

28 October 2021



Ms Anna Collyer
Chair
Australian Energy Market Commission
Sydney South NSW 1235

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By online submission

Dear Ms. Collyer

Directions Paper - Metering Framework Review

AEMO welcomes the opportunity to provide a submission to the directions paper published on 16 September 2021 entitled "Review of the regulatory framework for metering services – directions paper". AEMO agrees with the Commission's view that the efficiency and effectiveness of the metering framework can be improved in order that customers and market participants can better access the benefits of smart meters.

AEMO considers that there is an opportunity to approach several topics raised in the directions paper collectively, and that material efficiencies can be gained in doing so. Changes to the current requirements for the maintenance of legacy manually read metering installations could:

- create efficiencies in the reactive deployment of smart meters;
- reduce costs to distributors in relation to maintenance testing;
- remove administrative burdens on Metering Coordinators and AEMO for the operation of metering installation malfunction exemptions for manually read metering installations; and
- create an imperative time limit by which manually read metering must be replaced by smart meters, enabling all interested parties to plan for and access the services that smart meters can provide.

This opportunity is expanded on in Attachment A in the response to specific questions raised in the directions paper.

Should you wish to discuss any of the matters raised in this submission, please contact [Kevin Ly, Group Manager – Regulation on kevin.ly@aemo.com.au](mailto:kevin.ly@aemo.com.au).

Yours sincerely,

A handwritten signature in blue ink, appearing to read "Violette Mouchaileh", is written over a light blue horizontal line.

Violette Mouchaileh
Executive General Manager, Reform Delivery

Attachment A: AEMO response to consultation questions

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Question 3 - Transition to smart metering installations

As the Commission has identified, the vast majority of smart metering deployments in the NEM are reactive rather than proactive. Currently, most meter installations result from a customer request such as a new connection or installation of a solar PV system, or the replacement of malfunctioned metering installations.

Smart metering installation resulting from these reactive sources is inherently inefficient – ad-hoc, often unplanned and geographically dispersed. Whilst it might be possible for a Metering Coordinator to obtain some efficiencies from combining customer service provision and malfunction rectification, the lack of a comprehensive proactive metering replacement program means that potential greater efficiencies in the rollout of smart metering cannot be obtained.

AEMO considers that the metering framework should, to the extent possible, support the timely delivery of customer services and outcomes whilst minimising the inefficiencies inherent in reactive smart meter deployment, as well as creating appropriate incentives and imperatives for the efficient proactive rollout of smart metering.

Of the options explored by the Commission in relation to Question 3, AEMO considers that there are material advantages of establishing an “expires-by-date”, or “age-replacement-trigger” for all remaining manually read type 5 and 6 metering installations for reasons including:

1. Ability for all parties to proactively plan for the replacement of manually read type 5 and 6 metering installations over a defined period; the timeframe being determined by the furthest “expires-by-date” allowed in the NER.
2. Certainty for all interested parties regarding the date by which legacy metering installations would be replaced – allows planning for the adoption of related services which require density of smart meters in a given geographical area¹
3. Ongoing Distribution Network Metering Coordinator savings resulting from a cessation in metering device testing for manually read type 5 and 6 metering installations – the identification of metering devices at end of life being determined by age rather than maintenance testing
4. An end to the raising of “family failure” metering installation malfunctions requiring reactive replacement – this would eliminate administrative costs for Metering Coordinators regarding the associated malfunction exemption process (as considered in Question 10) and the inefficiencies associated with family failure reactive replacement (as these metering installations would instead form part of a proactive replacement plan related to NER “expires-by-date” requirements).

¹ As highlighted by the Commission in Section B.3. and Table B.3 of the Directions paper

AEMO considers that this arrangement is preferable to the alternative options considered in Question 3, specifically:

- targets for a roll out under which the retailer will be required to replace a certain percentage of their customers' meters with smart meters each year; or
- introducing a 'backstop' date or dates by which time all manually read type 5 and 6 metering installations must be replaced (e.g. 90% of meters required to be smart meters by 2030),

These arrangements are likely to be administratively burdensome, particularly in the NEM regions where there are high volumes of customer switching and retailer competition. Neither of these options replace the need for Distribution Network Metering Coordinators to perform ongoing metering installation testing as they are generically applied to NMIs regardless of metering installation device, age, condition, or other characteristic which might have otherwise led to a malfunction over time. These two options also necessitate consideration of withdrawing customers' rights to object to a smart meter installation to be effective (considered within Question 11 of the directions paper) as they are retailer-program driven rather than asset-compliance driven.

Should the Commission adopt an "expires-by" policy for type 5 and 6 manually read metering installations, AEMO does not recommend extending any such provisions to other non-legacy metering installation types. Metering Coordinators should be capable of identifying innovative methods to maintain their smart meter fleet as fit-for-purpose (as provided for in National Electricity Rules (NER) Schedule 7.6) and should not be subject to an end-of-life date, particularly when the useable life of the diverse types of modern smart meters is unknown.

Question 5 – Minimum Services Specification

AEMO agrees with the view taken by the Commission, that no changes to the Minimum Services Specification in the NER are required at this time. AEMO notes the importance of maintaining a joint approach to the specification of metrology and metering requirements across all regions of the NEM and that the NER and associated procedures provide scope to maintain a harmonised approach to these matters. With the adoption of modern technologies and the potential for the development of new services and markets in the future, AEMO considers that the market bodies and jurisdictions should seek to utilise mechanisms such as the Minimum Services Specification in preference to creating regionally specific technical metering or metrology requirements. This would ensure NEM consistency and to enable the application of, and test against, the relevant market objectives.

Question 6 and 7 – A framework for power quality data access and exchange

The directions paper correctly identifies that complex billing and consumption interval data files, defined by AEMO via the NEM 12 standard format, define the structure, data points, sequencing, and frequency of data captured, providing a standard that enables data to be delivered consistently by different data providers.

The Commission highlights that power quality data (e.g. voltage) is not included within the scope of the NEM 12 file format and requirements for its collection, processing and delivery are not standardised within the NER.

Depending on the use cases related to the acquisition of power quality data, the NEM 12 requirements and design might provide a model that could be leveraged to apply rigour and certainty to the future delivery of power quality data. By design, the NEM 12 file is delivered containing historic (e.g. as at the previous midnight or for a previous period), rather than live or real-time information. Two options that could be explored for the delivery of power quality data via this model are:

1. Expand the current NEM 12 format to accommodate power quality data – with requirements residing in the published Meter Data File Format Specification². This option would provide certainty in structure and content but would require all parties currently receiving the NEM 12 format to accommodate new power quality data fields regardless of their interest in it.
2. Expand the current Meter Data File Format Specification to include a new file format, say a NEM 14 file, specifically designed to support the delivery of power quality data. This option has the advantages of option 1 but need only be delivered to parties who have an interest in receipt.

Both models would leverage the existing robust and consistent mechanisms for the delivery and receipt of standard data formats in the NEM.

Question 10 - Timeframes for the resolution of metering installation malfunctions

The metering installation malfunction exemption processes have historically worked well for complex metering installations. In practical terms, prior to the 2017 metering framework changes, they were required exclusively at large customer connection points, where from time-to-time technical issues frustrate the timely rectification of malfunctions. In such cases, AEMO works with the applicant to confirm specific timeframes for malfunction resolution and measures to be applied to mitigate associated risks to the market and participants.

The exemption processes are less well suited to small customer connection points as evidenced by the outstanding number and age of open exemptions amongst this connection type (~350,000 NMIs) and feedback provided to the AEMC's review to date.

AEMO considers that the position proposed by the Commission in the directions paper (to impose time limits for rectification for metering installations at small customer connection points) is an improvement to the current arrangements. However, AEMO believes that the metering framework could operate more efficiently if the need for family failure malfunctions is removed, as considered in our response to Question 3 above.

Limiting the timeframe within which a family failure malfunction can be resolved will remove the administrative burden on Metering Coordinators related to management of exemptions, however it will also mean that Metering Coordinators have less flexibility to combine and plan

² https://www.aemo.com.au/-/media/files/electricity/nem/retail_and_metering/metering-procedures/2021/mdff-specification-nem12-nem13-v24.pdf?la=en

this work with other customer generated reactive installations. This is likely to make the management of reactive smart metering installations less efficient in general.

Questions 12 and 13 – Improvements to the operation of roles and responsibilities

A number of practical issues and inefficiencies in the deployment of smart metering, and operation of metering services in general, could be resolved if authorisation processes were in place to allow appropriately skilled electrical worker to perform minor network work associated with metering installations. As the Commission highlights in the directions paper, the New South Wales “Accredited Service Provider” (ASP) scheme operates a version of an authorisation process.

AEMO considers that models used in the New Zealand market present an interesting case study. In New Zealand it is commonplace for appropriately skilled electrical contracting businesses to obtain formal authorisation from distribution network service providers to perform limited network connection work related to metering installations and connections. These businesses are also able to seek approval to work under the auspice of one or more competitive Metering Provider’s accreditation for metering installation work. Importantly, both the network and metering authorisations are subject to ongoing adherence to compliance with the requirements of the approving party (rather than an independent assessor) regarding quality of work, asset handling and management, timeliness and administration. As a result of this authorisation framework, work that requires metering and network services can typically be performed by a single service provider, including authorisation to perform work proactively (e.g. replacing metering and network equipment post an extreme weather event, replacing aged or impaired network equipment when attending to install new metering devices, performing both the connection work and metering installation for a new connection). Whilst AEMO is aware that matters such as this might be beyond the scope of the NER, the metering framework review provides an opportunity for such a model to be raised to parties who would be able to consider it further.

Section C.4.2 - Testing and inspections and NER Schedule 7.6

Section C.4.2 of the directions paper discusses AEMO and Intellihub proposals via submissions regarding amendments to the testing and inspection of metering installations in NER S7.6.

AEMO observes that there is a material difference between the proposals presented for the AEMC’s consideration in the submissions referenced. AEMO’s submission proposed several changes to NER Schedule 7 to improve clarity or to correct, but not to materially change market practice. On the other hand, the proposal from Intellihub would have material impacts on the requirements for testing and inspection of smart metering installations and AEMO’s ongoing confidence in the veracity of the metering data used for energy settlement.

Current provisions in NER Schedule 7.6 for the creation of an alternative asset management strategy, provide Metering Coordinators with substantial flexibility to develop and deploy innovative methods for the testing (confirmation of the ongoing accuracy of the device(s) that comprise the metering installation) and inspection (ongoing assessment of the condition and connection security) of metering installations. Innovative Metering Coordinators can use their

technology, systems, and business capability to improve the effectiveness and efficiency of their approach to metering installation maintenance.

AEMO considers that in a competitive market, it would be imprudent to provide the market participant who bears the responsibility and costs of inspections (i.e. the Metering Coordinator in the NEM) with a free hand to determine how an ambiguous term such as “remote monitoring” (as proposed by Intellihub) might replace the need for metering installation inspections. It is reasonable to consider that such a move would instigate a “race-to-the-bottom” to save costs at the expense of metering data accuracy. Conversely, hard-coding requirements for testing and inspection methodology would fix costs across competitive parties who would then not be able to benefit from innovations.

In a competitive metering market AEMO considers that Metering Coordinators are sufficiently incentivised to develop innovative strategies and to improve them over time. Interactions between AEMO and various competitive Metering Coordinators regarding asset strategy assessment and approval are confidential, however AEMO can confirm that Metering Coordinators have taken a variety of approaches to testing and inspecting and that the innovative use of smart metering systems is often a feature. Importantly, AEMO assesses that any assertion made in an application is supported with evidence, that innovative approaches meet or improve on the outcomes obtained by traditional methodology and that they are underpinned with auditable processes, quality assurance measures and continuous feedback loops as appropriate. AEMO believes that having a sufficiently competent and independent market body assessment and approval process is critical in ensuring that Metering Coordinators can take advantage of innovative approaches whilst maintaining confidence in the ongoing accuracy of metering installations and metering data used for energy settlement, retailer, and network billing.

Once approved, Metering Coordinator strategies are then auditable, both via the independent audits required on Metering Coordinators and via accreditation audits on Metering Providers and Metering Data Providers tasked with undertaking the work to implement the approved testing and inspecting strategies.

Confidence in NEM metering data stems from a combination of inter-reliant standards, rule obligations and assurance processes. These include:

- National Measurement Act – device pattern approval and verification as required by the National Measurement Institute
- Australian Standards – device requirements and wiring regulations
- National Association of Testing Authorities (NATA) traceability to the National Measurement Act and to Australian Standards
- NER obligations, registrations, accreditations, and related assurance processes:
 - Devices and installation practice fit for purpose – metering installations are appropriate for use and compliant upon installation.
 - Maintenance testing – assuring that the accuracy of the device remains fit-for-purpose on an ongoing basis.

- Maintenance inspection – assuring that the condition of the installation remains fit-for-purpose on an ongoing basis.

A diminution of, or act of omission to apply, any one of these requirements would at the least materially devalue the application of the others.

As has been demonstrated in recent years, the application of maintenance testing and inspection by responsible market participants is often the weakest link in the above chain. An example is the failure of multiple responsible market participants to test instrument transformers and the need for AEMO and AER interventions to resolve these matters³. AEMO is happy to discuss more recent examples with the AEMC in confidence. These issues have typically arisen when the market has relied on the responsible participant to abide by obligations for testing and inspection without independent market body oversight and involvement.

One of Intellihub's proposals is for inspections to only be required when meters are tested, including when testing is conducted via a sampling methodology. This proposal incorrectly conflates the objective of testing with inspection. Sample testing calibrated devices manufactured to an approved standard is commonplace. Standards exist for the sampling of meters, and it is often applied within AEMO approved alternative testing strategies in the NEM. This is made possible as immutable characteristics of metering devices, such as make, model, type and year of manufacture are known.

Inspections assure that non-device variables are not impacting the accuracy and integrity of the metering installation. For example, inspections assess illegal tampering, effects of UV exposure and other elements, pest infestation and inadequate installation practices. There is no fixed pattern or design that applies to these non-device variables, and they are not suitable for a statistical sampling approach. If inspections were only required when a metering installation was tested regardless of testing methodology, as proposed by Intellihub, Metering Coordinators could apply to perform testing via a sampling approach (commonly an exceedingly small proportion of metering installations being required to be physically tested) and avoid the need to perform inspections. Such a change would undoubtedly reduce costs to competitive Metering Coordinators, however it would have the effect of removing one of the key assurance processes that supports the ongoing veracity of NEM metering data.

Despite legacy electromagnetic metering devices being a globally well-established and demonstrably reliable metering technology, the accuracy of the devices and the condition of the metering installations can become no longer fit for purpose and require replacement⁴. The medium to long term reliability of mass-deployed modern smart metering devices and installation practices are yet to be determined in NEM conditions. Current provisions in NER Schedule 7.6 enable Metering Coordinators to demonstrate to AEMO how these devices are performing over time, how their processes and systems assure data accuracy and completeness and amend their methods for testing and inspecting over time with AEMO approval.

³For example: AER compliance Bulletin No. 6 regarding instrument transformer testing
<https://www.aer.gov.au/system/files/Compliance%20Bulletin%20No%206%20-%20Testing%20requirement%20for%20instrument%20transformers.pdf>

⁴ As highlighted by the AEMC in section C.2 of the Directions paper

AEMO considers that it would be imprudent to move away from the current requirements (with minor amendment and clarification as previously provided by AEMO) which afford flexibility to Metering Coordinators in their approach to testing and inspection and provide assurance that NEM metering data is accurate. Should changes be adopted as proposed by the Intellihub submission, AEMO's confidence in the accuracy of metering data provided for energy settlement would be materially diminished.

AEMO has contemplated expanding the Alternative Testing and Inspection Guidelines for Metering Installations in the NEM⁵ to accommodate guidance on the application for testing and inspection strategies for direct connected (i.e. not connected via instrument transformers) small customer metering installations. AEMO is keen to understand whether the metering framework review identifies potential value in the provision of additional guidance in this area.

⁵ https://aemo.com.au/-/media/files/electricity/nem/retail_and_metering/accreditation/aemo_-_alternate_testing_and_inspection_guidelines_for_metering_installations_in_the_nem_v20_final.pdf?la=en