

Submitter	Transpower New Zealand Limited as grid owner (Transpower)
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<i>Q1 Do you agree with the Authority's draft determination that Genesis, as a generator, was the causer of the 13 December 2018 UFE? If not, please state your alternative view on the causer and give your reasons.</i>	
<i>Q2 Do you agree with the Authority's draft determination that Transpower, as the grid owner, was the causer of the 14 December 2018 UFE? If not, please state your alternative view on the causer and give your reasons.</i>	<p>No.</p> <p>Transpower considers there is no causer of the 14 December 2018 UFE.</p> <p>Transpower's reasons are attached.</p>
<i>Q3 Do you agree with the system operator's calculation that, for the purposes of calculating the UFE charge, 200.1 MW was lost at the grid injection point for Huntly Unit 5 as a result of the 13 December 2018 UFE? If not, please state your alternative view on the MW lost and give your reasons.</i>	
<i>Q4 Do you agree with the system operator's calculation that, for the purposes of calculating the UFE charge, 240.7 MW was lost at the grid injection point for Huntly Unit 4 as a result of the 14 December 2018 UFE? If not, please state your alternative view on the MW lost and give your reasons.</i>	Yes

Attachment – Transpower’s reasons

Transpower disagrees with the Electricity Authority’s (**Authority’s**) draft determination that Transpower is the causer of the under-frequency event (**UFE**) on 14 December 2018 (**14 December UFE**).

Transpower’s reasons are:

1. The interruption in electricity from the Huntly 4 generating unit that resulted in the 14 December UFE was not caused by Transpower’s act, omission or property, as would be required for Transpower to be the causer under paragraph (a)(i) of the definition of “causer” in Part 1 of the Electricity Industry Participation Code 2010 (**Code**).
2. Even if the 14 December UFE was caused by Transpower’s property (specifically, the correct operation of the protection on the Huntly_Stratford_1 transmission circuit (**Circuit**)) as claimed by the Authority, the exclusion in paragraph (c) of the definition of “causer” applies so that that cause must be disregarded for the purposes of the causer determination.
3. A final determination that Transpower is the causer of the 14 December UFE will potentially create inefficient incentives and unavoidable penalties for Transpower, contrary to the purpose of the causer regime.

Transpower submits that the appropriate final determination is that there was no causer of the 14 December UFE because:

1. the 14 December UFE was caused by a lightning strike, not by the Circuit or any other asset; and
2. even if the 14 December UFE was caused by the Circuit, the exclusion in paragraph (c) of the definition of “causer” applies so that the Authority must disregard that cause.

The Rulings Panel has confirmed it is possible for there to be no causer of a UFE.¹

Causation – paragraph (a)(i)

At paragraph 5.11 of its draft determination the Authority says Transpower meets the definition of causer under paragraph (a)(i) of the definition of “causer” because the interruption was caused by Transpower’s property (the Circuit). The Authority goes on to say, at paragraph 5.13, that the reason why the interruption occurred was the lightning strike.

Transpower submits that this attempt to distinguish between the cause of the interruption and the reason why it happened is artificial. The reason is the cause.²

In this case the lightning strike was clearly the causative factor. The Authority acknowledges this in paragraph 5.13 of its draft determination when it observes that the lightning strike would almost

¹ Rulings Panel decision of 6 June 2014 relating to the disputed causer determination for the under-frequency event on 1 May 2013 (**Causer Decision**). The Causer Decision is the only Rulings Panel decision on a causer determination dispute.

² In the Concise Oxford Dictionary, the primary meaning of “reason” is “a motive, *cause*, or justification”, and a primary meaning of “cause” is “a *reason* or motive”.

certainly have resulted in the interruption even if the protection on the Circuit had not operated. But for the lightning strike, nothing would have happened.

Treating the lightning strike as the cause is consistent with the Rulings Panel's approach in its Causer Decision.³ In that case there was a UFE coincident with a 135 MW drop-load test by Meridian at its Manapouri generating station. The system operator determined⁴ that Meridian was the causer of the UFE because the reduction in electricity came from Manapouri and there was no antecedent asset-related event. However, the Panel went further. It looked behind the reduction and decided that if the HVDC link had been capable of greater modulation at the time of the test then the UFE would not have occurred. On that basis the Panel held that the system operator had not established that the drop-load test was the "cause" referred to in paragraph (a)(i) of the definition of "causer". The Panel said (emphasis added):

76. Accordingly, we hold that although the 135MW drop load test conducted by Meridian on 1 May was the occasion of the UFE, we do not think the SO has established that that was its cause. It cannot therefore be said that Meridian is the causer of that event under clause 8.61.

...

84. The issue appears to be the adequacy of the load compensation. The method adopted worked well for all tests up to the 130 MW, but something caused a failure at 135 MW. The SO has not established that it was not some other factor, such as the loss of response from the HVDC that caused the problem.

In the current case the cause of the problem was the lightning strike, not the correct operation of the protection or anything else to do with the Circuit.

Code compliance – paragraph (c)

Even if the Authority is correct that the Circuit caused the interruption, paragraph (c) of the definition of "causer" requires the Authority to disregard that cause.

Paragraph (c) says that if an interruption or reduction occurs in order to comply with the Code then the Authority must disregard it for the purposes of determining the causer of a UFE.

Transpower is obliged under clause 4(4)(a) of Technical Code A of Schedule 8.3 of the Code to have protection that operates correctly to clear electrical faults, including faults caused by lightning strikes. In addition, under clause 12.113 of the Code, Transpower is obliged to operate all interconnection assets (of which the Circuit is one) in accordance with good electricity industry practice. It would not be good electricity industry practice to operate the Circuit without appropriate protection in place.

The Authority does not appear to dispute that the protection on the Circuit operated correctly in this case. Furthermore, as the Authority notes in footnote 2 on page 7 of its draft determination, the power system would likely have suffered greater damage without the controlled disconnection provided by the protection equipment. The protection exists, and operated on 14 December 2018, in order to comply with the Code and safeguard the assets in the power system.

On the Authority's logic, if Transpower had not had the protection on the Circuit, or the protection had not operated correctly, Transpower would not have been the causer of the 14 December UFE.

³ See note 1.

⁴ At the time the system operator was responsible under the Code for making causer determinations.

In that case it is likely the protection on the Huntly 4 generating unit would have operated to disconnect the unit from the grid. That would have shifted the cause of the interruption from Transpower to Genesis (in a way Genesis could not avoid) and resulted in Genesis being the causer of the 14 December UFE. Transpower submits that any interpretation of the Code that:

- (a) penalises a participant for another participant's Code breach; or
- (b) requires a participant to choose between complying with the Code and avoiding a fee imposed under the Code,

cannot be correct.

At paragraph 5.17 of its draft determination the Authority says it is not aware of any UFEs that did not involve a protection operation. The Authority says an interpretation of the Code that counts correct protection operation as an exception for being a causer would result in far fewer UFEs being determined to have a causer. However:

1. A determination that Transpower is not the causer in this case would not mean it is not the causer in any other case involving a grid protection operation. The reason why the protection operated will always be relevant. If the protection operated incorrectly or due to some antecedent failure in the grid then Transpower will likely be the causer. In that case the interruption would occur due to Transpower's breach of the Code, not in order to comply with it.

For example, the Rulings Panel is currently considering Transpower's admitted breach of clause 4(4)(a) of Technical Code A of Schedule 8.3 of the Code on 25 January 2018. The breach occurred because the protection on transformer T6 at Transpower's Hamilton substation operated incorrectly, interrupting electricity supply to the Waikato region. If the breach had caused a UFE then Transpower would clearly have been the causer of it.

The 16 May 2016 causer determination referred to in the System Operator's letter to the Authority of 10 May 2019 is another example.⁵ In that case a generator's protection operated but did so incorrectly in response to a false indication from a water sensor (owned by the generator) rather than an electrical fault. The system operator decided paragraph (c) of the definition of "causer" did not apply in that situation and the generator was determined to be the causer of the UFE.

2. The number of causers a particular interpretation of the Code produces is not relevant to the question of what the correct interpretation is. There is no quota for causers that Transpower knows of. It is not "the intent of the regime" to produce more causers than before the definition of "causer" was amended in 2010.⁶

Transpower accepts that if a particular interpretation of the Code were to completely neuter the causer regime then that interpretation would be highly questionable, but (as explained above) that is not the case here.

The Rulings Panel considered paragraph (c) of the definition of "causer" in its Causer Decision. The Panel decided that Meridian was entitled to the protection of paragraph (c) because the reduction

⁵ Appendix D of the Authority's draft determination.

⁶ As suggested at paragraph 5.17 of the Authority's draft determination.

was in order to comply with an approved test plan, despite the system operator's argument that Meridian had not complied with a condition in the test plan to provide load compensation.⁷ In reaching this conclusion the Panel focused on the reasonableness of Meridian's conduct. The Panel said (emphasis added):

81. We feel there is some force in the SO's approach, and could contemplate a party losing its exemption where it had been clearly shown by the SO to be operating carelessly, or without regard to the requirements of the Plan. Such an approach would not dissuade generators and asset owners from conducting regular testing programs, and incents the SO to ensure Test Plan proposals and their safeguards are thoroughly reviewed before implementation.
82. We think that the SO's submission is the equivalent of saying that an indemnity for breach is provided, but it is lost if there is a breach. We think the better interpretation is that the exemption is available for a generator not shown to have acted unreasonably in the performance of its approved Test Plan. A generator acting recklessly or negligently would not be exempted.
83. On that approach, we do not think that the SO has established that the performance by Meridian under the approved Test plan was unreasonable.

In the current case there is no element of carelessness, recklessness, negligence or any other type of unreasonable conduct by Transpower. The exclusion in paragraph (c) applies, consistent with the Causer Decision.

Inefficient incentives and unavoidable penalties

Transpower agrees with the Authority that the definition of "causer" should be interpreted in light of its purpose. Transpower also agrees that the purpose of the definition is to "incentivise asset owners to take reliability and risk into account when designing, maintaining and operating their assets."⁸

Incentives work best when the risk is reasonably controllable by the person being incentivised to avoid it. When the risk is not reasonably controllable (such as a lightning strike or other force majeure type event) undesirable incentives potentially arise. A final determination that Transpower is the causer of the 14 December UFE will (for example):

1. discourage grid maintenance that requires reducing some generators to N-security in circumstances where it would otherwise be efficient to do the maintenance that way. This may include disconnecting the generator entirely for the duration of the maintenance;
2. encourage late rescheduling of grid maintenance work when the weather forecast changes, and an overly conservative approach to outage scheduling generally; and
3. encourage Transpower to seek reductions in offered generation for generators that are put on N-security for grid maintenance.

These incentives will tend to increase the cost of Transpower's maintenance work without reducing the required quantity or cost of instantaneous reserve. The incentives are inefficient.

⁷ The case for paragraph (c) applying in the current case is even stronger because there is no suggestion Transpower was not fully compliant with Code.

⁸ Paragraph 5.15 of the Authority's draft determination.

In some cases there will be nothing Transpower can do to avoid the causer risk. If the final determination is that Transpower is the causer of the 14 December UFE then the precedent will not be limited to situations where a planned outage has reduced a generator to N-security. The precedent will also apply when there is N-security by design (including by choice of the generator) or by reason of an unplanned outage Transpower could not control. The causer regime should not operate in a way that imposes unavoidable penalties.