



Distribution market model review

**AER submission on
Australian Energy Market
Commission draft report**

July 2017

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Inquiries about this publication should be addressed to:

Australian Energy Regulator
GPO Box 520
Melbourne Vic 3001

Tel: 1300 585 165

Email: AERInquiry@aer.gov.au

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Summary

The AER welcomes the opportunity to respond to the AEMC's draft report on the distribution market model.¹

The AEMC's upfront observation about distributed resources is particularly apposite, that:

The uptake of rooftop solar photovoltaic systems, battery storage, electric vehicles and other technologies at the distribution level in Australia's electricity sector is having a significant impact on the way that consumers use electricity. Technological innovation is making the functions these devices perform smarter, cheaper and more accessible to a wider range of users. This change is greatly expanding the choices that consumers have to manage their energy needs and can potentially deliver significant efficiency benefits as well as improvements to the reliability and security of the provision of electricity services.

These 'distributed energy resources' are capable of providing a range of services to a number of different parties.²

The AEMC has published a forward-looking, strategic piece exploring how to ensure efficient investment in and operation of distributed energy resources in a world where these resources will become both more important and more ubiquitous.

This review should assist the AEMC in taking a broad ranging, and first principles based, perspective in reviewing future rule change requests from stakeholders, particularly where these may be more narrowly defined, or relate to particular aspects of distributed energy resources (DER) and the changing energy industry.

The draft report makes a number of points with which we can agree. In particular, the report appropriately emphasises the role of promoting the National Electricity Objective through:

- the importance of moving to better price signals, and
- the value of competition and structural separation over further regulation.

This report is therefore a valuable further marker to work that has been undertaken into a number of Power of Choice reforms, such as tariff reform, ring-fencing and demand management.

While we are in agreement with many of the issues raised and discussed in the report, and we note a number of these, this submission also takes the opportunity to highlight a number of areas where the AEMC might seek to clarify or consider further.

Also, while we agree with the fundamental role of better price signals to drive efficient investment and use of distributed energy resources, we note that the transition to fully cost reflective pricing is likely to be a long term objective. Accordingly, additional consideration could be given to what other measures, along with better price signals, are needed to incentivise efficient investment and use of DER in the short to medium term.

¹ AEMC, *Distribution market model—Draft report*, 6 June 2017.

² AEMC, *Distribution market model—Draft report*, 6 June 2017, p.i.

Direction of report

We consider the draft report gets many things right. In particular, we agree with:

The emphasis on the central role of dynamic price signals as the primary guide to the usage of and investment in distributed energy resources

For example, we agree with the AEMC's statement that:

The Commission considers that the installation, connection, optimisation and control of distributed energy resources should, except for system security and safety reasons, be determined through market-based signals. This approach will [be] most likely to lead to efficient outcomes because it promotes consumer choice while providing a level playing field for market participants.³

We also agree with the AEMC's statement that "...cost-reflective price signals are an important precursor to efficient investment in and operation of the services provided by distributed energy resources".⁴

The emphasis on structural separation and competition

The report makes clear that distributors do not always have incentives which coincide with the long term interests of consumers, especially when it comes to competing in the provision of distributed energy resources. For example, the report discusses the incentives of distributors to engage in cross-subsidisation, to control the flow of information, or to engage in anti-competitive discrimination.⁵ These are of course potential harms that the ring-fencing provisions are designed to address.

In addition, the paper consistently favours market-based or competition solutions rather than regulated solutions, such as "...regulation, however well designed, is likely to be a second-best alternative to well-functioning markets."⁶

The emphasis on technological neutrality

The AEMC is also clear on the importance of technology neutrality. For example, we agree with the AEMC's statement that:

In a time of rapid technological change, it is particularly important to enable technology neutrality. Specifying arrangements for a particular technology in the regulatory framework may lock it in, whilst locking out evolving new technologies that might not even have been anticipated when the design was considered. This means that design should consider what is supplied rather than how it is supplied.⁷

The emphasis on regulatory and market arrangements which are flexible and resilient in responding to an uncertain future

³ AEMC, *Distribution market model—Draft report*, 6 June 2017, p.63.

⁴ AEMC, *Distribution market model—Draft report*, 6 June 2017, p.21.

⁵ AEMC, *Distribution market model—Draft report*, 6 June 2017, p.21.

⁶ AEMC, *Distribution market model—Draft report*, 6 June 2017, p.20.

⁷ AEMC, *Distribution market model—Draft report*, 6 June 2017, p.26.

As the AEMC emphasises “any regulatory and market arrangements should be flexible and resilient to whatever the future may bring”.⁸

Scope of report

There are two matters which the AEMC has currently decided to exclude from the scope of the distribution market model review, which, we consider could benefit from being included within this review or within other AEMC processes. These are:

- standalone power systems and micro-grids, and
- “passive” distributed energy resources.

Standalone power systems and micro-grids

In our submission on the AEMC’s approach paper, we recommended that the AEMC broaden the scope of the distribution market model review to related retail and wholesale market issues and the regulation of standalone power systems.⁹ We considered this broader scope would reflect the evolving nature of the sector, where the distinction between retail, distribution, transmission and generation are changing beyond their traditional boundaries and are likely to move further over the next decade.

In response, the AEMC stated in the draft report that:

- the review does cover the interactions between distributed energy resources and other markets (including wholesale and retail markets) but only to the extent that distribution energy resources can participate in, and affect, those markets,¹⁰ and
- consideration of standalone power systems and micro-grids is outside the scope of this review because those matters are being separately considered in the rule change proposal submitted by Western Power.¹¹

We note that relevant interactions with other parts of the supply chain will be taken into account and this is welcome. However, in relation to stand-alone systems, it is not clear to what extent the Western Power rule change will afford the opportunity to look at these issues comprehensively.

A major benefit of the distribution market model review is that, of those matters that the AEMC has decided are within scope, the AEMC is looking at those matters from a broad ranging and first-principles based perspective.

On the other hand, Western Power’s proposed rule change appears to be more narrowly focussed. The focus appears to be on Western Power’s desire of being able to disconnect fringe of grid customers who would then be served through alternative technology within stand-alone systems, but regulated as virtual extensions of its own network.

⁸ AEMC, *Distribution market model—Draft report*, 6 June 2017, p.29.

⁹ AER, *Submission on AEMC distribution market model approach paper*, 20 December 2016, p.1.

¹⁰ AEMC, *Distribution market model—Draft report*, 6 June 2017, p.6.

¹¹ AEMC, *Distribution market model—Draft report*, 6 June 2017, p.8.

The AEMC has published a consultation paper on Western Power's proposal.¹² The list of questions the AEMC is seeking stakeholder feedback on appears reasonably broad. Accordingly, it may be that the AEMC is intending to undertake a wide ranging consideration of regulatory and market issues associated with standalone power systems and micro-grids through the Western Power rule change process. We certainly encourage the AEMC to do so.

However, we also understand that, under the National Electricity Law (NEL), the AEMC can be restricted on the extent to which it can broaden its considerations beyond the scope of the matters initially raised by the rule proponent. If the AEMC forms the view that it is constrained in that way, then we encourage the AEMC to expand the scope of its distribution market model review to provide the same broad ranging and first-principles based perspective on standalone power systems and micro-grids as the AEMC has given to other regulatory and market design issues associated with distributed energy resources.

Definition of distributed energy resources

In regards to the definition of distributed energy resources, the AEMC proposed not including 'passive' energy equipment such as passive solar PV on the grounds that it is 'unable to respond to external signals' so "the ability of a 'market model' to address the issues it raises is limited".¹³ The AEMC noted that such devices may become smart over time and then would fall within the definition.

We consider there would be benefit in including both smart and passive energy equipment within the AEMC's definition of distributed energy resources, thereby expanding the scope of the review to consider issues associated with both.

Even if passive equipment (such as solar PV) is unable to respond to price signals in the short term (the operational time frame) there is no doubt that customers investing in solar PV will respond to price signals when making the investment decision. For example, customers responding to price signals may choose whether or not to invest in solar PV at all, what capacity to invest in, and whether to orient their solar panels towards the north (to maximise solar PV generation) or towards the west (to reduce the costs associated with evening peak prices, such as if they are on a time-of-use or demand based tariff). As we understand it, the AEMC's review is concerned with both efficient usage of and investment in distributed energy resources. Even if passive devices cannot respond to price signals when making usage decisions, customers can still respond when making investment decisions relating to passive devices.

Furthermore, passive devices may have a substantial impact on the local supply/demand balance and therefore knowledge of these devices is essential for forecasting local supply/demand and flows on the local network. The exclusion of passive equipment from the definition may make such forecasting infeasible.

¹² AEMC, *National Electricity Amendment (Alternatives to grid-supplied network services) Rule 2017—Consultation paper*, 14 June 2017, p.4.

¹³ AEMC, *Distribution market model—Draft report*, 6 June 2017, p.4.

Concept of an ‘optimising function’

The draft report makes repeated reference to the concept of an ‘optimising function’. The AEMC defines this function as follows:

The function of responding to signals that inform how to invest in or operate a distributed energy resource in a way that delivers the most value at a particular point in time.¹⁴

We understand this to mean the activity of responding to price signals—whether this is carried out by the end-customer, or the retailer acting on behalf of the customer, or by some other third-party. The draft report states:

This function could be carried out by multiple parties, by market participants (e.g. consumers themselves) or consumers' energy service providers responding to price signals on their behalf.¹⁵

The concept of an “optimising function” is given some prominence in the draft report (appearing 14 times). The AEMC also stated that this optimising function may need to be “created” and is an “important precursor” to the next stages in the market.¹⁶

It is widely accepted that participants in a market economy respond to economic incentives including price signals. This leads to outcomes which are economically efficient and therefore optimal (subject to any constraints that may exist). However, whether such a process needs to be separately described as an ‘optimising function’ is not clear.

It might be possible to optimise (or at least promote) efficient investment in, and efficient usage of, distributed energy resources through anything ranging from:

- Continued improvement of existing regulatory and market arrangements—such as more cost reflective distribution network tariffs and feed-in tariffs, refinements in the design of the demand management incentive scheme and innovation allowance, and more thorough distribution regulatory investment test (RIT-D) assessments and compliance, to
- Significant changes to regulatory and market arrangements—such as the establishment of an independent distribution market operator and ‘distribution market’ (like the wholesale spot price market at the transmission level) which would operate a central dispatch process for distribution energy resources through a merit order process subject to network constraints.

It is not quite clear to us, on a practical level, what the AEMC has in mind by an “optimising function” and what form this would take, who would carry out this function, or how the policy decision over these matters would be decided and when.

We recommend, in its final report, that the AEMC clarify what is meant by an ‘optimising function’, to give a more practical and less abstract consideration to these matters.

¹⁴ AEMC, *Distribution market model—Draft report*, 6 June 2017, p.5.

¹⁵ AEMC, *Distribution market model—Draft report*, 6 June 2017, p.5.

¹⁶ AEMC, *Distribution market model—Draft report*, 6 June 2017, p.33.

We also note that any changes to regulatory and market design arrangements should be subject to a careful cost-benefit analysis. We elaborate on this last point in the next section.

Costs and benefits of changes in market design

The AEMC noted that distributed energy resources can provide a range of services to a number of different parties. The AEMC also correctly notes that not all of these services can be provided simultaneously, and so sometimes trade-offs must be made. We consider the AEMC has accurately identified the range of possible services. This is represented in a diagram in the draft report, which we reproduce below.

The AEMC further stated:

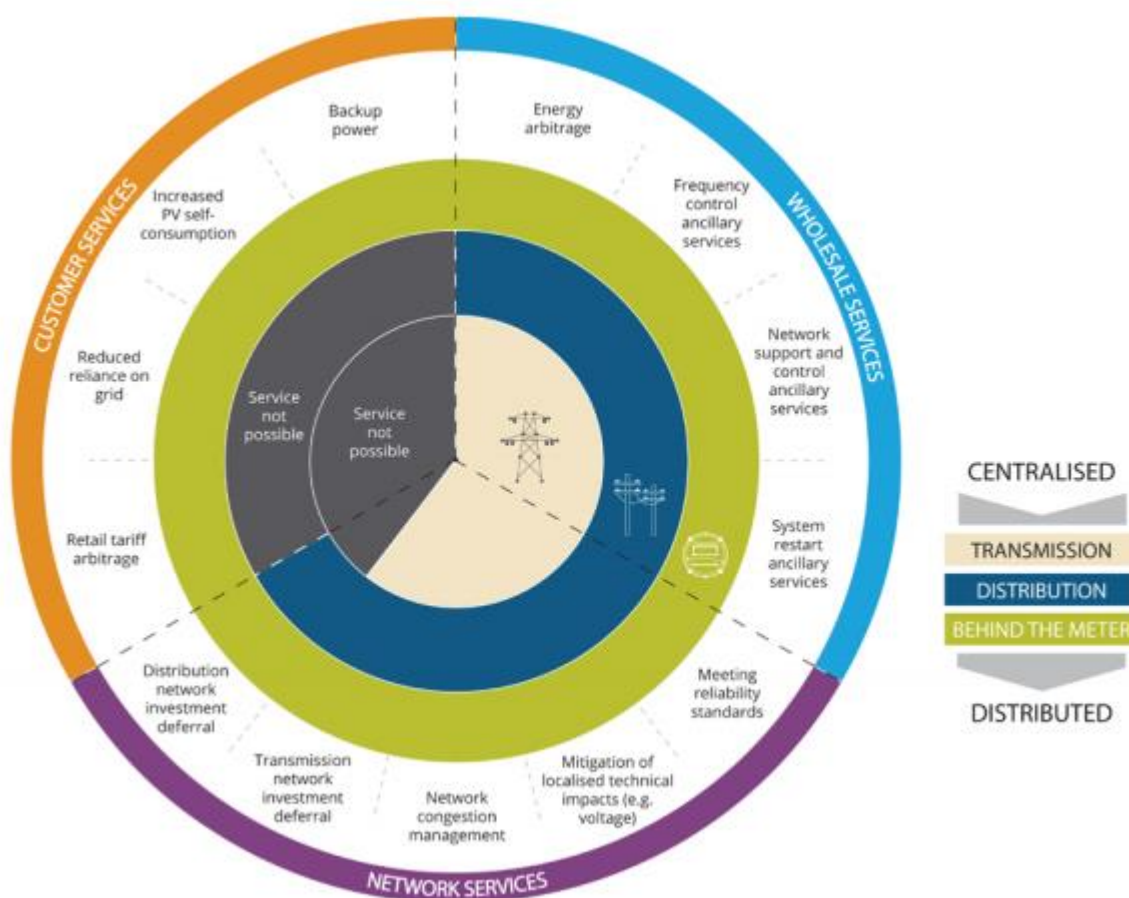
Currently, consumers might be able to benefit from one or two of the revenue streams that distributed energy resources can provide. However, in the AEMC's view, consumers (or their chosen energy service providers) should be able to access *all* possible revenue streams, if they choose. More generally, there is a need to facilitate cooperation between various parts of the supply chain to maximise the value of the multiple services than can be provided by distributed energy resources.¹⁷ [emphasis added]

We support this statement as a high level objective. However, it is also the case that the specific value that can be derived by consumers from the various revenue streams will likely vary depending on the relevant demand-supply conditions for each service. This also means that any regulatory or market design changes needed for customers to access all possible revenue streams should be assessed in terms of their respective costs and benefits; that the costs associated with those changes are outweighed by the potential benefits the regulatory or market design change can bring.

Whilst it is difficult to predict what the DER value streams may be in the future, when it comes time to practically assess any particular regulatory or market design change, it will also be necessary to form some view on what these may be or their likely trends over time.

¹⁷ AEMC, *Distribution market model—Draft report*, 6 June 2017, p.i.

Figure 1 AEMC diagram on the multiple value streams of DER



Source: AEMC

The diagram above is the list of services or value streams that the AEMC considers distributed energy services could provide.¹⁸ This list of services is an important reminder of the breadth of the services that distributed energy resources can provide—particularly if located within the consumer’s residence. If any regulatory or market design changes are necessary in order for consumers to access those services, we consider the focus should be on those changes which are likely to create the most value.

Network access and connection charges

In the draft report, the AEMC has raised a number of interesting observations and questions around the related issues of network access and connection charges. We support continued review of both of these areas to test whether current regulatory arrangements remain appropriate and fit-for-purpose in light of continued uptake of distributed energy resources.

Network access

The AEMC noted that transmission and distribution networks in the NEM operate under an open access regime in which parties have a right to negotiate a connection to the

¹⁸ AEMC, *Distribution market model—Draft report*, 6 June 2017, p.17.

transmission network, but there is no firm access. Rather, scheduled generators earn revenue by being dispatched.

However, the AEMC correctly observed, in our view, that this open access regime is “confused” by rules 5.4A (which applies to transmission networks) and rule 5.5 (which applies to distribution networks).¹⁹ The AEMC summarised rule 5.4A as:

This clause described an ability for generators to negotiate a form of firm financial access with the TNSP and seek compensation from the TNSP in the event that it is constrained on or off, in return for an access charge.²⁰

The AEMC also concluded that the particular design of rule 5.4A was “unworkable” and had not been applied successfully to date.²¹ The AEMC recently made a rule determination to delete rule 5.4A, as part of the rule change proposal on transmission connection and planning arrangements.

In this context, the AEMC has now asked whether stakeholders consider that an open access regime will continue to be appropriate at the distribution level in an environment of increasing uptake of distributed energy resources.

We have no strong view at this stage on this question, and we support the AEMC continuing to review the resilience and effectiveness of the current access regime at the distribution level, in light of increased penetration of distributed energy resources. However, we make the following points in relation to rule 5.5, which we consider should be deleted regardless of the nature of the access regime:

- If it is decided that an open access regime should continue at the distribution level—then rule 5.5 should be deleted, because rule 5.5 is not consistent with the notion of an open access regime. We agree with the AEMC’s observation that the current open access regime is “confused” by rule 5.5.
- If it is decided that some form of firm access regime should be introduced at the distribution level—then rule 5.5 should be deleted, at any rate, and be replaced with some other provision. We agree with the AEMC’s observation that the design of the transmission equivalent provision (rule 5.4A) was “unworkable”. For the same reasons, we consider the distribution provision (rule 5.5) is unworkable and would not be an effective means to promote some form of firm access regime.

By way of background, clause 5.5(f)(4)(ii) of the NER is traceable to an original provision of the National Electricity Code. The incorporation of compensation provisions for a constrained on (or off) generator was discussed in the ACCC’s determination to originally authorise the Code. It was determined that any compensation payable to that generator must be managed by the local network service provider. Clause 5.5(f)(4) provided a mechanism for a network service provider to place this liability with another connected generator, but only if the other generator agreed to pay compensation. To the best of our knowledge, the provision has never been applied. Further, we do not believe it would work in practice in today's

¹⁹ AEMC, *Distribution market model—Draft report*, 6 June 2017, p.55.

²⁰ AEMC, *Distribution market model—Draft report*, 6 June 2017, p.55.

²¹ AEMC, *Distribution market model—Draft report*, 6 June 2017, p.55.

environment. This is because the second generator does not have an incentive to agree to make compensation payments.

Connection charges

Clause 6.1.4 of the NER prohibits a distributor from charging a distribution network user (such as an owner of a distributed energy resource) distribution use of system charges for the export of electricity by that user to the distribution network. The AEMC stated:

There may be cause to revisit this clause if DNSPs incur costs (and benefits) due to the export of energy from distributed energy resources (or passive solar PV systems) that are not appropriately reflected in connection charges and where these costs (and benefits) increase (albeit not necessarily proportionately) with the volume of injections.²²

In the draft report, the AEMC asked whether stakeholders support the AEMC's proposal to explore deleting clause 6.1.4.²³

We support exploring the deletion of clause 6.1.4 as part of this review. This does not necessarily mean we would support distributors charging customers with distributed energy resources for exporting electricity to the grid. Rather, it just means that we consider the rules should be open and flexible to consider alternative pricing arrangements. Blanket prohibitions in the rules that rule-out certain options make the rules less adaptable to change. If alternative pricing arrangements were explored, we consider these should take into account, among other matters:

- Both the costs and the benefits that distributors incur or receive due to customers exporting electricity from distributed energy resources to the grid.
- The desirability of consistency between pricing arrangements at the transmission and distribution levels, and consequently the reduction of distortions between transmission connected and distribution connected generation and energy resources. This is particularly important where a distribution energy resources participant is in a position to also participate in the wholesale spot market and other transmission level markets. We note that, under current arrangements, transmission connected generators do not pay for the export of electricity into the grid.
- Alternative business models that could develop at the distribution level, such as peer-to-peer trading, and whether different pricing arrangements are appropriate under such circumstances.

²² AEMC, *Distribution market model—Draft report*, 6 June 2017, p.59.

²³ AEMC, *Distribution market model—Draft report*, 6 June 2017, p.60.