

ISP 2022 Consumer Panel

AEMO

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Submission: ISP Methodology Issues Paper

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1 Introduction and Summary

The ISP Consumer Panel has been appointed by AEMO under recent amendments to the National Electricity Rules. More information is available from the AEMO website¹. We have a formal role under the rules to provide two submissions to AEMO – one on the ISP Inputs Assumptions and Scenarios Report (due mid-2021) and one on the Draft ISP (due in December 2021). We have decided to also provide this submission on the Methodology Issues Paper as well as one in February 2021 on the Draft IASR to assist AEMO’s consideration of and engagement on key issues.

This short submission on the Methodology Issues Paper (‘Paper’) builds on a range of comments we made in our submission on the Draft IASR². Our comments are a combination of:

- Highlighting an issue where we think greater transparency would help stakeholders better understand and contribute to the development of AEMO’s methodology
- Specific suggestions on how modelling might be undertaken to meet the AER Cost Benefit Analysis (CBA) Guideline

We acknowledge Figure 1 “Navigating the ISP Process” as an important visual representation of a very complex process. We encourage AEMO to incorporate simple graphical representations as much as possible as aids and guides for stakeholder engagement.

We look forward to further discussions with AEMO on the comments and questions we raise here and how they might influence both the Modelling Methodology and CBA Methodology.

2 Modelling Methodology

2.1 Gas Prices Assumptions and Optimal Development Path analysis

2.1.1 Gas price assumptions

Our submission on the draft IASR highlighted the materiality of gas price forecast in developing the Optimal Development Path. We were very critical of the Consultant study that provides these gas price forecasts. Our comments included the lack of transparency around the

¹ <https://aemo.com.au/energy-systems/major-publications/integrated-system-plan-isp/2022-integrated-system-plan-isp/get-involved/consumer-panel>

² ISP Consumer Panel Submission available at https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2021/iasr/submissions/isp-consumer-panel.pdf?la=en

assumptions and their apparent inconsistency with the same variables in other ISP modelling, the absence of any reference to recent Federal Government gas policy announcements, the misunderstanding of ACCC gas report data, the lack of an explanation of why the forecast prices had increased by so much in 6-9 months compared with the Core 2020 ISP forecast and the 'black box' on the modelling methodology.

The end result was a lack of confidence in the forecasts. Given where we are in the ISP timeline, we understand it is not possible to arrange for a second forecast. We are pleased that AEMO is planning an additional engagement meeting, though we suggest it should be in March rather than in April to give time to incorporate any changes in the forecasts. This meeting would discuss the forecasts and how the modelling might be undertaken to account for the concerns around the forecasts. Our proposal to AEMO is that this session would cover:

- LGA providing a presentation on their results/methodology;
- Compare the LGA forecasts with other published benchmarks (assuming they are available)
- How sensitivity testing might be used. For example, what would be a lower/upper bound sensitivity price for modelling? At what price would the ODP change? At what price is project X not part of the ODP?³
- Look at more details around GPG vs C&I prices recognising the changes going on in delivered GPG prices as their operating cycle changes.

We hope that budget constraints would not prevent a thorough analysis of such a key assumption and meeting the AER's Guideline requirements.

Finally, there is the general issue around using consultants to develop key inputs and assumptions. Inevitably consultants will not want to be transparent about their proprietary modelling. This requires a level of trust from both AEMO and stakeholders that the consultant's description of their methodology will be enough to engender that trust. That is not the case for the LGA report. We would suggest that AEMO, along with other market bodies, consider developing an in-house forecasting expertise in such central issues as gas prices.

2.1.2 Gas model

The current approach does not have any cost-related information. As the Paper notes (p.26):

³ In all cases recognising the complexity of ISP modelling, but it seems from the description in the Paper that since the TOOT analysis will (p.44) *"Determine the net market benefits of the actionable project by comparing total system costs between the ODP and the TOOT case."* That a breakeven price should be computable.

“The gas supply model does not presently contain cost-related information in sufficient detail to form a reliable view on pipeline and production augmentation based on cost-efficiency alone. It therefore does not co-optimize pipeline expansion from a number of options like the capacity outlook model does. Instead, when a supply shortfall is reported that may be alleviated with a transmission project, the model can be used to perform sensitivity analysis to test the ability of an augmentation or suite of augmentations to restore supply sufficiency.”

Our initial reaction is that this seems simplistic so we look forward to further discussions with AEMO. How does it assess the costs of a transmission augmentation to supply a gas shortfall? What are the issues that arise from this approach? How is an NPV analysis completed without this cost information?

2.2 Anticipated transmission projects

These are defined as (p.16):

“Anticipated transmission projects are transmission augmentations that are not yet committed but are highly likely to proceed and could become committed soon. Such projects could be network or non-network augmentations and could be regulated or non-regulated assets. Because these projects are an input to ISP modelling, they cannot become actionable under the ISP framework. They are included in the ISP so their impact on other projects can be captured (their merit is not assessed).”

It is difficult to answer the consultation question without specific examples of these projects from the 2020 ISP and potential examples in the 2022 ISP. Is CopperString potentially one of these projects? If so, how would it be incorporated in the modelling?

2.3 Hydrogen modelling

In our Draft IASR submission we 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.

It is acknowledged that it is early days in hydrogen modelling and so there will be a lot of simplifications. Issues we would like to better understand in relation to the ISP Methodology include:

- NEM hydrogen demand for export and sub-regional domestic consumption will be exogenous to the model rather than optimised within the modelling – so how will these exogenous assumptions be determined?
- “Within the capacity outlook modelling the location of the electrolyser loads within each sub-region would be co-optimised with current REZ generation expansion and the development of associated network” (p. 23). Does this mean that availability of water and hydrogen transport are not factors in location of electrolyser location; if they are, how will the modelling take those factors into account?
- This question is also relevant to the comment on hydrogen storage (p.24)

“For domestic-driven electrolysers, AEMO proposes assuming that there would be sufficient storage in the distribution pipelines and the new electrolyser plant to manage daily variances in demand, similar to the way in which linepack is currently managed by gas and pipeline operators. AEMO is exploring the ability to incorporate hydrogen storage into the capacity outlook modelling.”

It would be helpful to get more information on how this assumption was arrived at. Given it seems the gas transmission system will not be used (embrittlement risk?) it seems to assume that electrolysers will be located next to a gas distribution system. But REZs are often not next to existing gas distribution networks and the small regional gas distribution networks that may be close to REZs are likely to have limited linepack. What are the assumptions around trends in blending (natural gas/hydrogen) over time and what is the basis for these assumptions?

The assumptions around the location of electrolysers for domestic use is not clear. Are they associated in any way with export focussed electrolysers at ports?

We are concerned that the conclusions of the Export Superpower scenario will be the focus of debate and advocacy, not the constraints on the results from the simplistic modelling. This is why the scenarios weighting is important. Simplistic modelling is less of an issue if the scenario has a low weighting.

2.4 Engineering Framework

We note that there are a number of matters raised in the Modelling Methodology section that we expect to overlap with AEMO’s Engineering Framework Program⁴.

Further, in Section 2.5 “Engineering Assessment”, the Paper proposes some Amendments to the Assessment that reflect issues raised in submissions to the Draft IASR, including ours:

⁴ <https://aemo.com.au/en/initiatives/major-programs/engineering-framework>

- Infrastructure delivery and the cost of transmission: we encourage consideration of project staging and sequencing to “smooth” out the demand for new transmission infrastructure in order to lower construction costs (p35).
- Distribution Network – we agree with other stakeholders that greater co-optimisation between transmission and Distribution investment is needed. We encourage AEMO and DNSPs to engage actively on the role of the Distribution Networks in meeting demand and providing system services as part of the “whole of system” plan that is the ISP (p35). We also note that the support of Energy Networks Australia (ENA) in their submission to the Draft IASR⁵:

“ENA agrees with the paper that distribution networks represent a missing piece of the forecasting puzzle and given the rising penetration of DER devices connecting to the larger system via the distribution network this makes sense.”

3 CBA Methodology

We note that this part of the ISP Methodology involves numerous opportunities to reflect consumer preferences and to allocate risks to consumers.

For example, the question at page 42 in relation to selecting the Optimal Development Path (ODP), “Do you consider that the risk appetite for consumers is such that ...”, is an important framing. We encourage AEMO to continue engaging directly with consumer stakeholders on the issues raised.

3.1 Selecting an optimal development path

AEMO is proposing two approaches to selecting the optimal development path.

- As required under the AER CBA Guideline, one mandated approach is scenario-weighting based on a risk neutral decision making approach. The economic benefits of each candidate development path are weighted according to the relative likelihood of each scenario occurring.
- ‘Least regrets’ or ‘least worst regrets’ which was used in the 2020 ISP

We had expected more discussion in the Paper around how AEMO is approaching the development of scenario weightings. There was a brief mention in the Draft IASR (p.21) where AEMO invited stakeholders to provide their views on the likelihood of the possible futures encompassed in the proposed scenarios. And there was a [survey](#) on AEMO’s website asking for qualitative comments on scenario likelihood. We look forward to AEMO publishing the results.

⁵ <https://aemo.com.au/consultations/current-and-closed-consultations/2021-planning-and-forecasting-consultation-on-inputs-assumptions-and-scenarios>

The Paper notes that:

“The AER’s CBA guidelines require AEMO to rank the CDPs based on the scenario-weighted approach, but allow AEMO to use an alternative approach (such as LWR) and professional judgement to select the ODP.

The choice of approach AEMO will use in the ISP is necessarily reliant on the outcomes and risks observed in the market modelling. The approach selected, and AEMO’s justifications in doing so, will be documented in the Draft ISP to provide the opportunity for stakeholders to provide feedback. Any deviation from the scenario-weighted approach would clearly explain how the decision balances risks for consumers, and the potential cost associated with selecting the ODP based on the LWR approach compared to the scenario-weighted approach.”

We hope that this does not mean that AEMO is going to wait until publication of the Draft ISP to explain who it has selected the scenario weightings. They should be consulted on now as part of finalising the Methodology. We appreciate that scenario weightings are likely to be difficult to determine and relatively subjective, but this makes it even more important that AEMO explains and consults on how it proposes to select those weightings.

We believe that an approach that fails to engage in detailed consultation in the context of finalising the ODP will not meet the requirements set out in the AER Guidelines.

The issue of scenario weightings will be particularly important given submissions by some stakeholders on the draft IASR that express the view that AEMO’s central scenario largely represents a ‘no policy change’ scenario rather than a best estimate of the most likely future. Unless AEMO amends how the scenarios consider government policies and decarbonisation, there is a risk that the central scenario is not the most likely scenario and should be given a lower weighting than some other scenarios. We note that the rules and the AER’s CBA Guidelines require AEMO to identify one scenario as ‘the most likely scenario’ for the purposes of clause 5.22.5(e)(3) of the NER, even if multiple scenarios were assigned the same weight under the scenario-weighted approach.

The approach to selecting the ODP and assigning weightings should also explicitly consider linkages to the RIT-T process and the extent to which it promotes consistency between the analysis used by AEMO in the ISP and TNSPs in RIT-Ts for actionable ISP projects. While AEMO has considerable flexibility in how it uses scenarios and weights them to select the ODP, TNSPs have significantly less flexibility in resulting RIT-Ts. In particular, under the AER’s CBA Guidelines (pp. 12, 47 and 58):

- AEMO must ‘assign one or more scenarios to each actionable ISP project that will be used by the relevant RIT-T proponent in applying the RIT-T to that project’.
- In performing the RIT-T, the TNSP must only consider those scenarios and must assign a weight of zero to all other ISP scenarios.
- AEMO must assign ‘a likelihood-based weight to each scenario if more than one scenario is assigned to a given actionable ISP project.’ These weights ‘must be proportional to the weights used by AEMO in presenting a risk neutral decision making approach, as part of the framework for selecting an optimal development path’ even if AEMO has selected the optimal development path based on an alternative decision making approach.
- This means that even if AEMO selects the ODP using a framework other than the scenario-weighted approach, it must still advise TNSPs which scenarios they can consider and must assign weights to those scenarios that are consistent with the weights it determined as part of the scenario-weighted approach. As a result, the scenario weightings will be critical for the resulting RIT-Ts even if they are not ultimately relied on by AEMO in the ISP.

The Paper also asks for comments on whether another approach would ‘provide a more appropriate, considered framework for assessing benefits and investment risk’ (p. 42). It is difficult to answer this question given the Paper does not discuss any other alternatives that have been considered by AEMO.

We would encourage AEMO to explain whether there are any other alternatives that it has considered and what it views as the advantages and disadvantages of each approach. For example:

- the National Grid approach⁶ concluded that single year regret analysis is the best way to evaluate the needs of the UK electricity transmission system.
- we would encourage AEMO to consider whether there is a role for more qualitative tools to assess the key risks involved in each development path, eg their sensitivity to changes in key inputs, the level of project risk involved or the extent to which they rely on benefits that do not accrue until well into the future. However, as noted above, such an approach may lead to greater risks of inconsistency between the ISP and resulting RIT-Ts.

We recognise that any approach will involve subjective judgements. A development path that is seen to be “optimal” using a range of assessment methods would give consumers more confidence that it is indeed the ODP.

⁶ National Grid ESO “Network Options Assessment Methodology Review” March 2017 <https://www.nationalgrid.com/sites/default/files/documents/NOA%20Methodology%20Review%202017.pdf>

3.2 TOOT analysis

When the decision was made to remove the AER review process under 5.16.6, it was replaced by a range of measures including the establishment of the ISP Consumer Panel and the implementation of the 'feedback loop'. Under Section 3.5.3 of the [AER Cost Benefit Analysis Guideline](#) a TNSP cannot submit a contingent project application in relation to an actionable ISP project without first obtaining written confirmation from AEMO that the project:

- Addresses the relevant identified need and aligns with the ODP in the most recent ISP, and
- The cost of the preferred option does not change the status of the actionable ISP project as part of the ODP.

The capex cost in the contingent project application cannot exceed the capital cost used in the AEMO feedback loop analysis. So far there has only been one project that has been subject to the feedback loop – VNI Minor which [passed the test](#).

This still left consumers with a concern. If the feedback analysis was completed on the basis of the projects in the optimal development path as a package then even though the higher capex costs of the individual project may mean it has negative net benefits as a standalone project, these could be offset by positive net benefits from the other projects in the ODP so overall the ODP is still optimal.

The take one out at a time (TOOT) process is designed to address this concern with the analysis able to (p.44):

“Determine the net market benefits of the actionable project by comparing total system costs between the ODP and the TOOT case.”

We consider that the TOOT analysis is a useful addition that will go some way to addressing this concern. However, there are limitations in this approach that should be acknowledged when determining how much weight to place on its outcomes.

A key limitation of the TOOT analysis is that it compares (1) the net market benefits with the actionable project included in the ODP and (2) the net market benefits with the actionable project removed but nothing substituted in its place. This will assess the benefits of the actionable project compared with a 'do nothing' counterfactual. However, it will not assess the benefits compared with a more realistic counterfactual of substituting the project for a lower cost alternative.

For example, if the capex costs of a large interconnector project increase significantly, the project may still pass the TOOT test because the net market benefits are higher with the interconnector

included in the ODP compared to removing it and not substituting anything in its place. But the TOOT analysis will not reveal whether there would be higher net market benefits if the project was substituted with a smaller network or non-network alternative.

It may be possible to add additional tests to the TOOT analysis to address this limitation, eg by also comparing the net market benefits of the next best alternative project that was identified in the ISP or RIT-T process. However, modelling limitations may mean that is not possible, in which case this limitation should be acknowledged.

We would also appreciate a more detailed explanation of:

- What costs would AEMO use - the PACR or some other figure and how would that be transparent to stakeholders
- How the individual project net market benefits would be assessed and how that differs (if at all) from the net market benefit assessment under the previous AER 5.16.6 assessment
- What level of consultation will AEMO undertake on the feedback loop analysis?

before having confidence that the feedback loop will provide the comfort consumers need.