

Draft 2022 Integrated System Plan (ISP) – Overview



The Australian Energy Market Operator (AEMO) has published the Draft 2022 ISP for consultation, prior to the final 2022 ISP in June next year.

About the ISP

The ISP is a 30-year roadmap for the efficient development of the **National Electricity Market (NEM)**.

The ISP presents an ‘optimal development path’, a coordinated generation and transmission investment plan to transition the power system.

It aims to assist governments and industry to plan, invest and develop policy to support consumers’ current and future energy needs.

Published every two years, the ISP is developed by AEMO as the independent planner for the NEM through extensive collaboration with consumers, policy makers, regulators, industry representatives and other stakeholders.

Consultation

The first phase of consultations commenced in September 2020, culminating in the *Inputs, Assumptions and Scenarios Report (IASR)*, the *ISP Methodology* and *Transmission Cost Report*, published in July 2021.

The Draft 2022 ISP reflects stakeholder feedback and significant refinement of inputs and assumptions from workshops, webinars, public forums, other engagements and submissions.

All stakeholders are invited to provide a written submission by 11 February 2022 on any aspect of the Draft 2022 ISP and attend AEMO’s upcoming public forums. Please access details on our consultation forums, presentations, and webinars [here](#).

Date	Event
10 Dec 2021	Draft ISP published
10 Dec 2021	Public Briefing
15 Dec 2021	AEMO Consumer Forum
1 Feb 2022	Public Forum
4 Feb 2022	Consumer Advocate verbal comment
11 Feb 2022	Submissions close

ISP Consumer Panel

For the first time, an ISP Consumer Panel was set up under the National Electricity Rules. The panel’s role is to provide independent expert advice and elevate consumer feedback during development of the 2022 ISP.

AEMO considers the panel’s reports as part of its decision-making, and discusses these in the Draft 2022 ISP and final 2022 ISP.

About AEMO

AEMO is responsible for operating Australia’s largest gas and electricity markets and power systems in the best interests of Australian energy consumers. These include the NEM, the Wholesale Electricity Market and power system in Western Australia, the Victorian gas transmission system and gas markets across Australia.

As Australia’s independent energy markets and power systems operator, AEMO provides critical planning, forecasting and power systems security advice and services to deliver energy security for all Australians. For more information, head to www.aemo.com.au.

Stakeholder engagement and consultation activities



1,500+
stakeholders
engaged



25
webinars
hosted



30+
presentations
and reports



100+
written submissions
provided



Step Change scenario – the most likely scenario

Under the Step Change scenario through to 2050, the NEM will need to cater for significant investment in generation capacity, storage, firming generation and transmission augmentations as coal generation withdraws. Market and technical reforms for system services and two-way electricity flow will need to be pursued. Importantly, all major projects will need careful design to meet environmental, economic and social licence expectations.

NEM developments:

 **Double** the delivered electricity to almost 330 TWh per year.

 Coal retiring **two to three** times faster than anticipated.

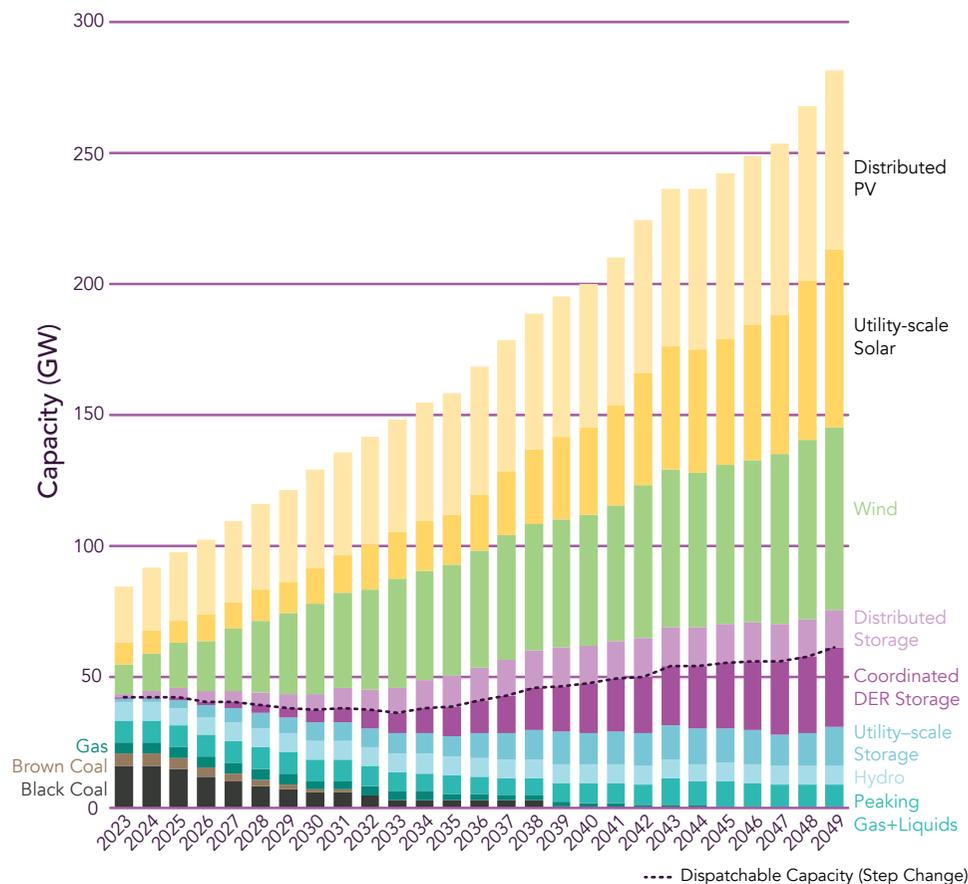
Treble the firming capacity as coal generation retires

By 2050, without coal, the NEM will require:

- 45 GW / 620 GWh of storage (in all forms).
- 7 GW of existing dispatchable hydro (natural water inflows).
- 9 GW of gas-fired generation for peak loads and firming, complementary to battery and pumped-hydro generation¹
- Wholesale demand response and other flexible loads.

¹ Over time, emissions will need to be offset, or natural gas will need to be substituted for net-zero carbon fuels.

Forecast NEM capacity to 2050, Step Change scenario



NEM developments:

 **Nine times** utility-scale VRE capacity.

 Nearly **five times** the distributed PV capacity, and substantial growth in distributed storage.

Market and technical reforms

Significant market and technical reforms are underway to securely manage the transformation to a low emissions grid. This includes Five Minute Settlements, Wholesale Demand Response and Energy Security Board's (ESB's) post-2025 reform recommendations.

In addition, AEMO's Engineering Framework enables industry participants to collaboratively define the operational, technical and engineering requirements for the NEM's future, and informs the market reforms being undertaken by the ESB.

The transformation will deliver low-cost renewable electricity with reliability and security, help meet regional and national climate targets, and contribute significantly to regional jobs and economic growth.

Transmission investment

Optimal Development Path (ODP)

The Draft 2022 ISP sets out a draft ODP with committed and anticipated projects underway, actionable projects to commence at the earliest planned time and future ISP projects to augment the NEM.

Projects are selected from candidates in accordance with the Cost Benefit Analysis Guidelines made by the Australian Energy Regulator, as detailed in AEMO's *ISP Methodology*.

Benefits of the ODP

Transmission investment in the the draft ODP is forecast to deliver net market benefits of \$29 billion, returning 2.5 times its investment value².

Further, the ODP helps provide investment confidence, the flexibility to reduce emissions at a faster rate in the next decade if needed, and time for greater community engagement and supply chain risk management.

The ODP projects will cost-effectively serve the needs of consumers, support Australia's decarbonisation, and support regional employment and economic growth.

2. The network investment identified as actionable in this Draft ISP is ~\$12.5 billion in today's value and, after considering additional future network investment, constitutes about 7% of the total investments needed in the power system, including new generation and storage and the costs to operate them.

Significant risks and limitations are being monitored and need to be addressed

The cost-benefit analysis of this Draft ISP takes a comprehensive set of transformation risks into account. These are incorporated into the range of drivers affecting the scenarios, including policy, technology and cost assumptions and other factors.

The cost-benefit analysis applies multiple evaluation approaches to take risks into account, including the risks of coal generation retiring earlier than announced or anticipated.

However, some important considerations may still risk the draft ODP's timely implementation:

- Securing social licence for VRE, storage and transmission.
- Project sequencing to manage supply chain risks.

Additional factors that may be considered in future ISPs include:

- Consideration of broader public benefits and risks when selecting the draft ODP.
- Potential for additional investment in the NEM's main flow paths, or even new flowpaths.
- Securing social licence for DER.
- Role of the distribution network.

Network projects in the ODP

