



## Distribution Market Model Final report

**The AEMC's final report delivers a number of findings which are considered pre-conditions for the development of distribution level markets.**

### Context for the project

The uptake of rooftop solar photovoltaic systems, battery storage, electric vehicles, smart energy appliances and other technologies at the distribution level are having a significant impact on the way that consumers use electricity.

These resources can provide services to different parts of the electricity system, including network businesses, the wholesale market and consumers themselves. The AEMC considers that there is a need for a way to buy and sell these services at the distribution level in a more dynamic way, in response to price signals and consumer preferences.

The final report discusses how distribution system operations and associated regulatory arrangements are likely to require greater consideration of two issues:

1. The value of **optimising** investment in and operation of distributed energy resources. Such resources can provide a range of services to a number of parties that cannot all be provided by the same asset at the same time. An optimising service gives consumers the ability to, if they choose, receive the maximum possible benefit that the distributed energy resource is capable of providing, given transaction and information costs, as well as technical constraints.
2. The value of **coordinating** the operation of distributed energy resources with the wholesale market. That is, consideration of how distribution networks can, in both a technical and regulatory sense, enable the efficient use of distributed energy resources in distribution markets and effective access for distributed energy resources to participate in transmission-level markets, such as the wholesale market.

The Commission considers that any evolution of distribution systems needs to be driven by consumers (or their chosen energy service providers). While there needs to be consideration of how the frameworks should evolve to facilitate choice, any evolution must occur in a way that maintains a safe, secure and reliable supply of electricity. The evolution should balance the benefits from a customer-led roll out of such technologies, with the needs of networks to manage the system impacts.

### The final report

The final report presents a view of what future distribution network operation might look like, guided most strongly by the principles of competitive neutrality and consumer choice.

Specifically, the final report:

- clarifies the project scope, key definitions and market design principles in response to stakeholder submissions on the approach paper and draft report
- sets out the key characteristics and enablers for a future where investment in and operation of distributed energy resources is optimised to the greatest extent possible
- identifies and assesses the barriers (if any) to these enablers
- sets out a number of findings of short-term actions that can be taken to advance the development of distribution systems and more readily incorporate distributed energy resources into our market

Promoting the development of a competitive 'distribution' market for the provision of services enabled by distributed energy resources means that markets, in response to consumer decision-making, determine the most efficient outcomes.

## A competitive market for distributed energy resources

The AEMC considers that promoting the development of a competitive 'distribution' market for the provision of services enabled by distributed energy resources means that markets, in response to consumer decision-making, determine the most efficient outcome. Centrally co-ordinated orchestration of such a market is likely to result in inefficient and costly outcomes.

The key characteristics of such a future include:

- the need for an 'optimising service': a customer-facing, optional service aimed at maximising the value of distributed energy resources
- a distribution system operation function – the party responsible for maintaining distribution system security as issues become more localised
- consideration of how network capacity is provided i.e. using traditional build or distributed energy resources.

The AEMC has made a number of findings on how the above aspects can be further progressed so that we have flexible and resilient arrangements for the future, specifically:

- facilitate better co-ordination between distribution level markets and the wholesale market through the AEMC's *Reliability frameworks review*
- assess the potential for distributed energy resources to provide frequency control services through the AEMC's *Frequency control frameworks review*
- identify the data about distributed energy resources which AEMO needs to maintain power system security into the future
- understand the level of control network businesses need to have over distributed energy resources to maintain system safety, reliability and security
- get more dynamic information about congestion and technical issues on networks, at more localised levels, to know where distributed energy resources can be of most benefit
- consideration if the current access model for distributed energy resources is appropriate, if networks become more congested as more resources connect
- fit-for-purpose Australian Standards, along with clear and transparent technical assessments when connecting distributed energy resources.

## Background

The Distribution Market Model project is a forward-thinking, strategic piece of analysis to inform the AEMC's analysis of rule change requests submitted by stakeholders in response to emerging issues, and its advice to governments. The analysis is part of the AEMC's broader technology work program and complements the range of work being undertaken by the AEMC and other parties regarding distributed energy resources, distribution networks and interactions with the electricity regulatory framework. It is also consistent with the AEMC's *2015 Strategic Priorities*, specifically related to network transformation, and is expected to feature in the Commission's *2017 Strategic Priorities* advice to the COAG Energy Council.

As summarised in Figure 1, the AEMC's reform program has already established a solid foundation for the uptake and use of distributed energy resources.

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Figure 1

The AEMC's reform program has established a solid foundation for the uptake and use of distributed energy resources.

## The AEMC's reform program has already established a solid foundation for the adoption of distributed energy technologies.

Our rules have made it easier for consumers to:



choose and switch retailers



access and understand their consumption data



receive and respond to price signals so they can better manage their bill



access a wider range of technologies, products and services

On the supply and operations side of the market, the AEMC has made rules that:



make it easier to connect new generation to both the transmission and distribution networks



provide the market and system operator with more tools to manage the system as it changes