



Australian Energy Market Commission

APPROACH PAPER

**ELECTRICITY NETWORK ECONOMIC
REGULATORY FRAMEWORK 2020
REVIEW**

4 JUNE 2020

REVIEW

INQUIRIES

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Reference: EPR0085

CITATION

AEMC, Electricity network economic regulatory framework 2020 review, Approach Paper, 4 June 2020

ABOUT THE AEMC

The AEMC reports to the Council of Australian Governments (COAG) through the COAG Energy Council. We have two functions. We make and amend the national electricity, gas and energy retail rules and conduct independent reviews for the COAG Energy Council.

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1 INTRODUCTION

1.1 About this review

The COAG Energy Council has requested that the Australian Energy Market Commission (the AEMC or Commission) conduct the Economic regulatory framework review to monitor market developments on an annual basis, and consider whether the economic regulatory framework for electricity network is sufficiently robust and flexible to continue to support the long term interests of consumers in a future environment of increased decentralised energy supply.

The current review is the Commission's fourth such annual review under a standing terms of reference.¹

1.2 Purpose of this paper

This paper has been prepared to explain the Commission's approach and seek stakeholders' feedback on the issues the Commission proposes to consider as part of the *2020 Electricity Network Economic Regulatory Framework Review (2020 Review)*.

This approach paper also provides stakeholders with visibility over the broader work program that is being undertaken by the Commission in relation to network-related issues arising from the current transformation of the electricity sector.

1.3 Review approach

The Commission developed the question below to serve as a guide in conducting this annual review.

Does the economic regulatory framework provide sufficient flexibility to allow and incentivise networks to adapt to changes in the market, including increased decentralised supply?

Consumer choices will continue to shape the future development of the electricity market. It is not possible to know whether certain scenarios will prevail, and the Commission does not believe its role in conducting this review is to predict exactly how the market is likely to develop in the future.

The Commission intends to identify emerging themes and/or potential challenges that may be faced by electricity networks in the near to medium term. The themes and challenges will be informed by the monitoring of indicators and market developments as well as consultation with key stakeholders. The identified challenges may be priority areas for the COAG Energy Council to focus on for future reforms.

1.3.1 Stakeholder consultations

Stakeholder consultation will form a large part of the review process. The Commission intends to consult with a broad range of stakeholders: the Australian Energy Regulator (AER),

¹ See: <https://www.aemc.gov.au/sites/default/files/2018-07/Terms%20of%20reference.PDF>

the Australian Energy Market Operator (AEMO), network businesses, retailers, consumer groups as well as new energy businesses.

Feedback from stakeholders will provide the Commission an up-to-date view of the issues faced by the industry. It will also provide information on emerging technologies which may become pervasive in the coming years. These emerging technologies may bring along issues of their own which will need monitoring and may have impacts on the economic regulatory framework.

1.3.2 Monitoring key indicators, drawing on a range of information sources

In conducting this review the Commission will draw on a wide range of sources that will form an evidence base to explain and assess the changes in the electricity market most likely to have the greatest impacts on electricity networks. The Commission will collate relevant data into a succinct report that gives an overview of the status of the market.

Information will be sourced from published papers on relevant topics, stakeholder consultation, as well as industry data already available. There will be some quantitative data reported on annually in the form of indicators to inform the review's conclusions. However, the report will focus predominantly on qualitative information and case studies.

1.3.3 Identify emerging themes and potential challenges facing the regulatory framework

The report will identify a priority list of issues relevant to the ongoing transformation of the electricity sector. It is expected that many of these issues have already been identified by stakeholders and there are processes under way to address them. Therefore, the Commission will focus on emerging issues that are not currently considered by other processes.

Chapter 2 includes themes and areas of concern covered in the past three editions of this review and the Commission welcomes stakeholders' feedback on whether those themes remain relevant today.

1.4 Consultation

Written submissions on this approach paper must be lodged with Commission by **2 July 2020** via the Commission's website, www.aemc.gov.au, using the 'lodge a submission' function and selecting the project reference code **EPR0085**.

The submission must be on letterhead (if submitted on behalf of an organisation), signed and dated.

Where practicable, submissions should be prepared in accordance with the Commission's guidelines for making written submissions. The Commission publishes all submissions on its website, subject to a claim of confidentiality.

All enquiries on this project should be addressed to Daniela Moraes, Senior Adviser, on (02) 8296 0607 or daniela.moraes@aemc.gov.au.

2 THE 2020 REVIEW: KEEPING AN EYE ON THE HORIZON

For this year's final report, the Commission intends to focus on the following three areas:

1. Identifying key priorities, emerging issues/themes for future reforms
2. Update on implementation of recent reforms
3. Continual monitoring of issues in the electricity sector.

Each of these topics are explored further in this chapter.

2.1 Overarching theme: identifying emerging and priority issues beyond DER integration

The transition of the electricity sector from a centralised to distributed system is well under way. Distributed energy resources (DER), if integrated efficiently into the electricity system, can deliver significant benefits to all electricity system users.

Conversely, customers could bear significant costs if DER is not integrated efficiently. With this in mind, the Commission's 2019 Review detailed a series of key recommendations and actions required to integrate the increasing uptake of DER into the national electricity market (NEM) in a way that benefits all electricity system users.

Box 1 below provides a high level summary of the 2019 Review's recommendations. The integration of DER remains a significant area of focus for the Commission, and is one of the Commission's strategic priorities.

BOX 1: 2019 REVIEW FINDINGS — 'TOOLS' CRUCIAL TO INTEGRATING DER AND OPTIMISING BENEFIT FOR ALL CONSUMERS

- **Customer reward pricing:** how network services can be priced to send efficient signals to owners of DER able to consequently provide services delivering the most value at specific points in time.
- **Distribution system access and connections:** how to facilitate greater access to the grid for DER, such as allowing customers to select varying levels of static export limits and firmness.
- **Information to enable decision-making:** how to increase the availability of information that assists both network providers and consumers to make informed choices about DER utilisation and network constraint management at the lowest cost.
- **Maintaining security and reliability:** how to ensure the predictability of DER in order to maximise its value, including the importance of common standards, interoperability, and impact on system stability.

- **Consumer engagement:** heralding the cultural change required in the sector that will inform the extent to which networks will be adaptable to transition and a more consumer-centric and wholly integrated market.

Source: AEMC, *Integrating distributed energy resources for the grid of the future*, Economic regulatory framework review, 26 September 2019.

There is a significant program of work under way to integrate DER into the electricity system. For example, the Energy Security Board's (ESB's) DER Integration Work Plan details the work that market bodies are progressing from the technical, market and regulation integration perspectives. Many of the recommendations from the 2019 Review have also commenced.

As the electricity sector transformation continues, it is timely to consider whether there are other emerging issues beyond DER integration. The 2020 Review will seek to identify a priority list of issues relevant to the electricity sector's transformation that may require attention or reform. Some issues that have come to the Commission's attention are:

- large transmission investments and the increasing use of contingent projects
- risk allocation between network businesses and consumers
- the need for enhanced consumer engagement.

Each of these issues is briefly discussed further in the sections below.

2.1.1

Dealing with large transmission investment and contingent projects in the context of ISP Integrated System Plan

At the COAG Energy Council meeting on 20 March 2020, ministers agreed to the set of rule changes to the National Electricity Rules (NER) to convert the Integrated System Plan (ISP) into action.² The ISP will 'action' key projects by triggering RIT-T applications.

The ISP Rules are intended to streamline the regulatory processes for key projects identified in the ISP whilst retaining a rigorous cost benefit assessment. These rules are scheduled to commence from 1 July 2020.³

In addition, the AER is currently consulting on draft guidelines to clarify how AEMO will develop the ISP and how transmission businesses will apply the RIT-T when there is an actionable ISP. In both cases, this will entail applying a rigorous cost benefit analysis. While AEMO has flexibility around how it identifies optimal investments, its decisions must be fully transparent.⁴ The final guidelines are expected to be published by August 2020.

Contingent projects

² The ISP is updated by AEMO every two years that forecasts the overall transmission system requirements for the national electricity market over the next 20 years. AEMO has the role of national transmission planner.

³ See more on: <http://www.coagenergycouncil.gov.au/publications/actionable-isp-final-rule-recommendation>

⁴ AER, *Providing guidance about Integrated System Plan processes*, fact sheet, 15 May 2020.

The AER is required by the National Electricity Rules (NER) to assess applications by network service providers to amend their revenue determination to include the revenue required for a 'contingent project'.⁵

Generally, 'contingent projects' are significant network augmentation projects that maybe required in order to meet the capex objectives in the NER during a regulatory control period. However, unlike other proposed capex projects, the need for the project (and therefore the associated costs) is not sufficiently certain at the time of the revenue determination to be included in the allowed forecast of total capex. Contingent projects are linked to unique investment drivers and are subject to a set of 'trigger events'.

This mechanism is often used for projects where it is not clear at the start of the regulatory period whether the project will be required, for example projects that will only be needed if demand reaches a certain level. Contingent projects are approved subject to certain triggers being met, one of which is often completion of a regulatory investment test (RIT).⁶

Issue

The way transmission planning is undertaken is changing and significant investment in transmission infrastructure is proposed over the coming years. The Commission understands that since the introduction of the ISP, a few stakeholders have raised concerns about whether the existing economic regulatory framework remains fit-for-purpose when large, discrete, non-recurrent transmission investments are required, such as the large transmission projects arising from the ISP. For example, this could include how the regulatory framework might better manage the risk or incentive that a TNSP overestimates the costs of the transmission investment or experiences significant cost overruns in building a large new transmission asset or interconnector.

2.1.2

Risk allocation between distribution networks and consumers

The key principle of network regulation in the NEM is that it is based on incentivising DNSPs to provide services as efficiently as possible. It does so by determining the maximum regulated revenues that DNSPs can recover from consumers based on an estimate of the costs that an efficient and prudent DNSP would incur to meet its regulatory obligations. The AER locks in the DNSPs' maximum allowed revenues prior to each regulatory period (*ex-ante*), incentivising DNSPs to provide required services at the lowest possible cost. The savings made from any reduction of costs below the AER estimate are shared with consumers in future regulatory periods.

It's worth noting that the current framework does not provide DNSPs with a 'guaranteed' rate of return or a right to recover their actual costs. For example, a DNSP would not receive additional revenue during a regulatory period if its expenditure exceeds the forecast.

5 Clause 6A.8.2(d) of the NER requires the AER to assess contingent project applications by transmission network service providers (TNSPs).

6 The RIT-T is a cost-benefit analysis that transmission businesses apply before making network investments in excess of \$6 million. The purpose of the RIT-T is to identify the network or non-network investment option with the highest net economic benefits across the national electricity market. This promotes efficient investment decisions and helps ensure that consumers pay no more than necessary for electricity network infrastructure.

In addition, DNSPs are subject to regulatory obligations to connect all customers that request a connection and must supply services in accordance with reliability standards set by jurisdictional governments or regulators. For example, DNSPs cannot choose whether to supply customers and have limited choice over what level of service they provide to customers. This has implications for considering how risks should be allocated; for example, if reliability standards are set at inefficiently high levels, resulting in increased network costs.

Overall, there are inherent risks associated with forecasting efficient levels of capital expenditure. As the future is intrinsically uncertain, these forecasts will always be inaccurate to a greater or lesser degree.

- *Risk of under-investment:* if DNSPs' forecasts significantly underestimate future levels of demand, they may spend too little on capex. As a result, they may fail to meet legislated reliability standards, resulting (for example) in unplanned outages. This will cause them to incur penalties under the Service Target Performance Incentive Scheme (STPIS).⁷ The risks associated with under-investment are thus shared between DNSPs and consumers.
- *Risk of over-investment:* if DNSPs invest in capex based on forecasts of demand which turn out to be too high, this will result in underutilisation and increasing costs. Over time these costs will be recouped from consumers. The risks associated with over-investment based on significantly incorrect demand forecasts are thus borne by consumers but not DNSPs.

2.1.3

Need for enhanced consumer engagement

The environment of network revenue determination processes has changed markedly in recent years, with increasingly positive and constructive engagement by the AER, networks and consumers on regulatory processes. This helps smooth the transition to a future consumer-centric electricity system and enable consumers to engage with energy markets in new and exciting ways.

The AER is actively promoting early engagement to incentivise more 'robust' expenditure proposals. Network businesses now commonly develop and consult on 'draft plans' before submitting their regulatory proposals to the AER.

Further, the AER is exploring and applying to an extent negotiated-settlement approaches between consumer representatives and the network businesses through New Reg. Such developments may play an important role in the transformation of the sector by enhancing consumer engagement.

BOX 2: NEW REG PROJECT

The New Reg project, a joint initiative launched in June 2017 by the AER, ENA and Energy Consumers Australia, aims at improving engagement on network revenue proposals and

⁷ See AER's website on: <https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/service-target-performance-incentive-scheme-2018-amendment>

identify opportunities for regulatory innovation.

The process being trialled involves the establishment of a Customer Forum to be the 'formal counter party' in negotiations with the network business and to, as far as possible, reach agreement on the regulatory proposal prior to its submission.

In January 2020, trial participant AusNet Services submitted its 2021-26 regulatory proposal to the AER. In its *Issues paper: Victorian distribution determinations, 2021 to 2026*, the AER indicated that its preliminary view that '... compared to other Victorian DNSPs' proposals, [they] may focus [their] assessment on total opex and capex, and conduct less extensive assessment of components of capex and opex forecasts in AusNet Services' proposal, compared to other Victorian DNSPs' proposals.'

This need for less extensive assessment was as a result of the '... agreed positions between AusNet Services' and the Consumer Forum, combined with [the AER's] existing understanding of AusNet Services' proposal gained through the New Reg trial.

Source: AER website; AER, *Issues paper: Victorian distribution determinations, 2021 to 2026*, April 2020, p. 29-30

The Commission understands that the New Reg project has identified a number of key learnings from the trial, their implications on the regulatory framework. The reform directions and identified through the New Reg projects could potentially introduce flexibility and improve the way network businesses and the AER take into account customer preferences as part of the regulatory determination process.

2.1.4

Focus of our consultation

In this chapter, the Commission has outlined a number of issues that have been examined in previous editions of this review, along with some possible emerging themes.

The Commission is interested in stakeholder views on whether additional or complementary reforms to the framework are needed so that the regulatory framework is sufficiently robust to provide the best outcomes to consumers.

QUESTION 1: IDENTIFYING PRIORITY AND EMERGING ISSUES FOR FUTURE REFORM

1. For the issues included in this paper, do stakeholders consider them as relevant and important?
2. Are there any other issues that have not been identified in this paper that should be considered by the Commission?

2.2 Update on implementation of recent reforms

In addition to identifying emerging issues, the 2020 Review will also provide an overview of developments in network regulation and an update on the implementation of key reforms programs.

As DER integration remains a key focus for the Commission, the 2020 Review will provide an update on the implementation of the actions detailed in the 2019 Review. Table 2.1 below lists the actions and recommendation in the 2019 Review and provides a brief summary on progress to date.

Table 2.1: Modernising the grid: key actions

WHO?	WHAT?	WHEN?
AEMC, DEIP	Reform how customers are charged for using the grid to maximise the value of their DER while minimising total system cost, as part of ARENA's DEIP.	Expected 1 July 2020.
AER	Reform network pricing so customers are rewarded for using energy in a way that helps the grid work more efficiently.	Ongoing progress through annual tariff structure statements.
AER	Develop guidelines for how the AER will assess proposals from distribution businesses to integrate distributed energy resources.	AER published a consultation paper on a guide to DER expenditure forecasts in November 2019.
AER, AEMC, ARENA, consumer groups	Develop a methodology for estimating the 'value of customer export' to help distribution businesses weight up the costs and benefits for all consumers of building more network.	Progressing through DEIP DER valuation package.
AEMC	Review the effectiveness of introducing competition in providing smart meters so customers have the tools they need to optimise their DER. This will include monitoring the roll out of smart meters and assessing the benefits of greater data availability.	Monitoring is continuing. Review will commence in December 2020.
AEMC, consumer groups	Improve understanding of the information customers need about their DER, and how third party providers can help consumers act on that information.	Currently being considered through the ESB DER Integration Steering Committee.
Distribution businesses	Invest in cost-effective monitoring and modelling equipment to improve the visibility of loads and	Ongoing.

WHO?	WHAT?	WHEN?
	voltages on the grid connecting a customer's property and the local substation, enabling better understanding of current and future network constraints.	
Distribution businesses, consumer groups	Identify additional meter data that should be collected and made available to support better visibility of network constraints.	Ongoing.
AEMO, Standards Australia	Develop technical standards to support the technical integration of DER and improve the grid's resilience.	Rule change request received in May 2020.
Jurisdictional governments and safety regulators	Consider mechanisms to assess and improve compliance of distributed energy resources with technical standards.	Currently being considered through the ESB DER Integration Steering Committee.

Source: AEMC, *Future of the Grid*, infographic, September 2019.

2.3 Continual monitoring of issues

The 2020 Review will continue to monitor key trends in grid usage as well as development and uptake of new technologies and business models — as requested in the standing terms of reference for this review.

2.3.1 Networks performance indicators

In previous editions of this review, the Commission monitored and reported on key metrics such as network expenditure, regulatory asset base (RAB) values and network utilisation. Box 3 below provides a list of the key metrics that were reported in the 2019 edition of this review.

BOX 3: NETWORKS KEY PERFORMANCE INDICATORS

Investment trends:

- For distribution network service providers (DNSPs):
 - Regulatory asset base (RAB) trends: combined and per service provider
 - Capital expenditure (CAPEX) trends: combined and per service provider
 - Augmentation expenditure (AUGEX) trends
 - Replacement expenditure (REPEX) trends

- Operational expenditures (OPEX) trends
- CAPEX/OPEX ratio
- For transmission network service providers (TNSPs):
 - Regulatory asset base trends: combined and per service provider
 - Capital expenditures (CAPEX) trends: combined and per service provider

Other operational indicators for DNSPs only:

- Customer numbers by distribution network service provider
- Extent of utilisation of assets
- Electricity delivered
- Reliability indicators
 - System Average Interruption Duration Index (SAIDI): average number of minutes of outages experienced by customers
 - System Average Interruption Frequency Index (SAIFI): average number of outages experienced

Other indicators:

- Smart meter installation trends in the NEM
- Investment environment: RAB multiples for publicly listed network service providers

Source: AEMC, *Integrating distributed energy resources for the grid of the future*, Economic regulatory framework review, Appendix A, 26 September 2019.

In addition to the above metrics, the 2020 Review will also publish data on the following developments that are relevant to the decentralisation of supply (where data is available):

- uptake of new technologies including solar PV, batteries and electric vehicles
- networks' use of non-network solutions and whether there are indications that networks are favouring traditional network solutions over non-network solutions (measured through non-network operating expenditure, network support payments, avoided transmission use of systems charges, use of demand management incentive scheme/demand management innovation allowance and regulatory investment tests)
- number of embedded generator connection
- number of distribution feeders with constraints or reverse power flows
- number of off-grid consumers and embedded networks.

3 RELATED WORK

This review of electricity network regulation sits within a broad field of related work programs that comprise a proactive and collaborative approach to energy sector transformation. This chapter provides a non-exhaustive overview of the most significant developments within this space, including the Commission's most recent and upcoming rule changes and the relevant reforms they are intended to action.

3.1 Collaborative work towards sector transformation

Modernising the grid is a multi-dimensional project occurring between and within market bodies and government initiatives. This section aims to give a broad overview of the interlocking work programs that comprise the policy space of energy network transition.

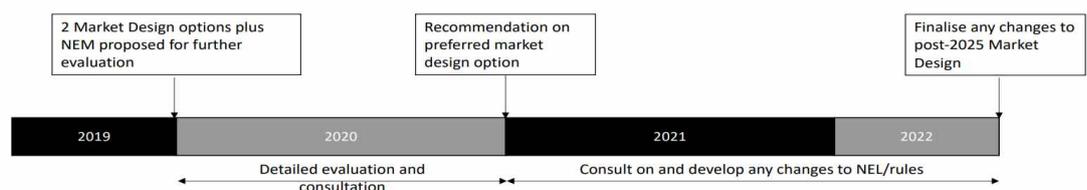
3.1.1 The Energy Security Board (ESB)

In March 2019, the COAG Energy Council requested the Energy Security Board (ESB) to advise on a long-term, fit-for-purpose market framework to support reliability, modifying the NEM to meet the needs of non-dispatchable generation and flexible resources such as demand side response, storage, and DER participation.

The ESB's *Post-2025 market design* project involves three key phases of program development and delivery, as follows:

- **Short term (12-18 month) deliverables:** relating to the Renewable Energy Zones, and interim security measures and reliability framework measures.
- **Intermediate deliverables:** relating to the development of Ahead Markets, Two-Sided Markets and Access Reform, to be developed for decision at the framework level by the end 2020 with implementation of some aspects likely ahead of 2025.
- **Longer term deliverables:** relating to investment programs, an aging thermal generator strategy and initiatives relating to development of DER markets with implementation after 2025.

Figure 3.1: The ESB's Post-2025 market design project timeline



Source: ESB, *Post-2025 market design*, issues paper, September 2019.

Final recommendations on all aspects will be made no later than mid-2021. The Commission is working closely with the ESB, particularly in relation to:

1. **The design of a two-sided market:** unlocking data on consumer energy demand that is hidden 'behind the meter', adding to the value household energy technology contributes to the system, designing new systems to govern how bidding takes place in the markets, and overhauling the way that electricity buyers and sellers are described and regulated. This includes the possibility of developing ahead markets and other arrangements that will give greater visibility to the amount of energy and demand response resources that are available at any given time.
2. **The Distributed Energy Resources integration workplan:** a comprehensive set of actions being undertaken by the energy market bodies across technical integration, regulatory integration, and market integration to optimise the benefits of DER for all electricity system users.⁸ Many of these actions are already under way, including through the collaborative Distributed Energy Integration Program (DEIP) initiated by ARENA.⁹

The *Post-2025 market design* project must satisfy the national electricity objective, and contribute to the central outcome of the COAG Energy Council's Strategic Energy plan: delivering more affordable energy and satisfied energy consumers.

Coordination of generation and transmission investment (COGATI) review

In line with the above, the Commission has a key role to play in assisting the ESB reach its core deliverables relating to the development of transmission access reform.

Alongside the *ENERF review* focussing on the transformation that is occurring in small scale decentralised generation, the *Coordination of generation and transmission investment (COGATI) review*¹⁰ addresses the changes that are occurring in relation to transmission access for large scale generation investment.

The AEMC is taking the lead on this particular work stream of the ESB's 2025 project, and so will design the access model and draft a package of rule changes, due for completion by the end of the year.

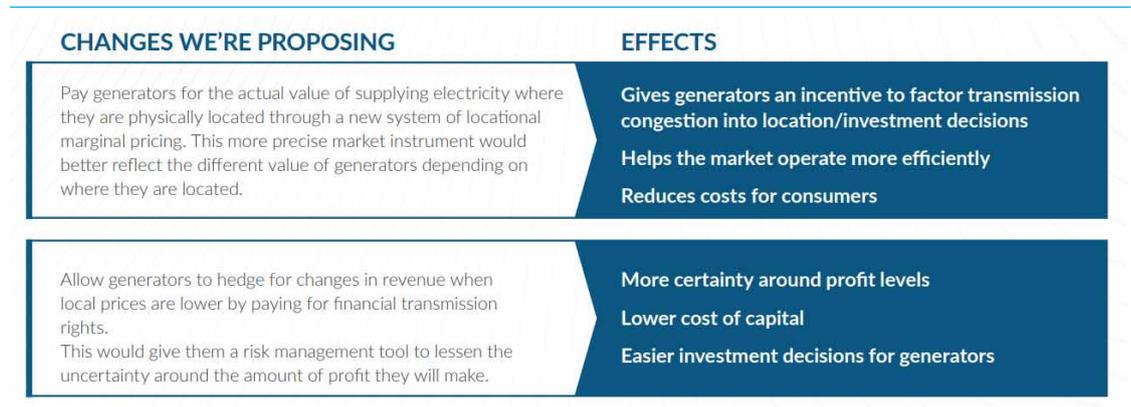
The proposed transmission access model involves two key changes: locational marginal pricing that aims to better reflect the underlying value of electricity in prices and so makes it more likely that new generation investment is located in the parts of the network where it can deliver the greatest benefit to consumers in the long term, and financial transmission rights, which allow market participants to better manage risk of transmission congestion and losses. This is detailed in Figure 3.2 below.

8 See <http://www.coagenergycouncil.gov.au/sites/prod.energycouncil/files/publications/documents/ESB%20DER%20Integration%20Workplan%20Oct%202019.pdf>

9 See more in section 3.1.2 below.

10 COGATI terms of reference: <https://www.aemc.gov.au/sites/default/files/content/97164a7b-09bf-49fb-9f2e-f6b996f5a96b/Reporting-on-drivers-of-change-Terms-of-Reference.PDF>

Figure 3.2: Fast-tracking the cheapest, fairest path to a lower-emissions power system



Source: Excerpt of AEMC, COGATI infographic, 26 March 2020.

Together, both ENERF and COGATI enable the Commission to monitor market developments and drivers that impact investment decisions. This allows the Commission to make recommendations to the COAG Energy Council on ways to adapt the regulatory framework so that it continues to provide the right incentives for efficient investments and minimise the cost of the sector's transition.

3.1.2

ARENA's Distributed Energy Integration Program

The program, launched on 3 October 2018, is an initiative of the Australian Renewable Energy Agency (ARENA) that brings together energy peak bodies, market authorities, industry associations and consumer associations to maximise the value of DER for all energy users. The forum is driven by the premise that exchanging information and collaborating on DER issues will more efficiently identify knowledge gaps and priorities, as well as accelerate reforms in the interest of customers.

The Commission is a member of the Distributed Energy Integration Program (DEIP) steering group and secretariat. The DEIP has the following objectives:

1. Target greater collaboration, research, knowledge sharing, demonstrations and resources.
2. Apply the DEIP working principles (collective leadership, collaborative approaches, a focus on outcomes and fit-for-purpose work) to accelerate and reduce the cost of the transition to a distributed energy system.
3. Deliver outcomes that seek to balance community expectations for an affordable, reliable and cleaner energy system through clearly prioritised work stream initiatives.

The four key ongoing work streams encompass capturing customers' preferences, enabling multi-party exchange of value in markets, optimising investment and regulatory frameworks,

and improving the interoperability of DER. Presently, DEIP is developing a framework and maturity assessment to help industry stakeholders understand DER projects.¹¹

DEIP Access and Pricing Working Group

Of particular relevance is the *DEIP Access and Pricing Working Group (A&P working group)*, established in August 2019.

The A&P working group was formed following the Regulatory DEIP Dive workshop convened by AEMC and ARENA that identified access and pricing reform as a key priority for the industry, with the aim to identify consensus on the need for reforms, to inform the policy debate, and to frame potential rule change proposals. It is currently finalising a report that will make several recommendations for immediate and future reforms to the regulatory framework.

The A&P working group includes representatives from the AEMC, ARENA, consumer groups (Energy Consumers Australia, Australian Council of Social Services, Total Environment Centre, Public Interest Advocacy Centre), the AER and Energy Networks Australia (ENA).

A final report with key recommendations is due by June 2020. It is expected that rule change requests may be submitted to the Commission to progress recommendations identified through this process.

The A&P working group will continue to engage with industry to define customer centric principles, to guide and build consensus through consideration of alternative DER access and pricing models and support the creation of momentum for any necessary reforms.

3.1.3

Open Energy Network (OpEN)

ENA and AEMO launched the *Open Energy Network* project in June 2018, as a joint consultation seeking stakeholder input on how best to integrate DER into Australia's electricity grid. After consultation with stakeholders, in July 2019 it released the *Required Capabilities and Recommended Actions interim report*, describing how all customers may benefit from fully integrating customer solar, battery and controllable devices into the electricity grid, and outlining the actions required to start the process.¹²

OpEN created four potential new market frameworks and examined how well each one allows DER to operate efficiently with other elements of the network and system:

1. Single integrated platform (where, in broad sense, AEMO does everything)
2. Two-step tiered platform (broadly, the DNSP does everything)
3. Independent distribution system operator (envisages the creation of a new participant to manage the integration and dispatch of DER in a distribution market)
4. Hybrid model, where the market operation functions are allocated to AEMO, while leaving the DNSP to optimise the network.

¹¹ ARENA, <https://arena.gov.au/knowledge-innovation/state-of-der-technical-integration/>.

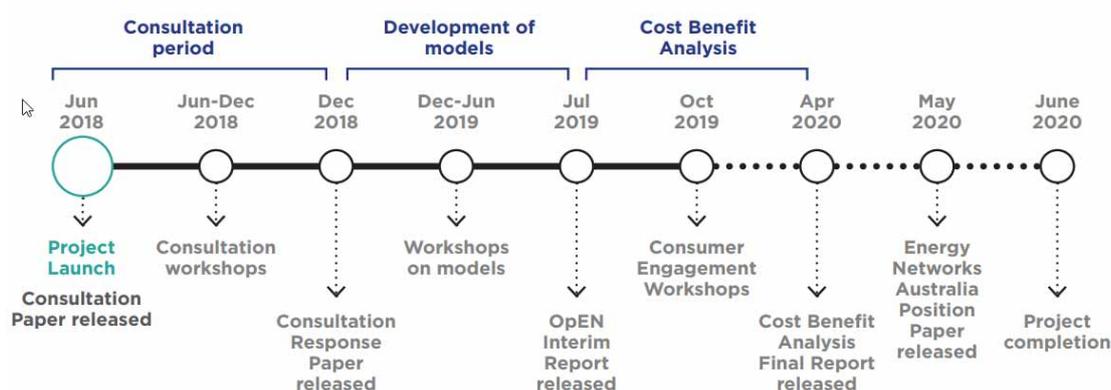
¹² Open Energy Networks report: *Required Capabilities and Recommended Actions*, interim report, 22 July 2019.

Importantly, all four frameworks envisage the creation of two new entities to deliver a distribution market: the distribution system operator and the distribution market operator.¹³

In May 2020, as part of its contribution to the ESB's two-sided market paper and the broader design of the energy sector post-2025, ENA released a position paper summarising the network industry's position on how Australia's energy system can be best managed to support the growing input of DER.¹⁴

Figure 3.3 below shows the project timeline, which is expected to be completed by June 2020.

Figure 3.3: OpEN project timeline



Source: Open Energy Networks Project, *Energy Networks Australia position paper*, 13 May 2020.

3.1.4 AEMO's Integrated System Plan

The AEMO's Integrated System Plan (ISP), first published in 2018, is a whole-of-system plan that provides an integrated roadmap for the efficient development of the NEM over the next 20 years and beyond. The ISP is updated every two years.

Its primary objective is to maximise value to end consumers by designing the lowest cost, most secure and most reliable energy system capable of meeting any trajectory of emissions determined by policy-makers at an acceptable level of risk. It fully utilises the opportunities provided from existing technologies and anticipated innovations in DER, large-scale generation, networks, and coupled sectors such as gas and transport.

The AEMO's Draft 2020 ISP, which has finalised consultation in March 2020, builds on the analysis of the inaugural 2018 ISP and follows industry engagement on the design of forecasting and planning scenarios and sensitivities.¹⁵

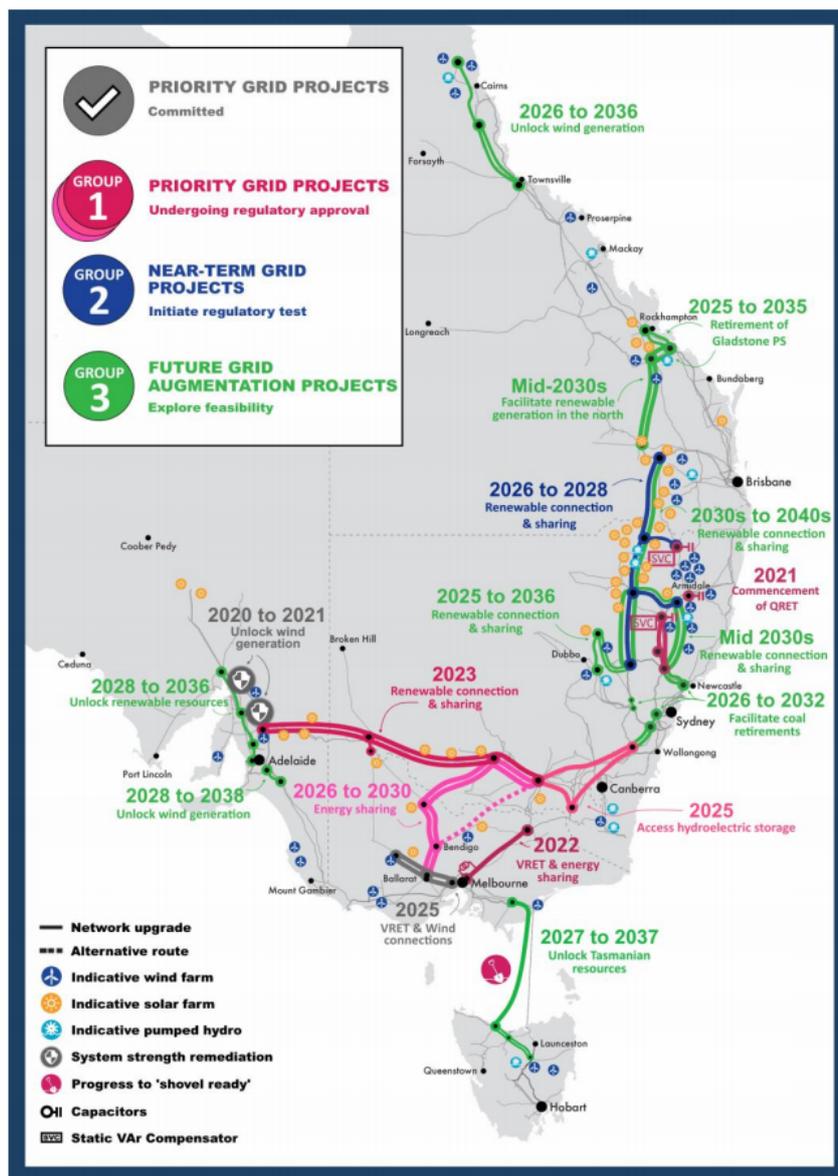
13 For more information see project page on: <https://www.energynetworks.com.au/projects/open-energy-networks/>

14 Open Energy Networks Project, *Energy Networks Australia position paper*, 13 May 2020.

15 AEMO, *Draft 2020 Integrated System Plan*, December 2019.

The Commission is working alongside AEMO to streamline regulatory processes for projects identified in the ISP.

Figure 3.4: Development paths for the NEM in the 2020 Draft Integrated System Plan



Source: AEMO, *Draft 2020 Integrated System Plan*, December 2019, Appendix 6.1.1, Figure 127.

3.1.5

AEMO's Renewable Integration Study

AEMO has also recently published the *Renewable Integration Study: stage 1 report*, which is the first stage of a multi-year plan to maintain system security in a future NEM with a high share of renewable resources. The report takes the projections of AEMO's *Integrated System*

Plan as given, and investigates in detail the challenges faced by the NEM in the short-term to 2025.¹⁶

The report sets out a number of key challenges in the areas of:

- System operability within security and reliability standards
- Integration of distributed solar PV: balancing increasing levels of small, distributed generation with power system requirements
- Frequency management
- Stable voltage and low system strength
- Resource adequacy

Following the publication of the report, AEMO plans to conduct an open and transparent stakeholder engagement process to discuss priority focus areas for the future, explore these findings with policy-makers to inform the ongoing reform process, scope areas of further study, undertake identified actions to address system limits, and ultimately incorporate relevant findings as part of the *Final 2020 Integrated System Plan*. Building on the Stage 1 Renewable Integration Study findings and subsequent stakeholder engagement, AEMO plans to develop a roadmap for the secure transition to higher penetrations of wind and solar in the NEM by the second quarter of 2021.

3.1.6

ACCC's electricity market monitoring 2018-2025

On 20 August 2018, the Treasurer directed the ACCC to hold a public inquiry that will monitor the prices, profits and margins in the supply of electricity in the National Energy Market.¹⁷

The ACCC released its most recent report on 22 December 2019, which included an examination of the cost components of electricity bills for the 2018–19 financial year and how they are changing over time. This report also contained analysis of how pricing of electricity plans on offer has changed since reforms to retailer pricing and advertising came into effect on 1 July 2019.

The ACCC found that network costs comprise 43 per cent of the average annual bill for residential customers, and concluded that excessive network investment results in higher than needed customer bills, so that inefficiently high electricity prices continue to impact economic and social activity.¹⁸

The ACCC reinforced its past recommendation of writing down excessive regulatory asset bases. In addition, it suggested that the AEMO's ISP, which proposes a multi-billion dollar investment program, must involve constant cost-benefit analysis to ensure efficient expenditure.

The inquiry is to conclude with a final report by 31 August 2025. The Commission will continue to engage with the ACCC throughout the process in line with the NEO to improve the strategic development of energy services for the long-term interests of consumers.

¹⁶ AEMO, *Renewable Integration Study*, stage 1 report, 30 April 2020.

¹⁷ See ACCC's website on: <https://www.accc.gov.au/regulated-infrastructure/energy/electricity-market-monitoring-2018-2025>

¹⁸ ACCC, *Inquiry into the National Electricity Market*, November 2019 report.

3.2 AEMC's recent and upcoming rule changes

The Commission has been working on an extensive program of already initiated or otherwise anticipated rule changes to action the key reforms that are required to modernise the grid. This section provides an overview of the most recent rule change developments spanning 2019-2020.

DER technical standards

On 5 May 2020 the AEMC received a rule change request from AEMO to implement national DER device standards in the NER and the NERR.

As DER uptake increases, the timely application of nationally consistent device standards for DER will allow consumers to realise their benefits without adversely affecting the secure operation of the electricity system.

The rule change request proposes implementation of new standards focused on updates to inverter standards, the development of communications, data and control functionality, and integration of cyber-security standards. The rule change request also includes proposed requirements for compliance and provisions for enforcement, as well as measures to smooth transition and recognise existing standards ahead of any major changes.¹⁹

Regulatory sandboxes

A regulatory sandbox is a framework within which participants can test innovative concepts in the market under relaxed regulatory requirements at a smaller scale, on a time-limited basis and with appropriate safeguards in place. Innovation in the energy sector can lead to better services and lower costs for consumers.

On 26 March 2020 the AEMC published its final advice to the COAG Energy Council aimed at making it easier for businesses to do test runs of innovative ways to deliver energy services to consumers. The advice included rules to implement regulatory sandbox arrangements in the national electricity and gas markets.²⁰

The final report recommended changes to the energy laws with more detailed provisions to be made under the rules and under a new trial projects guideline. These changes were included in the final report as recommended drafting instructions for amendments to the national energy laws. The final report also recommended initial drafting for changes to the national energy rules to give effect to the toolkit.

In order to introduce the regulatory sandbox framework, the COAG Energy Council needs to progress changes to the National Electricity Law (NEL), National Energy Retail Law (NERL), and National Gas Law (NGL). The COAG Energy Council will develop draft law changes and conduct separate stakeholder consultation before the law changes are submitted to the South Australian Parliament.

Following passage of the law and rule changes the AER will develop the *Trial Projects Guideline* in consultation with stakeholders.

¹⁹ See project page: <https://www.aemc.gov.au/rule-changes/technical-standards-distributed-energy-resources>.

²⁰ AEMC, *Regulatory Sandboxes — Advice to COAG Energy Council on rule drafting*, final report, 26 March 2020.

Wholesale demand response

On 12 March 2020, the AEMC released a second draft determination and draft rule to implement a wholesale demand response mechanism.²¹

The mechanism introduced under the draft rule is designed to provide greater opportunities for consumers to participate in the wholesale market by bidding in demand reductions as a substitute for generation, thereby unlocking under-utilised demand response in the national electricity market.

The Commission considers that the mechanism will promote greater demand side transparency, as well as price and reliability related benefits. A final determination is expected by mid June 2020.

Contingent projects

Contingent projects are major network infrastructure assets which have been pencilled in to long-term investment plans. They are flagged in network revenue proposals, and approved by the AER in revenue determinations.

On 26 April 2019 the AEMC made a final rule that allows transmission and distribution network businesses to submit a contingent project application at any time during a regulatory control period up until the last 90 business days of the second last year of the regulatory control period. This was previously restricted by the NER.²²

Embedded networks

Embedded networks are private electricity distribution networks that serve multiple customers and are connected to another distribution or transmission system in the national grid through a parent connection point. These include apartment buildings, shopping centres, retirement villages, and caravan parks, where consumers are often locked into uncompetitive supply deals and lack the same protections as consumers connected directly to the grid. These networks are exempt from the current regulatory framework.

To address issues in relation to accessing retail market competition, consumer protections, and monitoring and enforcement regimes, the Commission recommended new regulatory arrangements in a proposed package of law and rule changes published in 2019.²³ The new arrangements will elevate embedded networks into the national framework, so that obligations relating to consumer protections and retail market competition apply directly to embedded network service providers and can thus be more readily enforced.

The proposed framework will be implemented once the COAG Energy Council has redrafted electricity and energy retail laws based on the Commission's proposed law change descriptions and submitted these to the South Australian Parliament to make. The COAG Energy Council has yet to respond to the Commission's recommendations.

²¹ AEMC, *Wholesale Demand Response Mechanism*, draft determination, 12 March 2020.

²² AEMC, *Application period for contingent project revenue*, final determination, April 2019.

²³ AEMC, *Updating the Regulatory Frameworks for Embedded Networks*, final report, 20 June 2019.

Figure 3.5: Updating regulatory frameworks for embedded networks



Stand-alone power systems (SAPS)

SAPS — usually a combination of solar PV, batteries and a back-up generator — are increasingly allowing electricity services to be delivered through alternatives to grid connection at a lower cost and with improved reliability, which could be particularly beneficial for remote communities. Currently, SAPS are not captured under national regulatory frameworks or subject to jurisdictional frameworks which vary in their coverage.

On 19 December 2019, the Commission published a draft report advising the COAG Energy Council on a draft package of proposed rule changes to enable distribution network businesses to supply their customers using stand-alone power systems where it is cheaper than maintaining a connection to the grid, whilst ensuring customers retain all of their current consumer protections.²⁴

The final report was published on 28 May 2020 and set out a rule change package that would give effect to the high-level recommendations made in the Commission's earlier *Review of the regulatory framework for stand-alone power systems — priority 1*, which also contained drafting instructions for changes to national energy laws.²⁵

These new arrangements can then be implemented by the COAG Energy Council amending the national energy laws based on the Commission's instructions, and these being passed through the South Australian parliament.

The proposed rule changes described in the report can then be made by the South Australian Minister for Energy. Following the enactment of the package of law and rule changes,

²⁴ AEMC, *Updating the regulatory frameworks for distributor-led stand-alone power systems*, draft report, 19 December 2019.

²⁵ AEMC, *Updating the regulatory framework for distributor-led stand-alone power systems*, final report, 28 May 2020.

jurisdictions may also need to make amendments to jurisdictional instruments, and AEMO and the AER will require a transitional period to consult on and update relevant procedures and guidelines. It is anticipated that the full framework will go-live in mid- to late-2021.

ABBREVIATIONS

AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
ARENA	Australian Renewable Energy Agency
Capex	Capital expenditures
COGATI	Coordination of Generation and Transmission Investment
Commission	See AEMC
DEIP	Distributed Energy Integration Program
DER	Distributed energy resources
DNSP	Distribution Network Service Provider
ECA	Energy Consumers Australia
ENA	Energy Networks Australia
2020 Review	2020 Electricity Network Economic Regulatory Framework Review
ESB	Energy Security Board
EV	Electric vehicle
ISP	Integrated System Plan
MCE	Ministerial Council on Energy
NEL	National Electricity Law
NEM	National electricity market
NEO	National electricity objective
NERL	National Energy Retail Law
NERO	National energy retail objective
NGL	National Gas Law
NGO	National gas objective
NSP	Network Service Provider
OpEN	Open Energy Network Project
Opex	Operational expenditures
RAB	Regulatory asset base
RIT	Regulatory Investment Test
SAPS	Stand-alone power systems
TNSP	Transmission Network Service Provider