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15 February 2023

Ms Anna Collyer
Chair
Australian Energy Market Commission

By online submission

Dear Ms Collyer,

Submission: Unlocking CER benefits through Flexible Trading

AEMO welcomes the opportunity to provide a submission to the Australian Energy Market Commission's (AEMC's) consultation paper on the *Flexible Trading Arrangements and Minor Energy Flow Metering in the National Electricity Market (NEM)* rule change proposal (FTA proposal)[1].

The FTA proposal provides a more accessible way for customers and their providers to independently manage flexible energy resources in wholesale settlement, paving the way for greater competition, enhanced customer choice, and more effective integration of consumer energy resources (CER) and resource aggregations in the NEM. These benefits are becoming increasingly important as uptake of CER expands and evolves from overwhelmingly passive resources (such as solar PV) towards more active devices including home batteries and electric vehicles, which have significant potential to deliver value to customers and the electricity system.

This submission (Attachment 1) provides AEMO's views on the following topics from the consultation paper:

- The importance of flexible trading arrangements for the Scheduled Lite rule change proposal and integration of virtual power plants (VPPs) into the NEM.
- Additional use cases for minor energy flow metering which have arisen through the AEMC's review of the regulatory framework for metering services.
- The feasibility, requirements and identified issues associated with the alternative concepts put forward by the AEMC to deliver flexible trading for customers.

These initiatives form part of a broader suite of reforms required for efficient and effective technical and market integration of CER which are in development. AEMO considers that flexible trading, in concert with the related Schedule Lite proposal and metering framework review, should be progressed with alacrity as they will deliver market frameworks to facilitate enhanced retail competition for CER and should enhance rather than conflict with ongoing technical reviews.

Importantly, AEMO advises against the Commission pursuing the alternative options raised in its consultation paper for delivering flexible trading due to the extent of change that would be required to the National Electricity Rules (NER), and participant systems and processes to implement these options. The parallel / multi-element metering arrangements were originally AEMO design concepts presented for the AEMC's consideration in 2014, however AEMO considers that they are no longer suitable models to deliver flexible

[1] Available at https://www.aemc.gov.au/sites/default/files/2022-05/ERC0346%20Rule%20change%20request%20pending.pdf

trading for small customers. Their adoption would require material alterations to the existing relationships and linkages between the connection point to the distribution network, the financially responsible Market Participant (FRMP), National Metering Identifier (NMI) and metering installation. This would lead to wide-ranging implementation issues, including:

- Changes to the role of the Metering Data Provider (MDP), with MDPs becoming responsible for creating, assigning and maintaining NMIs within their systems, as well as separating and assigning energy flows to the appropriate NMI and FRMP. This represents a material departure from the existing MDP role.
- Redesign of the roles, responsibilities and obligations of Metering Coordinators, FRMPs/retailers, and distribution network services providers (DNSPs), and the appointment arrangements for Metering Coordinators, Metering Providers and MDPs.
- Competition and coordination issues associated with having a 'shared' Metering Coordinator at the connection point to the distribution network.
- Redesign of participant and AEMO systems and processes, which are predicated on the existing connection point / FRMP / NMI / metering installation relationship.
- Additional risks associated with loss, theft and transfer of energy.
- Small Victorian customers would be excluded from utilising these options without amendments to the Victorian Advanced Metering Infrastructure specifications to align with changes to the NER.

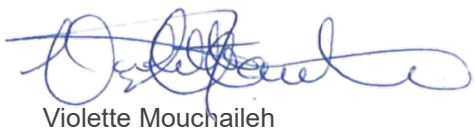
These and many other issues were considered during the process of developing the Energy Security Board's (ESB's) Post 2025 Final Advice, informing its decision to pursue Flexible Trader Models 1 and 2 to deliver flexible trading arrangements over alternative options in recommendations which were formally endorsed by Energy Ministers.

Further to minimising the implementation challenges, it is also AEMO's view that the proposed Flexible Trader Model 2 best delivers the potential for flexibility, innovation and efficiency for small customers.

These benefits and issues are explored in detail in Attachment 1 and AEMO is happy to assist the Commission to further understand the complexities of the alternative options raised in its consultation paper. Equally, AEMO welcomes other options for flexible trading that might be raised by stakeholders, and is keen to assist in the assessment of potential benefits and impacts for options the Commission determines to explore in greater detail.

AEMO looks forward to working with the AEMC as it progresses this rule change proposal. Should you wish to discuss any of the matters raised in this submission, please contact Kevin Ly, Group Manager – Reform Development & Insights on kevin.ly@aemo.com.au.

Yours sincerely,



Violette Mouchaileh

Executive General Manager, Reform Delivery

Appendix 1

Interactions with Scheduled Lite and VPP integration

What is Scheduled Lite?

Scheduled Lite is a proposed voluntary mechanism that aims to lower barriers and offer incentives for price-responsive, distributed resources to provide visibility and participate in the market scheduling process of the NEM. Participation in Scheduled Lite would present new opportunities for distributed resources to make valuable contributions to the secure and reliable operation of the power system, whilst providing new ways to enable and reward customers for their flexibility. Although a key focus of the mechanism is to improve visibility and better integrate CER into the market, it is also expected to accommodate a range of resources that currently do not participate in scheduling processes, such as large users and small generating or bidirectional units currently exempt from registration in the NEM. Two Scheduled Lite models are being developed for participants to opt into:

- Visibility: to enable the provision of information relating to forecast behaviour and actual consumption and generation, and
- Dispatch: to integrate price-responsive load and generation into the NEM dispatch and scheduling processes.

Alongside AEMO's FTA proposal, the Scheduled Lite proposal forms one of the key recommendations of the Energy Security Board in its Final Advice to Energy Ministers on the Post 2025 Market Design. The Scheduled Lite rule change proposal and high-level design were submitted to the AEMC by AEMO in January 2023[2].

The proposed Scheduled Lite participation framework has been designed to provide optionality around the connection and metering arrangements established at connection points within traders' aggregated portfolios, including whether or not flexible resources are separated from passive resources for participation in Scheduled Lite. Fundamentally, the trader is responsible for providing data, forecasting, bidding, dispatch and compliance (as applicable to the visibility or dispatchability model) associated with the resources sitting behind the NMI at which it is participating (at an aggregate level). This means that at a given individual customer connection point, traders could participate via:

- A standard connection point arrangement, taking responsibility for all energy flows at the site (both flexible and passive resources).
- A second connection point to the distribution network (Flexible Trader Model 1), participating only with the resources behind that connection point and managing these independent of the customer's passive load.
- A secondary connection point established within the customer's electrical installation (Flexible Trader Model 2 – pending outcome of this rule change process), participating only with the resources behind that connection point and managing these independent of the customer's passive load.

The key expected benefit of flexible trading for Scheduled Lite is that separation or 'unbundling' of a customer's flexible resources (via Flexible Trader Model 1 or 2) could support more accurate forecasting and bidding of resources (provided at aggregate level) which are price responsive and under the control of the trader. AEMO would continue to forecast the behaviour of connection points with passive resources as

[2] See https://www.aemc.gov.au/rule-changes/scheduled-lite-mechanism

required for power system operation and dispatch[3]. Traders may be better able to comply with the requirements regarding the accuracy of their forecasts and bids because they do not need to account for the customer's passive resources, lowering the risk of participation. Participation via standard connection point, on the other hand, may require use of an energy management system to firm passive load and generation behind the connection point and may limit participation in Scheduled Lite to larger or more advanced installations. For example, unexpected changes in passive consumption may compromise the degree of flexibility traders have in managing their portfolio of resources and provide for less efficient utilisation of available aggregated capacity.

This also provides an important use case for a single retailer utilising flexible trading arrangements. A single retailer could establish Flexible Trader Model 2 to separate a customer's resources for participation in Scheduled Lite, including providing different pricing contracts for a customer's flexible and passive resources. This could support customers' ability to maximise the value obtained from their CER and provide the FRMP with additional flexibility in aggregating resources for market participation.

The Scheduled Lite rule change proposal and high-level design provides additional detail on the proposed design elements, including the participation framework and analysis on the expected interaction with mechanisms such as flexible export limits (also referred to as dynamic operating envelopes).

Virtual Power Plant (VPP) integration

Today, the price-responsive behaviour of VPPs is not visible to the market as they do not participate in AEMO's scheduling and dispatch process. As the volume of price-responsive resources rises, this degrades the accuracy of demand forecasts and creates challenges for system operation. These challenges are expected to grow substantially into the future, with AEMO requiring new tools to manage them effectively without resorting to inefficient use of mitigation measures.

Scheduled Lite and flexible trading arrangements would work together to facilitate the participation and integration of VPPs into the electricity system, improving the ease with which they can participate in existing and emerging markets and obtain value for services. Scheduled Lite provides a framework for integrating VPPs into the market to ensure they are visible, dispatchable and contribute to the firming capacity requirements of the power system, whilst Flexible Trader Model 2 provides a more accessible way for traders to separate and participate with customers' flexible resources independent of their passive load.

Effective integration of VPPs would provide an enhanced toolkit for efficient system operation as distributed resource uptake grows. For customers, it would translate into additional opportunities to maximise the value of their CER whilst lowering overall costs. Without Scheduled Lite and flexible trading arrangements working together, effective VPP integration is expected to be more challenging and customers will have fewer opportunities to gain value from provision of services in the market.

Alternative options for flexible trading and Scheduled Lite in Victoria

Implementation of the alternative options for flexible trading presented in the consultation paper, (other than Flexible Trader Models 1 and 2 (as proposed)), would preclude small Victorian customers from participating in

[3] Noting that, if a customer did decide to connect passive resources behind the secondary connection point (and the AEMC does not disallow this in its flexible trader arrangements determination), a forecast of those passive resource would need to be provided as is the case at the standard connection point arrangement.

Scheduled Lite through separation of flexible resources (i.e. traders would only have the option of participating at the standard connection point), unless the Victorian Government and Essential Services Commission Victoria (ESCV) adopted substantially similar changes to the Victorian Advanced Metering Infrastructure (VIC AMI) specifications. This is beyond the remit of the NER. Conversely, the implementation of Flexible Trader Model 2 and minor energy flow metering would apply in Victoria as neither proposal conflicts or interferes with the VIC AMI requirements, as outlined in the FTA proposal.

The final section of this appendix provides a more detailed treatment of the alternative concepts put forward by the Commission in the consultation paper to deliver flexible trading.

Metering review and minor energy flow metering

In submission to the AEMC's *Review of the regulatory framework for metering services*, AEMO has highlighted a potential further use for the minor energy flow metering design presented within AEMO's FTA proposal. AEMO submitted that there might be specific, limited circumstances where the proposed minor energy flow metering requirements could benefit a proposed acceleration in deployment of smart metering by being used to meter standard market connections to the distribution network.

As noted in the submission, the physical space available at a proportion of standard customer connections will complicate or prevent the installation of smart metering. Restrictions of this type are likely to be more prevalent within multi-occupancy dwellings where legacy meters, often with far smaller physical dimensions than modern smart meters, are often 'sandwiched' together in uniform rows. To avoid costly electrical work to make these types of connections suitable for the installation of standard smart meters, the minor energy flow metering arrangement might provide a more practical and cost-effective solution.

More broadly, the implementation of minor energy flow metering at connection points that are currently unmetered will have the effect of reducing and stabilising unaccounted for energy (UFE) across distribution networks. AEMO considers it likely that there will be other, yet to be identified, situations that might also benefit from a metering framework that includes the proposed amendments and further commends the progression of the proposals to the Commission. AEMO is keen to continue to support the development of minor energy flow metering, ideally within this consultation process, alternatively in the review of the metering framework, or both as the Commission sees fit.

Feasibility of alternative concepts for delivering flexible trading relationships for small customers

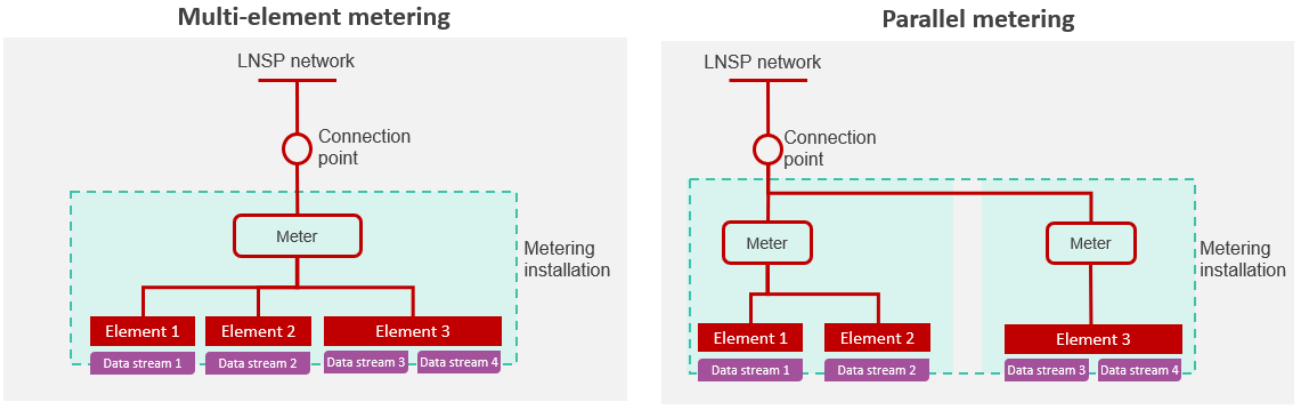
In addition to Flexible Trader Models 1 and 2, the consultation paper presents two alternative options which might enable flexible trading, labelled as "Parallel metering" and "Multi-element metering". The former contemplates multiple parallel metering installations downstream of the physical connection point, with different NMIs and FRMPs corresponding to different load or generation types at a premises. The latter allows for different load or generation types to be recorded as different data streams at a single metering device, assigning different FRMPs and NMIs to those data streams. In theory, this could include data streams directly linked to multiple independent measurement points within more complex metering installations as well as creation of separate data streams for a bi-directional flow from a single measurement point, with the resulting data streams separated and assigned to separate NMIs and FRMPs.

All of the options presented in the consultation paper, including those identified as parallel and multi-element metering, were explored as part of the *Multiple Trading Relationships* proposal, provided by AEMO in 2014 (noting that the Commission decided not to make a rule in its 2016 determination regarding that proposal). While the consultation paper presents parallel and multi-element metering options as two separate alternatives, AEMO considers they are likely to be nearly identical in practice, delivering identical outcomes with the same implementation challenges, although physically enabled in slightly different ways. To explain this further:

- A metering installation includes the assembly of components that are controlled for the purposes of metrology for a connection point – this might include a single metering device, multiple metering devices, or metering devices with more than one measuring element, or any combination at any metering installation.
- The configuration of a metering installation is typically determined by a combination of the services that need to be provided at the connection point, the nature of the electrical supply (e.g. single or more phases, low voltage whole current connected, low voltage instrument transformer connected, or high voltage), physical space limitations and the metering, communications and associated device types available to the Metering Provider.
- If enabled, the selection of a parallel metering or multi-element metering configuration would, for the most part, be determined by the aforementioned criteria; the outcome being that regardless of physical configuration, separate data streams would be aligned with associated "settlement points" (identified in market systems by unique NMIs) by the appointed MDP for separate treatment in customer billing, energy settlement, and possibly network charge calculation and invoicing.

The parity between the parallel and multi-element metering options is presented in Figure 1 below. Both demonstrate metering installations configured to enable separation of four data streams across the three measurement elements at the connection point. The decision to install one or more meters is incidental to the energy measurement, data collection, processing, assignment of roles in market systems and so on.

Figure 1 Examples of parallel and multi-element metering configurations



Importantly, as noted by the Commission in its 2016 determination, the parallel / multi-element metering arrangements are subject to a range of complex implementation issues.

In working with the ESB in the development of advice to Energy Ministers regarding the potential adoption of flexible trading relationships in 2021, AEMO considered the viability of the models put forward in the 2014 *Multiple Trading Relationships* proposal and high level design. This included consideration of the parallel and

multi-element metering options as well as the subtractive metering design, in the context of the market dynamics and technologies that exist or are emerging in the current landscape. AEMO has identified three important changes to market rules and systems that have occurred since 2014 which had a particular bearing on AEMO's decision to progress the development of, and advocate for, Flexible Trader Models 1 and 2 (Model 2 being a variation on the 2014 subtractive metering design) over other options:

- The first is the commencement of metering competition for small customer metering installations in December 2017. This creates additional complexity for the parallel / multi-element metering approach, particularly in relation to competitive appointment of metering roles; for example, the NER now requires retailers to appoint the Metering Coordinator at small customer connection points via a commercial agreement for the provision of metering installations and metering services. This change is complimentary to Models 1 and 2.
- The second is the creation of the Embedded Network Manager role. This established a framework for the creation and management of NMIs beyond the connection to the distribution network; a change leveraged in the Model 2 design.
- The third is the Victorian Government's decision to extend its mandate for the Victorian Advanced Metering Infrastructure (VIC AMI) specifications and deferral of metering competition by Order-in-Council. This limits the ability for the NER to affect change to metering arrangements at the connection point to the distribution network in Victoria (including the application of the parallel / multi-element metering option), but not beyond that point, such as an embedded network child connection point (which also utilises the subtractive metering approach key to Model 2).

Foundational to the parallel / multi-element metering concept is a fundamental alteration of the established relationship between the connection point to the distribution network, FRMP, NMI and metering installation, with the creation of multiple "settlement point" NMIs at a single physical connection point to the network. This inter-relationship is a central assumption around which many participant systems and processes are built (including AEMO's MSATS system). Changing this relationship dynamic is likely to require extensive regulatory change and face wide-ranging implementation challenges. In contrast, Flexible Trader Models 1 and 2 are based on the established frameworks, retaining these linkages. For these reasons, Flexible Trader Models 1 and 2 do not require the creation of the Commission's proposed "settlement point" terminology; instead utilising "connection point" terminology consistent with standard connections to the distribution and transmission networks, connections within stand-alone power systems, Small Generation Aggregator connection points, and parent and child connection points within embedded networks.

Model 2 leverages the subtractive metering approach, established in market systems from NEM market commencement and utilised today to support settlement in embedded networks. It also builds on existing systems and processes to minimise the complexity and cost of implementation (e.g. by replicating the concept of the Embedded Network Manager role for the creation and maintenance of NMIs and metering installations beyond the connection to the distribution network, MSATS role appointment, customer switching processes, etc.).

AEMO also considered developments and adaptations to metering devices and metering systems since the 2014 *Multiple Trading Relationships* proposal was drafted. It identified the opportunity to expand the framework within NER Chapter 7 to accommodate what AEMO has identified as "minor energy flow metering" in the rule change request. Combining this approach with the Model 2 design allows for innovation and flexibility in the delivery of trading arrangements, whilst ensuring settlement and billing accuracy, and

remaining consistent with the requirements of the National Measurement Act. It provides options for metering location, device type and specification, broadened beyond the restrictive confines of a customer's traditional metering enclosure with the number of flexible trading arrangements that could in theory be established limited only by the availability of market offers and a customer decision to adopt them.

Conversely, the parallel / multi-element metering option retains these constraints. For example, as all metering devices must be installed as close as possible to the connection point to the network (requiring electrical wiring separation through and up to the point of energy measurement), metering position, physical space and electrical wiring costs act as barriers to adoption that will vary from customer to customer. Where space and wiring costs do allow, it is probable that any addition to flexible trading at a customer's connection point over time would require whole-of-site metering changes to accommodate the extended trading measurement, regardless of whether the devices otherwise required replacement. The Model 2 design allows flexible trading to be installed, or removed, without any changes being made to the metering installation at the connection point to the network. If site-by-site analysis is required to confirm the ability to offer a product or service, it is unlikely that the product or service will be made widely available to customers. The lack of market offers for customers in embedded networks, influenced by the often-site-specific uncertainties in being able to arrange for a compliant NEM metering installation, is a good example of a framework in the NER that provides access to retail competition in theory, but is not commonly applied in practice.

To assist the Commission in considering its alternative options for delivering flexible trading, the following sections provide further detail on AEMO's high-level assessment of the feasibility of the parallel / multi-element options, and how they might align with the Commission's proposed rule change criteria as provided in the consultation paper. AEMO notes that this assessment is not as detailed as has been previously provided in the FTA proposal (for Model 2) or in the final rule and determination on *Integrating Energy Storage Systems in the NEM* (for Model 1).

Analysis of the alternative flexible trading options

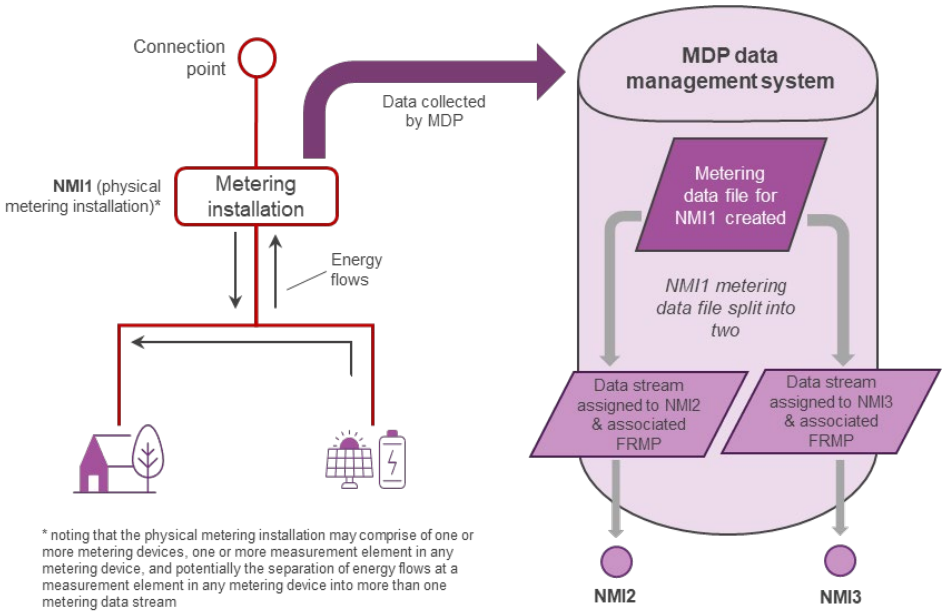
Roles, responsibilities and obligations

AEMO considers that implementation of the parallel / multi-element metering option in the consultation paper would require extensive redesign of existing roles, responsibilities and obligations for participants. This includes:

MDP role and responsibilities

Implementing the suggested alternative models would require changes to the existing roles, responsibilities and obligations of MDPs, particularly to implement models where different data streams within a single physical metering installation (comprising of one or more metering devices) are assigned to different FRMPs. Rather than being associated to a physical point as such, NMIs would need to be created, assigned and maintained within MDP systems, with MDPs responsible for separating and assigning energy flows in their metering data management systems to the appropriate NMI and related FRMP. This is represented in Figure 2 below, which provides a simplified example of how data streams might be assigned to NMIs in MDP systems.

Figure 2 **Possible method for assigning NMIs within the parallel / multi-element metering option**



This represents a material departure from the scope of the current MDP role.

Amongst other things, such a change might lead to issues around traceability and dispute resolution. For example, under NER 7.9.3(d), if there is an inconsistency between the data held in a metering installation and the data held in the metering database, the data in the metering installation is to be taken as prima facie evidence of the connection point's energy data. Under any model where data streams within a single metering installation (which might comprise of more than one meter and more than one measurement element and data stream within any metering device) are being separated and assigned to different FRMPs, NER 7.9.3(d) could not be applied in its current form. Whilst under current arrangements, energy flows at a NMI are traceable back to the metering installation, which is providing the measurement in all cases, this traceability might not be facilitated in the event of a dispute under the parallel / multi-element approach. Instead, traceability is likely to terminate at the point of separation and assignment to NMI within the MDP's "*metering data services database"* (i.e. their metering data management system). This is likely to make dispute resolution more complex as defining the "single source of truth" is less clear and would at least involve an analysis of how the MDP is collecting, processing, validating, assigning (to NMIs) and providing metering data. Such an arrangement might not be considered acceptable to customers who would not be able to reference the "source of truth" themselves, at least in a similar way to their ability to access the metering installation under current arrangements.

The changes to the MDP role which would be required to deliver the parallel / multi-element metering approach are also likely to require the development of a new accreditation process which would be materially different from current requirements. Based on AEMO's understanding of these matters, such a change would also require new systems, process and capabilities within MDP operations, with commensurate extensions to ongoing auditing arrangements to maintain accreditation and to assure veracity of metering data in the market.

Redesign of appointment rules for Metering Coordinators, Metering Providers and MDPs

For small customer metering installations in the NEM, the NER requires retailers to appoint the Metering Coordinator at a connection point via a commercial agreement for the provision of metering services. For standard connections, retailers can appoint a Metering Coordinator to install smart metering, appoint an alternative Metering Coordinator at any point in the future (so long as they remain financially responsible for the NMI), and for a newly acquired connection point via a customer transfer, decide whether to take services from the incumbent, or appoint a new Metering Coordinator.

AEMO expects the parallel / multi-element metering option would require a single Metering Coordinator (and Metering Provider and MDP) to be responsible for the metering arrangements at the connection point to the distribution network. This would be the simplest approach as requiring more than one Metering Provider to be responsible for installing and maintaining a single metering installation (which might include more than one metering device and related equipment, as is the case today), or requiring more than one MDP to be responsible for collection, processing, validation and delivery of metering data appears impractical to AEMO.

However, where there are multiple FRMPs, arrangements would need to be established to confirm consequential concerns, including:

- Which FRMP appoints the Metering Coordinator?
- If a single FRMP is given responsibility to appoint the Metering Coordinator, will they also need to ensure the Metering Coordinator, Metering Provider and MDP appointed can service other FRMPs, even to the extent that metering devices need to be changed beyond the scope of services that they are providing to the customer?
- Which FRMP pays for Metering Coordinator services, and how would the contractual relationships work?
- Which FRMP is responsible for paying the Metering Coordinator for general maintenance, including routine testing and inspecting, responding to communications faults, meter faults and damage to metering equipment?
- How can multiple FRMPs coordinate a planned outage? Which role supports this process, for example who does the customer interact with to arrange an outage for safety reasons?
  - AEMO notes that methods for coordinating outages between the relevant FRMPs and DNSP for metering installations with shared fuses to the distribution network is a matter being considered within the AEMC's review of the metering framework in the NEM.
  - Recognising the complexity of these types of arrangements for legacy connections in the NEM, AEMO does not consider it prudent to extend the range of circumstances for which complex coordination and multi-party involvement would be required to arrange for an outage.
- If more than one metering device, or a multi-element meter, is installed to provide both the flexible-CER FRMP and the rest-of-household FRMP with appropriate services, and the customer chooses to cease the arrangement with the CER FRMP (or a new customer moves in who does not want separate retail arrangements, instead placing all resources with a single FRMP who does not need such complex and costly metering arrangements), which party carries the risk and the costs of the installed metering (e.g. the Metering Coordinator, the remaining retailer, the customer, or a combination of these parties)?

Management of FRMP/retailer responsibilities

In addition to the Metering Coordinator issues described above, the parallel / multi-element metering option requires the coordination of multiple FRMPs at a single physical connection point, creating issues with the management of a range of other retailer responsibilities. These will at least include:

- Which FRMP has responsibility for the provisions of NER 7.2.1, which relates to the obligations of FRMPs to establish metering installations. These include, in respect of a connection point, the appointment of the Metering Coordinator, establishment of a metering installation, and acquisition of a NMI.
- Which FRMP has responsibility in relation to the provisions of NER 7.8.10 (metering installation malfunctions), and NER 7.8.10A-C (metering installation timeframes)?
- There are a number of issues in NER 7.15 to consider, such as which retailer pays for broken seals (7.15.2(e)), provision of passwords (7.15.3), and so on.

Each of these issues is avoided or otherwise resolved through current market frameworks in the Flexible Trader Model 2 proposal.

De-energisation and re-energisation responsibilities

The parallel / multi-element metering approach creates complexities for customers and FRMPs in relation to de-energisation and re-energisation, such as:

- If the customer wants to de-energise their connection for safety reasons (e.g. cutting trees or performing maintenance near electrical equipment), which FRMP do they coordinate with and what needs to be communicated between market participants to ensure a positive and safe customer outcome?
- Does one FRMP receive an overall right to de-energise all other NMIs (either for non-payment or move-out)? If so, which one and how is this responsibility managed, particularly considering that remote de-energisation is not uniformly enabled across regions in the NEM, and even where established has limitations that require de-energisation at the physical connection to the network? Addressing these issues may require the development of new rules for communication amongst all the retailers at a single physical connection point.
- When a customer moves out, what happens to the retailer relationships at each NMI? Does each NMI remain in existence with a move-in customer having to initially adopt the previous customer's choice (until they make an alternate decision), or does it revert to a single FRMP? If it reverts to a single FRMP, which one (this is likely to be particularly complex if the customer's electrical installation is separated into multiple load NMIs)?
- How will notification and management of life support requirements be managed amongst the various participants who operate at the connection point to the distribution network?

Flexible Trader Model 2 avoids these issues because the "primary" FRMP has responsibility for de-energisation and re-energisation of the premises at the connection point to the distribution network, and measures to avoid confusion with life support arrangements have also been considered it its design.

Competition concerns – provision of metering services and access to retail competition

Having a single 'shared' Metering Coordinator at the connection point to the distribution network means that a FRMP seeking to offer services for flexible CER through the parallel / multi-element metering option would need to either:

- Accept commercial terms for metering service provision from the incumbent Metering Coordinator, or any other Metering Coordinator that the rest-of-premises FRMP chose to appoint in the future, with no ability to obtain services from a party and terms of their choosing (noting that the flexible CER FRMP cannot provide or maintain services to the customer unless terms are accepted up front and on an ongoing basis, with limited, if any, bargaining power); or
- Have the power to displace the incumbent Metering Coordinator, directly impacting the rest-of-premises FRMP's commercial agreement with that Metering Coordinator and requiring them to accept terms of service determined by the Metering Coordinator appointed by the FRMP for the flexible CER, up front and as that party changes over time (a reversal of the previous dynamic).

This issue exacerbates further should the customer wish to adopt more than one flexible CER FRMP.

AEMO considers that either option is highly problematic, particularly considering the competitive nature of metering provision for small customer connection points in the NEM, which is reconfirmed in the AEMC's recent draft report on the review of the regulatory framework for metering services.

It is possible that regulating the price of metering services in these scenarios might mitigate this issue, but such a change might inadvertently add to costs of metering service provision (or unreasonably imbalance the proportion of cost allocation between FRMPs), and otherwise appears in contradiction to the competitive provision of these services. An alternative approach might be to enable small customers to appoint their own Metering Coordinator, as is currently enabled for large customers in the NEM. However, this would introduce further complexity and risk to the customer who is faced with making this choice with potential ramifications for customers who move-out and move-in to premises where an arrangement has been established (and other issues that are not material concerns demanding consideration in the NER and National Energy Retail Rules (NERR) for large customers). Changes to participant systems and processes would be required to acknowledge customer appointment of the Metering Coordinator. Customer switching processes are likely to be affected with extensions to the time it takes to switch if objection processes are reintroduced to prevent metering role displacement in contradiction to direct customer agreements. Specific consumer protections might be required to support small customer selection, service delivery and payment of metering services provision if this approach was adopted.

A related issue is that, for a CER-specific FRMP to commence services, the metering installation needs to be appropriately configured to support it. If the existing metering installation and the customer's wiring is already configured in such a way as to support separate trading of the CER in question, then the competition issues above are the key issue. If, on the other hand, the metering installation needs to be changed, rights and responsibilities would need to be established that consider the potential commercial and practical impacts and limitations on all the FRMPs who provide services to that customer, and any new FRMP that might commence providing one or other service to the customer in the future.

Impacts to participant systems and processes

The *Multiple Trading Relationships* rule change determination documented the extensive system and process changes that would be required to implement alternative options for flexible trading such as parallel metering and multi-element metering. Many of these changes flow from breakage of the established relationship between the connection point to the distribution network, FRMP, NMI and metering installation, around which many market participants have built their systems and operational processes.

For example, the AEMC's *Multiple Trading Relationships* determination notes that breakage of these links would require overhaul of DNSP systems and processes such as billing systems, standing data systems, meter data management systems, faults management systems, geographic information systems, and a range of operational processes. DNSPs would need to create virtual NMIs in their systems to identify the relationships at each connection point and allow for the receipt of the data from MDPs. DNSPs also noted the increased risk of errors which may arise due to the increased complexity and that new operational processes would be required to track customer connections which could no longer be done using NMIs.

As a result of the required changes to the MDP role (as outlined above), a major uplift would also be required to MDP systems who wish to provide services for flexible trading via a parallel / multi-element metering approach.

AEMO expects that implementing the capabilities to support parallel or multi-element metering is likely to require substantial redesign of the MSATS system, creating additional implementation cost and complexity.

In contrast, the Flexible Trader Model 2 proposal is designed to minimise system and process uplift. For example, as it does not interfere with the arrangements at the connection point to the distribution network, system and process uplift is expected to be considerably reduced. Required changes to AEMO systems are not extensive. In terms of MDP accreditation, the proposed requirements for Flexible Trader Model 2 are much lower than what would be required to implement the alternative options; the proposal introduces very few new requirements for a typical Type 4 MDP to be able to perform services at a secondary connection point with minor energy flow metering, and none at all if minor energy flow metering is not enabled.

Identifying loss of energy, energy theft and energy transfer

As originally outlined in the *Multiple Trading Relationships* proposal, the parallel / multi-element metering option might create new risks associated with loss, theft and transfer of energy. At present, the FRMP at the connection point has visibility of all metering data at the connection point. Under the alternative option, the only party who in every case should have access to metering data related to all energy flows at the connection point to the distribution network (that may comprise multiple metering installations installed in parallel) is the LNSP; and the LNSP will only be able to understand energy flows at a connection point if their system links NMIs (at "settlement points") to connection points. Access to metering data that measures all flows at the distribution network is required to identify instances of:

- Loss of energy and energy theft, where energy flows to a connection point and is consumed beyond the connection point, but is not metered, so is not charged for by the FRMP nor network service provider, or treated in energy settlement;
- Energy transfer, where energy flows to be measured at a particular "settlement point" are routed to another "settlement point", so the charges levied by the FRMP and/or network service provider are higher or lower than they would otherwise be.

New obligations, perhaps placed on the LNSP, might need to be developed to facilitate monitoring at distribution connection point level to mitigate against these risks.

Flexible trader Models 1 and 2 do not share this challenge as the one-to-one relationship of NMI to FRMP to physical connection point remains unchanged from a standard market connection point design.

Comparison of alternative flexible trading options against the proposed rule change assessment criteria

AEMO has considered, at a high level, how each of the options presented in the consultation paper might align with the Commission's proposed assessment criteria for the rule change as outlined in the consultation paper. The table below identifies what AEMO considers to be the greatest variations between the models against each criterion, rather than a comprehensive list:

Criteria	High-level assessment/ considerations
Outcomes for consumers	Once established, all options could provide customers with the capability to have their flexible CER separately managed in wholesale settlement and give customers access to "a more direct connection to price incentives in a way that allows them to get more value out of their CER"; however: • Flexible Trader Model 2 provides the greatest amount of flexibility for customers to establish secondary connection points as required, without involvement from the DNSP and independent of other FRMPs operating at the premises. It is also the easiest arrangement to retrofit, with minor energy flow metering able to be located adjacent to or within the CER device, embedded within the customers electrical installation. These arrangements would be applicable in the NEM as a whole, including for Victorian customers as it is beyond the remit of the Order-in-Council deferring metering competition. • Flexible Trader Model 1 requires the involvement of the DNSP for all connections, with associated costs. This is the option currently available for the connection of Small Generation Aggregator connection points in the NEM, and in all cases requires the electrical wiring for each connection point to be electrically separate up to the connection point to the network. As a result, it is better suited to installation at a new connection than retrofit, including for reasons of securing physical space for the necessary metering equipment adjacent to the network connection point. In NSW, small customers might not be able to access this model due to DNSP policy restrictions. This model has been adopted (using the SGA framework) to support CER deployment at tenanted properties, as unlike Model 2 it supports more than one customer being active at each connection point - such as a landlord/tenant relationship. • Parallel / multi-element metering options would be challenging to retrofit; adding additional measurement elements requires a separate electrical installation wired back to the connection point (like Model 1) electrically separate from the rest of the customer's wiring. Victorian customers would not be able to access these options unless the VIC AMI specifications are aligned to the rule changes. These options may also create additional confusion for customers around who to coordinate with for de-energisation for safety reasons, etc. • For customers more broadly, where there are costs incurred for the adoption of implementing Flexible Trader Models 1 and 2, they would be payable by the

	customer obtaining the benefit from establishing the flexible trading arrangement. Due to the scale of change and complexity AEMO expects would be required to implement the parallel / multi-element metering option, it is likely that costs to establish capability will be borne by energy users more broadly, regardless of whether they access flexible trading or not.
Security and reliability of the electricity system	• All options provide an avenue for separation of flexible resources for participation in Scheduled Lite and emerging markets, which would enhance the opportunities for CER to contribute to the security and reliability of the NEM. • However, in the case of the parallel / multi-element metering, Victorian customers would be excluded from this capability unless the VIC AMI specifications are aligned to the changes necessary in the NER and NERR.
Principles of market efficiency	• Both Flexible Trader Models 1 and 2 leverage existing market systems, processes, roles and responsibilities to deliver efficient frameworks for flexible trading and supporting greater retail competition. As explored in AEMO's high level design accompanying the FTA proposal, Flexible Trader Model 2 might present a competition risks in the form of 'hollowing out' the primary connection point, however these risks (to the extent they are material) could be mitigated through limits on what may be connected at the secondary connection point. • The parallel / multi-element metering option has the notional potential to support greater retail competition but would require redesign of the relationship between the connection point, FRMP, NMI and metering installation, create new risks for energy loss, theft and transfer, and introduces additional administrative burdens associated with coordination of shared fusing and dispute resolution where multiple FRMPs share the same physical metering installation. AEMO considers that the site-by-site specific installation complexity of this option is likely to inhibit widespread adoption. • Further, AEMO submits that the parallel / multi-element metering option cannot practicably be implemented without a redesign of the roles and responsibilities for the appointment and payment for metering services in NER Chapter 7. These options also generate inefficiencies associated with unclear roles and responsibilities at what would be a "shared" connection point to the distribution network.
Innovation and flexibility	• Through minor energy flow metering, Flexible Trader Model 2 enables the potential for the metering installation to be built into the device, providing opportunities for innovative products and services to be developed for customers. Minor energy flow metering also supports technology innovation for currently unmetered loads, such as smart street lighting to improve energy efficiency in the NEM and access to retail competition for unmetered, franchise loads and legacy customers in embedded networks. • Flexible Trader Model 2 is also the most flexible option for customers as they have the ability to retrofit more easily and establish secondary connection points independent of other FRMPs/ connection points on site and without

	involvement from the DNSP and any space restrictions at the physical location for the metering installation at the distribution connection point. • The parallel / multi-element metering option is limited in its flexibility. Retrofitting is complex, and establishing these options may be limited by the metering arrangements already in place at the premises.
Implementation	• Flexible Trader Model 2 leverages the existing embedded network framework and robust subtractive settlement processes to minimise implementation costs, whilst Flexible Trader Model 1 builds upon the existing Small Generation Aggregator framework. Both models retain the existing arrangement at the connection point to the distribution network, avoiding the need for extensive and costly changes to participant and AEMO systems. • The parallel / multi-element metering option, on the other hand, would require extensive changes to NER chapter 7 and system/process changes for market participants and AEMO. It would also require extensive changes to the roles and responsibilities of Metering Coordinators, FRMPs, DNSPs and MDPs. • Allocation of network charges is a complex matter which was considered in depth in the FTA proposal for Model 2. The parallel / multi-element option is likely to face similar challenges and complexity if progressed. Flexible Trader Model 1 requires separate physical connections to the network, and so relies on existing processes for the allocation and invoicing of network charges.
Decarbonisation	• None of the flexible trading options provides a direct advantage over others in terms decarbonisation; however, any option that makes it easier for customers to adopt and better utilise their flexible resources is likely to provide the greatest benefit to decarbonisation. • Minor energy flow metering is likely support decarbonisation as it would enable unmetered loads such as streetlights to be metered and dimmed for energy efficiency and where deployed at currently unmetered load connections, would incentivise all parties to use energy more efficiently.