



The Health of the National Electricity Market

2020

Energy Security Board

Volume 2: Major Report Summaries for 2020

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Health of the NEM, Volume 2 – Major Report Summaries for 2020

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Australian Energy Regulator

1. State of the energy market

Brief summary of the report

The AER in July 2020 published the twelfth edition of its signature report, *State of the Energy Market*. This report has served as a valuable resource for decision makers across the policy, legal and regulatory spheres since 2007.

State of the Energy Market covers Australia's wholesale electricity and gas markets, the transmission and distribution networks, and energy retail markets. The 2020 report provides an accessible review of energy market activity in eastern and southern Australia over 2019 and the early months of 2020. Among its features is a new chapter on the rapid transformations taking place in the electricity sector.

State of the Energy Market is unique for both the scope of material covered and its audience reach. It covers all sectors of the energy market. It also takes a long term view - its analysis of policy and markets extends over years and some data series go back to market start. The report highlights trends and issues across the industry, consolidating material from sources including the AER's market performance reports, data monitoring and regulatory reviews of energy networks, and external resources. The text also plays an educative role in explaining how complex markets and regulatory models work. This report provides a working understanding of how the energy industry operates so readers can make their own assessment of the issues.

The report aims for non-technical language to reach a wide audience that includes market participants, policy makers, journalists and the wider community. Our stakeholders frequently remind us how much they value this publication as a ready source of unbiased and up-to-date information.

2. Annual retail market report 2019-20 and quarterlies for 2019-20

Brief summary of the report

The AER will publish the *Annual retail market report 2019-20* in November 2020. Prior to this the AER published three quarterly reports for this financial year (Quarter 1 July to September 2019, Quarter 2 October to December 2019 and Quarter 3 January to March 2020).

The following findings were made in the *Annual retail market report 2019-20*.

In 2020, the AER started publishing weekly COVID-19 data reports which provide a high-level summary of changes in the retail market caused by COVID-19. The AER called on retailers to provide additional data on a voluntary basis to enable the AER to have visibility of the effect of COVID-19 on the retail energy market.

3. AER \$5,000 reports

AER \$5,000 reports

Under the Electricity Rules, the AER is required to publish a report whenever the spot price for energy exceeds \$5000/MWh. It also has an obligation to publish a report when the ancillary service price exceeds \$5000/MW for a sustained period. These reports identify and describe the factors contributing to the high prices, including rebidding, network issues or changes to demand and generator availability.

The AER released six of these reports for energy in 2020, with all six being related to spot prices over \$5000/MWh in Victoria, New South Wales and South Australia.

- High demand driven by high temperatures was the major factor contributing to high prices in both South Australia on 19 December 2019, and Victoria and South Australia on 30 January 2020.
- Unplanned network outages, caused by local bushfires contributed to prices over \$5000/MWh in Victoria on 30 December 2019. An interruption to the NSW-Victorian interconnector also contributed to the high prices on 4 January 2020 in NSW.
- There were two instances in which the failure of the Heywood interconnector contributed to high prices. On 31 January 2020 the interconnector failed due to severe storm conditions and in addition to high demand driven by high temperatures, caused prices over \$5000/MWh in South Australia, Victoria and New South Wales. The Heywood interconnector tripped due to equipment failure on 2 March 2020 and was the major contributor of high prices in South Australia.

For all outages, the Australian Energy Market Operator (AEMO) was notified as soon as the issues were identified, and forecasts were updated accordingly.

The AER also reported on six instances where the ancillary service price exceeded \$5000/MW as part of the Q2 2020 Wholesale Markets Quarterly report.

- Prices above \$5000/MW in South Australia in some services on 31 January, 1, 10 and 12 February, and 2 March were driven by –
 - the outage of the Heywood interconnector between 31 January and 18 February 2020 and again on 2 March;
 - a shortage of some ancillary services;
 - participant rebidding capacity from prices below to above \$5000/MW
 - trade-offs between the energy and ancillary services markets effectively reducing the amount of ancillary services available to the market.

This resulted in record ancillary services costs for Q1 2020.

- The risk of or actual islanding of South Australia on 9 and 16 November 2019 due to network equipment failure and maloperation of protection equipment primarily drove prices above \$5000/MW in South Australia.

4. AER Wholesale Markets Quarterly reports

The Wholesale Markets Quarterly reports bridge the gap between short term and long term performance reports, allowing the AER to identify significant trends in the wholesale electricity and gas markets, and independently evaluate market developments as they emerge. Under the National Electricity Rules, the AER is also required to monitor and report on the performance of frequency control ancillary services markets on a quarterly basis.

The AER has published four Quarterly reports with the inaugural report for Q3 2019 published in November 2019. The reports covered analysis of topics such as prices, demand, generation, offers by participants and ancillary services.

5. AER wholesale electricity market performance report

Under the National Electricity Law, the AER is required to monitor and report on the performance of the NEM. This includes analysing and identifying whether there is effective competition in the market, and whether there are market features that may be detrimental to effective competition or the efficient functioning of the market. The AER must report on the performance of the market at least every two years and may also advise COAG Energy

Council on market performance and identify whether legislative or regulatory reform is required.

The inaugural report was published on 11 December 2018 and was detailed in the ESB's previous Health of the NEM report. The next report is due to be published in December 2020.

6. AER Electricity network performance report 2020

The *Electricity network performance report 2020* was published on 17 September 2020. The report sets out the AER's analysis of key outcomes and trends in the operational and financial performance data collected from electricity networks.

The *Electricity network performance report 2020* shows that network regulation is improving outcomes for consumers, with consumers getting a more reliable supply of electricity and paying less for this than they have previously. It also shows that Network Service Providers have been less profitable in recent years, largely driven by reductions in allowed rates of return. Nonetheless, the market evidence suggests that investors continue to view allowed returns as being at least sufficient to attract efficient investment.

Australian Energy Market Commission

Underway

7. Coordination of generation and transmission investment – access and pricing

In March 2020, the COAG Energy Council asked the AEMC to continue designing the access reforms as part of the ESB's post 2025 market reform package. During 2020 this work has been progressed including:

- conducting further modelling work and incorporating what is learnt into the design of the reforms – in response to stakeholder feedback to see detailed market modelling of the reforms to give a more accurate estimate of the benefits
- holding multiple public forums to discuss the modelling, work being undertaken and gain stakeholder input
- extensive bilateral stakeholder consultation on the reform
- development of a detailed design in consultation with a technical working group with more than 50 market body, industry and consumer representatives
- publishing an Interim report on Transmission access reform, along with the accompanying consultant reports, setting out:
 - updated technical specifications of the access reform model, reflecting significant
 - stakeholder input over the past several months; and
 - quantitative analysis of both the benefits and costs of the reform, in response to stakeholder requests for these items

This interim report was published as an accompanying paper to the ESB's 2025 market design consultation September 2020 paper.

8. System services rule changes

The AEMC has received seven rule change requests that propose new ways of providing the system services necessary to support the security and reliability of the power system. The rule changes are looking to:

- introduce new markets for fast frequency response to efficiently manage power system risks associated with reduced system inertia.
- introduce a reserve market to operate alongside the existing energy and frequency control markets, to help AEMO manage new and emerging operational challenges
- introduce an ex-ante, day ahead capacity commitment mechanism and payment to provide access to operational reserves and other required system security or reliability services
- address some of the system strength issues arising, including to allow for TNSPs to be more proactive in the provision of system strength in the NEM. The request proposes to abolish the “do no harm” obligation and substantially amend the minimum system strength requirement

The issues raised in the rule change requests are critical to addressing the security issues arising. They complement and are interdependent with the issues being explored by the Energy Security Board (ESB) in its ongoing post-2025 market design program.

9. Residential electricity price trends 2020

The annual price trends report is a core piece of work used to inform a range of stakeholders including AEMO, the International Energy Agency and the Reserve Bank of Australia. It helps consumers understand costs included in their electricity bills and provides governments with information about which parts of the sector are driving changes in electricity prices and provides context for long-term decision making on energy policy. The report focusses on the drivers of household bills across three key areas of the electricity supply chain – wholesale, regulated networks and environmental.

The final report for the 2020 Residential electricity price trends is scheduled to be published late December 2020.

10. Connection to dedicated connection assets

Dedicated connection assets are privately owned and operated connection assets that provide the services required to connect a party to the shared transmission network. This rule change is looking at ways to facilitate multiple generators or large energy users using the same dedicated connection assets to allow them to be better utilised. A draft determination was published in November 2020.

11. Compensation following directions for services other than energy and market ancillary services

This rule change request is looking at amending how compensation is determined following directions for services other than energy and market ancillary services. It is part of an interventions work program that was begun following the Investigation into intervention mechanisms in the NEM which was completed in August 2019. A draft determination and rule were published for stakeholder consultation in September 2020, and a final determination and rule are scheduled for publication in December 2020.

Work on the intervention framework is important given there has been a significant increase in the use of intervention mechanisms by AEMO over the last three years, primarily in response to system security issues such as inadequate system strength in South Australia but also to manage system reliability.

12. Compensation for market participants affected by intervention events

This rule change request is looking at allowing participants to be compensated if they incur losses related to market ancillary services and changing the definition of the highest price band specified in a dispatch bid to avoid participants being under-compensated where they are dispatched differently due to an intervention. It is part of an interventions work program that was begun following the Investigation into intervention mechanisms in the NEM which was completed in August 2019. A draft determination and rule were published for stakeholder consultation in September 2020.

13. Technical standards for distributed energy resources

This rule change request is looking at improving technical standards and standardising the performance capabilities of distributed energy resources in the NEM. It is part of three concurrent workstreams that are currently being undertaken by the AEMC, AEMO and the

ESB. In addition to this rule change AEMO will carry out a consultative process to develop the initial set of minimum technical standards that will apply to DER from the end of 2020 and the ESB will undertake a review to deliver a governance framework for DER. A draft determination and rule are scheduled to be published in December 2020.

14. Integrating energy storage systems into the NEM

Energy storage is becoming an increasingly important part of the NEM and recent forecasts point to a greater role for storage in the future. This rule change request is looking to address uses identified by AEMO with how grid scale batteries, aggregations of smaller batteries, and new business models with a mix of technologies behind the connection point (hybrid facilities) can register and participate in the NEM. A consultation paper was published for stakeholder feedback in August 2020. This rule change is interdependent with the issues being explored by the Energy Security Board (ESB) in its ongoing post-2025 market design program.

15. Access, pricing and incentive arrangements for distributed energy resources

The AEMC has received three rule change requests which aim to better facilitate the efficient integration of distributed energy resources (DER). The proposals aim to identify reform options that enable DNSPs to efficiently manage the integration of distributed energy resources. The rule changes are looking to:

- update the regulatory framework to directly recognise and consider export services, encourage efficient investment in distributed energy resources by DNSPs and remove the barrier for DNSPs to propose tariffs that include an export component.
- remove impediments in the National Electricity Rules to DNSPs recovering their costs in supporting the export of electricity from the users who export energy.
- remove impediments in the National Electricity Rules to DNSPs recovering their costs in supporting the export of electricity from the users who export energy.

These rule changes complement and are interdependent with the issues being explored by the Energy Security Board (ESB) in its ongoing post-2025 market design program.

16. Bill contents and billing requirements

Retailers are required under the National Energy Retail Rules to prepare an energy bill that complies with 26 content requirements. This rule change request is looking at simplifying energy bills, so households and small business owners can better understand and manage their bills and find a better energy deal. It covers both gas and electricity bills. This rule changes request was submitted by the Minister for Energy and Emissions Reduction, the Hon Angus Taylor MP. A consultation paper was published for stakeholder feedback in September 2020.

17. Generator registration thresholds

The AEMC is consulting on two rule change requests aimed at addressing concerns about the registration and classification of generators. One of these rule change requests is looking at increasing the participation of smaller generators in central dispatch to enable improved management of the power system and efficient operation of the market. The other is looking at changes that would minimise uncertainty in the registration and connection process for embedded generators (those that connect to the distributed system rather than the transmission system). A consultation paper covering both rule change requests was published for stakeholder feedback in October 2020. These rule changes complement and

are interdependent with the issues being explored by the Energy Security Board (ESB) in its ongoing post-2025 market design program.

18. Semi-scheduled generator dispatch obligations

This rule change request was submitted by the AER as part of the ESB's interim security measures and seeks to make changes to prevent semi-scheduled generators from adjusting their anticipated level of output without informing AEMO of that intention and waiting to receive a revised dispatch target. This rule change request is being progressed under the fast-track process as the AER carried out adequate consultation on the nature and content of this rule change request before it was to the AEMC. A draft determination and rule were published for stakeholder feedback in November 2020.

19. Prudent discounts in an adoptive jurisdiction

An adoptive jurisdiction is one where the declared network functions of AEMO apply. At this time Victoria is the only adoptive jurisdiction. This rule change request, which was submitted by the Hon Lily D'Ambrosio, Minister for Energy, Environment and Climate Change, is looking at making procedural changes to the operation of the prudent discounts framework in Victoria in order to clarify the procedural roles and responsibilities of both AEMO as the Victorian transmission network service provider and declared transmission service operators which own the assets forming the transmission network in Victoria. A consultation paper was published for stakeholder feedback in October 2020.

20. Review of the Retailer of Last Resort scheme

In October 2020 the Energy Ministers Meeting requested that the AEMC conduct a review to provide advice to governments on updating the Retailer of Last Resort (RoLR) scheme. The request follows the Commission's analysis and recommendations in the 2020 Retail energy competition review final report to amend the RoLR scheme to improve outcomes for small customers and to enhance the financial market stability of the NEM.

This review aims to refine the AEMC's recommendations to improve the RoLR scheme and provide an opportunity for stakeholder input. Given the heightened risks prevalent in the electricity sector due to the COVID-19 pandemic, which may last for a prolonged period, the AEMC considers this an appropriate time to consider changes to the RoLR scheme.

A consultation paper was published for stakeholder feedback in October 2020.

21. Maintaining life support customer registration when switching

Life support requirements are designed to provide additional customer protections and require retailers and DNSPs to register premises that have a person using life support equipment that relies on electricity or gas to operate. A draft determination was published in November 2020 which proposes that life support customers be able to receive back and re-utilise their medical confirmation documents that were submitted for the purpose of providing medical confirmation of life support equipment, provided the documents are dated less than four years ago. It aims to reduce costs and mobility challenges related to medical visits for life support customers while maintaining customer safety.

22. DWGM maintenance planning

This rule change request seeks to clarify AEMO's existing maintenance coordination function and eliminate inconsistencies between the National Gas Law and the National Gas Rules in the Victoria declared wholesale gas market. A consultation paper was published for

stakeholder feedback in October 2020. A final determination and rule are scheduled to be published in December 2020.

23. Participant derogation – financiability of ISP project (TransGrid)

24. Participant derogation – financiability of ISP project (ElectraNet)

AEMO's ISP is a whole of system plan and has identified an optimal development path for the NEM, consisting of ISP projects, generation developments and regulatory and market reforms over the next 20 years. TransGrid and ElectraNet, the transmission network operators in New South Wales and South Australia, have raised the question of whether the current regulatory framework design is adequate to secure financing for their respective shares of ISP projects.

The rule change request seeks to address TransGrid and ElectraNet's identified issues in securing financing for their ISP projects consistent with the AER benchmark rate of return.

A consultation paper was published for stakeholder feedback in November 2020.

25. Review of the system restart standard 2020

In October 2020 the Reliability Panel published a final determination on amendments to the system restart standard to account for changes made in the AEMC's System restart services, standards and testing rule change. An interim Standard was published alongside the final determination. At the same time, the Panel also published a draft determination on quantitative Standard settings for a combined Queensland sub-network for stakeholder feedback. This draft determination follows on from a decision made by AEMO to combine the existing North and South Queensland sub-networks to form a single Queensland sub-network.

Completed in 2020

26. Reallocation of national transmission planner costs

A rule was made in October 2020 that addresses errors related to the mechanics for charging national transmission planner costs. It will improve the effectiveness and efficiency of the administrative processes associated with the recovery of national transmission planner function fees from coordinating network service providers, potentially reducing costs for participants and contributing to cost savings being passed on to consumers.

27. Investigation into system strength frameworks in the NEM

The final report was published in October 2020 and sets out the AEMC's view on how the current frameworks should be evolved in a way that promotes the long term interests of consumers. The current system strength frameworks that address immediate system strength issues were put in place in 2017 and have been successful at keeping the system secure. However, with the fast pace of the transition the time has come to adjust and expand the frameworks so that they can evolve and be agile and flexible to support the rapid connection of new renewable generation.

The final report includes a number of recommendations in three distinct categories; supply side, demand side, and effective coordination between the supply and demand sides. The high level policy directions in relation to the development of an evolved system strength framework laid out in this final report are being progressed under rule changes and through the ESB's p2025 market design project.

28. Electricity network economic regulatory frameworks review

In the 2019 Electricity network economic regulatory frameworks review there was a focus on distributed energy resources and a series of key recommendations and actions required to integrate the increasing uptake of distributed energy resources into the NEM. The 2020 Electricity network economic regulatory frameworks review was published in October 2020 outlines priority reform considerations for distribution and transmission network regulation over the next 18 months, and how this fits in with the ESB's p2025 market design project.

In particular, this year's report explores the implications of some major developments highlighted by this consultation:

- the evolving role of distribution networks
- the implementation of the Integrated System Plan (ISP) for transmission networks
- innovative approaches to consumer engagement.

Following this report, the AEMC will commence work to clarify the role of distribution networks in the changing electricity sector, and to ensure an appropriate regulatory framework is in place to support network transformation.

29. Changes to intervention mechanisms

A rule was made in September 2020 that reduces costs to consumers while maintaining efficient price signals and incentives for investors when AEMO intervenes in the market. The rule removes the mandatory restrictions framework and removes the obligations to counteract during an intervention. In addition to this it clarifies the basis for affected participant compensation cost recovery following activation of the RERT.

Work on the intervention framework is important given there has been a significant increase in the use of intervention mechanisms by AEMO over the last three years, primarily in response to system security issues such as inadequate system strength in South Australia but also to manage system reliability.

30. Removal of intervention hierarchy

A rule was made in September 2020 that minimises costs to consumers when it is necessary to intervene in the electricity market. It does this by removing the existing hierarchy of interventions and replacing it with a more flexible requirement for AEMO to select the supply scarcity mechanism (or combination of mechanisms) that are most effective at addressing the need to intervene while also minimising direct and indirect costs.

31. Deferral of network charges

A rule was made in August 2020 that introduces a mechanism to allow some retailers to defer the payment of network charges to distribution network service providers for customers impacted by COVID-19 for a period of six months. The implementation of this deferral mechanism was important to deal with the heightened risk of multiple retailers exiting the market as a direct result of the unique circumstances caused by the COVID-19 pandemic, which do not reflect normal competitive market forces.

32. 2020 Biennial review into liquidity in wholesale and gas pipeline trading markets

The gas industry on the east coast of Australia has undergone a structural change over the last decade with largely isolated point-to-point pipelines having evolved into an interconnected network that supports a series of increasingly interlinked markets. In

December 2017 the COAG EC provided terms of reference for the AEMC to complete a biennial review into the growth in liquidity in the wholesale gas and pipeline capacity trading markets.

The 2020 review, published in July 2020, found that liquidity is growing in a number of Australia's wholesale gas and pipeline capacity trading markets and that progress is being made towards increase liquidity that can contribute to achieving the COAG Energy Council's gas market vision. The information used in the review largely predates the impacts of the COVID-19 pandemic and as such will provide a useful baseline for future assessment of the effects of the pandemic on gas market liquidity.

33. Delayed implementation of five minute and global settlement

In July 2020 a rule was made to give energy businesses an extra three months to get ready for the change to five minute settlement. The implementation date for five minute settlement is now set for October 2021. This rule change request was treated as urgent because of the potential for COVID-19 to cause financial stress for retailers and financial contagion in the energy sector.

34. 2020 Retail Energy Competition Review

The seventh annual review of retail competition in the NEM, published 30 June, looked into three main topics: the impacts of COVID pandemic on the retail markets; the retail market of the future, including as assessment of the regulatory changes needed to make consumer protections fit for purpose in the future and an analysis of how electric vehicles are being integrated into the market; and the outcomes in the retail market since the 2019 review. Ten recommendations have been made to support consumers in the retail market.

35. Wholesale demand response mechanism rule change

Rules were made in June 2020 to facilitate wholesale demand response in the NEM, allowing consumers to sell demand response in the wholesale market either directly or through specialist aggregators. The mechanism introduced will unlock under-utilised demand response and promote greater demand-side transparency as well as price and reliability-related benefits. This is an important step in the move towards a two-sided market which will assist the NEM in effectively evolving and transitioning to the future power sector.

36. Updating the regulatory frameworks for distributor-led stand-alone power systems

Advances in technology mean the economics of providing stand-alone power systems are improving, and they are becoming an increasingly viable way of supplying power, particularly for those customers for whom the cost of providing a grid connection is high. In May 2020 the AEMC provided a final report containing rules to allow local distribution network service providers (DNSPs) to use stand-alone power systems. This follows an earlier report published in 2019 that contained a detailed design and drafting instructions for law changes. The law changes for distributor-led stand-alone power systems were introduced into the South Australian Parliament in November 2020.

37. Introduction of metering coordinator planned interruptions

A rule was made in May 2020 to provide customers impacted by shared fusing arrangements with certainty of meter installation timeframes. These timeframes removed the potential for customers to be left without a new installation or service for an undefined time if their supply couldn't be interrupted without interrupting the supply to one or more other customers.

38. System restart services, standards and testing

A rule was made in April 2020 to enhance the frameworks for system restart and restoration which contributes to the overall resilience of the power system by enabling recovery following a major blackout. The nature of system restart ancillary services and black start capability have been expanded which allows AEMO to procure the services needed and take overall costs into account when doing so. The rule changes followed work the AEMC completed in its *Review of the South Australian black system event*.

39. Mandatory primary frequency control rule change and an updated frequency control workplan

A rule was made in March 2020 to require all scheduled and semi-scheduled generation in the NEM to support the secure operations of the power system by responding automatically to changes in power system frequency. This requirement activates an existing capability to provide primary frequency response will address the immediate need for improved frequency control in the NEM and gives AEMO greater confidence that it is maintaining the power system in a secure operating state. The AEMC also published an updated frequency control work plan developed in collaboration with the ESB, AEMO and the AER. The work plan sets out a pathway for the development of future arrangements to appropriately incentivise and reward frequency control in the NEM.

40. Regulatory sandboxes

Regulatory sandbox arrangements in the NEM will allow participants to test innovative concepts in the market under relaxed regulatory requirements at a smaller scale, on a time-limited bases and with appropriate safeguards in place. The AEMC completed a review into regulatory sandbox arrangements in September 2019 and were subsequently asked by COAG EC to provide further advice, including a final recommended package of rule changes. This package of rule changes was provided to the Council in March 2020. A legislation package of draft amendments was put out for consultation by the COAG Energy Council in September 2020. Following this consultation, a final package of draft amendments will be provided to the Energy Ministers' for consideration.

41. Victorian jurisdictional derogation – RERT contracting

A jurisdictional derogation was requested by the Victorian Minister for Energy, Environment and Climate Change – the Hon Lily D'Ambrosio – in response to challenging reliability issues facing Victoria in the short to medium term. A rule was made in March 2020 allowing AEMO to enter into multi-year electricity contracts under the RERT mechanisms for a limited period of time.

42. DWGM simpler wholesale price

A rule was made in March 2020 that simplifies risk management for market participants and improves wholesale gas prices in the Victorian declared wholesale gas market. The rule requires AEMO to take physical constraints on withdrawals of gas into account when setting the pricing schedules that determine market prices. The final result will be pricing schedules that better align with the physical capability of the system and reduce uncertainty and scheduling risk for market participants.

43. DWGM improvement to the AMDQ regime

A rule was made in March 2020 to make it easier for participants to secure and trade capacity certificates in the Victorian declared wholesale gas market. New capacity certificates will be introduced to help participants manage scheduling risk by providing tie-breaking benefits when bids to buy gas or offers to sell gas are tied at the same price.

44. Annual market performance review 2019

The annual market performance review covering the 2018-2019 period was published in March 2020. This year's review found there were more times when the system was not in a secure operating state compared with the previous year. However, it also found that new technologies and ways of doing business would be pivotal in providing solutions.

Climate change was highlighted as a major consideration in future power system security in the 2019 AMPR report. The challenge of maintaining a secure power system will grow as the number and range of weather events such as prolonged extreme temperatures, cyclones and bushfires increase as a result of climate change.

45. Short term forward market

In March 2020, the AEMC decided not to make a rule for the Short term forward market rule change request as it was unlikely it would contribute to the national electricity objective. The conclusion from consultation and market analysis was that there is currently limited demand for short term hedge products in the market and that demand is sporadic and bespoke.

46. Regulating conditional discounting

A rule was made in February 2020 that will require retailers to scale back the financial penalties they currently charge consumers who pay their bills late. The practice of 'conditional discounting' has been a common feature of energy market offers available to consumers but can lead to excessive charges and financial hardship.

47. Transmission loss factors

A rule was made in February 2020 to give AEMO more flexibility around the way it calculates marginal loss factors. The physics of the electricity network means that when you transport electricity across poles and wires, losses are incurred. This rule backs a consumer-focussed approach to the way electricity losses are calculated in the NEM.

48. Improving transparency and extending duration of MT PASA

A rule was made in February 2020 to give power system businesses more detailed information on whether or not electricity shortfalls are forecast. This will help avoid blackouts as generators can better schedule their maintenance outside of peak times. This rule also helps implement the national retailer reliability obligation (RRO) which makes electricity retailers contract with generator or 'on demand' resources to cover projected supply shortfalls.

Australian Energy Market Operator

49. Gas Statement of Opportunities for east Australia - March

Prepared annually forecasting annual gas consumption, maximum gas demand and the adequacy of eastern and south-eastern Australian gas markets to supply forecast demand for the next 20 years. The 2020 GSOO projects supply from existing and committed gas developments will be sufficient to meet forecast gas demand across eastern and south-eastern Australia until at least 2023, provided that liquefied natural gas (LNG) export spot cargoes are redirected to meet domestic demand, if required. However, unless additional southern supply sources are developed, LNG import terminals are progressed, or pipeline limitations are addressed, gas supply restrictions and curtailment of gas-powered generation (GPG) for the National Electricity Market (NEM) may be necessary on peak winter days in southern states from 2024.

50. Victorian Gas Planning Report - March

Prepared annually to provide information relating to gas supply, demand, network capability and Victorian Declared Transmission System for the next five years. The 2020 VGPR Update highlights that committed annual gas supply forecasts provided to AEMO by Victorian gas producers have increased by approximately 10% for 2020-23 compared to the 2019 VGPR, due to some anticipated projects progressing into committed projects. Despite the near-term increase in forecasts, committed supply is forecast to reduce by 37% from 2022 to 2024 due to field decline. Without additional gas supply, removal of pipeline constraints, or a liquefied natural gas (LNG) import terminal, gas supply restrictions and curtailment may be necessary from 2024.

51. WA WEM Electricity Statement of Opportunities - June

Prepared annually and provides forecasts and analysis of peak demand and energy use in the South West Integrated System for the next 10 years. The 2020 WEM ESOO finds that based on the 10% POE peak demand forecast, the Reserve Capacity Requirement has been determined as 4,421 megawatts (MW) for the 2022-23 Capacity Year. It also finds that sufficient capacity is expected to be available to meet forecast demand over the outlook period despite the staged retirement of Muja unit 5 in 2022 and unit 6 in 2024 and assuming no other capacity changes.

52. Victorian Annual Planning Report - June

Prepared annually to provide information relating to electricity supply, demand, network capability and development for Victoria's electricity transmission declared shared network. The 2020 VAPR found that new investment in the west of the state is creating additional supply centres, while an increasing penetration of non-synchronous generation continues to impact the stability and complexity of system operations. Consumer-led investment in distributed energy resources (DER), such as distributed photovoltaic (PV) systems, has altered the shape of the daily demand curve, and is creating new challenges through larger credible contingency sizes, new record levels of minimum demand, and decreasing levels of voltage control, inertia, and system strength.

53. Integrated System Plan - Biennial: Draft December (2019) with Final June (2020)

Prepared biennially to forecast a wide spectrum of interconnected infrastructure and energy development scenarios and plans including transmission, generation, gas pipelines, and distributed energy resources. The 2020 ISP identifies the optimal development path for the National Electricity Market (NEM) that will both maximise consumer benefits and deliver \$11 billion in net market benefits to 2040. It also identified four categories of transmission projects – committed, actionable, actionable (with decision rules) and future ISP projects – permitted to be developed by the transmission network service provider through the Renewable Investment Test - Transmission (RIT-T) process.

54. Corporate Plan - July

Prepared annually to present AEMO's three year rolling strategy and forward plans to manage energy systems and markets. AEMO's corporate plan outlines the opportunities, challenges and risks the energy sector is facing, and lays out our plans to address them.

55. NEM Electricity Statement of Opportunities - August

Prepared annually to provide forecasts and analysis of technical and market data for the NEM for the next 10 years. The 2020 ESOO found that the expected reliability outlook has improved for summer 2020-21 and across the five-year outlook, due to lower forecast peak demand (which includes the projected impacts of COVID-19 next summer), minor generation and transmission augmentations, and significant development of large-scale renewable resources. However, as a result of COVID-19 and other factors, the uncertainty range of this outlook has increased compared to previous years. In summer 2020-21, expected unserved energy (USE) is not forecast to exceed the reliability standard, nor to exceed the Interim Reliability Measure (IRM), in any NEM region.

56. Annual Report – November

Prepared annually to present AEMO's organisational, operating and financial results for the most recent financial year. AEMO's 2020 Annual Report tracked the delivery on corporate priorities during FY20 and showed we had achieved our primary objectives despite the challenges of a severe summer and the COVID-19 pandemic.

57. Energy Adequacy Assessment Projection - November

Prepared annually to quantify the impact of potential energy constraints on expected levels of unserved energy in the NEM for the next two years. Based on information provided by participants, the 2020 EAAP highlights that drought conditions are unlikely to significantly affect reliability in the coming summer, even under low rainfall assumptions. It also finds that energy limitations supplied by some thermal generators related to fuel supply have no impact on the level of projected unserved energy (USE) observed in any region in the next two years.

58. South Australian Electricity Report – November

Prepared annually for the South Australian Minister for Energy and Mining about South Australia's electricity supply and demand. In 2019-20, South Australia's world-leading energy transformation again saw new records set, variability in demand grow further, and the continued emergence of trends requiring action to maintain secure and reliable supply.

59. WA Gas Statement of Opportunities - December

Prepared annually to provide forecasts of gas demand and supply for the West Australian gas industry, including overview of gas infrastructure and emerging issues, for the next 10 years.

60. Quarterly Energy Dynamics

Prepared quarterly to provide a summary of electricity and gas market dynamics, trends and outcomes for the previous quarter compared to historic quarters for Western Australian energy markets and NEM, and east coast gas markets.

61. Medium-term PASA - Weekly

Prepared weekly to provide information on peak load forecasts, total available generation capacity, demand-side management capacity, any identified capacity shortfall of ancillary services, transmission outages, any security problems, fuel supply and logistics, and any facility testing for each week for the next two years