



Electricity Authority

29 November 2024

By email: [OperationsConsult@ea.govt.nz](mailto:OperationsConsult@ea.govt.nz)

## Update to scarcity pricing settings

Transpower appreciates the opportunity to respond to the Authority's consultation paper *Update to scarcity pricing settings* published 1 November 2024. This submission is made by Transpower primarily in its role as system operator (SO) and we indicate submission points from the grid owner (GO) where relevant.

Scarcity pricing is essential for an efficient energy-only market to address supply risks and maintain grid stability. We strongly support the Authority's review of these settings. We have consistently supported its review e.g. through our submissions<sup>1</sup> to the MDAG's analysis for *price discovery in a renewables-based system*,<sup>2</sup> and our system operator forums, particularly following the supply shortage risk in May 2024. An energy-only market relies on strong price signals during supply shortages to incentivise real-time operational decisions, contracting and future investments in firm, flexible capacity (both supply and demand) to reliably respond during shortage periods.

We agree with the proposals to raise the values of energy scarcity prices and the default value for controllable load, and reduce the number of reserve scarcity tranches to simplify the interaction between reserve and energy scarcity.

However, we are concerned that the proposed low value for reserve scarcity has implications for system security and the reliance on SO discretion. Both Scenario 2 and Scenario 3 in the consultation paper highlight instances when reserve scarcity was triggered when generation was available but was priced higher than the reserve shortfall price.

Setting reserve scarcity prices too low relative to energy offer prices will lead to the Scheduling, Pricing and Dispatch (SPD) tool prioritising reduced system security.

This effect increases the likelihood of the SO needing to apply discretion to mitigate reserve shortfall risk, which could persist until all offered resources are dispatched. Reliance on discretion highlights the need for more robust scarcity pricing settings to minimise the need for SO intervention and ensure the market can address supply and reserve risks effectively.

We support the Authority's view that it continues to expect good trading conduct by closely monitoring high price offers to ensure fair and transparent market behaviour, as highlighted in Scenario 1 of the proposal. We recommend that the Authority be more public about its

---

<sup>1</sup>[Transpower submission MDAG options renewable based electricity system](#)

<sup>2</sup>[MDAG Price Discovery in a renewables-based electricity system](#)

investigations, clearly communicating the results of these investigations into both good and poor trading behaviours. Such transparency is crucial, as both types of findings provide valuable learnings for market participants. Additionally, we encourage the Authority to take a firmer stance in its conclusions to reinforce expectations. Collectively, these measures should help maintain market confidence by consumers and mitigate risks of unintended market impacts, including the hidden cost of constraining on high-priced generation and potential price suppression.<sup>3</sup>

### The SO's policy statement could cover discretion during scarcity

We believe further robust analysis is needed to evaluate the economic trade-offs involved in running with Contingent Event (CE) reserve shortfalls, which increases the risk of an automatic under frequency load shedding (AUFLS) event. With the expected increase in flexible demand, an AUFLS event needs to be assessed against controllable load and demand reduction actions, to manage CE risk without triggering AUFLS.

Under the current market design of the scarcity pricing regime, apart from a genuine energy shortfall, reserve shortfall can also develop:

- when reserve scarcity prices are relatively low compared to offer prices, or
- because the Code and SPD cannot account for all the potential power system scenarios.

These situations are reflected in the scarcity pricing analysis of the consultation paper, which correctly highlights that the SO faces challenges in balancing the risks of two potential undesirable outcomes, both dependent on the dynamic offer set:

- The first risk is that the generation and reserve offers are priced higher than the reserve shortfall price (scenario 2 and 3), leading to physical capacity not being dispatched and the system running in an insecure state.
- The second risk is that multiple risk setters could cause the reserve shortfall price to exceed the energy shortfall price, which would result in scheduled load shedding.

The industry-agreed policy prioritises CE reserve shortfalls before instructing demand disconnection.<sup>4</sup> The Authority has endorsed an SO policy of using discretion to dispatch generation and reserves out of merit to minimise the reserve shortfalls should it be available.<sup>5</sup> It could be possible to consult through the Policy Statement process on whether to create clarity around the application of discretion to dispatch uncleared energy or reserves during periods of reserve and energy scarcity. Additionally, we emphasise the importance of minimising reliance on discretion by better ensuring that SPD's input settings produce operable outcomes.

---

<sup>3</sup> Paragraph 3.48 and 3.49 of the consultation paper.

<sup>4</sup> Paragraph 1.10 and 2.16 of the Final elements of real-time pricing Decision 27 September 2022. ([https://www.ea.govt.nz/documents/2608/Copy\\_of\\_Final\\_elements\\_of\\_real-time\\_pricing\\_-\\_Decision1374145.1\\_1.pdf](https://www.ea.govt.nz/documents/2608/Copy_of_Final_elements_of_real-time_pricing_-_Decision1374145.1_1.pdf))

<sup>5</sup> Paragraph 5.14 and 5.22 of the Final elements of real-time pricing Code Amendment Consultation Paper 07 June 2022 ([Long-form report](#))

## SO view on updating Scarcity Pricing settings

Since real-time pricing (RTP), our analysis and both Scenario 2 and 3 in the consultation paper concludes that Sustained Instantaneous Reserve (SIR) scarcity is more likely to trigger first due to its lower price setting and the larger quantity required to be procured, making it more prone to activation compared to Fast Instantaneous Reserve (FIR) scarcity.

While we agree that raising reserve prices above \$7,000/MWh<sup>6</sup> is excessive, we believe that setting reserve scarcity prices at the middle tranche (\$4,000/MWh for FIR and \$3,500/MWh for SIR) would be too low. Paragraph 5.22 indicates that the middle tranche is appropriate because reserve offers prices have not exceeded \$2,495/MWh since RTP was implemented. However, in Scenario 3 of the scarcity pricing analysis, raising the SIR scarcity price from \$3,000/MWh to \$3,500/MWh may still lead to SIR shortfall, as it would not be high enough to clear the \$5,000/MWh energy offer ( $\$980/\text{MWh} + \$3,500/\text{MWh} < \$5,000/\text{MWh}$ ).

We recommend the Authority conducts further analysis to explore adopting higher reserve scarcity prices while ensuring sufficient room between the reserve and energy scarcity prices. To avoid relying solely on historical offers to determine reserve shortfall values (as offer behaviour may change over time), the Authority should consider more frequent assessments of scarcity pricing settings than the five-year interval currently required under clause 13.58AB of the Code. This is particularly important given the anticipated increase in intermittent generation and flexible resources in the market.

Scarcity prices are critical for incentivising efficient operation, contracting and investment. However, increasing energy and reserve scarcity prices alone may not fully achieve these objectives. Strong market competition is essential to ensure these prices effectively meet their goals, as their impact depends on participants' offers. Introducing a price cap for offers in conjunction with scarcity price settings could be considered if scarcity prices alone prove insufficient. Additionally, stronger market monitoring is crucial to promote fair and transparent behaviour, reinforcing the overall effectiveness of scarcity pricing.

## Implementation implications on SO before winter 2025

We recognise the importance of implementing the updated scarcity pricing settings in the market system ahead of winter 2025. To ensure a smooth transition, our efforts will focus on the activities outlined in our response to question 6 of the Appendix. We will need to be informed about the updated scarcity pricing settings as soon as possible to allow sufficient time to complete these implementation activities.

Yours sincerely

**Rebecca Osborne**

**Head of Market Services**

---

<sup>6</sup> Paragraph 6.16 and 6.17 of the consultation paper.

## Appendix - Response to questions

Questions	Transpower (as System operator) Response
<p>Q1. Do you support the proposal to raise energy scarcity prices? Please explain your answer.</p>	<p>Yes</p> <p>The industry-agreed policy prioritises CE reserve shortfalls before instructing demand disconnection.<sup>7</sup> The Authority has endorsed an SO policy of using discretion to dispatch generation and reserves out of merit to minimise the reserve shortfalls should it be available.<sup>8</sup> It could be possible to consult through the Policy Statement process on whether to create clarity around the application of discretion to dispatch uncleared energy or reserves during periods of reserve and energy scarcity. Additionally, we emphasise the importance of minimising reliance on discretion by better ensuring that SPD's input settings produce operable outcomes.</p> <p>We support the Authority's view that it continues to expect good trading conduct by closely monitoring high price offers to ensure fair and transparent market behaviour, as highlighted in Scenario 1 of the proposal. We recommend that the Authority be more public about its investigations, clearly communicating the results of these investigations into both good and poor trading behaviours. Such transparency is crucial, as both types of findings provide valuable learnings for market participants. Additionally, we encourage the Authority to take a firmer stance in its conclusions to reinforce expectations. Collectively, these measures should help maintain market confidence by consumers and mitigate risks of unintended market impacts, including hidden cost of constraining on high-priced generation and potential price suppression.<sup>9</sup></p>
<p>Q2. Do you support the proposal to set energy scarcity prices at values consistent with 2018 VoLL (\$17,000/MWh, \$25,000/MWh and</p>	<p>Yes.</p> <p>We note the role of the grid owner's commissioned analysis<sup>10</sup> in reaching these values, and for scarcity pricing we agree with the Authority's reasoning to not further increase those values by inflation.</p> <p>The Authority is concurrently consulting on its work programmes under levy appropriations for FY25/26. Under the</p>

<sup>7</sup> Paragraph 1.10 and 2.16 of the Final elements of real-time pricing Decision 27 September 2022. ([https://www.ea.govt.nz/documents/2608/Copy\\_of\\_Final\\_elements\\_of\\_real-time\\_pricing\\_-\\_Decision1374145.1\\_1.pdf](https://www.ea.govt.nz/documents/2608/Copy_of_Final_elements_of_real-time_pricing_-_Decision1374145.1_1.pdf))

<sup>8</sup> Paragraph 5.14 and 5.22 of the Final elements of real-time pricing Code Amendment Consultation Paper 07 June 2022 ([Long-form report](#))

<sup>9</sup> Paragraph 3.48 and 3.49 of the consultation paper.

<sup>10</sup> Refer [PWC Estimating the Value of Lost Load.pdf](#), [Transpower VoLL Study June 2018](#)

<b>Questions</b>	<b>Transpower (as System operator) Response</b>
<p>\$40,000/MWh)? Please explain your answer.</p>	<p>market development programme, the Authority indicates in Option 2 it will review the VOLL however this is not indicated for Option 3. We consider it should be in Option 3.<sup>11</sup></p> <p>The review would influence the next consideration of scarcity prices, and security of supply standards for Winter energy and capacity margins. For the grid owner, the review could also influence the default VOLL under Schedule 12.2, where VOLL is the basis for valuing grid investment, transmission alternatives, and energy not served through interruptions.</p>
<p>Q3. Do you support the proposal to reduce the number of reserve scarcity prices from three tranches to one tranche? Please explain your answer.</p>	<p>Yes. We agree this will help reduce operational complexity.</p>
<p>Q4. Do you support the proposal to set reserve scarcity prices at \$4,000/MWh for FIR and \$3,500/MWh for SIR? Please explain your answer.</p>	<p>The proposed reserve scarcity price settings are still relatively low to the high energy price.</p> <p>Paragraph 5.22 indicates that the middle block (\$4,000/MWh for FIR and \$3,500/MWh for SIR) is appropriate because reserve offers prices have not exceeded \$2,495/MWh since RTP was implemented. However, in Scenario 3 of the scarcity pricing analysis, raising the SIR scarcity price from \$3,000/MWh to \$3,500/MWh may still lead to SIR shortfall, as it would not be high enough to clear the \$5,000/MWh energy offer (<math>\\$980/\text{MWh} + \\$3,500/\text{MWh} &lt; \\$5,000/\text{MWh}</math>).</p> <p>Setting the reserve scarcity price too low relative to energy offer prices results in SPD prioritising reduced system security and increasing the likelihood of the SO needing to apply discretion to mitigate reserve shortfall risk, which could persist until all offered resources are dispatched. Reliance on discretion highlights the need for more robust scarcity pricing settings to minimise the need for SO intervention and ensure the market can address supply and reserve risks effectively.</p> <p>We recommend the Authority conducts further analysis to explore adopting higher reserve scarcity prices while ensuring sufficient room between the reserve and energy scarcity prices. To avoid relying solely on historical offers to determine reserve shortfall values (as offer behaviour may change over time),</p>

<sup>11</sup> [Proposed levy-funded appropriations 2025/26](#) Page 25

Questions	Transpower (as System operator) Response
	<p>Authority should consider more frequent assessments of scarcity pricing settings than the five-year interval currently required under clause 13.58AB of the Code. This is particularly important given the anticipated increase in intermittent generation and flexible resources in the market.</p> <p>Scarcity prices are critical for incentivising efficient operation, contracting and investment. However, increasing energy and reserve scarcity prices alone may not fully achieve these objectives. Strong market competition is essential to ensure these prices effectively meet their goals, as their impact depends on participants' offers. Introducing a price cap for offers in conjunction with scarcity price settings could be considered if scarcity prices alone prove insufficient.</p> <p>Additionally, stronger market monitoring is crucial to promote fair and transparent behaviour, reinforcing the overall effectiveness of scarcity pricing.</p>
<p>Q5. Do you support the proposal to raise the price of controllable load to \$16,000/MWh? Please explain your answer.</p>	<p>Yes.</p> <p>We recommend the Authority clarifies that the controllable load prices apply only in the Price Responsive Schedules (PRS) as difference bids, meaning they can only set the price in the PRS schedules.</p>
<p>Q6. Do you have any comments on the drafting of the proposed amendment?</p>	<p>See our comments for Q4. We recognise the importance of implementing the updated scarcity pricing settings in the market system ahead of winter 2025. To ensure a smooth transition, our efforts will focus on the following activities:</p> <ul style="list-style-type: none"> <li>• Implementing the new settings in a non-production environment to validate functionality</li> <li>• Updating related market system settings to reflect the revised values, including adjustments to operator alarm thresholds</li> <li>• Running test market schedules under the new settings to ensure integration</li> <li>• Conducting test schedules to verify results against the results (vSPD)<sup>12</sup> provided by the Authority to ensure alignment</li> </ul>

---

<sup>12</sup> The Electricity Authority is responsible for developing, maintaining and updating the vectorised scheduling, pricing and dispatch model called vSPD. It is a replica of SPD which is an audited, mathematical pricing and dispatch engine used in the New Zealand electricity market.

Questions	Transpower (as System operator) Response
	<ul style="list-style-type: none"> <li>• Comparing test schedules with new settings against historical cases where shortages occurred to confirm expected behaviour</li> <li>• Updating our procedures and training materials</li> <li>• Revising externally facing explanatory animations and documents.</li> </ul> <p>We will need to be informed about the updated scarcity pricing settings as soon as possible to allow sufficient time to complete these implementation activities.</p> <p><b>Other observations.</b></p> <p>In paragraph 3.8, we recommend the Authority clarifies the policy that scarcity pricing signals should only be triggered when there is insufficient generation or reserve offered into the market to meet the forecast demand. This policy ensures that scarcity pricing is applied appropriately, reflecting actual market conditions and helping to provide clear signals for both market participants and SO.</p> <p>In paragraph 3.11, we consider the definition of scarcity pricing to be mistaken. When electrical disconnection of demand is instructed<sup>13</sup> then “what-if” pricing commences per the requirements of Schedule 13.3AA<sup>14</sup>. The “what-if” pricing considers the value of the load that has been instructed to be shed and sets prices as if that load were still trying to be served.</p> <p>In Paragraph 3.12, scarcity pricing may not directly impact Fixed Price Variable Volume (FPVV) customers in the prices they pay now. However, retailers are likely to include the costs of risk management in their fixed rates, which will ultimately be passed through to customers when scarcity events occur, albeit smoothed over a period longer than just the trading periods during which the scarcity occurred.</p> <p>In paragraph 3.22, the scarcity price tranches for energy are implemented within SPD as default bid blocks, equivalent to actual bids (not set as constraint violation penalties). SPD could clear the default bid blocks before generation.</p> <p>In Paragraph 3.27, we disagree with the statement because the trade-offs need to be considered given increases in VOLL and less tolerance for wide-spread load shedding which would occur under AUFLS operation. The statement also overlooks the</p>

<sup>13</sup> Electricity Industry Participation Code 2010 Schedule 8.3, Technical Code B clause 6 (1)(d) and 6 (2)(d)

<sup>14</sup> Electricity Industry Participation Code 2010 Schedule 13.3AA

<b>Questions</b>	<b>Transpower (as System operator) Response</b>
	<p>benefit of maintaining system security for CE events, which is critical to ensuring the reliability and stability of the grid.</p> <p>In paragraph 3.29 and 5.12, Scarcity is modelled at the nodal level – binding transmission constraints, for instance, can cause scarcity prices in a constrained “economic island” of one or more Grid Exit Points (GXP). We have had some dispatch intervals where energy scarcity was observed at Mangahao due to a binding transmission constraint.</p>
<p>Q7. Do you agree the proposed amendment is preferable to the other options? If you disagree, please explain your preferred option in terms consistent with the Authority’s statutory main objective in section 15 of the Electricity Industry Act 2010.</p>	<p>Yes, but subject to our comments for Q4.</p>
<p>Q8. Do you agree with the analysis presented in this Regulatory Statement? If not, why not?</p>	<p>As noted in our comments for Q4, we recommend the Authority conducts further analysis to explore adopting higher reserve scarcity prices while ensuring sufficient room between the reserve and energy scarcity prices.</p>