

# South Australian Generation Forecasts

September 2024

South Australian Advisory Functions





# Important notice

## Purpose

The purpose of this publication is to provide information to the South Australian Minister for Energy and Mining about South Australia's electricity generation forecasts.

AEMO publishes this South Australian Generation Forecasts report in accordance with its additional advisory functions under section 50B of the National Electricity Law.

This publication is generally based on information available to AEMO as at 1 May 2024, as modelled for the 2024 *Integrated System Plan* (ISP) (published on 26 June 2024).

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# 1 Electricity generation forecasts

The *South Australian Generation Forecasts* report provides forecasts of the potential future electricity generation mix in South Australia over the next 10 years.

## 1.1 Overview

The electricity generation and storage projections are based on analysis on the optimal development path published in AEMO's 2024 *Integrated System Plan (ISP)*<sup>1</sup> for the National Electricity Market (NEM).

### Key forecast trends

The key generation and storage forecast trends highlighted by the projections are:

- The amount of forecast generation will be influenced by the announced retirement of existing assets, the development of currently proposed generation, storage and transmission projects, and the potential for increased demand (in scenarios with high economic growth, high electrification and/or hydrogen industry growth) in both South Australia, and in neighbouring regions of the National Electricity Market (NEM).
- Both wind generation and large-scale solar generation are forecast to increase in the near term due to commissioning of new projects. The forecast degree of growth beyond this point varies between scenarios depending on future demand growth, federal and state government policies, carbon emissions trajectories and subsequent coal generation closures.
- The annual volume of gas and diesel generation is forecast to decrease relative to history. This is driven by the retirement of thermal generation, the commissioning of new variable renewable energy (VRE) generation and the commissioning of Project EnergyConnect (PEC).
- Compared to the 2023 South Australian Generation Forecasts report, the overall generation forecast is lower, driven by lower forecast demand in the early years, lower levels of wind and rooftop PV generation, and increases in interconnector imports.
- Forecast growth in small and large scale battery technologies demonstrates growing value in storage technologies that can time-shift surplus energy thereby improving operational flexibility.
- Rooftop photovoltaics (PV) and PV non-scheduled generation (PVNSG) are forecast to continue to grow over the next decade.

<sup>1</sup> At <https://aemo.com.au/-/media/files/major-publications/isp/2024/2024-integrated-system-plan-isp.pdf?la=en>.

## 1.2 Scenarios analysed

This report is based on scenarios and sensitivities described in AEMO's 2024 ISP, which uses the scenario definitions in the 2023 *Inputs Assumptions and Scenarios Report* (IASR)<sup>2</sup>; Table 1 summarises the high-level scenario narratives.

The scenarios are selected to provide perspective on a range of plausible outcomes in different futures.

**Table 1** Descriptions of AEMO's scenarios used in this report

Scenario	Description
<b>Step Change</b>	This scenario achieves a scale of energy transformation that supports Australia's contribution to limiting global temperature rise to below 2°C compared to pre-industrial levels. Electrification is a key enabler to transition the economy at a pace aligned with beating the 2°C abatement target of the Paris Agreement. Consumer actions lead to rapid and significant continued investment in orchestrated CER and include electrification of the transportation sector.
<b>Green Energy Exports</b>	This scenario reflects very strong decarbonisation activities domestically and globally to limit temperature increases to 1.5°C, resulting in rapid transformation of Australia's energy sectors, including a strong use of electrification, green hydrogen and biomethane.
<b>Progressive Change</b>	This scenario meets Australia's current Paris Agreement commitment of 43% emissions reduction by 2030 and net zero emissions by 2050. This scenario has more challenging economic conditions, higher relative technology costs and more supply chain challenges relative to other scenarios.

## 1.3 Electricity forecasts

A summary of forecast electricity generation, interconnection, and loads for South Australia from 2023-24 to 2032-33, across three scenarios, is shown in Table 2.

Key assumptions include:

- New generation and storage developments, and closures as outlined in AEMO's February 2024 Generation Information publication<sup>3</sup>.
- Transmission and generation developments are as forecast in the 2024 ISP's optimal development path. This includes the revised commissioning date for stages 1 and 2 of Project EnergyConnect and system security constraints.
- Forecast gas prices from AEMO's 2023 *IASR Assumptions Workbook*.
- Electricity demand and consumption forecasts, including CER forecasts, are as forecast in the 2023 Electricity Statement of Opportunities (ESOO)<sup>4</sup>.

<sup>2</sup> At <https://aemo.com.au/-/media/files/major-publications/isp/2023/2023-inputs-assumptions-and-scenarios-report.pdf?la=en>.

<sup>3</sup> At <https://www.aemo.com.au/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-planning-data/generation-information>.

<sup>4</sup> 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>.

In Table 2:

- S stands for Scheduled, SS for semi-scheduled, NS for non-scheduled generation.
- Rooftop PV means behind-the-meter PV systems up to 100 kilowatts (kW).
- PVNSG means distributed PV systems greater than 100 kW, up to 30 megawatts (MW).
- ONSG (other non-scheduled generation) is small non-scheduled generation less than 30 MW (a mix of renewable and non-renewable generation). Peaking generation is excluded from the Other Non-Scheduled Generation (ONSG) in this year's forecast as outlined in AEMO's Electricity Demand Forecasting Methodology. Peaking generation is now considered as a form of demand side participation (DSP).
- VPP stands for Virtual Power Plant, that is, orchestrated behind-the-meter battery storage systems.

**Table 2 Forecast annual energy supply mix for South Australia (gigawatt hours [GWh])**

Financial year	Generation									Interconnector flow			Load	
	Wind (SS, NS)	Solar (SS)	Battery (S)	ONSG	PVNSG	Rooftop PV	VPP <sup>5</sup>	Gas and diesel (S) <sup>6</sup>	Total	Imports to SA	Net interchange (+ve import)	Exports from SA	Battery (S) and VPP	
<b>Step Change</b>														
<b>2022-23 Actuals</b>	<b>6,651</b>	<b>804</b>	<b>74</b>	<b>70</b>	<b>436</b>	<b>2,505</b>	<i>not available</i> †	<b>3,644</b>	<b>14,184</b>	<b>1,377</b>		<b>499</b>	<b>877</b>	<b>97†</b>
<b>2023-24 ††</b>	7,223	1,125	163	64	507	3,501	29	2,060	14,672	2,612		1,174	1,437	228
<b>2024-25</b>	7,258	1,185	268	65	567	3,745	37	1,551	14,675	3,010		1,561	1,448	362
<b>2025-26</b>	8,125	1,221	400	65	628	3,959	34	1,574	16,006	2,885		1,186	1,699	516
<b>2026-27</b>	8,356	1,240	408	66	689	4,206	33	1,205	16,203	3,782		2,276	1,506	526
<b>2027-28</b>	8,533	1,490	365	66	757	4,544	25	907	16,687	5,008		3,085	1,924	464
<b>2028-29</b>	9,216	1,754	401	67	834	4,875	63	1,523	18,732	3,977		1,563	2,414	552
<b>2029-30</b>	8,984	1,866	336	60	918	5,253	49	933	18,399	4,574		2,549	2,025	458
<b>2030-31</b>	11,168	1,702	263	60	1,000	5,577	51	517	20,338	3,848		1,374	2,474	374

<sup>5</sup> AEMO has updated its forecasting approach to VPPs to reflect that these resources would be dispatched with less frequency than assumed in previous forecasts. This forecast also includes a lower forecast installed capacity trajectory for VPP. These two factors combined has resulted in lower forecasts for VPP generation compared to the 2023 South Australian Generation Forecasts.

<sup>6</sup> The increase on the volume of gas and diesel generation in 2028-29, particularly in Progressive Change, is due to coal generation retirements in Victoria and New South Wales combined with a slower rate of new generation developments in this year.

Financial year	Generation									Interconnector flow			Load
	Wind (SS, NS)	Solar (SS)	Battery (S)	ONSG	PVNSG	Rooftop PV	VPP <sup>5</sup>	Gas and diesel (S) <sup>6</sup>	Total	Imports to SA	Net interchange (+ve import)	Exports from SA	Battery (S) and VPP
2031-32	10,956	2,543	274	61	1,088	6,015	85	451	21,473	3,777	1,020	2,757	427
2032-33	10,943	2,588	301	61	1,178	6,349	135	532	22,087	3,836	1,045	2,792	519
<b>Progressive Change</b>													
2022-23 Actuals	<b>6,651</b>	<b>804</b>	<b>74</b>	<b>70</b>	<b>436</b>	<b>2,505</b>	<i>not available</i> †	<b>3,644</b>	<b>14,184</b>	<b>1,377</b>	<b>499</b>	<b>877</b>	<b>97†</b>
2023-24 ††	7,223	1,125	163	63	465	3,501	29	2,060	14,628	2,612	1,174	1,437	228
2024-25	7,258	1,185	268	63	471	3,745	37	1,551	14,577	3,010	1,561	1,448	362
2025-26	8,161	1,249	365	62	478	3,530	12	1,436	15,293	3,074	1,436	1,638	449
2026-27	8,331	1,228	435	62	486	3,620	8	797	14,968	4,835	3,280	1,555	529
2027-28	8,344	1,520	581	62	507	3,779	4	544	15,341	6,262	4,235	2,027	698
2028-29	8,471	1,854	694	62	532	3,920	14	1,401	16,949	4,541	2,671	1,870	843
2029-30	10,591	2,048	549	55	575	4,100	9	622	18,548	3,714	1,474	2,240	664
2030-31	10,263	1,927	412	55	616	4,242	5	245	17,766	4,382	2,347	2,034	497
2031-32	10,254	1,888	383	55	644	4,400	6	187	17,817	4,571	2,526	2,044	463
2032-33	10,286	1,933	398	55	668	4,539	8	242	18,127	4,635	2,468	2,167	483
<b>Green Energy Exports</b>													
2022-23 Actuals	<b>6,651</b>	<b>804</b>	<b>74</b>	<b>70</b>	<b>436</b>	<b>2,505</b>	<i>not available</i> †	<b>3,644</b>	<b>14,184</b>	<b>1,377</b>	<b>499</b>	<b>877</b>	<b>97†</b>
2023-24 ††	7,223	1,125	163	72	523	3,501	29	2,060	14,695	2,612	1,174	1,437	228
2024-25	7,258	1,185	268	80	602	3,745	37	1,551	14,726	3,010	1,561	1,448	362
2025-26	8,223	1,280	387	89	683	4,042	40	3,142	17,884	2,542	1,072	1,470	507
2026-27	10,449	1,784	376	97	765	4,321	45	1,247	19,083	3,549	1,869	1,681	501

Financial year	Generation									Interconnector flow			Load
	Wind (SS, NS)	Solar (SS)	Battery (S)	ONSG	PVNSG	Rooftop PV	VPP <sup>5</sup>	Gas and diesel (S) <sup>6</sup>	Total	Imports to SA	Net interchange (+ve import)	Exports from SA	Battery (S) and VPP
2027-28	13,265	3,217	758	106	877	4,780	41	838	23,882	2,749	-1,050	3,800	959
2028-29	13,777	4,110	825	114	1,001	5,312	75	988	26,202	3,070	-1,112	4,182	1,082
2029-30	16,638	6,373	812	115	1,115	5,909	85	840	31,887	4,055	324	3,731	1,079
2030-31	19,135	7,436	721	123	1,230	6,434	78	493	35,650	3,396	-284	3,680	959
2031-32	20,348	8,346	918	132	1,344	6,956	132	686	38,862	3,681	15	3,666	1,262
2032-33	20,201	8,111	789	140	1,449	7,454	165	590	38,900	3,525	-360	3,885	1,149

† AEMO is unable to quantify the precise historical level of VPP generation and load, so 2022-23 actuals are not available. This is a more appropriate historical estimate than utilising the prior year's forecast value.

†† The 2023-24 forecast generation for Step Change, Progressive Change and Green Energy Exports scenarios represent full-year forecast values, and are not adjusted to reflect actuals that have already happened during FY23-24.