

Zenith Applied Sciences' principals are engineers with experience in modelling, analysis and design of complex systems in energy, defence, manufacturing and environmental engineering. We are supportive of efforts to decarbonise Australia's energy sector. This submission has been written to provide feedback on the AEMO Draft 2024 ISP. In recent years, ISP publications (as well as the CSIRO GenCost reports) have attracted extensive feedback, with many authors focused on granular details of particular aspects of the modelling undertaken in relation to specific projects, technologies and scenarios. While those concerns are not unfounded, this submission is focused on high level questions of the framing of the ISP as an exercise and the impact this has on its outcomes, as well as the manner in which those outcomes are reported. This submission forms a response to the specific consultation question of *"Does the proposed optimal development path help to deliver reliable, secure and affordable electricity through the NEM, and reduce Australia's greenhouse gas emissions?"*. In short, it appears that the ISP exercise could be significantly improved in order to more robustly achieve the goal of delivering reliable, secure and affordable electricity through the NEM. While some of this submission could be construed as a response to the ISP Methodology and IASR documents (for which the consultation processes have been closed), it is important to evaluate the methods and assumptions used in an exercise such as the ISP in light of the results they generate. The conclusions drawn by the ISP, and the way in which these conclusions are reported, highlight the following issues.

### Scenarios and their likelihood

The ISP does not appear to seriously contemplate any possibility of events unfolding outside of the three named ISP Scenarios. This has the potential to build fragility into the proposed development path effectively over optimising it for cost, leaving the system unprepared should these scenarios prove to be inaccurate. Current government policy is assumed to be inevitably followed for the next 25 years, with no scenarios contemplating a change in policy or market conditions. While AEMO might not be expected to propose or advocate for development pathways contrary to current government policy, understanding the implications of different policy settings would enable an informed discussion of the risks accepted when proceeding with the proposed pathway. Furthermore, consideration of different policy settings would allow for a report that continues to provide value if and when policy settings change. Should there be a significant change in energy policy, the ISP report in its current form may prove to be of extremely limited value. Presumably the likelihoods assumed for the three ISP Scenarios are not meant to be taken literally, and there is a greater than zero likelihood of a scenario outside those considered eventuating. It is unclear whether the ODP would prove resilient to such a scenario. The ISP provides little insight into the best course of action should the proposed ODP be impractical to implement in time to replace existing coal fired generation.

### Reporting of findings

Some of the statements made in the Draft ISP are not supported by the modelling described in the document. Section 1.1 of the ISP states, "Coal generators are retiring. **The ISP finds that the lowest cost replacement is renewables, connected with transmission, firmed by storage, and backed up by gas-powered generation.**" The Draft ISP has been claimed<sup>1</sup> to demonstrate that a majority renewables grid is lower cost than technologies which are explicitly ruled out from consideration within the ISP. Careful wording of the ISP could prevent such erroneous conclusions from being drawn. Acknowledging that the assumptions and methodologies have been clearly stated within the Draft ISP, it should be noted that the complexity of such a document lends itself to misinterpretation or misrepresentation. Careful wording of statements as to the findings of the ISP would minimise the risk of misinterpretation.

The assignment of a 1% higher likelihood to the Step Change scenario over Progressive Change leads to the headline figures and charts being derived from the Step Change case. Were this 1% difference in assumed likelihood reversed, the ISP would be predicting the inclusion of some amount of coal

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<sup>1</sup> The Hon Ed Husic, MP (2023) *GenCost confirms renewables remain the cheapest form of energy, as the cost of nuclear reactors skyrocket*, Ministers for the Department of Industry, Science and Resources. Available at: <https://www.minister.industry.gov.au/ministers/husic/media-releases/gencost-confirms-renewables-remain-cheapest-form-energy-cost-nuclear-reactors-skyrocket> (Accessed: 16 February 2024)

generation capacity through to 2050. The statement in the executive summary, that “About 90% of the NEM’s coal fleet is forecast to retire before 2035 in AEMO’s most likely future scenario, and the entire fleet before 2040.” would read very differently with only a 1% change in assigned likelihood. It is concerning that the headline conclusions drawn by the ISP hinge on an assumption of one scenario being 1% more likely than another. Acknowledging that the ISP report is clear about the assumed likelihood of the three scenarios considered, it is still important to consider that the executive summary will serve to represent the entire body of work described in the various ISP documents. In light of this, the executive summary should be carefully worded so as to not imply conclusions which are not robustly supported by the ISP.

If an exercise such as the ISP is to be used to support government policy, the bounds and limitations of the exercise must be clearly communicated and understood. In its current form, the ISP lends itself to misinterpretation of the underlying modelling and the drawing of conclusions not rigorously supported by the analysis. Acknowledging that reframing of the ISP and the removal of these limitations is likely not practical before the issue of a final version, clearer communication on the points addressed in this submission would seem to be the only prudent option.

Sincerely,

Phil Kurts and Dr Nick Boustead

Principals

Zenith Applied Sciences