Australian Energy Market Commission

AEMC
Australian Energy Market Commission

RULE

Consultation paper

Minimum system load governance and market arrangements

Proponents
Clean Energy Council - Minimum System Load reserve service (ERC0417)
Reliability Panel - Minimum System Load framework and floor price proposal (ERC0439)

9 July 2026

Enquiries

Australian Energy Market Commission
Level 15, 60 Castlereagh Street
Sydney NSW 2000

E aemc@aemc.gov.au
T (02) 8296 7800

Reference: ERC0417, ERC0439

About the AEMC

The AEMC reports to the energy ministers. We have two functions. We make and amend the national electricity, gas and energy retail rules and conduct independent reviews for the energy ministers.

Acknowledgement of Country

The AEMC acknowledges and shows respect for the Traditional Custodians of the many different lands across Australia on which we live and work. The AEMC office is located on the land of the Gadigal people of the Eora nation. We pay respect to all Elders past and present, and to the enduring connection of Aboriginal and Torres Strait Islander peoples to Country.

Copyright

Citation

To cite this document, please use the following:
AEMC, Minimum system load governance and market arrangements, Consultation paper, 9 July 2026

Summary

1 The continued growth of consumer energy resources (CER), including rooftop solar and home batteries, is leading to new challenges for the operation of the National Electricity Market (NEM). One such challenge is a condition known as "Minimum system Load" (MSL), where the aggregate contribution of rooftop solar generation offsets underlying consumer demand, reducing the demand for electricity from grid-scale generation. To date, these MSL conditions occur rarely, during periods where customer demand is relatively low and rooftop solar generation is high such as during a sunny spring-time weekend.

2 The Australian Energy Market Commission (AEMC or Commission) has received two rule change requests proposing changes to the National electricity rules (NER) relating to the management of MSL conditions in the NEM: one from the AEMC Reliability Panel (Panel) and one from the Clean Energy Council (CEC).

- The Panel proposed the introduction of **an MSL governance framework alongside a requirement to set the regional spot price at the market floor price (MFP)** (currently – $1,000/MWh) when system demand is expected to be insufficient to maintain secure power system operation. The Panel's proposed an MSL governance framework modelled on the existing lack-of-reserve (LOR) framework to define MSL conditions and AEMO's related responsibilities to declare and report on these. Meanwhile, the Panel envisaged that its MFP pricing proposal would sharpen price signals during oversupply, encouraging generators to withdraw generation capacity and load to absorb excess energy, thereby reducing reliance on AEMO interventions.
- The CEC proposed **a new MSL market ancillary service** through which any responsive load (including utility Battery energy storage systems (BESS), pumped hydro and behind-the-meter resources) could bid to provide dispatchable reserves for use by AEMO to increase demand as required during forecast MSL periods. The CEC envisages that this service would be technology-neutral, self-committed and operate like the existing frequency control ancillary service (FCAS) markets.

3 The AEMC has commenced its consideration of these requests, and this consultation paper is the first stage. We are seeking your feedback on the materiality of the issues raised, potential solutions and how we propose to assess if each request will promote the long-term interest of consumers.

The assessment of these rule changes is part of a broader reform program

4 The Commission's assessment of these MSL rule change requests takes place in the context of a range of other regulatory and operational reforms underway to integrate and accommodate the projected increase in CER, including from rooftop solar generation, home battery and electric vehicles. At a high level, this broader reform work program is described by the National Consumer Energy Resources Roadmap (the CER Roadmap) which sets out a plan for reforms to ensure Australians are able to harness the full potential of CER. Effective coordination of CER can help lower costs for all consumers by offsetting the need for billions of dollars in grid-scale investment.

5 In particular, the Commission highlights a number of reforms currently being considered or in the process of implementation that are likely to have a bearing on the outlook for MSL conditions in the NEM. This includes reforms related to:

- **Retail pricing** – such as the Commonwealth Government's Solar Sharer Offer, a regulated energy offer that will provide eligible households with 3 hours of free electricity in the middle

of the day; and the final recommendations from the AEMC's *Pricing Review: Electricity pricing for a consumer-driven future,* which sets a clear direction for a simpler, more transparent energy market that unlocks the full potential of a consumer-led system. Each of these reforms – once implemented – are likely to impact on consumer behaviour and lead to underlying changes in operational demand profiles.

- **Market participation and visibility of CER** – including the implementation of Voluntary scheduled resource classifications to support increased participation of price responsive demand side resources and the related *Market visibility framework* process initiated by AEMO in May 2026 to investigate further reforms to improve visibility and integration of unscheduled price response resources in the market to support secure operation and efficient market outcomes.
- **Operation of a high CER power system**, including definition and specification of new operational capabilities, roles and responsibilities to formalise *Distribution Network Service Providers* (DNSPs) as distribution system operators (DSOs). The new DSO role is envisaged to include operational responsibilities to adjust energy flows or activate flexible resources to efficiently manage power system requirements, including in response to low demand and minimum system load conditions.

AEMO has developed procedures to monitor and manage MSL conditions in the NEM

6 AEMO must operate the power system to maintain a real time-balance between electricity supply (generation) and demand (consumption), while also maintaining sufficient reserves to respond and ride through unexpected events such as the failure or disconnection of a major generator or load. At the same time, under the current operation of the system, grid demand must also be sufficient to meet the minimum requirements of synchronous generators to maintain grid stability. Over time, as we rely less on synchronous generators to provide these services, this may change and so will have implications for minimum system load conditions.

7 In the absence of an explicit MSL framework in the NER, AEMO has developed its own MSL framework, to monitor and manage these conditions. The key elements of the current approach involve the identification of MSL conditions and publication of market notices to inform market participants of the operational outlook for MSL conditions. It also informs the market of any related actions AEMO intends to take in order to manage the integrity of the system.

8 Modelled on the existing lack-of-reserve (LOR) framework, AEMO applies a three-tier system of classification and notification (MSL1, MSL2 and MSL3) reflecting a region's proximity to the point at which demand becomes insufficient to maintain a secure operating state. The regional MSL thresholds vary according to system conditions, including network outages, plant availability and a region's export capability.[1]

9 Where a timely voluntary response does not materialise, AEMO has a range of responses and mechanisms available to it to help manage the system. For example, it may intervene to maintain or restore system security – for example, by directing scheduled resources or instructing network service providers to maintain regional demand above the minimum secure level (MSL3). As a last resort, this may include the use of emergency photovoltaic (PV) backstop mechanisms that curtail rooftop solar generation.

10 AEMO reports on MSL events through its quarterly LOR reports.

1 AEMO, *Minimum system load thresholds fact sheet*, 2025, pp.1–2; AEMO, *2025 NEM spring readiness industry briefing*, 20 August 2025, pp.5–6.

11 AEMO has also recently sought to procure load response services through transitional service arrangements of Type 1 contracts. These are contracts that seek to fill urgent immediate grid reliability gaps during the energy transition. AEMO is seeking to use these contracts to engage scheduled batteries to help minimum system load.

12 AEMO has also access to type 2 contracts that allow AEMO to trial new technologies or innovative uses of existing technologies. AEMO has recently opened up an expression of interest for a broader Type 2 procurement related to minimum system load. This would be open to any resource able to deliver a measurable increase in operational demand.[2]

The outlook for MSL conditions in the NEM is highly uncertain and likely to evolve

13 The outlook for MSL conditions has a significant bearing on the scope and scale of regulatory change that would be appropriate to address the issues raised in the rule change requests. While AEMO's projections in the 2026 Integrated system plan (ISP) show that there is expected to be continued growth in rooftop PV, the evolution of the demand side of the system is far more uncertain. Key sources of uncertainty include:

- the development of new large loads (such as data centres, electrolysers, utility-scale storage and pumped hydro),
- the rate of uptake of home batteries and electric vehicles,
- the extent to which consumer energy resources are visible, coordinated and controllable, and
- the timing of thermal generator retirements and the delivery of replacement system security plant.

14 AEMO's 2025 Transition Plan for System Security projected the potential number of MSL events in each NEM region to 2031. The projected number of future MSL3 days over this outlook ranges widely – from zero per year in each NEM region to as many as 2 days in NSW, 53 in Victoria, 33 in Queensland and 135 in South Australia – reflecting both a high degree of uncertainty and a general upward trend.[3]

15 This uncertainty about the outlook for MSL bears directly on the materiality of the costs of managing MSL conditions through directions-based arrangements, and on the relative benefits of establishing the new market and operational arrangements proposed by the rule change proponents. Navigating this uncertainty will be a central component of the Commission's assessment.

We are seeking your views on MSL governance and reporting arrangements

16 The Reliability Panel's rule change proposed an explicit framework in the NER to support transparency, governance and accountability around the management of MSL conditions in the NEM. The CEC similarly considered that NER changes are required to clarify the definitions related to MSL along with AEMO's governance and reporting obligations.

17 Both proponents look to the existing LOR framework as a model for new rules based MSL governance arrangements. The Panel proposed that the NER be revised to define MSL conditions and clarify AEMO's role in identifying, managing and reporting on them, supported by related AEMO guidelines. The CEC proposed similar changes including a defined 'minimum system load'

2 AEMO, *Statement of need under clause 3.11.12(a) of the National Electricity Rules – MSL transitional services (Type 1)*, 27 November 2025, pp.7–9.
3 AEMO, *2025 Transition plan for system security – Appendix A3: MSL regional assessments*, 1 December 2025.

condition under NER cl 4.8.4, an obligation for AEMO to prepare MSL declaration guidelines, and consequential changes to the reporting and intervention-timing provisions.

18 As envisaged by the rule change proponents, the existing LOR arrangements provide a starting point for developing additional regulatory obligations for AEMO to manage and report on low demand conditions. In exploring the merits of these two proposals, the Commission will consider if a formal MSL governance framework is needed to meet the future needs of the power system and market participants, and if so, how it should be defined and implemented to promote the long-term interest of consumers. This includes consideration about how a low-demand condition should be defined and named – for example, as 'minimum system load', a 'lack of load reserve', or by reference to the probability of unscheduled generation shedding.

19 The Commission is seeking stakeholder views on whether an explicit MSL governance framework is warranted and, if so, on the fundamental definitions and elements it should contain.

We are seeking your views on how the NEM provides effective price signals for efficient market outcomes during MSL conditions

20 A fundamental role of the wholesale market is to send price signals that support efficient operational, investment and consumption decisions. Both rule change requests identify that, during periods of low operational demand, the market response is currently muted and system security is maintained largely through out-of-market intervention by AEMO – indicating the absence of a market-based tool capable of delivering a sufficient signal during MSL conditions.

21 The Reliability Panel considers that its proposal to set the regional energy spot price at the market floor price (MFP, currently –$1,000/MWh) when AEMO declares an MSL3 event would sharpen price signals during oversupply. This price signal, or the threat of it, should encourage generators to withdraw supply and flexible load and storage to increase consumption to absorb excess energy, reducing the need for AEMO to intervene in the market to ensure stability. It would also better support integration of consumer energy resources.

22 Stakeholder submissions to the Panel's 2026 Reliability Standard and Settings Review (RSSR) expressed mixed views. Some supported the trigger as a means of limiting out-of-market intervention and providing clearer signals, while others raised concerns about its effect on bidding behaviour and storage incentives, the financial exposure of thermal plant that must remain online for system security, and whether a wholesale price signal would reach the distributed rooftop PV that primarily drives MSL conditions.

23 The Commission is seeking views on the effectiveness of the current arrangements and on the design of the Panel's proposal – including how the trigger would be defined and whether the market floor price is the appropriate setting for an MSL3 condition, or whether there is an alternative price that would better reflect the cost of intervention. The Commission is also examining complementary reforms, including whether intervention pricing should apply when AEMO intervenes to increase demand (it does not at present) and whether MSL minimum demand requirements should be reflected within central dispatch.

We are seeking your views on the provision and availability of load reserves

24 The CEC proposed a new MSL market ancillary service to secure defined volumes of load response over specified periods to help manage MSL conditions. It considered that this would support efficient market outcomes and manage system security risks during low-demand periods without needing AEMO to intervene. The CEC considers that the current reliance on directions and

Type 1 transitional contracts is not fit for purpose over the medium to long term, because the risk of AEMO intervening to change the availability of storage undermines the investment case for the dispatchable storage the NEM increasingly requires.

25 Under the CEC's proposal, any responsive load – including utility-scale batteries, pumped hydro and behind-the-meter resources – could bid to make its capacity available for AEMO to control during forecast MSL periods. The service would operate in a manner similar to the existing contingency FCAS markets, with providers dispatched through the NEM dispatch engine (NEMDE) in advance of an expected requirement.

26 The Commission notes that a key distinguishing feature of the proposed service is its degree of 'aheadness' provided through an MSL service. Unlike FCAS, which is enabled for delivery in the following dispatch interval, the MSL service would likely need to be enabled several hours ahead of a forecast MSL condition. The Commission is interested in stakeholder feedback on the expected benefits, the operational design and costs of implementing this proposal.

27 The Commission has also identified a range of alternative or complementary arrangements that could provide (or support the provision of) load reserves for MSL conditions. These include:

- continued reliance on the energy price signal,
- improved governance and information provision around the need for load response,
- extending and/or building on the existing transitional service arrangements,
- reconfiguring an existing market ancillary service to provide MSL reserves,
- adapting the wholesale demand response mechanism to provide two way response,
- out of market contracting arrangements to deliver a load-increase service, similar to the existing Reliability and emergency reserve trader (RERT) arrangements.

28 The Commission is seeking stakeholder views on the relative merits of these options against the CEC's proposed MSL market ancillary service.

We consider that there are four assessment criteria that are most relevant to this rule change request

29 Considering the NEO[4] and the issues raised in the rule change request, the Commission proposes to assess the rule change request against four assessment criteria.

30 Please provide feedback on our proposal to assess the rule change proposals against:

- **Safety, security and reliability** - this relates to how the regulatory frameworks support transparency and accountability of future system security and reliability needs such that critical capabilities are available where and when they are required.
- **Principles of market efficiency** - this relates to how price signals, information and risk allocation support the efficient operation of the power system and the efficient investment in new plant and capabilities to support efficient long term market outcomes.
- **Emissions reduction -** this relates to whether the proposed reforms would efficiently contribute to achieving government targets for reducing, or that are likely to reduce, Australia's greenhouse gas emissions
- **Principles of good regulatory practice** - this relates to how potential changes to the NER would promote predictability, stability and alignment with the broader direction other reforms underway.

4 Section 7 of the NEL

Submissions are due by 20 August 2026 with other engagement opportunities to follow

31 There are multiple options to provide your feedback throughout the rule change process.

32 Written submissions responding to this consultation paper must be lodged with Commission by 20 August 2026 via the Commission's website, www.aemc.gov.au.

33 There are other opportunities for you to engage with us, such as one-on-one discussions or industry briefing sessions. See the section of this paper about "How to engage with us" for further instructions and contact details for the project leader.

Full list of consultation questions

Question 1: The outlook for MSL events in the NEM in the context of the broader reform program

1. What are your views on the expected frequency, severity and location of MSL conditions over the short, medium and long term?
2. Are there specific information gaps in the current MSL outlook that materially affect investment, operational or policy decisions?
3. In the context of the rule change proposals, how should the Commission distinguish between temporary transitional MSL risks and enduring structural MSL risks?

Question 2: The case for including an MSL governance framework in the NER

1. Do you agree that there is a need for an explicit framework in the NER to more clearly set out the governance arrangements in relation to MSL conditions in the NEM?

Question 3: The potential elements of an MSL governance framework in the NER

1. What are your views on the fundamental definitions and naming conventions that would provide the basis for a framework in the NER for MSL conditions?
   a. Would it be appropriate to define the concept of MSL in the NER?
   b. Would it be appropriate to define the concept of a lack of load reserve - or similar - in the NER?
   c. Would it be appropriate to define the concept of unscheduled generation shedding - or similar - in the NER?
2. What are your views on the potential elements of a rules-based MSL governance framework including potential requirements for :
   a. Forecasting low demand or MSL conditions through ST PASA?
   b. The declaration of MSL or low demand conditions?
   c. Reporting on MSL or low demand conditions?

3. Are there other additional elements that you consider should be included in a MSL rules framework?

Question 4: Is the NEM set up to provide effective price signals to support efficient operational and investment outcomes with respect to MSL conditions?

1. What are your views on the effectiveness of the current market arrangements sending effective price signals to support efficient investment outcomes and avoiding the need for AEMO intervention during MSL conditions?
2. Do you agree with the Reliability Panel that there is need to revise the NER to enhance the pricing outcomes with respect to MSL conditions? Please provide evidence to support your view.

Question 5: The Reliability Panel proposes that the NER requires that the energy price be set at the market floor price during MSL3 conditions

1. Do you support the Panel's proposal to set the price at the market floor price during MSL3 conditions? In particular, do you have views on the degree to which it would improve market efficiency and energy pricing outcomes in the NEM by sending a stronger scarcity/oversupply signal?
2. What potential related unintended consequences should the Commission be mindful of in relation to the Panel's proposal? How could these be mitigated?

Question 6: Alternative and complementary reforms to improve pricing outcomes in relation to MSL conditions

1. What are your views on the potential application of intervention pricing for AEMO interventions to decrease generation or increase demand during MSL conditions?
2. What are your views on the role of central dispatch and NEMDE in supporting effective price formation for MSL conditions?
3. Are there other reforms that the Commission should consider, that could improve price signals in the NEM in relation to MSL conditions?

Question 7: The case for change to the NER to support the provision of load reserves to manage MSL conditions

1. How effective and efficient do you consider the existing NEM regulatory arrangements are at supporting investment in and availability of load reserves?
2. Do you agree with the CEC that there is a need to change the NER to more explicitly support the provision of load reserves to manage MSL conditions?

Question 8: The CEC's proposed new MSL market ancillary service

1. What are your views on the potential benefits of the CEC's proposal to establish a new MSL market ancillary service?
2. What are your views on the CEC's operational vision for a new MSL market ancillary service?
3. What are your views on the implementation and operational costs associated with the CEC's proposal to establish a new MSL market ancillary service?

Question 9: What are your views on alternative or complementary solutions for the pricing and provision of load reserves for MSL conditions?

1. What are your views on potential alternative or complementary solutions for the pricing and provision of load reserves?

Question 10: Assessment framework

1. Do you agree with the proposed assessment criteria?
2. Are there additional criteria that the Commission should consider or criteria included here that are not relevant?

How to make a submission

We encourage you to make a submission

Stakeholders can help shape the solutions by participating in the rule change process. Engaging with stakeholders helps us understand the potential impacts of our decisions and, in so doing, contributes to well-informed, high quality rule changes.

We have included questions in each chapter to guide feedback, and the full list of questions is above. However, you are welcome to provide feedback on any additional matters that may assist the Commission in making its decision.

How to make a written submission

Due date: Written submissions responding to this consultation paper must be lodged with Commission by 20 August 2026.

How to make a submission: Go to the Commission's website, www.aemc.gov.au, find the "lodge a submission" function under the "Contact Us" tab, and select the project reference code ERC0417 or ERC0439.[5]

Tips for making submissions are available on our website.[6]

Publication: The Commission publishes submissions on its website. However, we will not publish parts of a submission that we agree are confidential, or that we consider inappropriate (for example offensive, defamatory, vexatious or irrelevant content, or content that is likely to infringe intellectual property rights).[7]

Other opportunities for engagement

There are other opportunities for you to engage with us, such as one-on-one discussions or industry briefing sessions. Please reach out to the project team if you would like to arrange a discussion. We will consider the value of holding stakeholder technical working group sessions as the rule change processes progress.

For more information, you can contact us

Email: aemc@aemc.gov.au
Telephone: (02) 8296 7800

5 If you are not able to lodge a submission online, please contact us and we will provide instructions for alternative methods to lodge the submission.
6 See: https://www.aemc.gov.au/our-work/changing-energy-rules-unique-process/making-rule-change-request/submission-tips
7 Further information is available here: https://www.aemc.gov.au/contact-us/lodge-submission

Contents

Tables

Figures

1 The context for the rule change requests

This consultation paper seeks stakeholder feedback on two rule change requests submitted by the CEC and the Reliability Panel proposing changes to the regulatory and market arrangements that relate to minimum system load condition in the NEM.

1.1 The Reliability Panel has proposed changes to the rules to support effective governance, transparency and wholesale pricing for MSL3 conditions

On 23 April 2026, the Reliability Panel submitted a rule change request giving effect to part of its *2026 Reliability Standard and Settings Review* recommendations related to the role of the market floor price during MSL conditions. The request responds to the increasing frequency and severity of low-demand conditions, driven largely by growth in unorchestrated consumer energy resources, particularly rooftop PV that does not respond to wholesale prices.[8]

The request proposed two linked amendments to the National Electricity Rules (NER):

- **A wholesale pricing trigger** that would automatically set the regional spot price at the market floor price (currently –$1,000/MWh) when AEMO declares an MSL3 event. The Panel considers this would sharpen price signals during oversupply, encouraging generators to withdraw and load to absorb excess variable renewable energy, thereby reducing reliance on AEMO intervention. The approach is framed as consistent with existing NER provisions linking price to operational constraints, and with AEMO's current practice of directing increased load during MSL3.
- **A broader MSL governance and transparency framework**, modelled on the lack-of-reserve framework, to define MSL conditions and clarify AEMO's roles, supporting guidelines and reporting. MSL is not currently defined in the NER, which the Panel considers limits governance, accountability and transparency, and constrains implementation of the trigger.

The Panel does not propose detailed design or specific drafting, leaving these to be developed through the rule change process. The Panel considers the proposal promotes the National Electricity Objective by improving incentives for consumer energy resource integration and load response, supporting system security through fewer interventions, and increasing the transparency and predictability of market outcomes during low-demand conditions.

1.2 The CEC proposes changes to the rules to create new load reserve market ancillary services

The Clean Energy Council (CEC) submitted a rule change request on 20 June 2025 proposing changes to the NER to introduce a new MSL reserve service — a co-optimised market ancillary service that pays providers to deliver defined volumes of load response over specified periods, enabling AEMO to manage system security risks during low operational demand.[9]

The CEC frames MSL as a largely structural issue arising from rising distributed PV reducing operational demand alongside continued reliance on synchronous generation operating at minimum stable levels, citing AEMO's advice that related security risks (primarily exceedance of

8 Reliability Panel, Minimum System Load framework and floor price proposal, 23 April 2026 - available at https://www.aemc.gov.au/rule-changes/minimum-system-load-framework-and-floor-price-proposal

9 CEC, Minimum System Load reserve service proposal, 20 June 2025. Available at https://www.aemc.gov.au/rule-changes/minimum-system-load-reserve-service

transient stability limits following a load contingency) may emerge from 2025 under outage conditions and by 2027 under system normal conditions. It considers AEMO's current tools — directions and Type 1 transitional contracts — to be poor long-term substitutes for an open market, as they provide weak investment signals and discourage battery storage investment.

The request proposes:

- **A new MSL market ancillary service** through which any responsive load (including utility BESS, pumped hydro and behind-the-meter resources) could bid to provide dispatchable reserves for use by AEMO during forecast MSL periods. The CEC envisages that this service would be technology-neutral, self-committed and operate like the existing frequency control ancillary service (FCAS) markets, with enablement payments and marginal price formation along with co-optimisation of MSL reserve enablement with the energy and FCAS markets.
- **Related supporting amendments** to the NER, including a new "minimum system load" condition under clause 4.8.4 and potential MSL declaration guidelines analogous to those for peak load, with consequential reporting changes.

The CEC does not propose detailed drafting, leaving design to the rule change process. It considers the proposal promotes the National Electricity Objective through more efficient price formation, stronger investment signals via transparent market-based procurement, and improved system security by giving AEMO a targeted tool to procure rapid load response, with implementation costs expected to be modest.

1.3 The consideration of the MSL rule changes is part of a broader program of reform

The Commission's assessment of the MSL rule changes will take place in the context of a range of other regulatory and operational reforms underway to integrate and accommodate the projected increase in distributed consumer energy resources, including rooftop PV. At a high level, this reform work program is being coordinated through the National Consumer Energy Resources Roadmap (the CER Roadmap).[10]

In particular, the Commission highlights a number reforms currently being considered or in the process of implementation that are likely to have a bearing on the outlook for MSL conditions in the NEM. This includes reforms related to:

- **Retail pricing** - which may impact on consumer behaviour and lead to underlying changes in operational demand profiles.
- **Market participation and visibility of CER** - to support secure operation and efficient market outcomes.
- **Operation of a high CER power system**, including definition and specification of new operational capabilities, roles and responsibilities.

1.3.1 Reforms related to retail pricing

Minimum operational demand in the NEM is shaped not only by the aggregate volume of distributed solar generation but also by the extent to which consumption is shifted into the middle of the day in response to retail pricing arrangements. Two concurrent reforms that relate to retail pricing and the outlook for MSL are the Australian Government's proposed Solar Sharer Offer (SSO) and the AEMC's retail pricing review, described below.

10 Further information on the CER Roadmap is available here: https://www.energy.gov.au/energy-and-climate-change-ministerial-council/working-groups/electricity-working-group/consumer-energy-resources-sub-working-group/national-cer-roadmap

Solar sharer offer

The Australian Government, through the Department of Climate Change, Energy, the Environment and Water (DCCEEW), is introducing a Solar Sharer Offer (SSO) as one of a package of reforms to the Default Market Offer (DMO).[11] The reform responds to the rapid growth of rooftop solar, which now exceeds the capacity of the remaining coal-fired fleet, and to the fact that abundant, low-cost midday generation is not equally accessible to all consumers.[12] Its stated objectives are to enhance affordability, empower consumers, improve grid utilisation, and share the benefits of the energy transition more equitably.[13]

Under the SSO, retailers will be required to offer households with smart meters at least three hours of free electricity in the middle of the day, up to 24 kWh per day, on an opt-in basis, available to consumers with or without rooftop solar.[14] The offer commenced on 1 July 2026 in the DMO regions (NSW, South Australia and south-east Queensland), consistent with the Australian Energy Regulator (AER) DMO determination.[15]

By using a zero-price signal to shift controllable load into the solar peak, the SSO is likely to have a direct impact on the MSL outlook. To the extent that consumers adopt these plans and respond, it will be expected to raise daytime operational demand and partially offset the deepening minimum-demand trend.

The Pricing Review: Electricity pricing for a consumer-driven future

The Commission's review, *Electricity pricing for a consumer-driven future*, examines how the pricing framework should evolve as CER are adopted at scale. The final report for this review set out a clear direction for the future; a simpler, more transparent energy market that unlocks the full potential of a consumer-led system. This includes arrangements that would encourage and reward flexible use of CER to support the system by increasing or reducing demand in response to market and power system needs.[16]

The final report had four recommendations to achieve our vision of an electricity services market that places consumers at its core:[17]

1. Shine a light on retailer behaviour that contributes to negative outcomes for loyal customers
2. Make it easier for consumers to find electricity plans and services that suit them
3. Simpler energy plans, with complexity handled behind the scenes, to unlock the full value of a consumer-led energy system for everyone
4. Regularly review customer outcomes to refine regulations and eliminate unnecessary red tape

While the Pricing Review does not target minimum demand directly, the outcomes of this review, once implemented, are expected to have a general impact on the MSL outlook through the way that retail pricing arrangements play a role to encourage daytime load-shifting, either through direct response to price signals or via retailer-level coordination.

---

11 Department of Climate Change, Energy, the Environment and Water (DCCEEW), Default Market Offer, https://www.dcceew.gov.au/energy/programs/default-market-offer, accessed 9 June 2026.

12 Minister for Climate Change and Energy, Next steps for Solar Sharer Offer, media release, 23 January 2026.

13 Department of Climate Change, Energy, the Environment and Water, Solar Sharer offer (SSO) - Consultation Paper 2025–26, 4 November 2025, p.23.

14 Department of Climate Change, Energy, the Environment and Water, Solar Sharer offer (SSO) - Consultation Outcomes Paper 2025–26, 23 January 2026, p.23.

15 Australian Energy Regulator, 2026–27 Default market offer - Final determination, 26 May 2026, p.5.

16 For further information refer to: https://www.aemc.gov.au/market-reviews-advice/pricing-review-electricity-pricing-consumer-driven-future

17 See: The Pricing Review: Electricity pricing for a consumer-driven future | AEMC

1.3.2 Reforms to improve CER market participation and visibility

Given the expected continued growth of CER, the visibility and arrangements for market integration of these resources are key to the future operation of the electricity market and power system. This issue formed the basis of the AEMC's *Integrating price-responsive resources into the NEM rule 2024* (IPRR Rule), which introduced an NER framework for voluntary participation of CER in energy dispatch. Following on from this, the NEM Review Panel recommended that Energy Ministers implement a mandatory framework for visibility and market participation of price-responsive resources.[18] These reform programs are described further below.

Integrating price-responsive resources

The *IPRR rule 2024* provides a framework in the NER to support the integration of unscheduled price-responsive resources into the NEM's dispatch and scheduling processes.[19] A key element of the rule is the introduction of a voluntary "dispatch mode" under which aggregated CER, demand response and small generators and batteries may be scheduled and dispatched as *voluntarily scheduled resources* (VSR), combined with associated incentive, monitoring and reporting frameworks. Its objective is to reduce demand-forecast uncertainty and support efficient price formation. Under the final rule, the VSR dispatch mode is planned to commence on 23 May 2027.[20]

In June 2026, AEMO published a consultation paper proposing to introduce IPRR functionality progressively over three stages, with the associated scope and complexity increasing over time. Subject to stakeholder feedback, AEMO plans to submit a rule change request to the AEMC to amend the IPRR Rule and implement the staged IPRR delivery approach. Under the proposed reset:[21]

- Stage 1 would commence in early to mid-2027 and deliver limited initial operations under trial-like conditions;
- Stage 2 would commence in mid to late-2028 and include portfolio operations enabling broader participation; and
- Stage 3 would be delivered in late-2029 and provide full delivery aligned with the IPRR Rule.

The impact of the changes under the IPRR Rule is expected to have a bearing on the outlook for MSL, as the VSR dispatch mode provides a non-emergency means of scheduling price-responsive load and storage that can act in response to wholesale price signals to raise operational demand during low-demand conditions, while improving the accuracy of minimum-demand forecasts.

Market visibility framework

As recommended through the NEM Wholesale Market Settings Review 2025, AEMO is developing a *Market visibility framework* (MVF) to define fit-for-purpose arrangements for the provision and use of information on price-responsive behaviour and, where appropriate, the scheduling of resources in dispatch.[22]

The MVF seeks to improve:

- wholesale price formation and forecasting accuracy;

18 Independent Review Panel, National Electricity Market wholesale market settings review, final report, December 2025, p.102 (Recommendation 2A).
19 AEMC, Integrating price-responsive resources into the NEM, final determination, 19 December 2024.
20 AEMO, Integrating Price Responsive Resources into the NEM: high level implementation assessment, 2025.
21 AEMO, Integrating Price Responsive Resources into the NEM — development of a staged delivery path, consultation paper, June 2026.
22 AEMO, Market visibility framework for price responsive resources – Summary of approach to policy framework development, May 2026.

- AEMO's ability to operate the power system securely and efficiently; and
- market participants' ability to manage risk and make efficient investment and operational decisions.

AEMO is consulting on the MVF design and implementation pathway recommendations, which it will provide to Energy Ministers for decision in Q4 2026.[23] Unlike the voluntary arrangements under the IPRR Rule, the MVF would impose mandatory obligations on materially price-responsive resources, building on the VSR participation modes.

AEMO's approach paper expressly considers whether visibility obligations should apply at all times or be targeted to defined conditions, such as lack of reserve (LOR) or MSL events.[24] Improved visibility of price-responsive demand would materially assist AEMO to forecast and manage MSL conditions.

1.3.3 Reforms related to operation of a high CER power system (DSO related)

Reforms underway to support the operation of a power system with high levels of consumer energy resources (CER) are relevant to how minimum system load (MSL) conditions will be managed in the future. In December 2025, the Consumer Energy Resources Taskforce delivered final advice to Energy Ministers, recommending changes to the roles and responsibilities for distribution-level market and power system operations.[25] This advice related to the M3 and P5 priorities from the National CER roadmap which aim to define and assign the various roles and responsibilities needed to effectively integrate CER into the future operation of the power system and market.[26] Two of those recommendations bear directly on the distribution-side response to low operational demand and are summarised below.

Establishing DSO responsibilities in the NER

The final advice from the Consumer energy resources taskforce includes recommendations to formalise Distribution Network Service Providers (DNSPs) as distribution system operators (DSOs) in the NER, with clear, rules-based expectations, rights and obligations.[27] Of relevance for the MSL rule changes, the DSO role is envisaged to include operational responsibilities to adjust energy flows or activate flexible resources in response to low-load and minimum system load conditions, advising AEMO of available curtailment quantities, and maintain communication pathways for emergency CER curtailment.[28] Establishing these responsibilities in the NER would clarify the role of the DSO to operate the distribution system in a way that contributes to power system security, including through maintaining operational demand above secure levels in response to AEMO instructions, as required during MSL conditions.

A rule change request is expected on this issue by the end of 2026.

A national CER consistency framework, including PV backstop

The final advice also recommends establishing a framework to drive consistent delivery of DSO activities across the NEM's 13 DNSPs, with the AEMC to lead its initial policy design from mid-

23 Ibid.

24 Ibid.

25 CER Taskforce, Redefining roles and responsibilities for power system and market operations in a high CER future, December 2025.

26 Ref. https://www.energy.gov.au/energy-and-climate-change-ministerial-council/working-groups/electricity-working-group/consumer-energy-resources-sub-working-group/redefining-roles-for-market-and-power-systems-operations

27 CER Taskforce, Redefining roles and responsibilities for power system and market operations in a high CER future, December 2025, Recommendation 1 and Chapter 3.

28 Ibid, p.28. Table 3 (DSO responsibilities in the context of the NEM).

2026.[29] Ahead of the formal framework, prototype projects are to be progressed, including one directed at the performance of emergency backstop mechanisms – the capability to curtail rooftop solar PV output if required for power system security.[30] Backstop schemes are presently established under jurisdictional instruments, with no explicit NER obligation on DNSPs and material differences in performance and metrics between regions.

Furthermore the final advice describes a prototype project to develop nationally consistent performance metrics, testing protocols, and processes for determining the amount of backstop required to manage foreseeable MSL conditions. This consistency framework would strengthen and clarify the role of PV backstop as a key tool for managing system security risks associated with low operational demand.

A rule change request is expected on this issue by the end of 2026.

1.4 We have started the rule change process

This paper is the first stage of the AEMC's consultation process on each of the two rule changes. It seeks stakeholder feedback on:

- the issues raised in the rule change requests (and proposed solutions) with respect to:
  - the outlook for MSL conditions in the NEM (section 2.3)
  - MSL governance and reporting arrangements (chapter 3)
  - Provision of effective price signals for MSL conditions (chapter 4)
  - Availability of sufficient load reserves (chapter 5)
- our proposed assessment criteria (chapter 6).

The AEMC rule change process

A standard rule change request includes the following formal stages:

- a proponent submits a rule change request
- the Commission commences the rule change process by publishing a consultation paper and seeking stakeholder feedback
- stakeholders lodge submissions on the consultation paper and engage through other channels to make their views known to the AEMC project team
- the Commission publishes a draft determination and draft rule (if relevant)
- stakeholders lodge submissions on the draft determination and engage through other channels to make their views known to the AEMC project team
- the Commission publishes a final determination and final rule (if relevant).

Following receipt of stakeholder submissions, the Commission plans to make a draft determination with respect to the CEC and Reliability Panel rule change requests by 3 December 2026.[31]

Information on how to provide your submission and other opportunities for engagement is set out at the front of this document on page ix..

You can find more information on the rule change process on our website.[32]

29 CER Taskforce, Redefining roles and responsibilities for power system and market operations in a high CER future, December 2025, Recommendation 3 and Chapter 5.

30 ibid, Chapter 5 (prototype project 2 – emergency backstop mechanism performance); Appendix E.3.2 (emergency CER curtailment).

31 This timing includes an extension under s107 of the NEL, reflecting the complexity of the issues raised in the rule change requests.

32 See our website: https://www.aemc.gov.au/our-work/changing-energy-rules

To support the AEMC in making a decision on these proposals, we seek stakeholder feedback on the issues raised in the rule change requests, the proposed solutions and our proposed assessment approach.

2 What is minimum system load?

Minimum system load (MSL) is a term used by AEMO to describe an operational condition where there is a risk that operational demand may fall below levels required for safe and secure system operation.[33] This condition occurs during periods where underlying customer demand is low and the energy output from distributed rooftop solar is high. Such conditions are likely to arise when all or some of the following are true:

- during mild spring and autumn days when mild temperatures result in low customer demand
- during periods where industrial demand may be low, such as weekends or public holidays
- when there is high solar radiation and distributed PV(DPV or rooftop solar) generation.

These factors can result in an operational condition where the demand for electricity from resources dispatched through the National Electricity Market (NEM) can be so low that the safe and secure operation of the power system is challenging. At the same time, power system operation is currently dependent on the operation of synchronous generators that provide essential system services required for voltage control and voltage stability, collectively these requirements are referred to as "system strength".[34] AEMO's 2025 Transition plan for system security provided the following description of the operational challenges related to MSL:[35]

> MSL is the key challenge with respect to the aggregate impact of DPV on the bulk power system. Periods of MSL occur when distributed generation, particularly passive rooftop PV, significantly reduces demand on the transmission system. Large scale synchronous generators are currently essential for delivering system security services, such as system strength, fault current, inertia, voltage control, and ramping. These synchronous generators need to operate at or above their minimum stable operating levels (MSOLs). Low operational demand may prevent dispatching enough large-scale generators to maintain system security.[36]

Figure 2.1 provides an example demand profile of the drivers behind low daytime operational demand, driven by high levels of daytime rooftop solar PV generation. Further examples of demand profiles for MSL days in Victoria and South Australia (SA) are provided in appendix D.

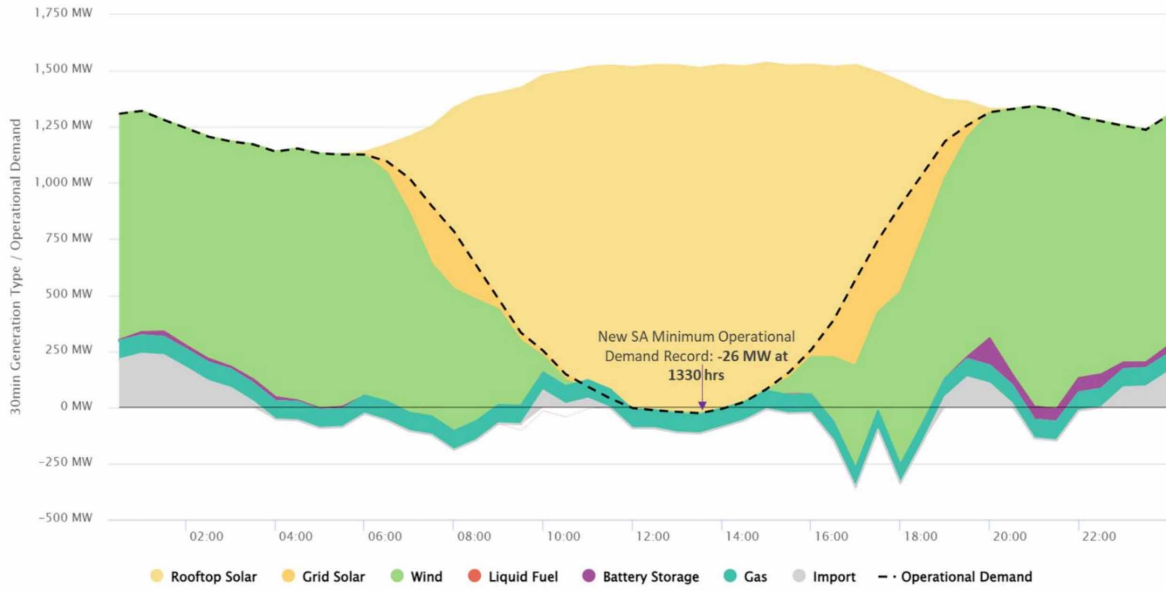
33 AEMO, 2025, Fact Sheet: Minimum System Load.

34 AEMO, 2025, NEM Spring Readiness Industry Briefing, p.5. Further detail on the concept of system strength and other essential system security services is available at https://www.aemo.com.au/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/system-security-planning.

35 AEMO, 2025 Transition Plan for System Security, 1 December 2025, p.119.

36 AEMO, 2025 Transition Plan for System Security, 1 December 2025, p.119.

Figure 2.1: Example Minimum system load demand profile



Source: AEMO, Engineering Roadmap FY2025 Priority Actions Report, August 2024, p.16.

Note: On New Years Eve 2023, DPV provided more than 100% (101.7%) of underlying demand in South Australia– a world-record for a grid of this size. At the time (and as a result) the region achieved a record minimum operational demand of -26 MW at 1330 hrs, requiring export of excess generation to neighbouring NEM regions. As shown in the figure above, this only occurred for a short period of time. AEMO expects that this operational condition will occur more frequently and in more locations as more DPV is installed by consumers.

Note: On this day AEMO issued the first formal MSL notice - MN112936 — a Minimum System Load 1 (MSL1) advisory for the Victorian region forecasting an elevated risk of insufficient demand to maintain a secure operating state from 1100 hrs to 1400 hrs.

During MSL conditions, AEMO may need to take actions to maintain the power system in a secure and satisfactory operating state. Of concern during minimum system load conditions is the potential for the loss of a major load or an exporting interconnector. If this occurred it could result in a material oversupply of energy and - at an extreme - lead to a cascading outage, in the absence of effective control measures. Maintaining the power system in a secure operating state during low demand conditions involves AEMO ensuring that:

- Operational demand is sufficient to match the minimum levels required to maintain the safe operation of generation units required for the provision of essential system services.
- There is sufficient system redundancy - including reserve capacity (operational headroom and footroom) to respond to and rebalance supply and demand to enable the system to ride through unexpected contingency events, such as the sudden loss of a major transmission line and associated generation or load. [37]

Box 1: Definition of key terms

Operational Demand (MW) - in a region is the demand that is met through AEMO's dispatch of the transmission level wholesale electricity market every 5 minutes. This includes energy provided by local scheduled generating units, semi-scheduled generating units, and non-scheduled intermittent generating units of aggregate capacity ≥ 30 MW, and by generation imports to the region and by Wholesale Demand Response. It excludes the demand met by non-scheduled generating units (< 30 MW) and exempt generation (e.g. rooftop solar, commercial tri-generation), and demand from

37 NER cl.4.2.6(b)(1) requires that AEMO must operate the power system such that it will be able to return the system to a secure operating state within thirty minutes following a contingency event.

local scheduled loads.

Underlying Demand - in a region is the estimated total of electricity consumption defined as operational demand plus rooftop PV generation.

System strength - System strength can broadly be described as the ability of the power system to maintain and control the voltage waveform at any given location in the power system, both during steady state operation and following a disturbance. System strength is traditionally provided by large rotating synchronous generators, including, hydro, gas fired turbines and thermal (gas or coal) powered steam turbines. AEMO is actively managing a transformation process to support the provision of system strength from new sources, including synchronous condensers and grid-forming inverter connected Battery energy storage systems.

Source: AEMO demand definitions as available at: https://www.aemo.com.au/energy-systems/electricity/national-electricity-market-nem/data-nem/operational-demand-data
Source: System strength definition as per AEMO, System Strength Requirements Methodology, 1 December 2022, p.6.

MSL conditions are an emerging operational phenomenon that AEMO has been actively monitoring and managing since as early as 2020.[38] While these operational conditions were initially identified in the SA region, they have also been observed in the Vic region and AEMO projects an increasing potential for MSL conditions occurring in each of the mainland NEM regions (including QLD and NSW) over the medium term outlook.[39]

- AEMO's operational framework for managing MSL conditions is described in section 2.1
- An overview of the historical frequency and impacts of MSL events is set out in section 2.2.
- An overview of the outlook for MSL conditions is set out in section 2.3.

2.1 AEMO's MSL framework to maintain power system security during periods of low operational demand

In the absence of an explicit MSL framework in the NER, AEMO has developed an MSL framework which describes how it monitors and acts to manage the operational risks posed by MSL conditions. Through the framework, AEMO seeks to maintain operational demand above the levels required to meet the minimum stable operating levels (MSOLs) of the generation units needed for secure system operation, including those providing essential system services such as inertia, system strength, and voltage and frequency management.[40] Key concepts related to essential system services and the NEM system security frameworks are described further in appendix C.

AEMO's current approach to managing MSL includes the following key elements:

- An MSL framework for issuing market notices for MSL events and related actions;
- Reporting on MSL event declarations through its quarterly lack of reserve reports; and
- Procurement and enablement of load response and load reserves through the transitional service arrangements.

Each element is described in more detail below.

38 AEMO, Minimum operational demand thresholds in South Australia,19 June 2020.

39 AEMO, 2025 Transition Plan for System Security, 1 December 2025, p.120. AEMO's 2025 TPSS included an MSL regional assessment appendix with gave an outlook for MSL incidence under a range of plausible operational scenarios out to 2031.

40 AEMO, 2025, Statement of Need – MSL Transitional Services (Type 1), p.5.

2.1.1 AEMO's MSL framework for market notices and related actions

AEMO's MSL framework is modelled on the existing Lack of Reserve (LOR) framework established under the NER and described further in section 3.3 and appendix A. The LOR framework involves the declaration of LOR conditions and publication of LOR notices by AEMO to highlight periods where there may not be sufficient supply to meet demand and maintain system security. AEMO's MSL framework seeks to similarly inform market participants of forecast or actual periods where AEMO considers there is a likelihood of insufficient demand to support the minimum loading of units providing essential system services.[41] As set out in Table 2.1, AEMO applies a three-tier structure for classifying and notifying of MSL conditions based on a region's proximity to the point at which demand becomes insufficient to maintain the power system in a secure operating state.[42]

Table 2.1: AEMO's MSL notification framework

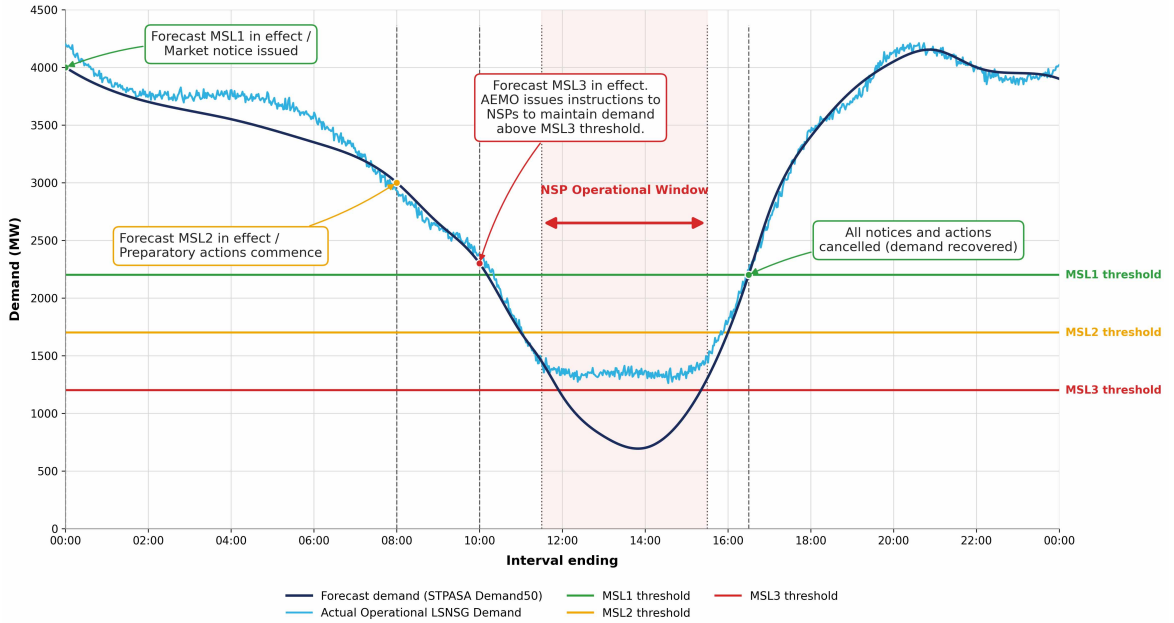
Level	Definition	AEMO actions
MSL1	Operational demand forecast is two credible load contingencies away from MSL3	Monitor the situation and publish an MSL market notice with thresholds when forecast (up to a week ahead)
MSL2	Operational demand forecast is (or is forecast to be) one credible load contingency away from MSL3	Take available actions to clear the condition (e.g. recalling transmission outages, decommitting non-essential units, leveraging storage) and ensure the system can return to a secure state within 30 minutes of a contingency event
MSL3	Operational demand forecast is insufficient to maintain a secure operating state	Additionally, instruct network service providers to maintain regional demand above the MSL3 threshold (e.g. via controlled loads, network-managed storage, or reducing Distributed PV generation through emergency backstop mechanisms as a last resort)

Source: AEMO, 2025, Minimum System Load Thresholds fact sheet, p.1

These MSL thresholds are illustrated in Figure 2.2.

41 AEMO, 2025, NEM Spring Readiness Industry Briefing, p.5.
42 AEMO, 2025, Minimum System Load Thresholds fact sheet, p.1.

Figure 2.2: AEMO's procedure for MSL notifications and related actions



Source: Illustrative chart prepared by AEMC based on similar example from AEMO's 2025 NEM Spring readiness Industry briefing, 20 August 2025.

The regional MSL thresholds described in Table 2.1 are not fixed; rather AEMO varies them based on system conditions, including network outages, the availability of reactive plant and contingency FCAS, pumping load availability, the MSOLs of synchronous units online, and the region's export capability.[43] AEMO publishes market notices (issued where MSL conditions are forecast, and updated as conditions change) to provide situational awareness with a view to eliciting a market response.[44] AEMO's expectations for potential market responses include scheduled loads and bidirectional units making their full load capacity available, consumers increasing demand, and non-essential generation decommitting ahead of a forecast event.[45]

Where a voluntary market response does not materialise in a timely manner, AEMO may intervene in the market as necessary to maintain or restore the power system to a secure operating state. These interventions may include issuing **directions** to a registered participant in respect of the operation of a scheduled resource or, in accordance with clause 4.8.9, requiring a registered participant to take such action as is necessary to maintain power system security.

AEMO Reports on MSL declarations through the quarterly LOR reports

Consistent with its treatment of LOR conditions, AEMO reports on MSL event identification through its quarterly lack of reserve reports, providing transparency to the market and stakeholders on the incidence of MSL conditions across NEM regions. This MSL reporting is discussed further in section 3.4.3

43 AEMO, 2025, Minimum System Load Thresholds fact sheet, p.2.
44 AEMO, 2025, NEM Spring Readiness Industry Briefing, p.6.
45 AEMO, 2025, Effective Market Response to MSL and DPVC Market Notices fact sheet, p.1.

2.1.2 AEMO is using the transitional service arrangements to procure MSL support services

The transitional services framework was introduced into the NER from 3 June 2024 as part of the *Improving security frameworks for the energy transition Rule 2024.* The stated objective of the framework is to help AEMO acquire services to maintain power system security in the transition to a low- or zero-emissions power system.[46] This framework allows AEMO flexibility to define and procure services in advance of operational requirements and avoid the use of directions to maintain secure power system operation.

The framework allows for two broad types of transitional services:[47]

- **Type 1 transitional services** - which are essential system services that are not otherwise captured in the existing NER frameworks.[48]
- **Type 2 transitional services** - which are services that are acquired for the purpose of trialling new technologies, or a new application of existing technologies, for the management of power system security in a low- or zero-emissions power system.[49]

Since 2025, AEMO has utilised the transitional service arrangements to procure load response and load reserves to help manage the operational risks posed by MSL conditions. We understand AEMO also has plans to use transitional services contracts to engage trough filling load response from providers from Spring 2026. AEMO reports on its use of transitional services and the future outlook through the Transition Plan for System Security (TPSS). Since 2025, AEMO has used the type 1 contracts to contract for MSL support services from scheduled BESS, while in its most recent procurement process, AEMO has sought offers from anyone capable of providing a measurable increase in operational demand. This type 2 service could be provided from flexible loads, coordinated DPV curtailment and electric vehicle charging operators.

AEMO reports on the costs associated with provision of transitional services through its annual *Non market ancillary services (NMAS)* report. AEMO's 2025 NMAS report noted:[50]

> While AEMO did not acquire any Transitional Services for the financial year 2024-25, it did implement a procurement process via a direct Request for Offer (RFO) approach to select battery energy storage system (BESS) service providers in SA and VIC for Type 1 Minimum System Load (MSL) Transitional Services. The procurement commenced in March 2025 in readiness to address forecast MSL events in spring 2025.
>
> Further information on the use and performance of these contracts will be provided in the FY26 NMAS report.

2.2 Overview of the historical frequency and impacts of MSL events

The incidence of MSL events in the NEM emerged initially in the SA region prior to 2024, before expanding to include a small number of events in the VIC region in 2025. While the historical data set for MSL events is still in its infancy, a substantial increase in the number of MSL events was observed for FY 2026 relative to previous years as shown in Figure 2.3.

46 NER cl. 3.11.11

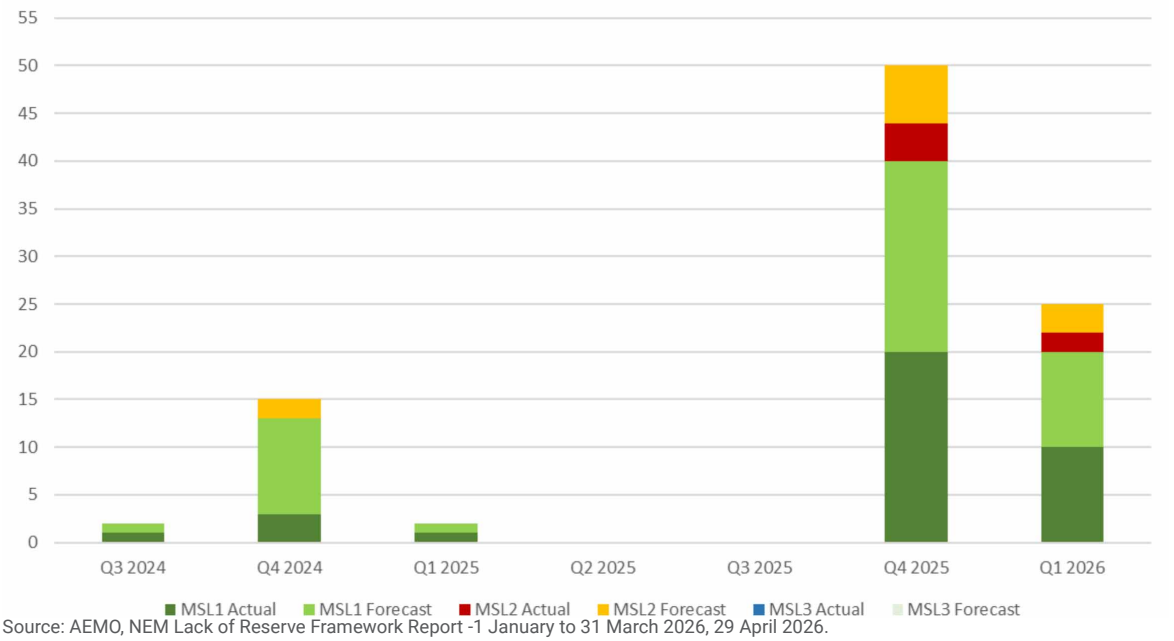
47 NER cl.3.11.11(m)(1)(ii) requires that a type 1 transitional service must not have a contract term that continues past 1 December 2029. NER cl.3.11.11(m)(2)(ii) requires that a type 2 transitional service must not have a term that continues past 1 December 2039.

48 NER cl. 3.11.11(b)(1)

49 NER cl. 3.11.11(b)(2) - A type 2 transitional service must be an application of a technology that has not been used to provide the relevant service to manage power system security prior to 28 March 2024.

50 AEMO, *Network support and control ancillary services (NMAS)* report 2024-25, 20 October 2025, p.13.

Figure 2.3: Quarterly Declaration of Minimum System Load conditions, Q3 2024 to Q1 2026



Source: AEMO, NEM Lack of Reserve Framework Report -1 January to 31 March 2026, 29 April 2026.
Note: To date MSL declarations have only been made in the SA and VIC NEM regions

Further commentary on the historical impacts of MSL events is included in appendix D.1.

2.3 The outlook for MSL conditions in the NEM is highly uncertain

The Commission recognises that the outlook for MSL conditions has a significant bearing on the scope and scale of regulatory change that would be appropriate to address the related issues identified in the rule change requests. While AEMO's projections for the continued growth of rooftop solar PV are relatively consistent across all plausible futures in the 2026 Integrated system plan (ISP), the evolution of the demand side of the system is far more uncertain.[51] Navigating this uncertainty will be a key component of the assessment of these rule changes.

With respect to the drivers of uncertainty around the evolution of the demand side of the NEM, the Commission acknowledges material uncertainty within the following elements of the demand outlook:

- **Development and operation of new large loads (including data centres)** - There is an expectation of potentially large quantities of new large scale loads that would act to increase NEM demand and may interact directly with the electricity market - such as utility scale battery energy storage systems, pumped hydro, data centre loads and other new commercial and industrial loads.
- **Installation rates for CER** - Beyond rooftop PV, there is considerable uncertainty around the future adoption and growth of rates for home battery energy storage (BESS) and EV charging.
- **Coordination and control of CER** - The degree to which future CER, including BESS and EV charging - is visible, coordinated and control of CER is highly uncertain and is the subject of considerable active reform work - as discussed further in section 1.3 below.

51 AEMO, 2026 Integrated system plan - Appendix A9.Demand Side Factors Statement, 25 June 2026.

The MSL outlook is also impacted by uncertainty around the timing for the retirement of ageing thermal coal generation and the installation of new power system plant, such as synchronous condensers, to provide the essential system services traditionally provided by synchronous thermal generators. At the same time operators of synchronous thermal generation plant can invest in plant changes to reduce the minimum stable operating level for their plant and increase the related operational flexibility, including by enabling "two shifting", where a thermal generator is set up to support short term disconnection from the system during MSL periods.[52]

The CEC also provided commentary on the permanence of issues related to MSL in its rule change request:[53]

> The CEC acknowledges that there are several variables that will determine whether MSL issues are structural in nature, and / or how long they will continue to affect the NEM power system. In our view, there is a high probability the drivers of this issue are unlikely to be entirely resolved in the medium term, while other solutions may take some time to be fully implemented.
>
> For example, the underlying system security issue is based on the confluence of high levels of DPV output coupled with the aggregate MSOL of the synchronous generating units that AEMO currently relies on for maintaining operability of the power system.

This uncertain outlook has a direct bearing on the materiality of the costs associated with managing MSL conditions via directions based arrangements and the relative benefits of setting up and operating new operating systems and market arrangements as proposed by the rule change proponents.

AEMO's 2025 transition plan provided an outlook for MSL events out to 2031

AEMO's 2025 TPSS projected the potential number of MSL events for each of the NEM regions out to 2031 based on a range of scenarios accounting for the severity of minimum operational demand conditions and the delivery timing for replacement sources of essential system services. By way of a summary over the period 2026 – 2031, the projected number of days where actual MSL3 conditions would be expected to persist following AEMO MSL2 interventions during system normal conditions are:[54]

- NSW: as few as 0 – as many as 2 days.
- VIC: as few as 0 – as many as 53 days.
- SA: as few as 0 – as many as 135 days.
- Qld: as few as 0 – as many as 33 days.

This range indicates a high level of uncertainty for the frequency of MSL events, overlaid on a general trend of growth in the number of days where MSL events are projected to occur.

Further detail on the outlook for MSL conditions and minimum operational demand is provided in appendix D.

52 This concept of thermal coal "two shifting" is described further in AEMO's 2025 Thermal plant audit, under the heading: The evolving nature of thermal power plant. AEMO, 2025 Thermal Audit - Final report, 5 November 2025, pp.26-27.

53 CEC, Minimum System Load reserve service proposal, 20 June 2025, p.8.

54 AEMO, *2025 Transition Plan for System Security for the National Electricity Market - APPENDIX A3 MSL Regional Assessments,* 1 December 2025.

Question 1: The outlook for MSL events in the NEM in the context of the broader reform program

1. What are your views on the expected frequency, severity and location of MSL conditions over the short, medium and long term?
2. Are there specific information gaps in the current MSL outlook that materially affect investment, operational or policy decisions?
3. In the context of the rule change proposals, how should the Commission distinguish between temporary transitional MSL risks and enduring structural MSL risks?

3 MSL Governance and reporting arrangements

Chapter 1 highlighted that AEMO expects the frequency and severity of MSL events to increase as part of the transition, and beyond that there is a base level of minimum demand required to securely operate the power system. At the same time, there is also an expectation for AEMO's ability to manage the system during periods of low operational demand to increase through increased investment in large loads (including data centres), improved visibility of load and non-scheduled generation and growth in demand side flexibility and market participation.

While AEMO has developed an MSL framework, the Reliability Panel identified in its rule change request that the absence of an explicit regulatory framework in the NER for MSL conditions limits transparency, governance and accountability and constrains the development of broader mechanisms to manage the expected incidence of future MSL conditions.[55] While not the primary focus of its proposal, the CEC rule change request also identified that changes to the NER would likely be required to clarify the related definitions and high level governance and reporting obligations for AEMO in managing MSL conditions.[56]

This chapter describes the current regulatory arrangements related to the management of MSL conditions (or lack thereof) and the reasoning provided by the proponents for creating an explicit MSL governance framework in the NER. We are seeking stakeholder feedback on this along with views on what elements could be included in such a framework in the context of the issues raised in the rule change requests.

3.1 The need for an MSL governance framework in the NER

The Panel's rule change request identifies a gap in the NER in relation to the definition of MSL events and the related governance arrangements.[57] The NER does not envisage or define the concept of MSL, nor does it set out any explicit arrangements for the management and mitigation of operational risks associated with a deficiency of load.

The Panel notes that:[58]

> In the absence of a clearly defined MSL framework, market participants lack certainty about how price signals and operator actions will respond during low-demand periods, undermining predictability and confidence in market outcomes.

The Panel notes that the existing lack of reserve (LOR) framework in the NER provides an example for what may be included in an equivalent MSL framework. The LOR framework defines fundamental concepts and AEMO's responsibilities for managing situations where there is a risk of insufficient generation reserves to meet forecast demand and maintain power system security. The Panel's view is that minimum operational demand periods are expected to persist and increase as distributed PV generation grows driving the need for an MSL regulatory framework, similar to the existing LOR framework.[59]

55 Reliability Panel, Rule Change request - Minimum System Load framework and floor price proposal, 23 April 2026, p.7.
56 CEC, Minimum System Load reserve service proposal, 20 June 2025, p.8.
57 Reliability Panel, Rule Change request - Minimum System Load framework and floor price proposal, 23 April 2026, pp.7-8.
58 Ibid.
59 Ibid.

Question 2: The case for including an MSL governance framework in the NER

1. Do you agree that there is a need for an explicit framework in the NER to more clearly set out the governance arrangements in relation to MSL conditions in the NEM?

3.2 The proposal for an MSL governance and reporting framework

The Panel proposed that an explicit MSL framework be developed and included in the NER to clearly set out AEMO's role in identifying and managing MSL conditions. The Panel considered that an MSL framework would improve market confidence through clear definition of roles and responsibilities. It would also provide the basis for the evolution of market arrangements to accommodate future challenges associated with low operational demand conditions.[60]

The Panel's proposed framework would provide high-level definitions and clarify governance arrangements including AEMO's role in identifying and managing MSL conditions along with associated supporting guidelines and reporting arrangements.[61]Such a framework would:

- perform a similar function to the LOR framework for the management and reporting on periods where there is the potential for generation shortfall – LOR declaration, related guidelines and reporting.
- establish a common language and governance structure upon which future market and operational mechanisms that address low-demand conditions can be developed.
- clarify and build on AEMO's current MSL declaration and reporting framework to support improved transparency around the management of MSL conditions.

The Panel considers that:[62]

> A clearly defined framework would improve market efficiency by strengthening price signals and reducing reliance on out of market interventions. Over time, this would lessen the need for AEMO to enter into transitional services contracts to manage minimum demand conditions, thereby reducing the administrative burden associated with such events.

The Panel's rule change request noted that the existing arrangements in the NER that relate to lack of reserve conditions provide a basis for the consideration and development of a fit for purpose MSL framework. In particular, the Panel references the related NER arrangements that set out AEMO responsibility for:[63]

- the declaration of conditions related to lack of reserve.[64]
- the determination of Reserve level declaration guidelines.[65]
- reporting on lack of reserve conditions.[66]

The Panel did not propose any specific rule drafting for a new MSL governance framework, rather it proposed that the AEMC develop an appropriate framework through the rule-making process.

60 Reliability Panel, Rule Change request - Minimum System Load framework and floor price proposal, 23 April 2026, pp.9-10.
61 ibid.
62 Reliability Panel, Rule Change request - Minimum System Load framework and floor price proposal, 23 April 2026, p.8.
63 Ibid. p.9
64 NER cl. 4.8.4
65 NER cl. 4.8.4A
66 NER cl. 4.8.4B

The CEC rule change also proposed changes to the NER to provide clarity in relation to the definition of "minimum system load" and responsibilities for AEMO to prepare related guidelines and reports, consistent with the existing LOR framework.[67] Alongside its MSL reserve ancillary service proposal, the CEC envisaged:[68]

- the inclusion of a new "minimum system load" condition under NER cl. 4.8.4 of the NER.
- for AEMO to be required to produce "minimum system load declaration guidelines" equivalent to the existing Reserve level declaration guidelines required under NER cl. 4.8.4A.
- consequential changes with respect to:
  - lack of reserve framework reporting under NER cl. 4.8.4B
  - the obligations for AEMO in relation to managing the declaration of conditions in accordance with NER cl.4.8.5
  - the determination of the latest and last times for AEMO intervention as per NER cl 4.8.5A and 4.8.5B.[69]

The key differences between the proposed rule based MSL governance framework and AEMO's current MSL notification and operational framework are:

- It could support consistency around the AEMO's declaration, management and reporting on MSL conditions - building on AEMO's current MSL notification and reporting approach.
- It could clarify and provide guidance to AEMO on the approach to provision of information relating to the short term outlook for MSL conditions, in a similar way to the approach taken to monitor LOR conditions through the ST-PASA 7-day operational outlook.

An overview of the existing LOR framework is provided in section 3.3 while the potential elements of a new rule based MSL framework are discussed in section 3.4.

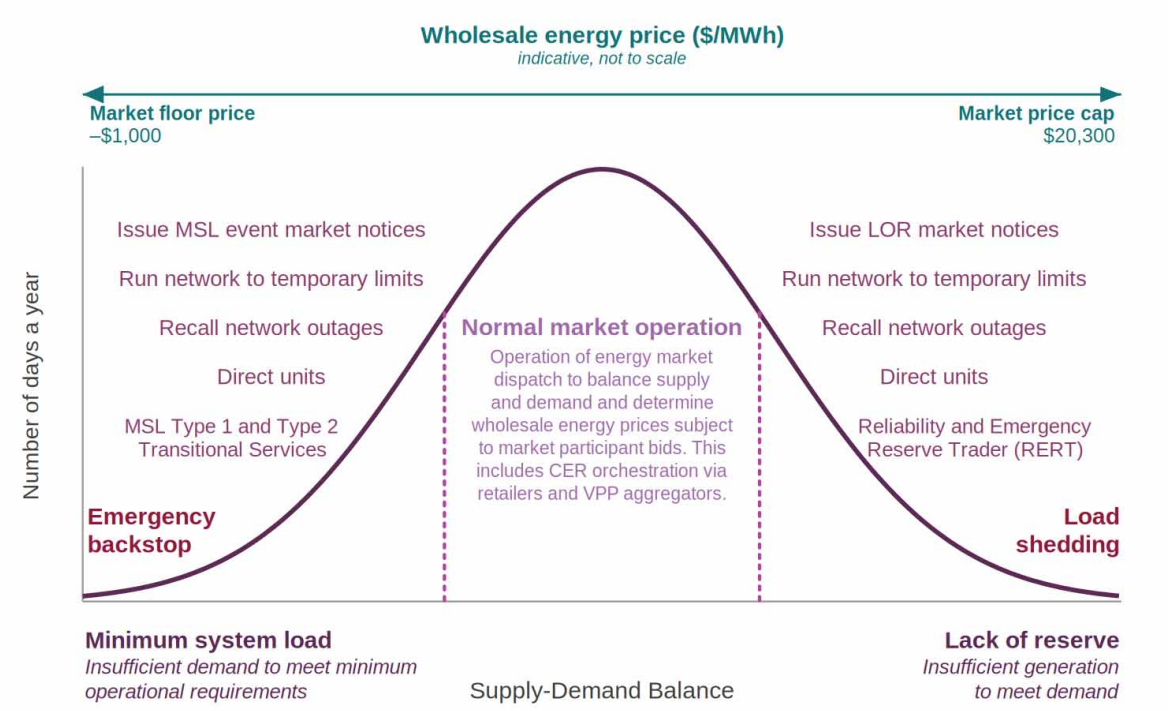
3.3 The existing LOR framework provides a basis for potential new MSL governance arrangements

This section describes the key elements of the existing LOR frameworks in the NER as a basis for discussion and consultation on a potential new rules based framework for managing low demand conditions.

The LOR framework involves the monitoring and short term forecasting of electricity generation reserves across operational timeframes. AEMO forecasts the supply–demand balance through the projected assessment of system adequacy (PASA) process. In particular the Short Term PASA (STPASA) and pre-dispatch PASA (PDPASA) processes are used to monitor reserve levels and provided forecasts for potential declaration of LOR conditions. Where the market does not respond to a forecast shortfall, AEMO has a range of intervention mechanisms available to maintain the power system in a reliable operating state. The operational mechanisms for maintaining the supply-demand balance are set out below in Figure 3.1.

67 CEC, Minimum System Load reserve service proposal, 20 June 2025, p.8.
68 Ibid.
69 The consideration of intervention pricing with respect to AEMO intervention for MSL related conditions is discussed in section 4.3.1.

Figure 3.1: Mechanisms to balance supply and demand in the NEM



Source: Illustrative chart prepared by the AEMC with reference to a similar image published by AEMO in its 2025 report, *Learnings from industry implementation of emergency backstop mechanisms for distributed resources - Insights from industry implementation experiences in Australia to date, 24 July 2025, p.16.*

Note: This illustrative diagram does not accurately represent the probability distribution for MSL or LOR events. In reality, MSL and LOR events are rare events and the market operates under normal conditions - in the absence of any LOR or MSL notice - for the vast majority of the time.

By way of a summary, the core components of the existing LOR framework include arrangements for:

- **Forecasting of LOR conditions** by AEMO over a short term 7-day outlook via the short term projected assessment of system adequacy (ST PASA) process and related reporting and data publication requirements.[70]
- **Declaration of actual LOR conditions** by AEMO.[71] LOR conditions are declared in accordance with the *Reserve level declaration guidelines* which are prepared by AEMO and set out how AEMO will determine an LOR condition.[72]
- **Reporting on LOR conditions** by AEMO through quarterly reports on the operation of the LOR framework. [73]

This summary of the core elements of the LOR framework provides a basis for consideration and consultation of the potential elements of a new MSL framework in the NER, as described in the following section.

Further detail on the NER LOR framework is provided in appendix A.

70 NER cl.3.7.3(k)(4)(iii)
71 NER cl.4.8.4
72 NER cl.4.8.4A
73 NER cl.4.8.4B

3.4 The potential elements of a rules based framework for managing low demand conditions

The Commission is interested in stakeholder views on the potential elements of a rule-based framework for managing low demand conditions. As envisaged by the rule change proponents, the existing LOR arrangements provide a reference for the consideration and development of additional regulatory requirements related to the actions and obligations for AEMO to manage low demand conditions. When exploring the merits of such a proposal, the Commission is mindful of the need for deeper consideration of the fundamental definitions and objectives for a new MSL governance framework that meets the future needs of the power system and market participants.

This section provides a discussion of the potential elements of a new rules-based framework for managing low demand conditions to guide stakeholder input.

- Section 3.4.1 discusses how the NER would define an operating condition where there is shortage of demand
- Section 3.4.2 discusses the potential for requiring the inclusion of MSL within the ST PASA process - as per the arrangements for LOR
- Section 3.4.3 discusses the potential for the NER to formalise the requirement for AEMO to report on the declaration and management of MSL conditions.

3.4.1 How could an NER framework define an operating condition where there is shortage of demand?

Both the Panel's and the CEC's rule changes proposed amendments to NER cl. 4.8.4 to define an MSL condition similar to how an LOR condition is defined. However, the Commission notes that there are fundamental differences between the operational nature of the concept of MSL as opposed to the concept of LOR. With respect to managing an operational shortage of supply, the NER defines a LOR as:[74]

> *Lack of reserve (LOR)* condition – when AEMO determines, in accordance with the reserve level declaration guidelines, that the probability of load shedding (other than the reduction or *disconnection* of interruptible load) is, or is forecast to be, more than remote.

This definition provides a useful starting point for conceptualising a potential analogous definition related to managing low demand conditions. Such a definition and inclusion in NER cl.4.8.4 could provide the basis for an MSL framework in the Rules, noting that - as for LOR - the high level definition could sit in the NER with a more detailed operational description set out in AEMO's *Reserve level declaration guidelines*.

In considering this high level definition, it is worthwhile to review and consider how the fundamental operational drivers of a MSL condition might differ from LOR. While an MSL condition is not defined in the NER, the term is currently used by AEMO to describe conditions where operational demand is forecast to drop below the minimum threshold required to maintain the power system in a secure operating state. In practice, MSL also refers to the operational thresholds defined by AEMO that reflect the minimum allowable levels for operational demand such that the power system will be in a secure operating state.

74 NER cl.4.8.4(b)

As described in section 2.1.1, AEMO sets the MSL thresholds based on its assessment of the need:

- to maintain operational demand above the level required for the safe operation of generation units providing essential system services
- for sufficient redundancy - including load reserve capacity - within the power system to ride through unexpected contingency events during low demand conditions.[75]

Conceptualising the high level definitions for a NER framework related to managing low demand conditions

Each of the rule change proponents envisaged the inclusion of "Minimum system load" as a defined term in the NER - extending from AEMO's use of this definition for operational purposes. However, it may be more generally appropriate to consider an alternative definition related to the fundamental market conditions that drive the need for AEMO intervention during such an operational condition. As such, an alternative name for the operational condition could be "lack of load reserve" or similar terminology.

A key component of the LOR definition is the link to the "probability of load shedding", which drives the operational and pricing outcomes that follow on from the declaration of an LOR event. As such an NER definition for a condition where there is a shortage of demand could include a similar mirror term related to the "probability of unscheduled generation shedding", or similar.

The Commission is interested in stakeholder views on what fundamental concepts would need to be defined in the NER to support a new NER framework related to managing low demand conditions.

3.4.2 Should the NER require forecasting of low demand conditions (MSL) through ST PASA?

The NER requires that AEMO provide an outlook for LOR conditions through its ST PASA process' including in relation to LOR conditions referred to in clause 4.8.4.[76] This ST PASA requirement is implemented by AEMO in two parts:

- **Pre-Dispatch PASA (PD PASA)** covers the operational outlook for the next trading interval until the end of the next trading day.
- **ST PASA** provides an operational outlook for the next 6 trading days from end of the trading day covered by the most recent pre-dispatch schedule.

Given the focus of ST PASA and PD PASA on monitoring the outlook for LOR conditions, it may be appropriate for these process to also provide a similar outlook for MSL conditions. Such standardised reporting on the short term forecast for MSL would be capable of being consistent with the PASA objective and help inform market participants on the outlook for power system security, supply and demand. This in turn would help market participants to make informed decisions in relation to the operation of their plant, including with respect to generation, demand, BESS and VPPs.

While the NER sets the requirements relating to the inclusion of information about LOR conditions in ST PASA, the detailed implementation of this is determined by AEMO through the ST PASA procedures in accordance with NER cl.3.7.3(c). AEMO published revised ST PASA procedure in February 2025 consistent with the *Updating Short Term PASA Rule 2022 (ST PASA Rule)* which took

75 In this context a "load reserve" is available capacity that can act to increase demand or reduce generation to restore system balance and secure operation following a contingency event, such as the loss of a large load or network component that is exporting power.

76 NER cl.3.7.3(k)(4)(iii).

effect from 31 July 2025.[77] The *ST PASA Rule* introduced a new principles-based framework for the ST PASA to allow AEMO greater flexibility to develop and update the information in the ST PASA in a manner that promotes the 'PASA objective'. This framework is described further in appendix A.1.

The Commission is interested in stakeholder feedback on the potential costs and benefits of including MSL forecasting within the ST PASA process and views on the potential timing for the implementation of such a change as part of AEMO's broader NEM reform program.

3.4.3 Should the NER require AEMO to report on low demand conditions (MSL)?

Each of the rule change proponents raised the potential for the NER to be amended to formalise the requirement for AEMO to report on the declaration and management of MSL conditions through NER cl. 4.8.4B. The Commission's preliminary view is that such a change would provide clarity and uniformity with respect to reporting on MSL conditions, consistent with an NER definition of the respective operational condition as described in section 3.4.1. The Commission notes that, since Q3 2024, AEMO has included MSL reporting in its quarterly LOR reports. Therefore, such a change to the NER is not likely to have material implementation costs.

The Commission is interested in stakeholders' views on the nature of a rules-based requirement for AEMO to report on the declaration and management of conditions where there is a deficiency of demand.

Question 3: The potential elements of an MSL governance framework in the NER

1. What are your views on the fundamental definitions and naming conventions that would provide the basis for a framework in the NER for MSL conditions?
   a. Would it be appropriate to define the concept of MSL in the NER?
   b. Would it be appropriate to define the concept of a lack of load reserve - or similar - in the NER?
   c. Would it be appropriate to define the concept of unscheduled generation shedding - or similar - in the NER?
2. What are your views on the potential elements of a rules-based MSL governance framework including potential requirements for :
   a. Forecasting low demand or MSL conditions through ST PASA?
   b. The declaration of MSL or low demand conditions?
   c. Reporting on MSL or low demand conditions?
3. Are there other additional elements that you consider should be included in a MSL rules framework?

77 AEMO, ST PASA Procedure and related documents - Final Report – Standard consultation for the National Electricity Market, 24 February 2025.

4 Effective price signals for efficient market outcomes during MSL conditions

A fundamental role of wholesale electricity markets is to send price signals which ensure efficient operation, investment and consumption decisions. Wholesale electricity prices are formed through central dispatch, under which AEMO dispatches scheduled resources and market ancillary services to balance power system supply and demand and to maximise the value of spot market trading. The resulting spot price at each regional reference node represents the marginal value of supply.[78] These spot prices provide Market Participants with signals as to the value of providing, or consuming, electricity at a particular location and time.[79]

Effective price formation underpins efficient market outcomes. In the short run, AEMO operates a central dispatch process to determine dispatch outcomes, aiming to maximise the value of spot market trading on the basis of dispatch bids, subject to *power system security* requirements and other operations constraints set out in the Rules. In this way, the dispatch prices reflect both the cost of meeting demand and the conditions under which the *power system* must be operated.[80] Over the longer term, the expectation of future market prices signal the value or opportunity available to new generation and load capacity in the NEM on a regional basis. Effective price formation during MSL conditions means that pricing arrangements continue to reflect underlying system conditions — including periods of minimum operational demand — and thereby signal the need for investment in flexible generation, energy storage and consumer flexibility services capable of responding to those conditions.

This chapter describes the issues raised in the rule change requests related to pricing during MSL conditions and potential solutions including the Panel's proposal for the wholesale price to be set at the market floor price during an actual MSL3 condition, when AEMO intervenes in the market by requesting that DNSP's maintain demand above a minimum level required for system security.[81] The arrangements for the implementation of this proposal are discussed in section 4.2 while alternative and complementary reforms, including the role of the National Electricity Market Dispatch Engine (NEMDE) and the potential application of intervention pricing for MSL conditions are discussed in section 4.3.

4.1 The rule change requests identify the important role of effective price signals to support efficient operation and investment

Each of the rule changes identifies the important role of the wholesale energy price in providing effective signals to support efficient operation and investment outcomes during periods of low operational demand. At these times, there is an operational need for increased energy consumption or, as a last resort, control of unscheduled rooftop solar generation to effectively maintain operational demand above the minimum levels required for the secure operation of the power system.

The Reliability Panel has proposed that the spot price be set to the market floor price (MFP) during MSL3 conditions. The Panel considered that the wholesale market price response to very low demand conditions was muted. Furthermore, the Panel considered that if supply exceeds the minimum secure level of demand, prices should fall low enough to provide greater incentives

78 NER cl. 3.8.1(a) and cl. 3.9.2(d).
79 NER, cl. 3.9.1(a)(7).
80 NER, cl. 3.8.1(b).
81 Reliability Panel, Minimum System Load framework and floor price proposal, 23 April 2026, pp.8-9.

some suppliers to withdraw or encourage load to increase. However, the Panel recognised that power system security issues associated with minimum operational demand currently rely on AEMO issuing directions to control supply in conditions approaching low demand.[82]

The current reliance on out-of-market intervention indicates the absence of a market-based tool capable of delivering a sufficient signal during MSL conditions.

The CEC noted in its rule change request that energy price signals could be used to deliver sufficient incentives for load to be made available when needed, including through setting the spot price at the MFP to provide a strong and clear price signal of the need for increased demand. However, the CEC noted concerns in relation to the depth of available demand resources and challenges with the temporal coordination of load resources needed to maintain the power system in a secure operating state, under specific low system load conditions. [83] The CEC therefore proposed an explicit and direct ancillary service market arrangement for the provision of load reserves to manage low demand conditions, as discussed further in chapter 5.

The Reliability Panel's rule change request noted historical MSL conditions in individual regions of the NEM, which have not yet reached or exceeded the thresholds to be classified as MSL3 events, have produced market prices above -$500/MWh, rather than close to the MFP of -$1,000/MWh. The Panel noted that the current market arrangements may have too great a reliance on AEMO interventions over voluntary market response to energy market signals:[84]

The Commission notes that the impacts of MSL events have not yet been significantly material in the NEM, with only a small number of MSL events, none of which exceeded MSL2, have occurred, to date as set out in section 2.2. However, the long term outlook is for minimum operational demand to continue to decline and become increasingly negative as described in section 2.3. In that future context, the Commission is interested in stakeholder feedback on the effectiveness of the current wholesale market pricing arrangements to facilitate a market response during periods of low operational demand and support efficient operation and investment outcomes in the NEM.

Question 4: Is the NEM set up to provide effective price signals to support efficient operational and investment outcomes with respect to MSL conditions?

1. What are your views on the effectiveness of the current market arrangements sending effective price signals to support efficient investment outcomes and avoiding the need for AEMO intervention during MSL conditions?
2. Do you agree with the Reliability Panel that there is need to revise the NER to enhance the pricing outcomes with respect to MSL conditions? Please provide evidence to support your view.

4.2 The proposal to set the energy spot price to the market floor price during MSL3 events to signal the value of increased demand

The Reliability Panel rule change request proposes that the NER include a trigger that would automatically set the regional energy spot price at the market floor price (currently –$1,000/MWh) when AEMO declares an MSL3 event. The Panel considers that this would sharpen price signals

82 Reliability Panel, Minimum System Load framework and floor price proposal, 23 April 2026, p.7.
83 CEC, Minimum System Load reserve service proposal, 20 June 2025, p.9.
84 Reliability Panel, Minimum System Load framework and floor price proposal, 23 April 2026, p.7.

during oversupply, encouraging generators to withdraw and where possible for demand to increase to absorb otherwise uncontrollable variable renewable energy, thereby reducing reliance on AEMO intervention. The approach is framed as consistent with existing NER provisions linking price to operational constraints, and with AEMO's current practice of directing DNSPs to maintain load above minimum levels during MSL3 conditions.

The Panel considered that this change to the NER would be justified in the context of the expected increase in the frequency of MSL conditions as the power system continues to evolve and accommodate greater levels of distributed rooftop solar generation. The Panel considered that forcing the price to the floor during MSL conditions would deliver improved market outcomes by:[85]

- reinforcing the market's ability to manage low-demand conditions through clearer and more effective price signals
- aligning MSL conditions with the intended role of the MFP, supporting the market's ability to clear during periods of oversupply
- reducing the likelihood of ad hoc intervention by AEMO to manage emerging MSL risks.

The Commission notes that stakeholder submissions to the *2026 Reliability Standard and Settings Review* on the Panel's proposal expressed a range of views, with some stakeholders strongly supportive and others concerned about potential negative consequences. AGL, AEMO, Snowy Hydro, Hydro Tasmania, Akaysha and EnergyAustralia supported the trigger as a means of limiting out-of-market intervention and providing clearer market signals while also suggesting that further assessment would be required to avoid possible unintended consequences.[86] Tesla noted that several MSL related policy instruments are already underway and that their interactions warrant closer consideration.[87]

In contrast, CS Energy, Shell Energy, Origin Energy, the EUAA and Alinta Energy did not support the trigger, citing potential effects on bidding behaviour and storage incentives.[88] Views also diverged on cause: CS Energy attributed MSL events to insufficiently price-responsive rooftop PV and warned the trigger would undermine coal generation, while Alinta Energy framed MSL as a system strength issue and that forcing the spot price to the floor could raise system security contract costs.[89] In light of this feedback, the Panel concluded that the design of the mechanism should be considered further through a rule change process, allowing a further investigation and assessment of the potential negative impacts of the proposal.[90]

The following sub-sections discuss:

- how the Panel's pricing proposal could work including considerations for how the MFP trigger could be defined
- the expected benefits of the Panel's MSL3 pricing proposal
- a preliminary consideration of potential unintended consequences, and implementation considerations.

The Commission is interested in stakeholder feedback on each of these issues to inform its assessment of the Panel's proposal and consideration of a draft rule.

85 Reliability Panel, Minimum System Load framework and floor price proposal, 23 April 2026, p.7.
86 Submissions to the 2026 RSSR draft report: AGL, p.1; AEMO, pp.3–4; Snowy Hydro, p.7; Hydro Tasmania, p.1; Akaysha, p.1; EnergyAustralia, p.4.
87 Tesla, Submission to the 2026 RSSR draft report, p.1.
88 Submissions to the 2026 RSSR draft report: CS Energy, p.2; Shell Energy, p.5; Origin Energy, p.2; EUAA, p.3; Alinta Energy, p.2.
89 Submissions to the 2026 RSSR draft report: CS Energy, p.2; Alinta Energy, p.2.
90 Reliability Panel, *2026 Reliability Standard and Settings Review*, Final report, 23 April 2026, section 4.2 (pp.42–43).

4.2.1 How would setting the wholesale price to the market floor price during MSL3 conditions work?

The Panel's rule change request sets out its high-level proposal to set the price at the MFP during MSL3 events in alignment with the existing arrangements to set the price at the MPC during LOR3 events.[91] However, the Panel did not provide detailed drafting on how this proposal would be implemented in the NER and noted that further consideration would be required on the design and implementation of its proposal:[92]

> stakeholders emphasised the need for additional analysis of the mechanism's impact to ensure that any unintended consequences are appropriately identified and addressed. The Panel recognises that there are important design and implementation considerations associated with such a mechanism. This includes interactions with existing security frameworks, potential impacts on AEMO, market participants and the overarching governance arrangements surrounding the MSL framework.

How could the NER define the trigger that would set the price at the MFP when AEMO intervenes to increase operational demand during MSL conditions?

The NER provisions associated with high-price outcomes during scarcity conditions do not directly reference specific LOR categories, nor does the NER codify the detailed LOR classifications. Rather the NER establishes the general concept of a lack of reserve condition and requires AEMO to set out the details of how this concept is operationalised through the *Reserve level declaration guidelines*.[93]

In practice, the energy price is set at the MPC during LOR3 conditions as a consequence of the MPC trigger described in Clause 3.9.2(e)(10) of the NER and the operational assessment and decisions made by AEMO in accordance with its *Reserve level declaration guidelines.* As such, the MPC trigger includes the following elements:[94]

- that AEMO reasonably determines that the central dispatch process may not be able to supply all load in a region; and
- that AEMO issues instructions for that trading interval to Network Service Providers or Market Participants for load shedding.

The Commission recognises that the implementation of the Panel's pricing proposal would require a clearly defined trigger mechanism in the NER. However, our initial view is that it is not necessary or practical to define MSL3 conditions directly in the NER (as implied in the Panel's proposal). An alternative trigger could describe the conditions for application of the MFP in a similar way to the trigger for the MPC during LOR conditions. Such a trigger may include the following preliminary elements that reflect AEMO's current MSL procedures:

- that AEMO reasonably determines that the central dispatch process may not be able to meet the **minimum operational demand** in a region; and
- that AEMO issues instructions for that trading interval to Network Service Providers or Market Participants to **maintain demand above minimum levels**.

The Commission recognises that the elements of this proposed trigger are preliminary and encourages stakeholder feedback on proposed solution, including whether it addresses the

91 As per NER Cl. 3.9.2(e)(1).
92 Reliability Panel, Rule Change request - Minimum System Load framework and floor price proposal, 23 April 2026, p.9.
93 NER cl.4.8.4 and cl. 4.8.4A .
94 NER Cl. 3.9.2(e)(1).

identified problems, the practicality of the proposed trigger and how it may be enhanced to better reflect the desired operational and pricing intent.

Is the market floor price the correct price to apply when AEMO intervenes to increase operational demand?

The Panel proposal is to apply the MFP (-$1,000/MWh) when AEMO intervenes in the market to increase operational demand, on the basis that this is the most extreme negative energy price in the NEM and that this would reflect the application of the MPC ($20,300/MWh) when AEMO issues instructions for load shedding during LOR conditions. However, the Commission recognises that the economic drivers that act on market participants during periods of low operational demand (generation surplus) are not equivalent to the economic drivers during periods of generation scarcity.

The defining characteristic of an LOR3 event is that there is insufficient generation capacity available to the energy market to meet forecast demand. However, in a MSL3 event, the defining characteristic is not simply the converse of this - that there is insufficient demand available to match the expected level of generation. Instead, it is that there is insufficient demand available to match the expected level of generation and also satisfy the minimum generation requirements for scheduled synchronous generators that are required to be online to meet system security needs.

It may be the case that there are additional sources of load response that would be available to increase demand (or reduce generation) at a price that is higher (or lower) than -$1,000/MWh.

While the Panel's proposal to send a strong price signal through the application of the MFP (-$1,000/MWh) could have merit, the Commission is interested in stakeholder feedback on the appropriateness of applying the MFP and whether other (stronger or weaker) price settings should be considered to send a price signal that is consistent with the intervention to increase operational demand by curtailment of rooftop PV. To be clear, the Commission is not proposing a change to the MFP as part of the assessment of these rule change requests. The Commission acknowledges the broader role that the MFP plays in driving reliability and the role of the Reliability Panel in determining the level of the MFP. Instead, the Commission is seeking views on whether there is an alternative price which would better reflect the cost of intervention during MSL conditions.

4.2.2 What are the expected benefits and positive outcomes from the MSL3 MFP proposal?

The Panel's rule change request outlined its expectation of how its proposal to strengthen the price signal during MSL3 conditions would contribute to the NEO as set out below.

Promoting the efficient operation and use of electricity services

The Panel considered that the proposed MSL trigger would be likely to contribute to the NEO by reinforcing the market's ability to manage low-demand situations. Strengthening price signals to participants during MSL3 events would support the purpose of the MFP — incentivising the market to clear excess supply — thereby encouraging generators and other market participants to respond appropriately to system conditions. Clearer and more predictable pricing during MSL3 events could also reduce inefficient dispatch and reliance on AEMO intervention: an automatic move to −$1,000/MWh may prompt some generators to withdraw pre-emptively and demand to rise (through higher native demand or price-responsive CER), potentially resolving the MSL condition without manual intervention. The Panel considers that fewer interventions mean fewer

out-of-market actions and compensation payments overall, which is a more efficient outcome for consumers. [95]

The Panel expanded on this expectation in the *2026 Reliability Standards and settings review Draft Report*:[96]

> The Panel's rationale is that by forcing the price to -$1,000/MWh in an MSL3 event, we send the strongest possible market signal for participants to respond:
>
> - any flexible loads or storage that can increase consumption have the maximum incentive to do so, and
> - any generators still online have the maximum disincentive to keep producing. In particular, this could encourage rooftop PV systems to temporarily curtail their exports or shift to consuming energy on-site at rare times when system security would otherwise be compromised

The Panel's rule change request expanded on the expected efficiency benefits of its proposed pricing mechanism including:

- **A reduced need for MSL ancillary services through greater reliance on the energy market price.** By automatically setting the spot price at the MFP during MSL3 events, the mechanism would allow prices to more accurately reflect oversupply conditions, encouraging generators to withdraw supply voluntarily and prompting demand-side responses without AEMO intervening through directions or the procurement of ancillary services. The Panel considers that fewer interventions would allow the market to operate more efficiently — with fewer out-of-market actions and compensation payments overall — delivering a more efficient outcome for consumers, and that the costs of implementing the mechanism would be minimal and outweighed by these benefits.[97]
- **Incentivising better integration of CER into the power system with benefits for the whole system.** The Panel considers that clearer, more predictable price outcomes during MSL conditions could strengthen incentives for CER to be orchestrated or managed in a way that better reflects system needs, upholding the intent of the MFP signal. Improved CER integration would in turn support system security, reduce the need for intervention, and allow the benefits of CER to manifest more broadly across the power system.[98]
- **Incentivising the efficient deployment of load to absorb excess CER.** The Panel considers the mechanism would provide a strong signal to flexible loads and storage to increase consumption. The Panel notes the 2026 RSSR finding that an MSL mechanism could encourage rooftop PV systems to temporarily curtail exports or shift to on-site consumption at the rare times when system security would otherwise be compromised. While many rooftop solar installations are not yet equipped or incentivised to respond to real-time prices, the Panel expects the capability for dynamic curtailment and orchestration to grow as more rooftop solar and batteries are installed and Virtual power plant (VPP) participation increases, ensuring the market properly reflects the severity of rare minimum system load events.[99]

95 Reliability Panel, Minimum System Load framework and floor price proposal, 23 April 2026, p.11.
96 AEMC Reliability Panel, 2026 Reliability Standard and Settings Review - Draft Report, 27 November 2025, p.35
97 Reliability Panel, *Minimum System Load rule change request*, 23 April 2026, p.12.
98 Ibid.
99 Ibid. p.13.

Transparency and predictability of market outcomes during low-demand conditions

The Panel considers that setting the wholesale market price to the floor during MSL3 events could enhance the transparency and predictability of outcomes by clearly signalling how the market is expected to operate under circumstances that the Panel considers are becoming increasingly frequent and severe. Greater clarity around market outcomes reduces uncertainty for participants and improves confidence in how low-demand risks are to be managed.[100]

Supporting system security by reducing the reliance on intervention

The Panel's rule change request set out that a stronger and more transparent pricing signals during MSL3 events would be expected to support system security and reduce reliance on interventions. The Panel expects its proposed pricing mechanism would allow participants to adjust their behaviour in ways that support secure system operation. The Panel considers that reducing reliance on AEMO intervention would improve both security and governance outcomes, with fewer out-of-market actions supporting reliable and secure supply while maintaining confidence that outcomes are determined by predictable market mechanisms, where possible.[101]

Supporting emissions reduction through efficient utilisation of renewable generation

The Panel considers that strengthening price signals during MSL conditions supports the efficient utilisation of variable renewable generation (VRE) including rooftop solar. More transparent signals during periods of excess supply could provide clearer incentives for storage and flexible load to respond by increasing VRE consumption. By incentivising load to absorb excess uncontrolled VRE, the mechanism may reduce involuntary curtailment and reliance on intervention, supporting the efficient use of low-emissions generation and contributing to the emissions reduction limb of the NEO.[102]

4.2.3 What are the potential costs, risks and unintended consequences of the MFP proposal?

In order to assess the Panel's MSL pricing proposal, the Commission is interested in the potential costs and risks of setting the spot price at the MFP during MSL3 conditions, and how these might be mitigated through the development of an MSL pricing and governance framework for the NEM. Stakeholder feedback to the Reliability Panel's *2026 Reliability Standard and Settings Review,* highlighted a number of potential negative unintended consequences of the proposal, which are grouped by key themes and discussed below.

Effectiveness and targeting of the price signal

Several stakeholders questioned whether a spot price signal would meaningfully change MSL3 outcomes, given these conditions are primarily driven by distributed rooftop PV that does not respond to wholesale spot prices. CS Energy considered that imposing a price-based incentive on participants that are not the source of low-load conditions would be inefficient, and that the more effective response would be reforms exposing distributed resources, including rooftop PV and batteries, to the same incentives as grid-connected assets.[103] Shell Energy similarly observed that non-scheduled load is not exposed to the spot price and that price-responsive consumers respond only indirectly through aggregators or retailers, leaving it unclear to whom the modified signal would actually be directed.[104]

100 Reliability Panel, Minimum System Load framework and floor price proposal, 23 April 2026, p.11.
101 Ibid.
102 Ibid.
103 CS Energy, Submission to the 2026 RSSR draft report, p.2.
104 Shell Energy, Submission to the 2026 RSSR draft report, p.7.

The Commission notes these concerns in relation to the indirect nature of an MSL wholesale price mechanism targeting the operation of distributed rooftop PV, that are predominantly unresponsive to wholesale price. While this expectation of the unresponsiveness of CER may be reflected in historical market outcomes, the expectation is that CER responsiveness to wholesale price signals will increase over the medium to long term. This outcome is supported by the general direction of market reform, towards market arrangements that encourage and support integration of CER into the market. This future vision is articulated by the CER roadmap actions related to retail pricing and the future operation of the power system and market in a high CER future.[105] As such, the expectation is that the market will evolve to establish arrangements to integrate CER into the wholesale market arrangements, including through retailer based behavioural incentive arrangements and CER participation in VPP's where customers are financially rewarded for providing third party control of their CER.

Preference for a targeted arrangement that supports storage investment

Several stakeholders expressed a preference for a more targeted MSL market arrangement, particularly one that supports rather than discourages investment in storage. Origin Energy cautioned that applying the MFP during MSL3 events could deter storage investment by introducing additional financial risk which could undermine investor confidence.[106] Both Origin Energy and Tesla pointed to other measures already underway (including the CEC's MSL reserve service proposal, the CER roadmap reforms and use of transitional services) which they expected would more effectively support investment in storage to help manage MSL conditions.[107] Tesla further observed that, because storage is generally called upon at lower MSL thresholds, batteries may already be fully charged before an MSL3 event and therefore unable to respond to the proposed price signal, increasing the opportunity cost of relying on them for this purpose.[108]

The Commission notes stakeholder feedback highlighting the operational and investment benefits of a targeted MSL market arrangement as proposed by the CEC. This proposal is discussed further in chapter 5.

Risk of disorderly market behaviour

Some stakeholders were concerned that the proposal could induce disorderly behaviour ahead of an MSL3 declaration. The EUAA cautioned that, if MSL3 intervals were settled at the MFP, dispatchable units may withdraw from the market before the event in order to be directed and receive compensation above the price at which they would otherwise settle as they have observed in response to historical LOR events.[109] Shell Energy raised a related risk that grid-connected and VPP-controlled storage might defer normal charging while awaiting an MSL3 declaration, which could, in turn, cause declarations to cycle as the resumption of charging removes the MSL3 condition. Both submissions emphasised that the assessment of the proposal should investigate the likely behavioural market's response, rather than focussing only on the idealised theoretical economic response.[110]

105 Refer to the AEMC pricing review final report: *The Pricing Review: Electricity pricing for a consumer-driven future* (published 18 June 2026) and the *Redefining roles and responsibilities for power system and market operations in a high CER future* Final advice to Ministers to progress M3/P5 priority of the National CER Roadmap (published 16 December 2025).

106 Origin Energy, Submission to the 2026 RSSR draft report, p.2.

107 Submissions to the 2026 RSSR draft report: Origin Energy, p.2; Tesla, p.1.

108 Tesla, Submission to the 2026 RSSR draft report, p.1.

109 EUAA, Submission to the 2026 RSSR draft report, p.3.

110 Shell Energy, Submission to the 2026 RSSR draft report, p.6.

The Commission acknowledges stakeholder concerns around disorderly market behaviour and is interested in further stakeholder input on whether and to what extent potential MSL governance and pricing arrangements could be developed to mitigate this risk.

MSL as a system security issue rather than a resource adequacy issue

Stakeholders also questioned the characterisation of the problem the proposal is intended to address. While the Panel framed the mechanism as managing risks to the reliable operation of the power system rather than system security,[111] Alinta Energy considered MSL to be fundamentally a system security issue warranting a more targeted solution than a blanket energy market price intervention. It noted that generators remaining online during a MSL3 event would typically be either insensitive to further price reductions or retained to provide essential system services, such that a lower price would neither prompt them to decommit nor remove the need for AEMO to intervene.[112]

The Commission acknowledges this stakeholder feedback which raises the consideration of the interaction between pricing outcomes during MSL conditions and the requirement for synchronous thermal generation to be online to provide system strength necessary for voltage stability. The Commission will investigate this issue further, both in terms of the operational interactions, where the MSL thresholds are driven by the minimum stable operating level of synchronous units, and the market and pricing implications.

While it is recognised that generation required to operate for the provision of system strength will not be able to respond to the MFP pricing proposal, and operate below its minimum stable operating level, the Commission notes that the benefit of a wholesale price signal is that it encourages the broadest possible market response. As such, the market response to such a signal may include a range of potential operational actions which would help to alleviate the MSL condition including any action to decrease electricity generation or increase electricity consumption within the period that the MSL condition is in effect.[113]

Financial risks to operators of thermal generation

Stakeholders representing thermal generation highlighted the financial exposure the proposal could create for plant that must continue to operate during MSL3 conditions. Origin Energy's concern about who ultimately bears the cost relates to the risk that thermal generators may incur the cost of generating during periods of stronger negative prices following application of the MFP .[114] CS Energy made a similar point, considering that the measure would further undermine the economic position of coal-fired plant and its capacity to fund the costs of flexible operation, while Alinta Energy and Shell Energy noted that greater exposure to negative prices could also increase system strength and direction-related compensation costs.[115]

The Commission acknowledges stakeholder concerns in relation to the financial risk to operators of thermal generation during periods of negative market prices. With respect to the assessment of the Panel's MSL pricing proposal, the Commission will seek to weigh up the benefits of setting a stronger negative price signal during MSL conditions against the associated costs and risks, including the ability for operators of thermal generation to manage the associated financial risks.

111 Origin Energy, Submission to the 2026 RSSR draft report, p.2.

112 Alinta Energy, Submission to the 2026 RSSR draft report, p.2.

113 Further information on the range of expected market responses to MSL notices is available in AEMO's fact sheet: *Effective Market Response to MSL and DPVC Market Notices, 23 June 2025.*

114 Origin Energy, Submission to the 2026 RSSR draft report, p.2.

115 Submissions to the 2026 RSSR draft report: CS Energy, p.2; Alinta Energy, p.2; Shell Energy, pp.5–7.

Operators of large thermal generators have a range of commercial and operational levers available to them to manage these risks. These risk mitigation measures include financial contracting arrangements and operational measures based on the portfolio of resources available to the market participant. Operational measures may include encouraging increased customer demand during low-load periods, curtailing price responsive distributed PV through VPP arrangements, investing to lower the minimum stable operating level of thermal plant, and adjusting retail pricing to offset the associated financial exposure. The availability of these levers will be relevant to the Commission's assessment of the materiality of this risk and of how it might be addressed within an MSL pricing and governance framework.

The Commission notes that its assessment of the rule change proposals must be made with respect to the NEO. The Commission has developed a set of assessment principles to guide this assessment, including consideration of market efficiency and the allocation of risks to those that are most suited to manage those risks. At the same time, the Commission will be mindful of the role of the wholesale energy price in providing a signal to market participants on the value of investing in and operating different power system equipment. The assessment principles are described in section 6.2.2.

Question 5: The Reliability Panel proposes that the NER requires that the energy price be set at the market floor price during MSL3 conditions

1. Do you support the Panel's proposal to set the price at the market floor price during MSL3 conditions? In particular, do you have views on the degree to which it would improve market efficiency and energy pricing outcomes in the NEM by sending a stronger scarcity/oversupply signal?
2. What potential related unintended consequences should the Commission be mindful of in relation to the Panel's proposal? How could these be mitigated?

4.3 Alternative and complementary reforms to support effective price formation during MSL conditions

This section discusses potential alternative and complementary reforms that could be implemented to support effective price outcomes during MSL conditions including:

- The potential role of intervention pricing when AEMO intervenes to manage MSL conditions - discussed in section 4.3.1
- The role of NEMDE in supporting effective price formation for MSL conditions - discussed in section 4.3.2

The potential role of a co-optimised MSL reserve service, as envisaged in the CEC proposal, is discussed in chapter 5.

4.3.1 Should intervention pricing apply when AEMO intervenes to manage MSL conditions?

The Commission notes that the application of intervention pricing would appear to be generally consistent with the Panel's proposal to strengthen price signals to encourage market participants to respond to help alleviate MSL conditions. This is based on the understanding that when AEMO intervenes during an MSL event to increase operational demand, the resultant energy spot price during the relevant trading intervals would be higher (less negative) than if the intervention had not

occurred. In such a situation, the application of intervention pricing would restore the underlying price signal, absent the AEMO intervention.

At the same time, the Commission understands that AEMO does not apply intervention pricing for interventions during MSL conditions that relate to the maintenance of load above minimum required levels.[116]

A description of the intervention pricing arrangements in the NEM is provided in Box 2.

Box 2: What is intervention pricing?

Intervention pricing is a practice designed to minimise market distortion when AEMO intervenes in the market. It works by preserving the price signals that the wholesale electricity market would have determined for the NEM in the absence of the AEMO intervention.

It applies during an AEMO intervention event where AEMO intervenes by issuing a *direction* under NER cl 4.8.9, or by exercising the *reliability and emergency reserve trader* (RERT) under NER rule 3.20. AEMO must declare the affected *trading interval* to be an *intervention trading interval* (NER cl 3.9.3(a)) and, for that interval, apply intervention pricing in accordance with NER cl 3.9.3.

Broadly, intervention pricing applies where AEMO directs a service that is priced by the *dispatch algorithm* — broadly, *energy* or *market ancillary services.* During an intervention pricing period AEMO attempts to set the *spot price* and *ancillary service prices* at the value that would have applied had the *AEMO intervention event* not occurred (NER cl 3.9.3(b)).

In practice, AEMO performs two parallel dispatch runs every five minutes: an out turn (intervention) run that sets physical dispatch targets reflecting the *direction* or RERT, and a separate "what-if" pricing run that disregards the intervention to determine the prices on which the market is settled. AEMO calculates intervention prices in accordance with its *Intervention Pricing Methodology*, made under NER cl 3.9.3(e), which must so far as reasonably practicable be consistent with the ordinary price-setting principles in NER cl 3.9.1, 3.9.2 and 3.9.2A (NER cl 3.9.3(f)).

Intervention pricing is not applied to every intervention. Ordinary pricing continues where the intervention relates to a localised requirement and an equivalent intervention at the *regional reference node* would not have removed the need for the intervention, or where the service is not priced by the *dispatch algorithm* — such as inertia, voltage control, system strength or a *non-market ancillary service* (NER cl 3.9.3(b2)). AEMO is also allowed a short period after intervening before intervention pricing begins (NER cl 3.9.3(c)). When invoked, the prices from the pricing run apply across all NEM regions, subject to any *market price cap*, *market floor price* or administered price scaling.

Source: AEMO, *Intervention Pricing Methodology*, 3 June 2024; AEMO, *Guide to Intervention Pricing*, May 2025; *National Electricity Rules* v248, cll. 3.9.2, 3.9.3 and 3.12.2.

The Commission recognises that the application of intervention pricing during MSL conditions requires careful consideration, especially with regard to the operational drivers for the AEMO intervention. For example, the NER is clear that intervention pricing does not apply where the intervention is required for the provision of a system security service such as inertia or system strength services.[117] On the other hand, intervention pricing does apply when AEMO directs for the provision of energy or market ancillary services to meet a region wide requirement.[118] The basis for this application is to preserve the price signals related to the operation of the energy market.

116 For Blyth Battery energy storage in SA to maintain synchronised and follow AEMO dispatch targets to address an elevated risk of insufficient demand to maintain a secure operating state. This notice stated that "Intervention pricing does not apply to this AEMO intervention event."

117 NER cll 3.9.3(b2)(3), 3.9.3(b3).

118 NER cll 3.9.3(b1)

NER cl 3.9.3(b1) provides a list of examples of services that do trigger intervention pricing, including the provision of energy or market ancillary services. However these examples are described in a way that would support an interpretation that a direction for the provision of energy does trigger intervention pricing.[119] The drafting of NER cl 3.9.3(b1) therefore, is not clear, or did not envisage, that a direction may be made for the consumption of energy, as could be the case under MSL conditions, where there is a surplus of generation and a requirement for more demand, particularly where the additional demand for energy is driven by a need to balance the excess energy output from generators that are required for system security reasons.

Despite this lack of clarity in the NER, it would appear that the application of intervention pricing during MSL conditions would align with the objectives of the Panel's MSL pricing proposal - to strengthen price signals during MSL conditions and reduce the need for AEMO intervention. The resultant intervention price would reflect the underlying valuation of energy generation and consumption during MSL conditions, in the absence of AEMO intervention.

In practice, the management of MSL conditions may involve, in no particular order, the following directions or actions by the AEMO, which could have a material impact on the wholesale energy price:[120]

- Enable a MSL transitional service for load reserves or trough filling
- Direct scheduled or semi-scheduled generators to reduce generation or decommit
- Direct a scheduled battery to remain out of the market for the purpose of providing a load reserve
- Direct a non-scheduled or scheduled battery to consume energy (charging)
- Direct a large energy user to increase demand
- Instruct an NSP or market participant to increase load or maintain load above a defined minimum level.[121]

The Commission is interested in stakeholder feedback on the appropriateness of clarifying in the NER how intervention pricing may apply during MSL conditions, within the context of the broader proposed MSL governance framework described in chapter 3.

4.3.2 Would including MSL constraints in NEMDE improve price formation for MSL conditions?

The Commission is aware of an option for revisions to the NEMDE to reduce the need for AEMO intervention to manage MSL conditions and send stronger price signals around the value of increased demand in the lead up to and during MSL conditions.

At a high level, AEMO operates NEMDE to balance supply and demand and maximise the value of trading in each dispatch interval, subject to the physical constraints of the power system.[122] The dispatch process determines dispatch targets for scheduled resources in order to balance the forecast demand on a regional basis for each 5 minute dispatch interval. This process also determines the regional reference node price in dollars per Megawatt hour for each region that reflects the marginal value of an additional MW of generation for each dispatch interval based on bids from market participants. The energy price provides a signal to market participants of the

119 Ibid.

120 This list of actions is consistent with AEMO's MSL framework described the NEM Spring Readiness Industry briefing slides published on 20 August 2025 and available at: https://www.aemo.com.au/initiatives/major-programs/nem-distributed-energy-resources-der-program/managing-distributed-energy-resources-in-operations/managing-minimum-system-load

121 This may be achieved through NSP control of distribution connected generation, control of rooftop DPV through the emergency PV backstop arrangements and as a last resort, shedding of reverse flow distribution feeders to drive a net increase in operational demand.

122 NER Cl.3.8.1

value of generating or consuming energy in each dispatch interval, subject to the availability of supply and consumer demand.[123]

Whilst NEMDE sets price and dispatch targets where operational demand is negative, such as during the middle of the day in SA in 25 December 2025, the Commission understands that NEMDE does not consider the MSL thresholds, nor the minimum stable operating levels for generation or the configuration of operating thermal units needed to maintain system security. That is to say, the MSL thresholds and minimum stable operating levels are not inputs to NEMDE that describe the power system's physical constraints.[124]

While it is understood the dispatch algorithm could be amended to explicitly include MSL requirements, it is not clear whether this would be an appropriate application of NEMDE or whether other mechanisms would better manage the relevant system security need. For example, the CEC's proposal to establish an MSL market ancillary reserve service would be an alternative mechanism to price the need for load reserves and incorporate this within the dispatch process as a market ancillary service that is co-optimised with energy and dispatched through NEMDE.

The CEC's MSL reserve market ancillary service proposal and related alternatives to provide sufficient reserves to manage MSL conditions are discussed further in chapter 5.

Question 6: Alternative and complementary reforms to improve pricing outcomes in relation to MSL conditions

1. What are your views on the potential application of intervention pricing for AEMO interventions to decrease generation or increase demand during MSL conditions?
2. What are your views on the role of central dispatch and NEMDE in supporting effective price formation for MSL conditions?
3. Are there other reforms that the Commission should consider, that could improve price signals in the NEM in relation to MSL conditions?

123 The dispatch process is described further in this AEMO fact sheet: https://www.aemo.com.au/-/media/files/electricity/nem/market-operations/dispatch-timing—-fact-sheet.pdf?rev=db60f6eaf19c436d97cc349ed941694a&sc_lang=en

124 Similarly, NEMDE does not explicitly consider or solve for supply reserve levels, rather these are managed separately through the STPASA and LOR processes described in section 3.3.

5 Provision and availability of load reserves

The CEC rule change proposes changes to the NER to establish a new MSL market ancillary service that would deliver defined volumes of load response over specified periods. The proponent considers that this would support efficient market outcomes and managing system security risks during low operational demand periods without the need for inefficient interventions by AEMO.[125]

This chapter discusses the reasoning behind the CEC's proposal and seeks stakeholder feedback on the stated benefits and potential alternative approaches to meet the power system requirements for sufficient load reserves to manage system security during periods of low operational demand.

- Section 5.1 provides a summary of the CEC's reasoning on the need for a new MSL market ancillary service.
- Section 5.2 describes how the CEC's proposed MSL market ancillary service would work and the associated benefits.
- Section 5.3 describes potential alternative arrangements for the provision of MSL reserves in the NEM.

5.1 The case for reform to support the provision of load reserves

This section summarises the CEC's reasoning on the need for changing the NER to support a new MSL market ancillary service and provides an overview of the existing arrangements that support the provision of load reserves.

5.1.1 The CEC considers the existing arrangements will not support the efficient provision of load reserves to mitigate future MSL risks

The CEC considers that the projected increase in the incidence and severity of MSL conditions, combined with existing arrangements that favour the use of out-of-market solutions — directions and transitional services — will drive materially inefficient market outcomes. In the CEC's view, this warrants a change to the NER to introduce a new market ancillary service for the provision of MSL reserves. The CEC submits that MSL is projected to become a material issue for system operability and security, noting AEMO's assessment that system security issues related to MSL conditions may arise as early as 2025 under unplanned outage conditions, and by 2027 under system normal conditions.[126]

The CEC's views on the problems caused by minimum system load

The CEC characterises the MSL issue as the confluence of two trends in the energy transition: the rising penetration of distributed photovoltaics (DPV), which is reducing operational demand during daylight hours; and the slower pace at which the power system's security requirements are transitioning away from reliance on synchronous — predominantly coal — generating units that must run at a minimum stable operating level to provide essential system services. The CEC notes that DPV uptake is forecast to continue growing, and that in some regions on some feeders local DPV output is already sufficient for areas of the distribution network to experience net reverse energy flows during peak solar periods. As operational demand falls, the CEC observes that AEMO may be left with insufficient demand to match the output of must-run generation, giving rise to

125 CEC, Minimum System Load reserve service proposal, 20 June 2025.
126 CEC, *Minimum System Load reserve service proposal*, 20 June 2025. p.1.

system security risks (primarily the exceedance of transient stability limits on interconnectors due to changed power flows following a load contingency).[127]

Chapter 2 provides further description of the drivers and outlook for MSL conditions in the NEM.

The CEC's views on how AEMO is currently managing MSL conditions

The CEC frames its rule change request as an alternative to the mechanisms AEMO has adopted, or proposes to adopt, to manage MSL conditions. These existing operational measures include:[128]

- use of directions under NER cl 4.8.9 to utility-scale BESS to discharge stored energy, creating the load headroom needed to charge and thereby increase operational demand as required during MSL conditions.
- use of the Transitional service arrangements to contract BESS to provide load reserves to manage MSL conditions.

The CEC submits that AEMO's current approach — issuing NER cl 4.8.9 directions and/or relying on Type 1 transitional contracts — is not fit for purpose over the medium to long term, because it poses material risks to investment in new energy storage.[129] In relation to directions, the CEC argues that:[130]

- for contracted BESS, directions may expose the operator to the risk of breaching tolling or other contractual positions, increasing the cost of new contracts through an added risk premium.
- for merchant BESS, the directions compensation regime is unlikely to be satisfactory, as it does not account for dynamic operating costs or warranty implications such as degradation and cycling limits, and is time-consuming to negotiate.
- timing mismatches between contract settlement and the payment of compensation may require additional working capital or reserve accounts, acting as a further disincentive to investment.

More fundamentally, the CEC considers that the risk of AEMO manually intervening to change the availability of BESS creates a significant and material risk for storage investors and developers, damaging the business case for energy storage at precisely the time when the NEM requires accelerated investment in dispatchable storage. The CEC raises comparable concerns about Type 1 transitional contracts, submitting that they would likely favour incumbents — a contract struck only after a project reaches its final investment decision does not support a new investment case — and that they are not a viable long-term solution, given their three-year maximum tenor and the opaqueness of their pricing.[131]

On this basis, the CEC considers both the underlying MSL issue and the consequences of the overuse of directions and Type 1 contracts to be sufficiently material to warrant a change to the NER.[132]

5.1.2 The existing arrangements that support the provision of load reserves

The existing market arrangements that support the provision of load reserves and load response during MSL conditions provide a basis from which to assess the CEC's rule change proposal.

127 *Ibid.*, p.2.
128 *Ibid.*, p.4.
129 These existing arrangements are described further in section 5.1.2.
130 *Ibid.*, p.4-5.
131 *Ibid.*, p.5.
132 *Ibid.*, p.5.

These existing arrangements span the provision of information to the market, the wholesale price signal, AEMO's procurement of transitional services, and operational directions to network service providers. This section provides an overview of those arrangements.

Information provision and AEMO's MSL framework

AEMO publishes information to help the market anticipate and respond to MSL conditions under its MSL framework which is intended to align broadly with the existing LOR framework. AEMO declares MSL1, MSL2 and MSL3 conditions and issues market notices identifying forecast and actual MSL conditions, together with the relevant regional demand thresholds. AEMO's MSL framework is described further in section 2.1.

The wholesale price signal

The wholesale spot price is the primary in-market signal for the provision of load reserves and load response. During periods of oversupply, low or negative spot prices signal for demand to increase and for generation to withdraw, helping to manage low-demand conditions. The effectiveness of this signal in coordinating reserves at the specific times AEMO requires, and the pricing reforms proposed to strengthen it, are discussed in chapter 4.

Transitional service arrangements

AEMO is procuring transitional services under the transitional services framework (NER cl 3.11.11) to provide load response and load reserves during MSL conditions. Two categories of service are available: type 1 and type 2 transitional services.

- **Type 1 transitional services** apply to established technologies, or established applications of existing technologies; AEMO is currently procuring Type 1 MSL services from utility-scale BESS to charge during the middle of the day, and so increase operational demand. Contracts for Type 1 services have a maximum term of three years and cannot extend past 1 December 2029 .[133]
- **Type 2 transitional services** apply to the trialling of new technologies, or new applications of existing technologies — such as flexible loads, coordinated DPV curtailment and electric vehicle charging; their contracts may run for up to ten years, but cannot extend past 1 December 2039.[134] The transitional services framework itself expires on 1 December 2039, so these arrangements are inherently time-limited.[135]

The way AEMO has specified its MSL transitional services has evolved across the 2025 and 2026 procurement rounds, reflecting two distinct service concepts: a load reserve and a load response, which are described below:

Load reserve is a service that contracts for load capacity to be maintained outside of dispatch, to be called on as required to support AEMO's efforts to re-secure the power system following a contingency event, such as the loss of a major energy user or transmission line feeding power to a load centre, a large user or a neighbouring region. AEMO specified its earlier (2025) round of Type 1 MSL transitional services on this basis, using the services to maintain load reserves so that the power system could be returned to a secure operating state within 30 minutes following a credible load contingency.[136]

133 NER cl 3.11.11(m)(1); AEMO, *Statement of Need under clause 3.11.12(a) of the National Electricity Rules – MSL Transitional Services – Type 1*, 27 November 2025. p.7.

134 NER cl 3.11.11(m)(2); AEMO, *Statement of Need under clause 3.11.12(a) of the National Electricity Rules – MSL Transitional Services – Type 1*, 27 November 2025. p.9.

135 NER cl 11.168.5.

136 AEMO, *Statement of Need under clause 3.11.12(a) of the National Electricity Rules – MSL Transitional Services*, 23 December 2024. p.9.

Load response (or trough filling) is a service secured ahead of time that acts to increase operational demand over a pre-determined time window— whether through an increase in underlying electricity consumption or a decrease in unscheduled (distributed) generation that is not visible to AEMO's market systems. AEMO's 2026 round of Type 1 MSL transitional services is specified on this basis: a 'trough-filling' service that requires contracted BESS to reliably provide and maintain a constant MW of charging between 1100 and 1500 hours when an MSL2 or MSL3 condition is forecast. AEMO notes that this service differs from the previous round and operates independently of any directions issued to manage MSL conditions.[137]

Market interventions, directions and the emergency PV backstop

AEMO's MSL framework sets out actions and operational actions it will take in order to maintain power system security during MSL conditions.[138] For example, when an MSL3 condition is declared AEMO's MSL framework describes how it may direct NSPs to maintain operational demand above the relevant threshold. This can be achieved through operational measures, including — as a last resort — activating the emergency backstop mechanism to curtail distributed PV exports, thereby increasing operational demand.[139] These directions give AEMO access to out-of-market reserves to restore demand and re-secure the power system during these conditions.

The Commission notes that the governance and pricing mechanisms described in chapter 3 and chapter 4 would support the provision of load reserves through improved access to market information and stronger price signals - the impact of these on reserve provision is described further in section 5.3.

Question 7: The case for change to the NER to support the provision of load reserves to manage MSL conditions

1. How effective and efficient do you consider the existing NEM regulatory arrangements are at supporting investment in and availability of load reserves?
2. Do you agree with the CEC that there is a need to change the NER to more explicitly support the provision of load reserves to manage MSL conditions?

5.2 The CEC proposes new market ancillary service arrangements for the provision of MSL - load reserves

This section summarises how the CEC's proposed new MSL ancillary service would be implemented along with its views on the related costs and benefits.

5.2.1 How would MSL/load market ancillary services work?

The CEC proposes a new market ancillary service — a MSL reserve service — that would pay a market participant, on an individual resource basis, to provide a load response defined over a specific timeframe and volume (MWh). Under the proposal, any form of responsive load could bid to make its plant dispatchable by AEMO during the trading intervals in which an MSL event is forecast.[140]

137 AEMO, *Invitation to Tender – Provision of MSL Type 1 Transitional Services (NEM wide)*, 13 April 2026, sections A.3 and C.
138 AEMO, NEM Spring Readiness - Industry Briefing, 28 August 2025, p.9.
139 AEMO, *Statement of Need under clause 3.11.12(a) of the National Electricity Rules – MSL Transitional Services*, 23 December 2024. pp.3, 7.
140 CEC, *Minimum System Load reserve service proposal*, 20 June 2025. p.5.

The CEC envisages the service operating in a manner similar to the existing contingency FCAS framework, and intends it to be fully co-optimised with the energy and FCAS markets. Under the CEC's proposal:[141]

- market participants would bid, or choose not to bid, into the MSL market one day ahead — as they do in the energy and FCAS markets — submitting up to ten price and volume bid bands, with a price floor of $0 and a price cap aligned with the level set by the Reliability Panel.
- AEMO would set the MSL response requirement and issue enablement instructions to registered assets to hold dispatchable load capacity across the trading intervals it determines necessary; the service would operate on a self-commitment basis, allowing AEMO to aggregate capacity across resources to achieve the lowest-cost outcome for consumers.
- An enabled provider would receive an ancillary service payment whether or not an actual MSL event occurred — akin to a contingency FCAS enablement payment — with prices set on a marginal basis, and assets paying or being paid the prevailing energy price when charging or discharging.
- When an MSL response is required, AEMO would issue dispatch instructions and enabled assets would act in accordance with their dispatch instructions, via centralised dispatch or an automated trigger; for assets requiring prior notice (such as a BESS reducing its stored energy to create headroom). AEMO would dispatch under a 'latest time to intervene' framework as set out in NER cl. 4.8.5A and cl 4.8.5B.

The CEC describes the service as technologically neutral: it could be provided by utility loads and bi-directional units (such as a charging BESS or the scheduled load pumps at a pumped hydro station) by increasing commercial, industrial or residential consumption, or by switching off behind-the-meter generation to increase grid consumption. The CEC notes that, because wholesale prices are generally expected to be negative during peak MSL periods, enabled assets would have a natural incentive to increase consumption when called upon. The new MSL service would provide AEMO with increased certainty around the load resources that they can call upon to increase demand as required to support power system security. [142]

The Commission notes that elements of the CEC MSL market ancillary service proposal align with the current market ancillary service arrangements for FCAS, A key difference is the degree of "aheadness" delivered through the proposed service. Whereas the existing FCAS products are enabled through market dispatch for service delivery in the following 5-minute trading interval, the CEC proposes that the new MSL service would be dispatched based on a "latest time to intervene" approach. Given the nature of MSL conditions, and observation of AEMO's use of MSL transitional services, the dispatch of MSL market ancillary services would likely be required many hours prior to the forecast MSL condition. This feature of the service would need to be further clarified and the implications for market dispatch fully considered in the course of assessing the CEC's proposal.

5.2.2 What would be the costs and benefits associated with new market ancillary services for MSL/load reserves?

The CEC considers that its proposal would contribute to the NEO through more efficient pricing and by supporting the security and reliability of the power system, at a cost the CEC considers would not be significant.[143]

141 Ibid. pp.6-7.
142 Ibid. p.7.
143 *Ibid.*, p.10.

The CEC considers its proposed MSL service would support efficient pricing outcomes

The CEC submits that a competitive, open market ancillary service would support more efficient price formation than the current reliance on directions and Type 1 contracts. In particular, it argues that:[144]

- Removing the risk of directions being used to manage MSL would avoid discouraging investment in energy storage, which would otherwise reduce competition over time and place upward pressure on price volatility and average wholesale prices.
- An open market would deliver better price discovery than a tender for Type 1 contracts, drawing on a larger pool of service providers than AEMO's current focus on energy storage alone.
- Better price discovery would, in turn, support more effective investment decisions and long-run dynamic efficiency.
- A transparent market mechanism would help reduce the cost of capital relative to opaque contracting.

The CEC considers that its proposal would support system security and reliability

The CEC considers that enabling AEMO to procure targeted volumes of load response during MSL-at-risk periods would markedly improve its ability to manage the associated system security risks. It notes that the potential provision of fast acting load response provided by BESS and other resources would be particularly valuable for managing breaches of transient stability limits, which must typically be addressed in shorter timeframes than oscillatory, voltage or thermal limits, and that the service would give AEMO a more targeted tool to coordinate the required MSL reserve response.[145]

The CEC considers costs and cost recovery would be similar to the implementation and operation of a FCAS market

On costs, the CEC submits that the new service should be paid for by its beneficiaries. Because MSL is largely an outcome of underlying consumer demand — similar to the lower contingency FCAS market — the CEC considers consumers to be the primary beneficiary and recommends that costs be recovered from market customers. It expects the costs to be comparable to those of the recently introduced fast frequency response market, as the service would leverage existing AEMO systems and market designs: a one-time cost to develop and implement the market, and an ongoing cost to administer it. Drawing on the cost of implementing the two new very fast contingency FCAS, the CEC considers these costs would not be significant.[146]

Question 8: The CEC's proposed new MSL market ancillary service

1. What are your views on the potential benefits of the CEC's proposal to establish a new MSL market ancillary service?
2. What are your views on the CEC's operational vision for a new MSL market ancillary service?
3. What are your views on the implementation and operational costs associated with the CEC's proposal to establish a new MSL market ancillary service?

144 *Ibid.*, p.10.

145 *Ibid.*, pp.10–11.

146 *Ibid.*, p.11. The 2021 cost estimate for development of the very-fast raise and lower market ancillary service arrangements was $4 million to $6.5 million as documented in the AEMC Fast frequency response market ancillary service Final Determination, 12 July 2021, p.21.

5.3 Alternative and complementary reforms to support the provision of load reserves to manage system security during MSL conditions

The CEC rule change request identifies a range of alternative solutions that could be considered to support the provision of load reserves required during MSL conditions. These include:

- reliance on energy spot price signals through the wholesale energy price as a signal of the need for load response and load reserves
- reliance on out of market solutions - such as the Transitional service contracting arrangements
- reconfiguring the existing Frequency control market ancillary services for provision of reserves to manage MSL

The Commission also notes the following additional alternative arrangements that could support the effective provision of load reserves to manage MSL conditions:[147]

- Improved governance and information provisions as described in chapter 3
- Augmentation of the wholesale demand response mechanism to support the provision of a load increase response and/or a new RERT style contracting arrangement to increase operational demand during MSL conditions.

Alongside these alternative and complementary arrangements described above, the Commission notes that reforms to improve the visibility and market integration of CER are likely to have a material bearing on AEMO's visibility of demand flexibility with respect to operating the power system during periods of low operational demand. As described in section 1.3.2 , relevant reforms and work programs include:

- The implementation of voluntary scheduled resource arrangements consistent with the *Integrating price-responsive resources into the NEM rule 2024.*
- Potential reforms identified through AEMO's *Market visibility framework* work program.

5.3.1 The energy price as a primary signal for the need for load

The wholesale energy spot price already provides market participants with signals to increase or reduce consumption.[148] The CEC acknowledges that NEM dispatch can provide strong signals to market-facing participants, and that at the peak of an MSL period, wholesale prices are generally expected to be very low or negative, which would tend to incentivise flexible load and storage to increase consumption.[149] On this basis, an argument can be made for relying on the energy market price to deliver load reserve volumes at the times needed to manage system security.

The Reliability Panel's rule change request, which is also being assessed through this consultation, would strengthen this signal by introducing a mechanism to set the spot price at the *market floor price* (MFP) — currently −$1,000/MWh — during MSL3 conditions. The Panel considers that this would sharpen price signals during MSL events and encourage better control of decentralised generation and greater demand response, supporting the market's ability to clear and reducing the need for AEMO interventions.[150]

147 This list of potential additional alternative arrangements for the provision of MSL reserves is focused on mechanisms that would act at the level of the NEM wholesale market through remunerated and voluntary service provision. Load control provided through the emergency PV backstop arrangements and potential future distribution level flexibility services as envisaged by the (DSO) - *Redefine roles for market and power system operations (M3/P5) – Final report* are not described here.

148 Where market participants includes Generators, Market customers, Integrated resource providers, Small resource aggregators and Demand response service providers as set out in NER cl.2.1A.

149 CEC, *Minimum System Load reserve service proposal*, 20 June 2025, p.9.

150 Reliability Panel, Minimum System Load framework and floor price proposal, 23 April 2026, pp.8–9.

The CEC considers, however, that reliance on the energy price alone may not reliably deliver load reserves when they are most needed. In particular:[151]

- the load side of the market — and in particular scheduled, controllable load — is currently thin, which reduces the likelihood that load reserves will be available when required;
- where an MSL event persists for several hours, a response delivered early by short-duration storage may be exhausted before the end of the period, leaving the later part of the event unaddressed; and
- there is a temporal coordination problem, in that it would be operationally challenging to set energy market prices on an ahead basis at a granularity sufficient to drive the specific outcomes AEMO requires, without risking unintended consequences across the wider market.

The CEC's proposed MSL *market ancillary service* is intended to address this lack of temporal coordination by sending explicit price signals for the provision of load reserves at the specific times when load is required.

The important role of the energy price with respect to balancing supply and demand in the NEM, including during low demand conditions, is discussed in chapter 4.

The Commission seeks stakeholder views on the extent to which the energy spot price — including the strengthened pricing proposal put forward in the Reliability Panel's MSL rule change proposed — can be relied upon to deliver sufficient and well-timed load reserves during MSL conditions. The Commission is also interested in stakeholder perspectives on the circumstances in which a more explicit procurement mechanism may be warranted.

5.3.2 Information provision helps to signal the need for load response

Improved governance and information provision, as described in chapter 3, can itself support the provision of load reserves by making the need for load response visible to participants in time for them to respond. AEMO already publishes minimum system load market notices when MSL conditions are forecast, together with advisory MSL thresholds, and has set out the market responses it considers effective during MSL conditions — including increasing scheduled load, decommitting units that are not required for essential system services, and making available all FCAS, particularly lower services.[152]

Strengthening forecasting, transparency and the visibility of price-responsive resources would further improve the ability of participants to anticipate and respond to MSL conditions on a voluntary basis. This approach is consistent with the position the Commission adopted in the *Enhancing reserve information* rule, where it preferred improvements to information and transparency over the introduction of a new reserve market, as a lower-cost and lower-intervention means of supporting the efficient provision of reserves during the transition.[153]

Improved information provision and clearer price signals may improve the efficiency of voluntary market responses, but may not by themselves ensure that sufficient load reserves are available and able to be dispatched at the precise times AEMO requires. The Commission seeks stakeholder feedback on the extent to which improved governance and information provision could reduce the need for a dedicated MSL reserve mechanism as proposed by the CEC.

151 CEC, Minimum System Load reserve service proposal, 20 June 2025, pp.9–10.
152 AEMO, *Effective market response to MSL and DPVC market notices*, Fact sheet, June 2025.
153 AEMC, *Enhancing reserve information final determination*, Rule determination, 21 March 2024, p.i.

5.3.3 Building on the existing transitional service arrangements to procure load response and load reserves

As discussed in section 2.1.2 and section 5.1.2, AEMO currently procures MSL load reserve and load response services using the Transitional service provisions of the NER.[154]These comprise Type 1 services, drawn from existing resources and contracted over short tenors, and Type 2 services, for trialling and developing new technologies. The arrangements provide AEMO with pre-positioned, controllable resources — including battery energy storage systems, pumped hydro, flexible loads and DPV curtailment — that can increase load or reduce generation to maintain secure operating conditions during low-demand periods.[155]

One option would be to build on, or extend the transitional service arrangements for procuring MSL load reserves, rather than introducing a new *market ancillary service*. The CEC, however, considers out-of-market structured procurement to be a poor substitute for an open, transparent market mechanism, on the basis that such contracts do not send effective investment signals and are subject to material uncertainty given the monopsony nature of AEMO as the sole procurer and the potentially oligopolistic nature of the shallow pool of potential suppliers (for type 1 MSL service contracts).[156] The CEC further notes that the Type 1 contracts are limited to a three-year tenor, are characterised by opaque pricing, and would tend to favour incumbents.

The transitional service framework was established in 2024 as an interim measure to manage MSL conditions while enduring arrangements are developed.[157] These arrangements include sunset provisions such that:[158]

- Type 1 transitional service contracts can not run beyond 1 December 2029.
- Type 2 transitional service contracts can not run beyond 1 December 2039.

AEMO's submission to the consultation on the *Security framework enhancements Rule Change proposal* has requested that the Commission consider amendments to the transitional service arrangements to continue to allow AEMO to contract for MSL services and other novel system security issues moving forward.[159]

The Commission seeks stakeholder feedback on whether it would be appropriate to extend or build on the existing transitional service arrangements to provide a procurement mechanism for MSL load reserves, and on how such an approach would compare with a market ancillary service in terms of efficiency, investment signals and cost to consumers.

5.3.4 Reconfiguring an existing market ancillary service to provide MSL reserves

The CEC proposes to locate a new MSL response service within the existing market ancillary services framework in NER cl 3.11.2, which at present provides only for frequency control ancillary services (FCAS). An alternative to creating a new and distinct service would be to reconfigure an existing market ancillary service (i.e. FCAS) to deliver the load response required during MSL conditions. For example, the CEC suggests that this could be achieved by changing the definitions and procured volumes of regulation or contingency lower FCAS.[160]

154 NER cl 3.11.11
155 AEMO, *Statement of Need under clause 3.11.12(a) of the National Electricity Rules — MSL Transitional Services – Type 1*, 27 November 2025, p.8.
156 CEC, *Minimum System Load reserve service proposal*, 20 June 2025, pp.9–10.
157 AEMC, Improving security frameworks for the energy transition Rule 2024.
158 NER Cl. 3.11.11(m)
159 AEMO, Submission to the Consultation Paper for the *Security framework enhancements Rule Change proposal, 21 April 2026, p.12.*
160 CEC, *Minimum System Load reserve service proposal*, 20 June 2025, pp.8,10.

The CEC considers this approach is unlikely to be effective as they consider that while FCAS and MSL management both relate to system security, they address different needs.[161] AEMO has similarly observed that market ancillary services such as FCAS address frequency control but do not provide the sustained load increase or generation reduction required to manage MSL events.[162]

The CEC's views around the MSL reserve being different to contingency FCAS, are based on the expectation that the MSL service would not be triggered by a frequency deviation as is the case for FCAS. However, the Commission notes that the existing delayed raise/lower and regulating raise/lower services are also able to be triggered by electronic signals from AEMO.[163] These related electronic signals for service delivery are delivered by AEMO through its Automatic Generation Control (AGC) system which would likely play a similar role for the control and delivery of a potential future MSL reserve service.

The Commission seeks stakeholder feedback on whether an existing market ancillary service could be reconfigured to provide MSL reserves and, if so, on the design changes that would be required to reconcile the differences between frequency control and MSL management.

5.3.5 Provision of load response and load reserves through revisions to the WDRM & RERT arrangements

Two further mechanisms in the NER are directed at demand-side participation and reserve procurement respectively, and could in principle be adapted to provide an MSL load-increase service.

Consideration of two-way wholesale demand response

The *wholesale demand response mechanism* (WDRM) allows demand response service providers to offer demand response into the NEM, where it is dispatched and paid in the same way as generators, with the demand response measured as the reduction in a load's consumption relative to an approved baseline. The WDRM is presently a one-way mechanism: it pays for reductions in load, not increases. Expanding the WDRM to facilitate a two-way response — paying customers to consume more than their baseline during periods of negative prices — has been put forward as a means of helping to manage MSL events.[164]

The Commission examined this option in its 2025 review of the WDRM and did not recommend that further work to expand the WDRM to include a two-way response be progressed. In the context of the expected implementation of the *Integrating price-responsive resources into the NEM rule 2024,* the Commission's analysis found that negative price outcomes have generally not been sufficiently negative to offset customers' increased retail charges, and thereby incentivise consumption above baseline. Most negative price outcomes are expected to fall within the range of $0 to −$100/MWh, which is insufficient to support a two-way response; and that the asymmetry between the *market floor price* and the market price cap means that responses to high prices carry greater upside than responses to negative prices. AEMO also advised that expanding the WDRM to a two-way response could require substantial changes to its dispatch, settlement, metering and baselining systems, including treating wholesale demand response units as bidirectional units and developing dual baselining methodologies.[165]

161 Ibid.
162 AEMO, *Statement of Need under clause 3.11.12(a) of the National Electricity Rules — MSL Transitional Services – Type 1*, 27 November 2025, p.8.
163 NER Chapter 10 definitions for *delayed lower service* and *regulating lower service.*
164 AEMC, *Review of the wholesale demand response mechanism*, Final report, 23 October 2025, pp.3,17.
165 Ibid, section 3.1, pp.17–18.

These findings are directly relevant to whether the WDRM could be augmented to deliver an MSL load-increase service. The Commission notes that the Reliability Panel's proposed mechanism, by setting the spot price to the MFP during MSL3 conditions, would alter the price signal on which a two-way response would depend; stakeholders may wish to consider whether this materially affects the Commission's earlier conclusion.

Consideration of MSL reserves through the Reliability and emergency reserve trader arrangements

The reliability and emergency reserve trader (RERT) mechanism under NER cl 3.20 provides a mechanism through which AEMO secures out-of-market reserves by contract to provide a last resort backup to maintain reliability of supply where the market is not expected to do so due to supply scarcity. It secures additional supply, or demand reduction, and is expressly a market for the trading of energy only. It does not include arrangements for the provision of ancillary services.[166]

A RERT-style contracting arrangement to manage MSL conditions would therefore operate in the opposite direction to the existing RERT. Such a service would involve securing the capability to provide an increase in operational demand rather than additional supply as for the existing RERT arrangements. The development of a load response RERT would likely require a re-oriented framework, including a distinct triggering condition, contracting process and cost-recovery arrangements.

The Commission seeks stakeholder feedback on whether the WDRM and/or a RERT-style contracting arrangement could be augmented or adapted to provide an MSL load-increase service, on the design changes that would be required, and on how such approaches would compare with the CEC's proposed market ancillary service and the other arrangements discussed in this section.

Question 9: What are your views on alternative or complementary solutions for the pricing and provision of load reserves for MSL conditions?

1. What are your views on potential alternative or complementary solutions for the pricing and provision of load reserves?

166 NER cl 3.20.1(b); see also cl 3.20.2(a).

6 Making our decision

When considering a rule change proposal, the Commission considers a range of factors.

This chapter outlines:

- issues the Commission must take into account in assessing the rule change proposals
- the proposed assessment framework
- decisions the Commission can make with respect to the rule change proposals
- rule-making for the Northern Territory.

We would like your feedback on the proposed assessment framework.

6.1 The Commission must act in the long-term interests of consumers

The Commission is bound by the National Energy Law (NEL) to only make a rule if it is satisfied that the rule will, or is likely to, contribute to the achievement of the National Electricity Objective.[167]

The NEO is:[168]

> to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to—
>
> (a) price, quality, safety, reliability and security of supply of electricity; and
>
> (b) the reliability, safety and security of the national electricity system; and
>
> (c) the achievement of targets set by a participating jurisdiction—
>
> (i) for reducing Australia's greenhouse gas emissions; or
>
> (ii) that are likely to contribute to reducing Australia's greenhouse gas emissions.

The targets statement, available on the AEMC website, lists the emissions reduction targets to be considered, as a minimum, in having regard to the NEO.[169]

6.2 We propose to assess the rule change using these four criteria

6.2.1 Our methods to analyse the proposed rule

Considering the NEO and the issues raised in the rule change request, the Commission proposes to assess this rule change request against the set of criteria outlined below. These assessment criteria reflect the key potential impacts – costs and benefits – of the rule change request. We consider these impacts within the framework of the NEO.

The Commission's regulatory impact analysis may use qualitative and/or quantitative methodologies. The depth of analysis will be commensurate with the potential impacts of the proposed rule change. We may refine these methodologies as this rule change progresses, including in response to stakeholder submissions.

167 Section 88 of the NEL]
168 Section 7 of the NEL.
169 Section 32A(5) of the NEL

Consistent with good regulatory practice, we also assess other viable policy options - including not making the proposed rule (a business-as-usual scenario) and making a more preferable rule - using the same set of assessment criteria and impact analysis methodology where feasible.

6.2.2 Assessment criteria and rationale

The proposed assessment criteria and rationale is as follows:

- **Safety, security and reliability** - Solutions should support reliability and security of the power system through the transition as the capacity of CER increase and thermal coal plant retire. Solutions should ensure services required for system security and reliability are available where and when they are required and that there is transparency and accountability in meeting future system security needs.
- **Principles of market efficiency** - We will consider whether potential changes to the NER would promote efficient operation of the power system and the investment in new plant and capabilities to support efficient long term market outcomes. Market efficiency is likely to be supported where
  - *Price signals and other incentives* encourage competition so the costs of providing a service are close to the social marginal cost. In principle voluntary responses to prices and other incentives are more likely to support efficient market outcomes rather than operator directions unless such interventions are relatively rare.
  - *Transparent access to market information* enables effective competition between market participants for the provision and consumption of energy and ancillary services (reserves).
  - *Allocation of operational and financial risks* are allocated to those parties best suited to manage those risks.
- **Emissions reduction -** We will consider how proposed solutions would efficiently contribute to achieving government greenhouse gas emission reduction targets.
- **Principles of good regulatory practice** - We will consider how potential changes to the NER would promote the predictability and stability of the regulatory framework. We will also consider how potential changes align with the broader direction other reforms underway.

Question 10: Assessment framework

1. Do you agree with the proposed assessment criteria?
2. Are there additional criteria that the Commission should consider or criteria included here that are not relevant?

6.3 We have three options when making our decision

After using the assessment framework to consider the rule change request, the Commission may decide:

- to make a rule(or rules) as proposed by the CEC and the Reliability Panel in their rule change requests.[170]
- to make a rule that is different to the proposed rule (a more preferable rule), as discussed below, or

170 Reliability Panel, Rule Change request - Minimum System Load framework and floor price proposal, 23 April 2026; CEC, Minimum System Load reserve service proposal, 20 June 2025.

- not to make a rule.

The Commission may make a more preferable rule (which may be materially different to the proposed rule) if it is satisfied that, having regard to the issue or issues raised in the rule change request, the more preferable rule is likely to better contribute to the achievement of the NEO.[171]

6.4 The proposed rule would not apply in the Northern Territory

The proposed rule would not apply in the Northern Territory, as it would amend provisions in NER chapters 3 and 4 that do not apply in the Northern Territory.[172] Consequently, the Commission will not assess the proposed rule against additional elements required by the Northern Territory legislation.

171 Section 91A of the NEL

172 Under the NT Act and its regulations, only certain parts of the NER have been adopted in the Northern Territory. The version of the NER that applies in the Northern Territory is available on the AEMC website at: https://energy-rules.aemc.gov.au/ntner.

A The existing arrangements for monitoring and managing supply reserves in the NEM

This appendix describes the existing lack of reserve (LOR) framework as set out in the NER and detailed further in relevant AEMO procedures and guidelines.

- Appendix A.1 describes the LOR and supply sufficiency forecasting frameworks over the short term and medium term projected assessment of system adequacy (PASA) processes.
- Appendix A.2 describes the arrangements for the declaration of LOR conditions.
- Appendix A.3 describes the arrangements for the management of LOR conditions and market intervention mechanisms to maintain power system security.
- Appendix A.4 describes the arrangements for reporting on LOR conditions by AEMO through quarterly reports on the operation of the LOR framework.

A.1 LOR Forecasting and the projected assessment of system adequacy (PASA) process

AEMO forecasts the supply–demand balance in the operational timeframe through the projected assessment of system adequacy (PASA). The NER defines the PASA objective as:[173]

> The PASA is a comprehensive program of information collection, analysis, and disclosure of medium term and short term power system security and reliability of supply prospects so that Registered Participants are properly informed to enable them to make decisions about supply, demand and outages of transmission networks in respect of periods up to 2 years in advance (or up to 3 years in advance, where specified).

The process is designed to ensure that sufficient information is published to enable the market to operate effectively with a minimal amount of intervention by AEMO.[174]

The NER requires AEMO to administer the PASA over two timeframes as described below:

- The short term PASA (ST PASA) provides the near-term outlook within which LOR conditions are forecast.
- The medium term PASA (MT PASA) assesses the adequacy of expected supply to meet demand across a 24-month horizon, identifying and quantifying any projected failure to meet the reliability standard.

Each of these is described further below.

A.1.1 ST PASA provides a seven-day outlook of capacity and reserves

Under the NER, ST PASA covers each 30-minute period across at least the seven trading days from and including the day of publication.[175] Registered Participants must submit their current intentions and best estimates of the available capacity and PASA availability of their scheduled resources, and any applicable energy constraints, and must keep that information up to date.[176] The NER expressly links the ST PASA process to the LOR framework: the ST PASA information that AEMO must prepare and publish for each 30-minute period must include the identification and

173 NER Cl. 3.7.1(b).
174 NER Cl. 3.7.1(d).
175 NER Cl. 3.7.3(b).
176 NER Cl. 3.7.3(h). The principles-based approach, the alignment of the ST PASA timeframe with practice, and publication of availability at the unit (DUID) level were introduced by the *National Electricity Amendment (Updating Short Term PASA) Rule 2022* (AEMC project ERC0332).

quantification of any forecast reserve conditions under NER Cl. 4.8.4 — that is, forecast LOR conditions.[177]

AEMO operationalises these requirements through its ST PASA Procedures and produces ST PASA in two parts: a six-day component (6-day PASA), covering the six trading days following the trading day of the most recently published pre-dispatch schedule and run hourly; and a pre-dispatch component (PD PASA), covering the most recently published pre-dispatch period and run every half-hour. PD PASA provides the nearest-term projection of capacity reserves and is the basis on which AEMO identifies LOR conditions within the next trading day.[178] AEMO must publish details of the outputs of the ST PASA each day. The published outputs include forecast capacity reserves, regionally aggregated available capacity, and the availability of individual scheduled resources at the unit (DUID) level, providing the market with the data needed to anticipate and respond to emerging reserve shortfalls.[179]

A.1.2 MT PASA assesses supply adequacy over the medium term

Under the NER, MT PASA covers a 24-month period (or, for specified inputs and outputs, a 36-month period) commencing from the Sunday after the day of publication, with a daily resolution. AEMO must review and publish the outputs of the MT PASA every week, and may publish additional updated versions in the event of changes that, in AEMO's judgement, are materially significant.[180] The NER prescribes the inputs AEMO must prepare — including forecasts of the 10 per cent probability of exceedance (POE) and most probable daily peak load, forecast network constraints, and unconstrained intermittent generation forecasts — and the inputs each relevant Market Participant must submit, being the PASA availability of its scheduled resources and applicable weekly energy constraints, representing its current intentions and best estimates.[181]

AEMO operationalises these requirements through its Medium Term PASA Process Description. MT PASA incorporates two functions: a three-hourly information service providing a regional and unit-level breakdown of the supply situation over a 36-month horizon, based on participant availability submissions; and a weekly assessment of system reliability. The weekly assessment is produced by two model runs — the MT PASA Reliability Run, which identifies and quantifies any projected breach of the reliability standard, and the MT PASA Loss of Load Probability (LOLP) Run, which assesses the days most at risk of load shedding.[182]

A.2 Declaration of LOR conditions

A.2.1 AEMO declares LOR conditions to signal declining reserve levels to the market

Under the NER, AEMO may declare an LOR condition in relation to a present or future period when it determines, in accordance with the reserve level declaration guidelines, that the probability of load shedding (other than the reduction or disconnection of interruptible load) is, or is forecast to be, more than remote.[183] AEMO declares LOR conditions to signal to the market that electricity reserves are running low and to elicit a market response prior to any actual shortfall or associated

177 NER Cl. 3.7.3(k)(4)(iii). The remaining limbs of NER Cl. 3.7.3(k)(4) require identification and quantification of projected violations of power system security, any projected failure to meet the reliability standard, and when and where network constraints may limit the dispatch of scheduled resources.

178 AEMO, *Short Term PASA Procedures*, 28 November 2025, made under NER Cl. 3.7.3(c). Under those procedures the 6-day PASA is run hourly and PD PASA every half-hour, each at a 30-minute (trading interval) resolution.

179 NER Cl. 3.13.4(c) and (d). See also the AEMC's Enhancing reserve information rule change (project ERC0295), which increased the transparency of energy availability information published to the market.

180 NER Cl. 3.7.2(a).

181 NER Cl. 3.7.2(c), (d) and (f). The participant input obligations in NER Cl. 3.7.2(d) are classified as a tier 1 civil penalty provision.

182 AEMO, *Medium Term PASA Process Description*, 24 April 2023.

183 NER Cl. 4.8.4(b).

intervention occurring. An LOR declaration is communicated through a market notice, which informs participants that they may make spare capacity available to the market as reserves, reducing the risk of load shedding.

A.2.2 AEMO determines LOR conditions in accordance with the Reserve Level Declaration Guidelines

The NER requires AEMO to make and publish reserve level declaration guidelines that set out how AEMO will determine a lack of reserve condition. The guidelines must describe how AEMO continually assesses the probability of capacity reserves being insufficient to avoid load shedding, must specify at least three probability levels at which AEMO will declare a corresponding LOR condition (indicating an increasing probability of load shedding), and must be reviewed by AEMO at least once every four years. When amending the guidelines, AEMO must comply with the Rules consultation procedures, using the expedited Rules consultation procedure (or the minor Rules consultation procedure where applicable). AEMO gives effect to these requirements through its Reserve Level Declaration Guidelines.[184]

A.2.3 LOR conditions are declared in three levels based on the severity of the reserve need

The Reserve Level Declaration Guidelines specify a Forecast Uncertainty Measure (FUM), which AEMO uses to quantify the capacity reserves at risk arising from forecast uncertainty. The FUM is calculated up to 72 hours ahead and is set to zero beyond that horizon, so the LOR trigger levels vary with operating conditions and the forecasting horizon.[185] LOR condition notices are issued in three levels based on the urgency of the reserve need:[186]

- **Lack of reserve 1 (LOR1)** is declared when forecast or actual capacity reserves fall below the larger of either the FUM or the sum of the two largest credible risks in the region. An LOR1 condition signals a reduction in reserve levels and encourages generators to offer more supply, or large industrial and commercial consumers to reduce their demand. At this stage there is no impact on power system security or reliability, and AEMO continues to monitor reserve levels.
- **Lack of reserve 2 (LOR2)** occurs when forecast capacity reserves fall below the larger of either the FUM or the largest credible risk in the region. At this level there is again no immediate impact on the power system, but supply could be disrupted if a large incident occurred.
- **Lack of reserve 3 (LOR3)** occurs when actual or forecast capacity reserves are below zero, indicating that load shedding is forecast or is actually occurring.

A.2.4 AEMO communicates LOR conditions to the market through market notices

The NER requires AEMO to publish any declaration under NER Cl. 4.8.4 as soon as reasonably practicable, including, to the extent reasonably practicable, the nature and extent of the LOR condition and the time period over which it applies.[187] Market participants are informed of LOR conditions through market notices. If a reserve shortfall is identified within the:

184 NER Cl. 4.8.4A; AEMO, *Reserve Level Declaration Guidelines*. The obligation on AEMO to develop and publish the guidelines, and to declare at least three probability levels, was introduced by the *National Electricity Amendment (Declaration of lack of reserve conditions) Rule 2017* (AEMC project ERC0226).

185 AEMO, *Reserve Level Declaration Guidelines*. The resulting LOR trigger levels are applied operationally under AEMO, *Short Term Reserve Management procedure* (SO_OP_3703), 12 December 2025.

186 NER Cl. 4.8.4; AEMO, *Short Term Reserve Management procedure* (SO_OP_3703). See also AEMO, *Lack of reserve (LOR) notices fact sheet*.

187 NER Cl. 4.8.5(a) and (a1). AEMO must also publish notice of any cancellation of, or significant change in, an LOR condition: NER Cl. 4.8.5(c).

- 6-day PASA timeframe, AEMO issues a market notice advising of forecast LOR1 conditions only where they appear in the run completed at 1400 hours (AEST); LOR2 or LOR3 conditions are declared as soon as possible after being identified in any 6-day PASA run;
- PD PASA timeframe, AEMO issues a market notice advising any LOR conditions (LOR1, LOR2 or LOR3) present in the current pre-dispatch run.

These notices inform participants' expectations of prices in the energy market. Participants may respond to this information by making their capacity available to the market as reserves.[188]

A.3 Management of LOR conditions and market intervention

The NER sets out the arrangements for AEMO to implement an escalating series of market interventions to maintain power system security where the response to market information and market notices is not sufficient.

In operational timeframes, AEMO observes the market's response to LOR notices and allows the market to take its course up until the "latest time to intervene", which AEMO estimates and publishes when the LOR notice is released.[189] If that time has passed and the market has not provided sufficient additional reserves to address the shortfall projected in the ST PASA, AEMO may intervene. Intervention is a last-resort mechanism to maintain the system in a secure operating state and avoid load shedding. The three intervention mechanisms operate as follows:

- **Directions** are issued to Registered Participants (generators and scheduled loads) to operate at a specified output or consumption level, and are dispatched through normal market processes. Generators are compensated for responding to a direction. Issuing directions for reliability reasons is rare, given that market prices are typically high at such times, which incentivises available generators to commit for dispatch.[190]
- **Instructions** are final-resort notices to Network Service Providers (NSPs) to shed customer load to maintain the integrity of the power system. Before issuing instructions, AEMO considers the cost of lost load and any material distortionary effects, and assesses the amount of load available to shed, key network locations and load-shedding procedures. Instructing networks to shed load is rare, and is generally carried out on a rotational basis under each jurisdiction's load-shedding plan.
- **The Reliability and Emergency Reserve Trader (RERT)** allows AEMO to secure emergency out-of-market reserves through contracts that can be activated, or pre-activated, on request. RERT reserves are contracted in addition to the reserve buffer made available by the market and assessed through the PASA process. RERT is procured on a long-, medium- or short-notice basis according to the lead time available before the projected reserve shortfall occurs.[191]

A.4 AEMO reports quarterly on the operation of the LOR framework

The NER requires AEMO to publish a lack of reserve framework report within one month following the end of each calendar quarter. The purpose of the report is to inform Registered Participants about the implementation of the reserve level declaration guidelines and to provide AEMO's high-level analysis of how the LOR framework is operating during the reporting period. Each report must include AEMO's observations of any trends in when and why LOR conditions are being

188 AEMO, *Short Term Reserve Management procedure* (SO_OP_3703), made under NER Cl. 4.10.1.
189 NER Cl. 4.8.5A and 4.8.5B; see also AEMO, *Short Term Reserve Management procedure* (SO_OP_3703).
190 Directions and instructions are issued under NER Cl. 4.8.9.
191 NER Cl. 3.20; AEMO, *RERT guidelines*.

declared, and a summary of the leading factors or causes of any LOR conditions declared, during the relevant reporting period.[192] This reporting supports the transparency of the framework and complements the ongoing publication of capacity reserve information through the ST PASA process described in appendix A.1.1.

AEMO has included analysis and reporting on minimum system load (MSL) conditions in its quarterly LOR framework reports from the Quarter 3 2024 report onwards. This provides a high-level summary of MSL declarations over the reporting period and against historical values to identify related trends.[193]

192 NER Cl. 4.8.4B. The quarterly reporting obligation was introduced by the *National Electricity Amendment (Declaration of lack of reserve conditions) Rule 2017* (AEMC project ERC0226).

193 See, for example, AEMO, *NEM Lack of Reserve Framework Report – Quarter 3 2024*.

B AEMO's procurement of MSL Transitional services

This appendix provides an overview of AEMO's use of the Transitional service arrangements for the purpose of procuring MSL load response and load reserve services to manage power system security during MSL conditions.

B.1 AEMO procured Type 1 transitional services for load reserves from Spring 2025

Throughout 2025, AEMO ran a procurement process for Type 1 transitional services to provide load reserves to help manage MSL conditions in Victoria and South Australia.[194] This procurement process resulted in AEMO contracting with some scheduled battery energy storage systems to hold charging headroom for activation by AEMO to increase system demand where required to restore the power system to a secure operating state following a load contingency event.[195]

AEMO signed two Type 1 Transitional Services contracts with BESS owners in Victoria with a charging capacity of 307.50 megawatt hours (MWh) but as of December 2025 was unsuccessful in obtaining similar agreements with BESS in South Australia.[196]

Further reporting on these transitional services over financial year 2025-2026 is expected through AEMO's 2026 Transition plan for system security (expected in Dec 2026) and AEMO's 2025-2026 Non market ancillary services report (expected Q4 2026).[197]

B.2 AEMO is seeking offers for the provision of MSL Type 1 and Type 2 transitional services for trough filling load response from Spring 2026

In preparation for Spring 2026, AEMO is seeking offers from potential providers of Type 1 and Type 2 transitional services in South Australia, Victoria, New South Wales and Queensland to address power system security risks to manage MSL conditions and improve AEMO's ability to manage these events. The contracts would commence from 1 September 2026 for a period of up to three years.[198]

AEMO is seeking to engage in the provision of **MSL Type 1 Transitional services** from scheduled battery energy storage systems (BESS). The service providers would be contracted to provide a "trough filling" service, whereby they would be required to charge (consume electricity) in accordance with a dispatch target provided by AEMO during an event window. Response provided under this service would be reflected in an improvement in MSL threshold from 1100-1500h, as shown in the following figure.[199]

194 See: https://www.aemo.com.au/consultations/tenders/minimum-system-load-transitional-services-for-victoria-and-south-australia

195 AEMO, 2024, Statement of Need – MSL Transitional Services, 23 December 2024, p.8.

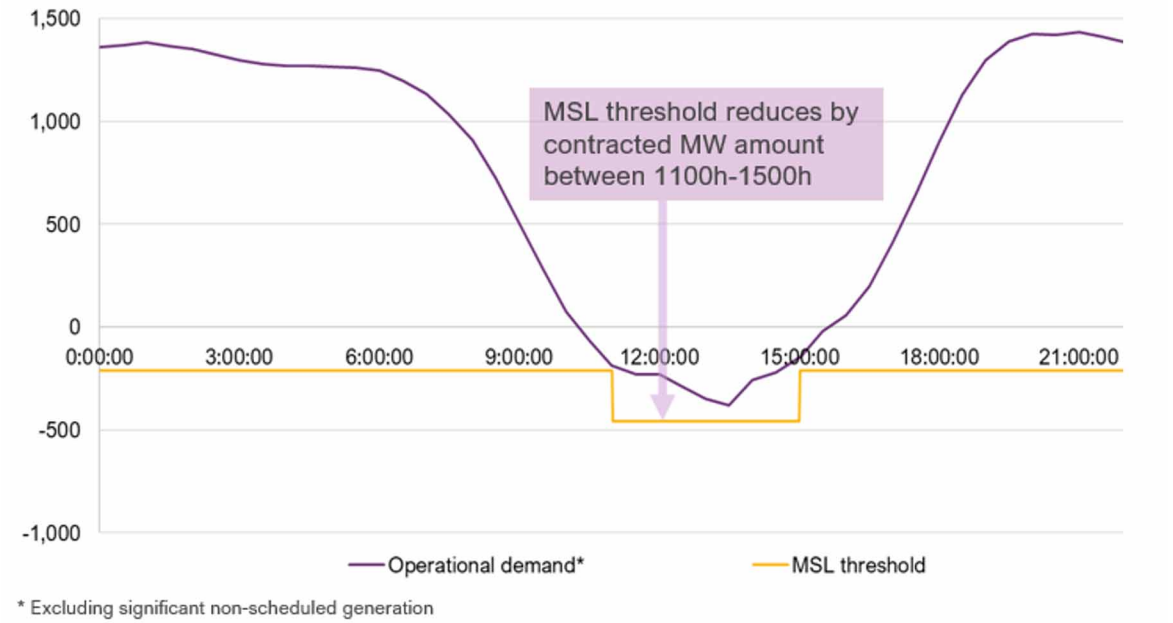
196 AEMO, 2025 Transition Plan for System Security, 1 December 2025, p.40.

197 For further information refer to: https://www.aemo.com.au/energy-systems/major-publications/transition-plan-for-system-security-tpss and https://www.aemo.com.au/energy-systems/electricity/national-electricity-market-nem/data-nem/ancillary-services-data/non-market-ancillary-services-annual-summary

198 See: https://www.aemo.com.au/consultations/tenders/provision-of-minimum-system-load-transitional-services-nem-wide

199 AEMO, Invitation to Tender - Provision of Minimum System Load (MSL) Type 1 Transitional Services – NEM wide, 13 April 2026, pp. 7, 16.

Figure B.1: The 2026 Type 1 MSL Transitional services will act to reduce the MSL threshold



Source: AEMO, Invitation to Tender - Provision of Minimum System Load (MSL) Type 1 Transitional Services – NEM wide, 13 April 2026, p.16.

AEMO is also actively seeking to engage in the provision of **MSL Type 2 Transitional services** to trial and increase the range of technologies and service providers available to manage MSL conditions. This procurement process is open to a broad range of potential technologies and service providers that are not eligible to provide a MSL Type 1 Transitional service. The service may be provided by a portfolio of one or more resources through any combination of:[200]

- Storing energy
- Increasing flexible load
- Turning down behind the meter generation
- Reducing the minimum stable operating load of plant that is required online for system security.

The service would act to reduce generation or increase consumption based on a flat demand response or a response profile that matches the solar output profile during the event period from 11:00 to 15:00.[201]

Type 2 Transitional service provision will progress through three stages, as set out below:[202]

1. Stage 1: Small-scale trial(s): proof-of-concept & response capability
2. Stage 2: Full-scale trials: consistent and repeatable results, response capability
3. Stage 3: Operational MSL management: called upon operationally to support MSL management as for MSL Type 1 service providers.

Further information and updates to this procurement process are available on the AEMO webpage at https://www.aemo.com.au/consultations/tenders/provision-of-minimum-system-load-transitional-services-nem-wide.

200 AEMO, Invitation to Tender - Provision of Minimum System Load (MSL) Type 2 Transitional Services, 4 May 2026, pp.16,19.
201 Ibid.p.25.
202 Ibid.p.16.

C NEM System security frameworks and related concepts

Historically, many system security services have been supplied as a byproduct of traditional thermal generation, such as coal-fired power stations or open-cycle gas turbines. As more inverter-based resources connect to the grid and coal units retire, AEMO continues to deepen its understanding of the security capabilities of the new generation mix, enabling it to implement new approaches to ensure system security.

Key concepts related to power system operations, including system security, reliability, system strength, frequency and inertia are described below.[203] Each of these services contributes to maintaining a secure power system.

- **Security.** Power system security broadly refers to the stability of the power system, including its ability to withstand disturbances and operate within defined technical limits.
- **Reliability.** Reliability refers to the power system having sufficient capacity to generate and transport electricity to meet customer demand. For a power system to be reliable, a secure operating state must be maintained. However, they are two distinct concepts. A reliable power system maintains a continuous balance between supply and demand over days or weeks, whereas a secure power system can continue operating in a stable state despite disturbances in the supply-demand balance over short timeframes.[204]
- **System strength.** A key factor in the power system's ability to respond to such disturbances is system strength. System strength is a core component in ensuring the power system remains secure. The term refers to the power system's ability to maintain and control the voltage waveform at any location, both during normal operating conditions and after a disturbance.[205] The framework for procuring and ensuring sufficient system strength is discussed in more detail in Section A.2.1 of the Commission's consultation paper for the *System security enhancements rule changes*.[206]
- **Frequency.** Maintaining a stable frequency is an important part of achieving a secure and reliable power system. Frequency control and ancillary services (FCAS) aim to restore and maintain the system frequency at 50 Hz by balancing supply and demand in real time. There are 10 FCAS markets in the NEM.[207] [208]
- **Inertia.** Inertia impacts the system's dynamic performance, especially frequency stability, by reducing the rate of change of frequency (RoCoF) following a contingency event. The inertia of the power system relies on the physical inertia of spinning masses inside synchronous machines and on any synthetic inertial responses that IBR may be programmed to produce.[209]
- **NSCAS** refers to network support and control ancillary services, and are defined in the NER as non-market ancillary services 'with the capability to control the active or reactive power flow

203 AEMO, TPSS, 1 December 2025, p. 18.

204 For more details on reliability, see AEMC, 2026 Reliability Standard and Settings Review, Draft report, 27 November 2025, Appendix A.

205 AEMO, TPSS, 1 December 2025, p. 4.

206 Refer to: https://www.aemc.gov.au/rule-changes/security-framework-enhancements

207 These include two regulation FCAS markets and eight contingency FCAS markets. For more information, see AEMO, Guide to Frequency Control Ancillary Services, 17 September 2025, p. 7.

208 There are also other frequency management tools in the NEM, such as primary frequency response which is the continuous active power control with respect to system frequency that is provided by all scheduled and semi-scheduled generation and BESS in the NEM in accordance with NER cl. 4.4.2(c1).

209 For more information on the difference between power system inertia, synchronous inertial response and synthetic inertia, see AEMO, *Inertia in the NEM explained*, March 2023.

into or out of a transmission network to address an NSCAS need'.[210] These services may be delivered to maintain power system security and reliability of supply or to maintain or increase the power transfer capability of the transmission network.[211] The NSCAS framework is discussed in more detail in the following section A.2.3 of the Commission's consultation paper for the *System security enhancements rule changes*.[212]

210 NER, NSCAS Glossary definition.

211 AEMO, Network Support and Control Ancillary Services (NSCAS) Description and Quantity Procedure, 1 December 2024, p. 4.

212 Refer to: https://www.aemc.gov.au/rule-changes/security-framework-enhancemen

D Further MSL related analysis

This appendix provides further analytical detail of historical MSL events and the outlook for MSL and minimum operational demand.

D.1 Historical MSL events

This section provides a case study summarising MSL conditions that occurred in South Australia and Victoria on Christmas Day and Boxing Day 2025 along with an analysis of pre-dispatch and settlement price outcomes for recent MSL events in South Australia.

D.1.1 Case study: MSL conditions in SA and Vic - 25-26 December 2025

Over the 2025 Christmas period, mild weather and high distributed photovoltaic (DPV) output coincided with low underlying demand across the southern mainland regions, driving operational demand below *minimum system load* (MSL) thresholds in both South Australia and Victoria on consecutive days. The events illustrate the operational characteristics of MSL conditions that the rule change requests seek to address, including AEMO's reliance on out-of-market direction of a bi-directional unit to maintain a secure operating state.

Thursday 25 December 2025

In the lead up to Christmas Day 2025, AEMO forecast the potential for MSL conditions for the Victoria and South Australian NEM regions on the 25 December.[213]

On the day, AEMO declared an Actual MSL2 condition in the South Australian region at 1156 hrs, with forecast minimum demand of –237 MW at 1330 hrs against advisory thresholds of MSL1 at 34 MW, MSL2 at –116 MW and MSL3 at –468 MW.[214] As the demand trough deepened through the afternoon, the thresholds were recalibrated and a subsequent notice recorded forecast minimum demand of –281 MW at 1500 hrs, with the Actual MSL1 condition forecast to persist until 1530 hrs.

In Victoria, AEMO declared an Actual MSL1 condition at 1339 hrs, with forecast minimum demand of 1,352 MW at 1400 hrs against thresholds of MSL1 1,695 MW, MSL2 1,195 MW and MSL3 695 MW; the condition was forecast to exist until 1500 hrs.[215] The South Australian and Victorian demand troughs were near-coincident.

AEMO considered that the market response alone was insufficient to manage the South Australian condition, such that at 0700 hrs, it directed Blyth Battery (a bi-directional unit) to remain synchronised and follow dispatch targets for the purpose of minimum system load management, with an expected duration to 1530 hrs.[216] The direction held the unit on standby at a low state of charge so that it could increase demand if required, rather than dispatching it on economic merit; the unit was not instructed to charge.

Figure D.1 shows the underlying conditions in South Australia. Operational demand (the solid black line) fell below zero around the middle of the day, reaching a low of approximately –300 MW

213 AEMO, *Market Notice 132059 – forecast minimum system load condition, SA region 25/12/2025* (and subsequent updates), 24–25 December 2025. Forecast minimum system load notices advise the market ahead of the day that regional demand is forecast to fall below an advisory MSL threshold, and are updated as the forecast is revised.

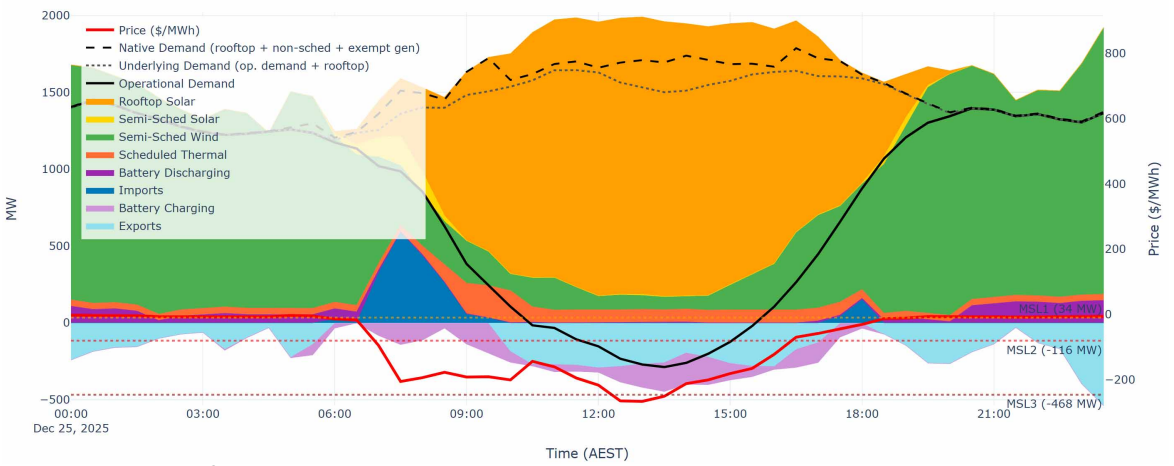
214 AEMO, *Market Notice 132116 – Actual Minimum System Load MSL2 condition in the SA Region on 25/12/2025*, 25 December 2025.

215 AEMO, *Market Notice 132120 – Actual Minimum System Load MSL1 condition in the VIC Region on 25/12/2025*, 25 December 2025.

216 AEMO, *Market Notice 132107 – Direction – SA region 25/12/2025 to Blyth Battery Pty Ltd*, 25 December 2025; and AEMO, *Market Notice 132108 – Direction – SA region 25/12/2025*, 25 December 2025. The direction was issued under NER cl 4.8.9(a1)(1) and noted that intervention pricing did not apply to the intervention event.

shortly after 1300 hrs—below the MSL2 advisory threshold—as rooftop photovoltaic output displaced grid-supplied demand. Through middle of the day, scheduled thermal generation was minimal, the region exported to Victoria, and grid-scale battery charging absorbed surplus generation.

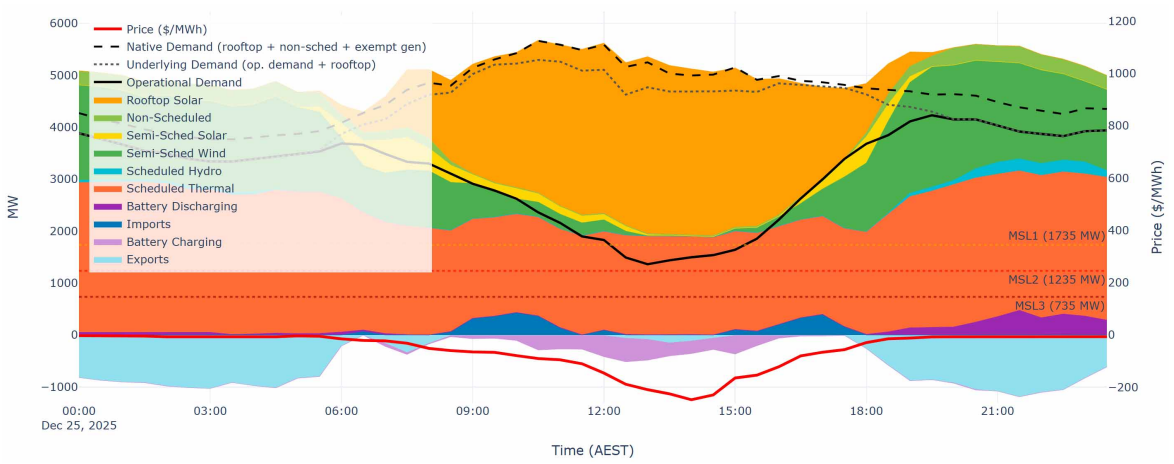
Figure D.1: Operational demand and generation by fuel type, interconnector flows and battery charging - South Australia - 25 December 2025



Source: AEMC analysis of AEMO MMS data - available at https://www.aemo.com.au/energy-systems/electricity/national-electricity-market-nem/data-nem/market-data-nemweb

Figure D.2 shows the near-coincident Victorian trough, where operational demand reached a minimum of around 1,360 MW in the early afternoon; demand remained above the MSL1 threshold throughout and Victoria did not require a direction intervention.

Figure D.2: Operational demand and generation by fuel type, interconnector flows and battery charging - Victoria - 25 December 2025



Source: AEMC analysis of AEMO MMS data - available at https://www.aemo.com.au/energy-systems/electricity/national-electricity-market-nem/data-nem/market-data-nemweb

Friday 26 December 2025

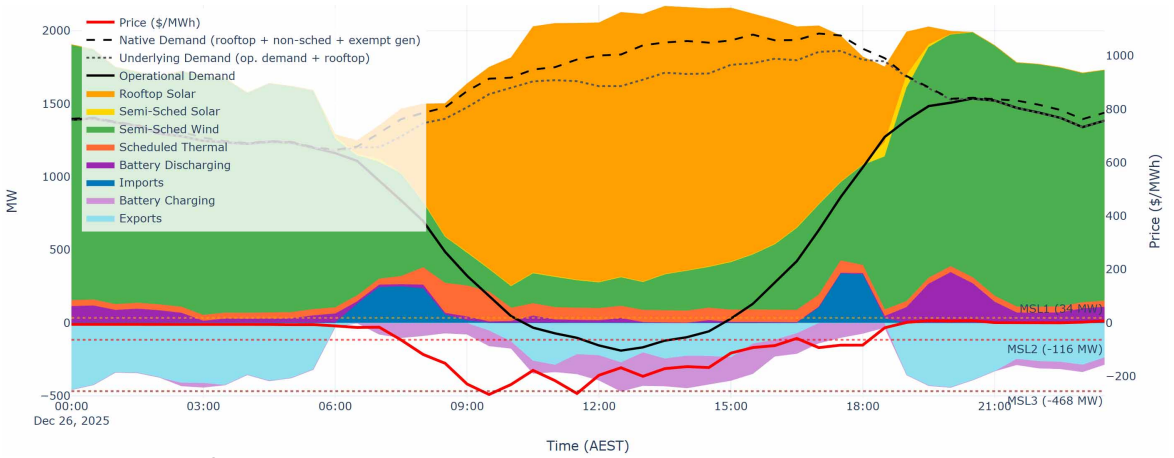
The MSL condition on Friday in South Australia was more pronounced on the second day, and AEMO again forecast it ahead of time. AEMO advised the market through a forecast MSL notice

projecting demand to fall below the MSL2 threshold from 1030 hrs to 1530 hrs, with a forecast minimum of −307 MW at 1430 hrs, and an estimated latest intervention time of 0700 hrs.[217]

On the day, AEMO declared an Actual MSL2 condition against advisory thresholds of MSL1 34 MW, MSL2 −116 MW and MSL3 −468 MW.[218] As on the preceding day, market response was insufficient and AEMO again directed Blyth Battery to remain synchronised and follow dispatch targets for minimum system load management, with an expected duration to 1530 hrs. The direction commenced an AEMO intervention event from the interval ending 0705 hrs; intervention pricing did not apply.[219] The breach below MSL2 spanned a wider window than the preceding day.

Figure D.3 shows a deeper and more sustained minimum operational demand period in South Australian as compared to the preceding day, with operational demand below zero throughout the middle of the day and a minimum of around −250 MW. The generation mix was again dominated by rooftop solar, with battery charging and interconnector flows absorbing the surplus.

Figure D.3: Operational demand and generation by fuel type, interconnector flows and battery charging - South Australia - 26 December 2025



Source: AEMC analysis of AEMO MMS data - available at https://www.aemo.com.au/energy-systems/electricity/national-electricity-market-nem/data-nem/market-data-nemweb

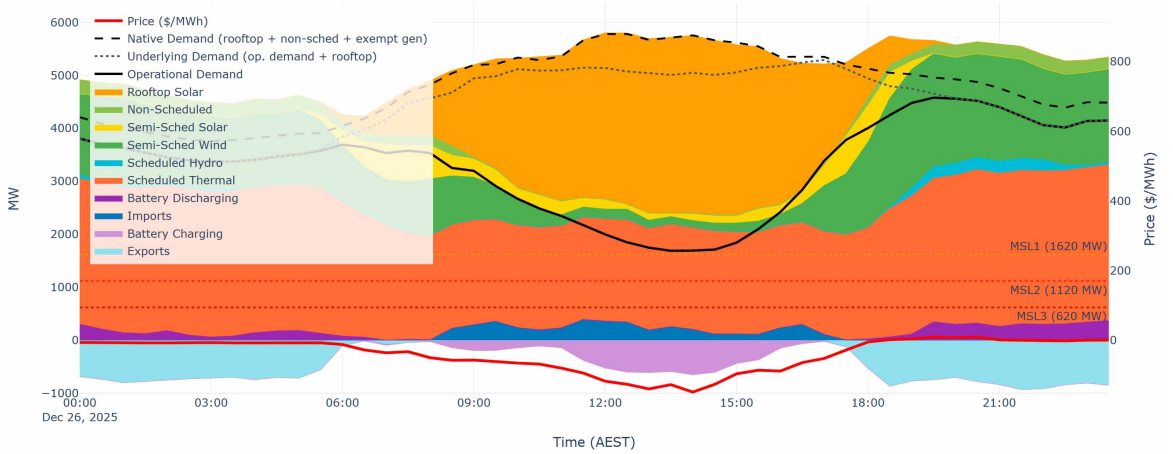
Figure D.4 shows the Victorian profile, where operational demand again reached a minimum above the MSL1 threshold (1,620 MW) and no direction was required; Victorian imports from South Australia were higher than on 25 December, consistent with the larger South Australian surplus.

217 AEMO, *Market Notice 132012 – forecast minimum system load condition, SA region 26/12/2025* (and subsequent updates), 24–26 December 2025. The updated notice recorded demand forecast below the MSL2 threshold from 1030 hrs to 1530 hrs, a forecast minimum of −307 MW at 1430 hrs, and an estimated latest intervention time of 0700 hrs on 26 December 2025.

218 AEMO, *Market Notice – Actual Minimum System Load MSL2 condition in the SA Region on 26/12/2025*, 26 December 2025.

219 AEMO, *Market Notice 132141 – Direction – SA region 26/12/2025 to Blyth Battery Pty Ltd*, 26 December 2025; and AEMO, *Market Notice 132142 – Direction – SA region 26/12/2025*, 26 December 2025. The direction was issued under NER cl 4.8.9(a1)(1) and noted that intervention pricing did not apply to the intervention event.

Figure D.4: Operational demand and generation by fuel type, interconnector flows and battery charging - Victoria - 26 December 2025



Source: AEMC analysis of AEMO MMS data - available at https://www.aemo.com.au/energy-systems/electricity/national-electricity-market-nem/data-nem/market-data-nemweb

Observations

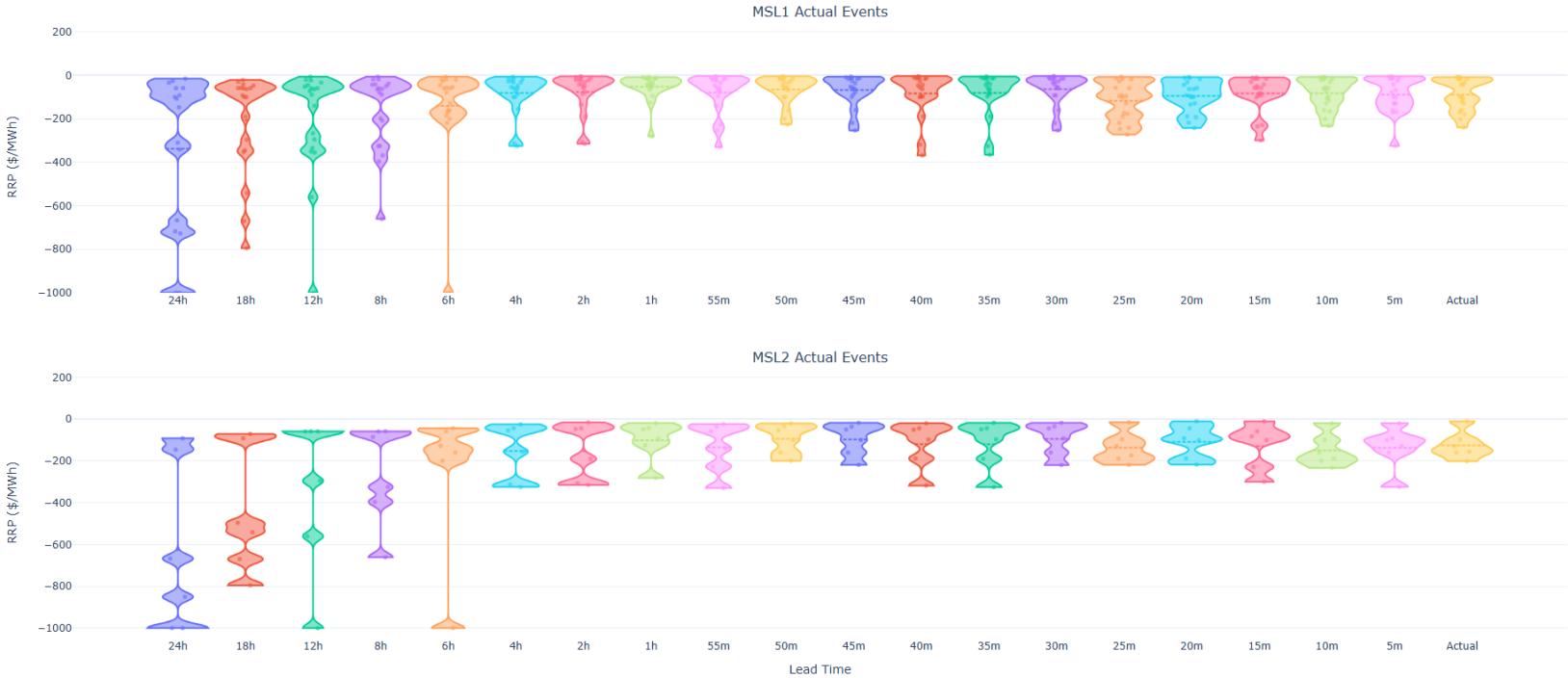
The MSL conditions over Christmas and Boxing Day 2025 demonstrate three features relevant to the MSL rule changes.

- First, these MSL conditions are managed in the pre-dispatch timeframe through advisory market notices and, where market response is inadequate, out-of-market direction.
- Second, the advisory MSL1/MSL2/MSL3 thresholds are recalibrated on a per-day basis to reflect the dispatchable plant expected to be online, so threshold values are not fixed across events.[220]
- Third, on both days the directed resource was a bi-directional battery energy storage unit held on standby at a low state of charge for system security purposes, foregoing the opportunity to participate fully in the energy market and operate on economic merit.

220 Forecast demand in each notice refers to forecast *Operational Demand* excluding the contribution from *Significant Non-Scheduled Generation*. Realised operational demand may differ from the forecast minima cited; see AEMO operational demand data.

D.1.2 Pre-dispatch and actual Energy prices for recent MSL conditions

Figure D.5: Pre-dispatch and settlement prices for recent MSL events in South Australia



Source: AEMC analysis of AEMO MMS data - available at https://www.aemo.com.au/energy-systems/electricity/national-electricity-market-nem/data-nem/market-data-nemweb

Note: Based on pre-dispatch and settlement energy prices for MSL events in SA on 11 Dec 2025 (MN130487, MN130553, MN130558); 7 Dec 2025(MN131381, MN131444, MN131472); 25 Dec 2025 (MN132116); 26 Dec 2025 (MN132147); 1 Jan 2026 (MN132356); 8 Mar 2026 MN(134640)

Figure D.5 displays the distribution of pre-dispatch regional reference prices (RRP) from 24 hours ahead to actual settlement, for MSL1 and MSL2 events in South Australia.

The chart shows that pre-dispatch price dispersion narrows materially as lead time to dispatch shortens, with prices converging from around four hours ahead toward a tighter band—typically within the range –$50 and –$300/MWh—that broadly aligns with actual settlement outcomes. The pattern is more

pronounced for the more acute MSL2 events, where deeper negative prices are more persistent. This convergence illustrates that, while acute negative pricing is a consistent feature of MSL conditions, the market floor price is realised only intermittently at settlement, and pre-dispatch signals become a reliable indicator of pricing outcomes only in the hours immediately preceding an event.

D.2 The medium term outlook for MSL

AEMO's 2025 *Transition plan for system security* (TPSS) included an outlook for MSL conditions in the NEM over the medium term out to 2031. This included projected incidence of MSL events for each of the NEM regions as described in appendix D.2.1 and a NEM wide outlook as described in appendix D.2.2.

The outlook for MSL conditions is constrained to the South Australia, Victoria, New South Wales and Queensland regions. At this stage, it is understood that the operational risks of MSL conditions in Tasmania are not as significant as compared to the mainland NEM regions. This is driven by:[221]

- Tasmanian demand having a large component associated with industrial customers, which are relatively less affected by growth in distributed PV.
- Distributed rooftop solar operating at lower capacity factors in Tasmania as compared to other NEM regions.

D.2.1 AEMO's regional outlook for MSL conditions to 2031

AEMO's 2025 TPSS included projections for MSL conditions in the NEM regions over the medium term outlook to 2031[222] This consolidated outlook for the NEM regions is shown in Figure D.6 and Figure D.7.

This regional outlook is based on a range of scenarios accounting for the severity of minimum operational demand conditions and the delivery timing for replacement sources of essential system services. By way of a summary, the projected number of actual MSL days expected during system normal conditions over the period 2026 – 2031, are:[223]

- For **MSL1 days**:
  - NSW: as few as 0 – as many as 21 days.
  - VIC: as few as 0 – as many as 52 days.
  - SA: as few as 19 – as many as 118 days.
  - Qld: as few as 0 – as many as 45 days.
- For **MSL2 days**:
  - NSW: as few as 0 – as many as 32 days.
  - VIC: as few as 0 – as many as 38 days.
  - SA: as few as 2 – as many as 142 days.
  - Qld: as few as 0 – as many as 29 days.
- For **MSL3 days** (where actual MSL3 conditions would be expected to persist following AEMO MSL2 interventions):
  - NSW: as few as 0 – as many as 2 days.
  - VIC: as few as 0 – as many as 53 days.
  - SA: as few as 0 – as many as 135 days.
  - Qld: as few as 0 – as many as 33 days.

221 AEMO, Supporting secure operation with high levels of distributed resources, 2 Dec 2024, p.47.

222 AEMO intends to publish updated MSL projections in late 2026.

223 AEMO, *2025 Transition Plan for System Security for the National Electricity Market - APPENDIX A3 MSL Regional Assessments,* 1 December 2025.

Figure D.6: Projected MSL incidence — worst case post action — by year (Transition point actions proceed)

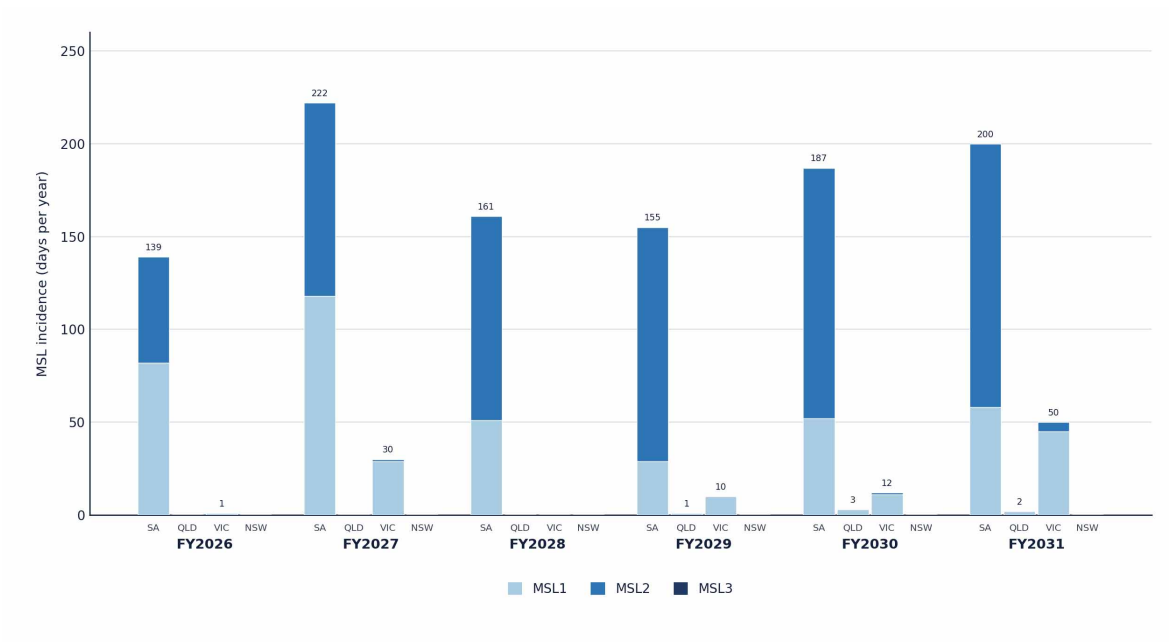
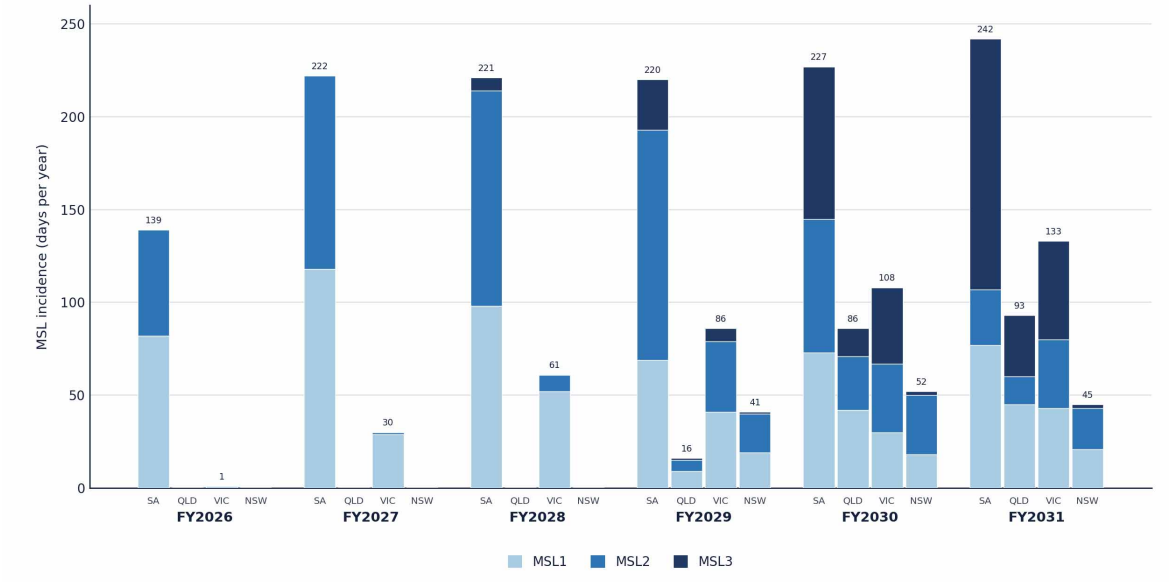


Figure D.7: Projected MSL incidence — worst case post-action — by year (Transition point actions delayed)



Source: AEMC chart based on AEMO data from the *2025 Transition Plan for System Security for the National Electricity Market - APPENDIX A3 MSL Regional Assessments,* 1 December 2025.

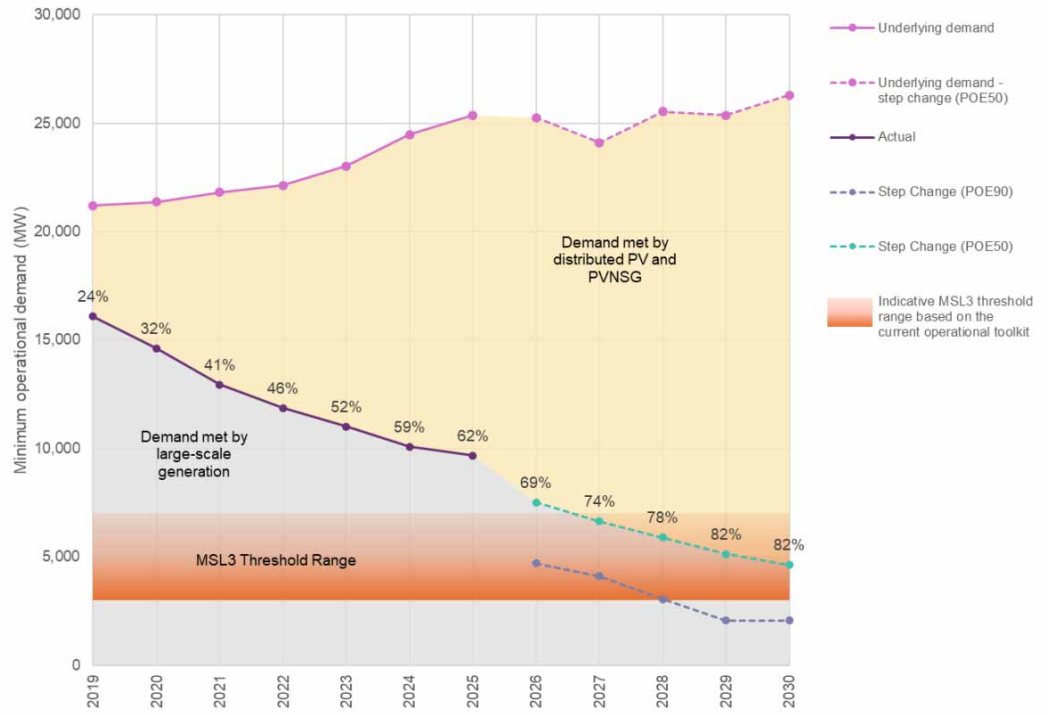
Note: Transition point actions are detailed in AEMO's 2025 TPSS and include the retirement of thermal coal power stations, commissioning of pumped hydro power stations, and connection of synchronous condensers.

Note: Estimates are for system normal only, and do not account for unplanned outages and extreme conditions which may significantly escalate the incidence and severity of MSL conditions. Present estimates for typical conditions do not account for utility-scale BESS as their typical behaviour across the five-year horizon may vary widely with rapidly increasing numbers of BESS. AEMO is working to incorporate BESS in future analysis, which may result in improvements particularly if frameworks and actions are implemented to incentivise BESS to provide firm certainty of energy capacity throughout a MSL condition.

D.2.2 AEMO's NEM-wide outlook for MSL conditions to 2031

AEMO's 2025 TPSS also provided an outlook for NEM-wide minimum operational demand against an indicative NEM wide MSL threshold range as shown below. This NEM-wide outlook indicates the possibility of MSL3 conditions emerging in one or multiple regions under some low probability, but plausible, onerous system conditions, such as during network outages or when interregional transfer capacity is significantly reduced.[224]

Figure D.8: Historical and projected minimum operational demand against indicative MSL3 threshold range for the NEM (2025 ESOO Step Change scenario)



Source: AEMO, 2025 Transition Plan for System Security, 1 December 2025, p.121.
Note: A revision to this outlook is expected in the upcoming 2026 TPSS, expected to be published before the end of 2026.

D.3 The longer term outlook for minimum operational demand in the NEM

AEMO's long term outlook is for continued decline in minimum operational demand, balanced out by increased demand side market participation from utility scale battery energy storage, pumped hydro systems, aggregated CER through VPPs and coordinated EV charging.

As shown in Figure D.9, AEMO's 2025 *Electricity statement of opportunities* (ESOO) includes long term forecasts for electricity demand in the NEM over a range of plausible scenarios. These demand outlooks project the progressive decline of NEM wide minimum operational demand, driven by projections for residential and business demand during P90 minimum demand conditions becoming negative from FY2030/31. This is primarily driven by the projected impact of continued growth in distributed behind -the-meter rooftop solar generation which is partially offset by electrification and coordinated EV charging.

This net NEM-wide minimum operational demand level provides an indication of the requirement for scheduled resources to be available to consume a similar level of energy in order to balance

224 AEMO, 2025 Transition Plan for System Security, 1 December 2025, p.121.

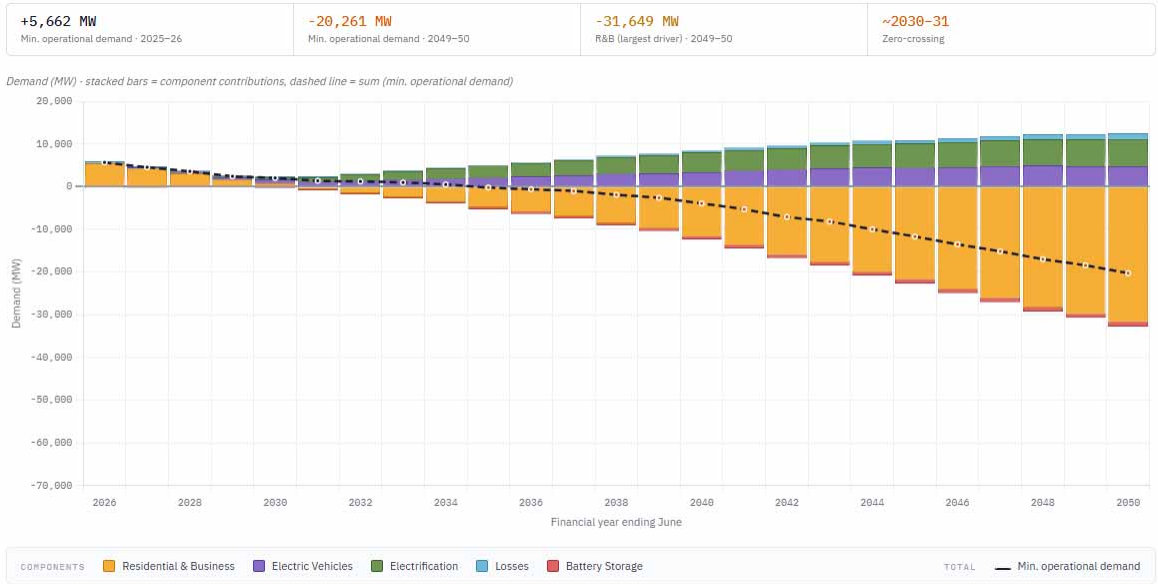
out the projection that the non-scheduled market component could in the future act as a net source of generation for a certain proportion of the time.

The Commission understand that the 2026 ESOO, expected to be published by the end of August 2026, will provide a revision to this long term outlook that reflects updated demand projections with respect to the revised outlook for energy storage and data centre growth over the outlook.

At the same time, the 2026 *Integrated system Plan* projects substantial investment and connection of new market facing sources of demand over the optimal development path for the step change scenario.[225] Figure D.10 shows that on a pure capacity basis, these sources of new demand are projected to exceed the required solar absorption capacity by at least a factor of three over the outlook period to 2050.

225 AEMO, 2026 Integrated system plan - Appendix A9.Demand Side Factors Statement, 25 June 2026.

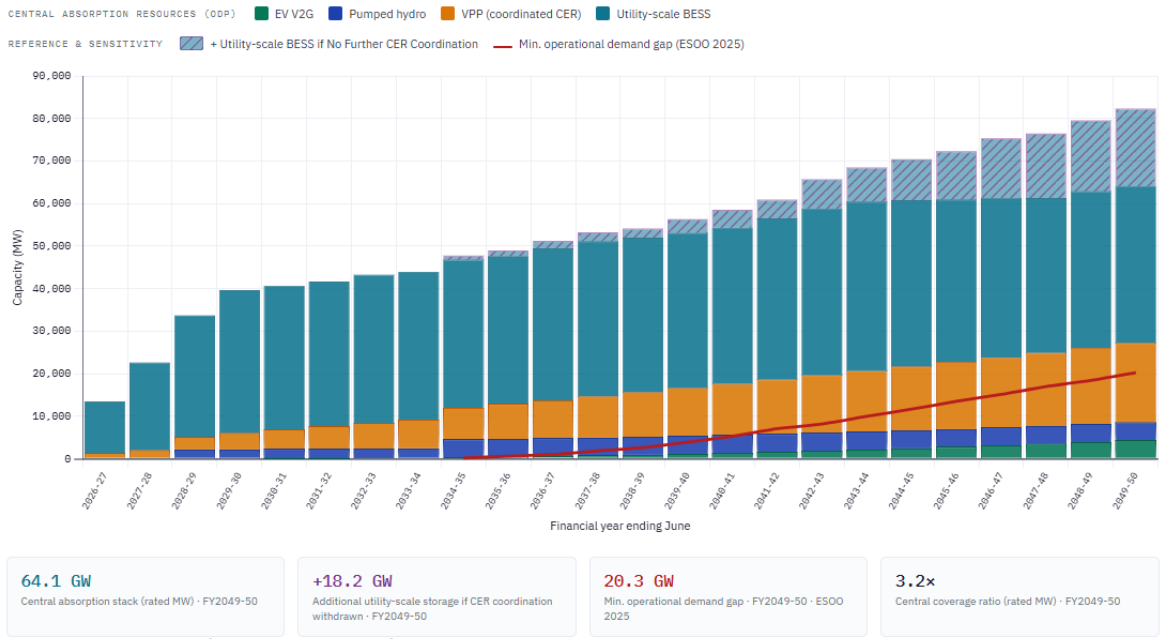
Figure D.9: AEMO's 2025 ESOO outlook for NEM-wide minimum operational demand



Source: AEMC analysis of data from AEMO 2025 Electricity Statement of Opportunities (ESOO) — NEM Forecasting Data Portal. 21 August 2025.

Note: Operational (sent-out) demand at the minimum-demand half-hour, decomposed into its five additive and offsetting components. Rooftop PV is excluded as per AEMO methodology, noting that midday rooftop solar PV output is what drives the operational demand total below zero. Sum of components = the dashed black line. Data centre growth is included within the residential and business data series.

Figure D.10: NEM Scheduled Demand Capacity vs. Minimum Operational Demand Gap, 2026–2050 (ISP step change)



Source: AEMC analysis of AEMO data sourced from: AEMO, 2026 Integrated System Plan Appendix A9 – Demand Side Factors Statement, 25 June 2026. AEMO, 2026 Integrated System Plan – Generation and Storage Outlook, 24 June 2026. AEMO, 2026 Integrated System Plan Inputs and Assumptions Workbook, 25 June 2026. AEMO, 2025 Electricity Statement of Opportunities, 21 August 2025

Note: The absorption stack (BESS, PHES, VPP, V2G) is from the final 2026 ISP Step Change ODP and No Further CER Coordination workbooks. The minimum operational demand gap is from the 2025 ESOO (Forecasting Data Portal, 90% POE, sent-out). The coordination band represents additional utility-scale storage built to make up for absent coordination. Passive (non-coordinated) CER batteries are excluded from the stack as they are netted within the ESOO minimum operational demand calculation.

Abbreviations and defined terms

AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
AGC	Automatic generation control
BESS	Battery energy storage system
CEC	Clean Energy Council
CER	Consumer energy resources
Commission	See AEMC
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DMO	Default Market Offer
DNSP	Distribution Network Service Provider
DPV	Distributed photovoltaic (generation) or rooftop solar
DPVC	Distributed PV curtailment
DSO	Distribution System Operator
DUID	Dispatchable Unit Identifier
EV	Electric Vehicle
ESOO	Electricity Statement of Opportunities
FCAS	Frequency control ancillary services
FUM	Forecast Uncertainty Measure
IPRR	Integrating price-responsive resources (Rule)
ISP	Integrated System Plan
LOLR	Loss of Load Probability Run
LOR	Lack of reserve
MFP	Market floor price
MMS	Market Management System
MPC	Market price cap
MSL	Minimum system load
MSOL	Minimum stable operating level
MT PASA	Medium term projected assessment of system adequacy
MVF	Market visibility framework
MW	Megawatt
NEL	National Electricity Law
NEM	National Electricity Market
NEMDE	National Electricity Market Dispatch Engine
NEO	National Electricity Objective
NER	National Electricity Rules
NERL	National Energy Retail Law
NERO	National Energy Retail Objective
NERR	National Energy Retail Rules
NGL	National Gas Law

NMAS	Non market ancillary services
NSCAS	Network support and control ancillary services
NSP	Network service provider
ODP	Optimum delivery path
PASA	Projected assessment of system adequacy
PD PASA	Pre-dispatch Projected assessment of system adequacy
PHES	Pumped Hydro Energy Storage
POE	Probability of Exceedance
Proponent	The proponent of the rule change request
PV	photovoltaic
PVNSG	PV non-scheduled generators
RRP	Regional Reference Price
RERT	Reliability and Emergency Reserve Trader
RSSR	Reliability Standard and Settings Review
SSO	Solar Sharer Offer
ST PASA	Short term Projected assessment of system adequacy
TPSS	Transition Plan for System Security
V2G	Vehicle to grid
VPP	Virtual power plant
VRE	Variable renewable energy
VSR	Voluntarily scheduled resource
WDRM	Wholesale demand response mechanism