



4 May 2023

Samantha Christie  
Australian Energy Market Operator  
Level 22, 530 Collins St  
Melbourne VIC 3000

Dear Ms Christie

## **RE: Update to ISP methodology**

Shell Energy Australia Pty Ltd (Shell Energy) welcomes the opportunity to respond to the Australian Energy Market Operator's (AEMO) Update to the Integrated System Plan (ISP) methodology consultation paper.

## **About Shell Energy in Australia**

Shell Energy is Shell's renewables and energy solutions business in Australia, helping its customers to decarbonise and reduce their environmental footprint.

Shell Energy delivers business energy solutions and innovation across a portfolio of electricity, gas, environmental products and energy productivity for commercial and industrial customers, while our residential energy retailing business Powershop, acquired in 2022, serves more than 185,000 households and small business customers in Australia.

As the second largest electricity provider to commercial and industrial businesses in Australia<sup>1</sup>, Shell Energy offers integrated solutions and market-leading<sup>2</sup> customer satisfaction, built on industry expertise and personalised relationships. The company's generation assets include 662 megawatts of gas-fired peaking power stations in Western Australia and Queensland, supporting the transition to renewables, and the 120 megawatt Gangarri solar energy development in Queensland.

Shell Energy Australia Pty Ltd and its subsidiaries trade as Shell Energy, while Powershop Australia Pty Ltd trades as Powershop. Further information about Shell Energy and our operations can be found on our website [here](#).

## **General comments**

Shell Energy Australia (Shell Energy) thanks AEMO for the opportunity to comment on proposed changes to the Integrated System Plan (ISP) and reliability assessment modelling methodologies. We are supportive of some of the proposed changes but recommend that further details and analysis be undertaken and provided in some areas. There are some areas where we do not support AEMO's proposed changes and have suggested alternatives in some instances.

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<sup>1</sup>By load, based on Shell Energy analysis of publicly available data.

<sup>2</sup> Utility Market Intelligence (UMI) survey of large commercial and industrial electricity customers of major electricity retailers, including ERM Power (now known as Shell Energy) by independent research company NTF Group in 2011-2021.



### **Transmission project lead time uncertainty**

Shell Energy is supportive of the proposed change set out as option 2 in the Paper, to revise the expected in-service dates to reflect observed project delay factors. However, we are concerned that this change will result in the bringing forward of the approval processes for actionable transmission projects where in some cases considerable uncertainty still exists with regards to supply-side resource investment and REZ implementation and timing. This uncertainty could significantly impact both the timing and forecast net benefits of an ISP project as new information becomes progressively known. We recommend that as part of implementing this change AEMO introduce routine ongoing analysis and review of ISP actionable projects to ensure that at subsequent ISPs the actionable project(s) is subject to review and confirmation that it remains part of the optimal development path. In our view an ISP driven by the National Electricity Objective (NEO) should seek to transparently inform of changes to the optimal development path (ODP) over time.

We note that National Electricity Rules (NER) clause 5.22.6 provides the ability for AEMO to nominate an ISP project as an actionable ISP projects. In our view the rules do not preclude ongoing review of an actionable ISP project(s) which has not achieved the defined "commitment" status at a future ISP. In fact, NER clause 5.22.6 (a) suggests that ongoing review of previously declared actionable ISP projects is a rules requirement as each ISP may include the range of potential development paths.

### **Impact of fossil-fuelled generation on REZ transmission limits**

We agree that changes in this area of the ISP modelling are warranted, yet Shell Energy does not support the change as proposed. We note the proposed change is aligned with the methodology AEMO recently used for modelling of the transmission network limits in the Draft 2023 IASR for the Gippsland REZ (V5) and Darling 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 would 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. In our view this is unnecessary as the NEM Dispatch Engine determines what generation utilises the available transmission network capacity.

As an alternative, we consider that the ISP modelling would be improved by updating the modelling to reflect a more granular, but not necessarily a fully nodal transmission network model, where the transfer capacity of the network is more accurately represented for key network flow paths. In particular, this should include network flow paths where interaction between existing generators, REZ connection points and new ISP projects is forecast and facilitate supply-side resource dispatch matching the lowest cost offer constrained dispatch model used in the NEM. This is important where remote generation sub-regions are connected via networks to more centralised demand sub-regions. The proposed change to Section 2.3 of the ISP methodology somewhat improves the granularity of the modelling, however we consider that further work is warranted in this area. Shell Energy recommends that AEMO engage further with stakeholders regarding proposed changes in this area of the ISP modelling to more accurately represent the interactions in the transmission network that will occur between existing supply side resources and the connection of new REZs and ISP projects.

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

Shell Energy supports the proposed change to increase the regional granularity of the ISP model by introducing improved transmission network granularity via sub-regional modelling as opposed to the current regional model. In undertaking the proposed change, it is critical that marginal loss factors for individual generating units which AEMO have indicated are to remain static in the modelling are referenced to their respective sub-regional reference node and not the central regional reference node to prevent the application of a double marginal loss factor penalty to a remote regional generator.



We recommend that AEMO issue a draft report for consultation setting out the proposed sub-regions and their nominated sub-regional reference nodes prior to this change being implemented. In addition, both the Draft and Final ISP reports should set out details of the static marginal loss factors used in the model for all generator and transmission supply points referenced to their respective sub-regional reference point.

We note this change to a sub-regional model will also allow implementation of the alternative modelling framework as set out in our comments to the section covering interaction of transmission limits between existing supply side resources and the connection of new REZs and ISP projects above.

### **Assumed renewable energy resource quality**

Shell Energy is supportive of the proposed change but recommends the change include an obligation on AEMO to publish and consult on a report in which AEMO details sites which have been determined as unsuitable for development in the resource assessment process including the reasons that the site is determined as unsuitable.

### **Potential inclusion of a value of carbon emissions**

We note that the current ISP modelling framework explicitly includes carbon emissions reductions through the inclusion of constraints to represent carbon budgets. The current approach ensures that carbon emission outputs in the ISP are driven by scenario-specific long-term input assumptions which consider the relative efforts to decarbonise not just the electricity system but the wider Australian economy.

Based on the implementation of the current proposed rule change to introduce a carbon emissions reduction objective into the National Electricity Objectives, AEMO proposes considering whether there is a need to value carbon emission reduction as an additional class of benefit. The value of emissions reduction is not explicitly incorporated into the ISP cost-benefit analysis at present. Shell Energy sees that AEMO's proposed approach would align with the inclusion of an emissions reduction benefit in the National Electricity Objective. However, AEMO has provided little detail regarding how such a change would be implemented. Shell Energy sees risks associated with the proposed change which could result in double claiming of benefits of carbon emission reductions for ISP projects.

We recommend that prior to introducing the proposed change AEMO consult on how the proposed change would be implemented including details of safeguards to ensure only the marginal value of carbon emission reductions above that already explicitly included in the ISP modelling will be calculated to ensure that double claiming of the same benefit is prevented.

In addition, we note that AEMO has provided no information on the process AEMO proposes to use to obtain a value to be applied to carbon emission reductions. We query how AEMO intends to ensure consistency with the values used by other processes of the NEM and what process AEMO will introduce to avoid biasing the results via the use of chosen values.

### **Consumer risk preferences**

Shell Energy supports the 2022 ISP Consumer Panel recommendation for the need for AEMO to further examine how the draft ODP reflects consumer risk preferences. We further note that AEMO has engaged a consultant to support the preparation of consumer risk preference metrics specifically relevant for the ISP, through conducting focus groups and a survey. The results of this survey have yet to be finalised.

Given the lack of detail provided in the Paper it is difficult to provide any more than high-level comments. We note AEMO's characterisation of the work as "novel"<sup>3</sup> and this suggests to Shell Energy that AEMO should be

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<sup>3</sup> AEMO, [Consultation paper - Update to the ISP Methodology](#), March 2023, p18.



very transparent in the methodology used and results obtained from the focus groups and survey. We look forward to the publication of both the questions asked and consumers' responses to these questions as well as engagement with AEMO and its consultant.

If AEMO chooses to apply these results as part of applying its professional judgement, then it should consult widely on how it proposes to do this. In particular, Shell Energy is interested in how different jurisdictional policies that are designed to reduce consumer risk of the energy markets transition might be accounted for in determining consumer risk preferences. It is crucial that consumer risk value is not applied both at the jurisdictional policy level and again as part of the ISP cost benefit analysis. We are concerned about AEMO exercising its discretion without appropriate transparency about how that exercise of judgement is implemented.

Shell Energy recommends that AEMO consult widely with the ISP Consumer Panel, the Australian Energy Regulator (AER) and the Forecasting Reference Group once the consultant's report is available for public review prior to proceeding in this area. We further propose AEMO recommend to the AER that further work regarding consumer risk preference form part of any future work undertaken by the AER in the area of the Value of Customer Reliability.

### **Dispatch behaviour of storage devices**

Details in this section should also be taken by AEMO as Shell Energy's submission to the FRG Consultation in the area of dispatch behaviour of storage devices in reliability forecasting modelling.

Shell Energy agrees with AEMO's assessment that the current methodology may overestimate the potential contribution of low storage capacity storage devices. We note that AEMO has defined low capacity storage devices as those storage devices with less than eight hours of equivalent output capacity at full registered discharge capacity. However, we consider AEMO's analysis to date is inadequate to justify the level of the proposed change for the following reasons:

- AEMO's analysis only considered actual output during a range of higher priced events. AEMO noted that additional capacity was indicated as available to be dispatched based on the participants' dispatch offer, but this volume was excluded by AEMO in the analysis.
- No analysis was undertaken by AEMO with regards to available state of charge of any of the storage devices in the analysis at a time period immediately prior (i.e. dispatch minus 1 hour) to daily maximum demand, in particular on higher demand days.
- Currently most low capacity storage devices in the NEM have an equivalent storage capacity of 2 hours or less. Given this, we query how AEMO can make reasonable assumptions regarding derating storage devices with a storage capacity greater than 2 hours, in particular in the 4 to 8 hour range.
- While we note and agree with AEMO that storage devices providing FCAS will reserve some part of their storage for provision of FCAS, AEMO has conducted no analysis on the level of storage reservation required to do so.
- The analysis was undertaken based on capacity utilisation (MW output), following which AEMO has sought to change this to a storage based, (MWh) modelling input assumption change, which provides a more conservative modelling outcome (i.e. increases USE levels). AEMO confirmed this in a at the 26 April Forecasting Reference Group meeting.<sup>4</sup>

We also note that undertaking this analysis with a reasonable degree of accuracy was difficult given the relatively mild demand outcomes and the low level of price volatility during the analysis period used by AEMO.

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<sup>4</sup> AEMO, Short duration storage methodology presentation, 26 April Forecasting Reference Group meeting.



However, if the same analysis methodology applied to low storage capacity storage devices was applied to open cycle gas turbines (OCGT) over the same time period it would likely conclude that a similar level of capacity reduction should apply to OCGTs which in our view would be a questionable input assumption.

Based on a review of available public market data for dispatch offers and estimates of the range of state of charge Shell Energy considers that a derating of no more than 30% may be justified for low storage capacity storage devices of 2 hours equivalent storage capacity rating or less. We also consider that this should be applied as a capacity (MW) as opposed to a storage (MWh) derating.

Given the lack of data available to undertake analysis in the two to eight hour equivalent storage capacity rating, based on the above we consider that the following would be a reasonable first step for modelling lower storage capacity storage devices in these timeframes.

- Greater than 2 hours but less than 3 hours – 20%
- Greater than 3 hours but less than 4 hours – 10%
- Greater than 4 hours but less than 8 hours – 5%

We recommend that AEMO continue to monitor this issue but with improved analysis and provide ongoing annual reports to the FRG.

We also understand that AEMO derates the capacity available for a number of battery energy storage systems (BESS) to which network support contracts apply. In some cases, these network support contracts apply all the time. For others, these contracts only apply at times of high demand and/or high regional import conditions. Shell Energy recommends that any network support contract capacity derating of BESS capacity only apply in the modelling for those conditions where the contracts would be active at Dispatch. We also suggest that consideration be given as to how a BESS providing network support would be dispatched in real time operations where the reduction in BESS capacity exceeds the network support benefit gained.

### **Duration of demand-side participation response**

We note AEMO's current methodology with regards to the modelling of demand side participation (DSP) is based on observed reduction from a 'baseline' load profile triggered either by high prices or reliability events. We also note that AEMO only uses the 50<sup>th</sup> percentile of observed response for the volume of DSP in both the ISP and reliability assessment modelling.

AEMO has proposed to continue to limit the observed DSP response to the 50<sup>th</sup> percentile of observed outcomes and to also limit the daily energy contribution from the reliability-response band of DSP to a maximum of two hours of continuous operation, as this is the expected duration of typical peak unserved energy (USE) events and aligns with the duration of trigger events upon which the DSP forecast is based. We note that there is little historical analysis to suggest this two-hour duration is reasonable due to the lack of historical reliability events in the NEM other than infrequent Actual Lack of Reserve Level 2 declarations by AEMO, noting that an Actual LOR is still based on AEMO forecasts and not actual realtime market data. There is little recent historical data where an actual LOR2 event has exceeded 2 hours.

However, the lack of recent experience with regards to an actual LOR2 event should not be used as justification to implement a change in the ISP or reliability assessment modelling. Prior to making such a significant change to the modelling, Shell Energy recommends that AEMO undertake a survey of Market Customers for which DSP has been observed to determine if this proposed two-hour period is supported, or a longer duration is achievable. Our recommendation reflects AEMO's statement in the consultation paper that "*lower price bands*



*triggering DSP response have been observed to last upwards of 12 hours”<sup>5</sup>. If observations of lower priced DSP events can last for this length of time, we consider it would be premature to implement a change to the modelling for a reliability event where price outcomes would generally be significantly higher.*

For more detail on this submission, please contact Regulatory Affairs Policy Adviser, Ben Pryor ([ben.pryor@shellenergy.com.au](mailto:ben.pryor@shellenergy.com.au) or 0437 305 547).

Yours sincerely

[signed]

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<sup>5</sup> AEMO, [Consultation paper - Update to the ISP Methodology](#), March 2023, p20