



Ms Nicola Falcon
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21 February 2020

Dear Ms Falcon,

Draft Integrated System Plan

ENGIE Australia & New Zealand (ENGIE) has actively and consistently participated in AEMOs planning and forecasting forums and welcomes the opportunity to provide feedback on the Draft 2020 Integrated System Plan (ISP).

ENGIE is a global energy operator in the businesses of electricity, natural gas and energy services. In Australia, ENGIE has interests in generation, renewable energy development, and energy services. ENGIE also owns Simply Energy which provides electricity and gas to more than 720,000 retail customer accounts across Victoria, South Australia, New South Wales, Queensland, and Western Australia.

ENGIE appreciates the difficulty and complexity when developing an ISP under a high degree of uncertainty. The right balance must be found between consumers shouldering the burden of inefficient investments and being exposed to uneconomic supply shortfalls and high price volatility as a consequence of underinvestment.

In recent submissions on the planning assumptions and ISP draft guidelines, ENGIE has emphasised the following:

- that in order for consumers to “get value for money” it is imperative that the forecasting process isn’t over conservative as this would result in customers underwriting the cost of network projects without receiving commensurate benefits
- that scenario planning methodology be effectively used to address the high/extreme levels of uncertainty (ie policy, technology, economy and environment)
- that calculating net benefits based on an arbitrary probability weighting of outcomes is not appropriate when quantifying benefits



- that market-based modelling should be used to “spot check” the costs-based modelling outcomes

ENGIE acknowledges and complements AEMO on its consistent approach in improving the process of developing planning assumptions, relevant scenarios and effective modelling methodologies.

Of specific note are the following:

- Annual refreshing of the technology costs (GenCost)
- Use of consistent scenarios by AEMOs consultants to ensure alignment of their contribution to AEMOs frameworks
- Extensive participant consultations and participation in a range of planning forums
- Comprehensive documentation of the methods, inputs and scenarios
- The use of a roadmap and sign posts to put the ISP recommendations into perspective
- The removal of the scenario probability weighted benefits when calculating project benefits and introducing the concept of “maximum benefit” and “least regret”.

Thermal plant reliability and forced outage rates

Recently ENGIE provided feedback on the choice of modelling and planning assumptions used for planning studies including the ISP. Of particular concern were reliability assumptions used for a number of thermal plants. Data from the recent past was used to frame long term assumptions which included numerous extended outages. Once the plant specific issues are engineered out, there is essentially no risk of them repeating. Yet the projection of the recent past will have them re-occur in the future. The impact of such an approach is to increase capital expenditure on new plant and interconnectors into the future to compensate.

The indicated benefits presented in the draft ISP show capital and operating (capex and opex) expenditure categories as by far the main contributors. Unfortunately, it isn't clear how much of the new capex is due to the plant unreliability.

The ISP should include a sensitivity that quantifies the impact of the high unreliability of thermal plant by running a model using longer historical performance reliability data.

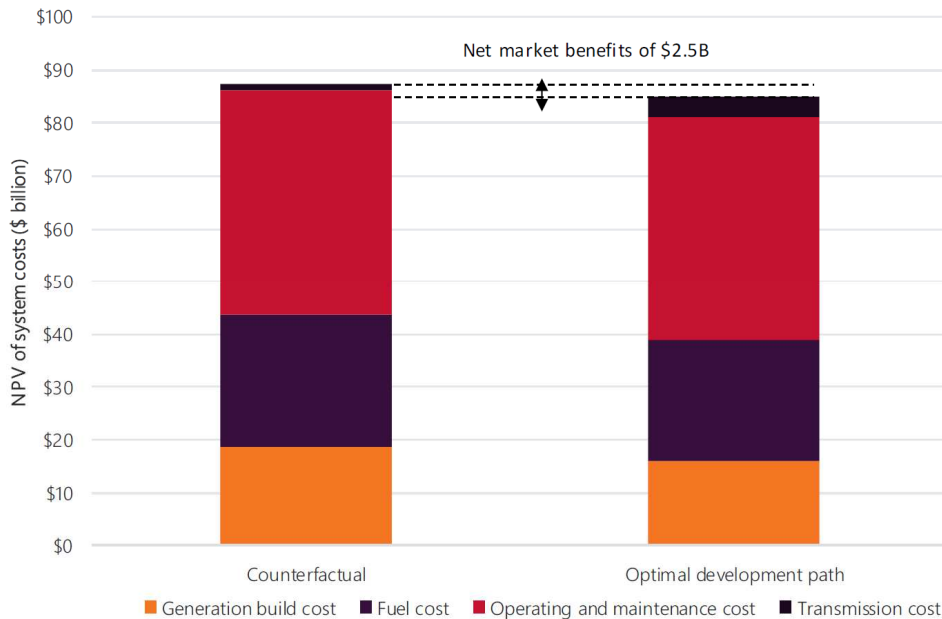
Cost based modelling and market-based modelling

The benefits are calculated as a difference of two large numbers of modelled system costs. The difference amounts to only around about 0.3% in several cases and is typically less than 1.5% when examined over a 20-year modelling horizon. This is illustrated in Table 5 p 52 (Draft ISP) and Fig 81 p92 (Appendix) shown below.

Table 5 Benefit and ideal timing for regional interconnectors (NPV, \$ billion)

Scenario	Interconnectors (further to 'no regret' augmentations)					Cost-benefit analysis		
	QNI Medium	QNI Large	VNI West	Marinus Link 1st Cable	Marinus Link 2nd Cable	Total system costs without interconnectors	Total system costs with interconnectors	Net market benefits
Central	2028-29	2031-32	2031-32	2036-37		85.34	84.91	0.43
High DER	2028-29		2031-32	2036-37		78.50	78.28	0.21
Step Change	2026-27		2027-28	2026-27	2031-32	90.98	89.81	1.16
Slow Change	2028-29					56.77	56.60	0.17
Fast Change	2026-27		2030-31	2036-37		83.84	83.63	0.21

Figure 81 Forecast NPV of total costs to 2041-42, comparing optimal development path to counterfactual, Central scenario



In addition, most benefits occur late in the modelling (late 2020s and early 2030s). Quantifying benefits so far out presents high risks of getting them wrong. Consumers are certain to see the cost but very uncertain to gain the claimed benefits.

The cost-based modelling allows for an efficient formulation which lends itself to short computational time frames. This is particularly important when dealing with a large number of scenarios and sensitivities. However, the cost-based modelling represents decisions made by a central planner with perfect foresight.

Prices in the NEM are not based on a simple merit order and are a product of participant bidding behaviour. Investments in the NEM are subject to market forces and decentralised decision making which are typically quite different to a central planner. That is primarily due to different objective functions. The central planner optimises over the whole system, whilst a market-based optimisation focusses on a single asset or a portfolio of plant.

It is therefore important to establish the level of correlation between cost based and market-based outcomes. ENGIE suggest a limited number of scenarios be modelled using market-based modelling and the corresponding calculated benefits compared to the benefits previously quantified using the cost-based modelling approach.

The differences between the modelling techniques could then be used to show the expected variability and applied as 'pseudo-error bars' around the calculated cost-based benefits.

It may be that the benefits using the market modelling exceed the benefits calculated using the cost-based modelling. However, it may also turn out that due to the different dispatch and investment choices, some of the interconnectors are not required.

The different dispatch levels in market modelling may influence the capacity of some interconnectors where generator output influences the interconnector flow.

In addition, modelling must be internally consistent to ensure that plant receives adequate revenue, to not only cover its short run costs, but also to meet its maintenance requirements and return on investments. Market modelling cross check as advocated here could be used to validate/ensure such a consistency.

Finally, plant retirements in the cost-based modelling are schedule driven and need to be tested for profitability/revenue adequacy. Plant not being able to earn sufficient revenue to fund maintenance will retire early, and plant running at a profit may delay its retirement. The cost-based modelling is insufficient for determining plant profitability and market-based modelling should be used instead to verify retirement outcomes.

Summary

ENGIE provides the following feedback on the draft ISP and in particular:

- Welcomes AEMOs approach to introduce
 - a roadmap
 - signposts to guide future decision making
 - a least regret approach for the assessment of project benefits
 - scenarios for consultants to align their outputs to the ISP
- Suggests additional sensitivity in relation to plant reliability assumptions

- Calls for a sample market-based modelling (bidding based) to assess the robustness of the benefits claimed and to quantify variability between the modelling techniques (central planner vs distributed market-based decision making)
- Recommends a confidence interval around the market benefits be introduced when comparing outcomes and to inform decisions
- Encourage AEMO to continue on the path of continuous improvement and high participant involvement

ENGIE looks forward to continuing to work with AEMO to advance the planning and forecasting processes and methodologies, including the ISP, to ensure that value delivered to customers is real and not compromised.

Should you have any queries in relation to this matter, please do not hesitate to contact me on, telephone, (03) 51 35 5040.

Yours sincerely,

David Hoch

Regulatory Strategy and Planning Manage