The Authority's preliminary decision on whether an undesirable trading situation occurred on 9 August 2021

Preliminary decision

Preliminary Decision Paper: 16 December 2021

Submissions close: 5pm 3 February 2022

Executive summary

On the evening of Monday 9 August 2021, New Zealand faced the largest demand peak on record in response to one of the coldest nights this year. The 9 August peak demand event meant that approximately 34,000 customers experienced an electricity cut without warning, with the biggest impact being felt in the Waikato region where over 17,000 customers were disconnected.

There are a number of reviews currently taking place into the 9 August peak demand event, including reviews run by the Ministry of Business, Innovation and Employment, the Electricity Authority (Authority), and Transpower. The Authority is running a number of work streams into different aspects of the 9 August peak demand event, including:

- a review under section 16 of the Electricity Industry Act 2010 (Act), which will consider many roles, including that of the system operator, lines companies, generators, and retailers, and
- considering several allegations of breaches of the Electricity Industry Participation Code 2010(Code). These allegations relate to the system operator and generators' actions in relation to the 9 August peak demand event.

In addition to the above, the Authority has conducted an investigation into a claimed undesirable trading situation (UTS) which is the focus of this preliminary decision paper. The claim alleged that Contact Energy Limited (Contact Energy) and Genesis Energy Limited (Genesis Energy) individually and jointly caused the peak demand event. Although not part of the claim, the Authority decided, following an initial review of the data, also to consider whether Transpower as the system operator contributed to the alleged UTS.

Having investigated the alleged UTS relating to this event, the Authority has reached the preliminary decision that a UTS did not occur in relation to trading periods 37 to 42 on 9 August 2021. In this particular context, the Authority found the decisions made by the system operator and generators were reasonably open to them in the circumstances. The market operated as expected, and the events lasted for a relatively short time period. As a result, there was no situation that threatened or may have threatened confidence in, or the integrity of, the wholesale market.

This preliminary decision paper sets out the Authority's investigation and findings into whether an undesirable trading situation occurred on 9 August 2021.

Overview of claim, investigation and findings

Summary of the UTS claim

On 12 August 2021, the Authority received a claim from Haast Energy Trading Limited (Haast Energy) and Electric Kiwi Limited (Electric Kiwi) that a UTS occurred on 9 August 2021 in relation to six trading periods (37 to 42). Two more parties subsequently joined the claim: Flick Energy Limited (Flick Electric) and Switch Utilities Ltd (Vocus New Zealand).[1]

The claim alleged that the UTS was individually and jointly caused by Contact Energy Limited (Contact Energy) and Genesis Energy Limited (Genesis Energy) on the grounds that:

[1] Letters were received from Flick Electric and Vocus New Zealand. These organisations are recorded on the participant register that the Authority maintains using the legal names of Flick Energy Limited and Switch Utilities Limited.

(a) Genesis Energy did not offer Huntly Rankine Unit 4 (HLY4) to the market, and

(b) Contact Energy had the Taranaki Combined Cycle station (TCC) available but did not run it.

Although not part of the claim, the Authority decided, based on an initial review of the data, also to consider whether Transpower as the system operator contributed to the alleged UTS.

Legal framework for investigation of a UTS

An undesirable trading situation (UTS) in the electricity market is a situation that threatens, or may threaten, confidence in, or the integrity of, the wholesale market and cannot satisfactorily be resolved by any other mechanism in the Code (aside from the trading conduct provisions). The UTS provisions in the Code give the Authority power to take corrective action if it considers a UTS is developing or has developed.

Therefore, in determining whether there was a UTS, there are three questions to be considered:

(a) whether the situation affected the wholesale market;

(b) whether the situation threatened, or may have threatened, confidence in, or the integrity of, the wholesale market; and

(c) whether the situation can be satisfactorily resolved by any other mechanisms available under the Code (aside from the trading conduct provisions).

Our preliminary view is there was not a UTS

The Authority found that, in retrospect, some decisions could have been different. However in the particular circumstances, the actions taken by the system operator, Genesis Energy and Contact Energy were reasonably open to them. The market operated as expected, and the events lasted for a relatively short time period. These findings are the basis of the Authority's preliminary decision that there was no UTS as there was no situation that threatened or may have threatened confidence in, or the integrity of, the wholesale market.

It is important to note that the Authority's views in this context are specific to the UTS investigation and the legal framework for considering a UTS. The Authority's findings in the context of the UTS in no way implies that these decisions may not have amounted to a breach of other provisions in the Code. Whether the actions and decisions of the system operator, Genesis Energy and Contact Energy amount to breaches of the Code is being separately assessed following the Authority's compliance process.

System operator

The Authority's finding was that the system operator's actions and decisions were generally appropriate and proportionate to the risk the system operator was seeking to manage: namely, to prevent cascade failure. In the circumstances staff consider that, although not perfect in retrospect, in the context of 9 August the system operator's actions did not threaten confidence in, or the integrity of, the wholesale market and so did not amount to a UTS.

Genesis Energy

The Authority's finding was that Genesis Energy's decision to not offer HLY4 was a decision that was open to Genesis Energy in the circumstances. In reaching this conclusion, the Authority took into account the data the trader was observing, the uncertain information available, and the range of potential price outcomes. The Authority also took into account the relatively short duration of the situation. In this context, the Authority concluded the decision to

not offer HLY4 did not threaten confidence in, or the integrity of, the wholesale market and so did not amount to a UTS.

Contact Energy

The Authority's finding was that Contact Energy could not make TCC available during the relevant trading periods on 9 August in response to any forecast data for the relevant trading periods.

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. It is important to note that, as this is a preliminary decision, 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.

Other investigations

As described above, the Authority is carrying out a separate review into the events of 9 August and is also considering alleged breaches of the Code. In addition, the Ministry of Business, Innovation and Employment has carried out an investigation into 9 August 2021. These reviews are separate from the Authority's preliminary decision in relation to the UTS claim.

Contents

1 Introduction

1.1 As set out above, 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 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.

Haast Energy and Electric Kiwi claimed a UTS occurred on 9 August 2021

1.2 On 12 August 2021, the Authority received a claim from Haast Energy and Electric Kiwi that a UTS occurred on 9 August 2021 in relation to six trading periods (37 to 42). Two more parties subsequently joined the claim: Flick Electric and Vocus New Zealand. The claim and supporting letters are at **Appendix A**.

1.3 The claim alleged that the UTS was individually and jointly caused by Contact Energy and Genesis Energy on the grounds that:

(a) Genesis Energy did not offer HLY4 to the market, and

(b) Contact Energy had TCC available but did not run it.

1.4 In summary, Haast Energy and Electric Kiwi submitted the following claim:

> *"1. HLY4 wasn't on outage but wasn't offered to the market. Marc England, the Chief Executive of Genesis, says it takes 6 to 10 hours to get online, but ignored that the cold weather and low evening wind were both forecast well in advance, and the System Operator issued a Customer Advice Notice (CAN) at 6:42am. The Minister of Energy, Hon Megan Woods, has already called it a commercial decision. The likely reason Genesis didn't run HLY4 is they were considering the economics of their wider portfolio in a manner which is inconsistent with offering on the basis of no significant market power.*
>
> *2. TCC was available but didn't run. It may be argued that it takes several days to plan for the delivery of gas supplies, but the period in question is a 2.5 hour super peak. We believe Contact could have reorganised their existing supplies and had TCC plus both peakers on for the critical period, without burning significantly more gas than they did. The likely reason Contact didn't run TCC is they were considering the economics of their wider portfolio, again in a manner inconsistent with offering on the basis of no significant market power."*[2]

Haast Energy and Electric Kiwi requested actions to resolve the claimed UTS

1.5 Haast Energy and Electric Kiwi requested the Authority undertake the following actions to resolve the claimed UTS:

(a) "*…stop the Pricing Manager finalising prices for 9 August while it investigates"*.

(b) "*…reset prices based on a model with TCC, HLY4 and South Island reserves offered in a way that is consistent with* [Code clause] *13.5A*".

[2] See page 1 of cover letter at Appendix A.1

(c) *"…instruct the Clearing Manager to update interim prices to a level reflective of where it expects to land in this process*".

The Authority also considered whether the conduct of the system operator contributed to the alleged UTS

1.6 The Authority's factual enquiry also considered whether the actions of the system operator gave rise to a situation that threatened, or may have threatened, confidence in, or the integrity of, the wholesale market.

1.7 The Authority's decision to expand the scope of the UTS investigation to include the system operator followed an initial review of data that suggested the electricity system was not under stress at the time the 18:47 notice was issued, and the reserve deficit in final pricing was small.

The Authority's preliminary decision is that no UTS occurred

1.8 The Authority carried out an investigation and undertook analysis to reach its preliminary decision. On balance, decisions were made that might have been imperfect in retrospect, but the Authority considers these were reasonably open given the operating context at the time of the event. The Authority is satisfied that confidence and integrity in the market were not threatened as a result of the actions taken by Genesis Energy, Contact Energy and/or the system operator.

1.9 This document sets out the Authority's analysis and preliminary decision that a UTS did not occur in relation to trading periods 37 to 42 on 9 August 2021.

1.10 In responding to this claim, the Authority has followed its external and internal guidelines for processing UTS claims.[3]

2 This is a preliminary decision and we invite your feedback

What this consultation paper is about

2.1 The purpose of this paper is to set out the Authority's preliminary decision on the alleged 9 August 2021 UTS and give interested parties the opportunity to comment on that preliminary decision.

2.2 We will consider all submissions before making our final decision.

How to make a submission

2.3 Our preference is to receive submissions in electronic format (Microsoft Word). Submissions in electronic form should be emailed to UTS.2021@ea.govt.nz with "Preliminary decision on August 2021 UTS " in the subject line.

2.4 If you cannot send your submission electronically, post one hard copy to either of the addresses below, or fax it to 04 460 8879.

[3] The guidelines for participants are available at https://www.ea.govt.nz/assets/dms-assets/8/8960Guidelines-for-participants-on-UTS.pdf.

Postal address	Physical address
Submissions Electricity Authority PO Box 10041 Wellington 6143	Submissions Electricity Authority Level 7, Harbour Tower 2 Hunter Street Wellington

2.5 Please note the Authority wants to publish 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 we can publish (if we agree not to publish your full submission).

2.6 If you indicate there is part of your submission that should not be published, we will discuss with you before deciding whether to not publish that part of your submission.

2.7 However, please note that all submissions we receive, including any parts that we do not publish, can be requested under the Official Information Act 1982. This means we would be required to release material that we did not publish unless good reason existed under the Official Information Act to withhold it. We would normally consult with you before releasing any material that you said should not be published.

When to make a submission

2.8 Please deliver your submissions by **5pm** on **Thursday 3 February 2022**.

2.9 We will acknowledge receipt of all submissions electronically. Please contact the Authority at UTS.2021@ea.govt.nz or 04 460 8860 if you don't receive electronic acknowledgement of your submission within two business days.

3 Background

3.1 The following description of the key events of 9 August 2021 was published by the Authority on 13 August 2021:

> *"On the evening of Monday 9 August 2021, a significant weather event caused national demand to reach a record high. On 9 August at 6.40am, Transpower as the system operator notified market participants that the forecast market schedules were signalling the possibility of a shortage of supply that evening, should conditions worsen. By 1pm, the conditions had worsened, and the system operator notified market participants that further generation offers were required to avert the risk of demand management. By 5pm, conditions had deteriorated further, and a Grid Emergency Notice (GEN) was sent notifying market participants that there were insufficient offers to cover both energy and reserve requirements and that reserve dispatch would be reduced to provide energy supply. At 6.48pm[4], all distributors were requested to reduce demand by 1% and notified that a Demand Allocation Notice (DAN) would follow. The DAN was issued at 7.09pm but contained a number of errors regarding the maximum demand limits requested of distributors.*

[4] The notice was issued at 6:47pm, but the email was received by distributors at 6:48pm. This preliminary decision paper therefore refers to the "18:47 Notice".

The errors in the DAN resulted in a number of distributors, who had already disconnected load in response to the 6.48pm request, to manage their load further. Whereas the initial response would have had little impact on consumers (ripple control hot water and street lighting disconnection being common mechanisms), the subsequent response was enacted through disconnecting consumers completely. As a result, four distribution companies disconnected approximately 35,000[5] *consumers for up to two hours on the coldest night of the year to date across the country. With demand management being greater than required, generation was no longer dispatched as it was not required to meet the demand. This has led to the situation where consumers were without power whilst generation capacity was available.*

At 8.20pm the original GEN was revised to allow distributors to return up to 5% of their current load levels. The Grid Emergency was formally ended at 9.01pm."[6]

3.2 A detailed chronology was subsequently published by the Authority on 10 September 2021[7] and is reproduced at **Appendix B**.

4 Legal framework for a UTS

4.1 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 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

4.2 Part 5 of the Code governs the Authority's ability to act in respect of undesirable trading situations. 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.*

4.3 Undesirable trading situation 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] This number was subsequently determined to be closer to 34,000

[6] Published on the Authority's website: https://www.ea.govt.nz/assets/dms-assets/28/Terms-of-reference-Electricity-Authority-Review-of-9-August-2021-event-under-the-Electricity-Industry-Act-2010.pdf

[7] Published on the Authority's website: https://www.ea.govt.nz/assets/dms-assets/28/Immediate-assurance-review-of-the-9-August-2021-demand-management-event.pdf

4.4 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.*

4.5 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.*

4.6 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.

4.7 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 at **Appendix C**).

Interpretation of the Code's UTS provisions

4.8 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 4.3 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).

4.9 Read together with clause 5.5, which refers to the restoration of normal market operations after a UTS has occurred, a UTS must be a situation outside the normal operation of the wholesale market which the Authority must attempt to correct in order to restore the normal operation of the wholesale market.

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

4.11 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?

4.12 The wholesale market is defined in clause 1.1 of the Code as:

> *(a) the spot market for electricity, including the processes for setting—*
>
> *(i) real time prices:*
>
> *(ii) forecast prices and forecast reserve prices:*
>
> *(iii) provisional prices and provisional reserve prices:*
>
> *(iv) interim prices and interim reserve prices:*
>
> *(v) final prices and final reserve prices:*
>
> *(b) markets for ancillary services:*
>
> *(c) the forward market for electricity, including the market for FTRs.*

4.13 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 has wider implications that might threaten confidence in, or the integrity of, the wholesale market more generally.

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

4.14 The definition of a UTS requires the situation to actually or potentially threaten "confidence in" or "the integrity of" the wholesale market.

4.15 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.

4.16 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.

4.17 Assessing confidence and 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) the scale and duration of an event in order to assess whether it threatened confidence; and

(c) whether the conduct and decisions of participants were consistent with what might be expected if the market was operating normally.

4.18 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?

4.19 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.

5 The Authority considered its statutory objective

5.1 In considering the application of the UTS provisions, the Authority considered its 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 statutory objective provides an economic context.

5.2 The Authority considers that its 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; and

(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.

5.3 The UTS provisions promote, and should be interpreted in light of, the Authority's 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.*

5.4 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.

6 Circumstances of the 9 August 2021 event and the effect on the wholesale market

6.1 This section considers whether the circumstances of the 9 August 2021 peak demand event affected the wholesale market, which is one of the three questions that need to be

satisfied in order for the Authority to find that a UTS has occurred. The Authority's preliminary view is that the 9 August event, and specifically the actions of the system operator, affected the wholesale market because regulated scarcity pricing was invoked, which set prices for the wholesale market for trading periods 39 to 42.

6.2 Scarcity pricing occurs when there is insufficient supply to meet demand, and demand has to be disconnected at an island-wide or national level to securely balance the system.

6.3 In practice, when supply does not meet demand, the system operator instructs disconnections or load reductions and "scarcity pricing' is invoked. This leads to an administered price (ie, one that is set by the Code at between $10,000/MWh and $20,000/MWh).

6.4 Without scarcity pricing, the price signals indicating a shortage of supply would be muted as cuts in demand would generally lead to lower prices. This would in turn mute the long-term incentives to invest in last-resort generation or demand response.

6.5 In summary, scarcity prices are not determined solely by bids by generators and demand; they are the outcome of regulation. This section provides further detail and analysis of the effect on the wholesale market that took place on 9 August 2021.

Context for the wholesale market on 9 August 2021

6.6 Monday 9 August 2021 had the highest demand for electricity that New Zealand has seen. The previous highest demand was late June 2021 and, prior to that, August 2011. On 9 August 2021, the system operator asked lines companies to shed load to maintain system security. This meant consumers experienced power cuts due to a widespread shortage, and scarcity pricing was invoked for trading periods 39 to 42.

6.7 The 9 August also saw the market running short of reserves for significant periods in real time which led to a reserve infeasibility[8] situation in trading periods 37 and 38.

6.8 The final prices included four trading periods (trading periods 39 to 42 starting at 19:00 and ending at 21:00) where there was scarcity pricing. Scarcity pricing refers to arrangements contained in Part 13 of the Code to modify prices in the spot market when the system operator reduces demand through administrative action. Scarcity pricing introduces 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. Prices for 9 August 2021 include a price floor of $10,000/MWh because there was forced load shedding.

Prices with and without scarcity pricing

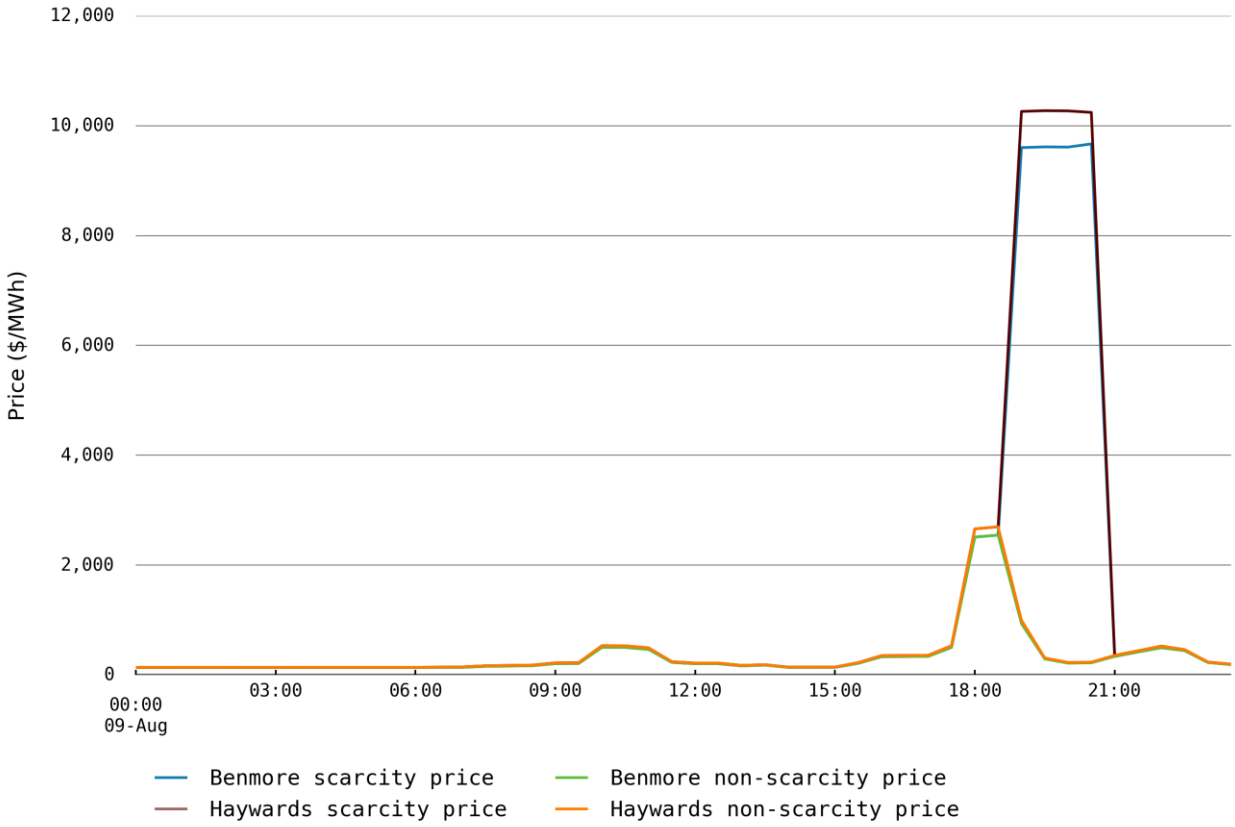
6.9 Figure 1 shows what prices would have been had scarcity pricing not been applied, and the scarcity price. The spot price is over $2,000/MWh for two trading periods without scarcity pricing. These prices are much lower than the scarcity price floor of $10,000. Given that all generation was running, including last resort plant, prices at the level indicated are expected.

6.10 Figure 1 also shows prices with scarcity pricing. Consumers were disconnected and the price in this case is the regulated scarcity price. The regulated scarcity price reflects that consumers experienced power cuts due to a shortage situation. In other trading periods,

[8] See Glossary

the prices determined by the market would be expected given the circumstances set out above.

Figure 1: Prices with and without scarcity pricing



Whether the situation affected the wholesale market

6.11 As explained above, scarcity pricing introduces 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. Prices for 9 August 2021 include a price floor of $10,000/MWh because there was forced load shedding.

6.12 These were regulated prices that occurred due to customers being disconnected. Previous UTS decisions have compared market prices with underlying supply and demand conditions. In this case, the prices are not determined solely by bids by generators and demand, they are the outcome of regulation. This means the situation (and specifically the actions of the system operator) affected the wholesale market in that regulated scarcity pricing was invoked and this set prices in the wholesale market for trading periods 39 to 42.

7 Circumstances of the 9 August 2021 event and whether market confidence or integrity was threatened by the system operator

7.1 This section considers whether the conduct and decisions of the system operator threatened, or may have threatened, confidence in, or the integrity of, the wholesale market. This is the second of three questions that needs to be satisfied in order for the

Authority to find that a UTS has occurred. To understand this, the Authority has analysed data and assessed the actions of the system operator. The Authority's assessment, views and conclusions are preliminary only and feedback is welcome.

7.2 The Authority considers the system operator affected the market through scarcity pricing. The Authority considers the system operator's decision to issue the grid emergency notice at 18:47 (the 18:47 notice) and its decisions to restore load were reasonable and justified in the circumstances. The Authority considers the 19:09 notice is not relevant to the UTS. While it affected the number of customers that were disconnected, the timing of these disconnections and the subsequent reconnections were independent of the 19:09 notice. The period over which scarcity pricing was invoked is therefore independent of the 19:09 notice.

7.3 The Authority's view is that demand could have started to be restored at 19:30. The voice log indicates the system operator started a process to restore load at 19:38, which took some time, and lines companies restored load quickly once it was allowed. The situation was resolved by the 20:05 and 20:06 phone calls and the 20:20 grid emergency notice.

7.4 While, in retrospect improvements could have been made, the Authority considers the system operator's decisions were reasonable and justified in the circumstances. Therefore, the Authority considers the system operator's conduct did not affect confidence in, or the integrity of, the wholesale market. The following sections explain each of the notices the system operator issued and provide further detail and analysis of whether market confidence or integrity was threatened by the system operator.

Overview of relevant circumstances

7.5 Consumers started to be disconnected when the system operator sent the 18:47 notice asking distributors to shed load.[9]

7.6 During the event, the system operator's actions were focused on system security and preventing cascade failure by ensuring that supply and demand remained in balance.

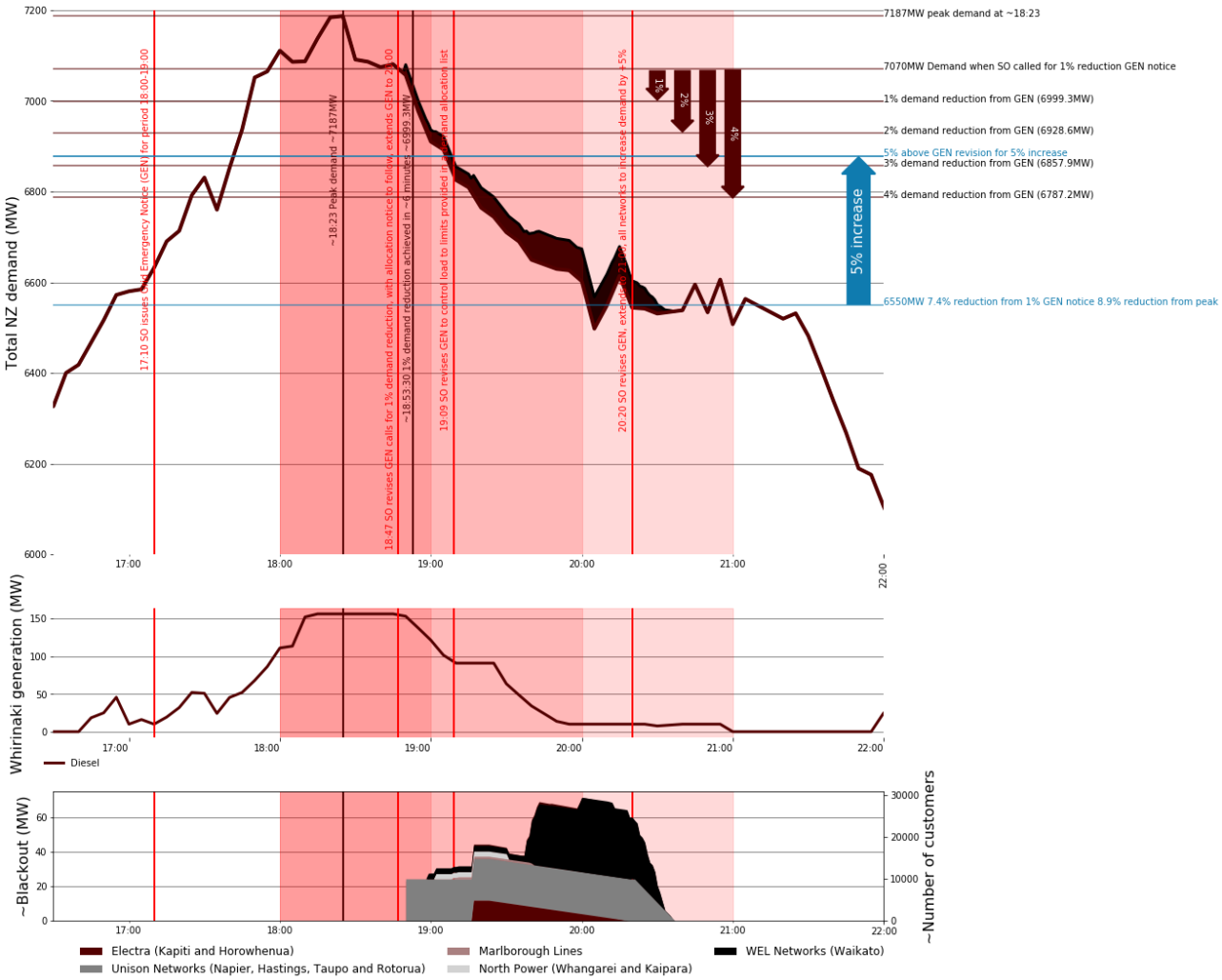
7.7 Figure 2 sets out what occurred on 9 August 2021, including notices issued by the system operator and the activity of distributors and generators (using Whirinaki as an indicator of generation more generally). Figure 2 shows that the 18:47 notice was issued after the peak of demand, but before Whirinaki had reduced its output below full.

[9] Electrical disconnection was the practical consequence of the 18:47 notice, although the grid emergency notices that were issued by the system operator did not state this. The 18:47 notice stated:

- "*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 were requested to "*increase energy offers*", "*increase instantaneous reserve offers*", "*decrease demand*", and "*All network companies to reduce load by 1% until further notice".*

The system operator subsequently advised the Authority that the notice was issued under clause 6(1)(b) and/or 6(5) of Technical Code B, Schedule 8.3 of the Code. The Authority considered that the system operator could have been clearer in its notices as to which emergency powers it was exercising, given the significance of scarcity pricing that resulted. (See Appendix C for the relevant Code provisions).

Figure 2: Summary of key events and data on 9 August 2021



The system operator affected the market through scarcity pricing

7.8 Overall, on 9 August, the market itself continued to dispatch the least cost generation. The effect the system operator had on market outcomes was through scarcity pricing. The system operator's 18:47 notice asking for reduction in load caused customers to be disconnected and, therefore, scarcity pricing to be invoked.

7.9 The system operator issued a further notice at 19:09 (the 19:09 notice) that contained faulty demand allocations. However, this is not considered relevant for the UTS as it is the prior notice that invoked scarcity pricing. The 19:09 notice did not affect the timing of decisions to disconnect and reconnect customers and hence it did not affect the duration of the event. It altered the total load and generation (but not prices), as scarcity pricing was already invoked by the earlier notice.

7.10 Further detail regarding the 18:47 and 19:09 notices is set out below.

The decision to issue the 18:47 grid emergency notice was appropriate in the circumstances

7.11 In considering whether the actions of the system operator threatened, or may have threatened, confidence in, or the integrity of, the wholesale market the Authority looked at:

(a) the data the system operator was relying on when it issued the 18:47 notice;

(b) whether the system operator was following its processes correctly; and

(c) the risks to the power system the system operator was trying to manage by issuing the 18:47 notice.

7.12 The Authority's findings were that the system operator's actions and decisions were generally appropriate and proportionate to the risk the system operator was seeking to manage: namely, to prevent cascade failure. In these circumstances the Authority considered that, although not perfect in retrospect, the system operator's actions did not threaten confidence in, or the integrity of, the wholesale market and so did not amount to a UTS. This is analysed further in the next section.

The system operator was observing that the power system was under a great deal of stress

7.13 The interim final pricing schedule indicates a reserve deficit of less than 1 MW for trading periods 37 and 38. This gives the impression that the event could have been managed without any load shedding.

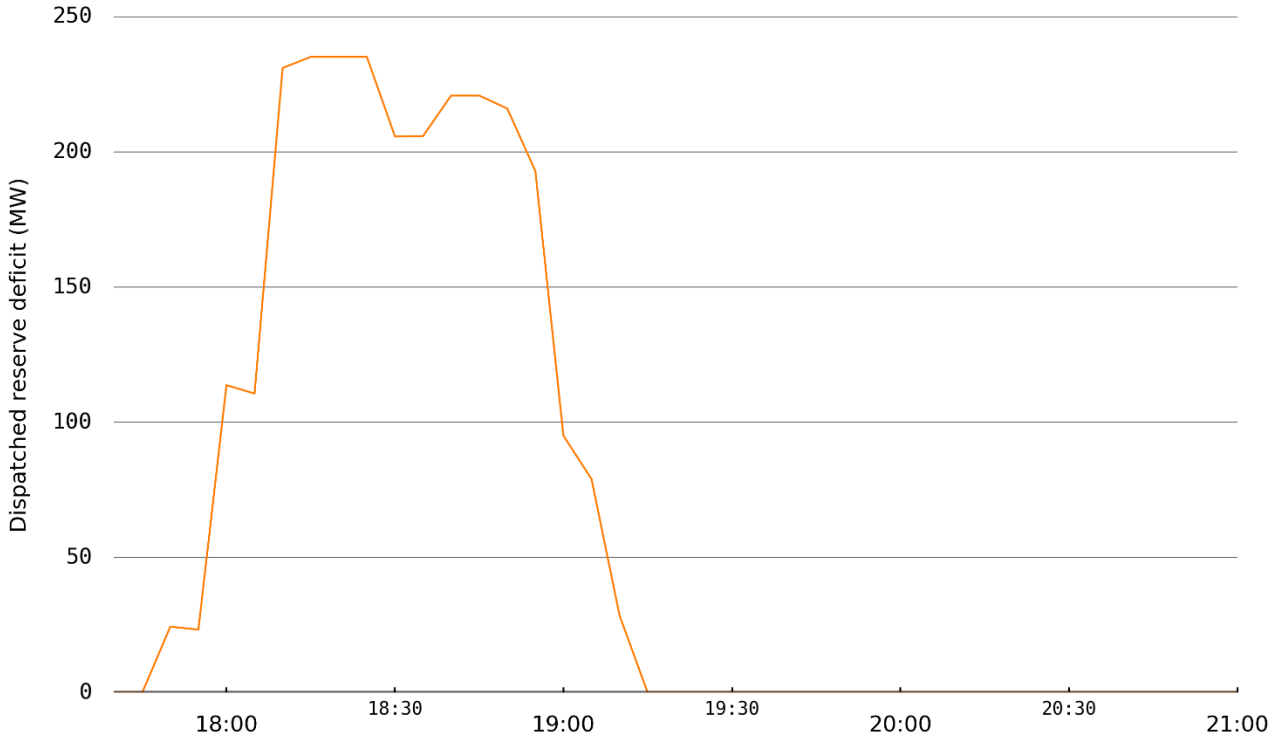
7.14 However, the situation facing the system operator in real-time was very different. There are several reasons why ex-post schedules may not appear as bad as real-time schedules:

Ex-post	Real-time
Half-hour time periods	Approximately 5-minute time periods
Based on conditions at the start of the trading period so doesn't account for contingencies that occur during the trading period	Real-time conditions accounted for
Average demand over the trading period, so averages out unders and overs	Demand in individual 5-minute periods often higher than half-hour average

7.15 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.

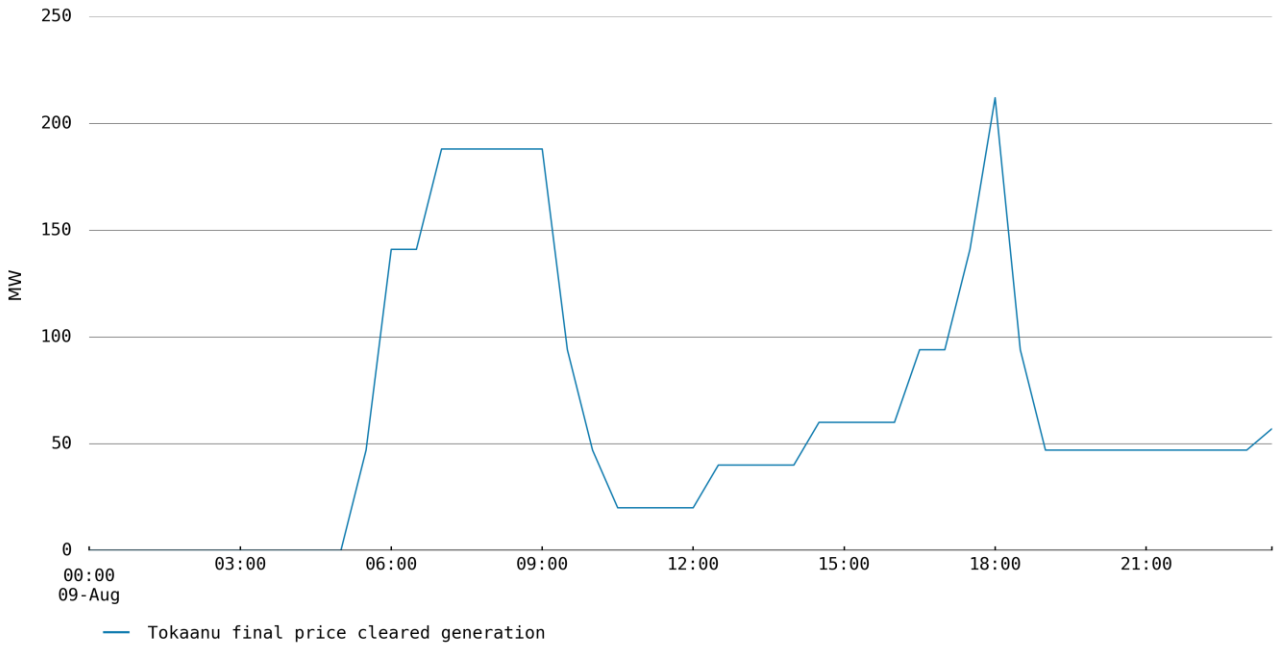
7.16 Figure 3 shows that between 17:45 and 18:10, the system operator observed a real-time reserve deficit steadily increasing up to 230 MW. When the emergency notice was issued at 18:47, the reserve deficit was still running at 220 MW and showing no sign of abating. The subsequent reduction in reserve deficit was due in large part to the instructed load shedding.

Figure 3 - Reserve deficit



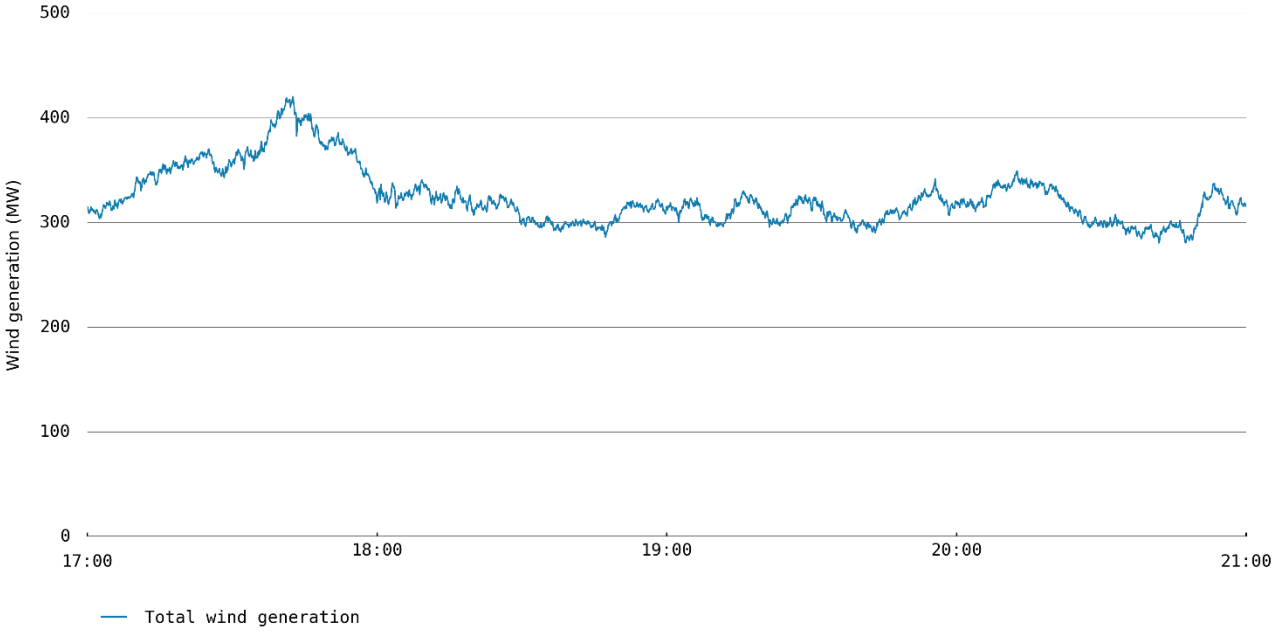
7.17 Figure 4 shows that between 18:06 and 18:52, Tokaanu's output progressively reduced from 218 MW down to 47 MW due to weed blocking the intake screens (the second time this had occurred that day).

Figure 4 - Tokaanu generation



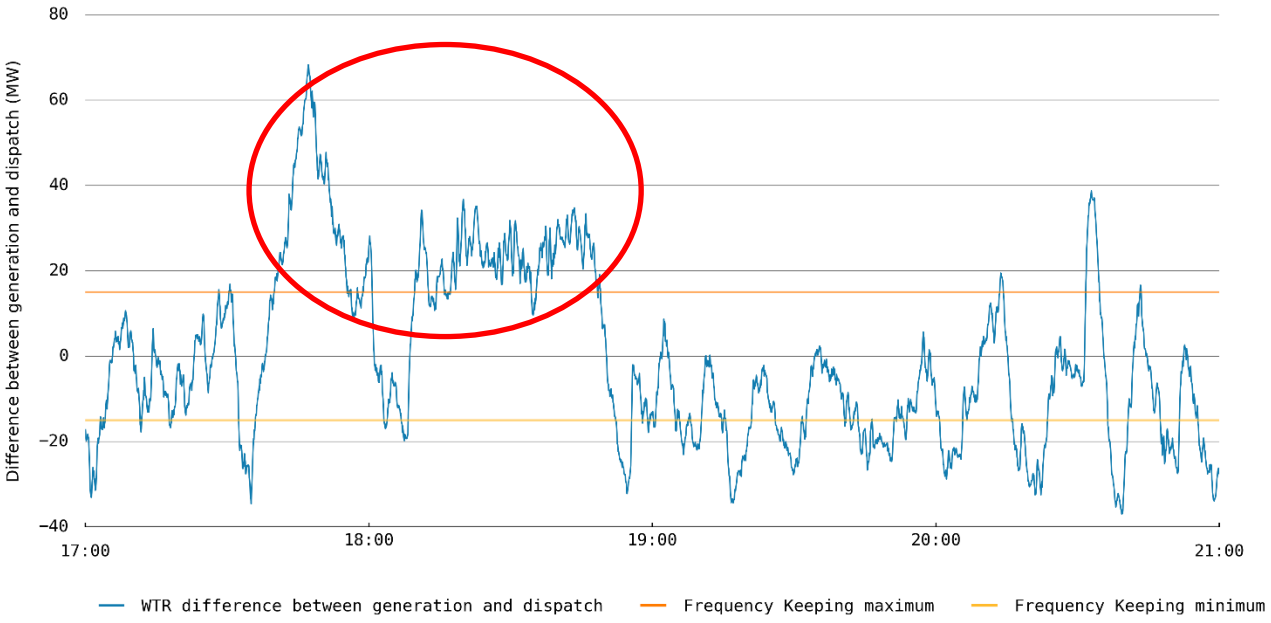
7.18 Figure 5 shows that between 17:40 and 18:40 wind generation had dropped by around 120 MW.

Figure 5 - Total NZ wind generation



7.19 The system operator had been unable to keep the Waitaki River block within its frequency keeping band, indicating that there were next to no uncleared generation offers available for dispatch. Figure 6 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.

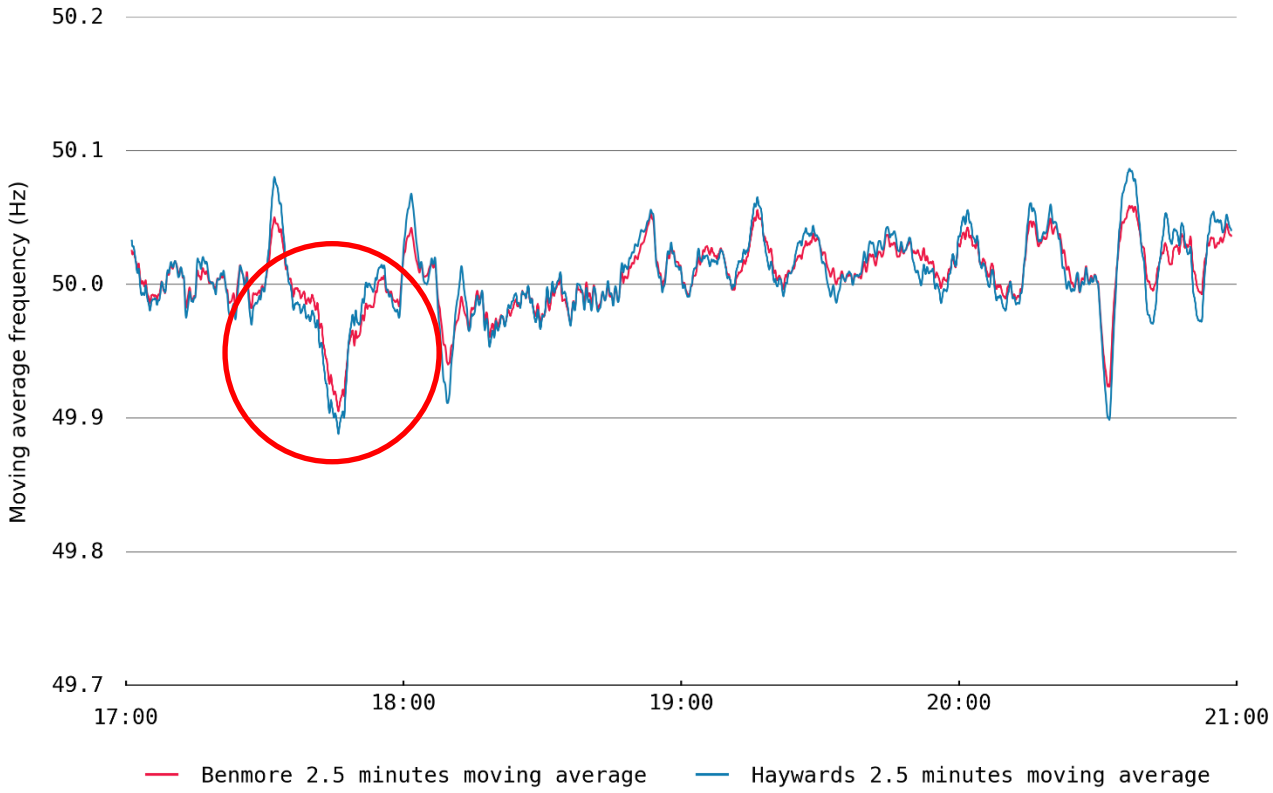
Figure 6 - Waitaki River frequency keeping performance



7.20 Figure 7 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

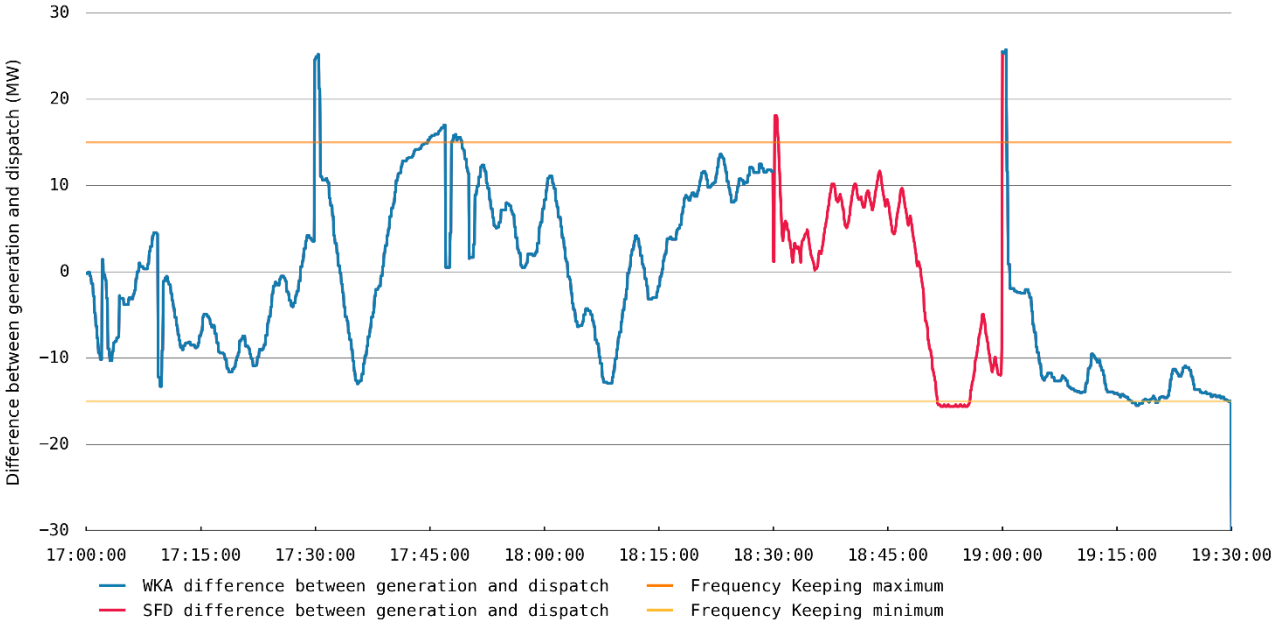
because of AUFLS, or cascade failure. This would involve widespread disconnection of customers.

Figure 7 - Island frequency



7.21 Figure 8 shows that that the North Island frequency keeping stations managed to stay essentially within their regulating bands.

Figure 8 – North Island frequency keeping performance



The decision by the system operator to issue the 18:47 notice was reasonable and justified

7.22 All this real-time information facing the system operator indicated that the power system was under a great deal of stress. The system operator was concerned to manage system security and prevent cascade failure.

7.23 In the circumstances, the Authority considers the system operator was justified in issuing its 18:47 notice for network companies to reduce load by 1%.

7.24 The Authority considers that a decision by the system operator that is reasonable and justified and is made for the purpose of preventing cascade failure would not threaten participants' confidence in the market nor would it threaten market integrity. Accordingly, the system operator's decision to issue the 18:47 notice was considered by the Authority to be a reasonable decision in the circumstances and one that was open to the system operator to make. The decision and consequences that flowed from this were found by the Authority to not threaten confidence in, or the integrity of, the wholesale market.

The system operator's decisions to restore load were appropriate in the circumstances

The 19:09 notice had a range of effects but is not relevant to the UTS because it did not affect the wholesale market

7.25 As noted above, the 19:09 notice itself is not considered relevant to the UTS. This is because it only affected the number of customers that were disconnected. The timing of these disconnections and the subsequent reconnections were independent of the 19:09 notice. The effects of the 19:09 notice are set out here as context to explain the circumstances that subsequently ended the situation. The Authority considers the restoration of connections is relevant to the UTS investigation also, because to the extent the restoration could have been handled differently it may have reduced the impact on consumers and the market generally.

7.26 At 19:09 the system operator revised the GEN notice, issuing individual demand allocations for various participants. By this time, total demand had decreased by over 3% since the 1% call and many generators were dispatched back from their maximum generation to balance this reduction in demand.

7.27 The 19:09 notice and its effects were discussed in the Authority's Immediate Assurance review.[10] This notice had a huge range of effects:

(a) Many lines companies were below the allocation and, therefore, did nothing;

(b) Northpower reconnected two feeders and some priority load;

(c) Unison – 320.8 MW allocated load, load at 19:09 was around 305 MW. Just before the 19:09 GEN notice, the Unison control room called Transpower requesting permission to restore power to the customers who had been disconnected at 18:47. Transpower did not permit them to restore load at this time;

[10] https://www.ea.govt.nz/assets/dms-assets/28/Immediate-assurance-review-of-the-9-August-2021-demand-management-event.pdf This is also referred to as Phase One of the Authority's review under section 16 of the Act into the 9 August event.

(d) Electra – 85.7 MW allocated load, load at 19:00 was about 100 MW, all hot water load was controlled, so Electra manually shed 14.9 MW of load to meet the Transpower demand allocation;

(e) Marlborough Lines – 77.7 MW allocated load, load at 19:09 was below this. Marlborough Lines had already manually shed about 2% of their load in response to Transpower's 18:47 GEN notice, they called Transpower at 19:36 to discuss that they were well below their demand allocation. The three feeders that were opened were restored by 19:42;

(f) Vector – 1,694.4 MW allocated load across two networks, combined load on both networks at 19:09 was marginally above this but falling. Vector received a call from Transpower at 19:31, at that time network load was 1,696 across both networks and continued to fall;

(g) Wellington Electricity – 430 MW allocated load, network load at 19:09 was 555 MW (22% above allocation). Wellington Electricity's GM of Asset Management called Transpower to confirm the allocation, they noticed that NZ Aluminium Smelter's load was much higher than their maximum load, which would suggest that the network allocations were calculated based on energy demand and not peak demand (which biases towards networks with high utilisation, like NZAS). Transpower confirmed that they were requesting a 1% reduction in demand, which had been met with the previous load control at 18:47;

(h) WEL Networks – 224.7 MW allocated load, at 19:09 WEL Networks cut another 40.5 MW of load by opening a total of 20 feeders for 31–55 minutes (affecting another 16,379 customers); and

(i) Aurora – 227.6 MW allocated load, Transpower called the Aurora control room and requested they reduce to 293 MW load, their load at 19:09 was 291 MW.

Load was able to be increased in some lines company areas from about 19:30

7.28 At around 19:30 different lines companies were able to increase load:

(a) Northpower reconnected two feeders as a result of the 19:09 notice allowing an increase in load;

(b) Orion was told by the system operator it could increase load at about 19:30;

(c) Marlborough Lines was able to increase load at 19:42 after a discussion with the system operator; and

(d) at 19:40 Unison's network operations centre (NOC) was advised that it could bring on load up to the specified limits in the Demand Allocation Notice. It became clear to Unison's NOC that Transpower's national grid operations centre did not have visibility of how much load Unison was drawing from the grid at the time. Unison restored power to some customers after this call, but this required other small feeders to be disconnected to stay within the limits.

This is consistent with the system conditions

7.29 At 19:30:

(a) the power system was being dispatched with full reserves from 19:15 (Figure 3);

(b) the frequency had been stable for some time (Figure 7);

(c) the South Island frequency keeper had been operating normally since around 19:00 (Figure 6);

(d) Tokaanu's generation had stabilised by 18:52 (Figure 4); and

(e) wind generation had stabilised by around 18:00 (Figure 5).

The Authority's view is that demand could have started to be restored at 19:30

7.30 The Authority's view is that load could have started to be restored by 19:30. Multiple indicators suggested that the power system was stable at this point and well off its peak. In addition, the system operator was starting to advise individual lines companies to reconnect load.

The voice log indicates that the system operator started a process to restore load at 19:38 but this took some time

7.31 At 19:38, the system operator discussed internally the fact that the 19:09 notice had an asymmetric impact with some lines companies getting an increase and some a severe decrease. There was uncertainty at this point how much load would come on because once hot water is cut, the water cools and then once reconnected demand is high as all cylinders come on at once as their thermostats switch on. The system operator also determined that the system operator could go back into reserve deficit to restore load.

7.32 At 19:54, the system operator was still attempting to use the load shed and restore (LSR) decision support tool to restore load.

7.33 At 20:03, the system operator decided to use a five percent target as the LSR tool was taking too long to produce a set of allocations that made sense given the system operator was aware that the 19:09 notice was incorrect by this time.

7.34 At 20:05 and 20:06, the system operator called the South and North Island grid controllers to ask them to contact lines companies to let them know that they could increase load by five percent. This was followed up with a notice at 20:20.

Lines companies restored load quickly once this was allowed

7.35 The lines companies that disconnected customers were able to restore load quickly:

(a) Northpower restored disconnected customers within 20 minutes once instructed;

(b) WEL restored disconnected customers within 9 minutes once instructed;

(c) Unison restored disconnected customers within 19 minutes once instructed;

(d) Electra restored disconnected customers within 9 minutes once instructed; and

(e) Marlborough Lines restored disconnected customers within 5 minutes once instructed.

Conclusion about restoration

7.36 The system operator's decisions around restoring load were slower than the Authority would ideally expect given the circumstances and with the benefit of hindsight.

7.37 While in retrospect, improvements could have been made, as the situation was resolved by the 20:05 and 20:06 phone calls and the 20:20 notice, the Authority considers that the decisions made were reasonable and justified in the circumstances. The Authority

considers the scale and duration of the event also supports the conclusion that it did not affect confidence in, or the integrity of, the wholesale market.

8 Circumstances of the 9 August 2021 event and whether market confidence or integrity was threatened by Genesis Energy and/or Contact Energy

8.1 This section considers whether the actions of Genesis Energy and/or Contact Energy threatened, or may have threatened, confidence in, or the integrity of, the wholesale market. As noted in relation to the system operator, this is the second of three questions that needs to be satisfied in order for the Authority to find that a UTS has occurred. To understand this, the Authority has analysed the data the traders were relying on when they made their decisions not to offer plant. The Authority considers this question revolves around efficiency because the Authority expects generators, such as Contact Energy and Genesis Energy, to offer generation into the market to make a profit. As is noted elsewhere in this paper, the Authority's assessment, views and conclusions are preliminary only and feedback is welcome.

8.2 The Authority considers that the decision by Genesis Energy not to offer HLY4 was open to it in the circumstances. In reaching this view the Authority considered the data the trader was observing, the uncertain information available and the range of potential price outcomes.

8.3 The Authority also considers that the decision by Contact Energy not to offer TCC was justified on the basis that Contact Energy could not make TCC available during the relevant trading periods on 9 August in response to forecast data on that morning.

8.4 This section provides further detail and analysis into whether market confidence or integrity was threatened by Genesis Energy and/or Contact Energy.

Overview of relevant circumstances

8.5 While the power system was stressed on 9 August 2021, in retrospect it was not particularly short of energy. The interim final pricing schedule shows the system dispatched with almost sufficient reserves in trading periods 37 and 38 prior to any load being cut. As noted above, what the system operator was observing in real time were different indicators suggesting a very stressed power system.

8.6 It is important to reiterate that some of the actions and decisions considered in this investigation are also relevant in considering the allegations that Genesis Energy and Contact Energy breached the trading conduct provisions. However, the Authority is considering those breach allegations separately and the legal framework that applies is different. As noted above, it is possible to find a breach of the trading conduct provisions without finding that the situation amounts to a UTS (and vice versa). The Authority's findings in relation to the generators' conduct in this preliminary decision in no way implies the Authority has reached a view on the trading conduct breach allegations.

The generator question revolves around efficiency

8.7 In the spot market, the Authority expects generators such as Contact Energy and Genesis Energy to offer their generation into the market to make a profit.

8.8 When considering offering generation, a generator needs to understand the effect of offering the unit on forecast market prices.

8.9 When a thermal unit is committed to the market, (ie, made available to operate) it cannot then be easily dispatched on and off, as this causes thermal stress on the equipment and increases the necessary maintenance. Therefore, such units are typically offered so that their minimum load is at a low price to prevent them being dispatched off. This is especially true of thermal units with boilers.

8.10 The decision to offer any generation is therefore made regarding the effect of that plant on the market price. This is particularly the case with a thermal unit offering its minimum load at a low price.

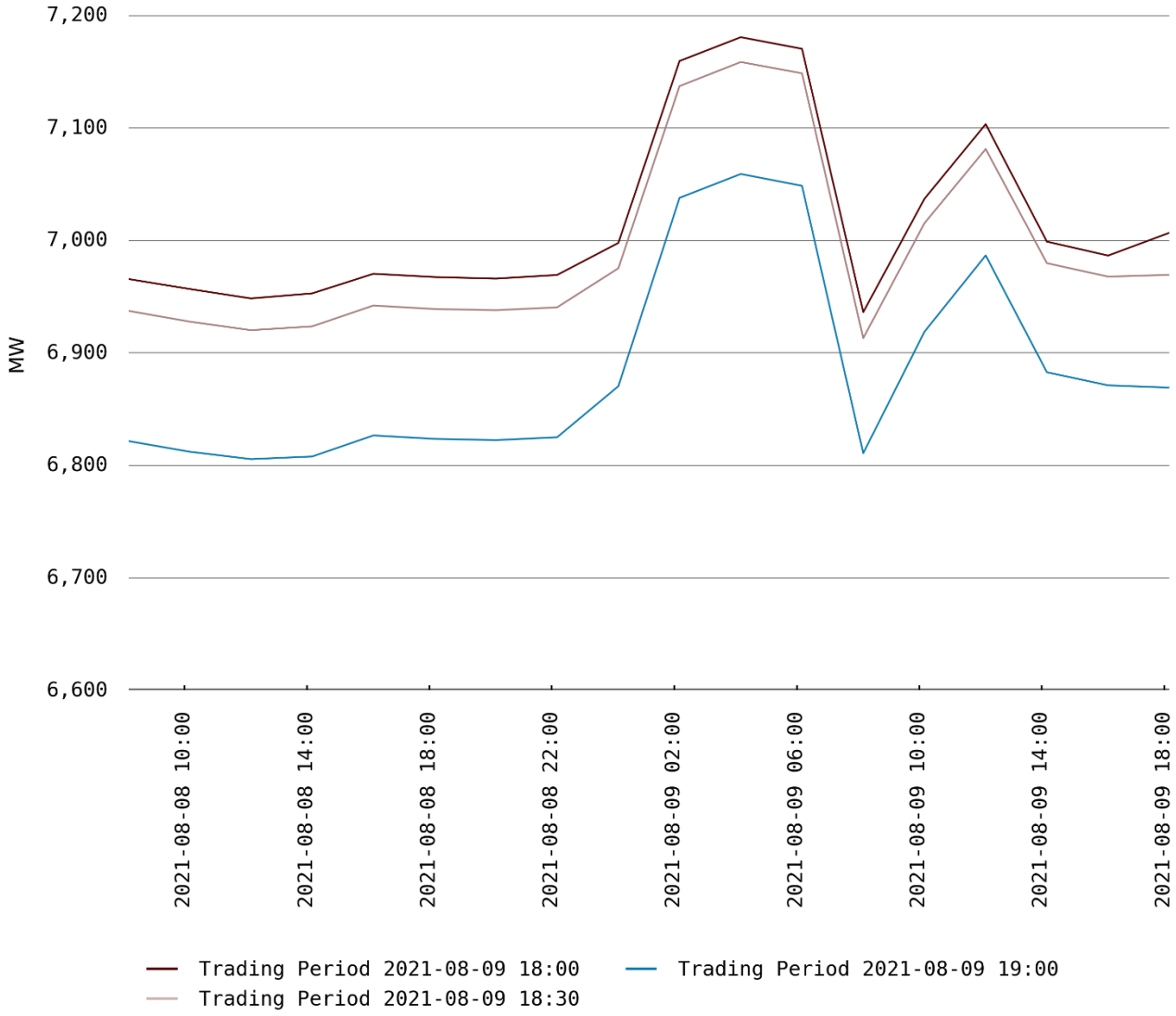
8.11 For the sort of slow start thermal plant in question, the decision to offer and run the plant needs to be made based on forecast prices and the anticipated effect of the thermal plant on market prices. This means that part of the context is uncertainty about forecast prices. For example, in the case of a Rankine, the relevant forecast prices are around 12 hours ahead.

Generator decisions were informed by forecasts

8.12 Generator decisions are informed by forecast price signals, load forecasts and weather information.

8.13 Figure 9 shows that on 9 August, the load forecast for the evening peak period had been fluctuating significantly over the day.

Figure 9 - National load forecast for evening of 9 August 2021



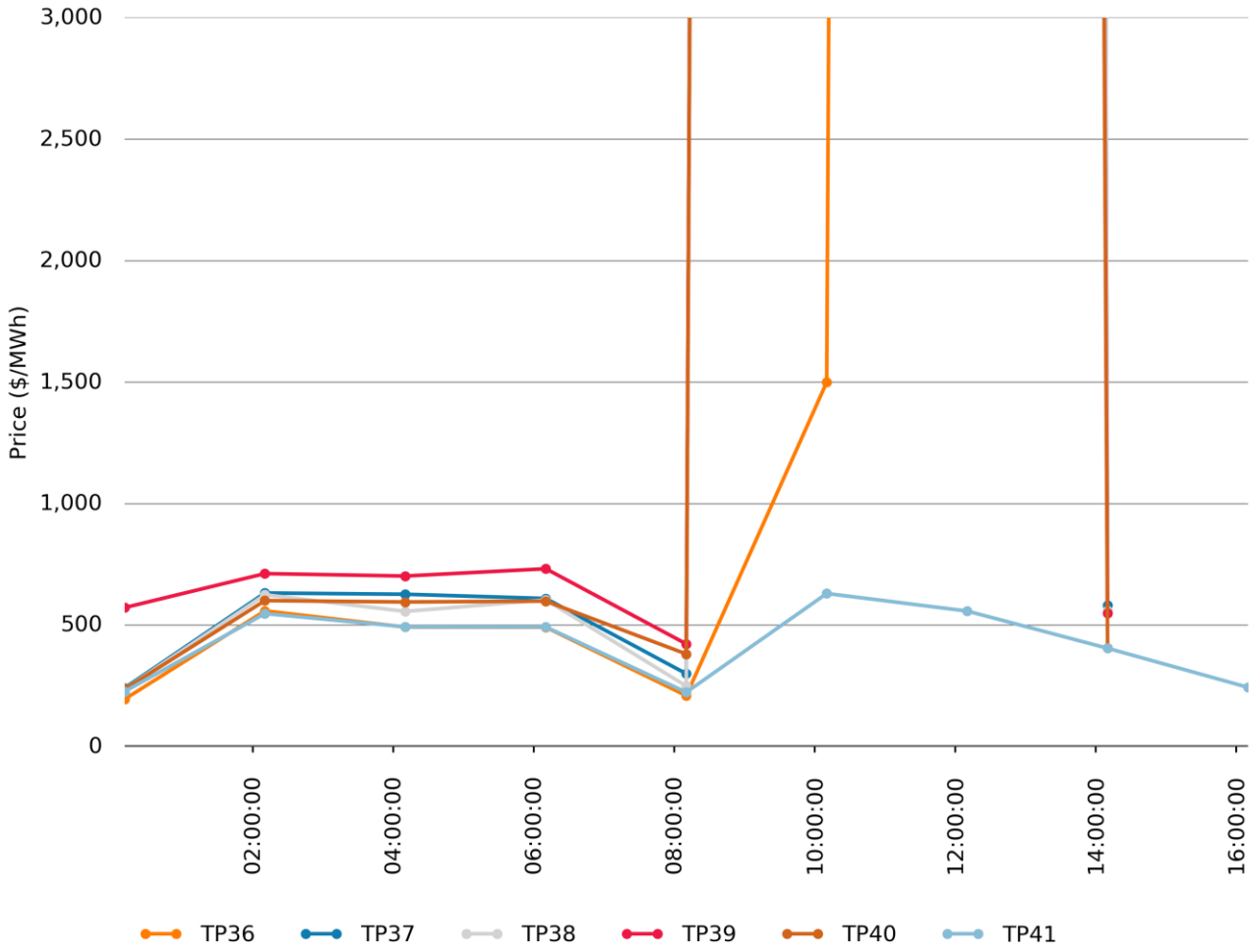
8.14 The fluctuating demand forecasts drove corresponding fluctuations in forecast prices; Figure 10 shows results from the NRSL (non-responsive long) schedule, indicating the following:

(a) forecast prices had exceeded $500/MWh for six trading periods over the evening peak in the 02:10, 04:10 and 06:10 schedules earlier in the morning. However, prices dropped back in the 08:10 schedule so that all but three trading periods had forecast prices below $300/MWh between TP36 and TP42; and

(b) infeasible prices showed up in the 10:10 and 12:10 schedules, prompting the system operator to issue the WRN notice at 13:02.

8.15 Forecast prices at 8:10 for trading periods 36 to 42 (the PRSL and NRSL schedules) were half what they were in the previous schedule. This is likely a result of the demand forecast in Figure 9. From that point onwards, the forecast prices increased indicating stress on the power system. Due to the Rankine start-up times, the 08:10 schedule is critical. This is set out in detail below.

Figure 10 - Forecast Prices for evening of 9 August 2021



8.16 While the reduction in generation output at Tokaanu due to weed blockages (Figure 4) and the drop in wind generation (Figure 5) increased the stress on the system, these are not events that could have been predicted with any degree of certainty. Wind is inherently uncertain, but traders can only act on the balance of probabilities and make decisions based on the information available to them at any point in time

The decision by Genesis Energy not to offer HLY4 was open to Genesis Energy in the circumstances

8.17 The Authority accepts that Rankine units (such as HLY4) are not well-suited to a short-term peaking role for the following reasons:

(a) bringing a unit online is a complex process, involving managing differential expansion while the unit is brought to operating temperature;

(b) Genesis Energy explained that under a best-case scenario it takes a minimum of 8 hours 13 minutes to bring a unit from cold to full load, but Genesis Energy usually allows 12 hours, to allow some contingency for potential plant, fuel and staffing issues. The Authority substantiates this information below;

(c) the units have significant start-up costs; and

(d) the units have a significant minimum operating load, which will tend to depress the market price.

8.18 Genesis Energy explained that it usually allows 12 hours to start a Rankine from cold. Genesis Energy explained that the best-case scenario for this is 8 hours and 13 minutes. Under this best-case scenario, the latest that a Rankine could start to be operating at full load at 5pm is 08:47. In addition there is 30 minutes for the trader to evaluate information and make a decision to run. This means that around 08:15 was the point at which Genesis Energy would have needed to offer HLY4 for it to be able to run at full load during trading period 35 starting at 17:00.

8.19 Figure 9 shows that at the critical time for the HLY4 decision—the 08:10 forecast—the forecast load fell dramatically.

8.20 Figure 10 shows the fluctuating demand and price forecasts. Consequently, there was no sustained price signal that indicated HLY4 would be required or would be able to cover its costs.

8.21 As the start-up times are critical for this analysis, the Authority has validated these using data from previous cold starts. We measured the time difference between Huntly units being offered, and when the first megawatt was generated. We did this for all of 2021 only, when a Rankine unit was off for a minimum of three days.

8.22 This time difference excludes ramp up time and time for the trader to offer the unit. Once ramp up time is added we found no instances when a cold unit would have been able to generate at full output in less than 8 hours and 24 minutes. Note this excludes any time for the trader to evaluate information and to decide to run. This is consistent with the information that Genesis provided and validates that the 08:10 forecast was critical for the decision to run / not run on 9 August 2021.

8.23 Note that the CAN notice issued at 06:42 signalled a low residual situation. This means that forecasts suggested that once the system had been fully dispatched, there would not be much excess generation left. These notices are relatively common and cannot be interpreted as signal of actual scarcity to the extent observed on the evening on 9 August 2021. They are a signal that if things get worse, there could be actual scarcity.

8.24 By the time the system operator issued the WRN notice at 13:02, it was too late to start and load HLY4 unit in time for the evening peak.

8.25 Infeasible forecast prices that indicated stress on the power system from trading period 36 onwards occurred at 10:10 which is over an hour too late to commit HLY4 based on the best-case scenario identified above.

8.26 Genesis Energy explained that it would need to observe forecast prices of $300/MWh to commit HLY4. This amount was needed to cover fuel and the risk that HLY4 would depress prices by offering. The Authority's view was that the decision not to run was finely balanced based on the data. This means that Genesis Energy's decision was not unexpected given the circumstances that it faced when the decision was made. As with other decisions discussed in this paper, in retrospect a different decision would have been preferable, but that does not mean that it constitutes a UTS.

8.27 It is important to note that the test for a breach of the trading conduct provisions of the Code is different from the test for a UTS under the Code. Trading conduct is focused on the exercise of significant market power. As set out at length above, the UTS test is not related to this.

Conclusion about the claim as it relates to Genesis Energy

8.28 The alleged UTS claimed that Genesis Energy ignored weather and wind forecasts and the Customer Advice Notice (CAN) issued by the system operator at 06:42.

8.29 Based on the analysis at paragraphs 8.1 to 8.27 above, the Authority's conclusion is that not offering HLY4 was a decision that was open to Genesis Energy in the circumstances. In reaching this conclusion the Authority considered the data that the trader was observing, the uncertain information available, and the range of potential price outcomes. The Authority also took into account the relatively short duration of the situation as an indicator of confidence and integrity not being threatened.

8.30 The Authority therefore reached the preliminary conclusion that, in this context, there was no UTS because there was no situation that threatened or may have threatened confidence in, or the integrity of, the wholesale market.

TCC could not have been made available in response to any forecast price for 9 August

8.31 The alleged UTS claimed that Contact Energy "could have reorganised their existing supplies and had TCC plus both peakers on for the critical period, without burning significantly more gas than they did".

8.32 As explained in paragraphs 8.7 to 8.11 above, the decision to offer plant needs to be made based on forecast prices. The Authority assessed a range of material[11] provided by Contact Energy and made a number of findings.

(a) The Authority assessed the operating policies that Contact Energy has for TCC which include synchronising and warming up the plant.

(b) The Authority observed that TCC takes between 6 and 9 hours to reach its peak load.

(c) Contact Energy's policies and procedure documents associated with TCC contain a large number of preliminary processes to go through before TCC starts to generate. The best-case times are:

(i) it takes 12 to 16 hours to get TCC out of its preservation state. This state is necessary once TCC stops generating

(ii) it then takes 24 hours to prepare TCC to generate. This involves filling the boiler in parallel to other preparations that revolve around ensuring the unit has been taken out of its preservation state correctly

(iii) then a further 8 hours to get to full generation.

(d) The Authority observed that TCC trips regularly on start up and can take a day before restarting again.

8.33 Contact Energy could not make TCC available during the relevant trading periods on 9 August in response to any forecast data for the relevant trading periods.

8.34 In these circumstances, the Authority reached the preliminary conclusion there was no UTS. The Authority found that the lead time for starting TCC is too long for it to have

[11] This material includes the check list for putting TCC into preservation mode that was completed after the unit shut down at the end of July, and telemetry showing that the heat recovery steam generator was drained and filled with nitrogen on 2 August 2021. Contact also provided the start-up check list and timings for bringing TCC out of preservation mode to generating.

responded to any prices forecast on 9 August for the relevant trading periods that evening. TCC could not have threatened confidence in, or integrity of, the wholesale market because it was not possible for it to respond and affect outcomes on 9 August 2021.

9 Whether the situation can be satisfactorily resolved by any other mechanism available under the Code

9.1 The third question the Authority needs to consider as part of a UTS investigation is whether the situation can be satisfactorily resolved by any other mechanisms available under the Code (aside from the trading conduct provisions).

9.2 Given the Authority's finding that there is no situation that threatens, or may threaten, confidence in, or the integrity of, the wholesale market, the Authority did not go on to consider whether there is any other mechanism under the Code to satisfactorily resolve the situation.

9.3 The claim that Contact Energy and Genesis Energy acted "in a manner inconsistent with offering on the basis of no significant market power" is outside the scope of this UTS investigation. Rather, this aspect forms part of the Authority's separate compliance review of whether a breach of the trading conduct rule under clause 13.5A of the Code has occurred.

10 The Authority's preliminary conclusion was that a UTS did not occur in relation to the 9 August 2021 event

10.1 Having investigated the alleged UTS relating to this event, the Authority's preliminary decision was that a UTS did not occur in relation to trading periods 37 to 42 on 9 August 2021. In this particular context, the Authority found the decisions made by the system operator, Contact Energy and Genesis Energy were reasonably open to them in the circumstances. The market operated as expected, and the events lasted for a relatively short time period. As a result, there was no situation that threatened or may have threatened confidence in, or the integrity of, the wholesale market.

10.2 Having considered the actions and decisions of the system operator and generators, the Authority's preliminary conclusion was that the situation described and analysed above does not constitute a UTS.

Appendix A UTS Claim

A.1 Haast and Electric Kiwi letter to Authority

9-August-2021-Haast-+-Electric-Kiwi-Trading-Conduct-+-UTS-complaint1318317.1.pdf (PDF, 367 KB)

A.2 UTS claim form Haast and Electric Kiwi

9-August-UTS-claim-form1318318.1.pdf (PDF, 153 KB)

A.3 Flick Energy (Flick Electric) letter to Authority

Flick-letter-to-EA-joining-UTS-claim-12-August21.pdf (PDF, 498 KB)

A.4 Switch Utilities (Vocus) letter to Authority

SWCH-UTS-Trading-Conduct-16082021-FINAL.pdf (PDF, 324 KB)

Appendix B 9 August 2021 event timeline

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Time	Event
Day of the event up to the issuing of the GEN at 17:10	
9 August 2021 6:30am	Overnight, the load forecast increased to 7170MW and the residual dropped to 142MW.
06:42	CAN issued for forecast low residual generation during the 17:30 – 20:00 trading periods. This notice advised the market: 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. 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 XX XXX XXXX. This notice will not be updated unless conditions worsen and a WRN or GEN notice is required.
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: 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. It then requested that participants increase generation and reserve offers and decrease demand. It then notified that if there was insufficient response by participants, the system operator will manage demand to restore power system security.
14:30 to 16:30	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.

Time	Event
17:00	The 17:00 NRSS schedule forecasts a reserve deficit of up to 31MW for the 18:00 – 19:00 trading periods. This is largely driven by a 125MW drop in wind offers for the evening peak and a 21MW increase in forecast load.
GEN declared at 17:10 and GEN notice issued	
17:10	GEN notice issued forecasting insufficient generation offers on a national basis during the 18:00 – 19:00 trading periods. This notice advised the market: 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. It then requested that participants increase generation and reserve offers and decrease demand. It then notified that if there was insufficient response by participants, the system operator will manage demand to alleviate the grid emergency.
17:30	Visible drop in demand (74MW).
	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.
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[1].
18:30 to 18:45	Waipipi generation reduces between 15MW to 20MW over 15 minutes due to falling wind speeds.
1% Load reduction notice issued via GEN notice	
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.

[1] The market system is configured to only dispatch generation up to their maximum offered capacity, this prevents the market from scheduling generation above their maximum capacity. Current market system limitations prevent bids and offers from being updated in the current trading period.

Time	Event
	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 Response to the DAN 19:26 to 19:59 19:31	19:09 Demand allocation notice sent. 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. 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. Orion reduced its demand by 17MW at 19:15. Orion managed demand with controllable load. 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. Electra reduced its demand by 4MW at 20:17 until 20:32, then lift its load (after the 20:20 notice – see below).
19:09 to 20:20 Total load reduction	The remaining load reduction across this time for many distributors is consistent with normal post peak demand decline. 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. Across this time, some units, notably, Huntly and Whirinaki were dispatched back to provide reserves (reserves were previously in deficit) and maintain system stability. From approximately 19:50 generation begins to be dispatched down due to dropping demand.
Log of key calls and conversations with distributors, NGOC, and NCC	
19:22	NGOC to NCC: Northpower queried demand allocation. Allocate 207.7MW vs 165MW actual, able to increase to 190MW.
19:26	NGOC Instruction to WEL Networks to stay below total load of 224MW.

Time	Event
19:59	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. 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 C Extracts from the Code

C.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.

C.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.

C.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.

C.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.

Glossary of abbreviations and terms

Authority – Electricity Authority
AUFLS – Automatic under-frequency load shedding
Code – Electricity Industry Participation Code 2010
CAN – Customer Advice Notice
DAN – Demand Allocation Notice
GEN – Grid Emergency Notice
Infeasibility: An infeasibility occurs when the scheduling pricing and dispatch (SPD) model cannot produce a solution that is physically feasible. When this occurs, the SPD model flags the infeasible solution, and the system operator reconfigures the input information.
HLY4 – Huntly Unit 4
LSR – load shed and restore decision support tool
NRSL – non-responsive long
NRSS – non-responsive short schedules
PRSL – Price Responsive Schedule Long
UTS – Undesirable trading situation
TCC – Taranaki Combined Cycle station