

# 2024 ISP Consumer Panel

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Methodology March 2023

**From:** ISP 2024 Consumer Panel

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## Section 1: Context

AEMO describes the Integrated System Plan (ISP) as a whole-of-system plan for the development of the National Electricity Market (NEM) for the next 20 years and beyond. It is focused on the long-term interests of electricity consumers to ensure the efficient development of the power system for all users and the delivery of reliable, affordable energy for everyone.

Under the National Electricity Rules (NER), the ISP is to be published every two years with the next due to be published in July 2024. Under those rules an ISP Methodology is to be published at least every four years. Given the 2022 ISP has a comprehensive review of the Methodology, the review for the 2024 ISP is a more focussed one stage review update proposing changes in eight aspects of the methodology.

### The ISP Consumer Panel

The ISP Consumer Panel is an advisory body set up under changes to the National Electricity Rules (NER) put in place since the 2020 ISP. The role of the ISP Consumer Panel is to bring a consumer-focused perspective to the ISP development process, in particular having regard to the long-term interests of consumers.

AEMO appointed the 2024 ISP Consumer Panel (the Panel) in September 2022:

The inaugural ISP Consumer Panel, the 2022 Panel, described their approach to the long term interests of consumers:

“...to ensure the ISP adequately accounts for the risks of over- or under-investment when the future, inevitably, doesn’t turn out the way it was modelled today. If there is over-investment, consumers will pay more than they need to for electricity, and we know the affordability of electricity is already a major issue for many consumers. If there is under-investment, there will be an increased risk of power outages due to reduced reliability or security of supply, or failure to meet emissions reductions targets due to an inability to connect new renewable generation.”<sup>1</sup>

The 2024 Panel endorses this approach.

### Panel 2022 methodology considerations<sup>2</sup>

In commenting on the Modelling Methodology, the 2022 Panel discussed:

- Gas Price Assumptions: A call for much greater transparency in developing forecasts and a lack of currency regarding Federal Government gas policy.
- Gas Model: a lack of cost related information.
- Hydrogen Modelling: The 2022 Panel “concluded that there is insufficient evidence to support the assumption in the Export Superpower scenario that there will be a strong emerging hydrogen export economy assumed to start from 2030 built on a strong domestic sector. There is a long way from proving a 10% blend can work to achieving large scale replacement of natural gas with hydrogen for the domestic economy. They acknowledged that it was early for hydrogen modelling and consequently there would be many simplifications. A range of issues were identified for further consideration.

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<sup>1</sup> 2022 Panel (2021b)

<sup>2</sup>[https://aemo.com.au/-/media/files/stakeholder\\_consultation/consultations/nem-consultations/2021/isp-methodology/submissions/isp-consumer-panel.pdf?la=en](https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2021/isp-methodology/submissions/isp-consumer-panel.pdf?la=en)

- Engineering Framework: Methodology overlap with the AEMO Engineering Framework Program was noted, with proposals to sequence infrastructure delivery in order to lower aggregate construction costs and opportunities to optimise transmission and distribution investment was identified.

### Cost Benefit Methodology

- Optimal development path: More discussion about the approach to developing scenarios weights was highlighted along with the importance of selecting the weighting process.
- The Panel asked for other alternatives for the CBA approach to be explored, including the UK National Grid approach and / or the development of additional qualitative tools to assess the key risks associated with each of the development paths considered.
- The Take One Out at a Time (TOOT) process was supported in principle with limitations being identified and requests made for further details on aspects of this approach.

The 2024 Panel notes 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 delays.

Developments to improve consumer perspective, specifically regarding Consumer Risk Preferences and Social license considerations are also acknowledged and welcomed.

## Section 2: The 2023 Draft Methodology Topics and Questions

The consultation paper regarding methodology for the 2024 ISP considers proposed updates to the methodology, which is reviewed thoroughly every 4 years, with the next full revision to occur for the 2026 ISP. The Consultation Paper asks questions regarding 8 proposed methodology updates. Our responses are provided in the order presented in the consultation paper.

### 2.1 Transmission project lead time uncertainty

In explaining the rationale for ‘factoring in’ project lead time uncertainty; AEMO states the following on page 10 of the draft methodology paper:

*“Shorter or longer transmission project lead times can influence which transmission projects are selected as actionable projects in the ODP, or as future projects, as well as the capacities and locations of other development opportunities (generation and storage projects) included in the ODP.”*

The Panel strongly agrees: project costing predicated on optimism rather than reality creates costs for consumers and can risk the construction of high cost projects that are not viable where construction timelines escalate significantly.

The revised methodology needs to take into account the major factors impacting on project lead times. This view has been expressed by the 2024 Panel in our submission in response to the Draft IASR.

AEMO has identified two options for bringing lead time uncertainty into the methodology:

1. **“Introduce an ‘actionable window’.** This would extend the window of time beyond the EISD under which a project could be considered beneficial. This change would be included by substituting references to ‘EISD + 1 year’ with ‘EISD + actionable window’ and the inclusion of a definition of an ‘actionable window’.
2. **Revise the EISDs to reflect observed project delay factors.** AEMO currently seeks input from transmission project proponents on project lead times for inclusion in the ISP modelling process. Under this option, AEMO would review and possibly extend the proposed project lead times from project proponents to acknowledge and incorporate the greater uncertainty observed in delivery of these major infrastructure projects.”

They then ask three questions, to which we provide brief responses

1. *“Is the revision of project lead times to reflect recent project delays an appropriate method to incorporate lead time uncertainty in the ISP? If not, what is an appropriate alternative?”*

The Panel strongly supports the revision of project lead times to reflect likely project delays in the methodology for the 2024 ISP. We are seeing a range of issues that have and may in the future contribute to the delay in particular ISP projects eg Western Renewables Link and VNI West. We await the PACR cost estimate for VNI West, which is still likely to be only an AACE Class 4 (ie costs can increase up to 50%)<sup>3</sup>.

The completion dates and capex cost provided by Snowy Hydro or the Federal Government for Snowy 2.0 show this uncertainty. When originally announced in March 2017 it was to be completed

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<sup>3</sup> [https://web.aacei.org/docs/default-source/toc/toc\\_96r-18.pdf](https://web.aacei.org/docs/default-source/toc/toc_96r-18.pdf)

by 2021 at an estimated cost of \$2b<sup>4</sup>. At the end of the feasibility study in December 2017 (which said the project was technically and financially ‘feasible’), the Prime Minister said operations would start ‘from 2024’<sup>5</sup> and the cost was estimated at “...between \$A3.8 billion and \$A4.5 billion in real terms”<sup>6</sup>. The February 2023 edition of AEMO’s Generation Information Page has Snowy 2.0 being partly available from the end of 2026 and fully commissioned by December 2027<sup>7</sup>. There would be few in the market who believe that timetable. The most recent cost estimate earlier this year was \$5.9b<sup>8</sup>.

Our preference is the second of the two options identified by AEMO, based on observed project delays. We consider that using the best available actual data provides a better outcome for consumers that using more generically applied ‘actionable windows.’

It is not clear in the description of option 2 on p.12 whether it applies to ODP projects in the 2022 ISP ie projects that have already completed their RiT-T. We think it should. An ISP driven by the NEO should seek to transparently inform consumers of changes in the ODP over time. For example, if the current timetable for a 2022 ISP ODP project is now x years later than assumed in the 2022 ISP, would the input assumption based on that revised timetable still result in that project being part of the 2024 ISP ODP? If it would not be part of the 2024 ISP ODP, what are the costs of continuing to proceed with that project in the revised timetable?

2. *What evidence can AEMO and project proponents collect to appropriately adjust project lead times?*

We suggest that evidence based measures can be found by a range of means, including”

- i. Surveying TNSPs and relevant sub-contractors about their experience of project delays and cost impacts
- ii. Averaging time delays of publicly announced ISP projects
- iii. Seeking advice from other groups with experience, eg Infrastructure Australia, The Institution of Structural Engineers or similar

3. *What risks should AEMO consider when assessing transmission project lead times for the ISP?”*

The recent Infrastructure Australia “Infrastructure Market Capacity 2022 – Risks to project delivery”, published on 14 December 2022<sup>9</sup>, lists the following key findings:

*Key findings*

- *The five-year pipeline of major public infrastructure projects is valued at \$237 billion - an increase of \$15 billion in the last 12 months and equivalent to 6.7% growth.*

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<sup>4</sup> <https://www.abc.net.au/news/2017-03-16/snowy-hydro-scheme-funding-boost-to-secure-electricity-supply/8358502>

<sup>5</sup> <https://pmtranscripts.pmc.gov.au/release/transcript-41391>

<sup>6</sup> <https://www.snowyhydro.com.au/snowy-20/about/>

<sup>7</sup> <https://aemo.com.au/en/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-planning-data/generation-information>

<sup>8</sup> <https://www.afr.com/companies/infrastructure/webuild-struggling-to-keep-workers-after-clough-acquisition-20230301-p5cojo>

<sup>9</sup> <https://www.infrastructureaustralia.gov.au/listing/media-release/Infrastructure-market-capacity-2022-risks-to-project-delivery-increase-as-5-year-investment-climbs-by-%2415b>

- *Transport accounts for 63% of spend. Investment is concentrated in New South Wales, Victoria and Queensland (84% of spend).*
- *The demand for materials for use in road construction projects is expected to grow to a peak of \$7.6 billion in 2023–24.*
- *Industry reports delays of up to 45 weeks in delivery of large diameter concrete pipe.*
- *Labour scarcity is the single biggest issue faced by construction companies.*
- *The cost of construction materials has risen by an average 24% in the last 12 months.*
- *As of October 2022, public infrastructure projects, including small capital projects, face a shortage of 214,000 skilled workers.*
- *In 2023, labour demand is projected to increase 42,000 to a peak of 442,000. This is more than double the projected available supply.*

From this list, skilled labour availability, materials costs, supply chain delays are key factors for assessing project lead times and we add for transmission and generation infrastructure, social license and competition from other major infrastructure projects. The Federal Government's recent announcement<sup>10</sup> of a review of the \$120b infrastructure project pipeline over the next 10 years to assess its deliverability, in terms of timetable and budget, given supply chain constraints supports a cautious approach by AEMO that reviews the data provided by project proponents.

## 2.2, Impact of fossil-fuelled generation on REZ transmission limits

The draft Methodology 2023 updates paper says:

*“REZs are represented in capacity outlook modelling for the ISP through the application of:*

- *Resource limits that cap the amount of generation that can be supported by the REZ, and*
- *Transmission limits that set the amount of power that can be transferred from the REZ through to the shared transmission network.*

*As the electricity sector transformation continues, changes to the expression of transmission limits are needed to better account for the impact of retiring fossil-fuelled generation.”*

There are two questions asked:

4. *Do stakeholders agree that the REZ transmission limit formulations should be updated to include fossil fuelled generation? If not, why not?*
5. *Are there any alternative methods to accounting for fossil-fuelled generation in REZ transmission limits that AEMO should consider?*

The Panel agrees that REZ transmission approaches need to be updated. We note that this issue is the subject of considerable current debate (particularly in the context of VNI West) and decision making, particularly by jurisdictional Governments.

The proposed change is aligned with the methodology recently used by AEMO for modelling of the transmission network limits for the issued in Draft 2023 IASR for the Gippsland REZ (V5) and Darling

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<sup>10</sup> <https://minister.infrastructure.gov.au/c-king/media-release/securing-australias-120-billion-nation-building-infrastructure-pipeline>

Downs REZ (Q8) and potentially the modelling used in the revised Western Renewables Link and Victoria to New South Wales interconnector RIT-T Consultation Paper. We are concerned that the proposed methodology could have the effect of reserving capacity in the shared network for both thermal generators and ISP projects when these interact with generation located in a REZ.

We consider that the ISP modelling would be improved by updating the modelling to reflect a more granular but not necessarily fully nodal transmission network model where the transfer capacity of the network is more accurately represented for key network flow paths and facilitate supply side resource dispatch matching the lowest cost offer constrained dispatch model used in the NEM.

Given this, we don't support the proposed change and recommend that AEMO engage further with stakeholders regarding proposed changes in the area of the modelling so as to more accurately represent the interactions in the transmission network that will occur between existing supply side resources and the connection of new REZ's and ISP projects.

### 2.3 Network losses for REZs and sub-regions

This update deals with energy loss in transmission through resistance and as such is an important factor to consider in modelling the amount of energy that is actually available to customers.

*6. Do stakeholders agree that the impact of network losses for REZs and sub-regions is worth quantifying in the modelling? If not, why not?*

The Panel agrees that calculating network losses should be based on the laws of physics rather than historical geography. Consequently, it makes good sense to adjust the ISP modelling methodology to account for losses subregions, particularly for larger states. Similar approaches should also be taken for REZ's.

*7. What alternative methods could be considered for incorporating network loss impacts for REZs and subregions?*

The Panel does not have alternative approaches to suggest.

### 2.4 Assumed renewable energy resource quality.

AEMO says that it has identified an opportunity to improve the assessment of the quality of wind and solar generation for application to the 2024 ISP. and ask the following 2 questions about this proposal.

*8. Do you agree with the consistent use of land use data for screening potential VRE sites to both REZ resource limit and wind resource traces in the REZ trace development process? If not, why not?*

The Panel understands that consumers, in general, expect ongoing improvements in all aspects of energy provision and market development including for the transition to a low carbon emissions energy future. It is no surprise that as a pivotal participant in the operation and development of energy markets that the expert staff employed by AEMO would identify opportunities for improvement to the market, in this case though improvement in assessing renewable energy quality.

AEMO staff are to be congratulated for their efforts.



We agree that enhancements to energy markets and ongoing innovation should be applied where benefit to consumers is highly likely. This is the situation with this proposal so consistent use of land data to better model renewable energy quality for Renewable Energy Zones should be applied.

The Panel highlights the importance of improved consideration of “cultural heritage” particularly with reference to Indigenous sites as one of the factors to better apply in considering VRE development proposals.

*9. Do you have a view on the proposed changes to the high wind and medium wind tranches, and the resulting capacity factors?*

The Panel is supportive of the changes proposed by AEMO for high and medium wind tranches and the resulting capacity factors.

## 2.5 Potential inclusion of a value of carbon emissions

Given the current process to incorporate an emissions reduction objective into the NEO, the proposal is to include a value for emissions reductions beyond those required by policy or scenario settings in the 2024 ISP.

*10. Do stakeholders agree that the ISP Methodology should be updated to be flexible in response to near-term changes to the National Electricity Objective (NEO)? If not, why not?*

The Panel supports the concept of valuing of carbon emissions in the ISP methodology. However, the Consultation Paper provides no information on the process AEMO proposes to use to obtain that value. How would AEMO ensure consistency with the values used by other parts of the NEM? How does AEMO avoid biasing the results with the chosen values?

*11. Do stakeholders agree with AEMO's proposed approach to incorporate a value of carbon emissions? If not, what alternatives should be considered?*

Even in the situation where a consistent carbon price is used by AEMO, we need to avoid the situation where consumers effectively pay multiple times for the same carbon reduction eg in the ISP CBS, in a TNSP RiT-T and in a DNSP RiT-D.

Transparency is crucial for customers, any change in our complex energy markets can be used for rent seeking at consumer expense. This outcome cannot occur.

## 2.6 Consumer Risk Preferences

The 2022 Consumer Panel recommended that the AEMO explore the extent to which the Optimal development path in the final ISP reflected consumer risk preferences. The 2024 Consumer Panel has welcomed the opportunity to explore approaches to quantifying consumer risk preferences in the 2024 ISP. We have worked with AEMO's consultant engaged to develop an approach to measuring consumer risk preferences and are in the midst of observing the initial engagement with residential and small business consumers. This has proved to be a complex task in seeking to obtain estimates of consumer's willingness (and likely capacity) to pay at some time in the future to reduce volatility at some time in the future when that payment is more certain than the reduced volatility. We await the outcomes of this engagement to assess how it might be applied in selecting the optimal development path.

12. Do you agree with the proposed provision to apply evidence-based consumer risk preference metrics in the ISP? If not, why not?

Incorporation of sound consumer risk preferences using a replicable methodology is a priority for 2024 ISP. It remains to be seen if the current exercise will give that methodology. As the methodology paper notes (p.18), “This work is novel”.

13. What factors should be taken into account when preparing metrics to capture consumer risk preferences as they relate to the ISP?

The methodology paper describes the existing approach as ensuring (p.18):

“...that the final ODP selection appropriately reflects consumers’ level of risk neutrality or aversion, the current ISP Methodology provides for AEMO to use professional judgement in the selection of the final ODP.”

It is important that the proposed methodology examines not just risk neutrality and risk aversion but risk preference. Some consumers may be happy to bear more risk for a lower price.

Factors to be considered in developing the consumer risk preference metric(s) include:

- Extent of existing consumers already paying to reduce the future risk of higher bills and / or reducing reliability (eg investment in PV, batteries, home insulation, load shifting, energy efficiency appliances and practices etc)
- Various State Government policies that seek to explicitly or implicitly promise that Government action will substantially reduce or eliminate consumer risk and so consumers do not have pay extra through changing the timing of ISP projects to reduce volatility
- The ISP cannot guarantee that a higher willingness to pay, which may translate into a higher net benefit for the ODP, will actually mean that the network and generation required to produce the lower volatility will actually be built in the ODP timetable; there are many factors outside of AEMO’s control that influence that timing
- Impact of recent and forthcoming large price rises eg following from the 2023-24 Default Market Offers
- Cost of living pressures on households, outside of rising energy costs given falling real wages.

## 2.7 Dispatch behaviour of storage devices

AEMO commences this section of the consultation paper with the explanation:

*“Actual NEM dispatch is dynamic, in that dispatch decisions are made by market participants for the current period with only imperfect knowledge of what will happen in following periods. For short-duration storage devices in particular<sup>18</sup>, device operators must balance the benefits of discharging now against the risk that it may be even better to wait a little longer.”*

They also say that their forecasting and planning models have *“perfect foresight within each simulated day. This can lead to exaggerated assumptions about ideal dispatch of storage devices.”* They explain that this means *“all storage is modelled in both the time-sequential model and the capacity outlook model as fully available to the energy market.”*

To deal with this likely exaggeration of actual available electricity for dispatch they propose two options:

1. *“A derating factor up to 50%, with the final Methodology to rely on stakeholder engagement to explore something that is more staggered as follows:*
  - *For devices with less than 2 hours of storage, reduce storage capacity by 50%.*
  - *For devices with 2 to (less than) 4 hours of storage, reduce storage capacity by 25%.*
  - *For devices with 4 to (less than) 8 hours of storage, reduce storage capacity by 10%.*
2. *limit the power output (in MW)”*

The first of these options is preferred by AEMO.

Four questions are asked about this proposed update.

*14. Do you consider it reasonable for AEMO's ISP models to reduce the reliable contribution from storage devices (particularly shallow storage devices) to reflect imperfect foresight? If not, why not?*

Of the methodology updates proposed, this is the aspect that has the greatest level of associated uncertainty for the Panel.

A part of this uncertainty relates to the extent to which VPP's, in particular, will be utilised by consumers for storage and dispatch, the risk preferences that individual consumers will reflect to their VPP provider and the strength of foresight that VPP operators will develop including through the application of “artificial intelligence.” We have chosen to focus on the application of our response to this proposal on VPP's because we think that they will prove to be increasingly utilised in the near future and have the potential to have significant dispatch capability through aggregation of individual storage contributions.

AEMO and ARENA produced a report about “Virtual Power Plant Consumer Insights”<sup>11</sup> in February 2021, the report reported findings of consumer sentiment regarding VPP's

*“Three strong consumer segments emerged, based on their focus and drivers for participation, and each segment would value different approaches to engagement:*

- *Early Adopters are highly engaged with the new technology. These consumers wanted information and tools to engage with their system as effectively as possible (providing depth of information about their energy usage, battery storage, solar charging, environmental benefits and money saved).*
- *Caring Community are consumers focused on the benefits of renewable energy and stabilising electricity supply for the community, and want to learn more about the specific benefits of the VPP to the environment and wider community.*
- *Personal Gain are consumers who are primarily seeking a positive financial outcome, and want to be shown the savings they are accruing.*

*The fourth segment, Going With the Flow, are more likely to be consumers who appreciate the benefits of VPPs but are less engaged.*

*Quantitative research helps to understand the importance of these different drivers.*

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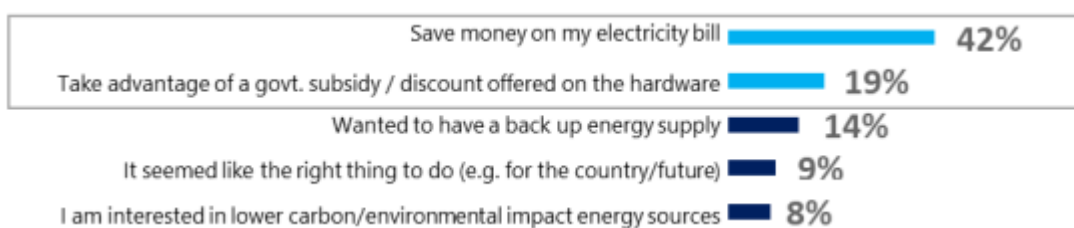
<sup>11</sup> [www.arena.gov.au/assets/2021/02/virtual-power-plant-consumer-insights-interim-report.pdf](http://www.arena.gov.au/assets/2021/02/virtual-power-plant-consumer-insights-interim-report.pdf)

A very strong driver for participation in a VPP (as shown in Figure 6), among many consumers in different segments, is an expectation of a positive financial outcome through lower energy bills:

- 42% indicated being interested in joining a VPP to save money on their electricity bill through lower charges for usage.
- 19% wanted to take advantage of a discount offered on hardware.

This demonstrates that when attracting new consumers to a VPP, highlighting the financial savings is an important message.”

#### Drivers for Participation



AGL<sup>12</sup> wrote in 2020

*“By 2030, we expect 700,000 Australian homes and businesses to have behind-the-meter energy storage, with more than 2.6 million electric vehicles on the road.<sup>34</sup> That equates to a twenty-fold growth in energy storage by 2030 – around 4 GWh of energy stored in batteries connected to home and business, and 36 GWh of energy stored in EV batteries.”*

These brief extracts reflect that there is a range of motivations for customers. Saving money is likely to be increasingly important as energy prices rise for many customers, but other motivators are significant too.

There is also an expectation that the extent, and hence dispatchable electricity from VPPs will also increase during the remainder of this decade. Reinforcing the importance of having the modelling as accurate as possible.

Our response to the question of reasonableness of reducing the reliable contribution from storage devices is a cautious “yes.” We accept that the best available data and best available advice from the market is for the reduction. The Panel strongly supports evidence based approaches.

Our degree of caution is predicated on the high levels of uncertainty about near future extent of storage and predictability of dispatch – we expect both to increase appreciably.

*15. Do you consider a limit on the storage capacity of storage devices, particularly on short-duration devices, to be the most appropriate way to restrict the performance of energy storage to approximate limited foresight and reservation of energy?*

The Panel accepts the limit on storage capacity of storage devices, as a first iteration of the approach to the revised role of storage devices, to committed for application for the 2024 ISP only.

<sup>12</sup> [Spotlight on: Virtual Power Plants \(agl.com.au\)](https://www.agl.com.au)

We consider the role of storage devices for dispatch to be a rapidly changing and uncertain topic that needs to be informed by sound data collection over the next 2-4 years.

*16. In what other ways could AEMO reduce the 'perfection' of foresight in its time-sequential model to improve model accuracy?*

We suggest that a short answer to this question is to include the consideration of consumer preferences regarding their risk appetite and consequent behaviour (particularly through VVPs) to the 'dispatch now vs save some capacity in case its needed in the next few hours' consideration. Better understanding of this attitude of consumers will help inform future foresight.

*17. Do you agree that an 'up to 50%' limit on storage capacity is an appropriate limit value? If not, what should the limit be, and what evidence can be used to support an alternative limit?*

The Panel accepts the 50% limit value for devices with less than two hours storage, as a first iteration of this value and to commit it for application for the 2024 ISP only.

AEMO, ARENA and other relevant stakeholders also need to use the next 2 years leading up the 2026 ISP, to capture data to inform improved future iterations of storage dispatch limit values that more accurately align with actual market experience and with understanding of likely near future market limits.

The other component of further work on this topic is to better understand consumer risk preferences in how they utilise storage and VVPs in particular.

We also recognise considerable current consideration of the widespread development of 'community batteries.' The Panel is very supportive of this concept, in part for equity reasons as community batteries have the potential to feed some of the benefits of lower cost renewable energy generation to lower income and disadvantage households, including renters, who have minimal other means for reducing energy costs. However, the preferred model for operation of community batteries is yet to emerge, nor their relationship with VVPs. The impact of community batteries will also likely need increased focus for future ISP considerations.

## 2.8 Duration of demand-side participation response

The introduction to this proposed update includes:

*"AEMO considers that forecast DSP utilisation should reflect the duration of response to actual trigger events, (rather than reduction from an observed 'baseline) in addition to the level of demand reduction. Whereas the lower price bands triggering DSP response have been observed to last upwards of 12 hours, conditions corresponding to the reliability response band typically do not exceed two hours in duration."*

Under the proposed update, *"AEMO is proposing to limit the daily energy contribution from the reliability-response band of demand side participation to a maximum of two hours of continuous operation."*

*18. Is the limitation of energy available for DSP for the reliability-response price band in the ISP modelling process reasonable? If not, why not?*

The approach is reasonable based on reported advice from relevant market stakeholders. As with our response to dispatch behaviour of storage devices above, we consider that utilising the approach for

ISP 2024 is appropriate with more data and detail sought for application to the 2026 ISP and associated methodology.

*19. Do you agree with the proposed two-hour duration limit for DSP reduction for reliability purposes? If not, what alternative value do you propose, and why?*

As with above questions, we suggest applying the two-hour duration for 2024 and reviewing the appropriateness of this approach, ex-post, as more data and evidence becomes available.

*20. Is it reasonable to limit the energy available for DSP to just the reliability-response band?*

For the 2024 ISP, confining the limit to the reliability based band is reasonable.

### Section 3: Proposals for 2026 Methodology Review

The 2026 ISP will include a detailed review of the methodology and so we see value in commencing the thinking for this review now.

*Future ISP Methodology should strengthen consumer perspective.*

The 2026 ISP will be the fifth version of the ISP and we contend that the focus for this ISP and hence the methodology review should shift to having a greater focus on the perspectives and impacts for consumers and their communities. The first ISP's have had a major focus on the 'engineering' and structural questions of generation and transmission as well as demand forecasting. This has been and will continue to be important, however engagement for revealing and understanding consumer preferences need to be increasingly considered in ISP development and include an improving understanding of consumer impacts as they evolve.

Further understanding consumer risk preferences and social license consideration will be two crucial aspects of further ISP development and the methodology to enable the development of ISP's and particularly optimal development paths. There has been solid progress made during the development of the 2024 ISP on these two aspects of ISP development, but there will need to be further development and refinement of methodology for increasing consumer centric aspects of future ISP's.

In our submission to the draft IASR – 2023, we considered sensitivity analysis and social license considerations. One of our 'key messages' was:

*"Key Message: uncertainty limits standard modelling and forecasting, so more focus is needed on sensitivity analysis."*

We expanded on this saying"

*"The 2024 Panel proposes the following additional sensitivities:*

- *Social licence – network commissioning delay and increased capex due to both supply chain and commissioning delay*

*...*

*We defined 'social licence' to include both 'Community' (local community acceptance of new infrastructure development) and 'Consumer' (acceptance of the costs to all consumers of the generation and network infrastructure). The Draft IASR submission said "the two interrelated risks around social licence are project delay and cost increase due to that project delay. Supply chain risk also manifests in increased capex. Project delay may result in a change in generation mix ..."*

Uncertainty will almost certainly be a major concern for many, and likely increasing numbers of households and businesses. The war in Ukraine was not a factor for the 2022 ISP but it has demonstrated the vulnerability of many aspects of Australian life to global disruption, the cost and timing of ISP optimal development path projects being a case in point.

The likely continuing squeeze of declining real incomes and rising costs for energy as well as housing and other household basics will likely impact on consumer attitudes to energy infrastructure projects that potentially treble the capital base of electricity infrastructure by 2050.

Consequently, deliberative engagement processes with consumers and other key stakeholders in developing deeper consumer insights to inform the detailed review of the methodology for the 2026 ISP need to be developed as soon as practical.

#### A Comment

The Panel recognises that there are proposals for sensitivity testing on many elements of the formulas used for the detailed modelling required for the ISP. We also understand that there are limits to the application of sensitivity analysis:

- technically as the linear programming methodology utilised can only incorporate a limited number of additional parameters (as sensitivities) without reducing the optimality of the modelling.
- Useable data for incorporating specific sensitivities in the modelling is often not available.

It is likely that choices will need to be made as to which of the many potential 'sensitivities' are able to be effectively modelled. The Panel is open to exploring any of these prioritisation and data questions, should then be helpful.