Please note that this webinar will be recorded and published online

AEMO
AUSTRALIAN ENERGY MARKET OPERATOR

Integrated System Plan (ISP) Methodology

Publication webinar

13 July 2023

We acknowledge the Traditional Owners of country throughout Australia and recognise their continuing connection to land, waters and culture.

We pay respect to their Elders past and present.

Today's agenda

1. Welcome and objectives (8 min)
2. Stakeholder feedback and updates to the ISP Methodology (40 min)
3. Questions and comments (40 min)
4. Next Steps (2 min)

How to interact today

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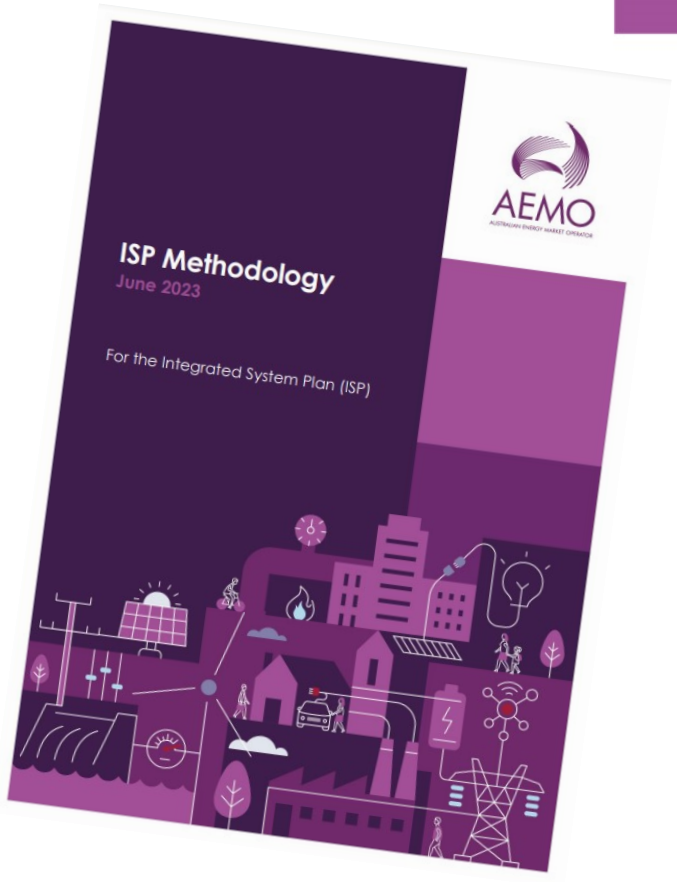
- Please ask questions or make comments using Slido.
- Questions can be up-voted. AEMO will not provide responses to unanswered questions.
- When we come to your question, we will unmute you to allow you to engage with the response.
- Written replies may be provided through Slido if appropriate.
- We will also place a direct Slido link in the Teams chat.

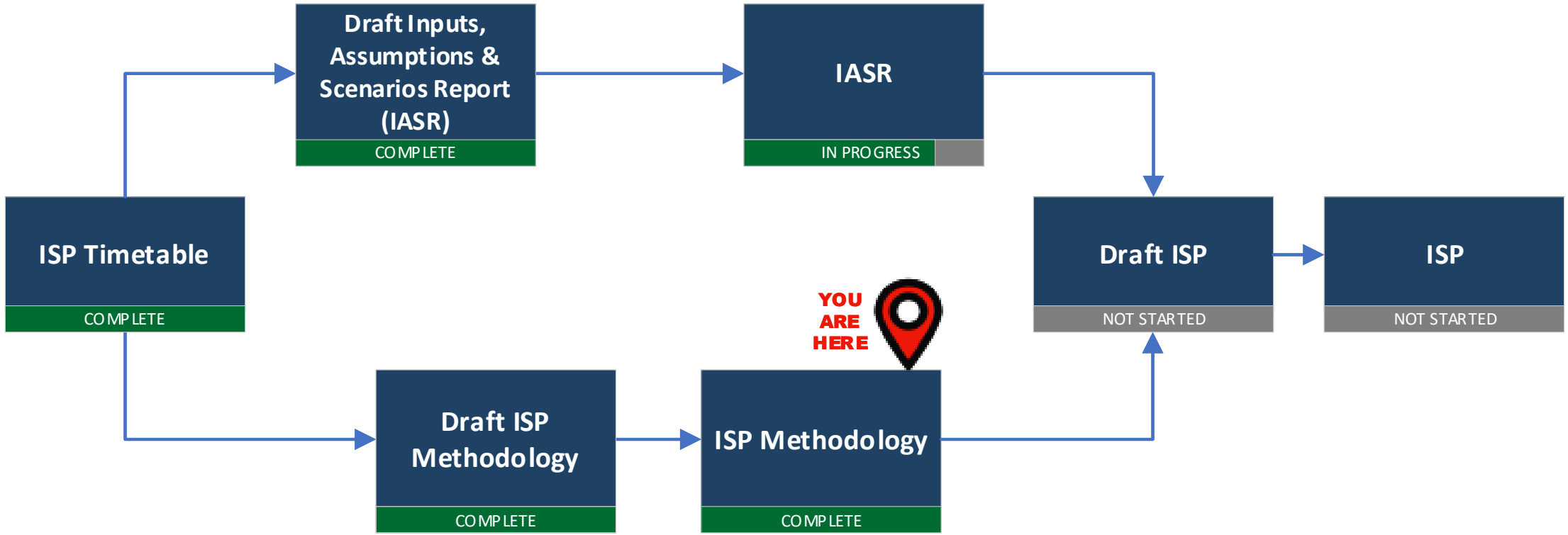
Today's objectives

Present a high-level summary of the final ISP Methodology and ***inform*** how feedback has been addressed.

After the presentation about the ISP Methodology, there will be an opportunity to ask AEMO any questions.



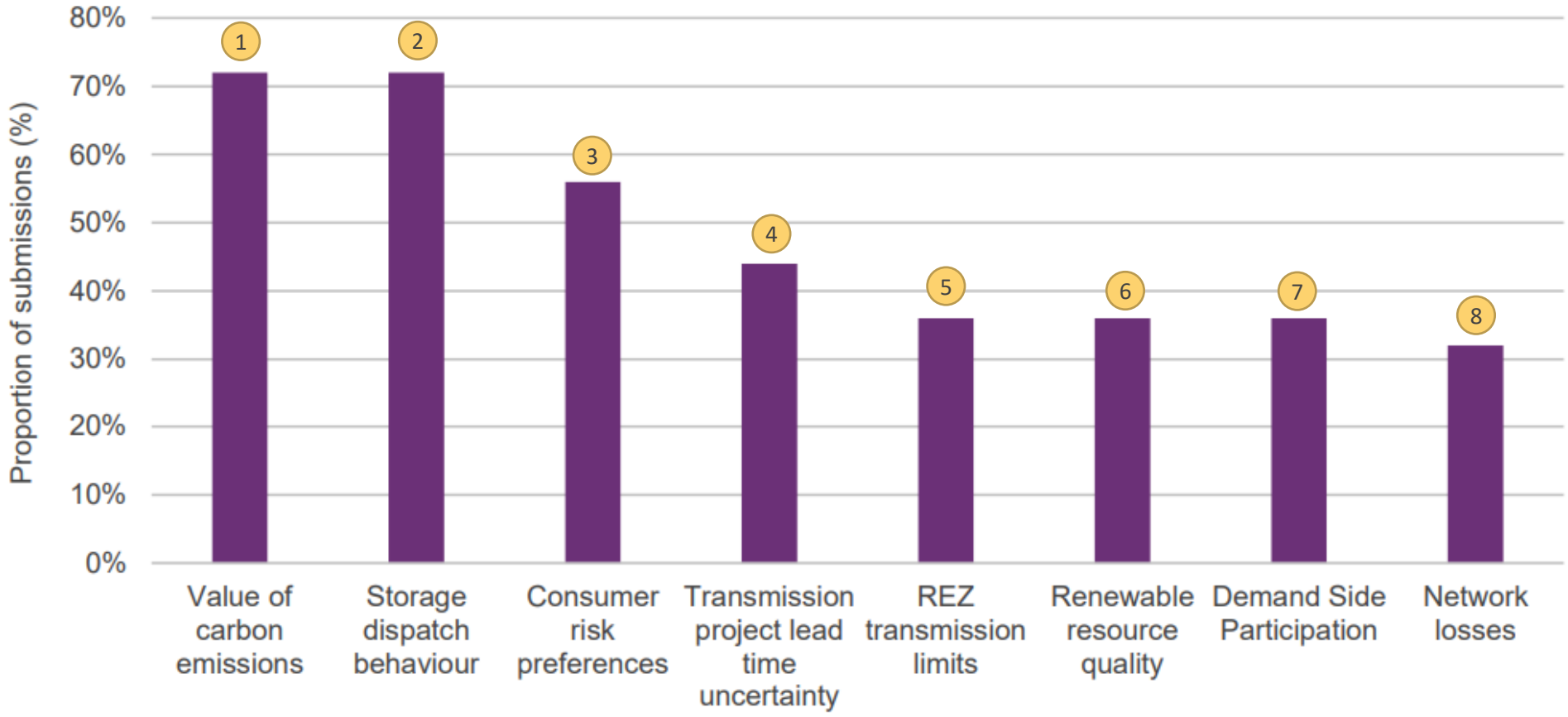
2024 ISP Timeline



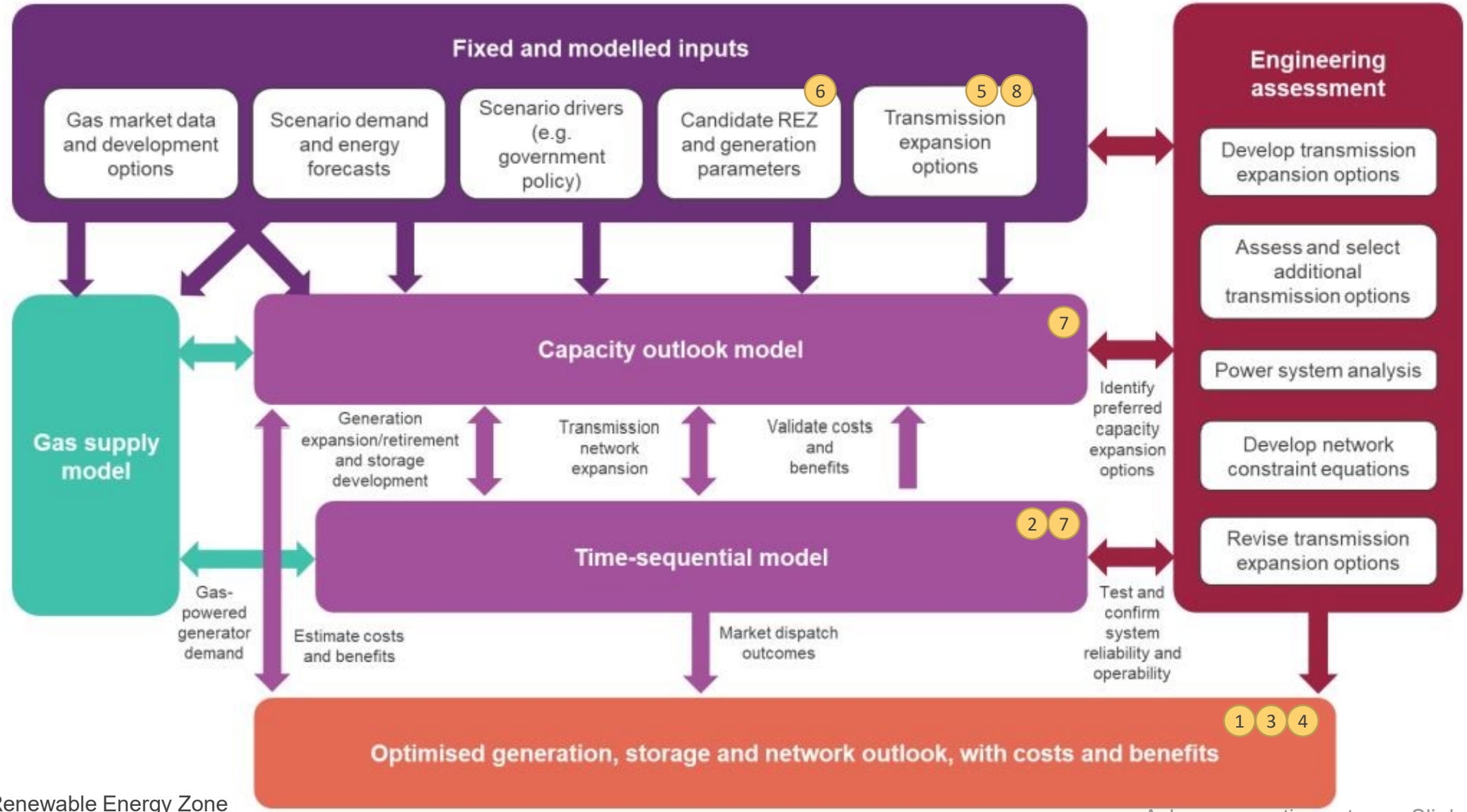
Stakeholder submissions

Community & consumer advocates	FIRST NATIONS CLEAN ENERGY NETWORK, PIAC, RE-ALLIANCE, **ISP Consumer Panel**
Environmental/climate groups	environment victoria, AUSTRALIAN CONSERVATION FOUNDATION, GREENPEACE, beyond ZERO emissions, CLIMATE ACTION NETWORK AUSTRALIA, Queensland Conservation Council, CLIMATE COUNCIL, Institute for Energy Economics and Financial Analysis ieefa.org
Networks	Energy Networks Australia, Transgrid, Powerlink QUEENSLAND, AusNet
Generation owners, developers & retailers	FORTESCUE FUTURE INDUSTRIES, Clean Energy Investor Group, windlab, Flow power, origin, Shell ENERGY, Hydro Tasmania
Peak body/consultants	CLEAN ENERGY COUNCIL, nexa ADVISORY

AEMO received feedback on eight key areas



Overview of the ISP modelling methodology



*REZ = Renewable Energy Zone

1. Including a value of carbon emissions

Draft proposal

Once the National Electricity Objective (NEO) is amended, an additional class of benefit may be required to incorporate the impact of the change into the ISP cost-benefit analysis.
Therefore, AEMO proposed to amend the ISP Methodology to include the possibility of the use of a value of carbon emissions in the ISP analysis, subject to supporting regulatory changes.

Stakeholder feedback

AEMO should provide sufficient information on how the value of carbon emissions would be derived.

Stakeholders strongly supported the proposal to include an additional class of market benefit to incorporate the value of emissions reductions, once there is clear direction provided by the AER.

Decision (Added clarifications)

AEMO has adopted its original proposal to reflect the anticipated emissions reduction objective in the NEO by applying a value of carbon emissions or value of emissions reduction in the ISP.

The application of this method in the 2024 ISP is subject to a value being developed by an authoritative body, as clarified in the consultation summary report for the final methodology.

2. Dispatch behaviour of storage devices

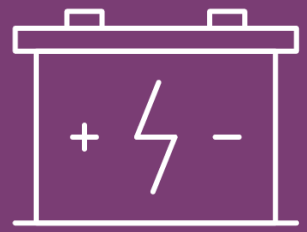
Draft proposal

AEMO proposed to apply limits to the capacity of storage devices in the ISP models:

- 50% capacity reduction for devices with less than two hours of storage
- 25% capacity reduction for devices with 2-4 hours storage
- 10% capacity reduction for devices with 4-8 hours of storage.

Stakeholder feedback

Stakeholders generally accepted the proposal as an approach to reflect imperfect foresight, however, recommending that the approach be committed for the 2024 ISP only.



Some stakeholders did not support the update as storage technology may improve and historical storage behaviour may not reflect future behaviour.

Decision (Changed approach)

AEMO decided not to implement the proposed changes to storage duration for the 2024 ISP as more investigation and analysis to identify the ideal implementation is required. Imperfect foresight considerations for storages will be revealed in operability modelling to assess power system reliability and operability under a range of conditions.

AEMO will progress work to better understand the operation of existing battery storages and investigate potential future modelling improvements.

3. Consumer Risk Preferences

Draft proposal

AEMO to engage a consultant to explore the potential use of consumer risk preference metrics.

AEMO proposed to amend the ISP Methodology to explain how these metrics may be used.

Stakeholder feedback

Stakeholders supported the proposal to use evidence-based consumer risk preference metrics as part of applying professional judgement to finalise the selection of the Optimal Development Path.

AEMO must consider consumer risk preferences, not only risk neutrality and risk aversion.

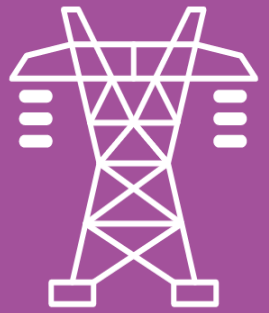
Decision (Added clarifications)

AEMO has decided to implement this update.

The project is exploring consumers' risk appetite for either price increases or price decreases under various scenarios.

4. Transmission project lead time uncertainty

Draft proposal



AEMO proposed to amend the ISP Methodology so that AEMO can revise project lead times to reflect the greater uncertainty observed in the delivery of these major infrastructure projects.

Stakeholder feedback

AEMO should include projects that have completed their regulatory investment test for transmission (RIT-T) among the projects that it considers revising earliest in-service dates.

Support for an 'actionable' window to allow some projects to be identified as actionable sooner.

Decision (Changed approach)

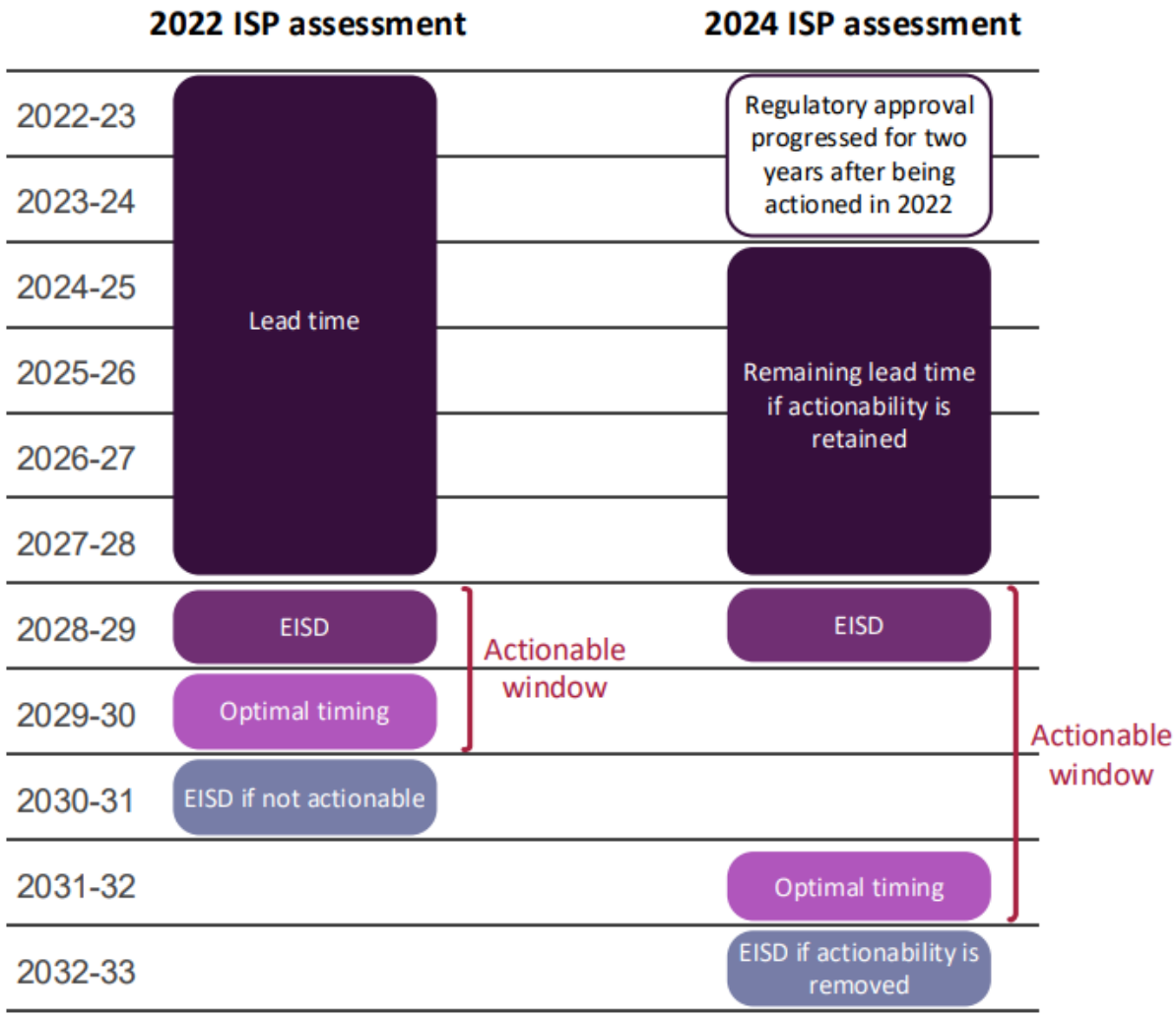
Based on feedback, we have revised our position on the 'actionable' window concept. We now consider that an actionable window should be introduced to reflect the progress that has been made on actionable projects and the impact on timelines if a project loses actionability.

Based on stakeholder feedback, AEMO will adopt actionable windows

An **actionable window** is used to determine which projects are actionable. If a project is optimally required during the actionable window, then it is actioned in the ISP.

- There is no change for projects that weren't actionable in the previous ISP – if the project's optimal timing is two or more years after its earliest delivery date, then it is not actioned.
- For a project that is already actionable, the actionable windows is two years (to account for the time between ISPs) plus two years for each ISP that previously maintained its actionable status (to reflect a need to repeat work if actionability were removed and subsequently reinstated).

(EISD = earliest in-service date.)



5. Impact of fossil-fuelled generation on REZ transmission limits

Draft proposal	Stakeholder feedback	Decision (Added clarifications)
To eliminate the need for manual modelling corrections through use of offsets, and given the expected increase in future retirements of fossil-fuelled generators, AEMO proposes to allow fossil-fuelled generators to be included as specific terms in the transmission limits for Renewable Energy Zones.	The update may reserve transmission network capacity for fossil-fuelled generation, and suggested ISP modelling of losses could be improved. ISP modelling would be improved by using a "more granular, but not necessarily a fully nodal transmission network model."	This change will not reserve network capacity for fossil-fuelled generation. AEMO has adopted the original update to accommodate access to transmission network in the market model for all generation. The model's complexity prevents further granularity.

6. Assumed renewable energy resource quality

Draft proposal	Stakeholder feedback	Decision (No change)
- Update wind profile assumptions using the most recent historical performance data. - Incorporate more granular information about site development suitability within REZs, Including environmental, ecological and cultural heritage criteria and land use categories.	Stakeholders supported the proposed updates. AEMO should improve its consideration of cultural heritage, particularly with reference to Indigenous sites, in its screening of land use data and selection of areas that are suitable for development.	AEMO adopted its proposed updates to exclude areas for the development of wind generation. The multi-criteria analysis includes planning data for biodiversity and cultural heritage, however due to confidentiality and the conceptual nature of the modelling this data will not be published.

7. Demand-side participation (DSP) duration

Draft proposal	Stakeholder feedback	Decision (No change)
AEMO proposed to apply energy limits on the reliability-response band of the demand side participation in the ISP modelling process. AEMO asked for stakeholder feedback on a proposed limit that assumes a maximum of two hours of operation of demand side participation, based on historical data.	 Stakeholders generally supported limiting Demand Side Participation duration. Some submissions highlighted the need for more data on appropriate duration length.	AEMO will implement the changes to DSP duration. It will be limited to a maximum of two hours of continuous operation per day in the reliability response band. AEMO may revisit this assumption when more data is available.

8. Network losses for REZs and sub-regions

Draft proposal	Stakeholder feedback	Decision (No change)
For the creation of Renewable Energy Zones, particularly where they are far from the regional reference node, AEMO is proposed to be able to create new loss equations. This will make sure that electricity losses across the system are appropriately included in the ISP model.	 Stakeholders supported the proposal for improvement to calculation of network losses. All submissions on this topic supported improvement to catering for losses.	AEMO amended the ISP Methodology to use the loss equations to better represent power transfers between specific REZs and sub-regions. This allows for consistency with the existing pricing methodology and merit order dispatch process for the NEM.

Additional topics were raised beyond the consultation scope

Social licence

1.5 degree scenarios

Full methodology consultation

Cost benefit analysis components

Transmission network congestion

Questions and comments

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Sign in with your name

Next steps

- Please provide feedback on today's webinar.
- Inputs Assumptions and Scenarios and Transmission Expansion Options Reports published 28 July.
  - Register here to attend the Transmission Expansion Options Report publication webinar on 10 Aug 2023
- Draft 2024 ISP publication expected on 15 December for public consultation.

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