

Via email: forecasting@ea.govt.nz.

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Review of forecasting provisions for intermittent generators in the spot market

Mercury welcomes the opportunity to provide feedback to the Electricity Authority (the Authority) on its issues and options paper *Review of forecasting provisions for intermittent generators in the spot market*, 14 June 2022 (Issues Paper).

The Authority is seeking stakeholders' views on options for updating the forecasting arrangements to improve forecast accuracy, better inform wholesale market participants' decisions, and enhance economic efficiency.

Of the four types of forecasting arrangements¹ considered in the Issues Paper, Mercury in general prefers the *central forecasting with the option for self-forecasting* – ie, a “hybrid model”.

Mercury prefers the hybrid model because it allows market participants and the system operator to develop forecasting models based on their individual requirements, drawing on the different information sources available to them. The hybrid approach also has the potential to create competitive tension between central-forecasting and self-forecasting approaches which improves the quality of both approaches.

A suitably designed hybrid model should enable information to be incorporated from diverse sources, providers and performance requirements that reflect operational differences between sites. This diversity should include topographical differences between and within sites, the generation capacity of sites, and the exposure of sites to different weather conditions.

The different operational characteristics between different sites also mean that forecasting performance requirements for each site should differ accordingly. For example, Mercury does not consider relying on the current uniformly applied 30 MW deviation included in the Code is appropriate for sites with different, particularly larger generation capacity. In addition, the Code's treatment of persistence forecasting should be amended to reflect the characteristics of solar generation.

Mercury looks forward to engaging with the Authority and industry stakeholders on updating the forecasting arrangements.

Yours sincerely,



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¹ The Issues Paper identifies four types of forecasting arrangements: 1) decentralised forecasting responsibility; 2) centralised forecasting responsibility; 3) centralised with option for self-forecasting (i.e. hybrid model); and 4) compulsory ahead market and balancing model

Annex: Issues Paper questions with Mercury's response

Issues Paper questions	Mercury response
<p>1. Do you agree with the Authority's problem definition? If not, why not?.</p>	<p>Mercury supports initiatives that aim to improve the quality of the information available to market participants to make improved decisions and enhance economic efficiency.</p> <p>However, there seems at times to be an implicit expectation in the problem definition that intermittent generation forecasts should have a similar level of accuracy as forecast for say hydro or geothermal generation. Clearly there are inherent features of intermittent generation, such as the respective uncertainty of wind and solar fuel sources, that means this is not the case.</p> <p>While intermittent generation forecasts are likely to have a greater inherent uncertainty than forecasting for other fuel sources, Mercury considers that the accuracy of such forecasts will improve over time as more information is collected about the performance of individual wind and solar generation sites under different weather conditions.</p>
<p>2. Do you agree that a new forecasting arrangement should apply to all grid-connected intermittent generators that are required to submit offers?</p>	<p>Mercury considers that the general principles of the new forecasting arrangement should be applied to all grid-connected intermittent generators that are required to submit offers.</p> <p>However, the arrangements may need to reflect the inherent differences between wind and solar generation. For instance, the current wording in the Code for persistence forecast may not be suitable for solar generation.</p>
<p>3. <i>Note this question is referring specifically to generators who have thermal assets:</i></p> <p>For all trading periods between 1 November 2019 and 31 October 2022, how often do you think you made the incorrect decision whether to start or stop your thermal unit(s)? Please provide reasons why this occurred.</p>	<p>Mercury has no comment.</p>
<p>4. What else, if anything, should be considered when assessing the relative advantages and disadvantages of the four forecasting arrangements the Authority has identified?</p>	<p>Mercury suggests that the Authority should also consider the impact of four the forecast arrangements on the Reserves and Frequency Keeping markets. We note that if there is an incentive to bias forecast then this could have adverse effects.</p>
<p>5. What other types of forecasting arrangements, if any, should be considered to improve the issue of inaccurate and unreliable forecasts?</p>	<p>Mercury has no comment.</p>
<p>6. Do you agree with the proposed evaluation criteria? If not, what is your view and why? Are there other criteria that the Authority should consider?</p>	<p>Mercury agrees in general with the proposed evaluation criteria.</p>
<p>7. Do you agree with the Authority's assessment of each forecasting</p>	<p>Mercury agrees in general with the Authority's assessment of each forecasting arrangement.</p>



Issues Paper questions	Mercury response
arrangement above? If not, why not?	
8. The Authority has not weighted the criteria based on importance. Are there particular criteria that you consider to be more important than the others?	Mercury does not have specific views at this point regarding the relative weighting of the criteria.
9. Are there additional criteria that the Authority should be considering?	Mercury does not have specific views at this point on additional criteria.
10. How frequently do you think intermittent generation forecasts should be updated, and how often do you think intermittent generators should be required to revise their offers to reflect updated forecasts?	Mercury notes that the existing arrangements require that the intermittent generation forecasts should be updated every trading period inside the next four trading periods. In addition, Mercury proposes that when there is significant change in the forecast, then the market should be informed immediately.
11. Do you think the Authority should implement accuracy standards? If not, please explain why.	<p>Mercury does not consider that it would be appropriate to implement accuracy standards as every intermittent generation site differs with different sensitivities at different parts of the power curve. As such, any accuracy standards would be arbitrary.</p> <p>In addition, accuracy standards should reflect the inherent nature of wind forecasting where the long/medium terms are more a probability (confidence intervals) and the short-term could be deterministic. Also, when it comes to the compliance threshold, the addition of a percentage of available capacity would be more reflective of operational conditions than the current threshold value of +/- 30 MW included in the Code.</p>
<p>12. If the Authority was to implement accuracy standards:</p> <ol style="list-style-type: none"> do you think outcome process standards would be more effective? should there be a single standard or multiple standards across different timeframes? should the standard(s) be focused on ensuring actual generation is within 30 MW of the amount that was forecast, or should the MW threshold be higher or lower? should the accuracy standards be based on the percentage of installed capacity rather than a certain amount of MW? 	See comments in response to the previous question, in particular the point that the current threshold of +/- 30 MW in the Code should be amended to include a percentage value of output to reflect the fact that the capacity of each wind farm differs.



Issues Paper questions	Mercury response
<p>13. Following the 9 August 2021 grid emergency, reports from two investigations recommended that the Authority amend the Code to disallow persistence forecasting and require wind generations make more accurate offers to the system operator about supply.</p> <p>Do you agree that the Authority should amend the Code to disallow persistence forecasting?</p>	<p>Mercury considers that persistence forecasting has its place, where appropriate, and it should be left to the individual generator to determine.</p> <p>We do note that the current wording in the code “the assumption that the variable resource conditions ... will persist” may not be strictly appropriate for solar where the path of the sun is variable but predictable, while other factors such as cloud cover are not. Mercury suggests a more nuanced interpretation of persistence – e.g. assuming persistent cloud cover but not persistent sun position – is more appropriate.</p>
<p>14. Do you think the Authority should implement accuracy requirements? If not, please explain why.</p>	<p>Mercury considers that the Authority should not implement accuracy requirements because each windfarm is different and it in effect entail different “standards” for each wind farm.</p>
<p>15. If the Authority was to implement a decentralised forecasting arrangement, do you have any suggestions for what type of incentives could be considered ?</p>	<p>Intermittent generators in general have the commercial incentive to improve the quality of their forecasts. This may take time, however, as operational data is gathered particularly for a new windfarm sites, under different weather conditions.</p>
<p>16. If the Authority was to implement a centralised forecasting arrangement:</p> <ol style="list-style-type: none"> do you have any suggestions for what type of incentives could be applied? should penalties for not meeting the standard(s) be prescribed? should penalties be higher for over generating than under generating (or vice versa)? 	<p>If the Authority determines to implement a centralised only model, then Mercury proposes that intermittent generators should pay for it on a \$/MWh basis, and Transpower should submit it into the market.</p> <p>Alternatively, if the Authority determines to implement a hybrid centralised and decentralised approach, then Mercury proposes that those intermittent generators with decentralised forecasts that are not as accurate as the centralised forecast should contribute to the cost of the centralised forecast. This would create a competitive tension and an incentive for market participants to improve the quality of their forecasts.</p>
<p>17. Do you have a view on who should have responsibility for submitting forecasts and who should pay for forecasting?</p>	<p>See response to question 16.</p>
<p>18. Do you have a view on what types of information should be published and what platform it should be published on?</p>	<p>Mercury proposes that the forecast information should be published on the wholesale information and trading system (WITS). Furthermore, these forecasts should be at the national, island and regional level, but not show forecasts for individual windfarms.</p>

