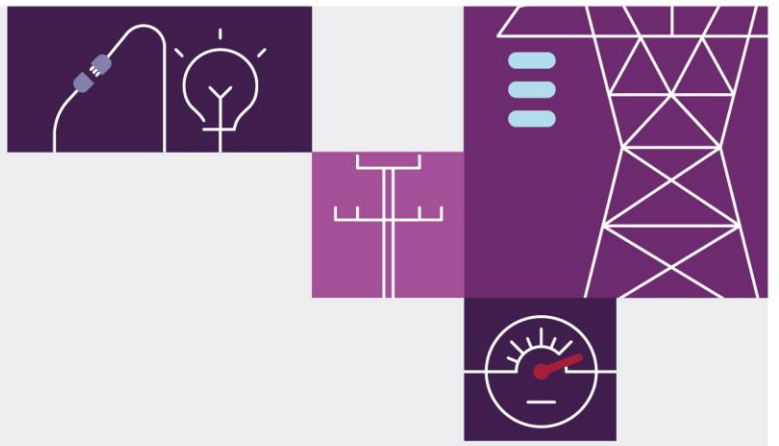


Appendix 1. Stakeholder Engagement

December 2023

Appendix to the Draft 2024
Integrated System Plan for
the National Electricity
Market





Important notice

Purpose

AEMO has prepared this document to provide information about stakeholder engagement to develop the Draft 2024 ISP, as at the date of publication.

Disclaimer

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Version control

Version	Release date	Changes
1.0	15/12/2023	Initial release.

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A1.1 Engagement program overview

AEMO’s *Integrated System Plan* (ISP) is a roadmap for the transition of the NEM power system, with a clear plan for essential infrastructure to meet future energy needs. ISP’s optimal development path sets out the needed generation, firming and transmission, which would deliver significant net market benefits for consumers and economic opportunities in Australia’s regions.

Development of the Draft 2024 ISP draws on extensive stakeholder engagement and power system planning expertise. Broad stakeholder input is essential to ensure its quality, accuracy, and suitability. AEMO’s definition of stakeholders includes consumers and advocates, industry, market bodies, government, and other interested stakeholders such as environmental groups, academics, and energy industry consultants.

Engagement to inform the development of the Draft 2024 ISP was carried out regularly over 18 months, with multiple opportunities for stakeholder input. The focus of AEMO’s engagement was on consulting on inputs, assumptions and scenarios, and how they are applied in the ISP modelling, to produce a dynamic roadmap to inform how Australians can plan, invest in and deliver needed infrastructure for the power system.

AEMO’s engagement goal for the 2024 ISP is:

Provide stakeholders with appropriate time and opportunity to enable meaningful input into AEMO’s planning. Stakeholder views to shape AEMO’s modelling and decisions, to create a plan for the efficient development of a safe, reliable, and affordable power system, for the benefit of all Australians, while enabling a net-zero future.

The goal AEMO set for the engagement program guides the approach and ensures the 2024 ISP, where appropriate, reflects stakeholder needs and expectations.

A1.1.1 Stakeholder engagement journey

Over the past 18 months, AEMO has strived to give all stakeholders as much opportunity as possible to get involved in the 2024 ISP development.

Table 1 below highlights the key activities throughout the stakeholder journey, and the engagement outcomes aligned with the IAP2 Public Participation Spectrum¹.

Table 1 2024 ISP engagement program activity

Stage	IAP2 Goal	Key activities	Output
1. Preliminary engagement	Collaborate	Set up the 2024 ISP Consumer Panel ^A and develop an engagement strategy.	<ul style="list-style-type: none"> Four panel members commenced 7 September 2022; meetings held fortnightly (20 plus to date) with advice on key ISP inputs. 2024 ISP Stakeholder Engagement Strategy delivered July 2023. Delphi Panel design September 2023.

¹ International Association for Public Participation. IAP2 Public Participation Spectrum. At <https://iap2.org.au/resources/spectrum/>. Viewed November 2023.



Stage	IAP2 Goal	Key activities	Output
		Set up AEMO's Advisory Council on Social Licence ^B	<ul style="list-style-type: none"> Panel established on 30 November 2022, four in person meetings in three cities since November 2022.
2. 2023 IASR	Consult	Across 12 months: <ul style="list-style-type: none"> Six webinars Two consumer advocate sessions. Seven government briefings and prior consultations across all jurisdictions. Three dedicated stakeholder briefings. One Delphi Panel (33 experts) to inform scenario weightings for the 2024 ISP. 	<ul style="list-style-type: none"> 909 webinar attendees. 68 written submissions. One consumer advocates verbal submission with 17 attendees. 24 reports/reference material published. Report, consultation summary report, 2024 ISP Consumer Panel report and infographic^C.
3. ISP Methodology	Consult	Across four months: <ul style="list-style-type: none"> Two webinars. 	<ul style="list-style-type: none"> 25 written submissions. 186 webinar attendees. Five reports published.
4. 2023 Transmission Expansion Options Report	Consult	Across four months: <ul style="list-style-type: none"> Two webinars. Five targeted engagements, including two consumer advocate sessions. Two government briefings. 	<ul style="list-style-type: none"> 22 written submissions. 276 webinar attendees. One joint consumer advocates verbal submission. 13 reports/reference material published.

A. See <https://aemo.com.au/en/energy-systems/major-publications/integrated-system-plan-isp/2024-integrated-system-plan-isp/isp-consumer-panel>.

B. See <https://aemo.com.au/consultations/industry-forums-and-working-groups/list-of-industry-forums-and-working-groups/social-licence-advisory-council>.

C. See <https://aemo.com.au/-/media/files/major-publications/isp/2023/2023-iasr-infographic.pdf>.



A1.2 Stakeholder feedback – key themes

AEMO considers all stakeholder feedback and summarises formal submissions into themes and AEMO responses in consultation summary reports. Table 2 below highlights the key feedback topics for each consultation.

Table 2 Key themes of consultation feedback

Consultation	Key feedback topics
2023 IASR	<ul style="list-style-type: none"> • Scenario design • Generation & demand • Renewable Energy Zones (REZ) • Social licence • Transmission • Hydrogen <p>For more information, see the <i>2023 IASR Consultation Summary Report^A</i> – July 2023.</p>
2023 ISP Methodology	<ul style="list-style-type: none"> • Value of carbon emissions • Storage dispatch behaviour • Consumer risk preferences • Transmission project lead time uncertainty • REZ transmission limits • Renewable resource quality • Demand side participation (DSP) • Network losses <p>For more information, see the <i>Consultation summary report – Update to the ISP Methodology June 2023^B</i>.</p>
2023 Transmission Expansion Options Report	<ul style="list-style-type: none"> • Approach to forecasting transmission costs • Transmission expansion options, including conceptual design, lead time, location, and cost estimate. • Calculation of approximate generation connection costs • An update to AEMO's transmission cost database <p>For more information, see the <i>2023 Transmission Expansion Options Consultation Summary Report^C</i> July 2023.</p>

A. See <https://aemo.com.au/-/media/files/major-publications/isp/2023/2023-iasr-consultation-summary-report.pdf>.

B. See https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2023/isp-methodology-2023/consultation-summary-report---update-to-the-isp-methodology.pdf.

C. See <https://aemo.com.au/-/media/files/major-publications/isp/2023/consultation-summary-report---2023-transmission-expansion-options-report.pdf>.



A1.3 Preliminary engagement

A1.3.1 Engagement strategy development

The purpose of the 2024 ISP engagement strategy is to articulate how AEMO intends to engage with stakeholders on the development of the 2024 ISP.

In developing the engagement program, AEMO recognised the challenges of engagement with highly technical subject matter that is broad in scope, involving a range of stakeholders across the NEM. AEMO took time to map major engagement priorities and determine the scope of engagement to ensure guidance was provided to stakeholders on how they could get involved and participate in consultation².

The AER's Forecasting Best Practice Guidelines³ provide consultation requirements and invaluable guidance for AEMO on the expectations for a genuine, reasonable, and efficient engagement process.

AEMO consulted with the 2024 ISP Consumer Panel on the engagement strategy and will apply learnings for future engagement processes in development of the 2026 ISP and, where relevant, other activities and work.

AEMO welcomes feedback from interested stakeholders on the approach any time during the process.

A1.3.2 Engagement approach

Throughout the engagement program, AEMO's approach was to provide stakeholders with a range of opportunities to consult, collaborate or co-design on relevant elements of the 2024 ISP.

This section provides detail on how AEMO approached engagement for the development of the 2024 ISP including principles and commitments, engagement scope, stakeholders engaged, as well as the engagement methods used.

Engagement stages

The 2024 ISP is developed across the following key stages with engagement occurring at each stage:

- Preliminary scenarios.
- Draft IASR development and consultation (*Transmission Expansion Options Report* is a sub-set of the IASR).
- Final IASR development and *Transmission Expansion Options Report*.
- *ISP Methodology* development and consultation.
- Final *ISP Methodology* development.
- Draft ISP development.
- Draft ISP consultation beginning with the publication of the Draft 2024 ISP.
- Final ISP development (final 2024 ISP to be published on 28 June 2024).

² AEMO's target level of engagement is mapped against the IAP2 Spectrum of Public Participation. For further information, see <https://iap2.org.au/resources/spectrum/>.

³ At <https://www.aer.gov.au/system/files/AER%20-%20Forecasting%20best%20practice%20guidelines%20-%202025%20August%202020.pdf>.



The 2024 ISP Timetable provides a high-level overview of the key milestones related to the 2024 ISP⁴.

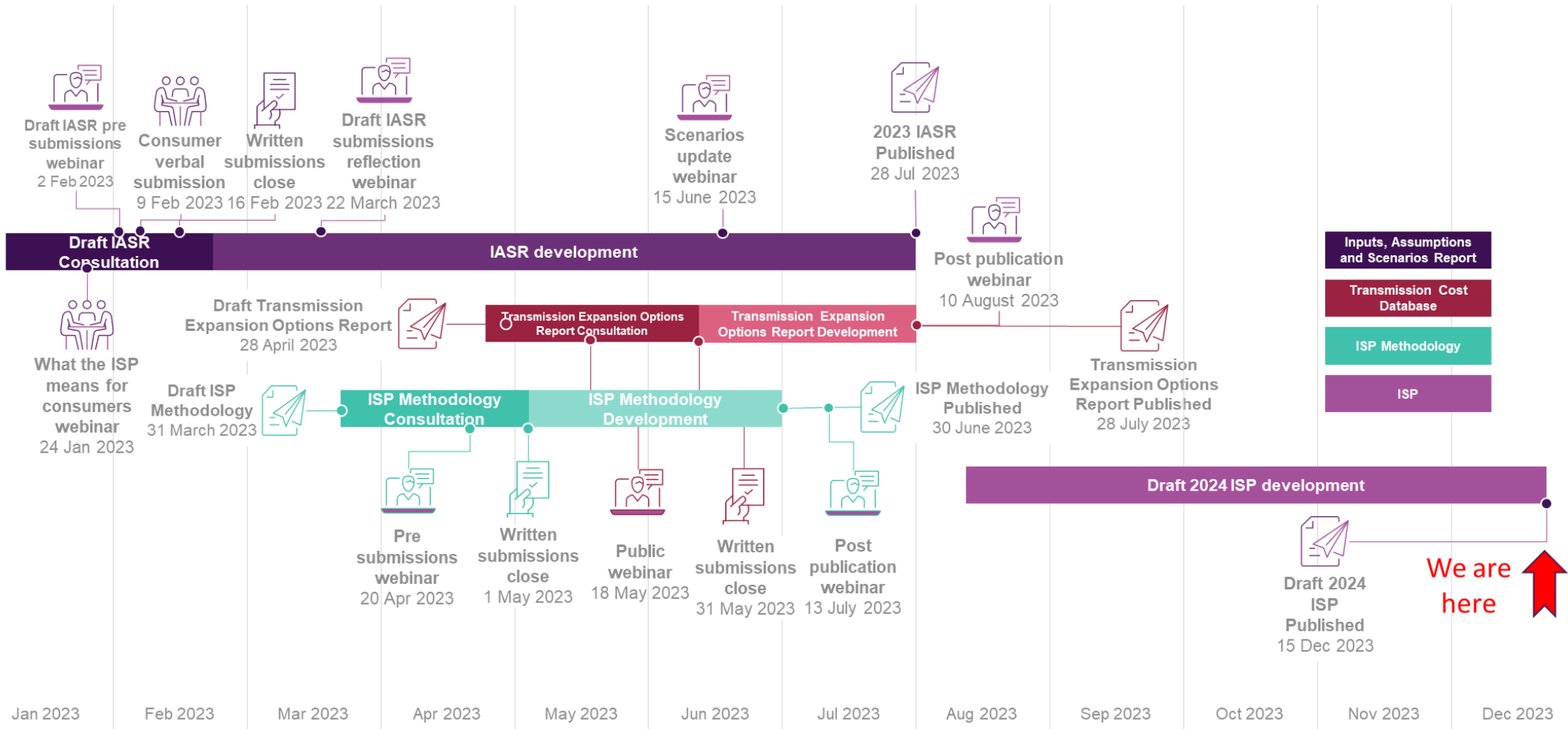
Stakeholder input is essential to the development of the Draft 2024 ISP. Figure 1 shows the stakeholder engagement AEMO undertook during 2023 to develop the 2023 IASR and the Draft 2024 ISP.

AEMO thanks all stakeholders who have taken the time to get involved, provide submissions, and attend webinars to date.

⁴ AEMO's 2024 ISP Timetable can be viewed at <https://aemo.com.au/-/media/files/major-publications/isp/2022/2024-isp-timetable.pdf>.



Figure 1 The Draft 2024 ISP development cycle





Engagement scope

AEMO’s engagement program focuses on engaging on areas of its planning that matter most to consumers and stakeholders, and where they can have the greatest influence. AEMO continually informs stakeholders throughout the ISP development cycle. The table below provides an outline of the key areas that included the consult, involve and collaborate levels of IAP2 spectrum of engagement⁵ with key stakeholders.

Table 3 ISP engagement scope

Topic	Scope
Methodology	<i>Consult</i> stakeholders for feedback on proposed modelling, methodology and analysis.
Inputs, assumptions and scenarios	<i>Consult</i> stakeholders on proposed inputs, assumptions, and sensitivities.
Transmission expansion	<i>Collaborate</i> with Transmission Network Service Providers (TNSPs) on transmission expansion options including conceptual design, lead time, location and cost estimate.
Cost/affordability	<i>Involve</i> the 2024 ISP Consumer Panel on cost of transmission augmentations as outlined in the 2023 Transmission Expansion Options Report consultation summary.
Scenario weighting	<i>Collaborate</i> with the 2024 ISP Consumer Panel to co-design the Delphi Panel to help determine scenario weightings for use in the Draft 2024 ISP.

Engagement principles and commitments

AEMO’s engagement on the 2024 ISP is underpinned by three key guiding principles:

- **Engage closely with stakeholders:** the program has been run with high levels of stakeholder engagement, including regular input from the 2024 ISP Consumer Panel on a range of matters relevant to consumers and providing industry with a forward view of options to assist with their own planning.
- **Deliver effective solutions:** AEMO works closely with market bodies, participants, and industry to ensure the solutions proposed in the Draft 2024 ISP are practical and possible.
- **Deliver as efficiently as possible:** AEMO continually works to identify opportunities for the most cost-effective development path that does not compromise on power system safety, reliability, or security.

To deliver on engagement principles and objectives, AEMO committed to respect stakeholder time, be transparent, and tailor material for the audience. AEMO also follow the ISP regulatory requirements, including provisions in the NER and relevant AER guidelines.

View the full ISP 2024 Engagement Strategy including the ISP regulatory framework (Appendix A) on AEMO’s website⁶.

Stakeholder map

Figure 2 shows the stakeholder groups that provided 117 submissions to AEMO during the three formal consultations in the Draft 2024 ISP development cycle.

⁵ For more information, see <https://iap2.org.au/resources/spectrum/>.

⁶ At <https://aemo.com.au/-/media/files/major-publications/isp/2023/2024-isp-stakeholder-engagement-strategy.pdf>



Figure 2 Stakeholder segment representation of webinar attendees and consultation submissions (1505 total)

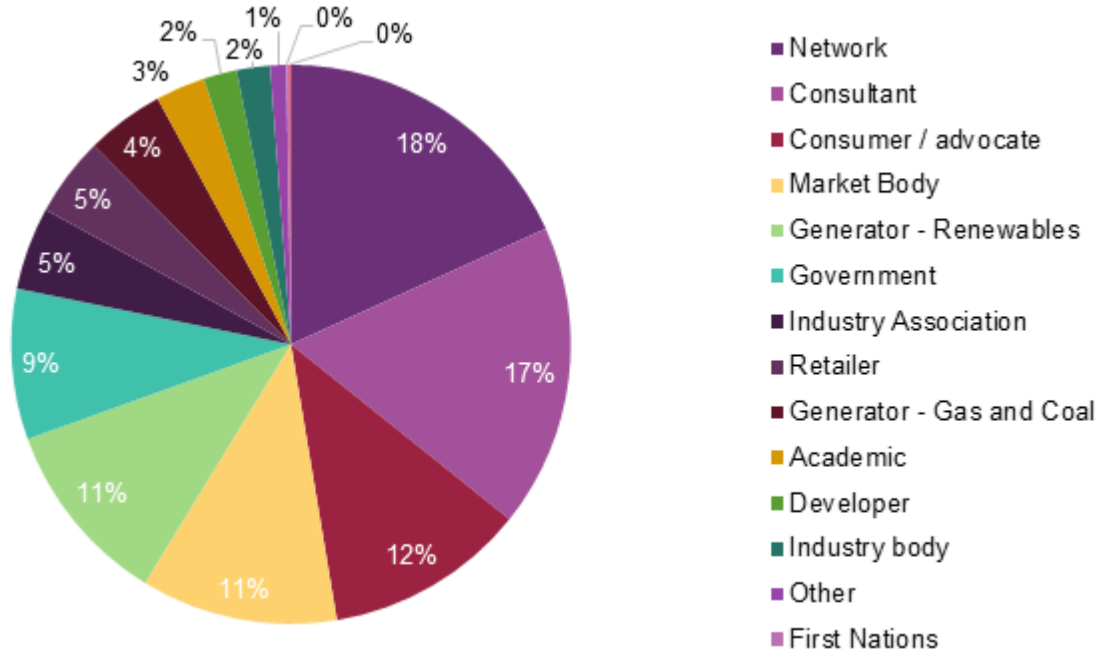
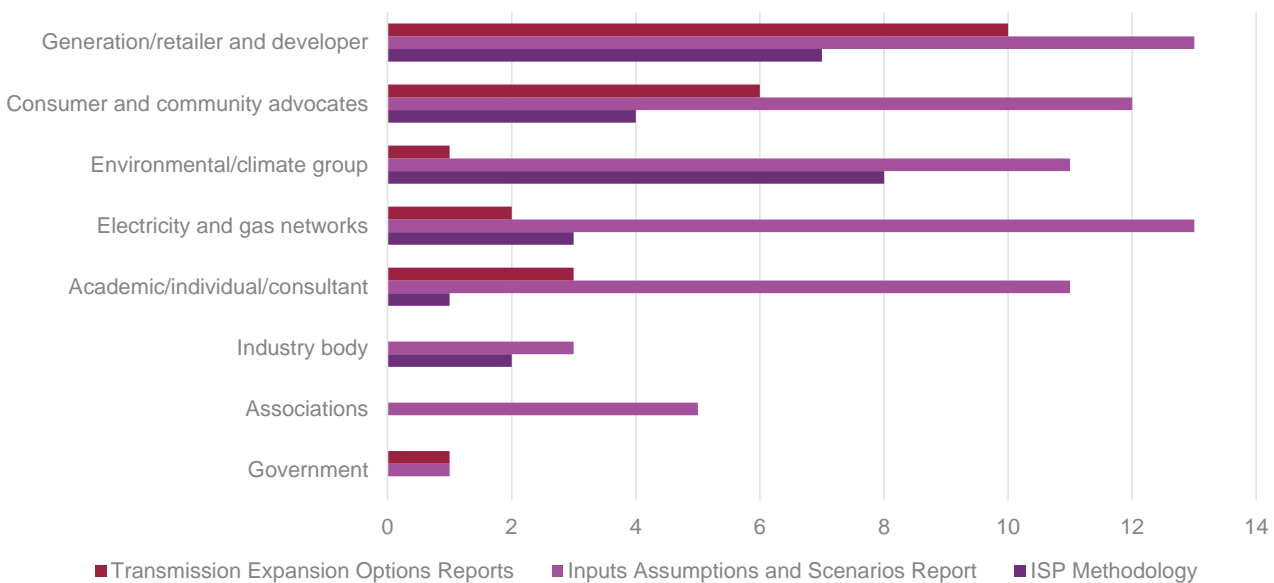


Figure 3 shows the number of submissions received by stakeholder segment on each of the three reports consulted on that inform the Draft ISP development: the *ISP Methodology*, the 2023 IASR, and the 2023 *Transmission Expansion Options Report*.

Figure 3 Draft ISP related consultation submissions by stakeholder segment (117)





Engagement impact

Table 4 shows the key impacts of engagement during the development of the Draft 2024 ISP

Table 4 Key consultation feedback adopted

Topic	Outcome
Social licence	For the first time the ISP has developed a dedicated social licence appendix and explored a social licence sensitivity of the risks of low social licence to the development of transmission infrastructure.
Modelling	Development of consumer risk preference research and a quantitative metric for the first time. AEMO is considering application of this research to the final 2024 ISP.
Methodology	Aligning assumed renewable energy resource quality in REZs with historical performance by incorporating values consulted on with stakeholders through the 2023 IASR process. For example, directly used stakeholder feedback to apply an 80% limit for each offshore declared area (reduced from assumed 90% that was deemed too generous). Based on stakeholder feedback, AEMO removed its proposed amendments to limit the foresight of storage devices in the ISP capacity outlook model. In response AEMO has explored alternative approaches to perfect foresight in Appendix 4 of the 2024 Draft ISP.
Scenarios	Changes to scenarios as part of the 2023 IASR consultation including removing the <i>Slow Change</i> scenario and changes to the <i>Progressive Change</i> scenario, mainly to align with decarbonisation policies. Following feedback, AEMO reconsidered the amount of hydrogen blending in the gas distribution network, with the <i>Green Energy Exports</i> scenario now featuring a maximum of 10% by volume. Hydrogen for exports and green steel remained unchanged. Based on feedback, the 'return-to-normal' timepoint for all technology capital costs was extended from 2027 to 2030 for the <i>Step Change</i> and <i>Green Energy Export</i> scenario.
Transmission options	Various conceptual transmission network options changes based on close joint planning with TNSPs and jurisdictional bodies. Stakeholder feedback has been considered and fed into the process including input on conceptual design, lead time, location and cost estimates. Following stakeholder consultation and specialist advice, AEMO will apply additional escalation factors for individual cost components (commodity prices and land cost) rather than assume that transmission network augmentation costs would increase in-line with economy-wide inflation.
Cost estimates	Changes to transmission cost forecasts including additional forecasts following feedback. Revised gas and coal price forecasts to reflect changes in Government policy. Reflected some of the costs for generation technologies (solar thermal) based on comments from stakeholders.

For a full summary of the consultation feedback and AEMO's responses, please view:

- 2023 IASR Consultation Summary Report⁷.
- Consultation summary report - Update to the ISP Methodology⁸.
- 2023 Transmission Expansion Options – Consultation Summary Report⁹.

2024 ISP Consumer Panel

The 2024 ISP Consumer Panel (the Panel) established by AEMO continues to bring a consumer-focused perspective to the ISP development process during the development of the 2024 ISP¹⁰, as shown in Table 5.

⁷ At <https://aemo.com.au/-/media/files/major-publications/isp/2023/2023-iasr-consultation-summary-report.pdf>.

⁸ At https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2023/isp-methodology-2023/consultation-summary-report---update-to-the-isp-methodology.pdf.

⁹ At <https://aemo.com.au/-/media/files/major-publications/isp/2023/consultation-summary-report---2023-transmission-expansion-options-report.pdf>.

¹⁰ The 2024 ISP Consumer Panel is an advisory body set up under changes to the NER that were put in place after the release of the second ISP in 2020.



AEMO maintains an open dialogue with the Panel to better understand consumer concerns about how the development of a new power system could affect them. The Panel does not replace broader engagement with energy consumers or their advocates in the ISP process. AEMO welcomes submissions and feedback from the broader consumer advocate community.

Table 5 2024 ISP Consumer Panel engagement activity

IAP2 Goal	Activity	Outcome
Consult & collaborate	Fortnightly meetings with four expert Consumer Advocates since September 2022	20 + meetings resulting in collaboration in six key areas outlined below.
	Collaboration on: <ul style="list-style-type: none"> Engagement strategy Consumer risk preferences Scenarios and sensitivities <i>ISP Methodology</i> Transmission costs 2024 ISP Delphi Panel. 	Delivery of: <ul style="list-style-type: none"> Co-design of Delphi Panel 2023 IASR ISP Consumer Panel report ISP Review – Directions Report Three consultation submissions (<i>2024 ISP Methodology, 2023 IASR and 2023 Transmission Expansion Options Report</i>).

Under the NER, the Panel is required to submit two reports to AEMO, within two months of the publication of the final IASR and Draft ISP¹¹. The Panel’s reports are required to provide their “assessment of the evidence and reasons supporting” the IASR and Draft ISP¹², and in preparing these reports the Panel “must have regard to the long-term interests of consumers”¹³.

AEMO appointed four members to the Panel on 7 September 2022. Since its creation, the Panel has engaged in great depth on numerous aspects of the development of the 2023 IASR and Draft 2024 ISP. The Panel engages in direct discussions with AEMO on key issues every fortnight, with over 20 meetings since September 2022. The Panel has also provided extensive written advice in the form of submissions to additional consultations within the overall ISP process, including the Australian Government Review of the *Integrated System Plan*.

There has been effective collaboration with the Panel on many topics, including:

- 2024 ISP stakeholder engagement strategy – resulting in the adoption of 14 recommendations to the strategy.
- Consumer risk preferences – participation in meetings to co-design and advise on the approach.
- Scenarios and sensitivities – discussion and input resulting in a detailed report with 42 recommendations, and participation in two social licence sensitivity workshops resulting in advice being adopted on social licence principles and parameters.
- Transmission costs – advice and input on the scope of the AEMO Transmission Cost Database and extensive recommendations for future development outlined in a 30 page submission to the *2023 Transmission Expansion Options Report*.
- 2024 ISP Delphi Panel design for scenario weightings – full co-design of the process including panel selection and results analysis.
- *ISP Methodology* – advice and input resulting in a formal submission.

¹¹ NER 5.22.7(d)(1)

¹² NER 5.22.7(e)(1)

¹³ NER 5.22.7(d)(2)



The Panel has noted that good progress has occurred on a number of the issues identified by the 2022 Panel, including gas forecasting, the place of hydrogen in the scenarios modelled, and recognition of supply chain issues impacting on project costs and delays¹⁴.

Further information on the Panel, including terms of reference, member biographies, and all the Panel’s reports and submissions, is available on the Panel’s page of AEMO’s website¹⁵.

AEMO wishes to record once again sincere thanks to Panel members Mark Grenning, Mark Henley, Craig Memery, Beverley Hughson (appointed May 2023) and Jo De Silva (resigned April 2023). AEMO acknowledges the Panel’s significant contribution to the development of the Draft 2024 ISP. The Panel both constructively challenged and extensively supported AEMO throughout its tenure.

AEMO will publish a call for expressions of interest for membership of the 2026 ISP Consumer Panel in early 2024. AEMO intends to appoint the 2026 Panel as near as possible to the beginning of the next two-year ISP development cycle, consistent with a key recommendation from the 2024 Panel.

Advisory Council on Social Licence

AEMO established the Advisory Council on Social Licence in November 2022 to better understand broader community sentiment, execution challenges and possible opportunities presented by the construction of new energy infrastructure. The Advisory Council on Social Licence includes a range of members across several stakeholder segments, including consumer advocates, farmers, Traditional Owners and environmental interest groups, with experience and interest in the topic of establishing social licence in the energy transition.

An inability to secure community acceptance or ‘social licence’ for new infrastructure development, social acceptance and mobilisation related to CER and acceptance of the broader energy transition could create significant delays, increase costs and threaten the delivery of infrastructure that is vital for Australia’s energy transition. Such delays are considered as part of the ISP development cycle.

For further information on social licence in the Draft 2024 ISP, please refer to Appendix 8.

Table 6 Advisory Council on Social Licence engagement

IAP2 Goal	Activity	Outputs
Collaborate	10+ experts from environment/climate, workforce, agriculture, social services, regional and economic development, and First Nations.	Four in person meetings in three cities since November 2022
	Collaboration and advice on: <ul style="list-style-type: none"> Defining social licence and narrative. Community sentiment. Victorian planning. 	Delivery of: <ul style="list-style-type: none"> Social licence appendix advice. Social licence sensitivity input.

¹⁴ At https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2023/isp-methodology-2023/submissions/17-isp-consumer-panel-isp-methodology-submission.pdf.

¹⁵ At <https://aemo.com.au/en/energy-systems/major-publications/integrated-system-plan-isp/2024-integrated-system-plan-isp/isp-consumer-panel>.



A1.4 Major engagements

Engagement with all stakeholders is critical to the development of the 2024 ISP, helping improve and refine scenario development and inform forecasting, decision-making and assessment.

Consultations for the 2024 ISP commenced in July 2022 with engagement on the inputs, assumptions and scenarios to be used. It continued with further consultations and is now at a major milestone recognising the significant role of engagement on the Draft 2024 ISP. This section provides an overview of the key major engagements that have already completed.

There have been three key stages of engagement that have facilitated stakeholder involvement including the development of:

- 2023 IASR including the 2024 ISP Delphi Panel on scenario weightings, social licence sensitivities and 2024 ISP Consumer Panel report on the 2023 IASR.
- 2023 *Transmission Expansion Options Report*.
- 2023 *ISP Methodology*.

A1.4.1 Inputs, assumptions, and scenarios

The 2023 IASR¹⁶ includes three scenarios that are used to support forecasting and planning in an uncertain environment, and assess future risks, opportunities, and development needs to match electricity supply and demand. Additionally, a range of sensitivities are defined to explore how forecasting and planning results may differ if a key assumption changes.

Following a 12-month consultation process, AEMO published the final 2023 IASR¹⁷ on 28 July 2023.

Over 60 submissions were received from organisations and individuals to the Draft 2023 IASR consultation, conducted from December 2022 until February 2023. Figure 4 provides a summary of the key submission topics received. Full details of the process and outcomes of stakeholder engagement is available in the consultation summary reports for the 2023 IASR¹⁸.

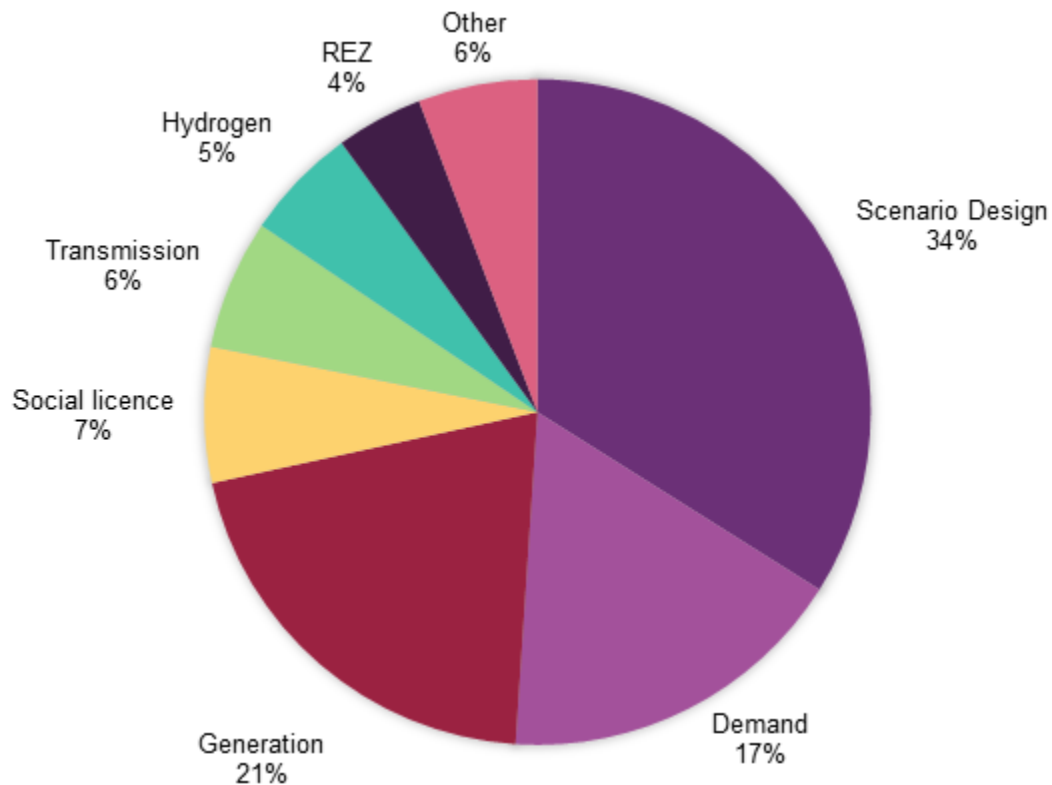
¹⁶ For a detailed explanation of the three ISP scenarios (*Step Change*, *Progressive Change* and *Green Energy Exports*), see Section 2 of the 2023 IASR at <https://aemo.com.au/-/media/files/major-publications/isp/2023/2023-inputs-assumptions-and-scenarios-report.pdf>.

¹⁷ The 2023 IASR, all supporting materials and demand trace data, are at <https://aemo.com.au/energy-systems/major-publications/integrated-system-plan-isp/2024-integrated-system-plan-isp/current-inputs-assumptions-and-scenarios>.

¹⁸ At <https://aemo.com.au/-/media/files/major-publications/isp/2023/2023-iasr-consultation-summary-report.pdf>.



Figure 4 2023 IASR key topics from 69 consultation submissions



2024 ISP Delphi Panel

Scenario likelihoods are important for the ISP as they inform the weighted value of the Draft 2024 ISP’s Optimal Development Path (ODP). Scenario weightings are used for evaluating the ODP using both a risk-averse and a risk-neutral framework, and these scenario weightings also are provided to any subsequent regulatory investment test for transmission. The 2024 Delphi Panel was established in August 2023 and consisted of 33 individuals including industry experts, government representatives, network service provider representatives, generators and retailers, researchers, academics, and consumer advocates.

The Delphi Panel represented some of the energy industry’s leaders in the design, governance, development, and use of the NEM, along with a greater representation of consumer advocates compared to the 2022 Delphi Panel. This was an outcome of co-designing the Panel’s participation with the 2024 ISP Consumer Panel, based on feedback from the previous ISP Delphi process.

What did the Panel do?

The Delphi Panel considered a critical question: *“Based on your knowledge of the future of the energy sector, what is the relative likelihood of each of AEMO’s three core scenarios for the 2024 ISP?”*

On 1 September 2023, panellists came together for a virtual, anonymous voting process to deliberate on the relative likelihood weightings for the three scenarios.

Over several rounds of voting, panellists provided their own weightings and considered alternative weightings provided by others. Panellists provided their justifications for their selection, and after each round of voting,

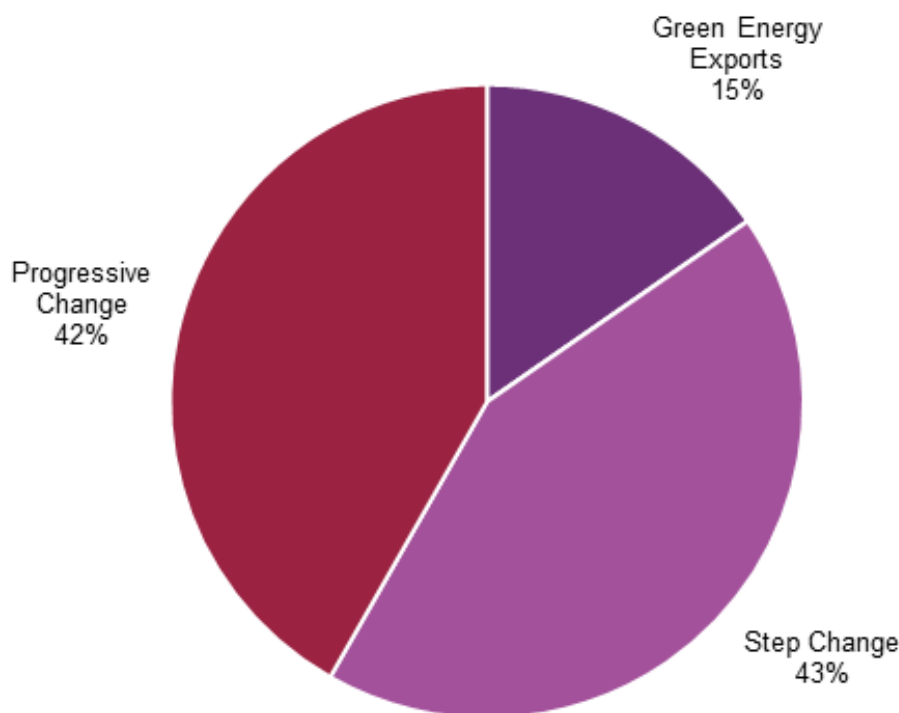


panellists had the opportunity to revise their weighting for each scenario taking into consideration the views shared by other panellists.

What was the outcome?

At the conclusion of voting, the Delphi Panel had produced the scenario likelihoods shown in Figure 5.

Figure 5 2024 ISP Delphi Panel scenario likelihood



The *Step Change* scenario received the most consistent level of support following detailed analysis of the Delphi participant feedback.

The Draft 2024 ISP explores all scenarios to determine the investment needs of the future power system. AEMO has decided that it is appropriate to use the scenario likelihoods as voted in the Delphi Panel process to inform the selection of an ODP in the Draft 2024 ISP. AEMO has determined that the central scenario for relevant 2023-24 planning activities, and the ‘most likely’ scenario for the Draft 2024 ISP,¹⁹ is the *Step Change* scenario.

¹⁹ To view the full report, see <https://aemo.com.au/-/media/files/major-publications/isp/2023/2024-isp-delphi-panel---overview.pdf>.



AER transparency review of the 2023 IASR

The NER require the AER to complete a transparency review of the 2023 IASR used in the development of the Draft 2024 ISP, that assesses the adequacy of AEMO's explanation of how the inputs, assumptions and scenarios have been derived, how key inputs and assumptions have changed since the previous ISP, and whether key inputs and assumptions can be verified or otherwise adequately tested with stakeholders²⁰. The AER published its transparency review on 28 August 2023²¹.

The AER concluded that “the majority of AEMO's inputs and assumptions have been adequately explained and AEMO has demonstrated that it has taken into account stakeholder feedback.”

However, the AER concluded that some aspects require further explanation of how the key inputs and assumptions have been derived in 14 areas:

- Public policy requirements
- Value of emissions reduction
- Social licence sensitivity analysis
- Carbon budget assumptions
- Consumption and demand forecasts
- Consumer risk preferences
- Victoria storage targets
- Impact of concessional finance
- Fuel and renewable assumptions
- Power system security
- REZs
- Unknown risk factor for estimated transmission costs
- Employment factors
- Growth in weather extremes.

The NER require that AEMO provide further explanatory information in an addendum to the IASR and undertake consultation on these issues in the Draft ISP²². Accordingly, AEMO produced the *Addendum to the 2023 Inputs Assumptions and Scenarios Report*, and published it alongside the Draft 2024 ISP for consultation.

²⁰ NER 5.22.9

²¹ At <https://www.aer.gov.au/publications/reports/performance/transparency-review-aemo-2023-inputs-assumptions-and-scenarios-report>.

²² NER 5.22.9 (c)



2024 ISP Consumer Panel's report on the 2023 IASR

The 2024 ISP Consumer Panel provided its report²³ on the 2023 IASR to AEMO on 28 September 2023, as required under the NER²⁴. The key elements of the Panel's conclusions and recommendations are summarised below.

The Panel's report made 44 recommendations across seven categories, outlined in Table 7. These include considerations for the 2024 ISP and implications for the 2026 ISP.

The Panel also acknowledged the difficulty and complexity of understanding and mitigating risks associated with the development of the ISP, noting that AEMO will need to continue to consider new ways of forecasting and engaging on the future of the power system and how the energy transition will occur.

AEMO will work with the 2024 ISP Consumer Panel on the further consideration and implementation where possible of recommendations regarding the 2026 ISP cycle.

²³ At <https://aemo.com.au/-/media/files/major-publications/isp/2023/isp-consumer-panel-report-on-2023-iasr.pdf>.

²⁴ NER 5.22.7(d)

Table 7 2024 ISP Consumer Panel IASR report recommendations

Theme	Panel feedback	Panel recommendation	AEMO response
Who pays, consumer risk, social licence	<p>Affordability and 'who pays' for the energy transition is a key theme of the report.</p> <p>The Panel has posed the question "how much will governments be willing to pay to keep consumer support (social licence) for the transition?"</p> <p>The Panel notes that delays in establishing social licence leads to additional cost pressure.</p>	<p>Consider how risks and costs borne by consumers might be better communicated in the 2024 ISP.</p> <p>Advocate for Commonwealth, State and Territory energy ministers to establish a national engagement strategy to develop a consistent approach to landowner compensation.</p>	<p>Through engagement and reform work, AEMO continues to consult with State and Jurisdictional Governments to support the consideration of key social licence issues in relevant policy and regulatory decision-making. This includes discussion on the potential impacts and opportunities brought about by the energy transition and new infrastructure development on rural and regional communities and landholders.</p>
Consumer and community engagement	<p>Compliments that over time the ISP has developed significantly in the depth and breadth of the issues covered and the level of stakeholder engagement. This contributes to "improved consumer engagement in the ISP process and a greater understanding of potential impacts on customers of potential ISP projects".</p> <p>Acknowledgement that AEMO has made an effort throughout the 2024 ISP Consumer program to engage with consumers and community, particularly with the consumer risk preferences project, but that there is more work to do in the 2026 ISP.</p>	<p>Develop the 2026 ISP Stakeholder Engagement Strategy as early as possible and co-design and consult with stakeholders on the draft strategy.</p> <p>Target engagement with those most impacted (communities hosting actionable project infrastructure).</p> <p>Develop a social research program "designed to better understand consumer and community attitudes, perceptions and uncertainties about the future energy market and the role of consumers".</p>	<p>AEMO is in the process of establishing an engagement approach to support the development of the 2026 ISP, with a view to engaging stakeholders to collaborate on the development of the engagement strategy.</p> <p>AEMO notes the recommendation to develop a social research program and will assess its benefit and practicality in consideration of other energy social research underway by Energy Consumers Australia, CSIRO and the Net Zero Economy Agency.</p>
Distributed network service provider (DNSP) engagement	<p>That the ISP is a whole of transmission plan, not a whole of system plan, and should be referred to as such until AEMO expand DNSP involvement and can consider the "considerable spare capacity in the sub-transmission system for connection of renewable generation that can be utilised while approvals are gained for ISP projects".</p>	<p>Test the outcome of modelling for the 2024 ISP with DNSPs for its practicality and alignment with DNSP observations of network utilisation and trends toward greater decentralisation.</p> <p>Noting DNSPs will be doing "a lot of the heavy lifting for the energy transition".</p> <p>AEMO work with DNSPs to co-design a specific DNSP Engagement Plan for the 2026 ISP.</p>	<p>While the ISP has a regulatory role in actioning transmission investments, AEMO considers that it also plays a significant role in informing investors, policy makers and the public on the energy transition.</p> <p>AEMO notes that the scope of the ISP is currently under review by the Commonwealth Government, and that "distribution requirements" are mentioned in the terms of reference.²⁵</p> <p>AEMO will continue to engage with DNSPs about the ISP.</p>
Scenarios and sensitivities	<p>The scenarios were already developed before the Panel were established and the Panel needs to be involved in scenario development for the 2026 ISP.</p>	<p>Establish next Panel as early as possible in 2024.</p> <p>Improve communication and engagement on the 'full list' of sensitivities and event driven scenarios earlier, and in parallel with scenario development.</p>	<p>AEMO is in the process of establishing an engagement approach to support the development of the 2026 ISP, with a view to establish the Consumer Panel earlier and engagement on scenarios earlier.</p>
GenCost Report	<p>The Panel has agreed to provide GenCost feedback to CSIRO separately. The GenCost Report is</p>	<p>Provide greater clarity on how AEMO use CSIRO's GenCost results in the 2024 ISP modelling.</p>	<p>AEMO has identified in the Draft 2024 ISP report that the optimal mix of generation, storage and</p>

²⁵ At <https://www.energy.gov.au/energy-and-climate-change-ministerial-council/energy-ministers-publications/terms-reference-review-integrated-system-plan>.

Major engagements

Theme	Panel feedback	Panel recommendation	AEMO response
	developed by CSIRO and AEMO and investigates the costs of electricity generation and storage technologies.		transmission investments considers the capital and operating costs (for generation and storage technologies) from GenCost, and does not use the more generalised levelised-cost of energy guidance. AEMO is also intending to publish a simple explanation of the various inputs and outputs of the ISP, including GenCost.
Discount rates	There is more work to do on discount rates to better consider discount rates used for network and generation/storage investments.	Engage an expert consultant to prepare a more comprehensive report with a wide sample of network and non-network equity and debt investors prior to the commencement of modelling the final 2024 ISP in early 2024.	AEMO engaged two independent expert consultants to inform the selection of discount rates for the 2024 ISP. The second consultant (Oxford Economics Australia) found anecdotal and empirical evidence to suggest that the 7% central discount rate proposed by the first (Synergies Economic Consulting) was reasonable. Survey information showed that the central discount rate is similar to those used by developers in the NEM. Further details are outlined in section 3.7.1 of the 2023 IASR. AEMO has also completed sensitivity testing to demonstrate that the optimal development path is robust to a wide range of discount rates, with 3% and 10.5% being explicitly tested. AEMO does not consider there is merit in further exploring discount rates for the final 2024 ISP, but intends to revisit assumptions for both discount rates and weighted average cost of capital in future ISPs.
Interdependencies	Strategically 'link' the ISP to the policies, programs and practices that the ODP relies on to ensure it is optimal.	Better communicate interdependencies such as policy certainty, transition strategy and energy efficiency in the 2024 ISP.	AEMO continues to provide detailed information on how public policy is treated in ISP modelling. AEMO has included a section in the <i>Draft 2024 ISP</i> to outline risks to the ODP and to the energy transition, including commentary on orchestration and market reform. AEMO considers that further work could be done in the final 2024 ISP to document the various areas where action may be needed to align policies, programs and practices with ISP projections.



Social licence sensitivity workshops

AEMO has introduced a new social licence sensitivity in the 2024 ISP, which quantifies some of the risks associated with adverse social licence outcomes for candidate development paths. AEMO is incorporating and considering social licence more explicitly as a key issue facing the energy transition in development of the 2024 ISP. As part of this, AEMO ran two consultation workshops with social licence experts (including both 2024 ISP Consumer Panel and Advisory Council on Social Licence members).

AEMO explored a number of modelling input parameters in the ISP that can be varied to reflect poor social licence outcomes (for example, cost and delays for transmission and generation investment) in consultation with the Consumer Panel and Advisory Council on Social Licence members. The social licence sensitivity provides an initial view of an incredibly complex and evolving topic.

Based on the feedback from these targeted workshops, AEMO has refined the social licence sensitivity parameters to better quantify the additional costs and benefits of social licence outcomes to end consumers.

For further information on the principles, parameters and application of the social licence sensitivity, see Appendix 6. Cost Benefit Analysis, page 80 and Appendix 8. Social licence, page 9.

A1.5 ISP Methodology

The NER require AEMO to develop the *ISP Methodology*, which sets out how AEMO will undertake modelling and cost benefit analysis for the Draft 2024 ISP²⁶.

An update to the *ISP Methodology* was released on 30 June 2023. This update followed consideration of 25 written and verbal stakeholder submissions to the *ISP Methodology* consultation.

AEMO identified 135 individual points and recommendations within the submissions provided. The main enquiries included in the submissions covered a potential inclusion of a value of carbon emissions, dispatch behaviour of storage devices, how consumer risk preference metrics are developed and applied and accounting for transmission project lead time uncertainty.

A summary of the key themes and the volume of submissions that addressed each is summarised in Figure 6.

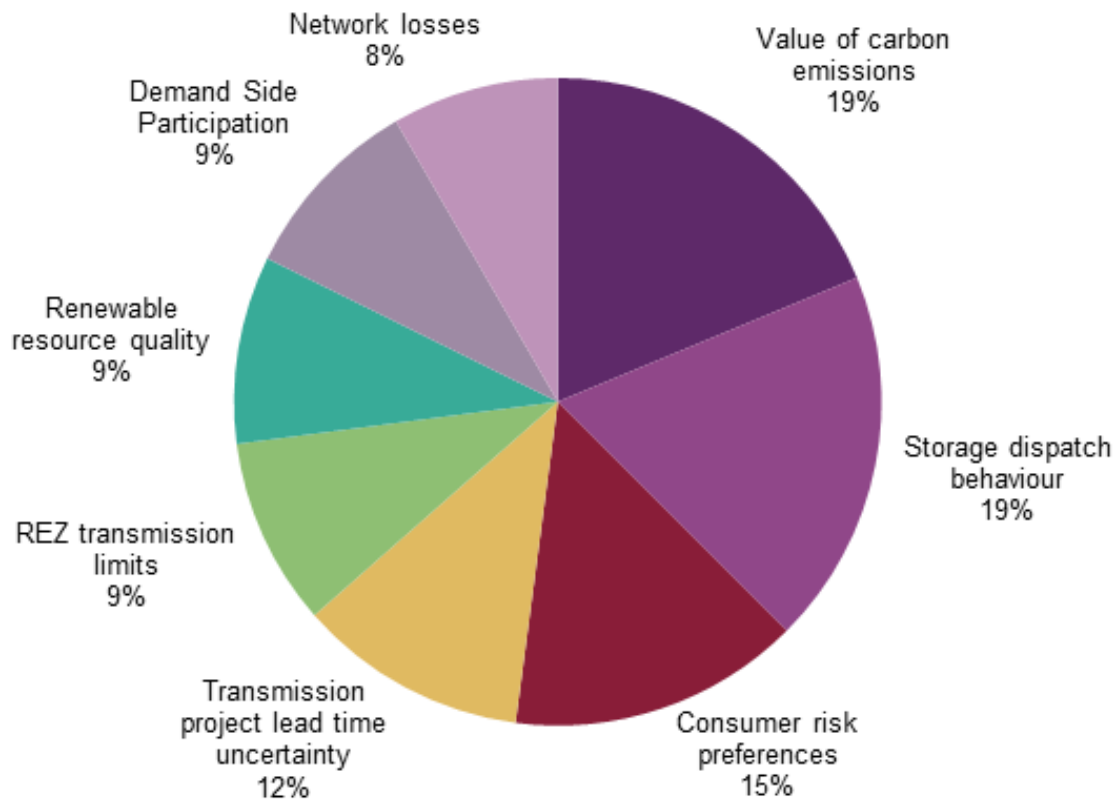
For a copy of stakeholder feedback and detailed responses, please see the *Update to the ISP Methodology Consultation Summary Report*²⁷.

²⁶ NER 5.22.8(d)

²⁷ At https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2023/isp-methodology-2023/consultation-summary-report---update-to-the-isp-methodology.pdf.



Figure 6 2024 ISP Methodology key topics from 25 consultation submissions



A1.5.1 2023 Transmission Expansion Options Report

The 2023 *Transmission Expansion Options Report* packages up transmission network expansion options to inform the development of the 2024 ISP. It includes AEMO’s approach to forecasting transmission costs and provides transmission options to be evaluated in the ISP alongside generation and storage options.

The final 2023 *Transmission Expansion Options Report*²⁸, published on 28 July 2023, was prepared following consideration of stakeholder submissions received in response to the draft report published in May 2023 and is the result of extensive joint planning with TNSPs and jurisdictional bodies.

Stakeholder engagement included 23 written and verbal submissions. The material recommendations and AEMO’s responses and amendments made in response to stakeholder feedback are outlined in the 2023 *Transmission Expansion Options Consultation Summary Report*²⁹.

Most of the submissions were enquiries on particular flow paths, REZ augmentations, social licence matters, transmission project cost estimates and forecasting approaches, operating expenditure estimates and non-network options.

The expansion options in the report fed into the Draft 2024 ISP.

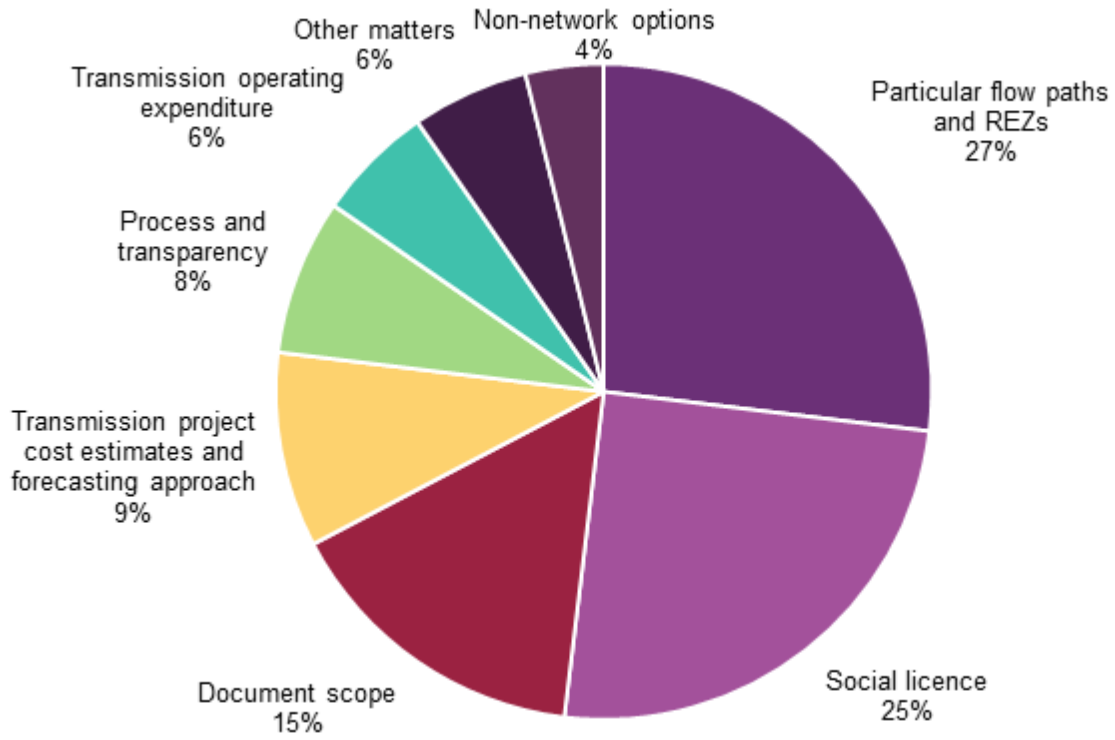
²⁸ At <https://aemo.com.au/-/media/files/major-publications/isp/2023/2023-transmission-expansion-options-report.pdf>.

²⁹ At <https://aemo.com.au/-/media/files/major-publications/isp/2023/consultation-summary-report---2023-transmission-expansion-options-report.pdf>.



A summary of the key themes and the volume of submissions that address each is summarised in Figure 7.

Figure 7 2023 Transmission Expansion Options Report key topics from 23 consultation submissions





A1.6 Draft 2024 ISP Consultation

A1.6.1 Engagement process

The following engagement opportunities are available as AEMO consults on the Draft 2024 ISP and develops the final 2024 ISP³⁰.

- A Draft 2024 ISP post publication webinar on 20 December 2023. A copy of the video recording will be on the AEMO website; search '2024 ISP Stakeholder Engagement'.
- A Draft 2024 ISP Consumer Advocate pre-submission webinar on 30 January 2024, to ask AEMO questions before consultation submissions are due.
- A Consumer Advocate verbal comment session on 15 February 2024.
- Written submissions in response to the Draft 2024 ISP, sent to ISP@AEMO.com.au by 6pm (AEST) 16 February 2024.
- A submission reflection webinar on 2 April 2024 (date subject to change).

Find the 2024 ISP stakeholder engagement strategy and past engagements including webinar recordings on the 2024 ISP Stakeholder Engagement webpage³¹.

Figure 8 outlines the consultation engagement process and status of engagement activities to date.

If you have any questions for the AEMO ISP team, please email ISP@aemo.com.au. Join the ISP mailing list to stay informed on current ISP engagement opportunities³².

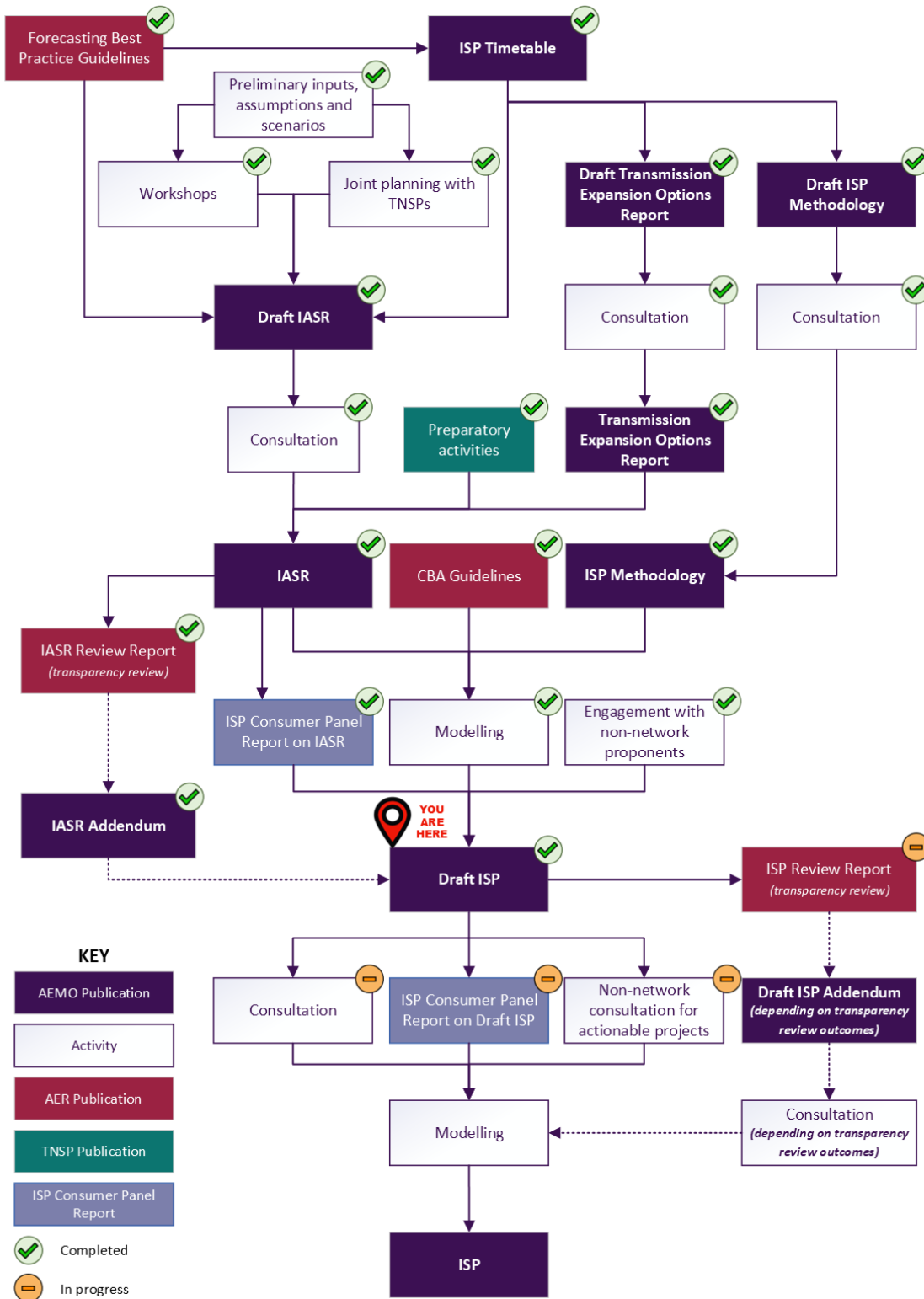
³⁰ Further information, including links, can be found at <https://aemo.com.au/energy-systems/major-publications/integrated-system-plan-isp/2024-integrated-system-plan-isp/opportunities-for-engagement>.

³¹ At <https://aemo.com.au/energy-systems/major-publications/integrated-system-plan-isp/2024-integrated-system-plan-isp/opportunities-for-engagement>.

³² Join the ISP mailing list at <https://aemo.us10.list-manage.com/subscribe?u=eae433173c2b1acb87c5b07d1&id=37df37c168>.



Figure 8 2024 ISP development process and status of report and engagement activity





Consultation questions

All stakeholders are invited to provide a written submission on any aspect of the Draft ISP, including development path outcomes. Submissions should be sent to ISP@aemo.com.au by 6pm (AEST) on Friday, 16 February 2024. AEMO considers all submission feedback and the questions below are simply a guide.

- Does the proposed optimal development path help to deliver reliable, secure and affordable electricity through the NEM, and reduce Australia's greenhouse gas emissions? If yes, what gives you that confidence? If not, what should be considered further, and why?
- Does the proposed timing and treatment of actionable projects support a reliable, secure and affordable NEM? If yes, what gives you that confidence? If not, what should be considered further, and why?
- Does the Draft 2024 ISP accurately reflect consumers' risk preferences? If yes, how so? If not, how else could consumers' risk preferences be included and what risks do you think are important to consider?
- Do you have advice about how social licence can be further considered in the ISP, or advice on how to quantify the potential impact of social licence through social licence sensitivity analysis?
- Do you have any feedback on the *Addendum to the 2023 Inputs Assumptions and Scenarios Report*?

A1.6.2 Continuous improvement

AEMO regularly evaluates how stakeholders are engaged to ensure this is continually improved and is as effective and collaborative as possible.

AEMO will publish a Draft 2026 ISP Engagement Plan prior to the release of the final 2024 ISP, for stakeholder comment. The development of the draft engagement plan will be informed by stakeholder feedback on the 2024 ISP cycle, including through both written submissions and specific stakeholder surveys.

Once again, AEMO thanks all stakeholders for their huge contributions to the Draft 2024 ISP and previous engagement activities that have supported the 2024 ISP. AEMO looks forward to continuing to work with all stakeholders as the final 2024 ISP is developed.

Glossary

This glossary has been prepared as a quick guide to help readers understand some of the terms used in the ISP. Words and phrases defined in the National Electricity Rules (NER) have the meaning given to them in the NER. This glossary is not a substitute for consulting the NER, the Australian Energy Regulator's (AER's) Cost Benefit Analysis Guidelines, or AEMO's *ISP Methodology*.

Term	Acronym	Explanation
Actionable ISP project	-	<p>Actionable ISP projects optimise benefits for consumers if progressed before the next ISP. A transmission project (or non-network option) identified as part of the ODP and having a delivery date within an actionable window.</p> <p>For newly actionable ISP projects, the actionable window is two years, meaning it is within the window if the project is needed within two years of its earliest in-service date. The window is longer for projects that have previously been actionable.</p> <p>Project proponents are required to begin newly actionable ISP projects with the release of a final ISP, including commencing a RIT-T.</p>
Actionable New South Wales project and actionable Queensland project	-	A transmission project (or non-network option) that optimises benefits for consumers if progressed before the next ISP, is identified as part of the ODP, and is supported by or committed to in New South Wales Government or Queensland Government policy and/or prospective or current legislation.
Anticipated project	-	A generation, storage or transmission project that is in the process of meeting at least three of the five commitment criteria (planning, construction, land, contracts, finance), in accordance with the AER's Cost Benefit Analysis Guidelines. Anticipated projects are included in all ISP scenarios.
Candidate development path	CDP	<p>A collection of development paths which share a set of potential actionable projects. Within the collection, potential future ISP projects are allowed to vary across scenarios between the development paths.</p> <p>Candidate development paths have been shortlisted for selection as the ODP and are evaluated in detail to determine the ODP, in accordance with the ISP Methodology.</p>
Capacity	-	The maximum rating of a generating or storage unit (or set of generating units), or transmission line, typically expressed in megawatts (MW). For example, a solar farm may have a nominal capacity of 400 MW.
Committed project	-	A generation, storage or transmission project that has fully met all five commitment criteria (planning, construction, land, contracts, finance), in accordance with the AER's Cost Benefit Analysis Guidelines. Committed projects are included in all ISP scenarios.
Consumer energy resources	CER	Generation or storage assets owned by consumers and installed behind-the-meter. These can include rooftop solar, batteries and electric vehicles. CER may include demand flexibility.
Consumption	-	The electrical energy used over a period of time (for example a day or year). This quantity is typically expressed in megawatt-hours (MWh) or its multiples. Various definitions for consumption apply, depending on where it is measured. For example, underlying consumption means consumption being supplied by both CER and the electricity grid.
Cost-benefit analysis	CBA	A comparison of the quantified costs and benefits of a particular project (or suite of projects) in monetary terms. For the ISP, a cost-benefit analysis is conducted in accordance with the AER's Cost Benefit Analysis Guidelines.
Counterfactual development path	-	The counterfactual development path represents a future without major transmission augmentation. AEMO compares candidate development paths against the counterfactual to calculate the economic benefits of transmission.



Term	Acronym	Explanation
Demand	-	The amount of electrical power consumed at a point in time. This quantity is typically expressed in megawatts (MW) or its multiples. Various definitions for demand, depending on where it is measured. For example, underlying demand means demand supplied by both CER and the electricity grid.
Demand-side participation	DSP	The capability of consumers to reduce their demand during periods of high wholesale electricity prices or when reliability issues emerge. This can occur through voluntarily reducing demand, or generating electricity.
Development path	DP	A set of projects (actionable projects, future projects and ISP development opportunities) in an ISP that together address power system needs.
Dispatchable capacity	-	The total amount of generation that can be turned on or off, without being dependent on the weather. Dispatchable capacity is required to provide firming during periods of low variable renewable energy output in the NEM.
Distributed solar / distributed PV	-	Solar photovoltaic (PV) generation assets that are not centrally controlled by AEMO dispatch. Examples include residential and business rooftop PV as well as larger commercial or industrial “non-scheduled” PV systems.
Firming	-	Grid-connected assets that can provide dispatchable capacity when variable renewable energy generation is limited by weather, for example storage (pumped-hydro and batteries) and gas-powered generation.
Future ISP project	-	A transmission project (or non-network option) that addresses an identified need in the ISP, that is part of the ODP, and is forecast to be actionable in the future.
Identified need	-	The objective a TNSP seeks to achieve by investing in the network in accordance with the NER or an ISP. In the context of the ISP, the identified need is the reason an investment in the network is required, and may be met by either a network or a non-network option.
ISP development opportunity	-	A development identified in the ISP that does not relate to a transmission project (or non-network option) and may include generation, storage, demand-side participation, or other developments such as distribution network projects.
Net market benefits	-	The present value of total market benefits associated with a project (or a group of projects), less its total cost, calculated in accordance with the AER’s Cost Benefit Analysis Guidelines.
Non-network option	-	A means by which an identified need can be fully or partly addressed, that is not a network option. A network option means a solution such as transmission lines or substations which are undertaken by a Network Service Provider using regulated expenditure.
Optimal development path	ODP	The development path identified in the ISP as optimal and robust to future states of the world. The ODP contains actionable projects, future ISP projects and ISP development opportunities, and optimises costs and benefits of various options across a range of future ISP scenarios.
Regulatory Investment Test for Transmission	RIT-T	The RIT-T is a cost benefit analysis test that TNSPs must apply to prescribed regulated investments in their network. The purpose of the RIT-T is to identify the credible network or non-network options to address the identified network need that maximise net market benefits to the NEM. RIT-Ts are required for some but not all transmission investments.
Reliable (power system)	-	The ability of the power system to supply adequate power to satisfy consumer demand, allowing for credible generation and transmission network contingencies.
Renewable energy	-	For the purposes of the ISP, the following technologies are referred to under the grouping of renewable energy: “solar, wind, biomass, hydro, and hydrogen turbines”. Variable renewable energy is a subset of this group, explained below.



Term	Acronym	Explanation
Renewable energy zone	REZ	An area identified in the ISP as high-quality resource areas where clusters of large-scale renewable energy projects can be developed using economies of scale.
Renewable drought	-	A prolonged period of very low levels of variable renewable output, typically associated with dark and still conditions that limit production from both solar and wind generators.
Scenario	-	A possible future of how the NEM may develop to meet a set of conditions that influence consumer demand, economic activity, decarbonisation, and other parameters. For the 2024 ISP, AEMO has considered three scenarios: <i>Progressive Change</i> , <i>Step Change</i> and <i>Green Energy Exports</i> .
Secure (power system)	-	The system is secure if it is operating within defined technical limits and is able to be returned to within those limits after a major power system element is disconnected (such as a generator or a major transmission network element).
Sensitivity analysis	-	Analysis undertaken to determine how modelling outcomes change if an input assumption (or a collection of related input assumptions) is changed.
Spilled energy	-	Energy from variable renewable energy resources that could be generated but is unable to be delivered. Transmission curtailment results in spilled energy when generation is constrained due to operational limits, and economic spill occurs when generation reduces output due to market price.
Transmission network service provider	TNSP	A business responsible for owning, controlling or operating a transmission network.
Utility-scale or utility	-	For the purposes of the ISP, 'utility-scale' and 'utility' refers to technologies connected to the high-voltage power system rather than behind the meter at a business or residence.
Virtual power plant	VPP	An aggregation of resources coordinated to deliver services for power system operations and electricity markets. For the ISP, VPPs enable coordinated control of CER, including batteries and electric vehicles.
Variable renewable energy	VRE	Renewable resources whose generation output can vary greatly in short time periods due to changing weather conditions, such as solar and wind.