

Draft determination of causer: 14 January 2025 under-frequency event

Consultation paper

15 May 2025

Executive summary

The normal frequency band in the New Zealand power system is between 49.8Hz and 50.2Hz. An under-frequency event (event) occurs when the frequency falls below 49.25Hz because of a loss of more than 60 megawatts (MW) injected into the grid.

At 10:39am on 14 January 2025 an event occurred when 179.787MW of generation injection was lost at the Huntly grid connection point. This resulted in a drop of frequency to 49.19Hz in the North Island.

The Electricity Industry Participation Code 2010 (Code) requires the Electricity Authority Te Mana Hiko (Authority) to consult with interested parties on its draft determination before making a final determination on the causer of the event.

The Authority's draft determination is that Genesis Energy Limited (Genesis) was the causer of the 14 January 2025 event.

The reasons for our draft determination are:

- (a) the interruption of energy injected into the grid occurred at Unit 1 of the Huntly power station (Huntly Unit 1), which belongs to Genesis
- (b) no other asset was identified as having caused or potentially caused the event
- (c) in the system operator's view, Genesis was the causer of the event
- (d) Genesis has accepted that it was the causer.

Submissions are invited on the draft determination from interested parties

Interested parties are invited to provide submissions on this consultation paper to compliance@ea.govt.nz by 5pm on 29 May 2025.

The Authority also invites comment on the system operator's calculation of the megawatts of power lost during the event, which the system operator uses for calculating the event charge.

The Authority will then consider all submissions and make a final determination on the causer of the event.

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1. What you need to know to make a submission

What this consultation is about

- 1.1. This paper sets out and invites submissions on the Authority's draft determination that Genesis, as the generator which owns Huntly Unit 5, was the causer of the under-frequency event at 10.39am on 14 January 2025.

How to make a submission

- 1.2. The Authority's preference is for submissions in Microsoft Word in the format shown in Appendix B emailed to compliance@ea.govt.nz by 5pm on 29 May 2025. Please write 'Consultation paper – 14 January 2025 under-frequency event' in the email subject line.
- 1.3. If you cannot send your submission electronically, please contact the Authority via compliance@ea.govt.nz or 04 460 8860 to discuss alternative arrangements.
- 1.4. Please note the Authority intends to publish all submissions it receives. If you consider that the Authority 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, and
 - (c) provide a version of your submission the Authority can publish (if we agree not to publish your full submission).
- 1.5. If you indicate part of your submission should not be published, the Authority will discuss this with you before deciding whether to not publish that part of your submission.
- 1.6. However, 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

- 1.7. Please provide your submission by 5pm on 29 May 2025.
- 1.8. The Authority will acknowledge receipt of all submissions by email. Please contact compliance@ea.govt.nz or 04 460 8860 if you do not receive email acknowledgement within two business days.

The Authority will consider submissions and make a final determination

- 1.9. The Authority is required to consult for 10 business days with every generator, grid owner and other participant substantially affected by an event on a draft determination under clause 8.61 of the Code.
- 1.10. The Authority will consider all submissions received and publish its final determination.
- 1.11. Clause 8.62 of the Code sets out provisions for any disputes about the Authority's final determination.

2. Introduction

- 2.1. The Authority must determine the causer of an under-frequency event (event) as per clause 8.61 of the Code.
- 2.2. The system operator is required to investigate and report on the possible causer of an event to the Authority as per clause 8.60 of the Code.
- 2.3. The Authority then determines who the causer should be and publishes a draft determination on the identity of the causer, including the reasons for its findings.

3. Genesis was the causer of the 14 January 2025 event

- 3.1. The Authority's draft determination under clause 8.61 of the Code is that Genesis, as the generator that owns Huntly Unit 1, was the causer of the event at 10:39am on 14 January 2025.

The system operator investigated the causer of the event

- 3.2. The system operator's report (dated March 2025) is attached as Appendix A.
- 3.3. The circumstances described in the report are summarised below:
 - (a) At 10:39am 14 January 2025, Huntly Unit 1 tripped removing 179.787MW of generation.
 - (b) North Island frequency fell to 49.19Hz.
 - (c) The frequency fall, and the quantity of MW lost (greater than the 60MW minimum), meant that an under-frequency event, as defined in Part 1 of the Code, had occurred when energy injected into the grid was interrupted.
 - (d) Huntly Unit 1 tripped due to a master fuel injection fault. Genesis believes this is what caused the event. No other asset, act, omission or property was identified as involved in the event.
 - (e) On 31 January 2025, the system operator requested the grid owner provide information on the circumstances of the event. On 4 March 2025, the grid owner provided its assessment of the event. The grid owner did not believe it was the causer of the 14 January 2025 event.
- 3.4. On 31 January 2025, the system operator wrote to Genesis requesting it provide information on its assessment of whether it was the causer of the event. On 14 February 2025, Genesis replied, agreeing that it was the causer and provided the circumstances that led to the Huntly Unit 1 tripping.

The Authority considered the circumstances of the event

- 3.5. The Authority has considered the system operator's report and correspondence with relevant participants. The Authority's reasons for the draft determination that Genesis was the causer are:
 - (a) An event occurred at 10:39am on 14 January 2025 when frequency dropped to 49.19Hz in the North Island.
 - (b) The interruption of electricity occurred at the grid injection point for Huntly Unit 1, which belongs to Genesis.
 - (c) No other asset, act, omission or property was identified as potentially causing the event.

- (d) The system operator and Genesis agree that Genesis was the causer of the event.
- 3.6. The Authority agrees with the system operator's findings on the causer of the 14 January 2025 event.

Q1. Do you agree with the Authority's draft determination that Genesis Energy Limited was the causer of the event on 14 January 2025 at 10.39am? If not, please advise your view on the causer and give reasons.

4. The system operator has investigated and calculated the MW lost during the event

- 4.1. Clause 8.64 of the Code sets out how the system operator should calculate the event charge payable by the causer of an event. This in turn enables the clearing manager to calculate the rebates for the event under clause 8.65.
- 4.2. The MW of injection lost at one or more grid injection points as a result of the event is central to how the event charge is calculated. The system operator determines the MW lost as part of its investigation into an event.
- 4.3. The system operator has determined the loss of injection into the grid for the event was 179.787MW at the grid injection point for Huntly Unit 1, resulting in an event charge of \$149,733.40.
- 4.4. The system operator's calculation of the MW lost for this event is included in their report (Appendix A). The system operator's calculation does not form part of the Authority's draft determination. However, the Authority acknowledges that the calculation is central to determining the event charge payable by the causer, and therefore also to the rebate (calculated by the clearing manager) paid for an event.
- 4.5. The Authority invites comment on the system operator's calculation of the MW lost. All comments received will be passed to the system operator.

Q2. Do you agree with the system operator's assessment that 179.787MW was lost from the power system in the 14 January 2025 event? If not, please advise your view on the MW lost and give reasons.

Appendix A System operator causation report 14 January 2025 under-frequency event

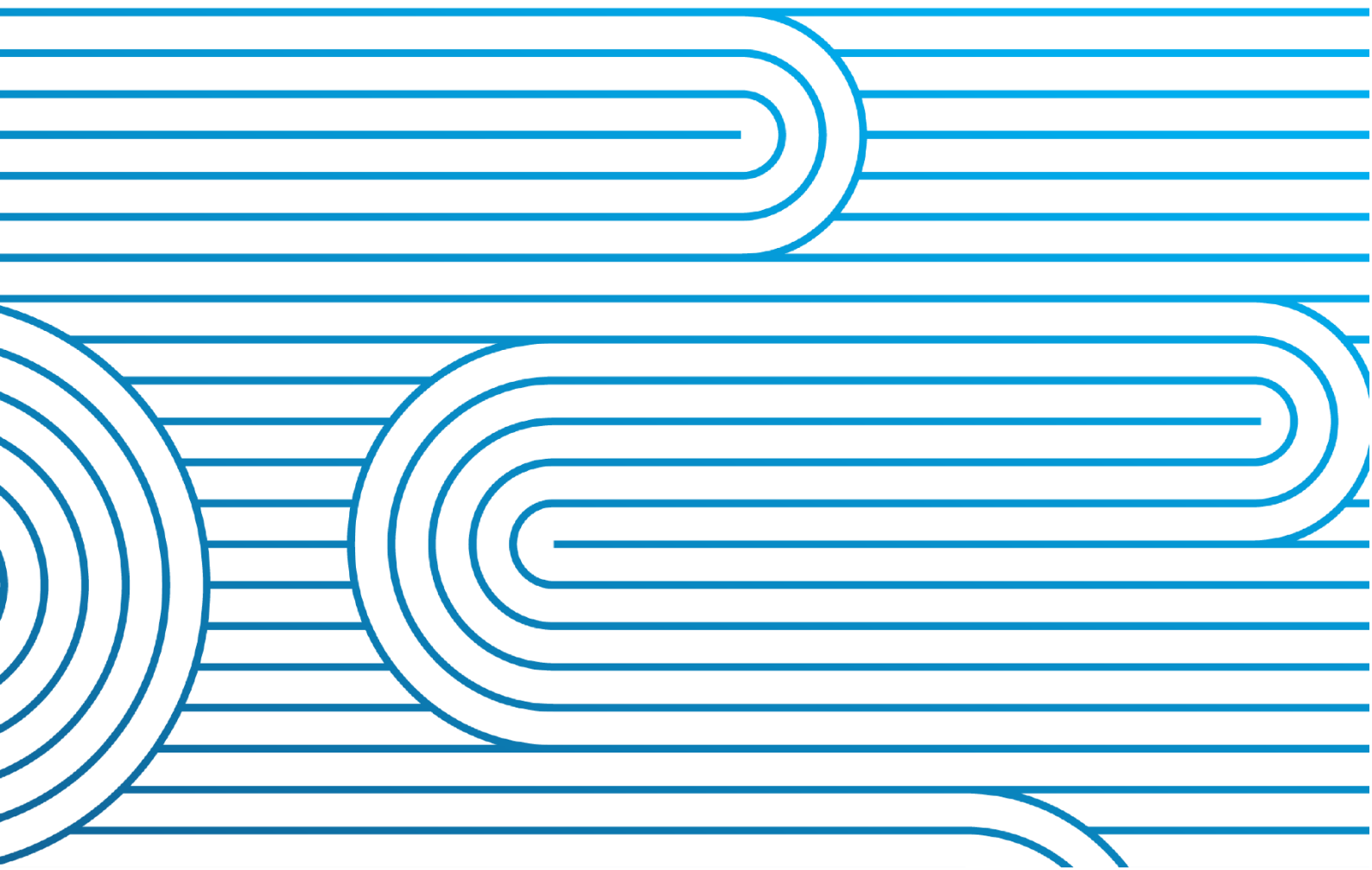
Causation Report

14th January 2025

Under-Frequency Event

System Operator event 4527

March 2025



IMPORTANT

Disclaimer

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PURPOSE

On 14th January 2025 a reduction of energy into the power system caused the system frequency in the North Island to fall below 49.25 Hz, resulting in an under-frequency event.

Pursuant to clause 8.60 of the Electricity Industry Participation Code 2010 (**Code**), the System Operator investigated the event to assist the Electricity Authority (**Authority**) in determining a causer of the under-frequency event.

This Causation Report is provided to the Authority pursuant to clause 8.60 (5) of the Code and includes the following:

- The System Operator's recommendation of the causer of the under-frequency event.
- The System Operator's reasons for forming its view.
- The information considered in reaching this view.

EXECUTIVE SUMMARY

At 10:39:41 on 14th January 2025 Genesis Energy's Huntly Unit 1 tripped.

The disconnection of generation from Huntly Unit 1 removed 179.787MW of injection into the power system.

At 10:39:42 the North Island frequency fell to 49.19 Hz. Either of the North or South Island frequencies falling below 49.25 Hz constitutes an under-frequency event, as defined in the Code.

Genesis Energy has stated that it believes the tripping of Huntly Unit 1 was the cause of the under-frequency on 14th January 2025.

Investigation into the tripping and other system events supports Genesis Energy's position that the trip of Huntly Unit 1 caused the under-frequency event.

Accordingly, the System Operator recommends Genesis Energy be found as the causer of the under-frequency event on 14th January 2025.

SYSTEM EVENTS – 14TH JANUARY 2025

Prior to the under-frequency event

According to the Grid Owner, there were no grid event or protection operations of any grid assets in the vicinity of Huntly on 14th January 2025 that may have contributed to the frequency falling below 49.25 Hz. Furthermore, there were no HVDC events that contributed to this under-frequency event. The HVDC responded to the event by automatically increasing the transfer by ~70MW to assist in mitigating the impact of the external event. No alarms or tripping occurred on the HVDC link at this time.

The under-frequency event

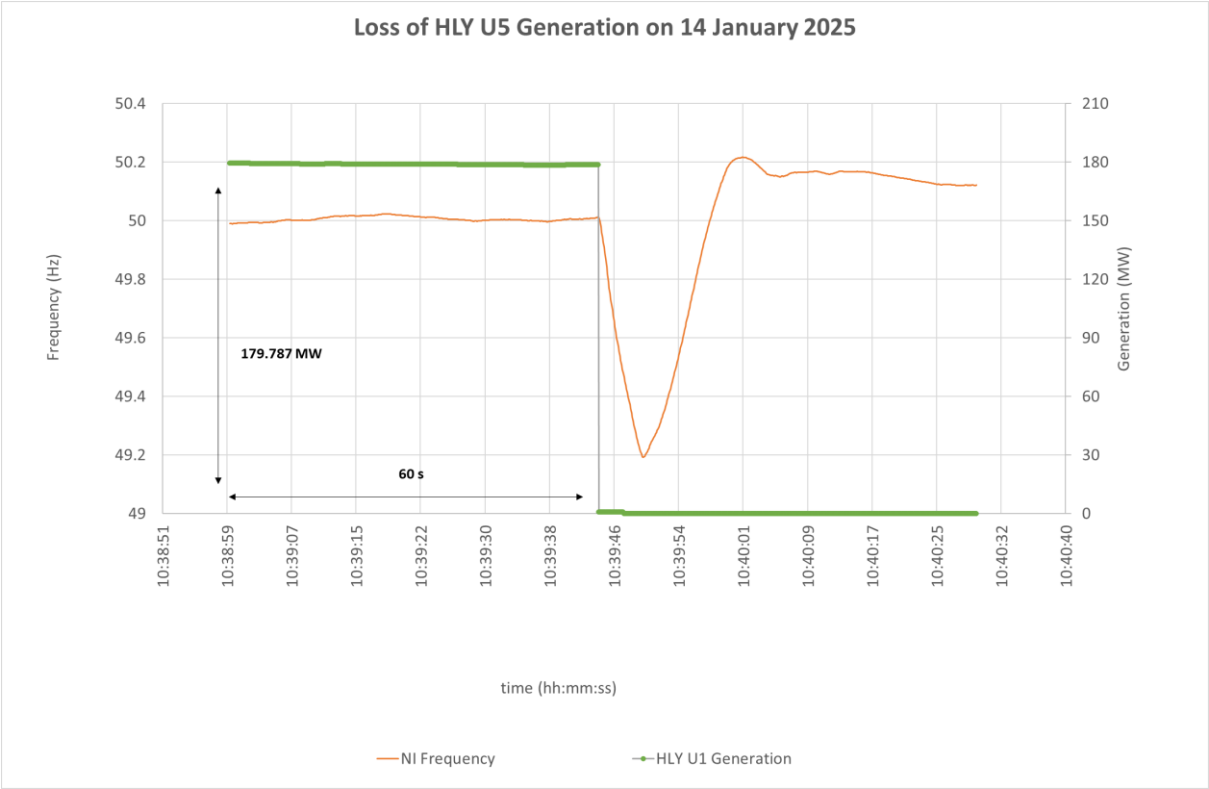
According to Genesis Energy, Huntly Unit 1 tripped on master fuel protection due to a fault. The fault was resolved and Unit 1 resumed generation at 14:00.

At 10:39:41 the disconnection of Huntly Unit 1 removed 179.787MW of generation injection into the power system. Consequently, this reduced the system frequency in the North Island below 49.25 Hz at 10:39:42 (49.19Hz).

Genesis Energy confirmed the MW lost as 179.787MW.

Please note the system operator’s graph below does not precisely time the tripping of Huntly Unit. This is because there is a time delay in the system operator’s SCADA data (which resulted in the delayed recording of Huntly Unit 1 tripping).

North Island Frequency



RATIONAL FOR RECOMMENDATION

Factors considered

Only one event occurred in close proximity to the North Island frequency falling below 49.25 Hz, namely the tripping of Huntly Unit 1 at 10:39:41 on 14th January 2025.

Accordingly, assessment of this information confirms that only the tripping of Huntly Unit 1 can be linked with the North Island frequency falling below 49.25Hz.

Genesis Energy and the Grid Owner were both asked if they considered themselves the causer of the under-frequency event.

Genesis Energy confirmed that the tripping of Huntly Unit 1 caused the under-frequency event.

The Grid Owner does not believe it caused the under-frequency event.

CALCULATION OF MW LOST

The purpose of this calculation is to determine the MW value provided to the clearing manager for the purposes of calculating the under-frequency event charge.

The System Operator follows the procedure 'Calculating the Amount of MW lost' (PR-RR-017) to determine the MW lost. This procedure follows the formula set out in clause 8.64 of the Code for calculating an event charge.

The event charge payable by the causer of an under-frequency event (referred to as "Event e" below) must be calculated in accordance with the following formula:

$$EC = ECR \times \left(\sum_y INT_{y,e} - INJ_D \right)$$

where

EC is the event charge payable by the causer

ECR is \$1,250 per MW

INJ_D is 60 MW

$INT_{y,e}$ is the electric power (expressed in MW) lost at point y by reason of Event e (being the net reduction in the injection of electricity (expressed in MW) experienced at point Y by reason of Event e) excluding any loss at point y by reason of secondary Event e

y is a point of connection or the HVDC injection point at which the injection of electricity was interrupted or reduced by reason Event e

As the ECR and INJ_D values are constants the values to calculate and complete the formula are y and $INT_{y,e}$.

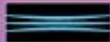
Using the event charge formula the calculation is as follows:

Event Charge = \$1250/MW * (179.787MW – 60MW)


Event Charge = \$149,733.40

Appendix 1: CORRESPONDENCE

1.1 CONFIRMATION OF EVENT NOTICE



TRANSPOWER



Customer Advice Notice

To: CAN NZ Participants

Sent: 16-Jan-2025 11:30

Ref: 5917922660

From: The System Operator

Telephone: 0800 488 500

Email: NMData@transpower.co.nz

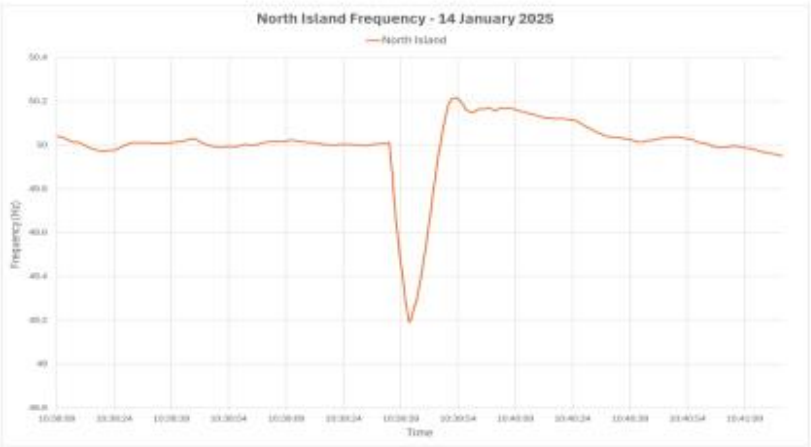
Revision of:

Under-Frequency Event Confirmation

The system operator wishes to advise market participants of an under-frequency event which occurred in the North Island on 14 January 2025.

Event ID	4527
Affected Islands:	North Island
North Island Minimum Frequency:	49.19 Hz
Time (start of UFE):	10:39:41
Time (of min. frequency):	10:39:42

North Island Frequency - 14 January 2025



The System Operator is investigating the cause of the following under-frequency event in accordance with Part 8, clause 8.60 (1) of the Electricity Industry Participation Code 2010. Ancillary Services Agents who were dispatched to provide instantaneous reserves at the time of the event should be prepared to provide information to the System Operator within 5 Business Days of receiving a request for information in accordance with their Ancillary Service Procurement Contracts.

Market Operations

Transpower NZ Ltd
P.O. Box 1021,
Wellington 6140,
New Zealand
Telephone: 04 590 7470
market.operations@transpower.co.nz

...

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

1.2 SYSTEM OPERATOR REQUEST FOR INFORMATION – GENESIS ENERGY

**TRANSPower**

Waikoukou
22 Boulcott Street
PO Box 1021, Wellington
New Zealand
Telephone +64-4-590 7000
Facsimile: +64-4-495 7100

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31 January 2025

Steve Leppien
Genesis Energy Limited
Private Bag 3131
Hamilton

Dear Steve,

14 January 2025 Under-Frequency Event

On 14 January 2025 at 10:39:41 an under-frequency event occurred in the North Island. We are investigating the event and require the following information from you:

- Could you provide information regarding the event and what you believe may have caused the under-frequency to occur on 14 January 2025.
- We have assessed the MW lost during the event as 179.787 MW at HLY Unit 1. Can you please confirm this assessment or provide data that indicates a different value of MW lost. We rely on SCADA data, but your data from site may be more accurate.
- Could you also confirm whether or not you could have been the causer of the under-frequency event as per the Code

Please provide the above information to us in writing by 5pm on 4 March 2025.

The information you provide will be used by the system operator to recommend to the Electricity Authority who the causer of the event was. The Electricity Authority will make the final determination of causer.

Please contact me if you require any further information.

Yours sincerely,

Samantha Naidoo
Corporate Counsel - Compliance & Impartiality

1.3 SYSTEM OPERATOR REQUEST FOR INFORMATION – GRID OWNER

**TRANSPower**

Waikoukou
22 Boulcott Street
PO Box 1021, Wellington
New Zealand
Telephone +64-4-590 7000
Facsimile: +64-4-495 7100

31 January 2025

Mao Reyes
Grid Compliance Manager
Grid Owner
Transpower
Wellington

Dear Mao,

14 January 2025 Under-Frequency Event

On 14 January 2025 at 10:39:41 an under-frequency event occurred in the North Island. We are investigating the event and require the following information from you:

- Could you provide information regarding the event and what you believe may have caused the under-frequency to occur on 14 January.
- Could you also confirm whether or not you could have been the causer of the under-frequency event as per the Code.

Please provide the above information to us in writing by 5pm on 4 March 2025.

The information you provide will be used by the system operator to recommend to the Electricity Authority who the causer of the event was. The Electricity Authority will make the final determination of causer.

Please contact me if you require any further information.

Yours sincerely,

Samantha Naidoo
Corporate Counsel - Compliance & Impartiality

1.4 GENESIS ENERGY RESPONSE

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Genesis Energy Limited
The Genesis Energy Building
94 Bryce Street
Private Bag 3131
Hamilton 3204
New Zealand

T. 07 982 7909

14 February 2025

Samantha Naidoo
Corporate Counsel - Compliance and Impartiality
Transpower New Zealand Limited
P O Box 1021
WELLINGTON 6140

By email: samantha.naidoo@transpower.co.nz

Dear Samantha,

RE: 14th January 2025 Under-Frequency Event

I refer your letter dated 31 January 2025 requesting information from Genesis to help identify the causer of the 14th of January 2025 under-frequency event.

Information regarding the event

Huntly Unit 1 tripped on master fuel protection due to a fault. The fault was resolved and Unit 1 resumed generation at 14:00.

Loss of Injection Figure:

Genesis concurs with Transpower's assessment of the loss of injection figure.

Causer:

Genesis considers it (Huntly Unit 1) was the causer of the 14th of January 2025 under-frequency event.

Yours faithfully

GENESIS ENERGY LIMITED

A handwritten signature in black ink, appearing to read "Steve".

Steve Leppien
Regulatory and Quality Assurance Manager

1.5 GRID OWNER RESPONSE

**TRANSPower***Keeping the energy flowing*

Waikoukou
22 Boulcott Street
PO Box 1021
Wellington 6140
New Zealand
P 64 4 590 7000
F 64 4 590 6968
www.transpower.co.nz

4 March 2025

Samantha Naidoo
Corporate Counsel – Compliance & Impartiality Manager
System Operations
Transpower
Wellington

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Dear Samantha

14th January 2025 North Island Under-Frequency Event

I am writing in response to your letter dated 31st January 2025, concerning the under-frequency event (UFE) that transpired on the 14th of January in the North Island.

Our understanding of the event is as follows:

- At 10:39:41 on the 14th of January, a unit or units at Huntly tripped, resulting in an under-frequency event occurring in the North Island.
- Market participants were promptly informed of this occurrence through a frequency excursion notice (please refer to Attachment A). This notice, issued at 10:53 on 14th January, stated that Huntly generation had tripped, causing the frequency in the North Island to drop to 49.19Hz.
- A customer advice notice (please refer to Attachment B), issued at 11:30 on 16th January, confirmed the occurrence of an under-frequency event in the North Island at 10:39:41 on 14th January 2025.
- It is important to note that there were no grid event or protection operations of any grid assets in the vicinity of Huntly on 14th January 2025.
- Furthermore, there were no HVDC events that contributed to the UFE. The HVDC responded to the event by automatically increasing the transfer by ~70MW to assist in mitigating the impact of the external event. No alarms or tripping occurred on the HVDC link at this time.

Considering the above information, I do not believe that the Grid Owner was the causer of the under-frequency event that occurred on this day.

I trust this clarifies our understanding of the event. Please do not hesitate to contact us should you require further information.

Yours sincerely

Mao Reyes
Grid Compliance Manager

Attachment A



TRANSPower



Excursion Notice

To: Excursion NI Participants
Sent: 14-jan-2025 10:53
Ref: 5912100907

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

Revision of:

Excursion:	Frequency
Time:	14-jan-2025 10:39
Location:	North Island
Affected Plant:	Huntly Generation Tripped
SI Hz Level:	NI Hz Level: 49.19
Comments:	

Frequency Excursion notices are only issued if the deviation is out side 49.5 and 50.5 Hz.

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

Transpower New Zealand Ltd The National Grid

Attachment B



Customer Advice Notice

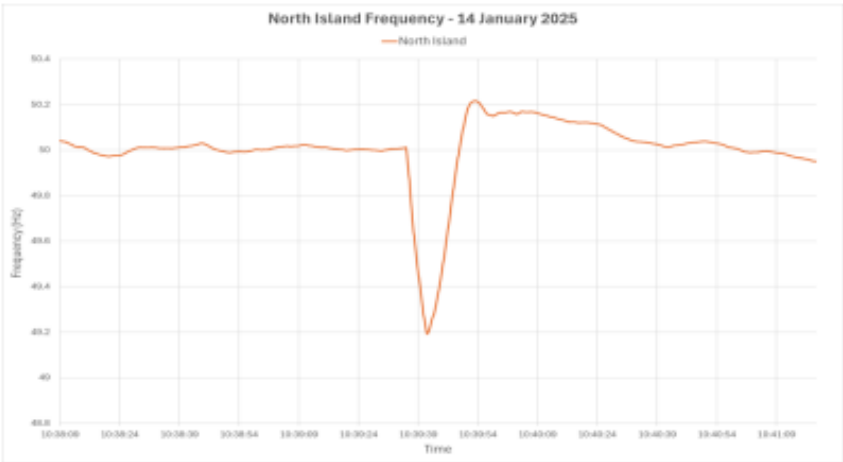
To: CAN NZ Participants From: The System Operator
Sent: 16-jan-2025 11:30 Telephone: 0800 488 500
Ref: 5917922660 Email: NMData@transpower.co.nz

Revision of:

Under-Frequency Event Confirmation

The system operator wishes to advise market participants of an under-frequency event which occurred in the North Island on 14 January 2025.

Event ID	4527
Affected Islands:	North Island
North Island Minimum Frequency:	49.19 Hz
Time (start of UFE):	10:39:41
Time (of min. frequency):	10:39:42



The System Operator is investigating the cause of the following under-frequency event in accordance with Part 8, clause 8.60 (1) of the Electricity Industry Participation Code 2010. Ancillary Services Agents who were dispatched to provide instantaneous reserves at the time of the event should be prepared to provide information to the System Operator within 5 Business Days of receiving a request for information in accordance with their Ancillary Service Procurement Contracts.

Market Operations

Transpower NZ Ltd
P.O. Box 1021,
Wellington 6140,
New Zealand
Telephone: 04 590 7470
market.operations@transpower.co.nz

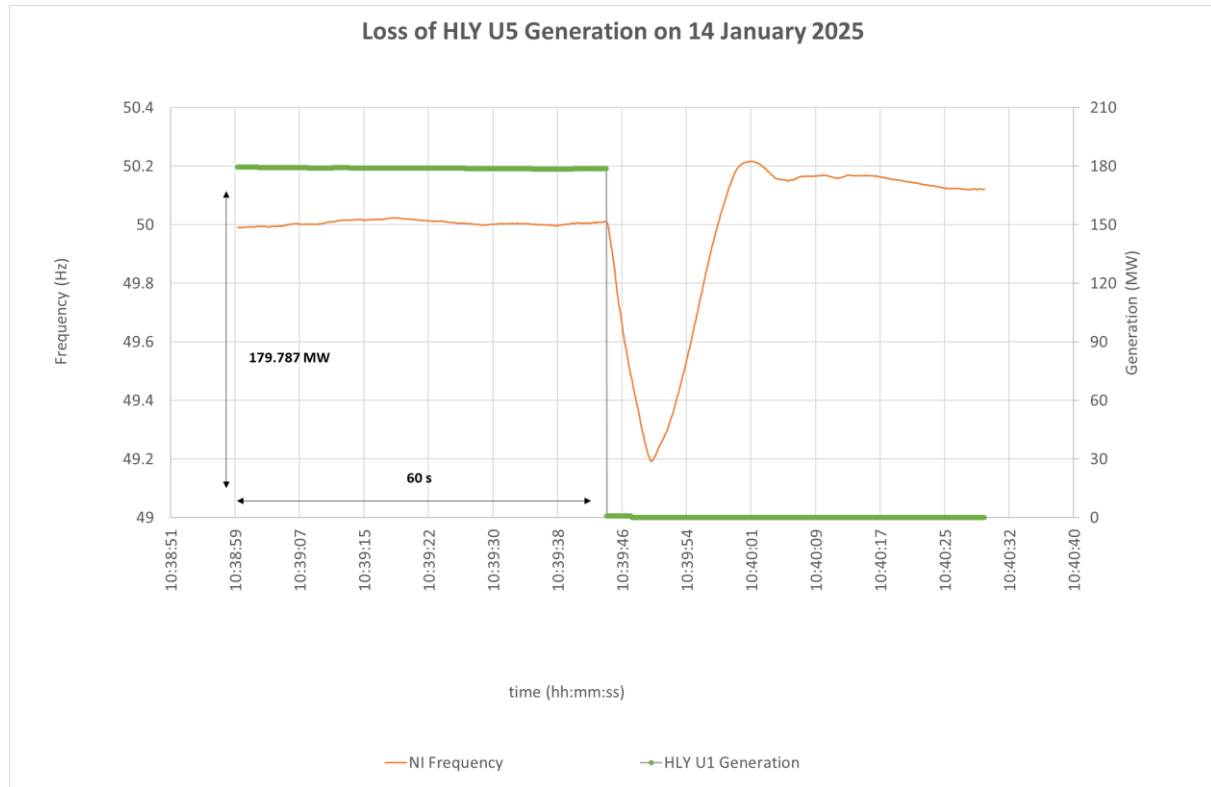
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A revision of this notice will be issued if there is any change to the situation above.

Appendix 2: CHARTS

System Frequency (North Island) and MW Trace 14th January 2025

North Island Frequency



Appendix B Format for submissions

Submitter	
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Questions	Comments
Q1. Do you agree with the draft determination that Genesis Energy Limited was the causer of the event on 14 January 2025 at 10:39am? If not, please advise your view on the causer and give reasons.	
Q.2 Do you agree with the system operator's assessment that 179.787MW was lost from the power system in the 14 January 2025 event? If not, please advise your view on the MW lost and give reasons.	