Ms Merryn York
Chair
Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

Electronic Submission - ERCO280

# Consultation Paper - Integrating Energy Storage systems into the NEM 

## Dear Ms York

Energy Networks Australia welcomes the opportunity to provide a response to the Australian Energy Market Commission's (AEMC) Consultation Paper on Integrating Energy Storage systems into the National Electricity Market (NEM).

Energy Networks Australia is the national industry body representing Australia's electricity transmission and distribution and gas distribution networks. Our members provide more than 16 million electricity and gas connections to almost every home and business across Australia.

For an effective long term framework, it is important that the arrangements for energy storage systems are clearly specified in the rules for scheduled and semi-scheduled generation/load connections on the transmission network and consistent with the AEMC Dedicated Connection Assets (DCA) framework and the Energy Security Board (ESB) Post 2025 Market Design.

Any framework to better integrate energy storage needs to be enduring and complementary to the post 2025 market reforms. It also needs to be consistent with the outcome of the Distributed Energy Resources (DER) access and pricing rule changes ${ }^{1}$ currently being progressed to enable generation onto the distribution network to incur distribution use of system charges.

The AEMC should ensure that the framework adopted for transmission connected hybrid facilities is fit for purpose and does not allow gaming. For example, if large load facilities added generation and/or storage they could seek to avoid paying Transmission Use of System (TUOS) for the existing underlying load component.

[^0]As transmission and distribution pricing, planning and operational arrangements are fundamentally different, alignment in pricing arrangements should not be a targeted design principle, although the relative pricing differential between transmission and distribution charges may influence the choice of network for battery storage facility locations.

The AEMC suggests that the Australian Energy Market Operator (AEMO) asset-based approach and the post 2025 services-based approach are mutually exclusive however it is inescapable that management of the technical characteristics of assets connected to the network remains vital as is the regulation of the services delivered by those assets. Regardless of a services-based approach, connection arrangements under the rules chapter 5 need to be fit for purpose across the asset and registration combinations and mindful of state-based licencing and regulatory obligations linked to definitions such as generate, transmit, distribute etc.

It is unclear that an additional participant category is more efficient than allowing bidirectional flows for generating systems or whether an additional category is essential for the essential system services (e.g. frequency services) and two-sided markets envisaged in the post 2025 reforms.

Given the differences between transmission and distribution regulatory frameworks and scheduling/non-scheduling, ENA would welcome further discussion with the AEMC and it would be helpful to explore some example connections (use cases) to better understand the implications of the rule, before the Draft Determination.

ENA has responded in more detail in Attachment A and has selectively responded to questions in Attachment B.

Should you have any queries on this response please feel free to contact Verity Watson, vwatson@energynetworks.com.au.

Yours sincerely,


Andrew Dillon
Chief Executive Officer

## Attachment A: Detailed Comments

Transmission and Distribution Networks are observing an in increase in the momentum of grid scale connected energy storage systems and many of these systems are expected to be co-located with wind and solar generation.
Implementation of reforms such as five-minute settlement and sunsetting of the mandatory primary frequency response, together with declining battery prices are likely to encourage uptake of grid connected energy storage systems ahead of the commencement of any Post 2025 Market Reforms.

This means that it is unlikely to be desirable to delay clarifying the treatment of storage in the NEM, but there are many interacting programs of work and rule changes on foot that make assessing the full impact of the proposed rule changes for integrating storage into the NEM hard to quantify.

## Auxiliary Load

Traditionally auxiliary load attached to scheduled and semi-scheduled generators connected to the transmission network including energy consumed for pumped hydro was considered part of the generator registration and as a result TUOS charges for this load component were not applicable. ENA consider that in principle this approach should continue.
In 2017, AEMO amended its generator registration guideline in response to concerns with the technical and market impacts of grid scale battery storage. The unintended impact of the requirement for batteries to register as market customers resulted in the charging load being potentially subject to TUOS.
Amending the existing generator registration category to enable bi-directional energy flow without creating a whole new bi-directional registration category may simplify the rule change. Auxiliary loads would include those scheduled loads that principally exist to charge the storage facility so that, subject to losses, it may ultimately inject that energy back into the electricity transmission network.
In this instance where all generation and all auxiliary load is scheduled/semi-scheduled and where the connection is on the transmission network there would be no TUOS charge, other than for losses.
Loads that are not auxiliary to the generator, such as productive facilities, would remain subject to TUOS whether they are scheduled or not.

## Registration of grid scale storage

Historically pumped storage facilities were the only grid scale storage elements in the NEM. The AEMO registration guideline of $2016{ }^{2}$ and prior specified that the generator and the associated pump, if separate from the generator, were included under the generator's registration with the pumping load being considered auxiliary to the generator. Importantly the auxiliary load was not required to be registered as a

[^1]customer and therefore was not subject to TUOS charges. Significant loads behind generator connection points which were not auxiliary to the generator were required to register as customers and were subject to TUOS.
2.3. Pump storage schemes
2.3.1. Single Point of Connection


Where the market generating unit and pumping loads are connected at the one physical connection point, the Generator is not required to register as a Customer and the electricity consumed for pumping is deemed to be purchased under clause 2.2.4(d).
2.3.2. Multiple Points of Connection


Where the electricity consumed in pumping is at a separate connection point, whether locally or remote, the Generator and the relevant Network Service Provider will need to confirm that the relevant points are the agreed connection point for the market generating unit. If such agreement has been obtained, the Generator does not need to register as a Customer for the pumping connection point.

Figure taken from NEM Generator Registration Guideline 2016
With the pending introduction of the Hornsdale and Dalrymple batteries in 2017 AEMO amended its registration requirements without consultation. The new guideline required new storage to register the auxiliary charging load as a scheduled market load due to the inability of the market systems to handle bidirectional flows from generators. This in turn required storage to bid the generator and load components separately creating additional market complexity.

## Distribution Storage: UoS Implications

For energy storage that is embedded in the distribution network, it will appear as load at a transmission connection point. To the extent that storage contributes to consumption from the transmission network it is appropriate that TUOS charges are levied at that connection point in accordance with each Transmission Network Service Provider's (TNSP's) pricing methodology.

The manner in which these transmission charges are recovered by distribution networks in their network tariffs, and ultimately passed on by market customers, is a
matter for the approved tariff structure statements for Distribution Network Service Provider's (DNSP's) in accordance with the pricing principles in the National Electricity Rules (NER). Distribution use of system charges are also applicable for the load component of energy storage embedded in the distribution network and should also be a matter for the approved tariff structure statements for DNSPs in accordance with the pricing principles in the NER. Any rule changes should not have consequential impacts on efficient pricing arrangements for distribution customers.

## Transmission Use of System

An unintended consequence of the requirement to register as a scheduled market load was that storage would potentially be liable for TUOS charges as it would be in receipt of prescribed transmission services.

ElectraNet proposed an arrangement to the Australian Energy Regulator (AER) under which the auxiliary scheduled load was treated as a negotiated transmission service and was not charged TUOS. This was contingent on the principal purpose of the facility being the generation of electrical energy to the transmission network. Following acceptance of this arrangement by the AER TNSPs in other states have adopted these arrangements.

The discussion paper introduces the concepts of a bi-directional unit and hybrid facilities. The former is a new category for storage while the later seeks to address facilities with combinations of generation and storage technologies and load behind a single transmission network connection point.

There is potential for loads in strong parts of the transmission network to register as a scheduled load within a hybrid facility in order to avoid prescribed transmission network charges.

TNSPs support an outcome where the storage component of a hybrid facilities is exempt from TUOS while loads not associated with the charging of the storage component are subject to TUOS. This would return the practical treatment of grid scale storage to that which applied to pumped storage prior to the AEMO changes of 2017. This could be achieved by requiring a load embedded in a hybrid facility to separately register as a market customer with appropriate metering capability.

## Distribution Use of System

For energy storage embedded in the distribution network it is appropriate that the storage proponent is charged for their use of the network for import and export services. This is consistent with Distribution Use of System (DUOS) charged for other large customer loads and the rule change to allow export charges for small-scale residential solar photo voltaic generators ${ }^{3}$. It also provides opportunities for incentivebased charges to influence the timing of exports from storage. The AEMC will need to be mindful of differential pricing arrangements between energy storage facilities

[^2]connected on the transmission network and those connected on the distribution network in respect of signals for the efficient location of storage facilities.

## Technical standards

Under the existing framework the generator component of storage is subject to generator technical performance standards (GPS) while the load is subject to customer technical performance standards (CPS). As CPS requirements are far less onerous than GPS AEMO is seeking greater control over the technical standards to apply to bidirectional units and hybrid facilities. ENA supports the standards for any changed registration categories residing in the rules and subject to AEMO proposing and consulting on changes to Chapter 5 before rules changes are proposed to the AEMC.

## Attachment B: Responses to selected AEMC questions

| Questions |  | Feedback |
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| Chapter 1 - Introduction |  |  |
| - Question 1: Proposed assessment framework (p. 5) |  |  |
| 1 | Do you agree with the proposed assessment framework or are there any additional assessment criteria the Commission should use when assessing identified issues and possible solutions? | Any proposed changes must also be considered under the broader context of other changes being made, such as the Coordination of Generation and Transmission Investment and the Post-2025 Market Design projects. |
| Chapter 2 - The threshold question: should storage be defined in the NER? |  |  |
| - Question 2: Current issues caused by the treatment of storage (and hybrids) under the NER (p. 14) |  |  |
| 1 | Do you agree with AEMO that there are currently significant issues for storage units and hybrid facilities being caused by the rules not including a storage definition? Why, or why not? | It is considered that the Rules should be as technology-neutral as possible, and it is not clear that the issues presented are due to definitions in the rules, or in how registration is implemented by the Guideline. |
| - Question 3: Implications for storage forecasts (p. 21) |  |  |
| 1 | Do you agree that storage and hybrid facilities are likely to play a significant role in the future market? If so, do you agree that this indicates that the issues AEMO has identified | It is unclear whether the issues raised are likely to become worse over time. It is noted that a number of other initiatives, including locational marginal pricing and transmission access are currently being considered, which may resolve some of the issues raised. |

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| Questions |  | Feedback |
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|  | in its rule change request, arising <br> from the current treatment of <br> storage under the NER, are likely to <br> become worse over time? Why, or <br> why not? | The complexities of maintaining a single generator performance standard for <br> a hybrid facility appear unnecessarily difficult. To some degree these <br> complexities are being considered in the current DCA rule change process. |
| Question 4: AEMO's rationale for defining storage and hybrids in the NER (p. 25) |  |  |
|  | Bearing in mind that the two-sided <br> market reforms (as discussed in <br> section 2.2.4) propose to move <br> towards service-based requirements <br> (rather than technology-based <br> requirements), are there differences <br> in the nature of the services <br> provided by or to storage facilities <br> that require these services to be <br> distinguished from generation and <br> load? | Policy objectives should be considered ahead of focussing on particular <br> technologies. A focus on a particular technology may hinder innovation. <br> Energy storage systems should be part of an energy mix based on efficiency. <br> Given that technologies evolve and change rapidly, technology-neutral policy <br> will ensure appropriate regulatory framework evolution into the future. |
| Question 6: Alternative to AEMO's proposed solution to integration issues for storage (p. 29) |  |  |


| Questions |  | Feedback |
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|  | sided market reforms to address the integration issues facing storage and hybrid facilities <br> b. Introducing AEMO's rule change proposal as an interim step prior to the implementation of the twosided market reforms <br> c. Implementing certain aspects of the two-sided market reforms through this rule change project, such as combining the different types of market participants and imposing obligations based on services rather than assets <br> d. Taking an alternative approach - please specify. | or within AEMO's guidelines. Providing clarity in the Rules may provide investors more certainty. |
| Chapter 3 - Registration issues for storage units and hybrid facilities |  |  |
| - Question 7: Understanding the interest in registering hybrid facilities and the challenges that exist (p. 35) |  |  |
| 5 | Do you consider that the lack of clarity in the NER on whether different technologies can be aggregated is a significant issue | It is noted that the fees charged for registration are determined by AEMO, and AEMO is currently concluding consultation on the participant fee structure that is to apply from 1 July 2021. Changes to AEMO's fee structure and registration processes could be made to improve efficiency when |


| Questions |  | Feedback |
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|  | for registering hybrid facilities? If so, why? | considering energy storage and hybrid facility registration applications. The NER should be as technology neutral as possible. |
| Question 10: Proposed approach to registration categories and classifications (p. 43) |  |  |
| 2 | In relation to the registration of hybrid facilities, do you agree that the NER should provide that participants cannot aggregate units with different classifications or different technology types (unless AEMO approves it on a case-by-case basis)? | Allowing the aggregation of units with different classifications, such as distribution connected batteries and controlled loads would have unintended consequences for network businesses. The extension of the use of bidirectional units into distribution networks is best handled by the two-sided market reforms. ENA suggest any interim rule changes, prior to the post 2025 reforms, do not incorporate any such provisions. |
| Question 11: Registering pumped hydro facilities (p.44) |  |  |
| 1 | Do you support AEMO's proposed approach to registration and classification for pumped hydro facilities? | The proposed approach, of treating different storage sources differently, would introduce confusion between energy storage providers and adds complexity. |
| Question 13: AEMO's solution to clarify what small units SGAs can aggregate (p. 45) |  |  |
| 1 | Do you agree with AEMO's proposal to clarify how an SGA can include storage units in its portfolio? | See answer to question 10-2. |
| Question 14: Adding further registered participant categories (p. 47) |  |  |
| 1 | Is there a strong case to add a participant category for storage or are there other alternative solutions | It is not clear that a new category for storage or hybrid systems will reduce complexity; this limits flexibility for future system changes. It is likely that in future, more participants will include some component of generation and |


| Questions |  | Feedback |
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|  | that could help to reduce complexity? | load within their connection. The addition of a separate 'storage' registration category adds cost and complexity. |
| Question 15: Alternative solutions for registered participant categories (p. 48) |  |  |
| 1 | Is AEMO's proposed rule the most efficient and effective way to address the identified issues relating to participant registration and unit classification? Are there alternatives or ways to potentially improve it? | It is unclear that an additional participant category is more efficient than allowing bi-directional flows for generating systems. |
| Chapter 5 - Issues with fees and charges |  |  |
| Question 21: Issues with how fees and charges, and non-energy costs are recovered (p.69) |  |  |
| 1 | Do you agree that there is an inconsistency with how fees and charges and non-energy costs are recovered from Market Participants? | Allocations of fees should be transparent and reliable, and should enable the charged party to pass on those costs appropriately and efficiently, without significant administrative burden. ENA is supportive of a simple fee structure that takes into close consideration who the true beneficiaries are when allocating costs. |
| Question 24: Issues with TUOS and DUOS charging arrangements (p. 76) |  |  |
| 1 | Do you agree that there is ambiguity and uncertainty around how transmission and distribution network businesses calculate and charge TUOS and DUOS for battery systems? | ENA does not consider TUOS and DUOS arrangement ambiguous; given they must follow the pricing principles of chapters 6 and 6A of the NER respectively. <br> While TNSPs are confident that the current arrangement for transmission connected grid scale storage in relation to TUOS is rules compliant amending the rules to clarify the intent is appropriate. |


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|  |  | Any proposed change to NER clause 6.1.4 (charging of DUOS for sent-out <br> energy) would have to be consistent with the outcomes of the DER Access <br> and Pricing rule change process currently underway. <br> ENA believes it is appropriate that transmission and distribution pricing <br> arrangements are different. These differences arise due to the significantly <br> different operational characteristics of distribution and transmission <br> networks, notably the operation of transmission constraints which directly <br> impact the dispatch of scheduled and semi-schedule generators and auxiliary <br> loads which receive non-firm access to the transmission network. Future <br> review of arrangements may be warranted for energy storage embedded in <br> the distribution network that is scheduled. |
| 2 | Does this ambiguity and <br> uncertainty create a material issue <br> for investment in battery storage <br> projects now, or in the future as the <br> number of energy storage <br> projects increase across the NEM? | A clearer regulatory framework would be expected to support investment <br> certainty. ENA consider that there may be benefit in clarifying the <br> arrangement for transmission connected storage. |
| 3 | What are the pros and cons to <br> allowing each NSP discretion in <br> developing and applying TUOS and <br> DUOS charges? On balance, should <br> the approach and method to <br> applying TUOS and DUOS <br> charges be <br> harmonised among NSPs? | TNSPs are not of the view that they have discretion in the matter. Having <br> arrived at a regulatory arrangement that supports bona fide storage being <br> treated as generation for the purposes of TUOS, it must be consistently <br> applied. <br> For the reasons noted in response to Q 24.1 there is no requirement for <br> alignment of charges between TNSPs and DNSPs. The flexibility provided in <br> the current rules for DNSPs to introduce new charges must be retained to <br> respond to industry developments, including the potential for DNSP to own <br> and lease grid-scale energy storage. |


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| 4 | Is there a regulatory risk when NSPs interpret how to apply the current rules to battery systems? | As the interpretation is well founded and agreed with the AER, TNSPs are not subject to unnecessary risk. <br> It would be best to address the issue in the rules nonetheless to provide clarity and avoid arbitrary changes to AEMO's registration guidelines having unexpected impacts on pricing and charging in the future. |
| Question 25: Solutions for clarifying the application of TUOS and DUOS charging (p.79) |  |  |
| 1 | Do you agree with AEMO's proposal to exempt all energy storage systems from TUOS charges? If you agree with an exemption, should the exemption of TUOS charges also apply to energy used on site (auxiliary load) i.e. energy that is not stored and sent out into the network? | For scheduled/semi-scheduled generators connected to the transmission network, scheduled generator auxiliary load for storage should be treated the same as any other generator and be exempt. Energy losses associated with storage should not be charged TUOS. Loads and related losses not associated with the storage of energy for re-injection into the transmission network should be charged TUOS. <br> For energy storage connected to the distribution network TUOS charges will accrue. The auxiliary load and charging by battery facilities would incur DUOS charges. The allocation of charges to storage and market customers is guided by the NER pricing principles. <br> To the extent that TUOS arises due to the charging behaviour of storage in the distribution network DNSPs must have the ability to recover these charges from the causer. |
| 2 | If battery systems are exempt from TUOS charges does this: <br> a. create a subsidy for battery technology and therefore an advantage over other generation technologies? | a. For bona fide scheduled auxiliary loads associated with storage it ensures that storage and standalone generators are treated on an equal basis as TUOS would not be double charged. <br> b. As the charging load would be scheduled it would provide strong signals for the load to be placed in a part of the network that can support it. |


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|  | b. remove the ability to <br> provide an efficient location <br> and/or price signal to <br> potential battery system <br> proponents, and therefore <br> impact on the efficient entry <br> and location of new battery <br> system participants? | Distribution connected storage would be expected to respond to time of use <br> and other cost reflective distribution tariff arrangements and are unlikely to <br> drive peak demand at transmission connection points. |
| 3 | If battery systems are not exempt <br> from TUOS charging does this: | If a battery or pumped hydro connected on the transmission network was <br> charged TUOS on the load, then for a battery the TUOS is charged for the <br> create double charging of <br> TUOS /DUOS for end use <br> customers? <br> discharged from the battery when the energy flows through to the |
| distribution network to end use customers. This double charging of TUOS is |  |  |
| distort investment signals |  |  |
| and not align with the need |  |  |
| for significantly more |  |  |
| storage investment across |  |  |
| the NEM? |  |  |$\quad$| Genecessary and creates administrative burden. |
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| TNSPs who charge only for net load. |


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| 5 | Do you agree that battery systems should pay DUOS charges for consumed energy? Please explain why or why not. | Where loads on battery systems contribute to the long run marginal cost (LRMC) on the distribution network then they should pay a DUOS charge reflective of LRMC. |
| Question 26: Alternative solutions for issues with TUOS and DUOS charging (p. 82) |  |  |
| 1 | How would charging all Market Participants TUOS and DUOS, based on the services received by participants (energy consumed) rather than based on the asset type, impact participants' behaviour and market outcomes? This would mean that all Market Participants would be liable for TUOS and DUOS charges for the energy that is consumed at their network connection point. | This suggests that both load and generation would be subject to TUOS which is the subject of other reviews currently on foot. These rules only relate to charging of export at distribution connection points, not transmission connection points. <br> Distribution arrangements are materially different to transmission arrangements for the reasons noted above. <br> It should be noted that the service customers receive from transmission networks principally relates to the availability of capacity to transport energy (MW) rather than energy (MWh). |
| 2 | If all Market Participants were charged TUOS and DUOS, would this have any impact on existing external arrangements? | Scheduled generators would potentially pay TUOS for energy consumed and generated adding to the wholesale prices and changing the underlying costs of Power Purchase Agreement. <br> The TUOS would again be charged on energy transmitted to the distribution network. The TUOS is again charged for end use consumer load. This appears to create additional administration and regulatory burden for no value and may lead to increased costs to consumers. Scheduled load does not drive transmission costs. |


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|  |  | This could also impact the cost stacks in the default market offers and retail contracts. The AEMC should be mindful of the broader implications and transition to the broader post 2025 reforms. |
| 3 | Is a definition for storage technologies needed to clarify TUOS and DUOS charging, or could AEMO's proposed solution or an alternate solution be implemented using the existing Market Participant categories, such as a scheduled load? | The application of TUOS charging proposed to a bi-directional participant would need to be made clear. There is benefit in considering the application of charging by scheduled, semi-scheduled and non-scheduled category and by application at transmission or distribution connection points. <br> Non-auxiliary loads in hybrid facilities should be subject to TUOS, there should be no opportunity to avoid network charges. <br> The rule change could be significantly simplified by amending the definition of generator to allow for it to be bi-directional rather than introducing a new standalone category. |
| 4 | Are there technical issues or complications with implementing AEMO's proposed solution or an alternative solution? | Any solution needs to consider that assets or activities guide a role description, licencing and obligations in state legislation and codes etc. AEMC may need to consider the consistency of these state-based arrangements and what licencing or capability criteria might be needed if registrations, including jurisdictional scheme charges for distribution connected energy storage. |
| 5 | Do stakeholders consider there is an inconsistency in the approach NSPs use to calculate network prices? If yes, would a more harmonised approach to network pricing provide clearer investment signals across the NEM and reduce | There is not inconsistency among TNSPs however clarity in the rules is preferred. <br> The incidence of scheduled auxiliary loads associated with grid scale storage in distribution networks is not known. <br> There needs to be further consideration of this issue. Transmission and distribution networks should be able to have separate network pricing |


| Questions |  | Feedback |
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|  | costs for battery system proponents? | arrangements. The rules should not be used to harmonise these arrangements, as the pricing principles and cost drivers are different. |
| 6 | Does the introduction of LMP and FTRs as contemplated through transmission access reform impact whether storage should face TUOS? | Locational Marginal Pricing and Financial Transmission Rights would arguably reinforce the logic for grid scale storage not being subject to TUOS. Storage would likely locate on the outer side of constraints and act to reduce transmission congestion and spilled renewable energy. |
| 7 | Are there any other approaches that could be considered to address the issues raised by AEMO? | Enabling generators to be bi-directional as was the case pre 2017 may be a more proportionate approach than what is proposed by AEMO. <br> It is also noted that there are current proposals to charge small and grid-scale generating systems in distribution networks for export services (ERCO309, ERCO310, ERCO311). It is therefore suggested that generator, storage and load charging should be examined in a holistic manner with post 2025 reform to ensure appropriate outcomes for end-users and networks. |
| Chapter 6 - Storage and hybrid integration drafting and other issues |  |  |
| Question 38: Marginal loss factors - solution (p. 103) |  |  |
| 1 | Do you agree with AEMO's proposed solution of applying the existing arrangements for applying MLFs to its proposed new market participant category (if this category were to be established)? | It is noted that separate loss factors for import and export in terms of distribution loss factors also applies. Pending future changes to marginal loss factors, this approach is appropriate and in line with the intended purpose of loss factors. |


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| Question 39: Reliability Panel representation (p. 104) |  |  |
| 1 | Is it appropriate to require that the <br> Reliability Panel include a member to <br> specifically represent storage and <br> hybrid asset proponents, or are the <br> current mandatory and discretionary <br> membership provisions adequate? | The benefit of an added 'storage' reliability panel member, in addition to the <br> existing generation representative, is not clear. |
| Question 41: Other drafting issues - solution (p. 108) |  |  |
| 1 | Do these solutions proposed by <br> AEMO in 6.3 effectively resolve the <br> issues identified in 6.2? If not, what <br> solution would be preferable? | It is unclear how potential amendments to the pricing arrangements defined <br> in the NER will aligned with Network Service Providers revenue determination <br> regulatory cycles. |


[^0]:    ${ }^{1}$ AEMC rule changes to charge small and grid-scale generating systems in distribution networks for export services (ERC0309, ERCO310, ERCO311)

[^1]:    2 NEM Generator Registration Guideline 2016

[^2]:    ${ }^{3}$ AEMC rule changes to charge small and grid-scale generating systems in distribution networks for export services (ERCO309, ERCO310, ERCO311)

