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Electricity Authority

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By email: forecasting@ea.govt.nz

Review of forecasting provisions for intermittent generators – proposed Code amendments

Transpower appreciates the opportunity to respond to the Authority's consultation paper *Review of forecasting provisions for intermittent generators – proposed Code amendments* published 11 October 2024. This submission is made by Transpower in its role as system operator (SO).

Given the importance of the SO's reliance on the outputs and performance of a centralised forecaster, we request additional details on contractual controls that will be established and the Authority's role in ensuring quality and accuracy. The SO should not be liable for any downside operational risk associated with poor forecast quality.

Further collaboration between the Authority and the SO will be needed to develop the operational requirements and understand the implications for the SO.

As well as indicating our drafting comments in the questions, we provide a marked-up commentary against the proposed Code amendments in the attached Word document.

Contract vs. Service Provider model

The draft Code proposes obligations on participants to provide data to the centralised forecaster, who is not an industry participant. A key consideration is what remedies should be available to other market participants in relation to the forecaster's performance. Participants can claim Code breaches of other participants, but not of non-participants.¹ As proposed the centralised forecaster's obligations would be limited to the contract with the Authority and we are concerned this would leave industry participants with no recourse against poor performance.

We recommend that the contract between the Authority and the centralised forecaster should be public and transparent, while taking commercial sensitivity into account. Another

¹ [Electricity Enforcement Regulations 2010](#) refer clause 8.

option would be for a participant bound by the Code, potentially the SO, to be the contractual counterparty to the centralised forecaster.

Ensuring forecasting accuracy

We consider a potential oversight for the scheme design is a lack of clarity about what the system operator should do if it considers the centralised forecast is of poor quality and we see system security risk because of it. (A similar forecast quality issue could also apply to generators). No Code obligation currently exists for the forecasting accuracy of intermittent generation. The proposal is that forecast accuracy will be a contractual matter between the Authority and the centralised forecaster. This approach means the contracted party is not a participant subject to Code obligations. We are concerned that the mechanisms to enforce accuracy or address non-compliance are unclear.

Paragraph 8.10 signals that the Authority is also in the process of analysing forecast performance of existing wind generators, and intends that analysis to inform the development of forecast performance standards. There is a wide disparity between the “forecast performance of the main 5 wind generators”, with the worst being roughly twice as inaccurate as the best.² Consequently, subject to understanding how the analysis will be used, this approach raises a risk that the forecast performance standards may reflect existing performance rather than what is achievable.

To avoid ‘settling’ for lower standards we recommend the Authority considers comparable forecast measures from jurisdictions with central forecasts in place, and the results of the tender trial period, before finalising the forecast performance standards.

While offering a centralised forecasting service for intermittent generators is beneficial, this approach may remove incentives for the forecaster and generators to continuously improve the forecasts. As the quantity of intermittent generation on the system increases the same forecast error percentage results in increases in the forecast error quantity (MW). The power system, and all the ancillary services, operate in absolute quantities not percentages.

We recommend the Authority finds ways to incentivise the centralised forecaster to continuously improve accuracy to deliver better results and minimise the forecast error as installed intermittent generation capacity increases.

Implementing the proposal in SO tools and operations requires investigation and funding

The Authority’s proposal includes that if an intermittent generator adjusts its forecast of generation potential (FOGP), it will not need to tell the SO. The rationale is that because the SO will receive the forecasts directly we will be able to determine ourselves if an intermittent generator has adjusted its FOGP.

² Root mean square error as adjusted percent [Intermittent generation forecasting | Tableau Public](#)

This element of the Authority's proposal in particular has investigation and implementation cost implications for the SO that must be funded through the established TAS (Technical Advisory Services) mechanism because they are not covered by the System Operator Service Provider's Agreement (SOSPA) fixed fee.

The Authority indicates it is selecting a preferred provider in early 2025 and that the forecaster will begin providing services by winter 2025.³ We will need more information on this element of the design, to understand the impact on our tools and our people, before we can assess the feasibility of that timeline. We have previously indicated that a more detailed assessment of this proposal and its impacts is required including (but not limited to) the following aspects:

- (i) **Integrating the external forecast with the market system.** Ensuring the market system can receive the forecast data including system support and service level requirements, such as business hours or 24/7 support.
- (ii) **System changes.**
 - Developing a mechanism for the SO to detect differences of FOGP between the centralised forecast and offers, to alert operators within gate closure period. This mechanism is needed because *the Authority is proposing that if an intermittent generator adjusts its FOGP, it will not need to notify the System operator.* We consider that without timely updates of revised FOGPs in real-time, there will be security risks including over dispatching intermittent generators and incorrect residual and risk assessment in the short-term schedules. (More detail is provided in our response to question 6, about clause 13.18A).
 - The ability to differentiate between the intermittent generators using the centralised forecast and those using their own forecast. This arises from the Authority's proposal that *if an intermittent generator is basing its offers on its own forecast, it will still need to notify the System operator and the Authority if a FOGP is adjusted and the reasons for the adjustment.*
 - Creating a mechanism to receive, store and update a backstop arrangement (e.g. long-term seasonal average), while still able to detect the differences against offers. Clarity is needed on the timing and usage of this backstop arrangement, considering that the last updated forecast may be more accurate than the seasonal average. The long-term seasonal averages can also be provided periodically to each intermittent generator so they're already available for use when needed. However, we would like to better understand any operational role for this long-term seasonal average.
 - Receive from the central forecaster different percentile forecasts for each site to understand the uncertainty in the intermittent generation forecast.
 - Providing any information back to the centralised forecaster, when necessary, e.g. the forecaster will need to know the times when an intermittent generator was

³ The Authority may wish to consider separate intermittent generation forecast providers for solar and wind under a centralised forecasting arrangement because forecasting solar generation and forecasting wind generation are distinct skill sets.

dispatched off for operation or price reasons, so that its actual (constrained) generation during those time periods does not inform future forecasts.

Requirements for generators when submitting offers

In subclause 13.6 (2), a generator must provide at least 5 business days' notice to the system operator before making its first offer. This requirement assumes that the generator is already engaged with Transpower during commissioning; however, it often takes much longer than 5 business days for the system operator to prepare a new generator for offering and dispatch in the market system.

We recommend extending the notice period, to accommodate the expected increase in intermittent generation commissioning and new vendors and technologies in the New Zealand electricity market.

Yours sincerely

Rebecca Osborne
Head of Market Services Group

Appendix - Response to questions

Question	Transpower (as System operator) Response
<p>Q1. Do you agree that the proposed Code amendments are necessary to give effect to the Authority's policy decisions? If not, please explain why.</p>	<p>Yes, but subject to our comments below and the comments relating to the proposed amendments.</p> <p>The Authority's proposal has investigation and implementation cost implications for the SO that must be funded through the established TAS (Technical Advisory Services) mechanism. Implementation of the proposed hybrid arrangement by the SO will require system changes not covered by the System Operator Service Provider's Agreement (SOSPA) fixed fee.</p> <p>The Authority indicates it is selecting a preferred provider in early 2025 and that the forecaster will begin providing services by winter 2025.⁴ We will need more information on this element of the design to understand the impact on our tools and our people, before we can assess the feasibility of that timeline. We have previously indicated that a more detailed assessment of this proposal and its impacts is required including (but not limited to) the following aspects</p> <p>Integrating the external forecast with the market system. Ensuring the market system can receive the forecast data including system support and service level requirements, such as business hours or 24/7 support.</p> <p>System changes.</p> <ul style="list-style-type: none"> Developing a mechanism for the SO to detect differences of Forecast of Generation Potential (FOGP) between the centralised forecast and offers, to alert operators within gate closure period. This mechanism is needed because <i>the Authority is proposing that if an intermittent</i>

⁴ The Authority may wish to consider separate intermittent generation forecast providers for solar and wind under a centralised forecasting arrangement because forecasting solar generation and forecasting wind generation are distinct skill sets.

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	<p><i>generator adjusts its FOGP, it will not need to notify the System operator. We consider that without timely updates of revised FOGPs in real-time, there will be security risks including over dispatching intermittent generators and incorrect residual and risk assessment in the short-term schedules. (More detail in question 6, about clause 13.18A).</i></p> <ul style="list-style-type: none"> • The ability to differentiate between the intermittent generators using the centralised forecast and those using their own forecast. This arises from the Authority's proposal that <i>if an intermittent generator is basing its offers on its own forecast, it will still need to notify the System operator and the Authority if a FOGP is adjusted and the reasons for the adjustment.</i> • Creating a mechanism to receive, store and update a backstop arrangement (e.g. long-term seasonal average), while still able to detect the differences against offers. Clarity is needed on the timing and usage of this backstop arrangement, considering that the last updated forecast may be more accurate than the seasonal average. The long-term seasonal averages can also be provided periodically to each intermittent generator so they're already available for use when needed. However, we would like to better understand any operational role for this long-term seasonal average. • Receive from the central forecaster the percentile forecasts to understand the uncertainty in the intermittent generation forecast. • Providing any information back to the centralised forecaster, when necessary, e.g. the forecaster may need to know the times when an intermittent generator was dispatched off for operation or price reasons, so that its actual (constrained) generation during those time periods does not inform future forecasts.
Q2. Do you agree that intermittent generators will be required to submit	Since the goal is to provide market participants and the system operator with better information on potential security issues and forecast price signals up to a week ahead, it is suggested that all bids and

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<p>their first offer six days before the beginning of the trading period to which the offer relates? What impacts, if any, would this change have on you?</p>	<p>offers should comply with the Week-Ahead Dispatch Schedule (WDS) timeframe. This would ensure consistency and improve the overall reliability of forecast and scheduling in WDS⁵.</p> <p>To align the timeframes with WDS, the bids and offers must be made up to seven days in advance, as the WDS covers the trading periods from 14:00 of the day after WDS publication to the end of the seventh day after WDS publication. For example, the automatic WDS generated on October 31 covers trading periods from 14:00 on November 1 to 23:30 on November 6, 2024.</p>
<p>Q3. Do you agree with the revised decision that all industry participants (i.e., not only generators) should be required to contribute to the costs of the centralised forecast rather than generators only?</p>	<p>We query whether the incremental cost for each generator using the service should be borne by the generator itself. That generator will benefit by the forecast informing its trading decisions, and by the opportunity to avoid costs of procuring or developing a forecast directly itself. Allocating the cost to intermittent generators who use the centralised forecast could also create competition between the centralised forecaster and the independent forecasters that the intermittent generators have already invested in and rely on for their offers.</p>
<p>Q4. Do you agree the Authority's proposed Code amendments</p>	<p>There are questions about regulatory provisions necessary to allow a non-participant to use the Code to impose obligations on participants.</p>

⁵ We've been raising the importance of accurate information into WDS to the Authority and industry participants. ([Note on Improving Inputs to WDS](#)). Intermittent generator offers are a subset of information into the WDS.

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<p>complies with section 32(1) of the Act?</p>	<p>In paragraph 4.3, the proposal for the centralised forecaster to submit offers on generators' behalf on a commercial basis raises questions about whether this would make the forecaster a participant (e.g. trading agent), given that other intermittent generators would also be providing data to the forecaster, and receiving FOGPs from the forecaster. There is also the question about the ability to rely on offers made by a party that is not bound by the Code.</p>
<p>Q5. What inputs would intermittent generators need to provide to the centralised forecaster to produce accurate generation forecasts? Would there be issues with intermittent generators providing this information?</p>	<p>Providing onsite weather actuals, generation actuals, outage information, the efficiencies of individual wind turbines and solar PV panels to the centralised forecaster could improve the accuracy of the forecast in MW, and any constraints that could impact the output of the intermittent generator compared to its potential MW.</p>
<p>Q6. Do you have any comments on the drafting of the proposed Code amendments?</p>	<p>We have also included all comments in the attached marked-up Word document.</p> <p>We have noted the following drafting and typographical issues:</p> <ul style="list-style-type: none"> • in clause 13.6: <ul style="list-style-type: none"> ○ The markup of sub-clause 13.6(3) initially referenced non-current Code, including the pricing manager, which was removed as of March 1, 2024. After contacting the Authority on October 31, 2024, the updated version now correctly refers to the clearing manager.

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	<ul style="list-style-type: none"> ○ Sub-clause numbering was initially incorrect – what was presented as unmarked up sub-clauses (2) and (3) were in fact ‘original’ sub-clauses (4) and (5). Further these clauses had not been renumbered to reflect the creation of new sub-clauses. After contacting the Authority on October 31, 2024, the updated version now correctly reflects the new numbering sub-clauses as (5) and (6). ○ The cross-references [using the correct sub-clause renumbering] in sub-clause (5) needs to be updated to sub-clause (3) as a result of the creation of a new sub-clause (2). It should also be considered whether the cross-references in sub-clauses (3) and (6) should be updated to include sub-clause (2) to capture self-forecasting participants as well as those using the central forecast. ○ The definition of “approved forecast” in the sub-clauses in 13.6(1)(b) uses the term “issued”, but this term may not sufficiently cover the full process of being produced, sent, and received, each of which is required. <ul style="list-style-type: none"> ● in clause 13.9B: <ul style="list-style-type: none"> ○ sub-clause 13.9B(2), as above clarification is needed on what occurs if it is issued but not received. ○ sub-clause 13.9B(3), the condition “if clause 13.6(1)(b)(ii) applies” appears to be a misplaced cross-reference. This subclause should refer to the situation of using alternative forecast when ‘there is no approved forecast’, which is covered by clause 13.6(1)(b)(iii). ○ sub-clause 13.9B(4) seems redundant at least as far as providing the alternative forecast information to the System operator. The generator is already required to provide offers regardless of provenance. ○ sub-clause 13.9B(5) may be more appropriate as a separate clause as the requirement to provide information to the approved forecaster is not an “offer requirement” as described in the clause title. ● in clause 13.18A:

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	<ul style="list-style-type: none"> ○ sub-clause 13.18A(1), a turnaround time of 30 minutes for potentially important FOGP update is too long. For example, if approved forecast is received at 17:15pm submitting revisions at 17:44pm means the 17:33pm NRSS/PRSS, the 17:40pm NRSL/PRSL, and all RTD's for the 17:30pm period would still rely on the FOGP from at least 16:45pm. ○ sub-clause 13.18A(2), we continue to require regular revised offers from generators using an alternative forecast. The exclusion to those generators afforded by this subclause doesn't fill the gap in those generators' obligations. The interpretation guidance states such revisions would be agreed with the Authority as condition of their approval to use an alternative forecast however this seems unnecessarily burdensome on the Authority and easily clarified by making the clause applicable to all intermittent generators. It is also unclear whether a revised offer is required in the event of receiving a new forecast which is the same as the previous one. ○ sub-clause 13.18A(3), it is important to receive updated FOGP for bona fide changes, simply relying on dispatch to SCADA in real-time poses a risk of over dispatching the intermittent generator based on outdated FOGP in certain situations during a dispatch cycle. With the expectation of considerably higher proportion of intermittent generation and some of them can set the island risk, timely FOGP updates are essential for assessing potential impacts on residuals and risks in the forecast schedules. There are security implications lasting up to 30 minutes without knowing the adjustments to FOGP in time and purely relying on the next cyclic reoffer. ○ sub-clause 13.18A(4) the phrase 'as soon as practicable' for revising an offer contrast with the use of 'immediately' for other participants, raising concerns about consistency. ● in clause 13.86A: this clause should remain, its purpose was for dispatch management, not forecast accuracy. Currently there is no dispatch compliance for intermittent generators. This clause was created to prevent intermittent generators from withdrawing generation in real-time. Nothing in the proposal addresses this issue, so the clause needs to be retained. The accuracy of the forecast metrics is not sufficient protection to stop withdrawing intermittent generation for commercial reasons.

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	<p data-bbox="591 256 2018 675">Nothing in the proposal changes the IG dispatch which is dispatch to what it is currently doing unless dispatched down with a flag. The Authority has discussed about 'generation accuracy' but only apply to the intermittent generators basing their offers on their own forecast. Moreover, the term 'generation accuracy' is misleading as it implies tuning the forecast to align with actuals on the assumption actuals are only affected by natural factors like wind or sunlight. If an intermittent generator has a commercial incentive to withhold MWs in real-time, it may appear as a forecast error rather than a 'dispatch compliance' issue as no compliance exists unless constrained. The contract for forecast accuracy is with the provider and there is no Code based obligation around intermittent generation dispatch compliance. Even if such obligations were included in a guidance note, their practical implications for compliance remain unclear.</p> <ul data-bbox="544 727 2018 842" style="list-style-type: none"> <li data-bbox="544 727 2018 842">• Definition of "offer" links to sub-clause 13.6(1) which does not include FOGP, while FOGP is added by the clause 13.9B saying each IG offer must include a FOGP. This raises the question of whether each offer update is also required to include a FOGP, as this is not explicitly clear.