movement of final performance standards as a project develops. The framework of automatic / minimum / negotiated standards is still appropriate. This is particularly important as the uncertainty of the market frameworks for services continues and the slowness of change in market structures for the services that support security. The market structures are not responsive enough to manage the changes over the medium term. Hence, the use of the access standards to significantly contribute to managing security risks should be facilitated by the application of the negotiating standards.

The ASMC considers that the need for supporting system security is more important than an absolute minimisation of generator costs. However, the position is not a binary one but one of emphasis and relative importance. AEMO discretion should be facilitated to ensure that an appropriate balance between performance standards and hurdles to investment is achieved across the different geographies of the NEM as well as over time. The AEMO discretion should be guided by an independent body such as the Reliability Panel or the Energy Security Board. This guidance needs to evolve to address the impacts of emerging technologies, as well as to achieve balanced supply system technical outcomes / options.



2.13 Question 13 AEMO's proposed changes to the negotiating framework

AEMC Question

AEMO proposes changing the negotiations so that the onus is on the connection applicant to prove that they cannot practicably meet an automatic access standard. Does this change strike the appropriate balance between security and costs?

Would the proposed changes present unnecessary barriers to entry for particular technologies, scales or locations?

Would the proposed changes have any unintended adverse consequences for connecting MNSPs or large customers?

Response to Q13

The ASMC considers that a greater focus on achieving the automatic standard is reasonable. It is important in assessing the justification for accepting a negotiated standard that the value of wider benefits such as energy productivity is taken into account. Co-generation and non-scheduled generator requirements should be recognised for the additional value they provide through process optimisation beyond the electricity system.

The process for approving generator performance standards needs to account for the varying levels of system strength across the NEM. The extremities of the Grid do not have the same network strength as the meshed areas. Sugar mill generation is often connected in weaker parts of the network. Where the weakness of the local network creates a hurdle for generation meeting the automatic access standards, the value of the synchronous generation to the general strength of the system and the value of the energy productivity of the synchronous generation associated with sugar mill operations should be accepted as a basis for lower performance standards. The ASMC considers this approach as appropriate for reasons of fairness, equity and balance between the costs of higher generator performance standards and the value of co-generation in the weaker parts of the network.

In association with the focus on automatic, access standards should be flexible about how the standards are met. It may be feasible and desirable for a proposed connection to source a capability to complement its generation from a source that does not have the same connection point but has the same impact electrically on the system in the area. AEMC / AEMO should consider flexibility in relation to the connection point that the access standard capability is delivered when considering some generation. This requires NSPs and AEMO to judge the performance of the system around a generator connection rather than at a generator connection in isolation. This approach would need to be supported by appropriate guarantees or commercial arrangements to support the contention that security is enhanced or at least not at risk.

The ASMC is concerned about any additional impact of changes in access standards increasing the costs of connecting loads to the Grid. The disincentive for development of manufacturing and processing in Australia will increase with any additional costs and this is not in the best interests of Australia. The electricity supply system has a purpose to support the economic and social vision for the nation. Manufacture and food production are critical elements of the Australian economic vision. Hence, the loads represented by these activities



need to be facilitated by our supply arrangements. Extending the burden for connection of loads to the Grid is misaligned with that objective.

2.14 Question 14 Nature of the issues raised

AEMC Question

What are the potential negative impacts on system security that could arise from the connection of new equipment under existing arrangements?

What other options may be available to address the issues raised, taking into account the limitations set out in section 6.2.1 below?¹

Response to Q14

The ASMC supports the desire to ensure the flurry of current connection applications does not distort the outcomes for security of the system at the lowest reasonable cost. The ASMC supports the principle that rule changes should not be backdated. Whether the date of submission of the rule change, rather than the rule change determination, is the appropriate reference date is debateable. The application of the proposed new access standards from 11 August 2017 is understandable and reasonable in the view of the ASMC.

2.15 Question 15 AEMO's proposed transitional arrangements

AEMC Question

What is the nature of the system security implications of an immediate transition to a new rule, as against a grandfathered transition?

What is the nature of the cost implications of an immediate transition to a new rule, as against a grandfathered transition, and could this vary for different technology types, or depending on the stage a project has reached?

Response to Q15

The ASMC does not have detailed comment on the transitional arrangements specifically because it is not likely to impact the ASMC members.

In principle, rule changes should not be made retrospective and the trigger for requiring existing plant to meet a new standard needs to deal with the various categories of plant affected. The continued recognition of non-scheduled plant is valuable because of its wider energy productivity contribution and its valid place in a diverse supply system. The trigger for altering the access standards to apply to existing non-scheduled plant needs to be carefully considered, so that no party is disadvantaged for no compelling reason. In particular, the trigger to alter the access standards for existing non-scheduled plant needs to take into account the integration of the generation into the core process (not electricity generation) that may be affected by the change of standards from both a technical and economic perspective and prohibit / restrict investment in co-generation.

¹ Consultation Paper National Electricity Amendment (Generator Technical Performance Standards) Rule 2017; AEMC