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Australian Energy Market Operator (AEMO)
By email: ISP@aemo.com.au

Dear AEMO

Powerlink Submission on Minor Amendments to the 2021 Inputs, Assumptions, and Scenarios, and ISP Methodology (Specifically Relating to Competition Benefits)

Powerlink welcomes the opportunity to provide input to the Australian Energy Market Operator's (AEMO's) consultation on minor amendments to the 2021 inputs, assumptions and scenarios, and the Integrated System Plan (ISP) methodology. We understand that this single stage consultation is primarily related to the computation of competition benefits within the ISP.

Key Messages

Our submission focuses on the following key messages:

- The calculation of competition benefits relies heavily on various assumptions regarding electricity generation and market structure. These assumptions are likely to change significantly over time as the energy market transitions to renewable generation and structural changes to market design are implemented.
- The materiality of competition benefits could potentially decrease over time due to the lower concentration of market power in generation, the introduction of new technologies, and the increasingly distributed nature of the power system.
- Consumers and the energy industry may benefit more by AEMO focusing on other aspects of the ISP, such as further testing the robustness of the optimal development path to changes in future technology.

The consultation paper includes a number of specific questions regarding the methodology for calculating competition benefits upon which stakeholders are invited to provide comment. Our submission provides an overview of Powerlink's experience in calculating competition benefits, and outlines the uncertainties and complexities of assessing this class of market benefit in an energy system undergoing significant transformation, and which may not materially change the outcomes of the ISP. In this context, Powerlink considers that consumers and the energy industry may benefit more by AEMO focussing on aspects of the ISP other than the computation of competition benefits.

The Regulatory Investment Test for Transmission (RIT-T) Application Guidelines state that where a credible option is not expected to affect the wholesale market, a number of classes of market benefits (including competition benefits) would not be expected to be material, and therefore would not need to be estimated in a RIT-T.¹ Hence the assessment of competition benefits is relevant primarily to investments such as interconnectors and major intra-regional flow paths that could impact the wholesale market.

Powerlink and TransGrid have previously quantified competition benefits as part of the assessment of net market benefits in the RIT-T for upgrading the Queensland-NSW interconnector (QNI upgrade).² When quantifying competition benefits, Powerlink and TransGrid used the Frontier approach. As this was a relatively new approach at the time, Powerlink and TransGrid consulted on the proposed methodology for competition benefits. A small number of submissions to the methodology consultation were received including one from AEMO.

Based on this experience Powerlink is able to offer a number of comments in relation to the computation of competition benefits. Firstly, the quantum of competition benefits that can be calculated relies significantly on assumptions used within the modelling. The strategic bidding outcomes depend on the structure of generator portfolios, contracting and power purchasing arrangements, and exposure of capacity to the spot market. This information is generally commercially sensitive and not readily available. Assumptions on these inputs are important for determining Nash equilibrium and associated pricing outcomes.

Powerlink also considers that these assumptions are likely to significantly change over the medium to longer term. The energy industry is undergoing significant transformation as part of the transformation to a decarbonised economy, with high levels of renewable energy connections within Queensland and across the NEM. Powerlink is also experiencing significant interest in battery energy storage systems with several projects currently under construction. Other transformational changes include proposed new pumped hydro energy storage schemes, electrification of the transportation sector, decarbonisation of industrial loads, and continued uptake of distributed energy sources. These changes are very likely to significantly alter both supply and demand side characteristics in the future.

Structural changes to market design as proposed by the Energy Security Board are also likely to change supply side dynamics. In particular, the transition to a hybrid energy plus capacity market will alter revenue streams of price setters (such as gas fired generation). Hence Powerlink considers that it will be increasingly difficult to forecast the quantum of competition benefits looking forward, and in fact considers that the materiality of this class of market benefit could potentially decrease over time due to the lower concentration of market power, new technologies, and the increasingly distributed nature of the power system.

Secondly, the evaluation of competition benefits relies heavily on assumptions relating to the elasticity of demand to wholesale pool price. Powerlink notes that AEMO is proposing to use a single aggregate elasticity of demand across the NEM, and that a halving factor be applied to convert wholesale pool price to retail price. Again, while these approximations appear reasonable, Powerlink notes that changes associated with storage technologies, distributed energy sources, and market design could markedly alter the characteristics of demand responses to price in the short to medium outlook.

¹ Australian Energy Regulator, *Application guidelines – Regulatory investment test for transmission*, August 2020, pp. 29–30.

² Specifically the Powerlink and TransGrid QNI upgrade RIT-T completed November 2014. Details are available on the Powerlink [website](#).

Thirdly, the assessment of competition benefits is a computationally intensive process. The computation increases in complexity with the number of strategic participants since Nash equilibrium needs to be reached across a higher number of players. Within the Powerlink and TransGrid QNI upgrade RIT-T, screening studies were used to estimate gross market benefits in the first instance. These screening studies excluded the computation of competition benefits. Detailed market modelling which included competition benefits was then performed on the shortlist of options. Powerlink notes this approach was also used within the TransGrid HumeLink RIT-T, and considers this a pragmatic approach. Powerlink found in the QNI upgrade RIT-T that competition benefits amounted to approximately 10% of gross market benefits, and did not vary significantly between options taking into account the scale of investment. This appears to correlate with the findings of the TransGrid HumeLink market modelling³.

Conclusion

Although competition benefits can contribute to gross market benefits associated with large scale upgrades of interconnectors and intra-regional flow paths, this category of market benefit generally has more of a secondary effect, and is unlikely to materially change the analysis of candidate development paths within the ISP. Furthermore, transformational changes in the energy system, the issue of data transparency, and computational complexity means that assessing competition benefits may not be proportionate or as relevant as other modelling assumptions within the ISP. Accordingly, Powerlink considers that it may be more effective for AEMO to focus on other aspects of the ISP, such as further testing of the robustness of the optimal development path to changes in future technology, decarbonisation strategies, impacts of changing marginal loss factors on capital plant investments, and other changes in the energy system.

If you have any further questions in relation to this submission, please contact Gerard Nicolas, General Manager Network Portfolio, on 0400 313 304 or gnicolas@powerlink.com.au

Yours sincerely



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³ Note only static competition benefits were assessed within the Powerlink and TransGrid QNI upgrade RIT-T. Powerlink agrees with Frontier Economics who indicate that if static competition benefits are not significant, then it is likely that dynamic competition benefits will also be small, and therefore the benefits of undertaking further modelling to assess them not be worthwhile.