

**Authority's preliminary  
decision on whether an  
undesirable trading situation  
occurred following 16  
February 2024**

Preliminary decision

8 May 2024

## Executive summary

The Authority is responsible for investigating any situation that it suspects or anticipates may be an undesirable trading situation (UTS). A UTS is a situation that threatens, or may threaten, confidence in, or the integrity of, the wholesale market, and which cannot be resolved via other mechanisms under the Electricity Industry Participation Code 2010 (Code). The Code gives the Authority power to take corrective action if it considers a UTS is developing or has developed.

The Authority in this UTS investigation is considering whether final prices determined by offers, which were depressed by demand management on 9 August 2021, could threaten confidence in, or the integrity of, the wholesale market following the High Court decision on 16 February 2024.

On balance, the Authority's preliminary view is that confidence in the wholesale market is threatened, or may be threatened, by prices being determined by offers in conjunction with demand management in circumstances where participants would expect higher prices to apply.

Accurate price signals are necessary for an efficient spot market and efficient investment decisions so that electricity is there when it's needed for consumers – whether on extremely cold winter nights like 9 August 2021, for those who are medically dependent or for businesses to provide the services we rely on. If prices are too low, parties who might be prepared to reduce demand in response to spot price signals will have reduced opportunities to enter into such arrangements. Ensuring the appropriate price signals for last resort generation also promotes security of supply, which is in the best interests of consumers in the long-term.

Last resort generation is generation that is needed when other sources of generation are insufficient to meet demand. Last resort generation is typically less efficient or more expensive to operate compared to other types of generation. As a result, it is usually kept in reserve to provide electricity during peak demand periods when prices are higher. Accurate price signals in this context means prices reflect peak demand or emergency conditions. If prices do not reflect those conditions, last resort generators may not be incentivised to invest in that type of generation, to build it, or run it, when it is needed. Without last resort plant, disconnections of consumers like those that occurred on 9 August 2021 may be increasingly necessary to manage peaks.

The introduction of real time pricing in November 2022 will prevent the same event that took place on 9 August 2021 happening again. Scarcity pricing will apply automatically when the real time market schedules show the need for a reduction or disconnection of demand, and without the requirement of an island shortage situation (ISS) notice being issued by the system operator.

There is, however, still the risk that either error or other action or event could result in prices that are in some way inappropriate given market conditions. It is important that the industry has confidence that the Authority will take any necessary action where prices have been artificially depressed, or inflated, to send the appropriate price signals to the market.

### **The events of 9 August 2021**

On 9 August 2021, New Zealand faced the largest demand peak on record because of one of the coldest nights of the year. The situation on 9 August rapidly escalated with a decline

in generation, high demand, and a real time risk of cascade failure of the national power system.

In response to the risk of cascade failure, the system operator issued notices to reduce demand, resulting in some lines companies disconnecting demand. While the risk of cascade failure reduced as a result of the demand reductions, approximately 34,000 customers were disconnected. The Authority's finding is that the system operator's actions to reduce demand in light of the real time data it was receiving, were appropriate and proportionate to the risk the system operator was seeking to manage.

### **The High Court decision on appeals against a pricing error claim and the effect on prices**

Following 9 August, participants raised a pricing error claim in respect of trading periods 1 – 48 alleging that participant behaviour led to higher spot prices for all trading periods on 9 August 2021. Participants also alleged a UTS had occurred during trading periods 37 - 42 on 9 August 2021.

The Authority decided not to uphold the pricing error claim and found that a UTS had not occurred on 9 August as there was no situation which threatened, or may have threatened, confidence in, or integrity of the wholesale market.

Participants appealed against the decisions on the pricing error claim and the UTS on the basis that the Authority erred by declining to intervene in the setting of prices on the electricity wholesale market. On 16 February 2024 the High Court upheld the participants' pricing error appeals finding that scarcity pricing was incorrectly applied to trading periods 39 – 42.

### **Our preliminary view is that there was a UTS**

The Authority commenced an investigation following the High Court's decision that scarcity prices were incorrectly applied to four trading periods on 9 August 2021 due to a pricing error. The Authority's previous UTS investigation into 2021 found that the application of scarcity pricing on 9 August was not a UTS because the circumstances were precisely those which the scarcity pricing regime was designed to manage. The effect of the High Court's decision is that scarcity pricing no longer applies. The Authority considered an investigation into a possible UTS was required to determine whether prices being determined by offers and demand management by the system operator, combined with the absence of scarcity pricing, amounts to a UTS.

Given the High Court's decision, the underlying fundamentals and appropriate price signals may no longer be reflected in prices on 9 August 2021. Without the high prices from scarcity pricing, it is necessary to consider the impact of the system operator's demand management on prices for all relevant trading periods. This includes trading periods 37 – 42.

The Authority's preliminary decision following this investigation, is that a UTS has occurred as a result of prices being determined by offers in conjunction with demand management in circumstances where participants would expect higher prices to apply.

The Authority considers that prices for trading periods 38 and 39 being artificially depressed as a result of the system operator's notices to reduce demand, combined with the absence of scarcity pricing in periods 39 to 42, threatens, or may threaten, confidence in, or the integrity of, the wholesale market. This is because the market expects high prices during times of scarcity. If prices are too low, parties who might be prepared to reduce demand in response to spot price signals will have reduced opportunities to enter into such

arrangements. It will also mute the incentives for investment in last resort generation, which will undermine security of supply.

Weak incentives for investing in last resort plant will mean that the power system will increasingly rely on demand reductions as occurred on 9 August 2021. This more frequent disconnection has an obvious direct negative impact on consumers, particularly as it can be reasonably anticipated that such disconnections will occur at periods of high demand, like during cold weather.

Accurate price signals are necessary for an efficient spot market, which in turn leads to more efficient investment decisions. Ultimately, spot prices that reflect underlying fundamentals are in the long-term interests of consumers to incentivise the sort of generation New Zealand will need in a reliable, renewable power system.

As the power system becomes more renewable, the need for last resort plant will increase. The Boston Consulting Group report *The future is electric* suggested that \$1.9b of investment was needed in flexible demand and generation, four times that built in the 2010s<sup>1</sup>. As power system assets are long lived, if these investment decisions are not efficient then consumers could suffer in the long term, either through higher prices or lower reliability.

Consumers are unlikely to be disadvantaged by higher prices on 9 August 2021 because scarcity prices are built into real time pricing, and these must already be reflected in any forward prices and therefore retail tariffs.

However, if a UTS is found to have developed, prices as high as those determined by scarcity pricing, for example, may not be required to restore confidence in the wholesale market.

The Authority has considered factors which could support a finding that no UTS has developed. The most significant of which is the effect of real time pricing. The particular circumstances of this situation cannot occur again because with real time pricing the dispatch model responds in real time to scarcity. Other factors considered include the passage of time since 9 August 2021 and the finalisation of prices, with the uncertainty arising from possible changes to those prices potentially threatening confidence in the wholesale market.

These are relevant factors for consideration, and the Authority encourages participants to submit on these issues in any submissions. The Authority's views on these issues are set out in this preliminary decision paper.

### **Next steps**

This is a preliminary decision, and we welcome feedback. We will consider all submissions before making our final decision.

Where the Authority finds that a UTS is developing or has developed, it may take any action it considers necessary to correct the UTS. The Authority is yet to consider what action may be necessary. If the Authority reaches a decision that a UTS is developing or has developed, it will then separately consider what action is necessary. As required by the Code, the Authority will consult with affected participants unless it considers that it is impractical to do so, before taking any action.

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<sup>1</sup> [the-future-is-electric-full-report-october-2022.pdf \(bcg.com\)](https://www.bcg.com/publications/2022/10/the-future-is-electric-full-report-october-2022.pdf)

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# 1. Introduction

- 1.1. The Authority may investigate any situation that it suspects or anticipates may be a UTS. A UTS is a situation that threatens, or may threaten, confidence in, or the integrity of, the wholesale market. The situation cannot be one which can be satisfactorily resolved via other mechanisms under the Code (aside from the trading conduct provisions). The Code gives the Authority power to take corrective action if it considers a UTS is developing or has developed.

## **A possible UTS investigation opened following the Court upholding appeals against a pricing error claim decisions**

- 1.2. On 5 July 2022 Haast Energy Trading Limited (Haast) and Electric Kiwi Limited (Electric Kiwi) appealed to the High Court against:
- (a) the Authority's decision on 1 September 2021 not to uphold Haast and Electric Kiwi's pricing error claim for trading periods 1 – 48 on 9 August 2021 (PEC 075)
  - (b) the Authority's decision on 1 February 2022 not to reconsider PEC 075
  - (c) the Authority's decision not to uphold a UTS alleged by Haast and Electric Kiwi to have arisen out of the events of 9 August 2021.
- 1.3. In a judgment dated 16 February 2024, *Haast Energy Trading Limited and Electric Kiwi Limited v Electricity Authority* [2023] NZHC 408 (the High Court decision) the High Court upheld the appeals against the PEC 075 decisions in respect of trading periods 39 – 42 and dismissed the appeal on the UTS decision as moot, given the finding on the PEC decisions.
- 1.4. In upholding the appeals on PEC 075, the High Court found that scarcity pricing had been applied to trading periods 39 – 42 on 9 August 2021 through a pricing error. As a result of the High Court decision, prices for trading periods 39 – 42 have been finalised without scarcity pricing applying.
- 1.5. On 29 February 2024 the Authority decided to open an investigation into a possible UTS following the High Court decision that scarcity prices were applied to the four trading periods due to a pricing error on the grounds that:
- (a) spot prices have been determined by offers, in conjunction with demand management, in circumstances where scarcity pricing would have been appropriate
  - (b) this may give rise to a situation which threatens, or may threaten, confidence in, or the integrity of, the wholesale market and there is no other mechanism under the Code for satisfactorily resolving this situation.
- 1.6. In this investigation the Authority has considered all trading periods where prices may have been artificially depressed as a result of demand reduction notices by the system operator to assess whether a UTS has developed, not just trading periods 39 – 42. This is because without scarcity pricing applying, the underlying fundamentals and appropriate prices may no longer be reflected in prices on 9 August 2021.
- 1.7. When scarcity prices applied, prices on 9 August were sufficiently high to ensure the correct incentives were provided to the market. Given the High Court decision,

scarcity pricing no longer applies, which raises the question whether prices were affected by demand management to an extent that, in the absence of scarcity pricing, confidence in the wholesale market has been or may be threatened.

## **The Authority's preliminary decision is that a UTS has occurred**

- 1.8. The Authority has carried out an investigation and undertook analysis to reach its preliminary decision. In particular, the Authority considered:
  - (a) the actions of the system operator on 9 August 2021
  - (b) the extent to which final prices were depressed as a result of disconnected demand
  - (c) the purpose and intent of scarcity pricing and whether the circumstances of 9 August were such that the market would reasonably expect scarcity pricing to apply.
- 1.9. On balance, the Authority's preliminary view is that confidence in the wholesale market is threatened, or may be threatened, by prices being determined by offers in conjunction with disconnected demand in circumstances where participants would expect higher prices to apply. It is important that prices reflect underlying supply and demand as this leads to efficient decisions in the short term for fuel, and in the long term for investment. In this case, the depressed prices weaken incentives for participants to operate and invest in last-resort generation. Ensuring the correct price signals for last-resort generation promotes security of supply which is in the best interests of consumers in the long-term. Without last resort plant, disconnections like those that occurred on 9 August 2021 will be increasingly necessary to manage peaks.
- 1.10. When prices move away from efficient prices, the spot market becomes less efficient and this means that we cannot rely on efficient investment in generation.

## **2. This is a preliminary decision, and we invite submissions**

### **What this consultation paper is about**

- 2.1. The purpose of this paper is to seek feedback from interested parties on the Authority's preliminary decision on the UTS, which is that prices for trading periods 38 and 39 being artificially depressed by demand management, in circumstances where participants would expect higher prices to apply, threatens or may threaten confidence in the wholesale market.
- 2.2. The Authority has previously consulted on the events of 9 August 2021 in the *UTS preliminary decision paper – 9 August 2021*<sup>2</sup> and the *Supplementary Consultation Paper – UTS decision*<sup>3</sup>. The Authority published its final decision on the UTS investigation in June 2022 (the 2021 UTS). That investigation was predicated on scarcity pricing applying to trading periods 39 - 42. The present investigation

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<sup>2</sup> [Long-form report \(ea.govt.nz\)](#)

<sup>3</sup> [Preliminary decision on claim of an undesirable trading situation on 9 August 2021 – Supplementary consultation paper \(ea.govt.nz\)](#)



proceeds on the basis that scarcity pricing has not been applied, following the High Court's finding upholding the pricing error claim appeal. The Authority does not intend to refer to submissions on the previous investigation and asks participants to provide feedback on this preliminary decision paper on this basis.

- 2.3. The Authority welcomes feedback on all aspects of this preliminary decision and is particularly interested in the sector's views on the following issues:
- (a) whether prices in trading periods 38 and 39 were artificially depressed as a result of demand management by the system operator
  - (b) whether prices being artificially depressed as a result of the system operator's notices to reduce demand, combined with the absence of scarcity pricing, threatens, or may threaten confidence in, or the integrity of the wholesale market
  - (c) are there any other factors not considered in this PDP the Authority should take into account in assessing whether the situation threatens, or may threaten confidence in, or the integrity of the wholesale market
  - (d) if you consider that confidence in the wholesale market has been, or may be, threatened in this situation, the potential consequences in terms of future participant behaviour and security of supply and the implications for consumers.
- 2.4. This is a preliminary decision, and the Authority will consider all submissions received by the deadline before making a final decision.

### **How to make a submission**

- 2.5. Our preference is to receive submissions in electronic format (Microsoft Word) in the format shown in Appendix A. Submissions in electronic form should be emailed to: [uts.2024@ea.govt.nz](mailto:uts.2024@ea.govt.nz) with "Preliminary decision on February 2024 investigation of an undesirable trading situation" in the subject line.
- 2.6. If you cannot send your submission electronically, please contact the Authority ([uts.2024@ea.govt.nz](mailto:uts.2024@ea.govt.nz) or 04 460 8860) to discuss alternative arrangements.
- 2.7. Please note the Authority has a practice of publishing all submissions it receives. If you consider that we should not publish any part of your submission, please:
- (a) indicate which part should not be published
  - (b) explain why you consider we should not publish that part
  - (c) provide a version of your submission that the Authority can publish (if we agree not to publish your full submission).
- 2.8. If you indicate part of your submission should not be published, the Authority will discuss this with you before deciding whether or not to publish that part of your submission.
- 2.9. Please note that all submissions received by the Authority, including any parts that the Authority does not publish, can be requested under the Official Information Act 1982. This means the Authority would be required to release material not published unless good reason existed under the Official Information Act to withhold it. The

Authority would normally consult with you before releasing any material that you said should not be published.

### When to make a submission

- 2.10. Please provide your submission by 5pm on 5 June 2024.
- 2.11. Authority staff will acknowledge receipt of all submissions electronically. Please contact the Authority ([uts.2024@ea.govt.nz](mailto:uts.2024@ea.govt.nz) or 04 460 8860) if you do not receive electronic acknowledgement of your submission within two business days.

## 3. Background

- 3.1. This section sets out the background to the events of 9 August, the subsequent pricing error and UTS claims by participants, appeals against the Authority's decisions on those claims, and the High Court decision on the appeals.

### Events of 9 August 2021

- 3.2. On the evening of Monday 9 August 2021, New Zealand faced the largest electricity demand peak on record because of one of the coldest nights of the year. At the same time as demand peaked, available generation unexpectedly declined, a result of a drop in wind generation and weed clogging the intakes of the Tokaanu power station. Slower-start generating assets were offline in the afternoon and could not be brought online in time to service the evening peak.
- 3.3. The 9 August event led to approximately 34,000 customers experiencing an electricity cut without warning, with the biggest impact in the Waikato region where over 17,000 customers were disconnected.
- 3.4. One of the system operator's principal obligations under the Code is to maintain system security. The real time data available to the system operator on 9 August 2021 showed insufficient generation available to meet demand and still have sufficient reserves for any contingent event. The real time information that the system operator was using to manage the power system suggested there was a risk of cascade failure of the national power system. This was an unprecedented event for New Zealand, and "*...the first time an event of this nature has occurred since the electricity market began in 1996*"<sup>4</sup>.
- 3.5. In order to maintain system frequency and avoid the risk of cascade failure, the system operator issued grid emergency notices (GENs) requesting participants increase energy offers and instantaneous reserve offers and decrease load. Some distributors were able to respond by reducing controllable load by ripple control, while other distributors disconnected consumers in order to reduce demand by the amount requested by the system operator.
- 3.6. After the grid emergency had ended, the system operator issued an island shortage situation notice (ISS notice) which caused the pricing manager to apply the scarcity

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<sup>4</sup> As noted at the end of the second paragraph of the Executive Summary of the MBIE Report – <https://www.mbie.govt.nz/dmsdocument/17988-investigation-into-electricity-supply-interruptions-of-9-august-2021>

pricing provisions in the Code<sup>5</sup>. The Code (as it was in 2021) required the system operator to issue an ISS notice whenever there had been an island wide instruction to electrically disconnect demand.

- 3.7. As a result of the ISS notice on 9 August, the pricing manager determined that scarcity pricing applied to four trading periods (trading periods 39 to 42 starting at 19:00 and ending at 21:00).
- 3.8. Scarcity pricing exists to prevent electricity prices being artificially depressed during times of high demand, and to provide appropriate incentives to generators. This now occurs automatically through real time pricing, but in 2021 it relied on the issue of an ISS notice. In 2021 the scarcity provisions of the Code provided a price floor and price cap to the spot market when an electricity supply emergency causes forced power cuts (called emergency load shedding) throughout one or both islands. Where the system operator has directed load to be shed, then the ordinary pricing mechanisms in the Code would result in a lower pricing solution: prices would fall even though real demand is high.
- 3.9. In this case, the application of scarcity pricing caused prices to reset to approximately \$10,000 MW/h for trading periods 39 – 42 on 9 August. If not for the application of scarcity pricing, the average price during those trading periods would have been much lower. As a result, the gross settlement amount for generation was up to \$130 million more than if scarcity prices had not been invoked, though the net impact was likely significantly less<sup>6</sup>.
- 3.10. The Code, as it was in 2021, contained provisions to give effect to the policy discussed above. However, these provisions specify that the system operator must require electrical disconnection as a pre-condition for scarcity pricing to apply (i.e. other forms of demand suppression are not sufficient).
- 3.11. The Authority and the system operator agree that the ISS notice was issued in error. The system operator did not require the electrical disconnection of demand on 9 August 2021; instead it requested that distributors reduce demand. Some distributors were able to respond to the system operator notices through ripple control, while other participants had to electrically disconnect customers to achieve the reduction requested by the system operator. As a result, the ISS notice and thus the triggering of scarcity pricing, did not follow the Code.
- 3.12. Real time pricing reforms came into force in November 2022. Under real time pricing, if there is a reserve or energy scarcity (where generation is so scarce that there is not enough to cover demand and forced power cuts are required) scarcity pricing is automatically applied in the market schedules when there is not enough

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<sup>5</sup> One of the Authority's functions under section 16 of the Electricity Industry Act 2010 is to contract for market operation services to operate the electricity market. The pricing manager was the market operation service provider appointed by the Authority responsible for collecting data and producing provisional, interim, reserve and final prices. Final prices were then provided by the pricing manager to the clearing manager to use in the clearing and settlement processes. The pricing manager was also responsible for considering any pricing error claims and resolving any pricing error that had occurred. The implementation of real time pricing mean that the pricing manager role is no longer required.

<sup>6</sup> The overall effect was to raise the gross settlement amount for electricity by approximately \$130 million. However, the actual financial gain for generators is likely to have been significantly less. This is because generators that are also retailers were both selling and buying electricity. Additionally, many retailers will have hedge contracts that seek to protect them from price spikes. As a result, the impact on consumers is also significantly less than \$130 million, particularly because many consumers will be on fixed price contracts.

generation or instantaneous reserve offered into the market to meet the forecast demand. As a result, there is no longer any distinction (for pricing purposes) between electrical disconnection and other demand-reduction measures taken in real time. Scarcity pricing is no longer triggered by ISS notices. Instead, scarcity pricing automatically applies whenever this is merited by the underlying (im)balance of supply and demand.

- 3.13. As the Code has been amended and the scarcity pricing provisions contained in the Code as at August 2021 have been revoked following the introduction of real time pricing, references to Code clauses within this paper are those that applied at the relevant time unless stated otherwise. Copies of previous versions of the Code can be found on the Authority's website<sup>7</sup>.

### **The pricing error claim**

- 3.14. Following 9 August, Haast and Electric Kiwi raised a pricing error claim (PEC 075). A pricing error is defined in the Code as a price that is likely to be incorrect as a result of:
- (a) an incorrect input being used in calculating the interim price or interim reserve price; or
  - (b) the pricing manager having followed an incorrect process in calculating that interim or reserve price, in contravention of this Code.
- 3.15. Haast and Electric Kiwi contended in PEC 075 that participant behaviour led to higher spot prices for all trading periods on 9 August 2021.
- 3.16. The pricing manager provided a recommendation to the Authority on PEC 075 in August 2021. As the pricing manager did not identify any incorrect input or incorrect process being used, the recommendation was to decline to uphold the pricing error claim.
- 3.17. In the course of reviewing the pricing manager's recommendation, the Authority identified a potential issue with the ISS notice issued by the system operator. At the time of considering PEC 075 neither the system operator nor the Authority had reached a view as to whether the ISS notice was validly issued.
- 3.18. Ultimately the Authority considered that any issue with the ISS notice could be considered within the context of a UTS investigation that was already underway in respect of the events of 9 August.
- 3.19. Accordingly, the Authority decided on 1 September 2021 not to uphold PEC 075 on the basis that a potentially incorrect ISS notice did not constitute an incorrect input or incorrect process in the context of a pricing error claim.
- 3.20. Haast and Electric Kiwi asked the Authority to reconsider the pricing error claim in December 2021 on the basis of the allegedly incorrect ISS notice. The Authority declined to reconsider the claim on 1 February 2022.

### **The 2021 UTS claim**

- 3.21. In addition to PEC 075, Haast and Electric Kiwi also submitted a UTS claim on 12 August 2021 in respect of trading periods 37 – 42 on 9 August 2021. Two more

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<sup>7</sup> [Previous versions of the Code | Electricity Authority \(ea.govt.nz\)](#)

parties subsequently joined the claim: Flick Energy Limited and Switch Utilities Limited (Vocus New Zealand). The claim alleged that the UTS was individually and jointly caused by Contact Energy Limited (Contact) and Genesis Energy Limited (Genesis) on the grounds that:

- (a) Genesis did not offer Huntly Rankine Unit 4 (HLY4) to the market
  - (b) Contact had Taranaki Combined Cycle (TCC) available but did not run it.
- 3.22. In the course of its investigation into the claimed UTS, the Authority also considered whether a UTS had arisen through the triggering of the Code's scarcity pricing regime by the system operator.
- 3.23. In response to the UTS claim, the Authority directed the pricing manager to hold prices interim for trading periods 37 – 42 under clause 13.184 of the Code.
- 3.24. In June 2022 the Authority published its final decision paper on the claim of a UTS. The Authority found that a UTS did not occur during trading periods 37 – 42 on 9 August 2021. In relation to HLY4 and TCC not being offered to the market the Authority considered that no UTS occurred because the decision not to offer HLY4 and TCC was within the range of what the market might normally expect in the circumstances and therefore the failure to bring it online or offer it to the market did not threaten confidence in, or the integrity of, the wholesale market.
- 3.25. In respect of the triggering of scarcity pricing, the Authority concluded that while the system operator made errors during the event, including the issuing of the ISS notice, there was no UTS because the Authority determined the circumstances of 9 August 2021 were those in which scarcity pricing was designed to apply. The application of scarcity pricing to the four trading periods given the underlying conditions was found not to threaten confidence in, or the integrity of, the wholesale market.

### **The High Court decision upheld the pricing error claim**

- 3.26. Haast and Electric Kiwi appealed against the decisions on the pricing error claim and 2021 UTS claim on the basis that the Authority erred by declining to intervene in the setting of prices on the electricity wholesale market for 9 August 2021. Haast and Electric Kiwi submitted that the use of scarcity pricing was an "incorrect process" or an "incorrect input" in terms of the definition of "pricing error" in clause 1.1 of the Code.
- 3.27. The High Court upheld the appellants' pricing error appeals in respect of trading periods 39 – 42, finding that while there was no error in the pricing inputs, the pricing manager followed an incorrect process:

"....

- (a) *The ISS Notice was issued in breach of the Code.*
  - (b) *This triggered the Pricing Manager to calculate interim prices using the scarcity measure under sch 13.3A (rather than the ordinary methodology in sch 13.3).*
  - (c) *This resulted in a significant increase in the price of electricity.*
- [107] *Because (a) above should never have occurred, the Pricing Manager's actions at (b)–(c) were wrongfully triggered, which amounted to an incorrect*

*process in calculating that interim price or interim reserve price” which is a pricing error under cl 1.1 of the Code....”<sup>8</sup>*

- 3.28. The High Court dismissed the appeal on the UTS decision as moot, given the finding on the PEC 075 decisions.

### **Resetting of prices following the High Court decision**

- 3.29. The High Court decision upholding the PEC 075 appeals in respect of trading periods 39 - 42, resulted in the clearing manager<sup>9</sup> being required to recalculate prices without the application of scarcity pricing for the four trading periods.
- 3.30. In accordance with its legal obligations under the Code, on 23 February 2024 the Authority notified the clearing manager of the decision on the pricing error claim and directed it to recalculate interim prices without scarcity pricing applying for those four trading periods.
- 3.31. On 29 February 2024 the Authority lifted the existing direction to hold prices interim for trading periods 37 – 42 on 9 August 2024 and directed the clearing manager to finalise prices for those trading periods. On 5 March 2024 the clearing manager finalised prices.
- 3.32. The resetting of prices without the application of scarcity pricing reduces prices for trading periods 39 – 42 from approximately \$10,000 MW/h to well under \$1,000 MW/h. This is set out in further detail in section 10. Scarcity pricing had not been applied to trading periods 37 and 38.
- 3.33. The High Court decision referred to trading periods 39-42 as these were the periods that scarcity pricing applied to. As set out above, the Authority’s UTS investigation is not confined to these trading periods, as without scarcity pricing ensuring the correct incentives in last resort generation, it was necessary to look at all trading periods where prices may have been artificially depressed as a result of demand management.

## **4. This investigation considers whether prices being determined by offers in conjunction with demand management amounts to a UTS**

- 4.1. This paper considers whether final prices being determined by offers in conjunction with demand management, combined with the absence of scarcity pricing, could threaten confidence in, or the integrity of the wholesale market. In analysing this issue the Authority has considered whether final prices fall below what the market would reasonably expect in order to ensure confidence is not threatened. The introduction of real time pricing will prevent the same event happening again. Scarcity pricing will apply automatically and without the requirement of an ISS notice.
- 4.2. There is, however, still the risk that either error or other action or event could result in prices that are in some way inappropriate given market conditions. It is important

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<sup>8</sup> paras 106 and 107

<sup>9</sup> Previously pricing manager at the time PEC 075 was made

that the industry has confidence that the Authority will take any necessary action where prices have been artificially depressed or inflated, to send the appropriate price signals to the market.

- 4.3. The finding of no UTS in the 2021 final decision paper as a result of scarcity pricing applying is not necessarily binary. That is to say it does not automatically follow that the absence of scarcity pricing results in a UTS.
- 4.4. The issue to be determined in the 2021 UTS was whether the application of scarcity pricing could amount to a UTS. At that time the Authority's view was based on the presumptive application of scarcity pricing. The Authority determined that the circumstances of 9 August 2021 were those in which scarcity pricing was designed to apply, there was no UTS as prices were what the market might expect given the underlying conditions.
- 4.5. In this UTS investigation the issue is whether final prices that are depressed by demand management where scarcity prices are not applied amounts to a situation that threatens or may threaten, confidence in or integrity of the wholesale market. If a UTS is found to have occurred, prices as high as those applied by scarcity pricing for example, may not be required to restore confidence in the wholesale market.

## 5. Legal framework for a UTS

- 5.1. Under Part 5 of the Code the Authority is responsible for investigating any situation that it suspects or anticipates may be a UTS. A UTS is a situation that threatens, or may threaten, confidence in, or the integrity of, the wholesale market, and which cannot be satisfactorily resolved via other mechanisms under the Code (aside from the trading conduct provisions). The Code gives the Authority power to take corrective action if it considers a UTS is developing or has developed. This section provides further detail on the legal framework for a UTS.

### The Code defines what a UTS is

- 5.2. Part 5 of the Code governs the Authority's ability to act in respect of a UTS. Specifically, clause 5.1 of the Code provides that:
  - (1) *If the Authority suspects or anticipates the development, or possible development, of an undesirable trading situation, the Authority may investigate the matter.*
- 5.3. A UTS is defined in clause 1.1 of the Code as:

*any situation—*

  - (a) *that threatens, or may threaten, confidence in, or the integrity of, the wholesale market; and*
  - (b) *that, in the reasonable opinion of the Authority, cannot satisfactorily be resolved by any other mechanism available under this Code (but for the purposes of this paragraph a proceeding for a breach of clause 13.5A is not to be regarded as another mechanism for satisfactory resolution of a situation).*
- 5.4. To assist in identifying a potential UTS, clause 5.1(2) of the Code provides the following examples of what the Authority may consider to constitute a UTS:

- (a) *manipulative or attempted manipulative trading activity:*
- (b) *conduct in relation to trading that is misleading or deceptive, or is likely to mislead or deceive:*
- (c) *unwarranted speculation or an undesirable practice:*
- (d) *material breach of any law:*
- (e) *a situation that threatens orderly trading or proper settlement:*
- (f) *any exceptional or unforeseen circumstance that is contrary to the public interest.*

5.5. However, as is noted in clause 5.1(3) of the Code:

(3) *To avoid doubt,—*

- (a) *the list of examples in subclause (2) is not an exhaustive list, and does not prevent the Authority from finding that an undesirable trading situation is developing or has developed in other circumstances; and*
- (b) *an example listed in subclause (2) does not constitute an undesirable trading situation unless the example comes within the definition of that term in Part 1.*

5.6. Therefore, even if a situation does not come within the examples in clause 5.1(2), it may still be a UTS under the Code. Similarly, even where a situation does come within those examples, the Authority will still need to establish that the situation comes within the definition of a UTS as set out in Part 1 of the Code.

5.7. Where the Authority does find a UTS, clause 5.5 of the Code requires that the Authority “must” correct the UTS and “restore the normal operation of the wholesale market as soon as possible”. (Further details of the actions the Authority may take to correct a UTS are set out in Appendix C).

### **Interpretation of the Code’s UTS provisions**

5.8. For a situation to be categorised as a UTS it must meet the criteria set out in paragraphs (a) and (b) of the definition in clause 1.1 of the Code, as set out in paragraph 5.3 above. That is, the situation threatens, or may threaten, confidence in, or the integrity of, the wholesale market and, in the reasonable opinion of the Authority, the situation cannot satisfactorily be resolved by any other mechanism available under the Code (aside from the trading conduct provisions).

5.9. A UTS may exist even if there is no Code breach, and a Code breach may occur without a UTS arising.

5.10. The UTS provisions are deliberately very broad in scope. The Authority is ultimately responsible for determining whether, and how, they apply to a particular situation. The analysis the Authority undertakes to inform and support that judgement may take different forms depending on the situation.

5.11. In exercising this broad discretion, the Authority is guided by its main statutory objective, which is “to promote competition in, reliable supply by, and the efficient operation of, the electricity industry for the long-term benefit of consumers.”

5.12. The Authority must also be mindful of the specific purpose of the UTS provisions. As illustrated by clause 5.5, the UTS regime is designed to allow the Authority to correct



a situation that threatens, or may threaten, the wholesale market, and to restore normal operation.

- 5.13. In determining whether confidence in the wholesale market is, or may be threatened, the Authority avoids hindsight-bias and will take into account all the factors that might have led to imperfect decision-making at the time.
- 5.14. The nature of the Authority's UTS powers is informed by the examples given in clause 5.2(2) of powers which the Authority can exercise to correct a UTS:
- (a) directing that an activity be suspended, limited, or stopped, either generally or for a specified period
  - (b) directing that completion of trades be deferred for a specified period
  - (c) directing that any trades be closed out or settled at a specified price; and/or
  - (d) directing a participant to take any actions that will, in the Authority's opinion, correct or assist in overcoming the undesirable trading situation.
- 5.15. In determining whether there is a UTS, there are three questions to consider:
- (a) whether the situation affects the wholesale market;
  - (b) whether the situation threatens, or may threaten, confidence in, or the integrity of, the wholesale market; and
  - (c) whether the situation may be resolved by any other mechanisms available under the Code (aside from the trading conduct provisions in clause 13.5A of the Code).

### **Question 1: Does the situation affect the wholesale market?**

5.16. The wholesale market is defined in clause 1.1 of the Code<sup>10</sup> and includes:

- (a) *the spot market for electricity, including the processes for setting—*
  - (i) *[Revoked]*
  - (ii) *forecast prices and forecast reserve prices:*
  - (iii) *[Revoked]*
  - (iv) *interim prices and interim reserve prices:*
  - (v) *final prices and final reserve prices:*
  - (vi) *dispatch prices and dispatch reserve prices*
- (b) *markets for ancillary services:*
- (c) *the forward market for electricity, including the market for FTRs.*

5.17. The Authority is required to assess whether the situation impacted the wholesale market as provided for in the above definition. The Authority's view is that, in order to come within this, any threat must be significant enough to be a threat to the wholesale market as a whole, and the Authority needs to be satisfied that the issue

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<sup>10</sup> Electricity Industry Participation Code 2010 – current version

has wider implications that might threaten confidence in, or the integrity of, the wholesale market more generally<sup>11</sup>.

## **Question 2: Does the situation threaten, or may it threaten, confidence in, or the integrity of, the wholesale market?**

- 5.18. The definition of a UTS requires the situation to actually or potentially threaten “confidence in” or “the integrity of” the wholesale market.
- 5.19. The Authority’s view is that threatening the wholesale market’s integrity requires a situation that directly impacts how the market operates, such that it might jeopardise the market’s ability to function<sup>12</sup>.
- 5.20. By contrast, threatening confidence in the wholesale market requires that the situation jeopardises participants’ faith in the market. This may involve considering how participants in the market would perceive and react to the situation.
- 5.21. Assessing confidence and / or integrity requires the Authority to look at indicators and other indirect factors to decide whether a UTS has occurred. It is not possible to directly observe or measure confidence in, or the integrity of, the wholesale market. Indicators that the Authority may consider – if relevant – could include:
- (a) prices and whether these are consistent with underlying supply and demand
  - (b) prices and whether these are consistent with the conditions of the market
  - (c) the scale and duration of an event in order to assess whether it threatened confidence
  - (d) whether the conduct and decisions of participants were consistent with what might be expected if the market was operating normally.
- 5.22. The Authority needs to consider the particular facts of each situation and apply indicators that are relevant and material. These may differ from case to case.

## **Question 3: Can the situation be resolved by any other mechanism available under the Code?**

- 5.23. Where the Authority considers that there is a situation which threatens, or may threaten, confidence in, or the integrity of, the wholesale market, it must then consider whether the matter can be satisfactorily resolved under any other Code provisions. The trading conduct provisions, contained in clause 13.5A of the Code, are expressly excluded from this analysis<sup>13</sup>.

## **6. The Authority considered its main statutory objective**

- 6.1. In considering the application of the UTS provisions, the Authority considered its main statutory objective. While the Code sets out the legal framework within which the Authority’s consideration of a UTS must occur, the application of the Authority’s main statutory objective provides an economic context.

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<sup>11</sup> For more information in relation to the UTS provisions and previous decisions, see: [Undesirable trading situations | Electricity Authority \(ea.govt.nz\)](#)

<sup>12</sup> In relation to para 5.19 – 5.22, see: [Undesirable trading situations | Electricity Authority \(ea.govt.nz\)](#)

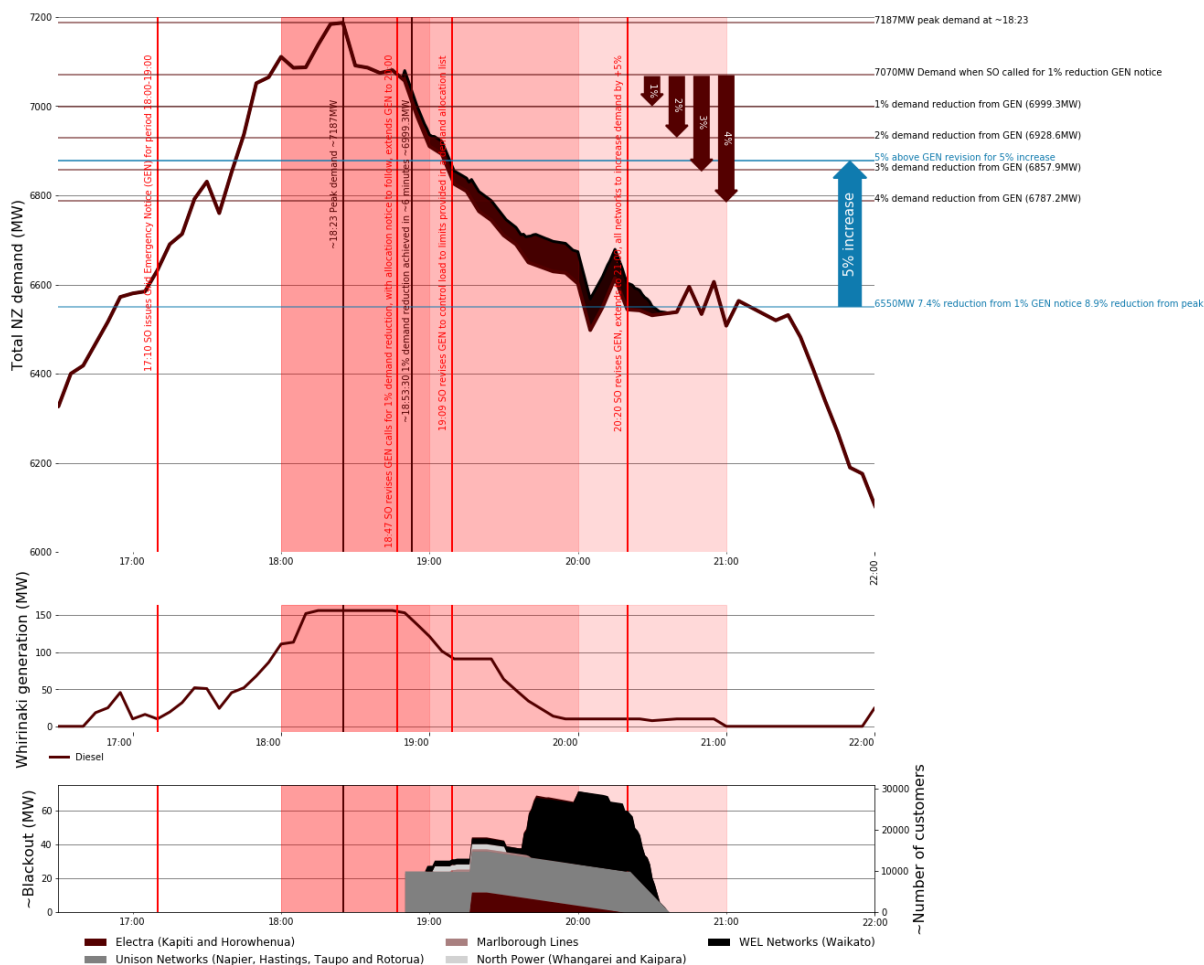
<sup>13</sup> Electricity Industry Participation Code 2010, Part 1, clause 1.1

- 6.2. The Authority considers that its main statutory objective requires it to exercise its functions—set out in section 16 of the Electricity Industry Act 2010 (Act)—for the long-term benefit of electricity consumers to deliver the following outcomes:
- (a) facilitate or encourage increased competition in the markets for electricity and electricity-related services, taking into account long-term opportunities and incentives for efficient entry, exit, investment and innovation in those markets
  - (b) encourage industry participants to efficiently develop and operate the electricity system to manage security and reliability in ways that minimise total costs whilst being robust to adverse events
  - (c) increase the efficiency of the electricity industry, taking into account the transaction costs of market arrangements and the administration and compliance costs of regulation, and taking into account Commerce Act 1986 implications for the non-competitive parts of the electricity industry, particularly in regard to preserving efficient incentives for investment and innovation.
- 6.3. The UTS provisions promote, and should be interpreted in light of, the Authority's main statutory objective as set out in section 15 of the Act, specifically:
- ...to promote competition in, reliable supply by, and the efficient operation of, the electricity industry for the long-term benefit of consumers.*
- 6.4. The broad UTS provisions are also consistent with the economic rationale for UTS-type provisions. Such provisions are intended to achieve operationally efficient and competitive markets. In particular, they recognise that market providers cannot foresee all eventualities and that some practices may be difficult to identify and prevent in advance of using other rules. As such, UTS provisions often give market providers broad discretion to address practices which might in some way threaten the market.

## 7. Context for the wholesale market on 9 August 2021

- 7.1. The timeline of the events of 9 August and the system operator notices are set out in Appendices A and C. In summary, however:
- (a) the 18:47 Grid Emergency Notice (GEN) is the first system operator action that caused demand to be disconnected. Figure 1 shows that this happened in three lines companies' areas
  - (b) at 18.52 the power system lost 47MW at Tokaanu
  - (c) by 18.53 a 70MW reduction in load was achieved relative to 18:47 when the 1% GEN was issued
  - (d) at 19:09 Transpower issued the demand allocation notice that resulted in more consumers being disconnected.
- 7.2. Figure 1 illustrates the 9 August peak event. It shows the timing of the system operator GENs against total demand (top chart), diesel generation at Whirinaki (middle chart), and the timing (and approximate magnitude) of customer disconnections (bottom chart).

**Figure 1 - The August 9 event summarised: load, Whirinaki generation and disconnections**



- 7.3. The vertical red lines indicate the timing of when the GEN was sent, while the shaded pink regions indicate the evolving Grid Emergency period. At 5:10pm, the system operator issued the first GEN for the peak period between 6pm and 7pm (darker shaded pink region), calling for increased generation offers and decreased demand.
- 7.4. Network companies responded by reducing controllable demand such as hot water heating and other industrial demand. By 6pm the grid emergency had started. Total generation reached a peak by about this time. To complicate matters, between 6:05pm and 6:10pm around 124MW of generation was lost on contingency from the Tokanuu hydro station (later cited as being caused by lake weed). This loss was partially replaced by additional generation, mainly from Whirinaki diesel generation in Hawke’s Bay and Maraetai hydro generation on the Waikato river.
- 7.5. By around 6:20pm peak demand was reached, remaining essentially constant for around 25 minutes until 6.45pm. At 6.47pm the system operator issued a revision to the GEN. This GEN asked for all network companies to reduce demand by 1%. It also extended the grid emergency end time from 7pm to 8pm and stated that a demand allocation notice would follow. Immediately following this GEN demand fell.
- 7.6. Lines companies (especially those who had used all controllable demand) started tripping distribution feeders to customers in their attempts to comply with the 1% reduction notice – these power cuts are illustrated in both the bottom chart and also by the darker brown area in the top chart. By 6:53pm, around 6 minutes after the

GEN revision, total demand had decreased by the 1% targeted reduction set by the system operator. However, with network companies responding at different times and with natural demand reduction occurring after the peak period, demand continued to drop as illustrated in the top chart.

- 7.7. By 7:09pm the system operator revised the GEN notice and issued individual demand allocations for various participants. As illustrated in the top chart, by this time total demand had decreased by over 3% since the 1% call and many generators had run back from their maximum generation. The middle chart shows Whirinaki diesel generation which had decreased from over 150MW to under 100MW by 7:09pm. Additionally, both Stratford gas peakers, Tokaanu hydro station, Maraetai hydro station and hydro stations on the Ohau scheme in the South Island had all reduced generation output to match the now falling demand.
- 7.8. Network companies such as WEL Networks (Hamilton/Waikato), who responded quickly to the 1% request were later required to trip customers. The timing and approximate magnitude of the power cuts resulting from this action are illustrated on the bottom panel of Figure 1 along with the brown shaded area on the top panel. We estimate that approximately 80MWh was lost through feeder tripping/power cuts, with perhaps an additional 300-400MWh of demand response by network companies during this time.
- 7.9. At 8:20pm the system operator issued a further GEN revision, extending the grid emergency end time from 8pm to 9pm – illustrated by the lighter shaded pink area. This GEN revision stated that all network companies could increase demand by 5%. As illustrated in the top chart, by this time total demand was around 6550MW, or 7.4% lower than when the 1% GEN notice was sent. As illustrated by the blue arrow, a 5% increase in demand from this point indicates a total demand higher than the demand at the time of the 7:09pm demand allocation notice.
- 7.10. At 9:01pm the system operator revised the GEN, ending the grid emergency.

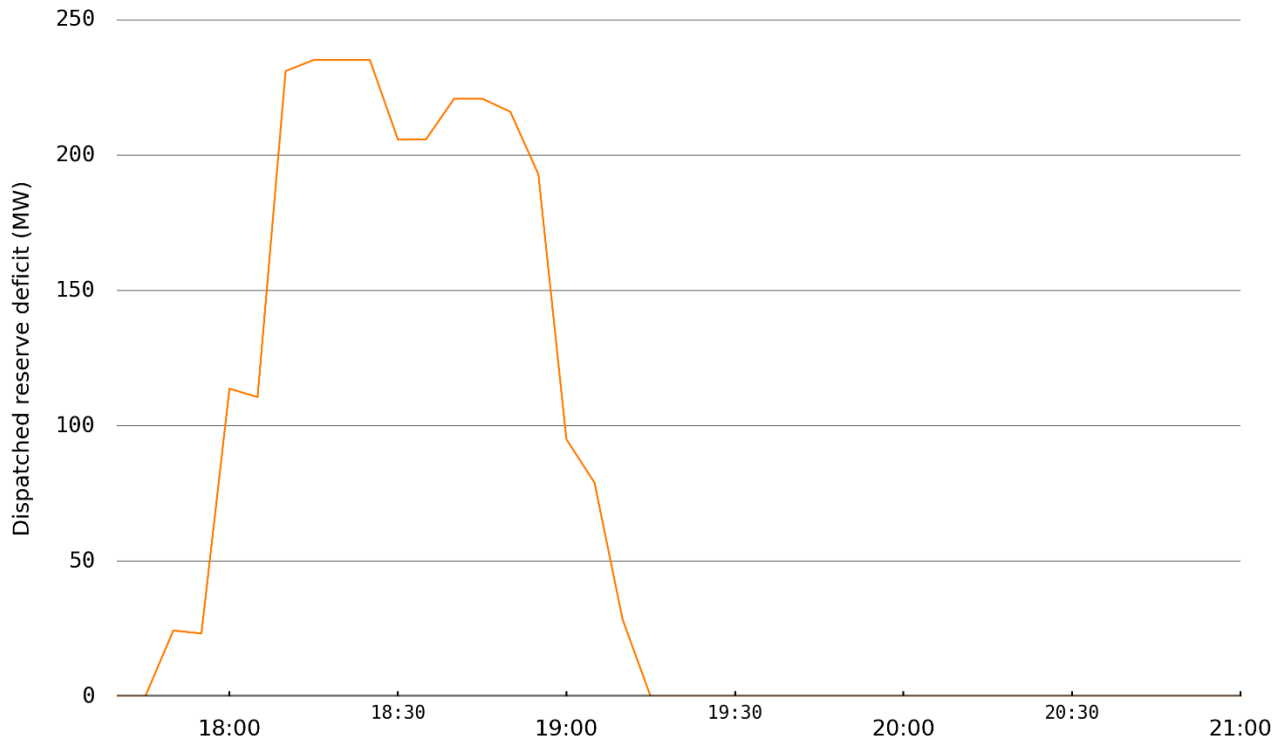
### **The system operator was observing that the power system was under stress**

- 7.11. The interim final pricing schedule indicates a reserve deficit of less than 1 MW for trading periods 37 and 38. This gives the incorrect impression that the event could have been managed without any load shedding. As the interim final pricing schedule is an ex-post schedule, it includes the actions taken by the system operator to mitigate the security issues they observed in real time in its calculation of the final prices.
- 7.12. As such, the situation facing the system operator in real time was very different. There are several reasons why ex-post schedules may not appear as bad as real time schedules:
  - (a) The NRSS (non-responsive short schedules) run at 17:03, 17:33, 18:33 and 19:03 showed infeasible prices for trading periods 37 through 39 (ie, 18:00 through 19:30), which indicated a shortage of instantaneous reserve to maintain a secure power system. This triggered the system operator to issue the first GEN notice at 17:10.
  - (b) Figure 2 shows that between 17:45 and 18:10, the system operator observed a real time reserve deficit steadily increasing up to 230 MW. When the GEN was issued at 18:47, the reserve deficit was still running at 220 MW and

showing no sign of abating. The subsequent reduction in reserve deficit was due in large part to the instructed load shedding.

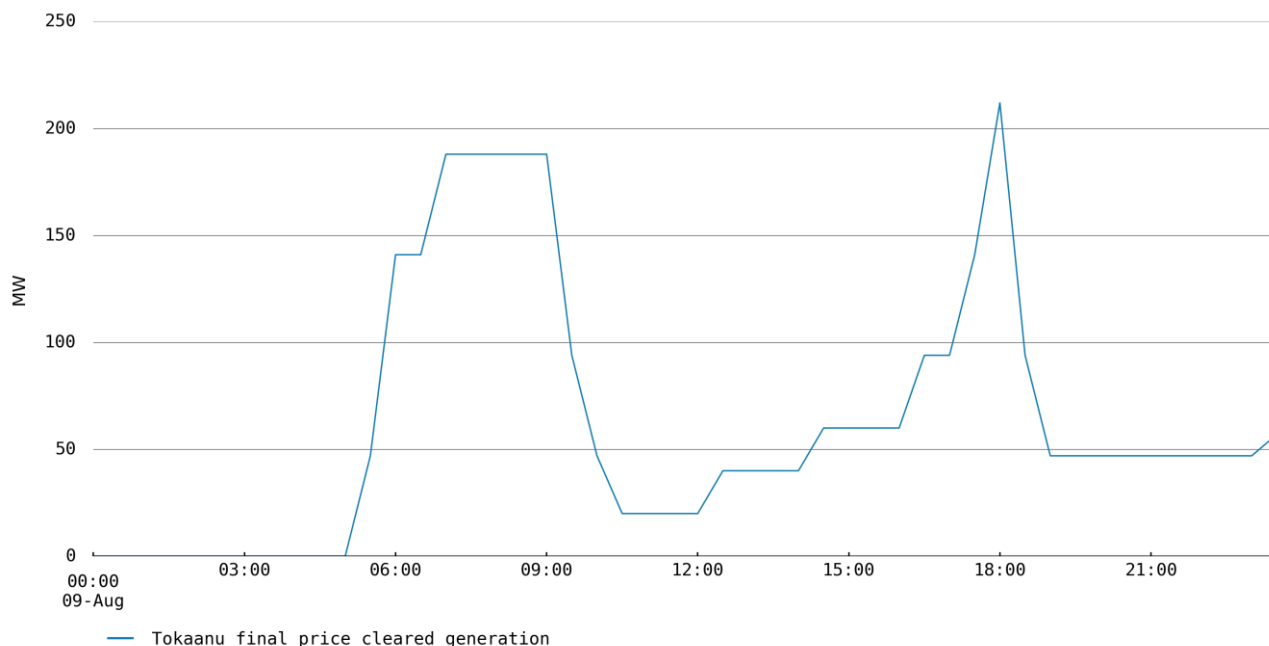
- 7.13. This is an obvious sign of system stress as it suggests that if a generator faults, there may be insufficient reserves, leading to automatic under frequency load shedding (AUFLS).

**Figure 2 - Reserve deficit**



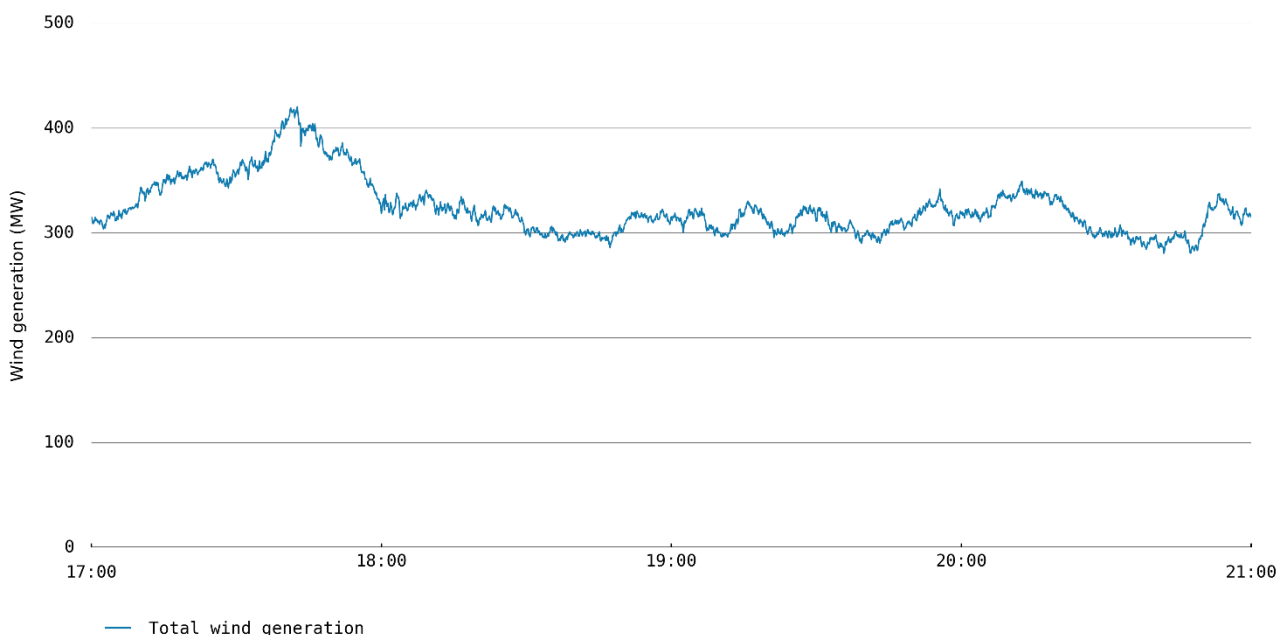
- 7.14. Figure 3 shows that between 18:06 and 18:52, Tokaanu's output progressively reduced from 218 MW down to 47 MW due to weed blocking the intake screens (the second time this had occurred that day). This meant that a system already stressed lost about 150MW at a time of peak demand.

**Figure 3 - Tokaanu generation**



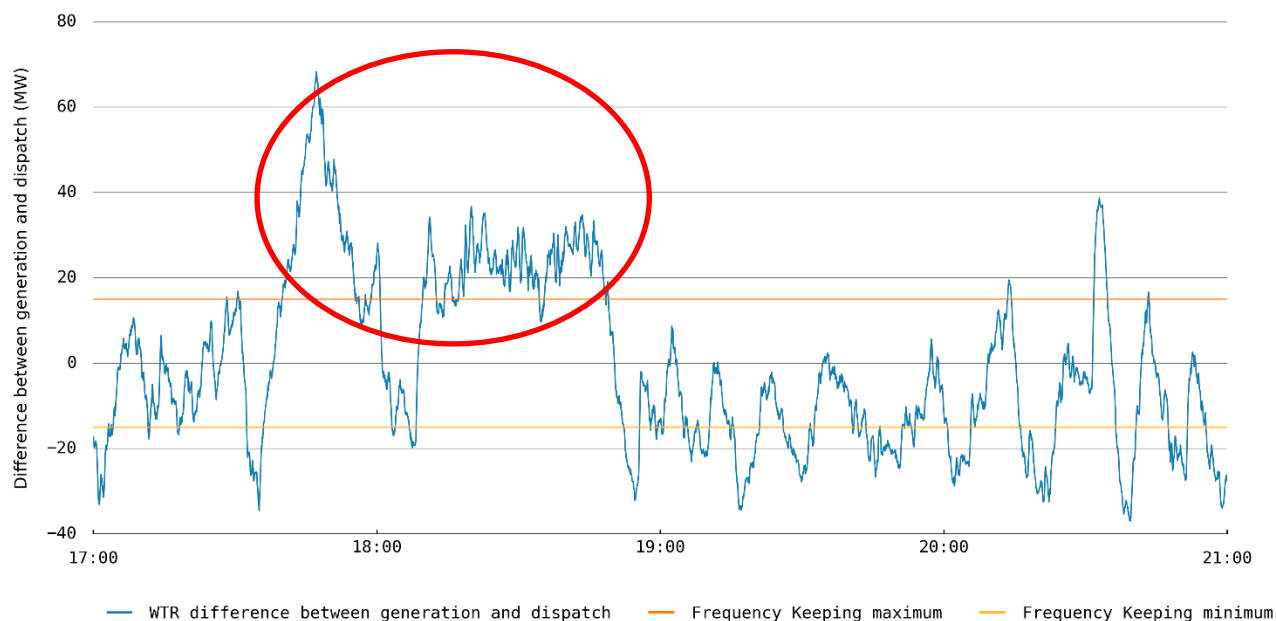
7.15. In addition, Figure 4 shows that between 17:40 and 18:40 wind generation had dropped by around 120 MW. Similar to the reduced output from Tokaanu, this meant less generation in an already stressed system.

**Figure 4 - Total NZ wind generation**



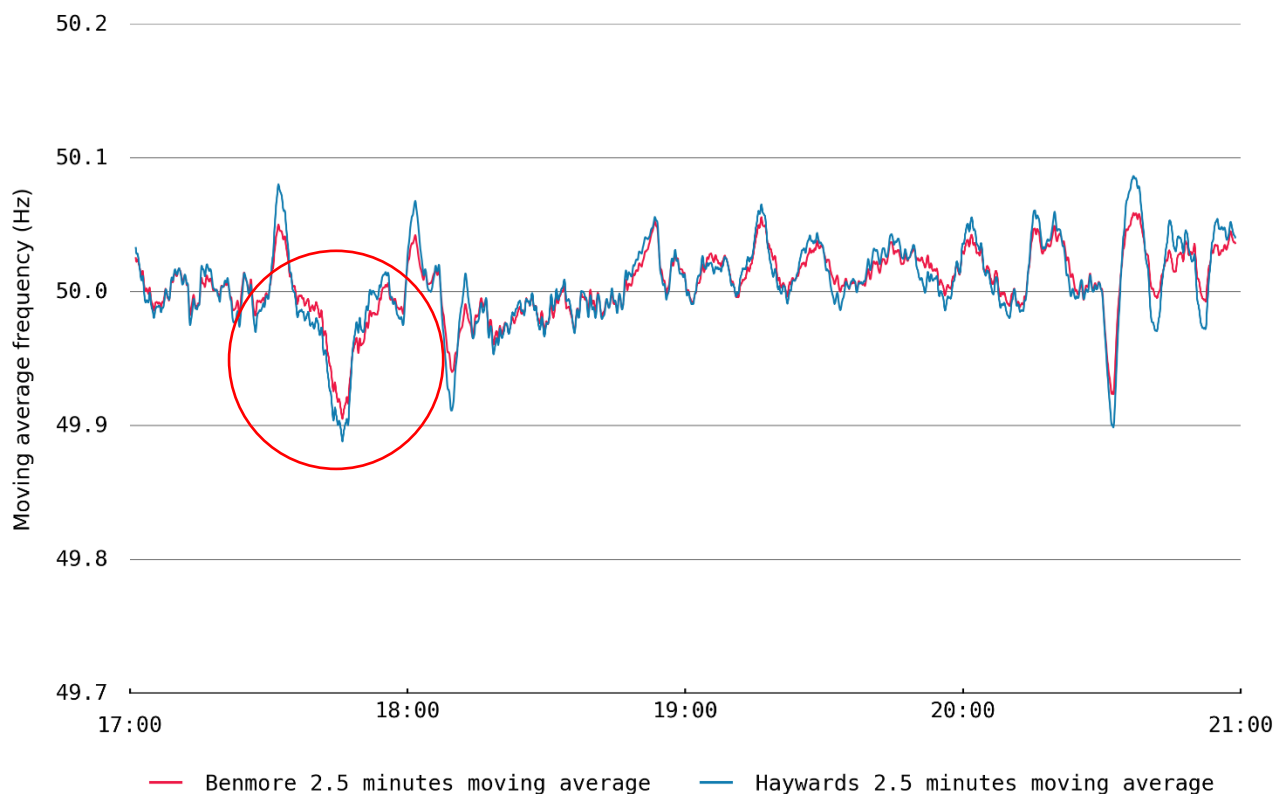
7.16. The system operator had been unable to keep the Waitaki River block within its frequency keeping band, indicating that there was next to no uncleared generation offers available for dispatch. Figure 5 shows the Waitaki River block operating above its maximum limit from 17:40 to 17:55 and again from 18:10 to 18:48. This is a sign of severe shortage in the power system as the frequency keeper is not able to balance supply and demand as it is supposed to.

**Figure 5 - Waitaki River frequency keeping performance**



7.17. Figure 6 shows that, as a result, the system frequency sagged significantly below 50 Hz during the earlier part of this period. This is a sign that demand is overwhelming supply. The risk is that if the frequency dips low enough then instantaneous reserves will trip leaving the power system exposed to any fault that might occur. With the power system as exposed as it was, the consequences of this could be more disconnected load because of AUFLS, or cascade failure. This would involve widespread disconnection of customers.

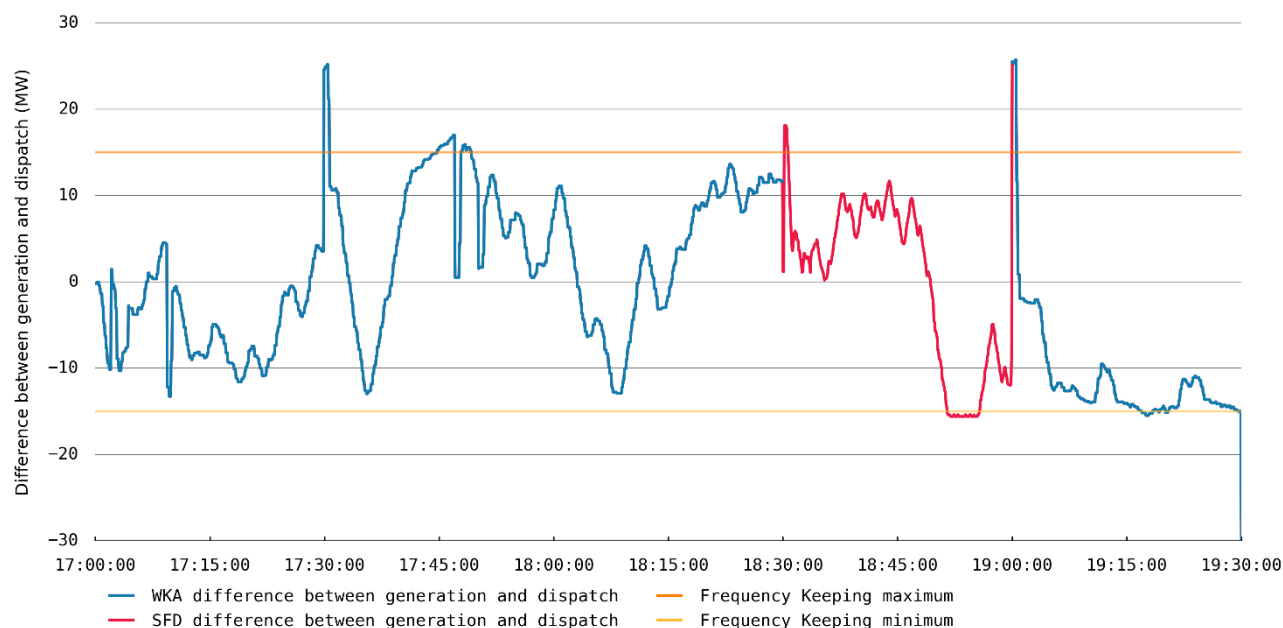
**Figure 6 - Island frequency**





7.18. Figure 7 shows that that the North Island frequency keeping stations managed to stay essentially within their regulating bands.

**Figure 7 – North Island frequency keeping performance**



### **The system operator's actions were appropriate and proportionate given the real time information available**

7.19. The Authority considers the actions taken by the system operator on 9 August 2021, while not perfect, were reasonable and justified in the circumstances given the real time information available. The Authority brought proceedings before the Rulings Panel against the system operator in connection with its actions on 9 August 2021, in particular its demand allocation. Both parties agreed that the system operator breached clause 7(1)(a) of the Code, the “reasonable and prudent” operator standard, based on deficiencies in the use of the load shed restore (LSR) tool, and the issuing of the ISS notice. However, the Rulings Panel noted in relation to the statement of facts agreed by the Authority and the system operator that “the combined effects of the demand reductions requested by the system operator successfully allowed control of system frequency to be maintained”<sup>14</sup>. If the situation had continued to deteriorate, system frequency could have fallen below 49.25 Hz, which could ultimately have triggered AUFLS.

7.20. While the Authority and the system operator agree that the ISS notice was issued in error, as the Code mandated prerequisites were not met, the Authority considers the system operator would have been justified in requiring the electrical disconnection of demand based on what it was seeing on the evening of 9 August. As a result, the issuing of the ISS notice was deemed in breach of the Code based on the wording contained in the 18:47 GEN notice, which “requested” demand reduction by 1% rather than “requiring” demand reduction.

<sup>14</sup> *Electricity Authority v Transpower New Zealand Limited*, Rulings Panel decision C-2022-002, 2 May 2023

## **8. Preliminary decision: prices being determined by offers in conjunction with demand management is a UTS**

- 8.1. The Authority's preliminary view is that having prices for trading periods 38 and 39 on 9 August 2021 determined by offers and demand management is a situation which threatens, or may threaten, confidence in, or the integrity of the wholesale market. The Authority's assessment, views and conclusions are preliminary only and feedback is welcome.
- 8.2. In determining whether there is a UTS, staff have considered the following three questions:
- (a) whether the situation affects the wholesale market
  - (b) whether the situation may be satisfactorily resolved by any other mechanisms available under the Code (aside from the trading conduct provisions in clause 13.5A of the Code)
  - (c) whether the situation threatens, or may threaten, confidence in, or the integrity of, the wholesale market

## **9. This is a situation which affects the wholesale market and there is no other mechanism under the Code for resolving it**

- 9.1. This section responds to the first two questions to be determined when considering whether a UTS has developed as outlined in paragraph 8.2(a) and (b) above.
- 9.2. The Authority's preliminary view is that prices being determined by offers and demand management in the circumstances that existed on 9 August 2021 is a situation which affects the wholesale market. The wholesale market is defined in the Code and includes final prices and final reserve prices. The price signals indicating the shortage of supply were muted as cuts in demand led to lower prices as set out in further detail in section 10 below. This is inconsistent with the intent of the scarcity pricing regime and could mute the long-term incentives to invest in last-resort generation or demand.
- 9.3. There is no other mechanism under the Code to satisfactorily resolve the situation of final prices being determined by offers (in conjunction with demand management) resulting in artificially depressed prices.

## 10. Market confidence or integrity is threatened by prices being determined by offers in conjunction with demand management

- 10.1. This section responds to the third question to be determined when considering whether a UTS has developed, as outlined in paragraph 8.2(c) above. The Authority's preliminary view is that prices being artificially depressed as a result of the system operator's notices to reduce demand, combined with the absence of scarcity pricing, threatens, or may threaten confidence in, or the integrity of the wholesale market. The Authority has reached this preliminary view based on the following factors which are discussed in more detail in this section:
- (a) prices on 9 August 2021 were artificially depressed by in excess of \$10 million as a result of disconnections following the system operator's notices to reduce demand
  - (b) the market would expect higher prices in circumstances such as 9 August where there was unprecedented demand, scarce generation, and disconnections resulting from demand management by the system operator
  - (c) last resort generation benefits consumers and promotes security of supply because:
    - (i) artificially depressed spot prices may mean inefficient fuel use and investment decisions
    - (i) ensuring the correct price signals for last-resort generation ensures the appropriate incentives for investment in, and the operation of, this type of generation
  - (d) the sector needs to have confidence that the Authority will intervene where prices have been artificially depressed or inflated to send the appropriate price signals to the market.

### Prices were depressed as a result of disconnections following demand management by the system operator

- 10.2. Prices were depressed as a result of disconnections. In order to inform the decision whether confidence in the wholesale market has been, or may be, threatened by prices being determined by offers in conjunction with demand management, the Authority has analysed the extent to which prices were depressed on 9 August 2021 as a result of disconnections. If, for example, the Authority's analysis identified no material change in prices then there is unlikely to have been a UTS as prices would be consistent with the underlying fundamentals.
- 10.3. In order to determine the effect of the system operator notices to reduce demand the Authority has used vectorised scheduling, pricing and dispatch (vSPD)<sup>15</sup> to model market outcomes as if demand had not been cut. This analysis shows prices

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<sup>15</sup> The Authority is responsible for developing, maintaining and updating vSPD, which is an analytical tool that the Authority uses to simulate Transpower's scheduling, pricing and dispatch model so we can analyse the New Zealand electricity market. This model is publicly available and allows the sort of simulation set out in this section.

were depressed on 9 August 2021 as a result of the actions taken by the system operator to manage the risk of cascade failure.

- 10.4. In this analysis we have used just the demand cuts that resulted in disconnected consumers and have not included the other demand that was cut due to the GEN notices from the system operator. As demand response, such as ripple control, is used routinely in the power system, we have not added this demand back for this simulation. That is because we are trying to measure how much prices were depressed when the expectation, as a result of either the scarcity pricing provisions or the underlying fundamentals, (in particular the unprecedented high demand and low supply) was that there would be high prices. For this purpose, it is the demand from disconnected consumers that is relevant.
- 10.5. Prices were depressed because unpriced demand was competing with high priced thermal generation, causing it to be dispatched down and to receive a lower price. The impact was felt by marginal generation that was both dispatched for less quantity as well as receiving a lower price.
- 10.6. As supply on 9 August 2021 became increasingly tight, more expensive generation sources were called upon to satisfy demand, which would ordinarily have caused the spot price to rise. However, the system operator notices to reduce demand to reduce the risk to the power system, resulted in demand (and consequently spot prices) being suppressed.
- 10.7. The analysis undertaken using vSPD shows that compared to final prices, spot prices in trading periods 38 and 39 are higher, with the largest effect in trading period 38, which is not one of the scarcity trading periods. This is shown in Figure 12 below.
- 10.8. We would not expect this situation to occur in reality as it would require the system operator to ignore the indicators of system stress set out in section 7. This modelling exercise simply provides an estimate of the effect of disconnections directed by the system operator on prices. The difference between the modelled spot prices in this scenario and the final prices represents the range of outcomes that could have happened with different levels of disconnection.
- 10.9. If demand reduction resulting in disconnections had not occurred as a result of the system operator notices, prices would have been much higher in trading periods 38 and 39 to reflect the scarcity of generation and high demand.
- 10.10. The effect of disconnecting consumers was to add up to 80MW of unpriced demand response into the power system. This unpriced demand response displaced last resort generation plant effectively outcompeting offered generation.
- 10.11. The impact on competition is twofold: it reduced the marginal price in the spot market, and reduced the volume that was being generated by the generators at the end of the offer stack. Using the evidence from the simulation above, the effect is mostly a price effect. The total difference in generation revenue is between final prices and the simulation being \$10.144m of which \$10.072m is a price effect.
- 10.12. Table 1 below shows the difference between current final prices and adding the disconnected demand back in and resolving using vSPD. This is an empirical estimate of the impact on spot prices of disconnecting demand.

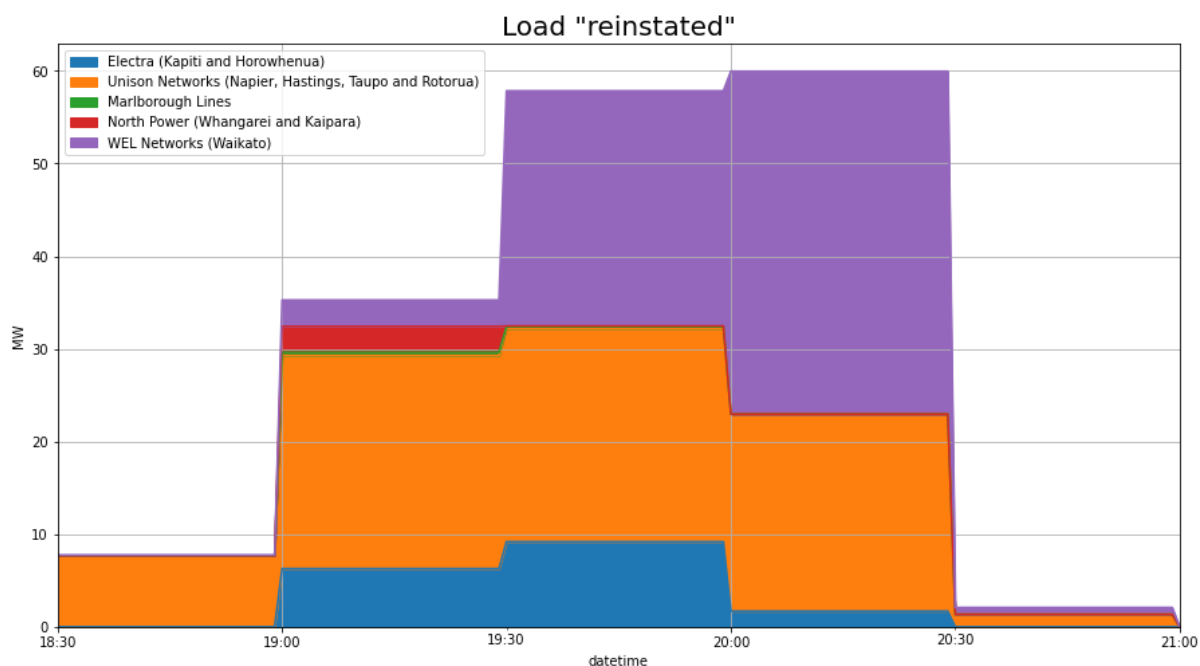
**Table 1: system cost for the scenario compared to final prices**

Scenario	Generation revenue	Difference from final prices
Final prices	\$15.249mm	0
Modelled prices adding in disconnected demand	\$25.321m	10.145m

10.13. Figure 8 below shows the disconnected load by trading period. This is based on the estimates in Figure 1, which in turn came from a survey of electricity lines businesses soon after the event.

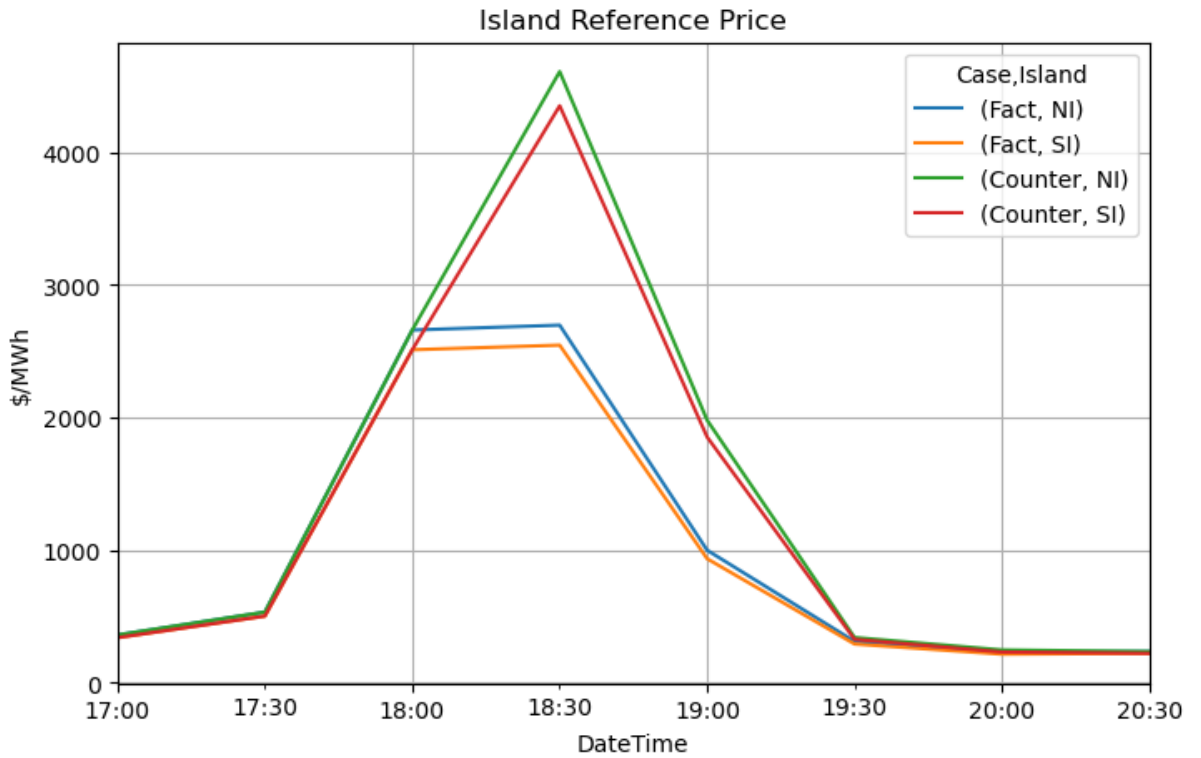
10.14. We added this demand onto system demand on 9 August 2021 and resolved vSPD. We needed to use a virtual reserve provider in trading period 39 to avoid infeasible prices.

**Figure 8: Disconnected load by trading period**



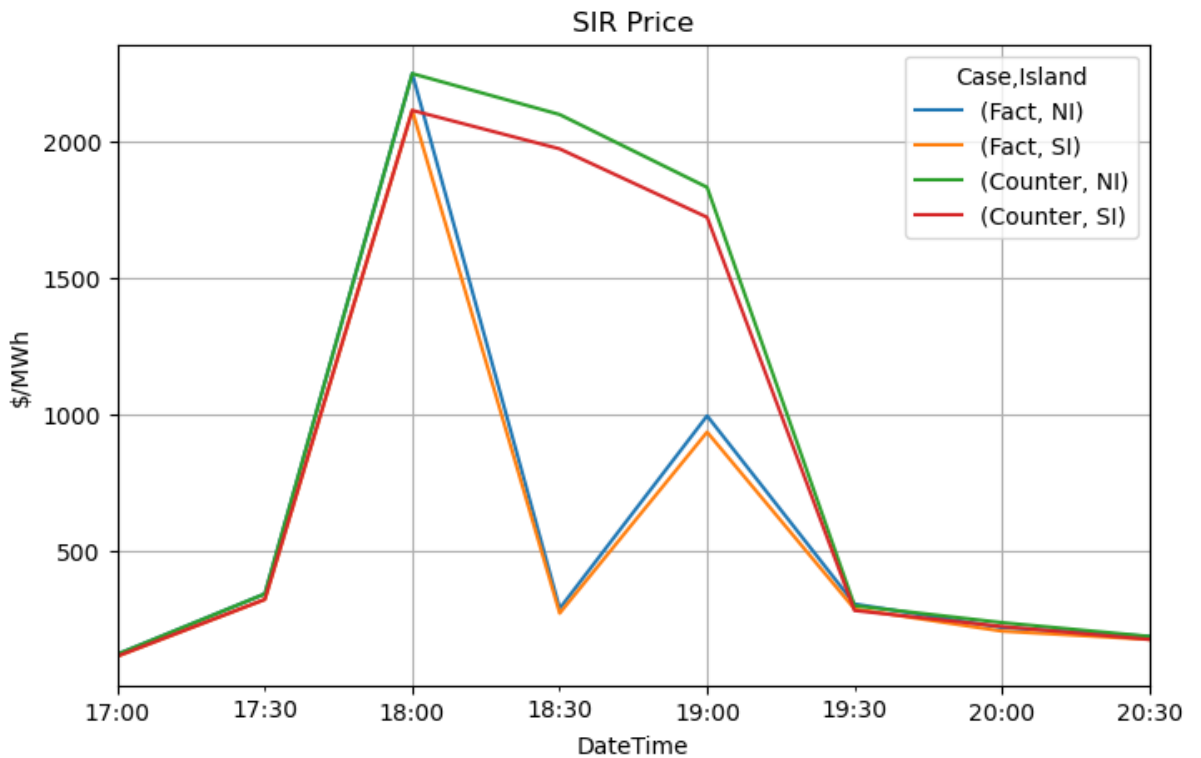
10.15. Figure 9 below shows the change in energy prices at Benmore and Ōtāhuhu as a result of the disconnected demand being added to system demand on 9 August 2021. There is a circa \$2,000/MWh increase in the energy price during trading period 38, and circa \$1,000/MWh in trading period 39.

**Figure 9: Energy price changes**



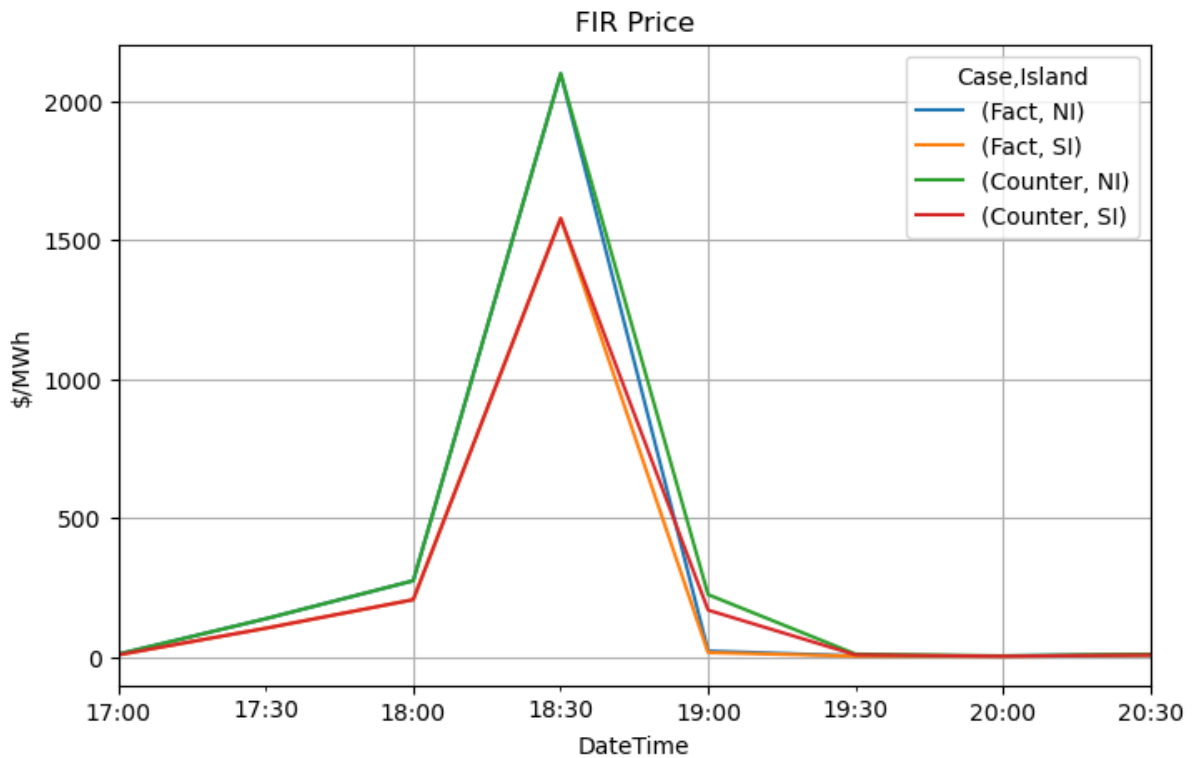
10.16. Figure 10 below shows the sustained instantaneous reserve price (SIR) price went up as energy was substituted for reserves. There was a \$2,000/MWh increase in trading period 38 matching and driving the energy price. There was a \$750/MWh increase in trading period 39.

**Figure 10: Sustained instantaneous reserve price changes**



10.17. Figure 11 below shows the fast instantaneous reserve price (FIR) price also went up but not as much as SIR prices. There was a \$500/MWh increase in trading period 38 matching and driving the energy price. There was a \$250/MWh increase in trading period 39.

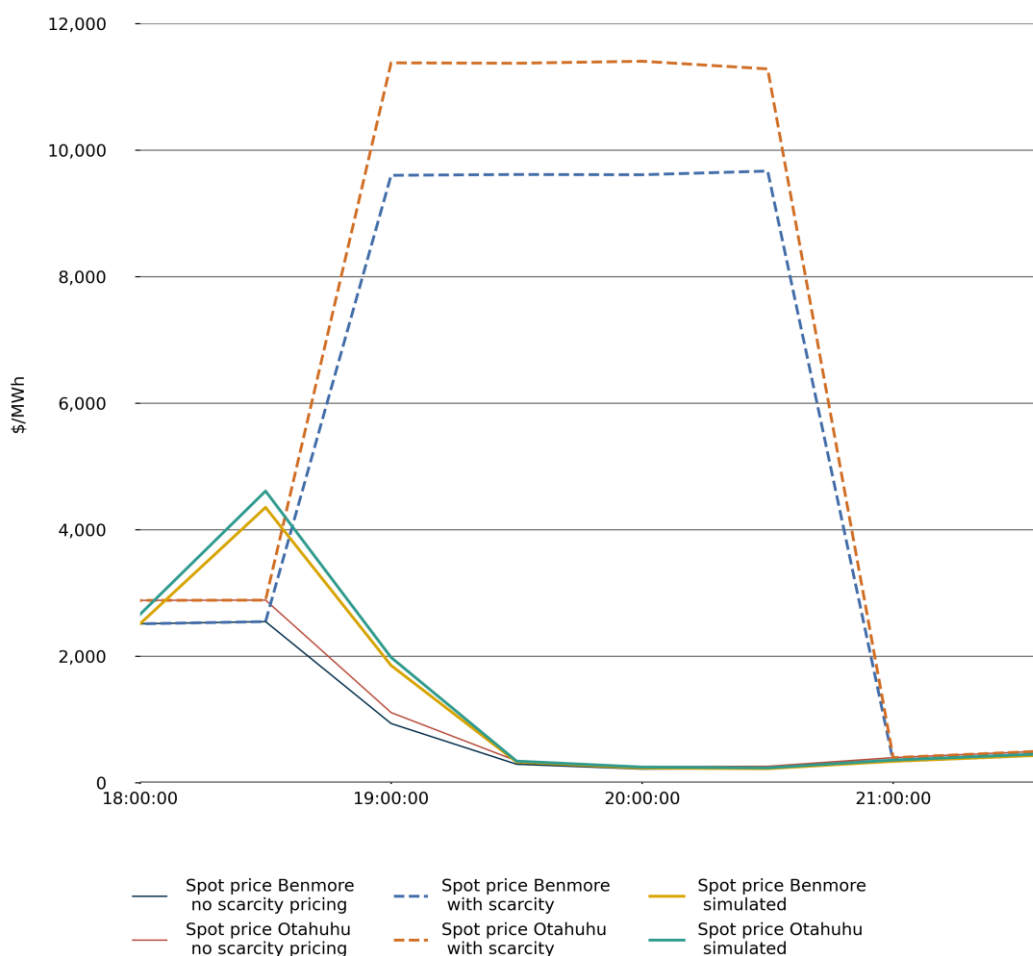
**Figure 11: Fast instantaneous reserve price changes**



10.18. The simulation shows how much disconnecting demand affected prices.

10.19. Figure 12 shows final prices (without scarcity pricing), the scarcity price for 9 August 2021, and the spot prices from the simulation. Figure 12 does not determine what prices should be but rather highlights that final prices reflect demand management that significantly depressed prices in trading periods 38 and 39.

**Figure 12: final prices with and without scarcity pricing**



**Prices being depressed on 9 August is contrary to prices the market would expect to see in such circumstances**

10.20. The Authority considers that prices in trading periods 38 and 39 being artificially depressed as a result of the system operator’s notices to reduce demand, combined with the absence of scarcity pricing, threatens, or may threaten, confidence in, or the integrity of, the wholesale market. This is because the market expects high prices during times of scarcity; if prices are too low, it will mute the incentives for investment in last resort generation which will undermine security of supply.

10.21. In circumstances such as 9 August, where there were unprecedented levels of demand, scarce generation, and disconnections resulting from demand management by the system operator, last resort generators would expect to receive a high price for their generation. High prices would be expected as a result of the



scarcity pricing provisions which were designed to apply where prices were depressed as a result of disconnections. In the absence of demand management resulting in disconnections, participants would expect high prices (such as those modelled in the Authority's vSPD analysis where cut demand was restored) to apply where demand is very high, and generation is scarce.

10.22. High prices for last resort generation creates the incentives to invest in, and run, this type of generation when required. The absence of scarcity being reflected in final prices reduces the incentives for last resort generation and is contrary to prices the market would expect to see following a scarcity event.

10.23. Scarcity pricing was designed to address the risk to security of supply incentives in the event of demand management which results in disconnection and prices being artificially depressed. The rationale for why price intervention is required where load is shed is outlined in the Authority's Explanatory Paper: *Summary of Scarcity Pricing and Related Measures* dated 27 July 2011:

3.4 ... *Because spot prices fall once demand is reduced in these situations, the incentive for generators to make more power available (e.g. bring a generating unit back from maintenance early) or to preserve more fuel is reduced. It can also discourage electricity retailers and electricity consumers' plans to voluntarily reduce their load.*

3.5 *Future investment decisions may also be affected. Generators and electricity retailers make their decisions based on their expectations of future spot prices. If they expect spot prices to be suppressed below their true value in a supply emergency, this will reduce their incentive to build last-resort generation plant or invest in demand-response capability. It also weakens the incentive on electricity retailers and other large wholesale buyers to enter into hedge contracts with providers of last-resort generation plant. These contracts can help to underpin generation investment*

10.24. No participants questioned the application of scarcity pricing based on the system operator's communications following 9 August. It was not until the Authority raised questions about the ISS notice that the system operator's underlying notices were scrutinised, ultimately leading to the pricing error identified by the High Court. This could indicate that the market expected scarcity pricing to apply given the circumstances of 9 August. The Authority acknowledges, however, that the absence of questions from participants is in no way determinative. Further, once the issue with the ISS notice was identified by the Authority, some participants considered it justified a finding of a UTS in the 2021 investigation on the basis that scarcity pricing should not apply.

10.25. The Authority considers higher prices than those based on offers in conjunction with demand management was expected in the circumstances and is consistent with the underlying rationale for scarcity pricing. As set out in the Authority's final decision paper on the 2021 UTS:

*During [9 August], generation was scarce. The system operator declared a grid emergency because there was insufficient generation to meet demand*

*and ensure the safe functioning of the national grid. There was a real risk of frequency dropping to dangerous levels.*

*It was predictable that the system operator took action to reduce demand so that it could be met by available supply. While the system operator's particular actions are open to criticism, and there are real questions as to the necessary scale of the disconnections, the Authority considers that forced demand reduction of some type was to be expected during the trading periods to which scarcity pricing has been applied. The Event involved unprecedented demand and an unexpected decline of generation on the coldest night of the year.*

*.... Without the application of these provisions, the resulting prices would reflect the distortions arising from the system operator's demand management, and fail to provide appropriate price signals to the market. Put another way: industry participants could reasonably expect scarcity pricing to apply in these circumstances. The system operator needed to manage demand during the Event, and prices would have been artificially low if the scarcity pricing regime were not applied.*

### **Last resort plant benefits consumers and promotes security of supply**

- 10.26. Unpriced and involuntary demand response such as occurred on 9 August undermines incentives for the sort of generation New Zealand will need in a reliable, renewable power system. This sort of "generation" - whether demand response, batteries, or some other technology - runs infrequently and for a high price and will be more important as the supply of dispatchable thermal falls. If this generation is not built in sufficient quantities, then the power system will increasingly rely on disconnections to manage peak demand. This is harmful to consumers, particularly as it can be reasonably anticipated that these events will happen during cold weather.
- 10.27. If spot prices are depressed by disconnections during emergencies, this will lead to inadequate provision of last resort generation and/or voluntary demand side response. This problem arises because last resort generators are only required to operate infrequently. To cover the costs and to incentivise investment, spot prices need to be at very high levels during periods when they are operating. Disconnections obviously undermine these prices and incentives.
- 10.28. Unless generators can reliably expect adequate revenue from the spot market, there will be insufficient incentive to invest. This in turn will lead to security being below the optimum level, with increased disconnections to manage scarcity events.
- 10.29. The problem may manifest itself in the form of reduced availability/commitment of demand response capacity or slow start generation plant, or poor fuel management decisions. In a longer-term context, it can lead to reduced incentives to retain or invest in infrequently-used power stations, fuel stocks, and/or demand response capability.
- 10.30. An additional outcome of price suppression is that disconnections may occur more often. Parties who might be prepared to reduce demand in response to spot price signals will have reduced opportunities to enter into such arrangements.

Conversely, there may need to be greater reliance on disconnections, harming consumers.

- 10.31. As the power system becomes more renewable, the need for last resort plant will increase. The Boston Consulting Group report *The future is electric* suggested that \$1.9b of investment was needed in flexible demand and generation, four times that built in the 2010s. As power system assets are long lived, if these investment decisions are not efficient then consumers could suffer in the long term, either through higher prices or lower reliability.
- 10.32. Consumers are unlikely to be penalised by higher prices on 9 August 2021 because scarcity prices are built into real time pricing, and these must already be reflected in any forward prices and therefore retail tariffs. What is important for consumers in the long run cost is that prices are efficient, reflect underlying supply and demand conditions and provide adequate price signals for investment so that the least price assets are built.
- 10.33. The appropriate incentives for investment in last resort generation will improve security of supply, resulting in a lower level of forced demand curtailment (and associated costs), which is in the long-term interests of consumers.

### **Participants need to have confidence that the Authority will intervene where appropriate to protect the integrity of the spot market**

- 10.34. Participants need to be confident that the Authority will regulate the market in a consistent manner and that it will act to intervene where prices are artificially depressed or inflated or in some way inappropriate relative to the conditions. In this new situation a key question is whether the impact of prices not being appropriate for the conditions is such that this threatens confidence in the wholesale market.

## **11. The Authority has considered factors which could indicate that there is not a UTS**

### **Prices have been finalised and some time has passed since 9 August 2021**

- 11.1. By the time the Court decided that scarcity pricing was incorrectly triggered on 9 August 2021 as a result of errors by the system operator in the notices it issued on the day, two and a half years had passed. In addition, prices have now been finalised following the High Court decision. Given the passage of time it could be argued that there should be no finding of a UTS as the industry has moved on, or alternatively that further changes to final prices could create uncertainty, potentially threatening confidence in the wholesale market.
- 11.2. The use of the UTS powers to reset prices after they have been finalised is rare and has only occurred once before with the 2019 UTS, where prices were reset over two years after the event. The Authority considers that the risk of any uncertainty arising in the market as a result of final prices being reset needs to be balanced against the benefits of ensuring prices accurately reflect the expectations of the industry and underlying conditions of the market.
- 11.3. The Authority's preliminary decision is that in the present context the benefits of ensuring that prices in the wholesale market create the appropriate incentives

outweigh the risk of any uncertainty arising from final prices being reset. The need for these incentives is ongoing and has likely increased given the transition to renewable generation and the importance of ensuring sufficient generation in times of scarcity or tight supply. These incentives support the Authority's objective to promote security of supply for the long-term benefit of consumers. Scarcity prices are still a function of real time pricing reflecting the ongoing requirement for these pricing incentives.

## Real time pricing

- 11.4. A further factor considered by the Authority is the effect of real time pricing. The particular circumstances that have led to prices for 9 August 2021 cannot be repeated because the dispatch model responds in real time to scarcity.
- 11.5. Nevertheless, the Authority considers it appropriate to consider and respond to prices that could affect market confidence, for the reasons set out in this paper. Whatever the pricing provisions of the Code, there is always a risk that either error or other action or event could result in inappropriate prices. Where this occurs the Authority's UTS powers may respond. This purpose and the UTS powers and scope, were noted in *Bay of Plenty Energy v The Electricity Authority* [2012] NZHC 238, where the High Court endorsed the Authority's summary of its UTS powers, recognising "UTS provisions are adopted by market providers because they cannot foresee all future eventualities and hence cater for these in the market's rules, and so are better covered by generic UTS-type rules" (at paragraph [31] of the judgment)."

## 12. The Authority's preliminary conclusion is that the situation constitutes a UTS

- 12.1. Having investigated this UTS, the Authority's preliminary decision is that prices for trading periods 38 and 39 being determined by offers in conjunction with demand management combined with the absence of scarcity pricing threatens, or may threaten, confidence in the wholesale market.
- 12.2. On 9 August 2021 the system operator issued notices to lines companies requesting demand reduction, which resulted in electrical disconnection. The system operator's actions were appropriate and proportionate in light of the real time data evidencing a real risk of cascade failure.
- 12.3. The system operator's demand management resulted in prices for trading periods 38 and 39 being artificially depressed. Prices were lower than what the market would expect in a scarcity situation such as occurred on 9 August. Over time, price suppression is likely to lead to inadequate provision of last resort generation and/or voluntary demand side response, both in a 'real time' context, and from a longer-term investment perspective. Participants need to have confidence that the Authority will intervene where prices do not reflect the underlying conditions or are in some way inappropriate.
- 12.4. The Authority will release a final decision after considering any submissions. If the Authority finds that a UTS has developed, the Authority will consider and consult on what actions to correct may be appropriate.



## Appendix A 9 August 2021 event timeline

Time	Event
<b>Day of the event up to the issuing of the GEN at 17:10</b>	
9 August 2021 6:30am	Overnight, the load forecast increased to 7170MW and the residual dropped to 142MW.
06:42	<p>CAN issued for forecast low residual generation during the 17:30 – 20:00 trading periods. This notice advised the market:</p> <p><i>Transpower as system operator advises that North Island residual generation is less than 200MW, including spare HVDC capacity, for trading periods TP 36 - 41 (17:30 -20:00) on 9 August 2021. If system conditions worsen, it could result in a WRN or GEN being issued due to insufficient offers being available to cover for the largest contingency or meet demand and maintain frequency keeping reserve.</i></p> <p><i>Participants should ensure energy and reserve offers and load bids are accurate for the times noted, and if not, please update accordingly.</i></p> <p><i>If you are aware of information that could impact system security, please advise the System Operator duty operations manager on XX XXX XXXX.</i></p> <p><i>This notice will not be updated unless conditions worsen and a WRN or GEN is required.</i></p>
09:19 – 10:03	Tokaanu claimed a bona fide situation to reduce their market offers in stages to 0MW. High winds had blown weed into the station intake screens blocking them.
10:30	10:00 NRSL schedule published at 10:30 forecasts a reserve deficit of up to 149.6MW for 18:00 – 20:00.
12:30	12:00 NRSL schedule published at 12:30 forecasts a reserve deficit of up to 208MW for 18:00 – 20:00
13:02	WRN notice issued forecasting insufficient generation offers on a national basis during the 17:30 – 20:30 trading periods. This notice advised the market:

Time	Event
	<p><i>Transpower as system operator advises there is a risk of insufficient generation and reserve offers to meet demand and provide for N-1 security for a contingent event.</i></p> <p>It then requested that participants increase generation and reserve offers and decrease demand.</p> <p>It then notified that if there was insufficient response by participants, the system operator would manage demand to restore power system security.</p>
14:30 to 16:30	<p>Tokaanu gradually reoffered its full 240MW capacity for the evening peak. This returned residual to positive in the 14:00 NRSL and 16:00 NRSS schedules. The residual hovers around the 100MW to 200MW range.</p>
17:00	<p>The 17:00 NRSS schedule forecasts a reserve deficit of up to 31MW for the 18:00 – 19:00 trading periods.</p> <p>This is largely driven by a 125MW drop in wind offers for the evening peak and a 21MW increase in forecast load.</p>
<b>GEN declared at 17:10 and GEN notice issued</b>	
17:10	<p>GEN issued forecasting insufficient generation offers on a national basis during the 18:00 – 19:00 trading periods. This notice advised the market:</p> <p><i>This is a New Zealand wide emergency. There is Insufficient Generation offers to meet demand and provide for N-1 security for a contingent event. The level of instantaneous reserves being scheduled may or will need to be reduced.</i></p> <p>It then requested that participants increase generation and reserve offers and decrease demand.</p> <p>It then notified that if there was insufficient response by participants, the system operator would manage demand to alleviate the grid emergency.</p>
17:30	<p>Visible drop in demand (74MW).</p>
	<p>Several calls from distributors via NGOC, eg, Mainpower noting that controllable demand had been in use most of the day. Two further distributors contacted NCC querying whether immediate demand management was required.</p>

Time	Event
17:50	Unison manage controllable hot water load, confirmed by Unison was in response to 17:10 GEN. Approx. 17MW.
18:06	Tokaanu bona fide their generation offers down from 218MW to 94MW – weed blocking intake screens.
18:25	Mercury call offering extra 12MW of generation for half an hour. This offer was inside the trading period and so was not able to be accepted <sup>[1]</sup> .
18:30 to 18:45	Waipipi generation reduces between 15MW to 20MW over 15 minutes due to falling wind speeds.
<b>1% Load reduction notice issued via GEN</b>	
18:40 to 18:47  1% reduce load notice sent	Frequency keeping (FK) band had been eroded, running deficit reserves, needed demand management to restore FK. 1% (~70MW) requested).  NGOCs phoned connected parties to confirm instruction to reduce demand by 1%.  Vector raised that it already had controllable load off – relayed to NCC via NGOC.  At 18:47, GEN revision notice sent – period extended 18:00 – 20:00 all network companies to reduce load by 1% until further notice. Demand allocation notice to follow.
18:52	Tokaanu bona fide their generation offers down from 94MW to 47MW – weed blocking intake screens.
18:53	1% load reduction achieved on a national basis, 71MW reduction in load measured by system operator indications.
19:08	3% of load reduction has been observed, or 228MW.  Many distributors appear to have dropped 1% then declined further.
19:09 to 20:20	19:09 Demand allocation notice sent.

<sup>[1]</sup> The market system is configured to only dispatch generation up to the maximum capacity of each generation unit, this prevents the market from scheduling generation above the maximum capacity. Current market system limitations prevent bids and offers from being updated in the current trading period.



Time	Event
<p>Response to the DAN</p> <p>19:26 to 19:59</p> <p>19:31</p>	<p>7 out of 33 recipients are asked to reduce load further. The total reduction requested was 236MW. These recipients are Unison, Electra, TOP, Orion, Delta, Wellington Electricity, Vector, and WEL.</p> <p>3 recipients [Orion, WEL, and Electra] appear to have acted on the DAN. Based on 1-minute Scada data there does not appear to be other controlled changes. Voice recordings from the control room identify several participants that phoned and were provided clarity.</p> <p>Orion reduced its demand by 17MW at 19:15. Orion managed demand with controllable load.</p> <p>NGOC contacted NCC to pass on demand allocation queries from Wellington Electricity (reduce from 551MW to 430MW) and Unison (reduce from 298MW to 192MW). Both parties were querying the scale of their allocated reduction. Both were told to hold off managing demand.</p> <p>Electra reduced its demand by 4MW at 20:17 until 20:32, then lifted its load (after the 20:20 notice – see below).</p>
<p>19:09 to 20:20</p> <p>Total load reduction</p>	<p>The remaining load reduction across this time for many distributors is consistent with normal post peak demand decline.</p> <p>When a demand curve is superimposed using the demand shape from 29 June 2021 (previous record demand), many of the distributors appear to have acted on the 1% GEN notice at 18:48 and held this reduction and then allowed demand to decline naturally.</p> <p>Across this time, some units, notably, Huntly and Whirinaki were dispatched back to provide reserves (reserves were previously in deficit) and maintain system stability.</p> <p>From approximately 19:50 generation begins to be dispatched down due to dropping demand.</p>
<b>Log of key calls and conversations with distributors, NGOC, and NCC</b>	
<p>19:22</p>	<p>NGOC to NCC: Northpower queried demand allocation. Allocate 207.7MW vs 165MW actual, able to increase to 190MW.</p>
<p>19:26</p> <p>19:59</p>	<p>NGOC Instruction to WEL Networks to stay below total load of 224MW.</p> <p>WEL contacted NGOC to confirm start time of demand management requirement, confirmed as an immediate requirement. Subsequent calls highlighted a discrepancy between the NGOC load indications for WEL Networks compared to the WEL Networks operational indications.</p>

Time	Event
	NGOC advised WEL could come up by 24MW from its current load.
19:31	NGOC contacted NCC to discuss demand allocation for Wellington Electricity and Unison. Advised distributors to stay at current demand with no action required from demand allocation notice, load is falling naturally.
19:34	Orion question demand allocation via NGOC, currently below DAN target. Advised can increase to 675MW.
19:38	NCC to operations management: issues recognised with demand allocation. Current load indications well below allocation total. Agree to plan load restoration allowing to run reserve deficit.
19:54	NCC to operations management: Discussed LSR tool and increasing load by 5%. System operator attempted to solve with LSR but still encountered issues with the tool.
20:03	NCC to operations management: Confirm use of “restore 5% of current load” instruction. Confirmed that 5% does not constitute all load shed.
20:05 - 20:07	NCC to all NGOC: contact distributors to restore 5% of current load, GEN extended to 21:00
20:20	GEN revision notice issued – period extended 18:00 – 21:00 all network companies can increase load by 5% based on current load.
20:25	Residual generation now at 390MW, NCC to instruct full load restoration.
20:28 – 20:33	NCC to NGOC: instruct all distributors to restore all load excluding hot water heating. Vector instructed to restore 50MW every 5 minutes until restored. WEL restore 20MW every 5 minutes until restored.
20:39	NCC to NGOC: instruct all distributors to restore all load including hot water heating.
21:01	GEN revision notice issued – grid emergency ended; all participants can restore all load.

**Source:** the system operator NCC call logs, supplementary notes, market notices and distributor call transcripts (obtained as part of the Authority's Immediate assurance review of the 9 August 2021 demand management event).

## Appendix B Extracts from the Code

### A.1 Clause 5.2

- (1) *If the Authority finds that an undesirable trading situation is developing or has developed, it may take any action that—*
  - (a) *the Authority considers necessary to correct the undesirable trading situation; and*
  - (b) *relates to an aspect of the electricity industry that the Authority could regulate in this Code under section 32 of the Act.*
- (2) *The actions the Authority may take under subclause (1) include any 1 or more of the following:*
  - (a) *directing that an activity be suspended, limited, or stopped, either generally or for a specified period:*
  - (b) *directing that completion of trades be deferred for a specified period:*
  - (c) *directing that any trades be closed out or settled at a specified price:*
  - (d) *directing a participant to take any actions that will, in the Authority's opinion, correct or assist in overcoming the undesirable trading situation.*

### A.2 Clause 5.5

*The Authority must attempt to correct every undesirable trading situation and, consistently with section 15 of the Act, restore the normal operation of the wholesale market as soon as possible.*

### A.3 Clause 5(1A), Schedule 8.3, Technical Code B

*The system operator must issue a notice in writing to all participants whenever, or as soon as practicable after, an island wide instruction to electrically disconnect demand has been issued, amended, or revoked under clause 6.*

### A.4 Clause 6, Schedule 8.3, Technical Code B

- (1) *If insufficient generation and frequency keeping gives rise to a grid emergency, the system operator may, having regard to the priority below, if practicable, and regardless of whether a formal notice has been issued, do 1 or more of the following:*
  - (a) *request that a generator varies its offer and dispatch the generator in accordance with that offer, to ensure there is sufficient generation and frequency keeping:*
  - (b) *request that a purchaser or a connected asset owner reduce demand:*
  - (c) *require a grid owner to reconfigure the grid:*
  - (d) *require the electrical disconnection of demand in accordance with clause 7A:*
  - (e) *take any other reasonable action to alleviate the grid emergency.*

....

- (5) *The system operator may, if an unexpected event occurs giving rise to a grid emergency, take any reasonable action to alleviate the grid emergency.*

# Appendix C Formal notices issued by the system operator on 9 August 2021



## Customer Advice Notice

**To:** CAN NZ Participants  
**Sent:** 09-aug-2021 06:42  
**Ref:** 4025411929

**From:** The System Operator  
**Telephone:** 0800 488 500  
**Email:** NMData@transpower.co.nz

**Revision of:**

### Low Residual Situation

Transpower as System Operator advises that North Island residual generation is less than 200 MW, including spare HVDC capacity, for trading periods TP 36 - 41 (17:30 -20:00) on 9 August 2021. If system conditions worsen, it could result in a WRN or GEN being issued due to insufficient offers being available to cover for the largest contingency or meet demand and maintain frequency keeping reserve. Participants should ensure energy and reserve offers and load bids are accurate for the times noted, and if not, please update accordingly. If you are aware of information that could impact system security, please advise the System Operator duty operations manager on 07 843 0618. This notice will not be updated unless conditions worsen and a WRN or GEN notice is required.

...

A revision of this notice will be issued if there is any change to the situation above.

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Transpower New Zealand Ltd The National Grid



## Warning Notice

**To:** GEN NZ Participants  
**Sent:** 09-aug-2021 13:02  
**Ref:** 4026187046

**From:** The System Operator  
**Telephone:** 0800 488 500  
**Email:** NMData@transpower.co.nz

**Revision of:**

<b>Cause:</b>	Insufficient Generation offers National
<b>Region or GXP affected:</b>	National
<b>Starting:</b>	09-aug-2021 17:30
<b>Ending:</b>	09-aug-2021 20:30
Transpower as System Operator advises there is a risk of insufficient generation and reserve offers to meet demand and provide for N-1 security for a contingent event.	

<b>Consequences on the power system:</b>
Reduced or zeroed reserves for the CE risk may be dispatched, and/or the SO may need to manage demand.

<b>Participants are Requested to:</b>	<b>At:</b>
Increase Energy Offers	North Island, South Island
Decrease demand	North Island, South Island
Increase Instantaneous Reserve Offers	National

<b>Demand Allocations:</b>	<b>Total</b>

<b>Consequences if insufficient responses by participants:</b>
SO will manage demand to restore power system security.

This notice is issued in accordance with Technical Code B - Emergencies, Schedule 8.3, Part 8

A revision of this notice will be issued if there is any change to the situation above.

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Issued 5:10 pm



TRANSPOWER



## Grid Emergency Notice

**To:** GEN NZ Participants  
**Sent:** 09-aug-2021 17:10  
**Ref:** 4027364789

**From:** The System Operator  
**Telephone:** 0800 488 500  
**Email:** NMData@transpower.co.nz

### Revision of:

<b>Cause:</b>	Insufficient Generation offers National
<b>Region or GXP affected:</b>	North Island, South Island
<b>Starting:</b>	09-aug-2021 18:00
<b>Ending:</b>	09-aug-2021 19:00

### Consequences on the power system:

This is a New Zealand wide emergency. There is Insufficient Generation offers to meet demand and provide for N-1 security for a contingent event. The level of instantaneous reserves being scheduled may or will need to be reduced.

### Participants are Requested to:

Increase Energy Offers  
Increase Instantaneous Reserve Offers  
Decrease demand

### At:

North Island, South Island  
North Island, South Island  
National

### Demand Allocations:

### Total

### Consequences if insufficient responses by participants:

Where participant response is insufficient, the System Operator will manage demand to alleviate the Grid Emergency.

This notice is issued in accordance with Technical Code B - Emergencies, Schedule 8.3, Part 8

A revision of this notice will be issued if there is any change to the situation above.

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Transpower New Zealand Ltd The National Grid



Issued at 6:47 pm



## Grid Emergency Notice

## Revision

**To:** GEN NZ Participants  
**Sent:** 09-aug-2021 18:47  
**Ref:** 4027605215

**From:** The System Operator  
**Telephone:** 0800 488 500  
**Email:** NMData@transpower.co.nz

**Revision of:** GEN, 4027364789, 09-aug-2021 17:10, Insufficient Generation offers

<b>Cause:</b>	Insufficient Generation offers National	
<b>Region or GXP affected:</b>	North Island, South Island	
<b>Starting:</b>	<del>09-aug-2021 18:00</del>	09-aug-2021 18:00
<b>Ending:</b>	<del>09-aug-2021 19:00</del>	09-aug-2021 20:00

### Consequences on the power system:

This is a New Zealand wide emergency. There is Insufficient Generation offers to meet demand and provide for N-1 security for a contingent event. The level of instantaneous reserves being scheduled may or will need to be reduced.

### Participants are Requested to:

Increase Energy Offers  
Increase Instantaneous Reserve Offers  
Decrease demand

### At:

North Island, South Island  
North Island, South Island  
National

All network companies to reduce load by 1% until further notice. A demand allocation notice will follow shortly.

### Demand Allocations:

### Total

### Consequences if insufficient responses by participants:

Where participant response is insufficient, the System Operator will manage demand to alleviate the Grid Emergency.

A revision of this notice will be issued if there is any change to the situation above.

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Transpower New Zealand Ltd The National Grid

Issued at 7:09 pm



TRANSPOWER



## Grid Emergency Notice

## Revision

**To:** GEN NZ Participants  
**Sent:** 09-aug-2021 19:09  
**Ref:** 4027589876

**From:** The System Operator  
**Telephone:** 0800 488 500  
**Email:** NMData@transpower.co.nz

**Revision of:** GEN,4027605215,09-aug-2021 18:47,Insufficient Generation offers

<b>Cause:</b>	Insufficient Generation offers National	
<b>Region or GXP affected:</b>	North Island, South Island	
<b>Starting:</b>	<del>09-aug-2021 18:00</del>	09-aug-2021 18:00
<b>Ending:</b>	<del>09-aug-2021 19:00</del>	09-aug-2021 20:00

### Consequences on the power system:

This is a New Zealand wide emergency. There is Insufficient Generation offers to meet demand and provide for N-1 security for a contingent event. The level of instantaneous reserves being scheduled may or will need to be reduced.

### Participants are Requested to:

Increase Energy Offers  
Increase Instantaneous Reserve Offers  
Decrease demand

**At:**  
North Island, South Island  
North Island, South Island  
National

All network companies to control load to the limits provided below. Thank you.

<b>Demand Allocations:</b>	<b>Total</b>	<b>7245.9</b>
<b>Company</b>	<b>NGOC</b>	<b>MW</b>
Alpine Energy	RCS	151.8
Buller Network	RCS	7.2
Centralines	RCC	23.0
Counties Power	RCN	149.5
Delta Utility Services	RCS	227.6
Eastland Network	RCC	58.5
Electra	RCC	85.7

A revision of this notice will be issued if there is any change to the situation above.

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Electricity Ashburton	RCS	124.1
Electronet/ Westpower	RCS	26.9
Horizon Energy Distribution	RCN	93.8
MainPower	RCS	122.1
Marlborough Lines	RCS	77.7
Methanex	RCC	10.0
Network Tasman	RCS	155.1
Network Waitaki	RCS	53.5
Northpower	RCN	207.7
NZAS	RCS	993.4
Origin Energy	RCC	11.1
Orion	RCS	645.7
Powerco Eastern	RCN	480.1
Powerco Southern	RCC	213.4
Powerco Western	RCC	194.3
PowerNet	RCS	223.7
Rayonier	RCS	10.9
Scanpower	RCC	16.1
The Lines Company	RCC	15.1
The Lines Company	RCN	36.2
Todd	RCC	0.0
Todd Generation Taranaki Limited	RCC	0.0
Top Energy	RCN	31.9
Tranz Rail	RCC	3.6
Tranz Rail	RCN	1.0
Unison Networks	RCC	192.3
Unison Networks	RCN	128.5
Vector	RCN	1101.1
Vector Northern	RCN	593.3
Waipa Networks	RCN	77.0
WEL Networks	RCN	224.7
Wellington Electricity	RCC	430.7
Whareroa Power	RCC	0.0
Winstones	RCC	47.6

**Demand Allocations:**

**Total**

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**Consequences if insufficient responses by participants:**

Where participant response is insufficient, the System Operator will manage demand to alleviate the Grid Emergency.

- Participants are required to limit load off-take to no greater than the level allocated for the duration of the above time.
- Participants must verbally acknowledge notice within 15 minutes to the Grid Asset Controller at the normal point of contact.
- If participants are unable or unwilling to comply fully with the instruction they advise must the Grid Asset Controller immediately.
- If at any time actual load is less than the allocation, and is expected to remain so, then that party must advise the Grid Asset Controller to allow re-allocation to other parties.

This notice is issued in accordance with Technical Code B - Emergencies, Schedule 8.3, Part 8

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# Grid Emergency Notice

# Revision

**To:** GEN NZ Participants  
**Sent:** 09-aug-2021 20:20  
**Ref:** 4027590150

**From:** The System Operator  
**Telephone:** 0800 488 500  
**Email:** NMData@transpower.co.nz

**Revision of:** GEN, 4027589876, 09-aug-2021 19:09, Insufficient Generation offers

<b>Cause:</b>	Insufficient Generation offers National	
<b>Region or GXP affected:</b>	North Island, South Island	
<b>Starting:</b>	<del>09-aug-2021 18:00</del>	09-aug-2021 18:00
<b>Ending:</b>	<del>09-aug-2021 19:00</del>	09-aug-2021 21:00

**Consequences on the power system:**  
 This is a New Zealand wide emergency. There is Insufficient Generation offers to meet demand and provide for N-1 security for a contingent event. The level of instantaneous reserves being scheduled may or will need to be reduced.

<b>Participants are Requested to:</b>	<b>At:</b>
Increase Energy Offers	North Island, South Island
Increase Instantaneous Reserve Offers	North Island, South Island
All network companies can increase load by 5% on current load.	

Demand Allocations:	Total
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**Consequences if insufficient responses by participants:**

This notice is issued in accordance with Technical Code B - Emergencies, Schedule 8.3, Part 8

A revision of this notice will be issued if there is any change to the situation above.

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# Grid Emergency Notice

# Revision

**To:** GEN NZ Participants  
**Sent:** 09-aug-2021 21:01  
**Ref:** 4027590320

**From:** The System Operator  
**Telephone:** 0800 488 500  
**Email:** NMData@transpower.co.nz

**Revision of:** GEN, 4027590150, 09-aug-2021 20:20, Insufficient Generation offers

<b>Cause:</b>	Insufficient Generation offers National	
<b>Region or GXP affected:</b>	North Island, South Island	
<b>Starting:</b>	<del>09-aug-2021 18:00</del>	09-aug-2021 18:00
<b>Ending:</b>	<del>09-aug-2021 19:00</del>	09-aug-2021 21:00

<b>Participants are Requested to:</b>	<b>At:</b>
The Grid Emergency has ended. All participants can restore all load.	

<b>Demand Allocations:</b>	<b>Total</b>

<b>Consequences if insufficient responses by participants:</b>

This notice is issued in accordance with Technical Code B - Emergencies, Schedule 8.3, Part 8

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## Grid Emergency Report

**To:** GEN NZ Participants  
**Sent:** 09-aug-2021 23:19  
**Ref:** 4027365293

**From:** The System Operator  
**Telephone:** 0800 488 500  
**Email:** NMData@transpower.co.nz

**Revision of:**  
**Grid Emergency Notice ref:** 4027364789

<b>Cause:</b>	Insufficient Generation offers National
<b>At:</b>	National
<b>Starting:</b>	09-aug-2021 18:00
<b>Ending:</b>	09-aug-2021 21:00
<b>Action Taken:</b>	This was a New Zealand wide emergency. There were insufficient Generation offers to meet demand and provide for N-1 security for a contingent event. The level of instantaneous reserves dispatched needed to be reduced, producing a reserve deficit situation. Load management was required to maintain frequency keeping capability.

This notice is issued in accordance with Clause 13.97 (1), Part 13

A revision of this notice will be issued if there is any change to the situation above.

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TRANSPOWER



## Island Shortage Situation Notice

**To:** ISS Recipients  
**Sent:** 09-aug-2021 23:54  
**Ref:** 4027696092

**From:** The System Operator  
**Telephone:** 0800 488 500  
**Email:** NMData@transpower.co.nz

**Grid Emergency Notice ref:** 4027364789

**Revision of:**

**Cause:** Insufficient Generation offers  
**Island:** National  
**Starting:** 09-aug-2021 19:00  
**Ending:** 09-aug-2021 20:30

There were insufficient Generation offers to meet demand and provide for N-1 security for a contingent event. The level of instantaneous reserves dispatched needed to be reduced, producing a reserve deficit situation. Load management was required to maintain frequency keeping capability.

**Verbal GEN Reference:**

There were insufficient Generation offers to meet demand and provide for N-1 security for a contingent event. The level of instantaneous reserves dispatched needed to be reduced, producing a reserve deficit situation. Load management was required to maintain frequency keeping capability.

This notice is issued in accordance with Technical Code B - Emergencies, Schedule 8.3, Part 8, clause 5(1A).

This Island Shortage Situation (ISS) notice has been issued by the System Operator to inform the Pricing Manager and Market Participants that an island wide instruction to disconnect demand has been issued, amended or revoked. Refer to the related GEN notice for details of the instruction. The ISS notice serves as an indication to the market that the Pricing Manager may invoke Scarcity Pricing subject to meeting additional market criteria.

A revision of this notice will be issued if there is any change to the situation above.

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