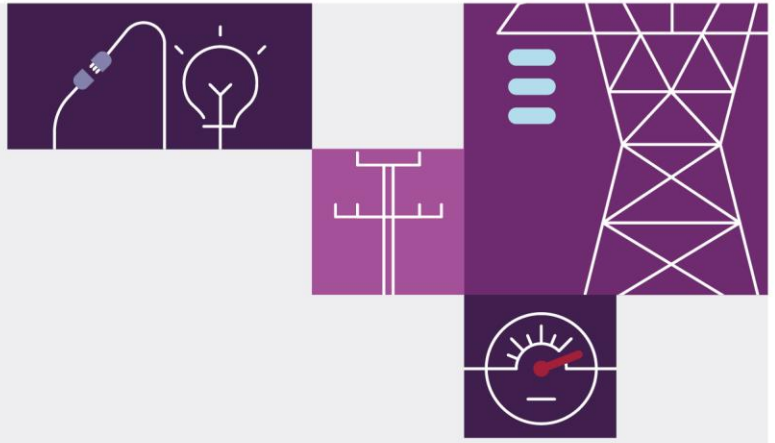


# T-3 Reliability Instrument Request for South Australia

September 2023

A request to the Australian Energy Regulator





# Important notice

## Purpose

This document has been prepared by AEMO as required by section 14I of the National Electricity Law (Law) and clauses 4A.C.1, 4A.C.2, 11.132 and 11.160 of the National Electricity Rules (Rules) and has effect only for the purposes set out in the Law and Rules.

This document has been prepared by AEMO using information from its 2023 Electricity Statement of Opportunities (ESOO) and the September 2023 Update to the 2023 Electricity Statement of Opportunities.

## Disclaimer

This document might also contain information which is provided for explanatory purposes. That information does not constitute legal or business advice, and should not be relied on as a substitute for obtaining detailed advice about the Law, the Rules, or any other applicable laws, procedures or policies. AEMO has made reasonable efforts to ensure the quality of the information but cannot guarantee its accuracy, completeness or whether it appropriate for your circumstances.

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## Version control

Version	Release date	Changes
1	28/9/2023	Request release



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# 1. Reliability instrument request

In its September 2023 update to 2023 Electricity Statement of Opportunities (ESOO)<sup>1</sup>, AEMO identified a forecast reliability gap in South Australia in 2026-27. AEMO requests the Australian Energy Regulator (AER) consider making a reliability instrument for this identified forecast reliability gap.

The T-3 cut-off day for this reliability gap is 1 December 2023.

## Creating a T-3 reliability instrument

Where a reliability forecast identifies a forecast reliability gap for a region, AEMO must request the AER consider making a reliability instrument<sup>2</sup> in accordance with section 14I of the National Electricity Law<sup>3</sup> and the requirements of Part C, Division 1 of Chapter 4A of the National Electricity Rules (NER).

Once a decision has been made, the AER will publish the decision, the reasons supporting that decision<sup>4</sup>, and, if applicable, the reliability instrument. The reliability instrument takes effect once published on the AER's website<sup>5</sup>. This request has been prepared in alignment with the AER's Interim Reliability Instrument Guidelines<sup>6</sup> and AEMO's Reliability Forecast Guidelines<sup>7</sup>.

The reliability forecast published in the September 2023 update to 2023 ESOO, was published on 28 September 2023, which is in the six months immediately preceding the T-3 cut-off day. A reliability gap was identified against the relevant reliability standard for 2026-27 at time of publication, being the interim reliability measure of 0.0006% unserved energy (USE)<sup>8</sup>. This request has been identified in accordance with the NER as modified by the 'Extension of the IRM to the RRO' rule change<sup>9</sup> published by the Australian Energy Market Commission (AEMC) on 21 September 2023.

## Forecast reliability gap

The size of the **forecast reliability gap** is 205 megawatts (MW)

This reliability instrument request applies to the **forecast reliability gap period** of 1 December 2026 to 28 February 2027 inclusive.

<sup>1</sup> Available at <https://aemo.com.au/en/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-reliability/nem-electricity-statement-of-opportunities-esoo>

<sup>2</sup> The requirements about when a decision must be made by the AER is governed by section 14K of the National Electricity Law and clause 4A.C of the National Electricity Rules

<sup>3</sup> As modified by section 19B of the *National Electricity (South Australia) Act 1996*

<sup>4</sup> In accordance with section 14K(6) of the National Electricity Law

<sup>5</sup> In accordance with section 14K(5) of the National Electricity Rules

<sup>6</sup> Available at <https://www.aer.gov.au/system/files/Final%20determination%20-%20Interim%20Reliability%20Instrument%20Guidelines%20-%20RRO%20-%20July%202019.pdf>

<sup>7</sup> Available at [https://aemo.com.au/-/media/files/electricity/nem/planning\\_and\\_forecasting/rsig/reliability-forecast-guidelines.pdf](https://aemo.com.au/-/media/files/electricity/nem/planning_and_forecasting/rsig/reliability-forecast-guidelines.pdf)

<sup>8</sup> The application of the interim reliability measure of 0.0006% was extended to 30 June 2028 on 21 September 2023, in accordance with clause 11.160 of the National Electricity Rules.

<sup>9</sup> <https://www.aemc.gov.au/rule-changes/extension-application-irm-rro>

The region in which the forecast reliability gap is forecast to occur is **South Australia**.

AEMO's **one-in-two year peak demand forecast** for the forecast reliability gap period is 3,137 MW (reported on a 50% Probability of Exceedance [POE], 'as generated' basis).

The **trading intervals** during the forecast reliability gap period are those that fall between 5PM and 9PM on working weekdays in December 2026 and January and February 2027. This means the trading intervals occurring during the periods ending 5:05PM and 9PM<sup>10</sup>.

### Further information on the forecast reliability gap<sup>11</sup>

A sensitivity matrix to assist with understanding of the identified *forecast reliability gap* and related inputs and assumptions is provided in Table 1. The information shows how additional firm capacity (in megawatts) is forecast to affect expected USE if that firm capacity is 100% available throughout all periods of the year. The additional capacity row of the table can be interpreted as either an increase in supply or a reduction in demand.

**Table 1 Sensitivity matrix for forecast reliability gap**

Additional capacity (MW)	0	100	200	205	300	400	500	600
Expected USE (%)	0.00123%	0.00088%	0.00061%	0.00060%	0.00041%	0.00026%	0.00015%	0.00009%

### Further information on the reliability forecast<sup>12</sup>

Figure 1 shows the monthly expected USE in South Australia in 2026-27. USE is forecast to occur in November, December 2026 and January, February and June 2027. This request relates to the December to February period only, where risks in November and June do not meet the criteria for this request based on the methodology described in the ESOO and Reliability Forecast methodology.

<sup>10</sup> All times are National Electricity Market (NEM) time.

<sup>11</sup> In accordance with section 3.1 of the Interim Reliability Instrument Guidelines. Available at: [https://www.aer.gov.au/system/files/Interim Reliability Instrument Guidelines - RRO - July 2019.pdf](https://www.aer.gov.au/system/files/Interim_Reliability_Instrument_Guidelines_-_RRO_-_July_2019.pdf)

<sup>12</sup> In accordance with section 5.2.2 of the Reliability Forecast Guidelines, as requested in stakeholder consultation. Available at <https://aemo.com.au/en/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-reliability/nem-electricity-statement-of-opportunities-esoo>.

**Figure 1 Monthly expected USE in South Australia, 2026-27**

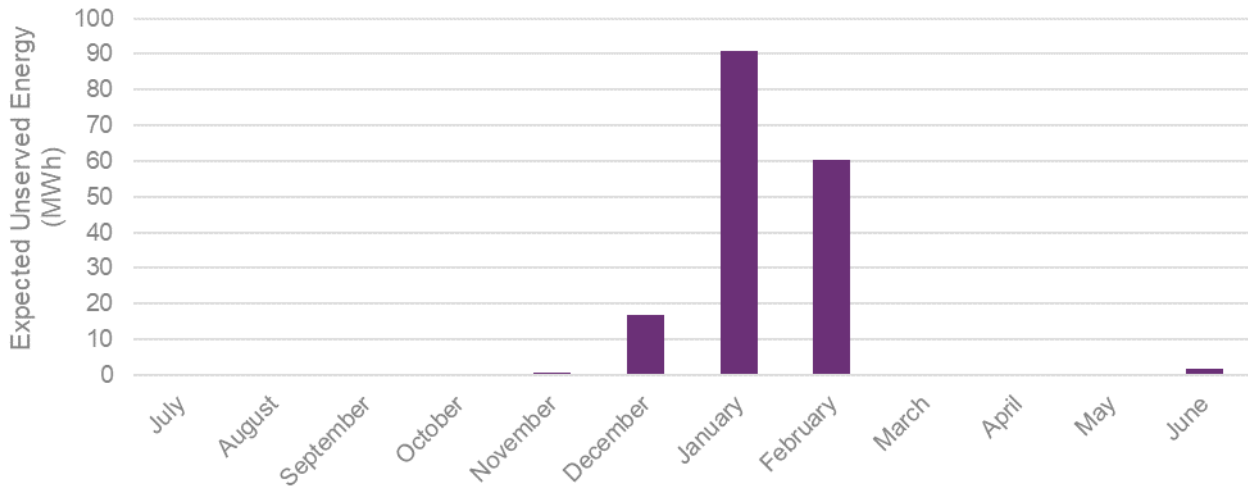
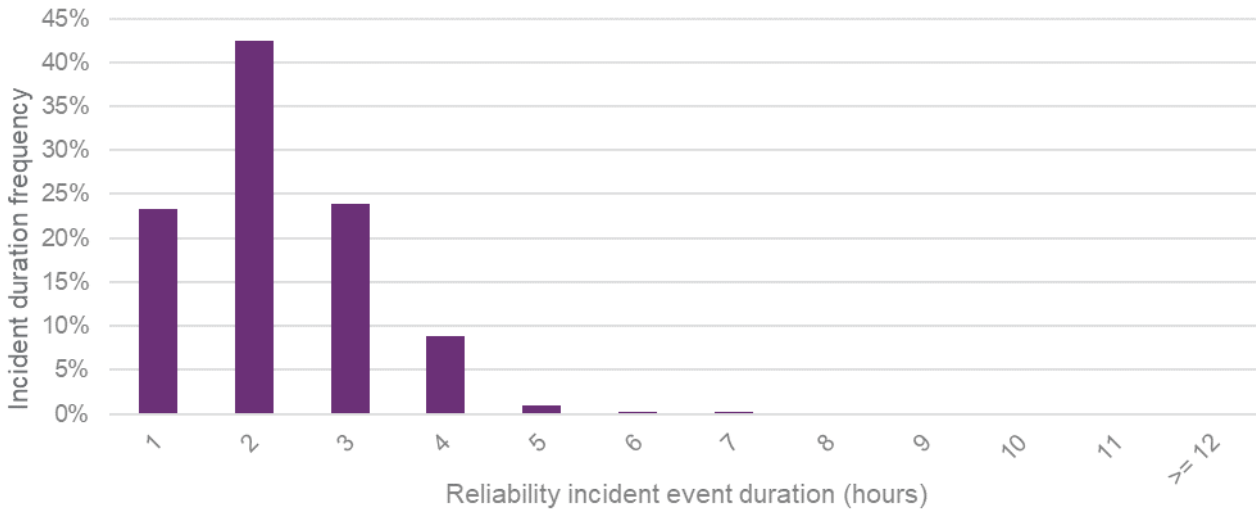


Figure 2 shows the duration of expected USE events in South Australia in 2026-27. USE events in this year are forecast to most frequently occur for two hours in duration, with the majority of USE events forecast to be of less than five hours duration.

**Figure 2 Forecast reliability incident duration in South Australia 2026-27**



## 2. Supporting information<sup>13</sup>

AEMO has published information within the 2023 ESOO (including the September 2023 update to 2023 ESOO) and accompanying documents regarding the data inputs, calculations, assumptions and methodology used in the reliability forecast<sup>14</sup>.

Specifically, the reliability forecasts and indicative reliability forecasts published in accordance with the Retailer Reliability Obligation (RRO) constitute Chapter 5 of the 2023 ESOO and are updated in the September 2023 update to 2023 ESOO. Key component forecasts and inputs include:

- Consumption and demand forecasts (See Chapter 2 of the 2023 ESOO).
- Supply forecasts (see Chapter 3 of the 2023 ESOO).
- The July 2023 Generation Information page.
- The August 2023 Transmission Augmentation Information page.
- The 2023 Inputs, Assumptions and Scenarios Report (IASR)<sup>15</sup>.

Table 2 below serves as a guide to these documents, by each key input, to assist the AER's review of the assumptions underpinning AEMO's reliability forecast data. Please note:

- Relevant sections of the 2023 ESOO and 2023 IASR are referred to in the "Description of input" column
- AEMO adopted the Step Change scenario as the ESOO Central scenario for the purpose of developing its reliability forecast in the 2023 ESOO and the September 2023 update to 2023 ESOO.
- The Low, Medium or High rating in the column "Materiality to the reliability forecast in 2026-27" is an approximate guide to each input's contribution towards the South Australia 2026-27 reliability forecast, particularly in the period over which the forecast reliability gap applies.
- Stakeholder consultation on the inputs, calculations, assumptions, and methodologies used in the reliability forecast encompassed:
  - the 2023 IASR, which is the source of most inputs, assumptions and scenarios used in the 2023 ESOO.
  - the NEM Reliability Forecasting Guidelines and Methodology Consultation<sup>16</sup>, which met AEMO's obligations under the AER's Forecasting Best Practice Guidelines to undertake a full two stage consultation on all AEMO guidelines and methodologies at least every four years. These revised methodologies and guidelines were applied for the 2023 ESOO.
  - Forecasting Reference Group (FRG) meeting<sup>17</sup> presentations and discussions on select topics, including relevant FRG consultations.

<sup>13</sup> In accordance with In accordance with section 3.1 of the [Interim Reliability Guidelines](#)

<sup>14</sup> Available at <https://aemo.com.au/en/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-reliability/nem-electricity-statement-of-opportunities-esoo>

<sup>15</sup> Available at <https://aemo.com.au/en/consultations/current-and-closed-consultations/2023-inputs-assumptions-and-scenarios-consultation>

<sup>16</sup> See <https://aemo.com.au/en/consultations/current-and-closed-consultations/2022-reliability-forecasting-guidelines-and-methodology>

<sup>17</sup> See <https://www.aemo.com.au/consultations/industry-forums-and-working-groups/list-of-industry-forums-and-working-groups/forecasting-reference-group-frg>



Summaries of stakeholder feedback and AEMO responses are published in each consultation, and in FRG meeting minutes. AEMO adopted the Step Change scenario as the ES00 Central scenario for the purpose of developing its reliability forecast in the 2023 ES00 and in the September 2023 update to 2023 ES00.



**Table 2 Guide for inputs, calculations, assumptions and methodology used in the reliability forecast**

Input	Description of input	Materiality to the reliability forecast in 2026-27 <sup>A,B</sup>	Data input source – IASR Workbook location	Stakeholder consultation	Consultancy reports
<b>Demand forecasting assumptions</b>	Forecasting scenarios 2023 ES00 Section 1.2	<b>Medium</b> AEMO adopted the Step Change scenario from the 2023 IASR <sup>C</sup> as the ES00 Central scenario for the purpose of developing its reliability forecast in the 2023 ES00 and in the September 2023 update to 2023 ES00. Relative to the 2023 ES00 Progressive Change scenario, 50%POE maximum demand is forecast to be 5 MW higher.	Not applicable	AEMO received close to 70 submissions on the IASR), including not only scenario design, but also how the various inputs and assumptions were reflected across the breadth of the scenarios. These submissions were taken into account when finalising the scenarios for the 2023 IASR.	Not applicable
<b>Electric vehicle (EV) uptake</b>	2023 IASR Section 3.3, Battery electric vehicle uptake	<b>Medium</b> In 2026-27 157 GWh of EV consumption is forecast in South Australia, which represents approximately 1.2% of operational consumption.  Demand for EV charging is forecast to be approximately 23 MW at time of maximum 50% POE demand in summer.	Battery & Plug-in EVs (Step Change scenario)	2023 IASR submissions made by the ISP Consumer Panel, RE-Alliance, Clean Energy Council (CEC), Shell Energy (Shell), Electric Vehicle Council (EVC), Victorian Bioenergy Network (VBN), ACF, Fortescue Future Industries (FFI), CitiPower, Powercor and United Energy.  September 2022 FRG meeting - Electric Vehicle forecasts.	CSIRO: <i>Electric vehicle projections 2022</i> <sup>D</sup>  Actual EV data (as at March 2023) sourced from VFACTS used to re-base CSIRO forecasts <sup>E</sup>
<b>Behind-the-meter battery storage installed capacity</b>	2023 IASR Section 3.3, Battery storage uptake	<b>Low</b> 39 MW of coordinated distributed storage is forecast to be available in South Australia in 2026-27. Due to the sustained nature of forecast USE, the average impact of this coordinated distributed storage during USE events is 16.7 MW.  Uncoordinated distributed storage discharge during 50% POE maximum demand events is forecast to be approximately 8 MW, in addition to the coordinated storage discharge listed above.	Embedded energy storages and Aggregated energy storages tabs (Step Change scenario)	2023 IASR submissions made by Hydro Tasmania, FFI, the ISP Consumer Panel, Beyond Zero Emissions (BZE), CEC.  September 2022 FRG Meeting – Draft Consumer Energy Resources (CER) forecasts.	CSIRO: <i>Small-scale solar PV and battery projections 2022</i> <sup>F</sup> .  Green Energy Markets: <i>Projections for distributed energy resources – solar PV and stationary energy battery systems</i> <sup>G</sup> .  2022 projections from above reports have been re-based using March 2023 actual data from the Clean Energy Regulator <sup>H</sup> .
<b>Distributed PV (including residential, commercial, and larger embedded and PV non-scheduled generation)</b>	2023 IASR Section 3.3, Distributed PV	<b>High</b> Estimated distributed PV generation output during forecast USE for South Australia in 2026-27 is 155 MW, which is a small portion of the 2,746 MW forecast installed capacity.	Rooftop PV and PVNSG tabs (Step Change scenario).	2023 IASR submissions made by RE-Alliance, the ISP Consumer Panel, FFI, VBN, Hydro Tasmania.  September 2022 FRG Meeting - Distributed Energy Resources (DER) forecasts.	CSIRO: <i>Small-scale solar PV and battery projections 2022</i> <sup>F</sup> .  Green Energy Markets: <i>Projections for distributed energy resources – solar PV and stationary energy battery systems</i> <sup>G</sup> .  2022 projections from above reports have been re-based

Input	Description of input	Materiality to the reliability forecast in 2026-27 <sup>A,B</sup>	Data input source – IASR Workbook location	Stakeholder consultation	Consultancy reports
[PVNSG] systems <sup>f</sup> )					using March 2023 actual data from the Clean Energy Regulator <sup>h</sup> .
<b>Economic growth and population outlook</b>	2023 IASR Section 3.3, Economic and population forecasts, Households and connections forecast	<b>Medium</b> Economic and population growth assumptions are fundamental inputs to the development of energy consumption and maximum demand forecasts. As identified in the 'Demand Forecasting Assumptions', scenario variation above, which captures variation in economic and population assumptions, the selection of these inputs is of medium materiality.	Economic Growth Forecasts tab. (Step Change scenario)	2023 IASR submissions made by RE-Alliance, Energy Consumers Australia (ECA), FFI and Transgrid. August 2022 FRG Meeting – Draft Economic forecasts.	BIS Oxford Economics: <i>Macroeconomics Projections Report</i> <sup>1</sup>  The Financial Year 2021-22 ABS National Accounts release was used for rebasing, as it was the most recently available annual dataset at the time of rebasing <sup>j</sup> .
<b>Demand side participation (DSP)</b>	2023 IASR Section 3.3, Demand side participation 2023 ES00 Section 2.5 2023 ES00 Appendix A6	<b>Medium</b> 49 MW of total DSP is forecast to be available in South Australia in 2026-27.	DSP tab (Step Change scenario).	2023 IASR submissions made by the ISP Consumer Panel, FFI, Ausgrid and the Energy Efficiency Council (EEC). May 2022 FRG Meeting – Draft DSP Forecasts.	Not applicable.
<b>Electrification</b>	2023 IASR Section 3.3, Electrification	<b>Medium</b> AEMO's 2026-27 forecast shows 783 GWh of consumption in South Australia related to electrification, which represents approximately 5.9% of operational consumption.	Electrification tab (Step Change scenario)	2023 IASR submissions made by Powerlink, VBN, Shell, APA Group (APA), Energy Networks Australia (ENA), the ISP Consumer Panel, EnergyAustralia, ElectraNet, Iberdrola, FFI, CitiPower, Powercor and United Energy. September 2022 FRG Meeting – Draft Multi sector modelling.	CSIRO and ClimateWorks Centre: <i>Multi-sector energy modelling 2022: Methodology and results</i> <sup>k</sup> .
<b>Energy Efficiency</b>	2023 IASR Section 3.3, Energy efficiency forecast	<b>Medium</b> AEMO forecasts a reduction of 480 GWh of consumption in South Australia due to energy efficiency measures. This represents a reduction of approximately 3.6% of operational consumption.	Energy Efficiency tab (Step Change scenario)	2023 IASR submissions made by RE-Alliance, FFI, Queensland Conservation Council (QCC), ECA and Energetic Communities,	Strategy Policy Research: <i>Energy Efficiency Forecasts 2023</i> <sup>l</sup> .
<b>Large Industrial Loads (LIL)</b>	2023 IASR Section 3.3, Large Industrial Loads. Note that LIL forecasts consider confidential information	<b>High</b> AEMO's 2026-27 forecast shows 3,630 GWh of consumption in South Australia related to LILs, which represents approximately 27.5% of operational consumption.  LIL forecast contribution to the maximum operational demand in South Australia is approximately 11.2%.	Not applicable	2023 IASR submission made by ElectraNet. May 2023 FRG Meeting – Draft consumption forecasts	Not applicable

Input	Description of input	Materiality to the reliability forecast in 2026-27 <sup>A,B</sup>	Data input source – IASR Workbook location	Stakeholder consultation	Consultancy reports
	provided by operators.				
<b>Inter-regional transmission unplanned outage rates</b>	2023 IASR Section 3.4, Transmission line unplanned outage rates. 2023 ESOO Section 3.5	<b>Low</b> The complete removal of inter-regional transmission unplanned outage rates would be associated with a small change (an average of 0.02 MW) to USE in South Australia in 2026-27.	Transmission Reliability tab	June-August 2022 – FRG Consultation on Unplanned transmission and generation forced outage rate projections. One informal submission received.  No submissions received on the 2023 IASR	Not applicable.
<b>Unplanned outage rates (FORs)</b>	2023 IASR Section 3.4, Unplanned outage rate trajectories 2023 ESOO Section 3.3	<b>High</b> Generator unplanned outages have a high impact on unserved energy. Approximately 483 MW of generation unplanned outages occur on average during South Australia 2026-27 forecast USE periods.	Generator Reliability Settings tab	June-August 2022 – FRG Consultation on Unplanned transmission and generation forced outage rate projections. One informal submission received. 2023 IASR submissions made by FFI and CEC	AEP Elical: <i>Assessment of ageing coal-fired generation reliability</i> <sup>M</sup> Aurecon: <i>2022 Costs and Technical Parameter Review</i> <sup>N</sup>
<b>Generation availability</b>	2023 ESOO Chapter 3 Supply forecasts.	<b>High</b> The reliability forecast in the 2023 ESOO and in the September 2023 update to 2023 ESOO considers existing and new generation and battery storage projects that meet the “committed”, “committed*” and “anticipated” commitment criteria published in AEMO’s Generation Information update in July 2023 <sup>L</sup> , subject to delays in full commissioning as per the ESOO and Reliability Forecast methodology	Seasonal ratings tab	2023 IASR submissions made by Queensland Energy Users Network (QEUN), CEC, Iberdrola, FFI, ACF and Bob King	Not applicable.
<b>Auxiliary loads</b>	2023 ESOO Section 5.5. Note that auxiliary load has been determined based on confidential information provided by participants.	<b>Low</b> As part of the generator information updates AEMO request scheduled and semi-scheduled generators to self-report their typical auxiliary load percentage. Approximately 15.3 MW of auxiliary load is forecast during USE periods in South Australia in 2026-27.	Auxiliary tab	October 2022 FRG Meeting – reported on completion of auxiliary load forecast review and improvements	Not applicable.
<b>Interregional network losses</b>	2023 IASR Section 3.10 Inter-regional loss flow equations, marginal loss factor (MLF) equations and loss	<b>Low</b> Approximately 4.2 MW interregional network losses are forecast during USE periods in South Australia in 2026--27	Network losses tab of IASR workbook.	No submissions received on 2023 IASR	Not applicable.


Input	Description of input	Materiality to the reliability forecast in 2026-27 <sup>A,B</sup>	Data input source – IASR Workbook location	Stakeholder consultation	Consultancy reports
	proportioning factors				
<b>Weather &amp; climate</b>	2023 IASR Section 3.8 Applying historical climatic conditions to forecast years.	<b>High</b> Weather and climate are a fundamental driver of the maximum demand distribution and the reliability forecast methodology. This methodology aims to capture the range of possible weather driven outcomes. Variation between 90% and 10% POE maximum demand forecasts, which are partially driven by weather are material. Variation between weather reference years that determine VRE generation and demand outcomes are also material.	Not applicable	2023 IASR submissions made by TasNetworks and Energetic Communities.	Not applicable.

**Table Footnotes:**

- A. Materiality is:
- Low if complete removal of this input from the reliability forecast would result in negligible difference to the size of the forecast reliability gap,
  - Medium if complete removal of this input from the reliability forecast could result in a noticeable change to the forecast reliability gap, and
  - High if complete removal of this input from the reliability forecast could result in either complete removal, or more than doubling of the forecast reliability gap.
- B. As a general measure of materiality of demand related inputs to the reliability forecast, the estimated contribution (in MW) to forecast maximum 50% POE demand in SA in 2026-27 has been provided. Note that the forecast contribution of these inputs during periods of forecast USE may differ from these figures.
- C. Available at <https://aemo.com.au/-/media/files/major-publications/isp/2023/2023-inputs-assumptions-and-scenarios-report.pdf>
- D. Available at [https://aemo.com.au/-/media/files/stakeholder\\_consultation/consultations/nem-consultations/2022/2023-inputs-assumptions-and-scenarios-consultation/supporting-materials-for-2023/csiro-2022-electric-vehicles-projections-report.pdf](https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2022/2023-inputs-assumptions-and-scenarios-consultation/supporting-materials-for-2023/csiro-2022-electric-vehicles-projections-report.pdf).
- E. Available at <https://www.fcai.com.au/sales/get-vfacts>
- F. Available at [https://aemo.com.au/-/media/files/stakeholder\\_consultation/consultations/nem-consultations/2022/2023-inputs-assumptions-and-scenarios-consultation/supporting-materials-for-2023/csiro-2022-solar-pv-and-battery-projections-report.pdf](https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2022/2023-inputs-assumptions-and-scenarios-consultation/supporting-materials-for-2023/csiro-2022-solar-pv-and-battery-projections-report.pdf).
- G. Available at [https://aemo.com.au/-/media/files/stakeholder\\_consultation/consultations/nem-consultations/2022/2023-inputs-assumptions-and-scenarios-consultation/supporting-materials-for-2023/gem-2022-solar-pv-and-battery-projection-report.pdf](https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2022/2023-inputs-assumptions-and-scenarios-consultation/supporting-materials-for-2023/gem-2022-solar-pv-and-battery-projection-report.pdf).
- H. Available at <https://www.cleanenergyregulator.gov.au/RET/Forms-and-resources/Postcode-data-for-small-scale-installations>
- I. Available at [https://aemo.com.au/-/media/files/stakeholder\\_consultation/consultations/nem-consultations/2022/2023-inputs-assumptions-and-scenarios-consultation/supporting-materials-for-2023/bis-oxford-economics-2022-macroeconomic-outlook-report.pdf](https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2022/2023-inputs-assumptions-and-scenarios-consultation/supporting-materials-for-2023/bis-oxford-economics-2022-macroeconomic-outlook-report.pdf).
- J. Available at: <https://www.abs.gov.au/statistics/economy/national-accounts/australian-system-national-accounts/2021-22>.
- K. Available at [https://aemo.com.au/-/media/files/stakeholder\\_consultation/consultations/nem-consultations/2022/2023-inputs-assumptions-and-scenarios-consultation/supporting-materials-for-2023/csiro-climateworks-centre-2022-multisector-modelling-report.pdf](https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2022/2023-inputs-assumptions-and-scenarios-consultation/supporting-materials-for-2023/csiro-climateworks-centre-2022-multisector-modelling-report.pdf).
- L. Available at: <https://aemo.com.au/-/media/files/major-publications/isp/2023/iasr-supporting-material/2023-energy-efficiency-forecasts-final-report.pdf>.
- M. Available at: [https://aemo.com.au/-/media/files/electricity/nem/planning\\_and\\_forecasting/inputs-assumptions-methodologies/2020/aep-elical-assessment-of-ageing-coal-fired-generation-reliability.pdf](https://aemo.com.au/-/media/files/electricity/nem/planning_and_forecasting/inputs-assumptions-methodologies/2020/aep-elical-assessment-of-ageing-coal-fired-generation-reliability.pdf).
- N. Available at: [https://aemo.com.au/-/media/files/stakeholder\\_consultation/consultations/nem-consultations/2022/2023-inputs-assumptions-and-scenarios-consultation/supporting-materials-for-2023/aurecon-2022-cost-and-technical-parameter-review.pdf](https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2022/2023-inputs-assumptions-and-scenarios-consultation/supporting-materials-for-2023/aurecon-2022-cost-and-technical-parameter-review.pdf).
- O. Available at <https://www.aemo.com.au/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-planning-data/generation-information>.

### 3. Reference publications

Term	Definition
AER Interim reliability instrument guidelines	<a href="https://www.aer.gov.au/system/files/Interim%20Reliability%20Instrument%20Guidelines%20-%20RRO%20-%20July%202019.pdf">https://www.aer.gov.au/system/files/Interim%20Reliability%20Instrument%20Guidelines%20-%20RRO%20-%20July%202019.pdf</a>
2023 ESOO report, supplementary results, data files, methodologies and constraints, including: ESOO and Reliability Forecast Methodology Document	<a href="https://www.aemo.com.au/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-reliability/nem-electricity-statement-of-opportunities-esoo">https://www.aemo.com.au/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-reliability/nem-electricity-statement-of-opportunities-esoo</a>
Demand Side Participation (DSP) Forecasting Methodology Reliability forecast guidelines	Available on <a href="https://aemo.com.au/en/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-approach">https://aemo.com.au/en/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-approach</a>
2023 IASR	<a href="https://aemo.com.au/-/media/files/major-publications/isp/2023/2023-inputs-assumptions-and-scenarios-report.pdf">https://aemo.com.au/-/media/files/major-publications/isp/2023/2023-inputs-assumptions-and-scenarios-report.pdf</a>
Consultant reports	<p><b>BIS Oxford Economics (now Oxford Economics Australia):</b> Economics: <a href="https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2022/2023-inputs-assumptions-and-scenarios-consultation/supporting-materials-for-2023/bis-oxford-economics-2022-macroeconomic-outlook-report.pdf">https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2022/2023-inputs-assumptions-and-scenarios-consultation/supporting-materials-for-2023/bis-oxford-economics-2022-macroeconomic-outlook-report.pdf</a></p> <p><b>CSIRO:</b> Multisector modelling (with ClimateWorks Centre): <a href="https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2022/2023-inputs-assumptions-and-scenarios-consultation/supporting-materials-for-2023/csiro-climateworks-centre-2022-multisector-modelling-report.pdf">https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2022/2023-inputs-assumptions-and-scenarios-consultation/supporting-materials-for-2023/csiro-climateworks-centre-2022-multisector-modelling-report.pdf</a></p> <p>Electric vehicles: <a href="https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2022/2023-inputs-assumptions-and-scenarios-consultation/supporting-materials-for-2023/csiro-2022-electric-vehicles-projections-report.pdf">https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2022/2023-inputs-assumptions-and-scenarios-consultation/supporting-materials-for-2023/csiro-2022-electric-vehicles-projections-report.pdf</a></p> <p>CER: <a href="https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2022/2023-inputs-assumptions-and-scenarios-consultation/supporting-materials-for-2023/csiro-2022-solar-pv-and-battery-projections-report.pdf">https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2022/2023-inputs-assumptions-and-scenarios-consultation/supporting-materials-for-2023/csiro-2022-solar-pv-and-battery-projections-report.pdf</a></p> <p><b>Green Energy Markets:</b> CER: <a href="https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2022/2023-inputs-assumptions-and-scenarios-consultation/supporting-materials-for-2023/gem-2022-solar-pv-and-battery-projection-report.pdf">https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2022/2023-inputs-assumptions-and-scenarios-consultation/supporting-materials-for-2023/gem-2022-solar-pv-and-battery-projection-report.pdf</a></p> <p><b>Strategic Policy Research:</b> Energy efficiency: <a href="https://aemo.com.au/-/media/files/major-publications/isp/2023/iasr-supporting-material/2023-energy-efficiency-forecasts-final-report.pdf">https://aemo.com.au/-/media/files/major-publications/isp/2023/iasr-supporting-material/2023-energy-efficiency-forecasts-final-report.pdf</a></p> <p><b>AEP Elical:</b> Forced outage rates: <a href="https://aemo.com.au/-/media/files/electricity/nem/planning_and_forecasting/inputs-assumptions-methodologies/2020/aep-elical-assessment-of-ageing-coal-fired-generation-reliability.pdf">https://aemo.com.au/-/media/files/electricity/nem/planning_and_forecasting/inputs-assumptions-methodologies/2020/aep-elical-assessment-of-ageing-coal-fired-generation-reliability.pdf</a></p> <p><b>Aurecon:</b> Forced outage rates: <a href="https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2022/2023-inputs-assumptions-and-scenarios-consultation/supporting-materials-for-2023/aurecon-2022-cost-and-technical-parameter-review.pdf">https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2022/2023-inputs-assumptions-and-scenarios-consultation/supporting-materials-for-2023/aurecon-2022-cost-and-technical-parameter-review.pdf</a></p>
<b>Relevant stakeholder consultations</b>	
Consultation on 2023 Inputs, Assumptions and Scenarios Report (IASR)	<a href="https://aemo.com.au/consultations/current-and-closed-consultations/2023-inputs-assumptions-and-scenarios-consultation">https://aemo.com.au/consultations/current-and-closed-consultations/2023-inputs-assumptions-and-scenarios-consultation</a>
Forecasting Reference Group (FRG) meeting records	<a href="https://www.aemo.com.au/consultations/industry-forums-and-working-groups/list-of-industry-forums-and-working-groups/forecasting-reference-group-frg">https://www.aemo.com.au/consultations/industry-forums-and-working-groups/list-of-industry-forums-and-working-groups/forecasting-reference-group-frg</a>
Responses provided by AEMO on 2023 IASR submissions	<a href="https://aemo.com.au/-/media/files/major-publications/isp/2023/2023-iasr-consultation-summary-report.pdf">https://aemo.com.au/-/media/files/major-publications/isp/2023/2023-iasr-consultation-summary-report.pdf</a>
Forecasting Accuracy Reporting	<a href="https://www.aemo.com.au/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-reliability/forecasting-accuracy-reporting">https://www.aemo.com.au/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-reliability/forecasting-accuracy-reporting</a>



Term	Definition
<b>NEM Reliability Forecasting Guidelines and Methodology Consultation</b>	<a href="https://aemo.com.au/en/consultations/current-and-closed-consultations/2022-reliability-forecasting-guidelines-and-methodology">https://aemo.com.au/en/consultations/current-and-closed-consultations/2022-reliability-forecasting-guidelines-and-methodology</a>

## 4. Glossary

Term	Definition
<b>Committed, committed* and anticipated projects</b>	Generation that is considered to be proceeding under AEMO's commitment criteria, defined under the Background information tab on the Generation Information page at <a href="https://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Planning-and-forecasting/Generation-information">https://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Planning-and-forecasting/Generation-information</a> .
<b>distributed PV</b>	Includes rooftop systems and other smaller non-scheduled PV capacity.
<b>installed capacity</b>	The generating capacity (in megawatts (MW)) of the following (for example): A single generating unit. A number of generating units of a particular type or in a particular area. All of the generating units in a region. Rooftop PV installed capacity is the total amount of cumulative rooftop PV capacity installed at any given time.
<b>generating capacity</b>	Amount of capacity (in megawatts (MW)) available for generation.
<b>generating unit</b>	Power stations may be broken down into separate components known as generating units, and may be considered separately in terms (for example) of dispatch, withdrawal, and maintenance.
<b>maximum demand (MD)</b>	Highest amount of electrical power delivered, or forecast to be delivered, over a defined period (day, week, month, season, or year) either at a connection point, or simultaneously at a defined set of connection points.
<b>non-scheduled generation</b>	Generation by a generating unit that is not scheduled by AEMO as part of the central dispatch process, and which has been classified as a non-scheduled generating unit in accordance with Chapter 2 of the NER.
<b>operational electrical consumption</b>	The electrical energy supplied by scheduled, semi-scheduled, and significant non-scheduled generating units, less the electrical energy supplied by small non-scheduled generation.
<b>unserved energy (USE)</b>	Unserved energy is the amount of energy that cannot be supplied to consumers, resulting in involuntary load shedding (loss of consumer supply). USE is calculated consistent with NER 3.9.3C.
<b>Expected USE</b>	AEMO forecasts expected USE by calculating the weighted-average USE over a wide range of simulated outcomes.