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Five-Minute Settlement (ERC0201) Directions Paper

Energy Networks Australia welcomes the opportunity to make a submission to the Australian Energy Market Commission's (AEMC) Five Minute Settlement Directions Paper.

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.

The recent Directions Paper outlines the AEMC's initial positions on [Sun Metals'](#) December 2015 rule change request on a move to a five-minute settlement regime from the current thirty-minute settlement established at the commencement of the National Electricity Market (NEM). Energy Networks Australia understands from the Directions Paper (and during the public forum held on 4 May 2017) that the AEMC considers there are some potentially significant benefits in any transition to a five minute settlement framework.

These include, but are not limited to:

- » Improved and more dynamic price signals
- » Technological neutrality
- » Opportunity for more responsive technologies to engage in the wholesale market
- » Incentivising efficiency and innovation.

Energy Networks Australia supports these objectives and reforms to market regulation which allow the most efficient portfolio of energy solutions to emerge to achieve the secure, reliable and sustainable energy system that customers value.

The AEMC's preferred approach is to transition from the current 30-minute settlement to a five-minute settlement architecture of indicatively, three to five years. This time-frame is intended to allow the electricity sector, its participants and regulatory entities to manage an efficient and effective transition required in Contract Market arrangements and practices; metering, and information Technology (IT) related issues and potential costs.

Significant reforms to the current settlements framework potentially impacts network service providers' metering equipment and practices as well as their IT systems to accommodate this proposed milestone change.

The potential practical implications of the Rule change proposal are yet to be considered as they relate to network service providers (NSPs) and incumbent Metering Data Providers (MDPs). The magnitude of changes and the likely costs are yet to be assessed. Energy Networks Australia encourages the AEMC to undertake a more robust assessment of these potential network costs, and how these costs would be efficiently managed and recovered.

Metering Reforms

Energy Networks Australia notes the Directions paper appears to favour an implementation of 5 minute settlement based on:

- Access to 5 minute data from revenue metering rather than profiling derived from Supervisory Control and Data Acquisition (SCADA) systems;
- Requirements for metering to be installed or retrofitted to be linked to existing National Electricity Rules (NER) based testing and compliance requirements, noting the cycle can be up to five years in some cases.

It is noted that these proposed changes would occur in an environment in which arrangements for small customer metering are undergoing significant change. In many cases, distribution network businesses will not necessarily remain the Metering Co-ordinator (noting default arrangements in most jurisdictions and the regulatory framework in Victoria).

For Transmission Network Service Providers (TNSPs), their meters are primarily Type 1 and 2 meters, given the energy throughput that occurs at transmission sites. Clause 7.3.1(a)(10) of the NER requires that these meters be capable of storing 35 days of interval data. The proposed introduction of five-minute settlement would effectively increase the amount of data required to be stored by these meters by six-fold. This data storage management and Rules compliance scenario is equally relevant to electricity distribution businesses for Type 4 meters.

Energy Networks Australia understands that while most Type 1 and 2 meters currently installed in the transmission networks are *able to record* in five-minute segments, they do not have the capacity to store the required volume of data for the required length of time under the Rules.

In order to avoid a high volume of meter replacements, the AEMC could consider transitional provisions. For instance, Type 1-4 reconfigured meters which fall slightly beneath the 35 day data storage requirement, being grandfathered in the proposed Rule¹.

Similarly, remotely read interval meters (for example type 5 Advanced Metering Infrastructure (AMI) meters) may be unable once reconfigured to meet the 200 day data storage requirement but may be able to store 30-35 days. Particularly, given the meters are read daily, the AEMC should provide grandfathering for those installations in the proposed Rule to avoid or reduce costs.

Due to the limitations mentioned above, the AEMC's suggestion that meters may be able to be remotely reconfigured is not a straightforward solution or option. While retrofitting existing meters may be a possibility, this may also have potentially negative consequences on the operation and accuracy of the meters themselves as well as on associated equipment at metering installations. As a result, Energy Networks Australia members consider that, the Directions Paper's current approach, the Rule change would impose a requirement for capability which would be likely to require a significant replacement of existing revenue meters.

Notwithstanding the suggestions provided above to minimise implementation costs, a thorough assessment of the costs and benefits should be undertaken and relevant cost recovery mechanisms be made more explicit. This is likely to impact upon the design and timing of this potential reform. Energy Networks Australia acknowledges that such a quantification exercise is not an easy one. Along with our members, we would be pleased to constructively discuss practical approaches to managing these issues with the AEMC.

A number of our member businesses will have separately lodged submissions that provide more specific commentary and details on metering and IT matters.

Other issues

In addition, Energy Networks Australia has identified several key issues that were not discussed in any material detail in the Directions Paper. We suggest that these additional concerns need further consideration prior to the development of the AEMC's Draft Determination and Draft Rule. These include:

- » **Outlining the linkages and need for logical consistency with other on-going electricity sector Reviews, and AEMC-conducted Rule changes** These include:
 - the Independent Review into the Future Security of the National Electricity Market ("the Finkel Review");

¹ A legal principle that allows an old rule to continue to apply to certain existing situations, while a new rule will be applied to new or future cases. Therefore, in effect, when a new law or Rule is made, it may include a 'grandfather clause', which provides an exemption to certain existing arrangements.

- potential changes in roles and responsibilities in the AEMC's own System Security Market Frameworks Review, for e.g. will this particular rule change impact on the likely Fast Frequency Response market arrangements;
 - the implementation program associated with the previous 'Power of Choice' reforms introduced by the Commission; and
 - the combined Engie/Snowy Hydro rule change on Non-scheduled generation and load in central dispatch.
- » **Victoria's existing AMI Metering arrangements.** Without amendments of the kind outlined above, the proposed reform appears to create the risk of replacement or retrofitting costs for a significant number of AMI meters in the Victorian jurisdiction. Additionally, the Commission should recognise that metering competition for small customer sites will be deferred in Victoria until at least the next regulatory control period and take this into account when considering transitional arrangements as part of this rule change.
 - » **Impact on Transmission Pricing approaches.** Energy Networks Australia recommends that any move to a five-minute regime should consider the impact of this change in demand metrics on transmission prices. In particular, the potentially significant short-term volatility in revenues that would need to be recovered from customers which exhibit peaky loads (see Attachment # 1 for more details).
 - » **Network Billing Systems and Arrangements** With the anticipated six-fold increase in metering data volume, this is likely to result in a significant increase upon, if not the exceeding of, the processing and storage capability of most NSP's existing billing systems. This will result in, at minimum, the need to significantly modify, if not lead to the replacing of current network billing systems.
 - » **Need to assess implications for System Operations.** One Energy Networks Australia member has highlighted the potential that the proposed changes could lead to a marked increase in dispatch volatility, with implications for the Basslink interconnector's flows. This may result voltage control in northern Tasmania becoming a tangible issue. It is anticipated that should there be greater real-time volatility in dispatch, this could amplify the existing issue of voltage control in this part of the NEM.
 - » **Treatment of outages for Performance Obligations.** The AEMC should consider and clarify how outages to replace or upgrade meters as a consequence of the Rule Change should be treated under performance reporting and National Energy Consumer Framework obligations, whether planned or as a result of a meter failure.

Responses to a selected number of Directions Paper questions relevant to network businesses are also provided in Attachment # 1 of the submission.

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

Yours sincerely

A handwritten signature in blue ink, appearing to read 'John Bradley', written in a cursive style.

John Bradley
Chief Executive Officer

Attachment 1

Responses to Selected Directions Paper Questions

Q5 (a) What other issues are likely to be material in considering the introduction of five minute settlement?

The AEMC should consider and address the concurrent reviews and the direction of a number of related reforms closely linked to this particular five-minute settlement rule change.

As outlined in the main body of the submission under *Other Issues*, these include System Security related reviews (the 'Finkel' Review), the AEMC's own System Security Market Frameworks Review, the implementation of the AEMC's Power of Choice Review, as well as the related rule change on Non-scheduled generation and load in central dispatch, currently being considered by the AEMC.

Q6 (b) If demand-side optionality is adopted as a temporary measure, should the settlement residue be incorporated in intra-regional residue settlements? If not, how should it be treated?

It would appear practical if this demand side optionality is only in place for a capped period of three-years to incorporate this into an existing operational mechanism.

To attempt to apply and implement a new 'causer pays' approach to these settlement residues will be difficult, as there will need to be a clear requirement to identify and recover costs from parties. It may be an over-complicated option and be a disproportionate response. This is particularly the case if several rounds of further consultation are required.

Risks should be allocated to parties who are in the best position to manage such risks. As highlighted in the Directions Paper, to date, intra-regional residues have been relatively small in volume and value, but they *may* increase. If the AEMC supports incorporation of demand-side created intra-regional residues, it should require AEMO to monitor the accumulation and volatility of these residues and manage these such that it mitigates against any sizeable shortfalls, that may negatively impact Transmission Network Service Providers (TNSPs) and ultimately consumers.

Q7 (a) Are there any suitable alternatives to collecting five minute data from the transmission network metering installations used to compile the NSLP (Net System Load Profile) other than reconfiguring or replacing the existing meters?

As discussed under the heading of *Metering Reforms* in the body of this submission, our TNSP members consider that retrofitting existing meters is potentially problematic and full replacement of the vast majority of existing meters would be likely to be required to give effect to this Rule change proposal in its current form.

On the issue of NSLPs, Energy Networks Australia seeks clarification from the AEMC as to how it is proposed a distribution business would appropriately manage type 7 (Unmetered

supplies) if there is a requirement to have all contributors to the NSLP, calculated on a 5-minute basis.

Q7 (b) What percentage of meters can be remotely reconfigured? What would this process look like and what would costs be? Conversely, what percentage would be need to be manually reconfigured or replaced?

Energy Networks Australia understands that the vast majority of metering for interconnector and wholesale sites would need to be replaced to meet the anticipated storage requirement. Similarly, Victorian distribution businesses—having recently rolled out Advanced Metering Infrastructure—have a mix of meters that may not be capable of capturing and providing five-minute interval metering data or cannot store the sixfold increase in data within the meter for the required 200 days under the existing arrangements. Such meters may be able to store 30-35 days of data. Given the meters are read daily, the AEMC should provide grandfathering for those installations in the proposed Rule to avoid or reduce costs.

Some TNSPs currently own and operate hundreds of Type 1 and Type 2 meters. As discussed in the Metering Reforms section, TNSPs do not consider that retrofitting existing meters would provide an effective, practical solution to the Rule change proposal.

Further, a number of transmission sites remain grandfathered under the Rules (transitional Rule 9.3.9). Under this clause, any change to the metering installation aside from normal repair and maintenance would trigger a full replacement of the metering installation.

Energy Networks Australia can assist the AEMC in obtaining additional cost estimate information from network businesses in such a way that will not impinge on commercial-in confidence requirements.

Q7 (c) The Commission has proposed aligning the transition with the timeframes for the NER test and inspection regime. Would this provide an appropriate amount of time for changes to occur?

Energy Networks Australia's initial assessment is that while this proposal makes intuitive sense, the AEMC must establish an appropriate commencement date, noting the existing lodgement cycle of member businesses' revenue and pricing proposals made to the Australian Energy Regulator.

Due to the potential scale of meter replacements required under this Rule change proposal, the three year proposed timeframe for Type 1 and 2 meters may not be practically achievable. Some TNSPs may not be able to replace certain meters (for example, for generation, larger or more critical infrastructure points) due to the difficulty in coordinating extended outage windows to facilitate a replacement. As a result, there may be merit in extending the three-year timeframe proposed for Type 1 and 2 meters to align with that of Type 3, 4 and 5 meters (i.e. five-years), at least on a case-by-case basis. This may also provide a reasonable means to address issues associated with Revenue Proposal cycles.

Q7 (d) For which categories and situations should an exemption from providing five minute data be considered? Why?

Energy Networks Australia members are concerned that the operation of two systems (30 minute and five minute) may introduce further complications and issues. Notwithstanding this, to the extent that certain obligations cannot be met in the AEMC's proposed three-year timeframe in relation to transmission meters, the ability to seek an exemption for a specified period of time on a case-by-case basis may be appropriate.

Changes to NER will be required or exemptions should be provided for by the Australian Energy Regulator (AER) to a Metering Coordinator where meters are manually read type 5 meters; are not able to be reconfigured to five-minute data; and maintain a quarterly read schedule. Grandfathering of the Rules or AER exemptions must also include any remotely read interval meters which may not meet the 35 days meter data storage requirements for either type 4 meters or 200 days for type 5 Victorian AMI meters, *if* actual data is to be collected on a more frequent basis.

Q7 (e) Are there any other metering implementation issues relevant to collecting five minute data that should be considered?

Amongst other issues, the increased volumes of data being transmitted from meters may mean more expensive data plans with telecoms providers. From a systems aspect, storage adequacy becomes more susceptible to performance and functionality limitations, especially if NSPs and MDPs are required to manage both five-minute and 30-minute data.

Other metering issues to consider if the rule change was adopted as indicated in the Directions Paper include:

- » Training and process developments
- » An increased impact on field testing to ensure times and readings are recorded accurately for data substitution, and the possibility of a need to install temporary meters, and
- » An increase in load on the telecommunication network will result in slower reading and increased costs.

As raised in the response to question 7(b), changes to grandfathered metering installations would trigger a full replacement of metering assets. This appears to be an unintended consequence of the Rule change proposal. To address this matter, the AEMC should consider extending the transitional arrangement to allow for the required upgrade of the meter itself without triggering the requirement to replace the full metering installation.

Other Matters – Transmission Pricing

- » Currently for transmission pricing, demand is used at multiple stages of the transmission pricing process and impacts locational, non-locational and common service prices. The proposed change to a five minute interval may create significant short-term volatility in revenues that would need to be recovered from customers who exhibit peaky loads. Under a 30-minute interval, some of this volatility would have been averaged out.

- » The proposal to move to five minute settlement intervals may also impact the terms of existing Connection & Access Agreements.

Energy Networks Australia notes that the Directions Paper does not discuss the potential transmission pricing impacts of a move to five-minute demand data and how this transition might be addressed in terms of impacts on customers in particular.

In addition, the Rule change proposal is likely to impact locational prices and the rate of change limited by the side constraint (refer NER Clause 6A.23.4(b)(2)). In terms of cost reflective prices for certain customers, the proposal is likely to increase the gap between the true locational price and the side-constrained locational price.