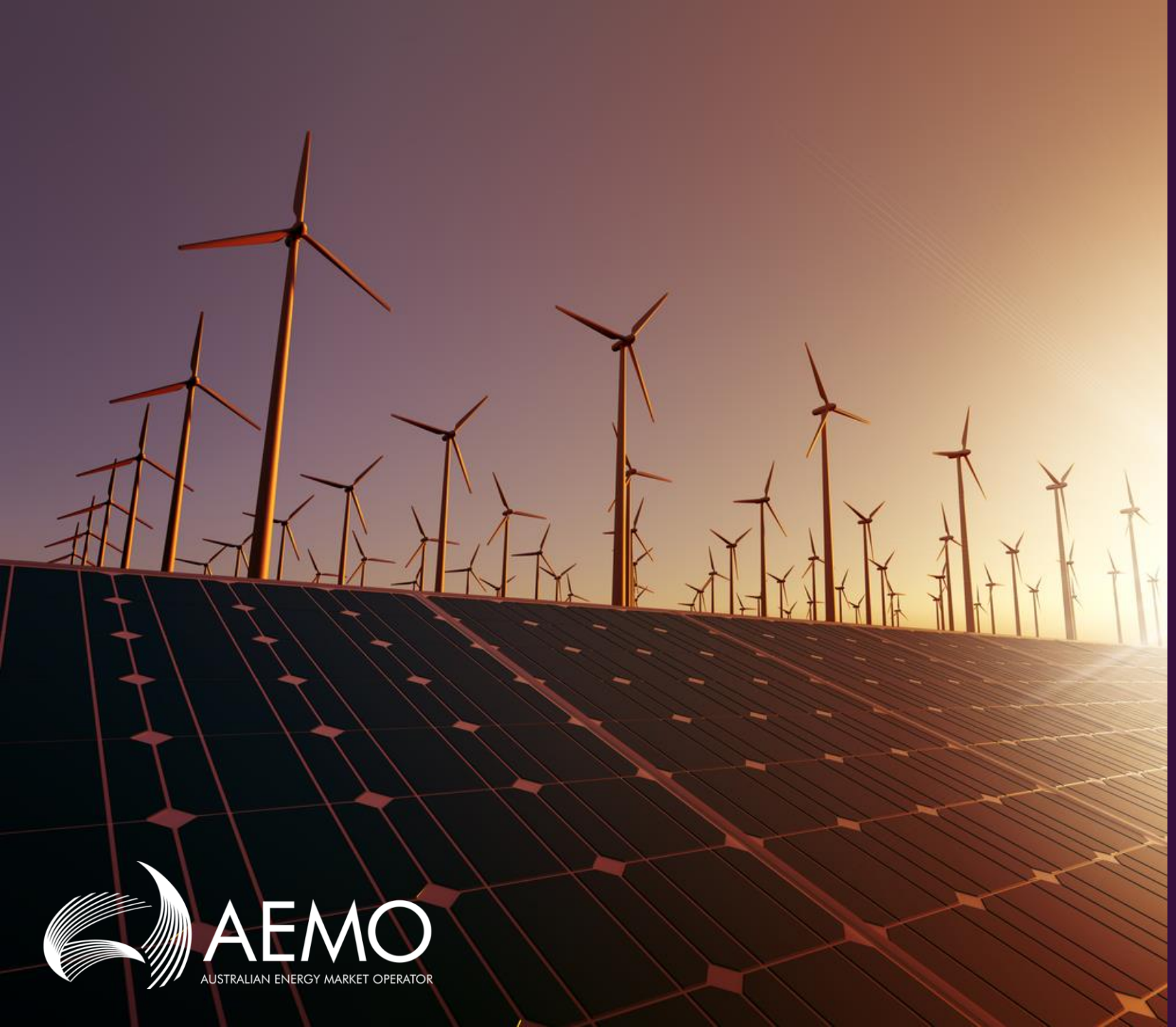

Renewable Integration Study (RIS)

Action Update

December 2020

AEMO
AUSTRALIAN ENERGY MARKET OPERATOR

Renewable Integration Study | Action Update

This report presents an update on the progress of the 15 actions from the Renewable Integration Study (RIS).

These actions are important first steps in enabling secure system operation out to 2025.

All ongoing actions will be tracked through the Engineering Framework.

Key action updated highlights are:

- ✓ Four actions are complete.
- ➡ Two actions are nearing completion.
- ➡ Progress has been made on the remaining actions.

Action	Timing	Status	Update
System Operability			
2.1 AEMO to identify and evaluate standard operational process, control room tools, and operator training to operationalise market interventions for system strength and inertia services under the current framework.	2020	✓	Operational procedures and operational tools are available for real time and other relevant operational staff. All staff are sufficiently trained to operationalise market interventions for system strength. However, the rapidly changing power system necessitates continuous upgrading of tools hence the procedures and training of staff. Future improvements will be captured in the Engineering Framework.
2.2 AEMO to redevelop existing scheduling systems (Pre Dispatch and Short Term PASA) to better account for system needs, including availability of essential system services, cross-regional sharing of reserves and better modelling of emerging technologies.	2022	➡	ST PASA Replacement Functional Requirements report was published on 20 May 2020. AEMO is reviewing recommendations from this report. Further details on this project, including progress and stakeholder engagement is available on our dedicated webpage.
2.3 ESB to make recommendations to the COAG Energy Council on high-level design options for the Markets Post-2025 Essential Systems workstream by end of 2020. These essential system services being considered include inertia, system strength, minimum synchronous units, operating reserves, and flexibility.	2020	➡	On 7 September 2020, the ESB released its post 2025 market design consultation paper, including analysis on the essential system services and ahead market workstreams. The ESB is targeting publication of the directions paper for December 2020, options consultation paper for release in March 2021, with final recommendations to National Cabinet Energy Reform Committee in mid-2021. Further information is available on the ESB's website.
2.4 AEMO to develop a detailed proposal outlining requirements, timing, and steps required to achieve specified NEM high-speed monitoring to allow better visibility of system performance and improve operational understanding.	2020	✓	A detailed proposal is complete. Recommendations were presented to NEM Operations Committee (NEMOC), including strategic installation of PMUs and better AEMO utilisation of existing high-speed data. The Operations Planning Working Group is assisting to develop a technical specification and coordinate outages for phasor measurement unit installation. While this initial action is complete, implementation of high-speed monitoring upgrades will be progressed through the Engineering Framework.

Renewable Integration Study | Action Update

Action	Timing	Status	Update
2.5 AEMO to develop new ways of managing increasingly complex operating systems. This includes collaboration with industry and leading power system operators to manage system security phenomena and optimisation of renewable resource inputs and emerging technologies.	2020-25	→	AEMO has engaged with leading system operators and engineering organisations, individually and through formation of the Global Power System Transformation consortium, and is working towards establishing a collaborative project to develop operational and decision-making tools to support operating a power system with higher penetration of renewables. AEMO expects to make more formal announcements in Q1 2021.
Distributed PV			
3.1 AEMO to fast-track requirement for short duration voltage disturbance ride-through for new DPV inverters in South Australia.	2020	✓	On 28 July 2020, AEMO published the final test procedure for short duration VDRT for South Australia. For further information see the AEMO consultation page. For information on the implementation of this test procedure, see the SA Government website.
3.2 AEMO to progress, through Standards Australia committee, an update to national standard for DPV inverters to incorporate bulk system disturbance withstand and autonomous grid support capability.	2021	→	Final draft of AS4777.2 update in post-ballot stage (final stage before publication). For further information, see the Standards Australia website. For larger size systems not covered by AS/NZS4777.2, AEMO has been consulting with DNSP's on disturbance withstand capabilities.
3.3 AEMO to collaborate with the ESB, AER, AEMC, and industry to: • Submit a rule change establishing the setting of minimum technical standards for DER in the NEM. • Improve compliance with new and existing technical performance standards and connection requirements for DPV.	2021	→	• On 5 May 2020, AEMO submitted a rule change request about creating a framework for setting minimum technical standards for DER. This rule change is currently being consulted on by the AEMC, with a Draft Determination scheduled for 3 December 2020. For further information see the AEMC website. • The ESB is progressing their consultation on the governance of DER technical standards. This will create structures and processes that support the planning, development, and compliance of DER technical standard in a more permanent manner.
3.4 AEMO to collaborate with industry to: • Mandate minimum device level requirements to enable generation shedding capabilities for new DPV installations in South Australia • Establish regulatory arrangements for how distribution NSPs and aggregators could implement this. • Investigate the need for updating the existing DPV fleet to comply with regional generation shedding requirements.	2021	→	AEMO has been engaging with a several consumer groups on their concerns regarding the implications of this action. • The SA Government is leading a consultation on regulatory changes for smarter homes. AEMO collaborating with SA jurisdictional bodies on this matter. • On 7 May 2020, AEMO published a report on minimum operational demand in SA, which further highlighted the need for new standards and setting to maximise the potential contribution of DPV. • On 27 August 2020, AEMO published the 2020 ESOO report. Chapter 7 of this report highlights the system security implications of reducing minimum operational demands across all NEM regions.

Renewable Integration Study | Action Update

Action	Timing	Status	Update
3.5 AEMO to collaborate with DNSPs to improve visibility and predictability of DPV systems available for curtailment, including real-time SCADA visibility for all new commercial scale systems.	2021	→	This work has been progressing with AEMO and SA Power Networks. Initiation with other DNSPs is scheduled for 2021.
Frequency			
4.1 AEMO to facilitate implementation of the Mandatory Primary Frequency Response rule. This is an important part of maintaining and strengthening system resilience.	2020-21	→	AEMO has published a dedicated page on implementation of the Mandatory Primary Frequency Response rule, including documentation on requirements, implementation updates and FAQs. Implementation of PFR Settings for a substantial fraction of generation in facilities over 200 MW (Tranche 1) has been achieved. AEMO is continuing to work with industry to achieve implementation of PFR across the largest possible proportion of Tranche 1 facilities prior to Summer 2020-21, with smaller facilities to follow.
4.2 AEMO to publish a detailed frequency control workplan.	2020	✓	AEMO published the Frequency Control Work Plan in September 2020. The frequency control work plan aims to facilitate effective communication of technical issues, prioritising the most urgent issues, and allowing them to be addressed in a cohesive way across industry.
System Strength			
5.1 AEMO to contribute to ESB and AEMC reviews of system strength frameworks and follow through with recommendations from these reviews.	2021	→	For ESB update see action 2.3 On 15 October 2020, the AEMC completed its investigation into the effectiveness of system strength frameworks in the NEM. The AEMC will use the TransGrid Efficient management of system strength on the power system rule change request to develop detailed implementation details of the recommendations made in their review. The draft determination for this rule change is scheduled for 24 December 2020.
Variability and Uncertainty			
6.1 AEMO to improve understanding of system uncertainty and risk, particularly during ramping events, through research on a ramping forecast and classification prototype and deployment of fit-for-purpose weather observation infrastructure.	2020-21	→	AEMO has been exploring several options with various potential vendors and are currently investigating a preferred approach (ramping forecast).
6.2 Improve the reliability of information provided by participants to support security-constrained dispatch.	2020-21	→	On 15 October 2020, the AEMC initiated the AER's rule change proposal on semi-scheduled generator dispatch obligations under a fast-tracked process. The draft determination for this change is scheduled on 19 November 2020. For further information see the AEMC website and AER website.

For more information

please visit www.aemo.com.au

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