

Summary of Submissions and Next Steps for Amending the Critical Contingency Management Regulations

20 August 2021



Executive Summary

The purpose of this paper is to provide a summary of the submissions that Gas Industry Co received on the *Statement of Proposal for amending the Critical Contingency Management Regulations* ('Consultation Paper'). The submissions received informed our thinking on the issues and prompted the reconsideration of some aspects of our proposals as well as further analysis of the options to manage some issues during the transition of New Zealand energy systems. This paper provides this further analysis based on these submissions and highlight which proposals we intend to progress through to a final Statement of Proposal.

Following the release of this paper, we will publish a final Statement of Proposal which will provide a further opportunity for stakeholders to make submissions. Once we have considered these final submissions, we will make a Recommendation to the Minister to change the CCM Regulations.

Table 1 below summarises the various proposals that were made in the Consultation Paper and highlights which proposals Gas Industry Co intends to progress to a final Statement of Proposal.

Proposal	Proceed to final Statement of Proposal?
Legislative context	
Amend the CCM Regulations	Yes
Setting a critical contingency price	
Remove the restriction to only base price on wholesale electricity prices for events where only bands 0-2 are curtailed	Yes
Produce a floor for contingency prices	Yes (but without defining the specific price floor method. This would be done outside the CCM Regulations within a set of defined parameters.)
Compliance regulations and offence provisions	
Update the CCM Regulations to: (a) replace regulations 82A and 82B with civil pecuniary penalties for knowingly providing false or misleading information and for failing to comply with curtailment directions; and (b) apply the prescribed defence (formerly provided in regulation 82B(2)) to the civil pecuniary penalty for failing to comply with curtailment instructions	Yes (a recommendation to the Minister has already been progressed)

Table 1: Summary of proposals and next steps

Proposal	Proceed to final Statement of Proposal?
Curtailment band definitions	
Remove the distinction between large consumers that have alternative fuel capability and those that do not	No. Instead amend the definition of band 2 to consumers who consume greater than 15 TJ per day but less than 100 TJ, and band 1 as consumers who use greater than 100 TJ per day.
Reserve band 2 for large consumers who are electricity generators who export electricity to the grid	No. Instead amend the definition of band 2 to consumers who consume greater than 15 TJ per day but less than 100 TJ.
Create an annual threshold of 4,000 TJ per year for large consumers	No
Split the current band 3 into 3A and 3 using 300 TJ per year as the lower threshold for 3A (and upper threshold for 3)	Yes
Define all annual threshold volumes by taking the average consumption over the previous three years	Yes
Define the daily threshold volumes by using the previous three years to determine consumption	Yes
Amend definition of "consumer installation" to include a gas installation with multiple points of connection to a distribution system or transmission system	Yes
Curtailment Instructions	
Proposal to require gas wholesalers to be responsible for issuing critical contingency notices to their retailers and to receive and forward compliance updates to the transmission system owner	Yes
Proposals to clarify that: (a) directions for partial curtailment must be made with regard to consumption rates at the time a critical contingency is declared (b) that designated shutdown profiles apply to consumption rates at the time a critical contingency is declared	(a) Yes (b) Yes, except for consumers with designated shutdown profiles who require their full shutdown profile to safely shutdown.
Proposals to require consumers in curtailment bands: (a) 1 and 2 (including those with approved shutdown profiles) to completely curtail before consumers in band 3 (or band 3A, if created) are directed to curtail	No. However, will progress a recommendation to require all customers with approved shutdown profiles to curtail fully before band 4 is directed to curtail

Proposal	Proceed to final Statement of Proposal?
 (b) 3A (if created) and 3 (including those with approved shutdown profiles) to completely curtail before consumers in band 4 are directed to curtail (c) 4 and 5 (including those with approved shutdown profiles) to completely curtail before consumers in band 6 are directed to curtail 	
Information provided to the CCO	
Amend schedule 4 of the CCM Regulations to update the types of transmission system information the TSO is required to provide the CCO	Yes, and update Regulation 10 to reflect the "Commencement Date" is no longer relevant
Modify regulations 38A to require the provision of outage information as soon as practicable after an asset owner or large consumer becomes aware of it	Νο
Provide the CCO with the ability to request numbers from Gas Industry Co of ICPs by curtailment band and by gas gate, as recorded in the gas registry	Yes
Clarify that approved shutdown profiles are to be provided by the industry along with notice of an approved designation to the parties listed in regulation 46k	Yes
Critical contingency plans	
Amend the CCM Regulations to clarify that a reference to an authoritative data source is an acceptable means of including contact details in a CCMP and that CCMPs must outline the process by which a TSO will manage and maintain contact details	Yes
Provide the industry body with three options for when CCMP amendments are submitted for approval: (a) Approve, for proposals that it agrees are immaterial and appropriate;	Yes
(b) Send a proposed amendment back to the TSO, for proposals that it does not agree are immaterial, or where it feels that industry input is warranted; or(c) Follow the current expert adviser process, for	
proposals that it deems require the scrutiny of the standard approval process	

Proposal	Proceed to final Statement of Proposal?
Specifically allow for a go-live date for a proposed amended CCMP	Yes
Remove the requirement in Regulation 74 to refer to the Reconciliation Rules when calculating contingency imbalances	No
Require retailers to provide their retailer curtailment plans to the industry body on an annual basis	Yes, and include the requirement that retailer curtailment plans should specify the primary contact for the CCO
Require that annual test exercises incorporate retailer curtailment plans	Yes
Require retailers to participate in annual test exercises	Yes
Include communications that occur in monitoring the system prior to a critical contingency and in declaring a critical contingency in the communications plan	Yes
Critical care and essential services designations	
Reduce the consumption criterion for essential service designations to above 250 GJ per year	Yes
Remove the requirement for critical care and essential services consumers to have a ToU meter	Yes
Allow the declaration form for critical care providers and essential service providers to be signed by a chief executive or equivalent position	Yes
Critical contingency threshold limits	
 Proposal to update Schedule 1 of the CCM Regulations to capture the following: (a) replacement of the Central (North) pipeline measurement point from Westfield to the Henderson Compressor Station inlet and adjustment of the boundaries to 35 (±2.5) bar g, with a time range of 3-10 hours; (b) standardisation of the Whangarei boundary conditions to a minimum operating pressure range of 30 (±2.5) bar g, with a time range of 3-6 hours; and (c) updates of naming conventions to align with current practice 	Yes

Proposal	Proceed to final Statement of Proposal?	
Other Matters		
Proposal to amend definition of "retailer" to clarify that retailer means any person who supplies gas to another person, or other persons, for any purpose other than resupply by the other person, or persons, as long as that gas is transported through the transmission system	Yes	
Proposal to amend the CCM Regulations to allow for short-term transient breaches of a pressure threshold without requiring a critical contingency declaration	Yes	
Amend the CCM Regulations to allow for planned outages to not trigger a critical contingency declaration	Yes	
Amend regulation 54A to include unexpected interruptions to asset operation	Yes	
Require retailers and large consumers to use a specified compliance reporting template	Yes	
Amend the determination of "publish" to include publication on the Industry Notifications page on the Gas Industry Co's website	Yes	
Amend the CCM Regulations to clarify that: (a) the CCO has 20 business days after the termination of a critical contingency to produce a draft performance report; (b) stakeholders have a minimum of 5 business days to make a submission; and (c) the CCO must prepare a final performance report no later than 10 business days following receipt of submissions and to specify that the CCO must have regard to the submissions on its draft report when preparing the final report	Yes	
Update amendments		
Update references in the CCM Regulations that refer to transmission arrangements or ownership	Yes	
Proposed minor amendments		
Update the CCM Regulations in a number of areas to correct minor drafting errors and redundant clauses	Yes	

Proposal	Proceed to final Statement of Proposal?
Further matters raised by submitters	
Provide further consideration for environmental impacts in the CCM Regulations	No
Provide further consideration for economic impacts in the CCM Regulations	No
Update the CCM Regulations for scenarios where a customer has two retailers	No
Update the CCM Regulations for scenarios where (a) a consumer only gets gas from a gas market or where (b) retailers do not have a contractual relationship with the TSO	(a) No (b) Yes, as discussed in 6.2.1
Update Regulation 39	Yes. We intend to update it so that instead of referencing gas gates where retailers' trade, it will reference gas gates where retailer's consumers are connected

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1.1 Purpose

The purpose of this paper is to provide a summary of the submissions that Gas Industry Co received on the *Statement of Proposal for amending the Critical Contingency Management Regulations* ('Consultation Paper'). It is also to provide further analysis based on these submissions and highlight which proposals we intend to progress through to a final Statement of Proposal.

Following the release of this paper, we will publish a final Statement of Proposal which will provide a further opportunity for stakeholders to make submissions. Once we have considered these final submissions, we will make a Recommendation to the Minister to change the CCM Regulations.

1.2 Introduction

The purpose off the CCM Regulations is to achieve the effective management of critical gas outages and other security of supply contingencies without compromising long-term security of supply. The CCM Regulations were extensively reviewed and amended after the October 2011 Maui pipeline outage. In light of experience with, and feedback on, subsequent events and exercises, and with the passage of time, it is clear that some elements of the CCM Regulations could be further improved.

Gas Industry Co released its Consultation Paper in May 2020. The Consultation Paper proposes a number of recommendations for changes to the CCM Regulations. Submissions on the Consultation paper were received from eleven parties:

- emsTradepoint Limited (eTp)
- First Gas Limited (Firstgas)
- Fonterra Co-Operative Group Limited (Fonterra)
- Greymouth Gas New Zealand Limited (Greymouth)
- Haast Energy Trading Limited (Haast)
- Major Gas users' Group (MGUG)
- Nova Energy Limited (Nova)
- OMV New Zealand Limited (OMV)
- Methanex New Zealand Limited (Methanex)
- Transpower Limited (Transpower)
- Vector Limited (Vector)

The remainder of this paper outlines the various proposals that were made in the Consultation Paper, summarises submitters views, and highlights which proposals Gas Industry Co intends to progress to a final Statement of Proposal.

The Purpose of the CCM Regulations is to achieve the effective management of critical gas outages and other security of supply contingencies without compromising long-term security of supply. The CCM Regulations came into force on 21 January 2010 after a lengthy industry consultation process that considered both regulatory and non-regulatory options. The CCM Regulations were later reviewed and amended in light of experience from an extended supply disruption in 2011. These amendments took effect on 1 March 2014.

The Consultation Paper released in 2020 proposes further amendments to the CCM Regulations. These amendments are in response to both experience over time and external elements such as amendments to the penalty provisions under the Gas Act. In the Consultation Paper Gas Industry Co said that it believes that there are no other reasonably practicable options, other than amending the CCM Regulations, that can better achieve the regulatory objective.

2.2 Submissions Summary and Gas Industry Co Comment

2.2.1 Proposal to Amend the CCM Regulations

Submissions Summary	Gas Industry Co Comment
Six parties submit on Gas Industry Co's view that	Gas Industry Co remains of the view that
amending the CCM Regulations is the most	amending the CCM Regulations is the most
practicable option. All six parties are in agreement	practicable option to achieve the regulatory
with Gas Industry Co's view. The remaining five	objective. The recommendations highlighted in the
who submit on the Consultation Paper are silent	remainder of this document we intend to carry
on this specific issue.	forward into a final Statement of Proposal.

2.3 Summary of Next Steps

Table 1: Summary of Legislative Context Proposals

Proposal	Proceed to final Statement of Proposal?
Amend the CCM Regulations	Yes

The CCM Regulations provide for the setting of a price that will apply to contingency imbalances after an event ('critical contingency price'). The intent of a critical contingency price is to encourage behaviours during an event that increase gas injections to, or decrease gas withdrawals from, the gas system. The critical contingency price is determined by the industry expert after an event and the CCM Regulations specify what needs to be considered when making this assessment.

The CCM Regulations provide two different sets of considerations depending on the type of event. The first is for an event where the CCO only curtails customers in bands 0 - 2 (gas storage and large industrial consumers). For these types of events, the industry expert must base the price on the wholesale market for electricity during the critical contingency. However, for all other scenarios, the industry expert must take into account the wholesale market for electricity during the critical contingency but also the economic cost of the loss of gas supply to those consumers who had their gas supply curtailed, and any other relevant matters.

Overtime, the way the gas market interacts with the electricity market has changed. When the CCM Regulations were first drafted, gas was used to provide steady baseload electricity generation. However, now gas thermal generation is used to operate on short notice to cover periods of high demand during the day. As a result of this changing dynamic, Gas Industry Co no longer believes that only considering the wholesale market for electricity when setting a contingency price is appropriate. The Consultation Paper recommends removing the narrower set of considerations for events that only curtail customers in bands 0 - 2. It proposes that the industry expert must take into account the wider set of considerations that are currently required for all other event types.

Further to this, the Consultation Paper proposes introducing a floor to the critical contingency price. In Covec's report¹ it advised that the critical contingency price should be both relatively high and predictable by market participants. The proposal of a price floor is to provide more certainty to industry participants that the critical contingency price will always be set at a level high enough to signal scarcity. The Consultation Paper considers a price floor that is produced using a volume weighted average price (VWAP) for the 7 days prior to, and including the critical contingency day, calculated from trades on eTp.

3.2 Submissions Summary and Gas Industry Co Comment

3.2.1 Proposal to remove the restriction to only base price on wholesale electricity prices for events where only bands 0-2 are curtailed

¹ https://www.gasindustry.co.nz/work-programmes/critical-contingency-management/critical-contingency-events/systemimbalance-event-may-2017/document/5576

Submissions summary	Gas Industry Co Comment
Of the parties that submit, seven parties agree with the proposal to require the industry expert to take into account a wider set of considerations when determining a critical contingency price. One further party, while not specifically disagreeing, does consider that there could be merit in considering alternative options for different types of events. Greymouth suggests using the approach as described in the Consultation Paper for events caused by damage to a pipeline, but for events caused by loss of supply, then require the industry expert to look at the specific question, "what gas spot price is sufficient to encourage offers to come to market?".	Gas Industry Co remains in favour of removing subpart (a) from regulation 71(3) to remove the restriction to base price on wholesale electricity prices for events where only bands 0-2 are curtailed. Gas Industry Co agrees with Greymouth that in events caused by loss of supply, it could be useful for the industry expert to look at the specific question "what gas spot price is sufficient to encourage offers to come to market?". However, Gas Industry Co sees the proposed change would provide enough flexibility for the industry expert to look at this question and we would be hesitant to specifically require it. In a dynamic and changing market, it is important that the industry expert has
	sufficience nextbilley when mutting its assessment.

Making a specific question a requirement would narrow down the options available to the industry

expert, potentially reducing flexibility.

3.2.2 Proposal to produce a floor for contingency prices

Submissions Summary	Gas Industry Co Comment
Eight of the submissions received comment on the proposal to produce a price floor. All are in agreement that a price floor should be created. However, many of these submitters raise issues that they would like Gas Industry Co to address before progressing any change.	While all parties who submit on the introduction of a price floor are in agreement that a floor should exist, many valid concerns about how it should be set are raised. To aid in our decision making, Gas Industry Co engaged the New Zealand Institute of Economic Research (NZIER) to recommend a floor price setting. Figure 1 below is a summary of the
The method proposed in the Consultation Paper is to use a VWAP for the 7 days prior to, and including the critical contingency day, calculated from trades on eTp. This calculation would include	recommendation from the NZIER report. You can find the full report to Gas Industry Co ' <i>Signalling</i> <i>Scarcity</i> ' in Appendix A.
tes from all trades on eTp, including the TSO's ancing purchases which often can be nificantly higher than non-balancing trades. tor is concerned that this could result in a price or that is too high. However, eTp considers that proposal would be beneficial to setting a price or as the price needs to be sufficiently high to lect scarcity.	The NZIER paper and its resulting recommendation make it clear that the creation of an enduring price floor methodology is difficult while there are indications of major structural change in the industry. The recommendation they make is based on the outlook over the next five years. Recommendations beyond this point would include high levels of assumptions.
Other issues that submitters wish to be considered by Gas Industry Co include the impact of the	With this in mind, Gas Industry Co intends to work with the Ministry of Business, Innovation and

carbon element associated with eTp's price; Employment (MBIE) before taking this to a final whether the relevant price data needs to be made Statement of Proposal, to consider our ability to public during a critical contingency event so that include the requirement of a price floor in the CCM the contingency price can be publicly known; Regulations without defining the specific method. whether there is merit in having multiple price Much like the critical contingency price itself, clear floor calculations and using the one that comes sets of parameters would be provided, but the out the highest on the day; and whether a reserve final calculation would be completed outside the price, similar to what is used in the electricity Regulations. market, could be used. In addition to the above issues, a number of parties propose alternative calculations for a price floor that they see would create a floor more reflective of scarcity. Vector largely agrees with the proposed calculation method but would like to see greater weight being given to the day-prior to an event. Nova suggests a 75th percentile of VWAP over the previous 21 days. It also suggests using only short-term spot trades to better reflect short-term supply restraints. OMV proposes a calculation that is based on known periods of gas scarcity, and MGUG suggests using an average of peak prices from eTp.

Figure 1: NZIER's price floor recommendation

8.2 Recommendation

Based on the proposed change to the regulations and the outlook for limited change in demand and supply over the next five years and provided that Huntly Unit 5 is in operation at the time of the CCE, we recommend that the floor price setting methodology is the minimum of:

- The 7-day moving average of the volume weighted average prices (7-day VWAP) of gas in the emsTradepoint system (excluding balancing trades) adjusted to remove the allowance for carbon prices⁴⁷
- The willingness to pay for gas of the Huntly Unit 5 plant based on the wholesale electricity price⁴⁸ when the CCE is declared and using the methodology and assumptions described in section 5.1.3.

We propose that the floor is set at the lower of the 7-day VWAP (excluding carbon prices and balancing trades) and the willingness to pay for gas of the Huntly Unit 5 plant to minimise the risk that the floor could be set above the CCP.

If Huntly Unit 5 is not generating electricity at the time of the CCE, we recommend that the floor price is based on the 7-day VWAP of gas in the emsTradepoint system (excluding balancing trades) adjusted to remove the allowance for carbon prices.

3.3 Summary of Next Steps

Table 2: Summary of setting a contingency price proposals

Proposal	Proceed to final Statement of Proposal?
Remove the restriction to only base price on wholesale electricity prices for events where only bands 0-2 are curtailed	Yes
Produce a floor for contingency prices	Yes (but without defining the specific price floor method. This would be done outside the CCM Regulations within a set of defined parameters.)

4

In May 2019, the Ministry of Business, Innovation and Employment (MBIE) published a review of the Gas Act 1992. The results from the review are included in the Gas (Information Disclosure and Penalties) Amendment Act (the Amendment Act).

The Amendment Act increases the maximum penalty that the Rulings Panel can order an industry participant to pay under the Gas Act and Gas Governance (Compliance) Regulations 2008 (Compliance Regulations) from \$20,000 to \$200,000.

The Amendment Act also repeals provisions in the Gas Act that allow gas governance regulations to provide for fines and offences of up to \$20,000 for breaches of gas governance regulations or rules. Instead, the amendment allows regulations to provide for the High Court to impose a civil pecuniary penalty on consumers (other than domestic consumers). The maximum penalty must not exceed \$200,000.

The Consultation Paper proposes to amend the CCM Regulations to align with these proposed Gas Act changes by replacing regulations 82A and 82B of the CCM Regulations with civil pecuniary penalties for knowingly providing false or misleading information and for failing to comply with curtailment directions. The maximum penalty of \$200,000 and previously prescribed defences would apply.

4.2 Submissions Summary and Gas Industry Co Comment

4.2.1 Update the CCM Regulations to:

- (a) replace regulations 82A and 82B with civil pecuniary penalties for knowingly providing false or misleading information and for failing to comply with curtailment directions; and
- (b) apply the prescribed defence (formerly provided in regulation 82B(2)) to the civil pecuniary penalty for failing to comply with curtailment instructions.

Four parties submit on this section and all parties agree with Gas Industry Co's proposals. Given the submittee ahead of the american possible a recommendation of the american possible and the america	e unanimous support from those who d for this proposal, it has been progressed the other proposed changes to align with adments to the Gas Act and avoid any regulatory gap. Gas Industry Co made a endation to the Minister for new gas nee regulations on 21 July 2021.

4.3 Summary of Next Steps

Table 3: Compliance regulations and offence provisions

Proposal	Proceed to final Statement of Proposal?
Update the CCM Regulations to: (a) replace regulations 82A and 82B with civil pecuniary penalties for knowingly providing false or misleading information and for failing to comply with curtailment directions; and (b) apply the prescribed defence (formerly provided in regulation 82B(2)) to the civil pecuniary penalty for failing to comply with curtailment instructions	Yes (a recommendation to the Minister has already been progressed)

5

There are currently eight curtailment bands, the objective of which are to promote effective management of critical gas outages by facilitating curtailment in an efficient and pragmatic way. Gas Industry Co considers that the current band definitions can cause both inefficient levels of curtailment and confusion for affected parties. The Consultation Paper proposes a number of ways to increase the efficiency of curtailment for the CCO and reduce the current level of ambiguity.

To improve the efficiency of curtailment for the CCO, the Consultation Paper looks to remove the distinction that is currently used to separate large consumers into bands 1 and 2 (whether a consumer has alternative fuel capability or not). Instead, the Consultation Paper considers reserving band 2 for large consumers who are electricity generators who export electricity to the grid. The Consultation Paper also recommends splitting the current band 3 into two distinct curtailment bands.

To reduce ambiguity, the Consultation Paper proposes to remove the daily threshold for large consumers so that all curtailment bands are determined by annual thresholds. It also proposes to clarify how these thresholds are calculated and the definition of "consumer installation".

5.2 Submissions Summary and Gas Industry Co Comment

5.2.1 Proposal to remove the distinction between large consumers that have alternative fuel capability and those that do not

Submissions Summary	Gas Industry Co Comment
Five parties submit on the proposal to remove the distinction between large consumers with, and without, alternative fuel capability and have mixed views. Vector, Nova and Firstgas are supportive of the proposal however, both Methanex and MGUG believe the current situation is more economically efficient.	While we agree with Methanex and MGUG that in occasional scenarios it may be that only band 1 would be required to curtail, we still see that the reduced volume in band 1 means only curtailing band 1 provides limited ability for the CCO to reduce load from the system, and so often bands 1 and 2 will be curtailed together. We see that a re-defining of bands 1 and 2 in a way that would
Methanex believes the suggestion in the Consultation Paper, that currently both bands 1 and 2 are likely to be curtailed together because there is limited load in band 1, is not a foregone conclusion and should not be used as a basis for justifying the proposal. Both Methanex and MGUG highlight that the current band 1 has significant	put greater load in band 1, would provide greater load reduction availability to the CCO and increase the chances of curtailing demand in band 1 without curtailing band 2 i.e., avoidance of over- curtailment. Gas Industry Co has considered the feedback we
load and a good outcome has been reached	received on the proposal to remove the distinction

previously in an event where band 1 (large customers with alternative fuel) was fully curtailed and band 2 (large customers without alternative fuel) was partially curtailed. They see this was a good outcome because there are less economic costs for customers who are required to curtail but are able to switch to an alternative fuel.

The Consultation Paper notes that if a strict interpretation of alternative fuel is taken, and consumers with private natural gas pipelines are considered to have alternative fuel, then almost all large consumers would be allocated to band 1, deeming the distinction irrelevant. Both Methanex and MGUG believe that private natural gas pipelines should not be considered an alternative fuel. They consider that the use of these private pipelines during an event should not be encouraged as it could have detrimental effects when the gas from these pipelines comes from the same fields that fuel the transmission system.

Further to this, they consider the argument made in the Consultation Paper, that the current definition may disincentive investment in alternative fuel, is overstated. Nova, while agrees with the proposal, also shares this latter view. between large consumers that have alternative fuel capability and those that do not, as well as the proposal to reserve band 2 for large consumers who are electricity generators who export electricity to the grid (as discussed in 5.2.2 below). These proposals would re-define band 1 and 2 consumers using a combination of size and type of gas usage.

As discussed above, we remain of the view that bands 1 and 2 should be re-defined. All other curtailment bands (with the exception of consumer designations) are based exclusively on volume to align with the idea that load curtailment should go in order from the few large consumers to the many small consumers. Efficient curtailment occurs when the CCO is able to send instructions to just a few consumers but remove considerable load from the system. We therefore, on reflection, see that bands 1 and 2 should only be defined by size as well.

We see that the lower threshold of band 2 should remain as consumers who use more than 15 TJ per day. However, instead of defining band 1 as those consumers who meet this threshold but have alternative fuel, we propose a volume threshold of consumers who use more than 100 TJ per day. Chart 1 below shows that this will not increase the number of consumers in band 1 but will over double the volume of gas consumption within it. We see that this will provide the CCO with a band of considerable load and therefore reduce the chances of both bands 1 and 2 being curtailed together.

Chart 1: Options for bands 1 and 2



5.2.2 Proposal to reserve band 2 for large consumers who are electricity generators who export electricity to the grid

Submissions Summary

Eights parties submit on the proposal to reserve band 2 for large consumers who are electricity generators and provide mixed feedback. Firstgas, Fonterra, Nova, Transpower and Vector agree with this proposal. However, Firstgas notes that under the CCM Regulations the CCO already has some flexibility to give priority to thermal generation. Fonterra, while agreeing, would like an exception to be made for Te Rapa and have it moved to band 3 to reflect its primary purpose of supplying steam for milk processing.

Both Methanex and MGUG disagree and would like the current band 2 definition to remain. They see band 1 and 2 being defined by large customers with, and without, alternative fuel as being the most efficient. Methanex highlights that in situations where there are no security of electricity supply risks then giving electricity generators priority does not make sense. Further to this, if this proposal goes ahead MGUG is concerned there could be an incentive for a thermal generation plant to increase production to take advantage of high electricity prices.

Gas Industry Co Comment

Gas Industry Co has considered and agrees with Firstgas's comment that the CCO already has flexibility to give priority to thermal generation and Methanex's point that in situations where there are no security of electricity supply risks then giving electricity generators priority does not make sense. Under 53(2)(a) of the CCM Regulations the CCO may direct curtailment of a subset of load within a curtailment band to enable remaining gasfired electricity generation within a curtailment band to assist with voltage support or electricity system stability, or both. This assessment is required to be made in consultation with the electricity system operator.

Given band 2 is no longer being combined with band 1, as discussed in 5.2.1 above, and because the CCM Regulations already provide some priority to thermal generators, Gas Industry Co will not be progressing this proposal. Instead, we intend to amend the definition of band 2 as consumers who consume greater than 15 TJ per day but less than 100 TJ, and band 1 as consumers who use greater than 100 TJ per day. Greymouth neither agrees nor disagrees with this proposal as it would like to see greater analysis undertaken first.

5.2.3 Proposal to create an annual threshold of 4,000 TJ per year for large consumers.

Submissions Summary	Gas Industry Co Comment
The Consultation Paper proposes all curtailment bands be defined by annual thresholds. Firstgas, Nova and Vector agree with this proposal however, both Methanex and MGUG disagree. Both disagreeing parties believe that for contingency events, it is the daily capacity of large consumers that always matters. To reflect this, MGUG would like large consumers to be defined by their peak flows, indicating that there could be merit in creating a definition based around the size of consumers' meters. Further to this, large consumers are currently defined as using more than 15 TJ per day but Methanex sees this as too high and would like this dropped to 10 TJ per day to more accurately capture thermal generators.	Currently bands 3, 4, and 6 are defined by annual consumption volumes; while bands 1 and 2 use daily volumes. This difference creates some inconsistency in the definitions and our proposal to create annual thresholds for all bands was to address this. However, we agree with the parties that highlight that for contingency events, it is the daily usage of large users that matters, rather than annual averages. We therefore propose to retain the daily definitions for bands 1 and 2. As discussed in 5.2.1 above, we intend to amend the definition of band 2 as consumers who consume greater than 15 TJ per day but less than 100 TJ, and band 1 as consumers who use greater than 100 TJ per day. We acknowledge the current inconsistency still exists but feel, on balance, daily volumes are the most appropriate.
Greymouth raises a suggestion for an amendment to allow the CCO access to the relevant information so that it can carry out the threshold calculations itself, and determine which customers belong in which band (rather than leaving it up to the individual retailers).	We considered MGUG's suggestion to base the thresholds on the size of consumers' meters, and whilst we see merit in the idea, given consumption data is more readily available we see it as the most efficient option and would provide a similar result.
	We note Greymouth's view that the CCO should be carrying out the threshold calculations itself, but we disagree. We see that retailers remain the most appropriate parties to monitor their own customers usage.

5.2.4 Proposal to split the current band 3 into 3A and 3 using 300 TJ per year as the lower threshold for 3A (and upper threshold for 3)

Submissions Summary	Gas Industry Co Comment
Firstgas, Nova and Vector agree with the proposal as presented in the Consultation Paper. Whilst Fonterra and MGUG agree with the creation of a	Gas Industry Co remains of the view that the current band 3 needs to be split into smaller bands to provide greater curtailment flexibility for the CCO. The intention of redefining band 3 is to

new band they have alternative views on how the threshold should be defined.

MGUG encourages further analysis by Gas Industry Co as it considers there could be merit in splitting band 3 into 3 bands, not 2. MGUG is also of the view that any new curtailment band should not be named "3A", rather, keep all curtailment bands numerical, and in order, for consistency. Fonterra would like the new band reserved for dairy consumers to reflect the perishable nature of milk products and the associated negative environmental impacts.

No submitting parties disagree with the proposal to create a new band however, six parties are silent on the issue. provide the CCO with a new band (or bands) that would hold substantial load but with few consumers. Efficient curtailment occurs when few consumers are able to curtail a substantial amount of load. Currently band 3 holds considerable load but also a large number of consumers.

Chart 2 below shows what consumer numbers and volumes would look like under four different scenarios. Under status quo, around 300 customers are using about 27 PJ per annum, and all would be required to curtail to remove this load from the system. Under scenario 1, as proposed in the Consultation Paper, only 19 customers would be required to curtail to reduce about half of the load that is currently in band 3. We remain of the view that this is more efficient and intend to progress this to a final Statement of Proposal.

We considered MGUG's suggestion that there could be merit in splitting band 3 into 3 unique bands instead of the proposed two. Scenarios 2 and 3 below show possible alternatives however, while they would provide a further band with few customers to curtail, we do not consider that the amount of load they contain justifies an additional band.

We also considered MGUG's preference not to use "3A" and rather keep the bands numerical. While we see there may be positives in doing this, it would require other bands to be renamed and we are concerned that this could overall cause greater confusion.

We are not supportive of Fonterra's suggestion to create a separate band for dairy consumers. While we appreciate its concerns relating to the negative environmental impacts that may be faced if dairy consumers are required to curtail gas usage, we are comfortable this can be appropriately managed through the current designation process. Currently under the CCM Regulations consumers can apply for a critical processing designation where gas is required to mitigate serious environmental damage.



Chart 2: Options for band 3²

5.2.5 Proposal to define all annual threshold volumes by taking the average consumption over the previous three years

Submissions Summary	Gas Industry Co Comment
Firstgas, Greymouth, Nova and Vector agree with the proposal to calculate annual thresholds using the average of a consumer's previous three years consumption rates. However, Firstgas, Nova and Vector would like some discretion available to Gas Industry Co for instances where the calculation is not available i.e., new customers. MGUG agrees that guidance on calculating consumption is required but would like thresholds to be defined by meter size as it sees this is a more appropriate	For bands defined by annual threshold volumes we intend to clarify that it should be calculated by taking the average consumption over the previous three years. We agree with parties that it needs to be made clear how to calculate new customers where three years of data is not available. For these customers we propose that it is based on the expected annual consumption until three years of data becomes available.
reflection of gas usage.	As discussed in section 5.2.3 above we will not be progressing MGUG's suggestion to base thresholds
methanex does not support the proposal for bands	on meter size.
1 and 2 on the principle that it is in favour of	
maintaining the current daily thresholds for large	

 $^{^{\}rm 2}$ Other than status quo, bands 1 and 2 are calculated using the approach proposed in 5.2.1

consumers. It is ambivalent about the method being used to calculate the thresholds for smaller consumers. In 5.2.3 we also note that we will be retaining daily thresholds for bands 1 and 2 and therefore this calculation will not apply to them.

5.2.6 Proposal to define the daily threshold volumes for band 2 by using the previous three years to determine whether consumption has been at least 15 TJ per day, from time to time

Submissions Summary	Gas Industry Co Comment
To calculate the threshold for the proposed band 2 (large consumers who are electricity generators exporting electricity to the grid) the Consultation Paper lays out a proposed approach for determining a consumer's daily volume. It proposes to use the previous three years to determine whether consumption has been at least 15 TJ per day, from time to time. Both Firstgas	In 5.2.1 above we note that we will not be changing the definitions for bands 1 and 2 as detailed in the Consultation Paper. Instead, we intend to amend the definition of band 2 to consumers who consume greater than 15 TJ per day but less than 100 TJ, and band 1 as customers who use greater than 100 TJ per day.
and Vector agree with this proposal but similar to their submissions on calculating annual thresholds, would like to make sure a process is in place for when there are new customers without consumption history.	These new definitions still use daily thresholds, and we therefore intend to clarify that "daily" means a customer who over the last three years has meet the daily usage threshold from time to time, or in the case of new customers, is expected to meet the daily usage threshold from time to
Greymouth, Methanex and Nova disagree with the	time.
proposed method and believe that the calculation should be based on capacity as this is what thermal generators' consumption is defined by. MGUG also disagrees with this proposal and is concerned that for thermal generators there could be large variances between any three years. It proposes the calculation be defined by a consumer's meter size to better reflect its consumption capacity.	We have been advised that for some customer sites there is a significant difference between installed capacity and actual usage patterns. To use capacity may result in some customers being unnecessarily curtailed.

5.2.7 Proposal to amend definition of "consumer installation" to include a gas installation with multiple points of connection to a distribution system or transmission system

Submissions Summary	Gas Industry Co Comment
All parties who submit on this particular issue agree with the proposal made in the Consultation Paper to amend the definition of "consumer installation". However, a number of parties raise areas that they believe require further consideration by Gas Industry Co.	Gas Industry Co remains of the view that the definition of "consumer installation" needs to be amended to reflect situations where one gas consumer has more than one gas connection (e.g., Ballance is supplied by both BAL09626 and BAL08201 welded points).
Paper to amend the definition of "consumer installation". However, a number of parties raise areas that they believe require further consideration by Gas Industry Co.	amended to reflect situations where one gas consumer has more than one gas connection (e.g. Ballance is supplied by both BAL09626 and BAL08201 welded points).

Both Fonterra and MGUG highlight that an exception may need to be made for Fonterra's Whareroa site which has multiple ICPs with quite distinct gas uses. Nova notes that further consideration may need to be given to situations where part of a consumer installation is an essential service or critical care provider.

Finally, Greymouth would like to ensure that any definition remains consistent with both the Gas (Downstream Reconciliation) Rules 2008 (Reconciliation Rules) and the Gas (Switching Arrangements) Rules 2008 (Switching Rules). Gas Industry Co is comfortable that for examples like Whareroa, where gas uses are distinct, the amended definition is broad enough to have the separate connections defined as unique gas installations. We see this is the same for situations where only one part of a site is considered an essential service or critical care provider (though we note that there are currently no examples of this).

We do not agree with Greymouth's suggestion that the definition of "consumer installation" needs to be consistent across the various gas industry rules and regulations. The purposes of each are unique and we are therefore comfortable that the definitions can be unique.

5.3 Summary of Next Steps

Table 4: Summar	y of curtailm	ent band definition
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Proposal	Proceed to final Statement of Proposal?
Remove the distinction between large consumers that have alternative fuel capability and those that do not	No. Instead amend the definition of band 2 to consumers who consume greater than 15 TJ per day but less than 100 TJ, and band 1 as consumers who use greater than 100 TJ per day.
Reserve band 2 for large consumers who are electricity generators who export electricity to the grid	No. Instead amend the definition of band 2 to consumers who consume greater than 15 TJ per day but less than 100 TJ.
Create an annual threshold of 4,000 TJ per year for large consumers	No
Split the current band 3 into 3A and 3 using 300 TJ per year as the lower threshold for 3A (and upper threshold for 3)	Yes
Define all annual threshold volumes by taking the average consumption over the previous three years	Yes
Define the daily threshold volumes by using the previous three years to determine consumption	Yes
Amend definition of "consumer installation" to include a gas installation with multiple points of connection to a distribution system or transmission system	Yes

6

The Consultation Paper lays out a number of proposals to update how curtailment orders are both instructed and applied. Currently, during a critical contingency event, the CCO issues curtailment instructions to the TSO, transmits those instructions to large consumers and retailers. Retailers then instruct their affected consumers. Although this process has been working well, new retailers have recently entered the market who do not have a relationship with the TSO and so the Consultation Paper lays out a proposal to re-define who is responsible for issuing critical contingency notices.

Further to this, the Consultation Paper proposes to clarify that when partial curtailment is instructed, or shutdown profiles commence, the consumption rates apply from the time the critical contingency is declared, not from a consumer's maximum capacity, or maximum in a shutdown profile. The intent of which is to avoid the opportunity for consumers to increase their consumption during an event.

The Consultation Paper also proposes a number of changes to how consumers with critical processing designations are treated. The proposed amendments are intended to reflect the importance of the critical processing designations to the consumers who hold them at the same time as ensuring fairness to all consumers across the system. The proposed modifications include requiring all large industrial consumers (bands 1 and 2) to be directed to fully curtail before the next tranche of industrial consumer (bands 3 and 3A); and all industrial consumers to curtail fully before commercial consumers (band 4). This also includes all consumers with critical processing designations. For example, a band 2 consumer with an approved shutdown profile would be required to stop using gas as soon as possible before band 3 could be instructed to curtail. Currently, a band 2 consumer with an approved shutdown profile is able to follow its profile until band 4 is curtailed.

6.2 Submissions Summary and Gas Industry Co Comment

6.2.1 Proposal to require gas wholesalers to be responsible for issuing critical contingency notices to their retailers and to receive and forward compliance updates to the transmission system owner

Submissions Summary	Gas Industry Co Comment
Six of the eleven submitting parties comment on this proposal. Firstgas, Methanex and Nova agree with this proposal as it is written and Firstgas highlights further clauses in the CCM Regulations that could be similarly updated.	Gas Industry Co is comfortable that the proposal to require gas wholesalers to be responsible for issuing critical contingency notices to their retailers is appropriate and should be progressed.

Greymouth and Vector, for efficiency reasons, would prefer all notices to come from the CCO (or TSO), though Vector concedes that this may not be a practicable option. Greymouth considers that this could be made practicable by full automation. In response to the further clauses that Firstgas sees could be similarly updated, we have summarised our views for each:

- Regulation 39 requires retailers to • annually provide information to the CCO relating to their consumers at each gas gate. Firstgas wonders whether there is merit in this type of information being provided to the CCO at shipper level, rather than retailer level (i.e., provided by gas wholesales on the behalf of 'white label' retailers). Gas Industry Co is of the view that this information should remain at retailer level and the responsibility of retailers. This regulation provides an ability to provide 'best estimate' data for when actual data is not available. We see that retailers are the best placed to calculate, for example, best estimates of a new consumer's consumption.
- *Regulation 43* requires all retailers to prepare a retailer curtailment plan.
 Firstgas would like Gas Industry Co to consider whether 'white label' retailers should be required to prepare a plan. We see that it is important for all retailers, including 'white-label' retailers, to have a curtailment plan. It is the retailers who have the relationship with the end consumer and therefore need to have a plan in place to communicate any curtailment instructions or be involved in media appeals.
- *Regulation 55* requires retailers and large consumers to provide the TSO with regular updates of compliance with the directions of the TSO. Firstgas wonders whether these compliance updates should be aggregated to the Shipper level before being forwarded to Firstgas. While we appreciate this could benefit the TSO by having to receive fewer compliance updates, we are concerned that it could result in the delay of some notices being provided. For example, we do not think it would be a good outcome if a wholesaler had to wait to provide its compliance update until it had received updates from all its 'white-label' retailers.

 Regulation 75 lays out the calculation methodology for contingency imbalances. Firstgas believes it makes sense for Shippers, rather than 'white label' retailers to be responsible for critical contingency imbalances. Gas Industry Co agrees with the sentiment of Firstgas's comment however, is confident that the current calculation is already at the shipper level and no updates are required.
We do not see that Greymouth's and Vector's desire for all curtailment instructions to come from the CCO is practicable. The CCO's core responsibility during an event is to monitor the system so that it can effectively issue curtailment instructions. Ensuring instructions are received can take time and it is most efficient that retailers and transmission owners, who have contractual relationships with their consumers, deliver these instructions. While automation of processes may make parts of this process easier it would come at a cost and monitoring confirmations, and failures, of notification delivery remains time consuming.

6.2.2 Proposals to clarify that:

- (a) directions for partial curtailment must be made with regard to consumption rates at the time a critical contingency is declared
- (b) that designated shutdown profiles apply to consumption rates at the time a critical contingency is declared

Submissions Summary	Gas Industry Co Comment
Six parties directly submit on this area and the submitters are largely in agreement with these proposals. However, a number of submitters seek clarification from Gas Industry Co on how the CCO will determine a consumer's consumption on a day. Greymouth also highlights that for shutdown	Though parties are largely supportive of these proposals they requested clarity on how a consumer's consumption on a day would be calculated. We propose using the consumption volume for each customer at the time a critical contingency is declared. If required, this would retrospectively be monitored by using the process for identifying gas usage that is contrary to
profiles it might not be as simple as starting the shutdown profile from the current consumption rate as consumers may have different shutdown	curtailment directions as outlined in Regulation 66A.
profile requirements for different levels of consumption rates.	We have considered Greymouth's concern that customers with designated shutdown profiles may require the extra gas, regardless of their consumption rates at the time, to safely shutdown. We agree with Greymouth's concern and intend to allow for this situation.

6.2.3 **Proposals to require consumers in curtailment bands:**

- (a) 1 and 2 (including those with approved shutdown profiles) to completely curtail before consumers in band 3 (or band 3A, if created) are directed to curtail
- (b) 3A (if created) and 3 (including those with approved shutdown profiles) to completely curtail before consumers in band 4 are directed to curtail
- (c) 4 and 5 (including those with approved shutdown profiles) to completely curtail before consumers in band 6 are directed to curtail.

Submissions Summary

Seven parties submit on these changes to the curtailment order and the views are mixed. Firstgas, Nova and Vector agree with these proposals. Firstgas notes that the changes would make the curtailment process faster and more efficient. However, Fonterra, Greymouth, Methanex and MGUG disagree.

Greymouth sees the curtailment order as being too complex and prescriptive and Fonterra, Methanex and MGUG are concerned that it would undermine the value of critical processing designations. Fonterra considers that the risk of not being able to follow an approved shutdown profile negates the value of any critical processing designation. MGUG also disagrees and notes that often the last part of a shutdown profile uses the least amount of gas and so it does not seem efficient to require that small gas usage to be fully curtailed before band 3 customers, who may be using more gas.

Methanex, who holds a critical processing designation, recognises that in some circumstances it will not be able to follow its approved shutdown profile, but it is concerned that the proposed changes will increase the chances of these circumstances occurring. It highlights that there is a risk that if it is not able to follow its approved shutdown profile, and is forced to shut down abruptly, then gas load across the system could also collapse abruptly, causing issues wider than the impact on Methanex's plant. It believes that if it is able to shut down in an orderly manner, using its approved shutdown profile, then

Gas Industry Co Comment

Gas Industry Co remains of the view that it is inefficient to require the CCO to curtail down to band 4 (the curtailment of over 6,000 customers) to remove the load from all large users. Chart 3 below assumes that all critical processing designations are curtailed at the same time and shows that the consumption required by all the approved shutdown profiles is considerably greater than that of all consumers within curtailment band 4. However, we understand the concerns raised by parties that believe these proposals would undermine the value of critical processing designations and associated approved shutdown profiles.

We see that a balance between retaining the value of critical processing designations and inefficient curtailment can be reached if we require all critical processing designations to curtail fully before band 4 is curtailed. This would allow approved shutdown profiles for 1C, 2C, 3AC and 3C customers to continue up until this point.

Figure 2 below shows how the recommended approach compares with the status quo and what is proposed in the Consultation Paper. We intend to take this recommendation through to a final Statement of Proposal. there is a better chance it will be able to immediately restart after an event. Given it is the largest gas consumer, it sees that its ability to restart quickly is crucial to help restore normal levels of gas production after an event. Because of this, Methanex does not see that an objective of the GPS, *ensuring risks relating to security of supply, including transport arrangements, are properly and efficiently managed by all parties*, will be met by these proposals.

Chart 3: Volume of gas used in approved shutdown profiles and curtailment band 4





*C indicates customers with approved shutdown profiles

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6.3 Summary of Next Steps

Table 5: Summary of curtailment instructions

Proposal	Proceed to final Statement of Proposal?
Proposal to require gas wholesalers to be responsible for issuing critical contingency notices to their retailers and to receive and forward compliance updates to the transmission system owner	Yes
Proposals to clarify that:	(a) Yes
(a) directions for partial curtailment must be made with regard to consumption rates at the time a critical contingency is declared	(b) Yes, except for consumers with designated shutdown profiles who require their full shutdown profile to safely shutdown.
(b) that designated shutdown profiles apply to consumption rates at the time a critical contingency is declared	
Proposals to require consumers in curtailment bands: (a) 1 and 2 (including those with approved shutdown profiles) to completely curtail before consumers in band 3 (or band 3A, if created) are directed to curtail (b) 3A (if created) and 3 (including those with approved shutdown profiles) to completely curtail before consumers in band 4 are directed to curtail (c) 4 and 5 (including those with approved shutdown profiles) to completely curtail before consumers in band 6 are directed to curtail	No. However, will progress a recommendation to require all customers with approved shutdown profiles to curtail fully before band 4 is directed to curtail



The Consultation Paper makes a number of proposals that reflect the need for the CCO to have good information about the transmission system. To address instances where the CCO has had issues obtaining information from the TSO, the Consultation Paper proposes that the types of information required to be provided by the TSO is updated in the CCM Regulations. Further to this, it proposes to make changes to how the CCO receives information on asset outages, consumer information, and approved shutdown profiles. These include:

- requiring asset owners and large consumers to inform the CCO of outages as soon as they become aware of it; and
- providing the CCO with the ability to request numbers of ICPs by curtailment band and gas gate from Gas Industry Co; and
- clarifying that Gas Industry Co are to provide the CCO with the approved shutdown profiles alongside the notice of an approved designation.

7.2 Submissions Summary and Gas Industry Co Comment

7.2.1 Amend Schedule 4 of the CCM Regulations to update the types of transmission system information the TSO is required to provide the CCO

Submissions Summary	Gas Industry Co Comment
Firstgas, Nova and Vector agree with this proposal and no parties disagree. Firstgas, as TSO, notes this proposal largely reflects the current situation. However, it also highlights that if any future information requests come through from the CCO, for information that is not readily available, or requires a high degree of customisation or expense to produce, it would lean on regulation 38(2)(a). This regulation refers to information being obtained or derived without unreasonable difficulty or expense. While raising this, Firstgas also emphasises that it is committed to working constructively with the CCO to ensure the CCO has access to all the information required under Schedule 4.	Of the submitting parties, there is unanimous support to amend Schedule 4 of the CCM Regulations. Gas Industry Co therefore will be progressing this through to a final Statement of Proposal. Gas Industry Co agrees with Firstgas that the reference to the "commencement date" in Regulation 10 is no longer relevant and should be updated.
Firstgas also notes that regulation 10 may need to be revisited as well to reflect that the "commencement date" referred to has passed. Regulation 10 requires the TSO to provide Gas	

Industry Co with the information in Schedule 4, no later than five business days after the commencement date.

The remaining parties are silent on this proposal.

7.2.2 Modify regulation 38A to require the provision of outage information as soon as practicable after an asset owner or large consumer becomes aware of it.

Submissions Summary	Gas Industry Co Comment
Nine parties submit on this proposal and there are a wide range of views on the matter. Haast, Nova, Transpower and Vector agree with this proposal, however, Fonterra, Greymouth, Methanex, MGUG and OMV disagree.	Gas Industry Co has considered the points raised by submitters relating to concerns around the value of this information and the difficulty for asset owners and large consumers to define a material outage.
Many of the parties who disagree with this proposal do not see what benefit asset outage information would provide the CCO. They believe the only relevant information is the real-time gas flows during an event. MGUG notes that the CCO already has access to this information as it has the ability to monitor the system during an event from	The value of this information is for the CCO to understand what risks could affect the system at any time. We do, however, agree with submitters that it is the real-time gas flows that is the most important for the CCO to understand when managing an event.
the TSO's control room, or remotely request gas flow information directly from it. It suggests improving this remote access as this will likely meet the needs of the CCO without requiring disclosure from asset owners.	We also understand that it is difficult for outages to be easily assessed as either 'material' or 'immaterial'. The same outage could have very different effects on the transmission system depending on the level of line pack and what other producers and consumers are doing at that time.
Greymouth and OMV believe that the established Upstream Gas Outage Information Disclosure Code 2020 (Upstream Code) sufficiently meets any need the CCO has for greater information. OMV does not agree with this proposal but highlights that if it is implemented then it would like to see greater clarity around what constitutes an outage material	Further to this, we note that there have been recent improvements in the public disclosure of outages and the CCO has regularly been making use of the Industry Notifications page.
enough to disclose to the CCO. To address this, it suggests aligning any thresholds with those created in the Upstream Code.	Given submitters concerns, the improvement in public disclosure and the current Regulation 38A which allows the CCO to request information about expected outages from gas producers, the TSO,
Further to this, MGUG notes that Gas Industry Co needs to fully consider the commercially sensitive nature of this information and the administrative burden before progressing this proposal any further.	and large consumers, we are comfortable to not progress this proposal to a final statement of proposal.

7.2.3 Provide the CCO with the ability to request numbers from Gas Industry Co of ICPs by curtailment band and by gas gate, as recorded in the gas registry

Submissions Summary	Gas Industry Co Comment
Nova and Vector agree with this proposal and no	Gas Industry Co intends to progress this proposal
other parties submit on this issue.	to a final Statement of Proposal

7.2.4 Clarify that approved shutdown profiles are to be provided by the industry along with notice of an approved designation to the parties listed in regulation 46K.

Submissions Summary	Gas Industry Co Comment
Nova and Vector agree with this proposal and no other parties submit on this issue.	Gas Industry Co intends to progress this proposal to a final Statement of Proposal.

7.3 Summary of Next Steps

Table 6: Summary of information provided to the CCO

Proposal	Proceed to final Statement of Proposal?
Amend schedule 4 of the CCM Regulations to update the types of transmission system information the TSO is required to provide the CCO	Yes, and update Regulation 10 to reflect the "Commencement Date" is no longer relevant
Modify regulations 38A to require the provision of outage information as soon as practicable after an asset owner or large consumer becomes aware of it	No
Provide the CCO with the ability to request numbers from Gas Industry Co of ICPs by curtailment band and by gas gate, as recorded in the gas registry	Yes
Clarify that approved shutdown profiles are to be provided by the industry along with notice of an approved designation to the parties listed in regulation 46k	Yes

Under the CCM Regulations there are currently requirements for TSOs to prepare and maintain critical contingency management plans (CCMPs), retailers to prepare and maintain retailer curtailment plans and the CCO to maintain the published communications plan. The Consultation Paper proposes a number of amendments in relation all three of these plans.

The intent of the proposals relating to CCMPs is to ensure they remain fit-for-purpose under any future transmission arrangement and to provide for more efficient processes to maintain a CCMP. These include clarifying acceptable data sources of contact details; provide greater flexibility within the CCMP amendment process for immaterial changes; provide for future go-live dates of CCMPs; and remove the reference to the Reconciliation Rules for critical contingency imbalance calculations.

The proposals relating to retailer curtailment plans came about in response to our concerns regarding the comprehensiveness of these plans and whether the requirement to keep them current is something that retailers have had difficulty incorporating in their usual business processes. To address these concerns, the Consultation Paper proposes requiring retailers to submit their plans to Gas Industry Co annually; increasing the scope of annual test exercises to include these plans; and requiring retailers to participate in these exercises.

The communications plan is a CCO-maintained document that outlines communication protocols between the CCO and TSO. The Consultation Paper proposes widening the scope of this plan to include communications that occur in monitoring the system prior to a critical contingency and in declaring a critical contingency.

8.2 Submissions Summary and Gas Industry Co Comment

8.2.1 Amend the CCM Regulations to clarify that a reference to an authoritative data source is an acceptable means of including contact details in a CCMP and that CCMPs must outline the process by which a TSO will manage and maintain contact details

Submissions Summary	Gas Industry Co Comment
Firstgas, Nova, OMV and Vector agree with these proposals as written. MGUG notes that it does not believe a change in the CCM Regulations is required and that the	Gas Industry Co does not agree with MGUG that a change in the CCM Regulations would not help clarify that an authoritative data source is an acceptable means of including contact details in a CCMP and that CCMPs must outline the process by
intended outcome can be reached by its current drafting.	which a TSO will manage and maintain contact details. The CCM Regulations do not explicitly include these currently and we therefore see that clarification is required to remove ambiguity.

Greymouth's preference is for all notifications to come directly from the CCO which would increase efficiency and mean a CCMP would not be required at all.	As discussed in 6.2.1, we do not consider it appropriate to require the CCO to issue notifications directly to consumers as suggested by Greymouth.
The remaining five parties do not comment on this proposal.	Gas Industry Co therefore intends to progress this proposal to a final Statement of Proposal.

8.2.2 Provide the industry body with three options for when CCMP amendments are submitted for approval:

- (a) Approve, for proposals that it agrees are immaterial and appropriate;
- (b) Send a proposed amendment back to the TSO, for proposals that it does not agree are immaterial, or where it feels that industry input is warranted; or
- (c) Follow the current expert adviser process, for proposals that it deems require the scrutiny of the standard approval process.

Submissions Summary	Gas Industry Co Comment
Firstgas, MGUG, Nova and Vector agree with this proposal as it is presented in the Consultation Paper.	Gas Industry Co agrees with Greymouth that any changes relating to safety should be consulted on, but we do not see that this is a reason to not progress this proposal. Any proposed amendment
Greymouth disagrees with this proposal as it sees that all changes relating to safety should be consulted on. The remaining six parties do not comment on this proposal.	that is related to safety would not be considered immaterial and therefore would be required to go through the scrutiny of the standard approval process.
	Gas Industry Co intends to progress this proposal to a final Statement of Proposal.

8.2.3 Specifically allow for a go-live date for a proposed amended CCMP

Submissions Summary	Gas Industry Co Comment
Firstgas, MGUG, Nova and Vector agree with this proposal as it is presented in the Consultation Paper. Greymouth, however, is unsure and considers further thought is required on the timing of go-live, specifically if it is tied to a future agreement that could change.	Gas Industry Co intends to progress this proposal to a final Statement of Proposal. We recognise Greymouth's point but are comfortable this type of situation can be dealt with either through the drafting of the Regulations or the timing of submission of the proposed amendment.
The remaining six parties do not comment on this proposal.	
8.2.4 Remove the requirement in Regulation 74 to refer to the Reconciliation Rules when calculating contingency imbalances

Submissions Summary	Gas Industry Co Comment
Five parties submit on this proposal to remove the reference to the Reconciliation Rules when calculating contingency imbalances and the views are varied. Firstgas, Nova and MGUG agree with this proposal (however, MGUG's preference is for any reference to a methodology be kept out of regulations entirely). Vector disagrees with this proposal as it sees the Reconciliation Rules provide the most accurate data to assess a contingency imbalance.	This proposal was put forward largely in response to GTAC and the intention at the time for daily imbalances on the transmission system to be calculated via three possible ways, not just the Reconciliation Rules results. The Consultation Paper notes it would be sensible for contingency imbalance calculations to be able to use the same data as is used for daily imbalances and so the reference to the Reconciliation Rules should be removed.
Greymouth would like further analysis done before progressing. The remaining six parties do not comment on this proposal.	However, since the Consultation Paper was published, Firstgas have announced that GTAC will not be being progressed. Gas Industry Co therefore sees that the initial argument for this proposal is no longer valid, and we will not be progressing it to a final Statement of Proposal.
	The CCMP stipulates how critical contingency imbalances are calculated (which must be in accordance with the Reconciliation Rules). Although GTAC is not going ahead, it is possible that parties may wish to use D+1 results for these calculations in the future. Gas Industry Co is beginning a process to formalise D+1 in the Reconciliation Rules and we therefore do not see that not progressing this proposal will inhibit a CCMP review process, once D+1 forms part of the Reconciliation Rules.

8.2.5 Require retailers to provide their retailer curtailment plans to the industry body on an annual basis

Submissions Summary	Gas Industry Co Comment
Firstgas, Nova and Vector agree with this proposal as it is presented in the Consultation Paper. MGUG agrees that the CCO needs to be confident in retailer curtailment plans but it does not believe this proposal goes far enough and suggests that retailers not only supply a plan but also a statement that includes a summary of their own internal testing of their plan. It sees that such a	Those parties who disagree with this proposal either think it is too onerous or not onerous enough. Gas Industry Co sees that the proposal as drafted in the Consultation Paper strikes an acceptable balance between these two opposing views and therefore intends to progress it to a final Statement of Proposal.

statement could include proof that they have carried out their own annual test exercise. Greymouth sees this proposal adds more work for retailers without adding any extra value. Greymouth would prefer all notices come from the CCO so retailer curtailment plans would not be required at all.	We also intend to include the requirement that retailer curtailment plans should specify the primary contact for the CCO and this should be communicated on an annual basis or if there are any changes. This further requirement is in response to recommendations made by the CCO in its latest exercise report.
The remaining six parties do not comment on this proposal.	As discussed in 6.2.1, we do not consider it appropriate to require the CCO to issue notifications directly to consumers and will therefore not be proposing this.

8.2.6 Require that annual test exercises incorporate retailer curtailment plans

Submissions Summary	Gas Industry Co Comment
Firstgas and Nova agree with this proposal to incorporate retailer curtailment plans into annual test exercises. However, Greymouth and Vector disagree and MGUG is unsure how this proposal will improve retailer involvement.	Retailer curtailment plans were included into the CCM Regulations in 2013 after it was found that a number of retailers were unprepared to carry out the actions required of them during the 2011 Maui Outage. Whilst this requirement is now in place the CCO has raised concerns in numerous exercise performance reports that it is not clear whether
Greymouth believes this proposal adds more work for retailers without adding sufficient value and Vector does not think that retailers who only supply residential consumers, or a few smaller	these plans are being regularly maintained or tested by retailers.
commercial customers, should be covered by this requirement.	As issues have occurred in the past and while concerns still remain, Gas Industry Co does not agree with the retailers that see this proposal
The remaining six parties do not comment on this proposal.	would (a) not improve retailer involvement or (b) be too onerous for parties. We believe this proposal would provide a positive obligation for retailers to participate in the annual test exercises, in the same way the TSO is required to participate. We see that the testing of these plans should already be part of retailers' annual processes and greater priority should be given to them to reflect their importance.
	We intend to progress this to a final Statement of Proposal.

8.2.7 Require retailers to participate in annual test exercises

Submissions Summary	Gas Industry Co Comment
Firstgas and Nova agree with this proposal for retailers to participate in annual test exercises. MGUG and Vector also agree but see there should be some exceptions. MGUG sees that retailers who can demonstrate their retailer curtailment plans work well should not be required to participate. Again, Vector thinks retailers who only supply residential consumers, or a few commercial customers, should not be required.	As discussed in 8.2.6 above, Gas Industry Co remains of the view that greater participation from retailers is required to ensure comfort that they are prepared for contingency events. We continue to see that requiring retailers to participate in the annual test exercises is an appropriate way to address this and will therefore be progressing this to a final Statement of Proposal.
The remaining seven parties do not comment on this proposal.	

8.2.8 Include communications that occur in monitoring the system prior to a critical contingency and in declaring a critical contingency in the communications plan.

Submissions Summary	Gas Industry Co Comment
Firstgas, Nova and Vector agree with this proposal however, MGUG does not see the benefit of including this information in the CCM Regulations as these additional communications are already occurring in practice.	Gas Industry Co intends to progress this proposal to a final Statement of Proposal. While we have no concerns about how these communications are occurring currently, we wish
The remaining seven parties do not comment on this proposal.	to secure the current levels of information for the future.

8.3 Summary of Next Steps

Table 7: Summary of critical contingency plans

Proposal	Proceed to final Statement of Proposal?
Amend the CCM Regulations to clarify that a reference to an authoritative data source is an acceptable means of including contact details in a CCMP and that CCMPs must outline the process by which a TSO will manage and maintain contact details	Yes
Provide the industry body with three options for when CCMP amendments are submitted for approval:	Yes

Yes
No
Yes and include the requirement that retailer curtailment plans should specify the primary contact for the CCO
Yes
Yes
Yes

9.1 Consultation Paper Summary

The CCM Regulations include provisions for a number of categories of gas consumers to be given a priority to gas during an event. These include consumers who provide critical care, provide essential services, require gas to complete critical processing, and to secure the supply of electricity. The criteria for these designations can include minimum annual consumption volumes, metering configuration, and Board certification, depending on the specific designation category.

From Gas Industry Co's experience with administering the designation process, the Consultation Paper proposes a number of changes in relation to critical care and essential services designations. These include lowering the threshold for essential services designation to cover consumers who provide an essential service but who do not currently meet the volume criteria; removing the requirement for a time of use meter for critical care or essential service customers; and allowing declaration forms to be signed by a chief executive, or equivalent, where the current Board signature is not appropriate e.g. for local governments.

9.2 Submissions Summary and Gas Industry Co Comment

9.2.1 Proposals to:

9

- (a) Reduce the consumption criterion for essential service designations to above 250 GJ per year.
- (b) Remove the requirement for critical care and essential services consumers to have a ToU meter.
- (c) Allow the declaration form for critical care providers and essential service providers to be signed by a chief executive or equivalent position.

Submissions Summary	Gas Industry Co Comment
Four parties submit on these proposals and all agree with the Consultation Paper. However, MGUG's preference is that all thresholds should be based on the size of a consumer's meter rather than volumes. MGUG also highlights that, while it agrees with a declaration form being signed by a chief executive for when a Board does not exist, it is of the view that if a Board signature is available, then it should be required.	As discussed in 5.2.3 above we do not see it is appropriate to define thresholds by meter size and will not be progressing this suggestion. Gas Industry Co therefore intends to progress proposal (a) as described in the Consultation Paper. All submitting parties are in agreement to remove the TOU meter requirement for critical care and essential services (proposal (b)) and we will be
	essential services (proposal (b)) and we will be

Nova also raises a suggestion that does not relate
to these specific proposals but relates to the
categories of consumers eligible to be classified as
an essential service. It would support the inclusion
of gas required for electricity generation into the
criteria of essential service providers. MGUG raises
a suggestion to review the essential services
category entirely in response to the essential
service definitions defined by Government during
its COVID-19 response.

progressing this through to a final Statement of Proposal.

We considered MGUG's view that Board signatures should still be required where they are available however, from our experience with administrating these designations we see that this requirement is too onerous for many organisations and often acts as an inhibitor to having these designations granted. Many of the consumers eligible for critical care or essential services designations are small gas users and can have difficulty raising the issue with their Board members. We see for these types of customers that chief executive level is more appropriate. We intend to progress the proposal (proposal c) as detailed in the Consultation Paper.

In response to Nova's suggestion to classify electricity generation as an essential service we see that sufficient priority is already given to electricity in the CCM Regulations as discussed in 5.2.2 above.

As a result of the Government's definitions created during its COVID-19 response, MGUG suggests a further review of the essential service providers under the CCM Regulations. In light of COVID-19, we ran an internal process that confirmed our comfort with the CCM Regulation's current definition and do not see that any changes are required.

9.3 Summary of Next Steps

Table 8: Summary of critical care and essential services designations

Proposal	Proceed to final Statement of Proposal?
Reduce the consumption criterion for essential service designations to above 250 GJ per year	Yes
Remove the requirement for critical care and essential services consumers to have a ToU meter	Yes
Allow the declaration form for critical care providers and essential service providers to be signed by a chief executive or equivalent position	Yes



10.1 Consultation Paper Summary

Schedule 1 of the CCM Regulations provides the threshold limits within which the TSO's CCMP must set the critical contingency trigger thresholds. The TSO recently undertook a review of its system's critical contingency conditions. The results of that review led to the TSO recommending to Gas Industry Co that Schedule 1 be updated. Gas Industry Co agrees with the TSO's recommended changes and proposes the relevant amendments in the Consultation Paper.

10.2 Submissions Summary and Gas Industry Co Comment

- **10.2.1** Proposal to update Schedule 1 of the CCM Regulations to capture the following:
 - (a) replacement of the Central (North) pipeline measurement point from Westfield to the Henderson Compressor Station inlet and adjustment of the boundaries to 35 (±2.5) bar g, with a time range of 3-10 hours;
 - (b) standardisation of the Whangarei boundary conditions to a minimum operating pressure range of 30 (±2.5) bar g, with a time range of 3-6 hours; and

Submissions Summary	Gas Industry Co Comment
Four parties submit on this proposal. Firstgas, Nova and Vector agree with this proposal. However, MGUG does not think these thresholds should be included in the CCM Regulations at all. It sees that instead the CCM Regulations could require the thresholds to be published and consulted on when any changes are required. The remaining parties do not comment on this proposal.	There is considerable support to update Schedule 1 from submitting parties and Gas Industry Co therefore intends to progress this to a final Statement of Proposal. We note MGUG's view that these should sit outside the CCM Regulations. However, it is our understanding that these thresholds are appropriately included within the scope of the CCM Regulations themselves rather than being delegated to Gas Industry or another third party.

(c) updates of naming conventions to align with current practice

10.3 Summary of Next Steps

Proposal	Proceed to final Statement of Proposal?
Proposal to update Schedule 1 of the CCM Regulations to capture the following:	Yes
 (a) replacement of the Central (North) pipeline measurement point from Westfield to the Henderson Compressor Station inlet and adjustment of the boundaries to 35 (±2.5) bar g, with a time range of 3-10 hours; 	
(b) standardisation of the Whangarei boundary conditions to a minimum operating pressure range of 30 (\pm 2.5) bar g, with a time range of 3-6 hours; and	
(c) updates of naming conventions to align with current practice	

Table 9: Summary of critical contingency threshold limits

11 Other Matters

11.1 Consultation Paper Summary

The Consultation Paper also raises a number of proposals to address a variety of matters to clarify, reduce ambiguity and improve processes. These include re-defining "retailer" and "publish" to better reflect current practices and systems; allowing transient breaches of pressure and planned outages to not trigger contingencies where it is clear there are no security risks; increasing the scope of what constitutes a failure of an asset to include unexpected interruptions to asset operation; requiring a template to be used by retailers and large consumers when providing the TSO with compliance updates during an event; and clarifying the timeframes associated with post-event performance reports.

11.2 Submissions Summary and Gas Industry Co Comment

11.2.1 Proposal to amend definition of "retailer" to clarify that retailer means any person who supplies gas to another person, or other persons, for any purpose other than resupply by the other person, or persons, as long as that gas is transported through the transmission system.

Submissions Summary	Gas Industry Co Comment
Five parties submit on this proposal. Four of the	Gas Industry Co intends to progress this proposal
submitting parties agree but Greymouth would like	to a final Statement of Proposal.
clarification that the gas supply referred to in this	In response to Greymouth's request for
proposed definition refers to the title transfer of	clarification, the proposed definition is based on
gas.	the definitions outlined in the Gas Act 1992.

11.2.2 Proposal to amend the CCM Regulations to allow for short-term transient breaches of a pressure threshold without requiring a critical contingency declaration

Submissions Summary	Gas Industry Co Comment
Six parties submit on this proposal and the majority are in agreement with the position laid out in the Consultation Paper. However,	Gas Industry Co has considered Greymouth's view that it would prefer an event to be declared even if the situation is transient. It sees that if no
Greymouth disagrees and MGUG does not consider a regulation amendment is required.	curtailment is instructed then there is no impact and so it would be safer to declare then provide any level of discretion to the CCO. We disagree
Greymouth is not concerned with critical contingencies being declared when they are not	with Greymouth that there is no impact. Once an event is declared organisation's internal CCM processes are triggered and furthermore, after an

required, as curtailment instructions would not be directed in these instances. It would prefer these types of situations over leaving declarations up to the discretion of the CCO.	event, incident and performance reports are required to be produced. We see that the discretion that would be available to the CCO is limited and is overall more efficient.
MGUG thinks that the wording of regulation 48 (the regulation that lays out when the CCO must determine a critical contingency) already provides sufficient flexibility to the CCO.	We do not agree with MGUG that regulation 48 is already able to deal with these situations. Regulation 48 requires the CCO to make a determination of a critical contingency if a threshold breach has occurred or is unavoidable. It does not make allowances for short-term transient breaches or breaches that are a result of a planned project.
	Gas Industry Co intends to progress this proposal to a final Statement of Proposal.

11.2.3 Amend the CCM Regulations to allow for planned outages to not trigger a critical contingency declaration

Submissions Summary	Gas Industry Co Comment
Five parties (Firstgas, MGUG, Nova, OMV and Vector) submit on this proposal and are largely in agreement with Gas Industry Co. MGUG, although it agrees with the intention of the proposal, believes regulation 48 could already satisfy this situation.	Gas Industry Co intends to progress this proposal to a final Statement of Proposal. As discussed in 11.2.2 above we do not agree with MGUG that the CCM Regulations already deals with these types of situations.

11.2.4 Amend regulation 54A to include unexpected interruptions to asset operation

Submissions Summary	Gas Industry Co Comment
Regulation 54A relates to asset owners communicating information about failed assets to ensure TSOs, retailers, and consumers are informed about the cause of any critical contingency. This proposal seeks to clarify that a failure of an asset can be the result of both	Submitters largely support this proposal and Gas Industry Co will therefore be progressing an amendment to regulation 54A to a final Statement of Proposal. We disagree with MGUG's comments that there is
internal and external factors. Seven parties submit on this proposal and Firstgas, Greymouth, Haast, Nova, OMV, and Vector agree. MGUG believes this issue has arisen from an over prescription in the	an over prescription in the CCM Regulations and are not looking to completely re-draft.
CCM Regulations and would like this regulation completely re-drafted.	Haast would like causes of contingency events to be publicly published in a timelier manner. Gas Industry suggests that Haast's concerns relate to information disclosure more generally and is being
Haast supports this proposal. However, it would like the amendment to go further and require	

these disclosures to be made in a timely manner	dealt with via our current information disclosure
to ensure all affected stakeholders receive	workstream.
information at the same time. It sees that some	
market participants currently have undue	
information advantages over other market	
participants.	

11.2.5 Require retailers and large consumers to use a specified compliance reporting template

Submissions Summary	Gas Industry Co Comment
Firstgas, MGUG, Nova and Vector agree with this proposal. Greymouth disagrees at it believes the CCO should be contacting customers directly. The remaining six parties do not comment on this proposal.	Submitters are largely supportive of the proposal to require the use of a specified compliance reporting template and Gas Industry Co intends to progress it to a final Statement of Proposal. As discussed in 6.2.1 above we disagree with Greymouth's view that the CCO should be
	contacting customers directly.

11.2.6 Amend the determination of "publish" to include publication on the Industry Notifications page on the Gas Industry Co's website

Submissions Summary	Gas Industry Co Comment
Seven parties submit on this proposal and all parties agree. MGUG notes that the amendment should go further and replace all publishing choices with the Industry Notifications page. It considers the current situation provides too much choice.	Given the level support for this proposal Gas Industry Co intends to progress this proposal to a final Statement of Proposal. We note MGUG's view that the amendment should go further by removing the other publish options however, we disagree as the proposed amendment to the drafting future-proofs the CCM Regulations.

11.2.7 Amend the CCM Regulations to clarify that:

- (a) the CCO has 20 business days after the termination of a critical contingency to produce a draft performance report;
- (b) stakeholders have a minimum of 5 business days to make a submission; and
- (c) the CCO must prepare a final performance report no later than 10 business days following receipt of submissions.

and to specify that the CCO must have regard to the submissions on its draft report when preparing the final report

Submissions Summary	Gas Industry Co Comment
Firstgas, Nova, OMV and Vector agree with these proposals. However, Greymouth, Methanex and MGUG disagree.	Gas Industry Co has considered the concerns relating to the possibility that the CCO is too conflicted to prepare the performance reports and whether it should be a Gas Industry Co
Greymouth would like to see Gas Industry Co writing the report. It considers the CCO to be conflicted and is not likely to recommend actions that impose costs on itself.	responsibility. We remain of the view that these reports are best prepared by the CCO. It is the CCO who is managing these events and who experiences what is working well and what is not. The Gas Industry Co does not have a role during an event and is therefore less informed about any
Methanex believes 5 business days for stakeholders to make meaningful submissions is too short and would like the same 10 business days as the CCO.	lessons. Gas Industry Co is, however, responsible for forming a view on any changes to regulations or processes as a result of the event. We do not believe that the CCO is incentivised to hold back recommendations due to cost concerns. Further to
MGUG also sees a minimum threshold for stakeholders and a maximum threshold for CCO confusing. It would like stakeholders to have the	this, we have no historical examples that have raised any conflict-of-interest concerns.
same 10 business day threshold that the CCO has as well.	Gas Industry Co has considered Methanex's and MGUG's view that 5 business days is too short to provide meaningful submissions. We see that
The remaining four parties do not submit on this proposal.	given the CCO only has 30 business days from the termination of a critical contingency to publish a final performance report, 5 business days is appropriate. We also note that it is a minimum threshold and so the CCO may provide a submission time of longer than 5 days.

11.3 Summary of Next Steps

Table 10: summary of other matters

Proposal	Proceed to final Statement of Proposal?
Proposal to amend definition of "retailer" to clarify that retailer means any person who supplies gas to another person, or other persons, for any purpose other than resupply by the other person, or persons, as long as that gas is transported through the transmission system	Yes
Proposal to amend the CCM Regulations to allow for short-term transient breaches of a pressure threshold without requiring a critical contingency declaration	Yes

Amend the CCM Regulations to allow for planned outages to not trigger a critical contingency declaration	Yes
Amend regulation 54A to include unexpected interruptions to asset operation	Yes
Require retailers and large consumers to use a specified compliance reporting template	Yes
Amend the determination of "publish" to include publication on the Industry Notifications page on the Gas Industry Co's website	Yes
Amend the CCM Regulations to clarify that: (a) the CCO has 20 business days after the termination of a critical contingency to produce a draft performance report; (b) stakeholders have a minimum of 5 business days to make a submission; and (c) the CCO must prepare a final performance report no later than 10 business days following receipt of submissions and to specify that the CCO must have regard to the submissions on its draft report when preparing the final report	Yes

12 Update Amendments

12.1 Consultation Paper Summary

The CCM Regulations currently refer to specific transmission arrangements (e.g. the Maui Pipeline Operating Code (MPOC) and Vector Transmission Code (VTC)). The Consultation Paper proposes amendments to future proof the CCM Regulations for any future transmission arrangements. The transmission pipelines have also recently undergone changes in ownership and so proposals are made to reflect this.

12.2 Submissions Summary and Gas Industry Co Comment

12.2.1 Update references in the CCM Regulations that refer to transmission arrangements or ownership

Submissions Summary	Gas Industry Co Comment
Firstgas, Greymouth, Nova and Vector agree with this proposal. Before agreeing to this proposal, MGUG would want to make sure that the new references are made to generic transmission codes and transmission information systems. The remaining six parties do not submit on this issue.	There is considerable agreement amongst submitting parties that these update amendments should be progressed. Keeping in mind MGUG's view relating to generic naming, Gas Industry Co intends to progress this proposal to a final Statement of Proposal.

12.3 Summary of Next Steps

Table 11: Summary of update amendments

Proposal	Proceed to final Statement of Proposal?
Update references in the CCM Regulations that refer to transmission arrangements or ownership	Yes



13.1 Consultation Paper Summary

The Consultation Paper highlights a number of areas where it is proposed to tidy up the CCM Regulations by correcting minor drafting errors and deleting redundant clauses.

13.2 Submissions Summary and Gas Industry Co Comment

13.2.1 Update the CCM Regulations in a number of areas to correct minor drafting errors and redundant clauses.

Submissions Summary	Gas Industry Co Comment
Firstgas, Nova and Vector agree with these	Of the submitting parties, there is unanimous
proposed minor amendments. The remaining eight	support for the proposed minor amendments. Gas
parties are silent on this proposal.	Industry Co intends to progress these proposals.

13.3 Summary of Next Steps

Table 12: Summary of proposed minor amendments

Proposal	Proceed to final Statement of Proposal?
Update the CCM Regulations in a number of areas to correct minor drafting errors and redundant clauses	Yes

14 Further Matters Raised by Submitters

Submitters take this opportunity to raise matters that were not explicitly discussed in the Consultation Paper. Below we outline these matters and what Gas Industry Co's view is of each.

14.1 Submissions Summary and Gas Industry Co Comment

Submissions Summary	Gas Industry Co Comment
Two parties raise views that highlight issues relating to the scope of the CCM Regulations. Fonterra notes that it would like to see the consideration of environmental impacts during the management of events to be formally taken into account by the CCM Regulations. MGUG highlights that the Consultation Paper promotes efficiency, but it is unsure whether this efficiency relates to the efficiency of the Critical Contingency Operator (CCO) or efficient economic outcomes. MGUG is of the view that the latter should be considered formally in the CCM Regulations.	Gas Industry Co recognises that although both environmental and economic impacts are important, they should come second to the primary purpose of the CCM Regulations (security of supply). Under the CCM Regulations, a consumer may apply for a critical processing designation for a process that requires gas to mitigate serious environmental damage. We consider that this adequately addresses environmental impacts and are not of the view that the CCM Regulations' scope needs to be widened to emphasis this. The CCM Regulations do not explicitly consider economic impacts but Gas Industry Co considers that any amendments to the CCM Regulations should be based primarily on improving processes to mitigate severe security of supply issues (which inevitably could have significant, detrimental economic impacts).
 Greymouth highlights other areas in the CCM Regulations that it sees may require updating. It would like clarification about: The responsibility of curtailment instructions when two parties supply gas to a single consumer The delivery of curtailment instructions if a consumer only gets gas from a gas market or if retailers do not have a contractual relationship with the TSO The interpretation of Regulation 39 (the requirement for retailers to provide 	 In response to Greymouth's further points we have outlined our views below: If two retailers supply a single customer, then both retailers are responsible for carrying out their individual retailer curtailment plans and contacting their customers appropriately. We do not see an issue with a customer receiving the same message twice. We also note that customers with two retailers tend to be large consumers who are often more engaged and aware of the CCM Regulations process

consumer information) when supply does not happen at a receipt point.	 If a consumer only gets gas from a gas market, then it would still be required to ship the gas along the transmission system and have a contractual relationship with the TSO from whom it would receive curtailment instructions
	 We agree that there is currently ambiguity around retailers who do not have contractual relationships with the TSO, and we have therefore proposed relevant changes in 6.2.1
	• We agree that amendments to Regulation 39 are required. We intend to update it so that instead of referencing gas gates where retailers' trade, it will reference gas gates where retailer's consumers are connected

14.2 Summary of Next Steps

Proposal	Proceed to final Statement of Proposal?
Provide further consideration for environmental impacts in the CCM Regulations	No
Provide further consideration for economic impacts in the CCM Regulations	Νο
Update the CCM Regulations for scenarios where a customer has two retailers	No
Update the CCM Regulations for scenarios where (a) a consumer only gets gas from a gas market or where (b) retailers do not have a contractual relationship with the TSO	(a) No (b) Yes, as discussed in 6.2.1
Update Regulation 39	Yes. We intend to update it so that instead of referencing gas gates where retailers' trade, it will reference gas gates where retailer's consumers are connected

Appendix A - Signalling Scarcity





Signalling scarcity

Setting a floor price during gas system outages

NZIER report to Gas Industry Company

August 2021

About NZIER

NZIER is a specialist consulting firm that uses applied economic research and analysis to provide a wide range of strategic advice.

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Authorship

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Key points

The Gas industry Company (GIC) has asked NZIER for advice and a recommendation on how to set a floor price in the rules governing critical contingency events (CCEs) in the gas sector.

Floor price purpose

We understand the purpose of the 'floor price' is to provide the industry with greater certainty about what will happen in a CCE. In previous work, the GIC has suggested that the floor price should be:

- Above market prices to signal to gas suppliers and consumers that gas is scarce and encourage allocation of scarce gas to its highest value use.
- At or below the final price determined for the CCE.

The floor price should also be simple to calculate based on information that is readily available to market participants and be based on gas prices as close as possible to the time of the CCE. The floor price calculation method also needs to have the flexibility to adjust to changes in the gas market structure that will be driven by Government policy to reduce the use of gas for both electricity generation and as a source of process heat.

Requirements implied by critical contingency event regulations

We note that the GIC has proposed an amendment to the regulations that would require the expert determining the price to consider 'prices in the wholesale market for electricity, cost of loss of gas supply to affected consumers, and any other matters that the industry expert considers relevant'¹ irrespective of whether supply is curtailed. Our advice assumes this recommendation is accepted. The purpose of setting a floor price is to increase industry certainty about the possible critical contingency price (CCP) that will be applied. It is explicitly **not** designed to be an estimate of what the CCP will be.

Floor price considerations: cost of lost gas supply and wholesale electricity prices

The cost of lost supply will vary widely across customers depending on the cost of gas as a proportion of the value of the customer revenue, whether alternative arrangements can be made to continue output without gas and what penalties the customer faces from its customers for interrupting output. In the absence of curtailment, the price paid for gas in the spot market is the best observable indicator of the value customers place on marginal gas supply.

We agree with the GIC proposal to use a volume weighted average of prices (VWAP) of trades in the emsTradepoint market as a component of the floor price.² The VWAP would indicate the willingness of customers to pay for gas and, therefore, the minimum cost of lost gas supply to customers.

¹ 'Statement of Proposal for amending the Critical Contingency Management Regulations, Gas Industry Company' page 19.

² Op cit page 19 to 20.

We agree with the GIC's analysis that the share of gas used by electricity generation has fallen since 2011³ due to the decommissioning of gas-fired plants. However, we note that:

- Gas use by electricity generators that are still operating in 2020 has fluctuated rather than declined. Gas use in 2020 was 35.0 PJ, near the peak over the period 2012 to 2020⁴ and electricity generators are the largest consumer of gas after Methanex.⁵
- The proposed CCP regulation still requires wholesale electricity prices to be considered in setting the CCP.
- While Government has an aspirational target of 100 percent renewable electricity generation, modelling by the Climate Change Commission indicates that:
 - the structural changes in the electricity market that could enable reduced reliance on baseload thermal electricity generation will not occur until 2026 to 2028⁶
 - major structural changes in the industrial gas market will occur simultaneously with the expiry of existing Methanex gas supply contracts in 2029 (which could cause a step increase in gas prices⁷) and fuel switching for process heat.

Floor price setting while gas is used for baseload electricity generation

Based on the proposed change to the regulations and the outlook for limited change in demand and supply over the next five years and provided that Huntly Unit 5 is in operation at the time of the CCE, we recommend that the floor price setting methodology is the minimum of:

- The 7-day moving average of the VWAP (7-day VWAP) of gas in the emsTradepoint system excluding balancing trades and adjusted to remove the allowance for carbon prices.⁸
- The willingness to pay for gas of the Huntly Unit 5 plant based on the wholesale electricity price⁹ when the CCE is declared and using the methodology and assumptions described in section 5.1.3 (also reported inclusive and exclusive of the allowance for carbon prices).

- ⁴ GIC data for major users includes the following generators: Huntly, Taranaki Combined Cycle, Stratford and Junction Road. Gas use by these generators has averaged 32.1 PJ per year over 2012 to 2020 within a range of 27.5 PJ in 2015 to 37.0 PJ in 2017. Gas used by Te Rapa (co-generation) averaged 4.1 PJ per year over 2012 to 2020 within a range of 3.8 PJ in 2019 and 2020 to 4.6 PJ in 2017.
- ⁵ Methanex used 64 PJ of gas in 2020, 49.8 PJ at Motonui and 15.2 PJ at Waitara. On 24 February 2020, Methanex announced that it was mothballing the Waitara plant due to inability to obtain gas supply. This will reduce Methanex gas use to about 50 PJ per year.
- ⁶ The key changes modelled by EnergyLink for the Climate Change Commission draft advice (February 2021) that enabled reduced reliance on gas-fired baseload generation are the phased closure of the Tiwai aluminum smelter over 2024 to 2027 and the construction of geothermal generating capacity. The EnergyLink modelling for the Climate Change Commission final advice (June 2021) assumed complete closure of the Tiwai aluminum smelter in 2024 and a much faster increase in wind and geothermal electricity generation capacity.
- ⁷ For the Climate Change Commission draft advice, EnergyLink modelled increases in gas prices from \$8.57 per GJ to \$9.60 per GJ in 2030 (central case) or \$14 per GJ (step increase). For the Climate Change Commission final advice, EnergyLink modelled gas prices as remining at \$9.00 per GJ from 2020 to 2035 or increasing at \$0.20 per GJ per year from 2021 to 2030 and then remaining at \$11.00 per GJ until 2035.
- ⁸ emsTradepoint gas prices include the cost of carbon calculated as the closing price of NZUs on the day and converted to a price in \$ per GJ of gas using the MBIE natural gas emissions factor.
- ⁹ Up to date electricity prices for selected nodes are available at <u>https://www.em6live.co.nz/Default.aspx</u>. More detailed real time pricing data are available as a subscription service through https://www.ems.co.nz/services/em6/.

³ MBIE data shows the share of gas consumed for electricity generation (excluding co-generation) fell from 32 percent in 2011 to 19 percent in 2019. Gas consumed for electricity generation (excluding co-generation) fell 28 percent (from 51.3 PJ in 2011 to 37.0 PJ in 2019) while supply increased 17 percent (from 151.8 PJ in 2011 to 177.8 PJ in 2019).

We propose that the floor is set at the lower of the 7-day VWAP (excluding balancing trades and adjusted to remove the allowance for carbon prices) and the willingness to pay for gas used at the Huntly Unit 5 plant to minimise the risk that the floor could be set above the CCP.

If Huntly Unit 5 is not generating electricity at the time of the CCE, we recommend that the floor price is based on the 7-day VWAP of gas in the emsTradepoint system adjusted to remove the allowance for carbon prices.

Floor price when gas is no longer used for baseload electricity generation

Assuming the generation of electricity from gas declines as modelled (or more quickly), we suggest that the floor price setting regulations will need to be reviewed so that the floor price setting methodology only relies on the 7-day VWAP of gas in the emsTradepoint market (excluding balancing trades and adjusted to remove the allowance for carbon prices). We suggest that the trigger for this change is the cessation of baseload gas-fired generation at Huntly for the following reasons:

- The calculation of generator willingness to pay for a gas peaker plant will deliver a floor price that is about 82 percent of the willingness to pay for gas of a baseload plant.
- The uncertainty of the relevance of electricity generator willingness to pay to the CCP calculation due to the disconnect between forecast electricity and gas prices.

We note that while the cessation of baseload generation is expected to reduce gas use for electricity generation to about 35 to 40 percent of current levels by 2029, this does not imply that the share of gas demand used from electricity generators will fall by anywhere near the same amount.

Forecasts prepared for the Climate Change Commission suggest that the share of total gas demand from electricity generation will be above 20 percent in 2021, decline briefly to 11 to 12 percent in the mid-2020s and then climb back to around 20 percent by 2029. The forecast path differs between the Climate Change Commission 'draft advice' and 'final advice' depending on the assumptions made about the closure of:

- Methanex 2029 in the draft advice and 2040 in the final advice.
- Aluminium smelter phased closure over 2024 to 2027 in the draft advice and complete closure in 2024 in the final advice.

(A more detailed comparison of the forecasts is provided in section 6.4.2.)

The proposed approach is the simplest option that is consistent with the regulations and the determinations of the CCP for the previous four CCE (13 July 2010, 03 Mar 2012, 24 May 2016 and 23 May 2017) while also recognising the impending structural change in the gas market driven by Government climate change policy. The simplicity is achieved at the justified expense of a more detailed consideration of the short-term variations in the demand for gas (particularly for electricity generation) and the expected duration and severity of a CCE.

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Alternatives considered but discounted

We have also considered using either quarterly gas prices published by the Ministry of Business Innovation and Employment (MBIE) and our estimate of the gas price paid by Methanex. We have discounted these options primarily because they are averages over 3 months calculated with a lag and therefore unlikely to indicate the value of gas close to the time of the CCE. We also note that these options were not suggested in submissions made by stakeholders on the GIC proposal for a floor price.



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1 Introduction and scope

The Gas Industry Company (GIC) administers a range of governance arrangements for the New Zealand downstream gas industry sector.

One of those relates to what happens if there is a serious incident affecting gas supply. These arrangements are set out in the Gas Governance (Critical Contingency Management) Regulations 2008 (CCM Regulations) and associated documents.¹⁰

The CCM Regulations were extensively reviewed and amended after a major outage of the Maui pipeline in October 2011. Following further CCM events and other changes in the gas industry and its governance, the GIC issued a consultation paper on a range of further amendments, including to the CCM arrangements.¹¹ The GIC has engaged the New Zealand Institute of Economic Research (NZIER) to provide it with advice and recommendations on one aspect of the proposed changes to the CCM Regulations: the setting of a floor in the price paid to or received from certain parties after a critical contingency event (CCE).

The GIC has asked us to produce a report that could be published as a stand-alone statement of both our advice and the reasons for it if our recommendations are accepted. We have, therefore, included below some important background material, which, while it may be very familiar to experienced industry players, does result in a self-contained explanation of our results.

- ¹⁰ For further details, see Gas Industry Company (2020a).
- ¹¹ Gas Industry Company (2020c).

1

2 The New Zealand gas system and critical contingencies

2.1 The New Zealand gas system

The natural gas system in New Zealand started in 1970, with the first deliveries from the onshore Kapuni field. A major expansion in the industry occurred in 1979 when the much larger offshore Maui field began delivering gas. In the early days of the development of the gas system, the Government was directly involved in owning and operating key pieces of infrastructure and being a significant buyer of gas, which was on-sold to other end-users, some of whom were also government-owned. At the same time, there was significant private sector involvement in the sector, especially in the areas of exploration, production, and transmission.¹²

The core of the gas system is two high-pressure gas transmission systems in the North Island, currently owned and operated by First Gas Limited:

- the 309km Maui pipeline, which runs from Oaonui, in southwest Taranaki, to Huntly.
- the 2,196km system, generally radiating from the Maui pipeline and delivering gas throughout the North Island.

Figure 1 over the page is a map of these two systems.

Figure 1 The New Zealand gas system



Source: FirstGas

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Over time, the Government removed itself from direct participation to its current role of policy development and co-regulation.¹³

2.2 Consumption data

Since about 2004, total gas consumption has been largely stable.

Figure 2 Gas consumption has been largely stable

Gross petajoules (PJ)



Source: BMIE

The Ministry of Business Innovation and Employment (MBIE) publishes gas consumption and price data for broad industry groups, and the Energy Efficiency and Conservation Authority (EECA) publishes a survey of end-users of natural gas that partially disaggregates the groups in the MBIE data. The GIC publishes data on consumption by major gas users. We have combined this data in Table 1.

¹³ Under Part 4A of the Gas Act, the gas industry is subject to co-regulation by the Government and the GIC.



Table 1 Major gas users' consumption

Gas use in PJ

Consumer	2012	2013	2014	2015	2016	2017	2018	2019	2020
Feedstock/heat									
Methanex Motunui	29.6	39.8	67.7	51.3	65.0	51.7	44.4	54.3	49.8
Methanex Waitara	8.1	11.9	17.1	16.5	17.1	17.4	10.8	12.5	15.2
Methanex Total ¹	37.7	51.8	84.8	67.8	82.1	69.1	55.2	66.7	65.0
Ballance	5.2	6.3	7.4	6.8	6.2	7.0	7.3	6.4	6.6
Sub total	42.9	58.1	92.2	74.6	88.4	76.1	62.5	73.1	71.6
Heat									
Glenbrook	2.0	2.0	2.0	1.9	1.8	1.8	1.9	2.2	2.0
Kinleith	2.9	2.6	2.8	2.6	2.8	3.2	2.8	2.9	2.8
Marsden Point	2.3	2.0	2.1	2.0	2.8	3.1	3.8	3.9	2.6
Fonterra (subtotal)	3.4	3.6	3.9	4.2	4.5	4.5	4.7	4.8	4.7
Sub total	15.8	16.5	18.2	17.5	18.1	19.7	20.5	20.1	18.7
Generation fuel									
Huntly	19.1	23.7	20.9	22.6	25.1	27.2	21.1	21.7	25.2
Junction Road ²	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3
тсс	12.7	8.4	3.3	0.6	2.4	4.6	6.0	5.9	4.8
Te Rapa	4.0	4.1	4.3	4.4	4.3	4.6	4.0	3.8	3.8
Stratford peaker	3.6	3.6	3.2	4.1	5.3	5.2	2.1	1.8	2.6
Sub total	16.7	21.1	22.9	24.1	25.2	25.4	24.7	24.0	25.0
Total	75.4	95.7	133.3	116.2	131.7	121.2	107.7	117.2	115.3
Note:									

1 Gas use at the Motonui site is between 74.8 percent and 81.3 percent of Methanex gas use.

2 Data on the gas used by the McKee electricity generation plant is not available. The major gas users' data for 'McKee/Mangahewa recorded annual consumption of 31 PJ in 2020 and 2021. However, the capacity of these plants is 109 MW, around 10 percent of the capacity of the Huntly generation plant.

Source: NZIER

Further details are in Appendix D.

Table 2 shows those users that have high daily consumption throughout the year. Note that Fonterra's usage, while high, is concentrated in the peak milk processing season.

Consumer	2012	2013	2014	2015	2016	2017	2018	2019	2020
Feedstock/heat									
Methanex Motunui	352	357	365	365	366	344	330	365	366
Methanex Waitara	271	332	338	347	343	354	240	253	306
Ballance	269	305	357	345	290	334	354	297	313
Heat									
Glenbrook	0	0	0	0	0	0	0	0	0
Kinleith	7	4	6	3	8	13	6	7	4
Marsden Point	0	0	0	0	0	17	30	1	0
Fonterra	106	132	109	131	143	127	137	144	145
Generation fuel									
Huntly	338	365	347	360	366	365	357	360	365
Junction Road	0	0	0	0	0	0	0	0	41
TCC	297	192	85	20	69	155	172	163	120
Te Rapa	2	3	6	12	11	8	7	3	0
Stratford peaker	102	90	83	117	179	161	50	36	56

Table 2 Major gas users – days above 15 TJ per day

Source: NZIER

2.3 Open access and the concept of balance

Through a long process of market development and regulatory reform, the gas transmission system now operates on an 'open access' basis, whereby parties¹⁴ wishing to buy, sell or ship gas can use the transmission pipelines to do so in exchange for a fee and subject to a series of conditions.¹⁵ These conditions are currently contained in two different codes: the Maui Pipeline Operating Code (MPOC) and Vector Transmission Code (VTC).¹⁶

One important condition is balancing, whereby, roughly, the amount drawn from the system is kept equal to the amount injected. So, for example, someone selling gas to final consumers needs to purchase gas from a field to match their sales. The actual molecules of gas injected into the system are not those that the final user will withdraw, but the system

¹⁴ In the jargon of the New Zealand gas system, there are two types of parties using the gas transmission system. "Welded parties" either inject gas directly into the system or draw gas directly from it. They are mainly gas producers, and major users like electricity generators. "Shippers" are entities that acquire gas from a third party and then on-sell it to end users, using the transmission system to transport the gas.

¹⁵ Vector introduced open access to its high-pressure pipelines in the mid-1990s while the open access commenced on the Maui pipeline in 2005.

¹⁶ FirstGas is currently in the process of replacing these separate codes with a single set of access arrangements called the Gas Transmission Access Code (GTAC).

is kept in balance. One important by-product of balancing is that the operating pressure in the system is maintained.¹⁷

2.4 Critical contingencies and imbalance

Critical contingencies happen if there is a shortage of gas supply relative to demand, mostly due to either an interruption at a gas production facility or damage to a transmission pipeline.

2.4.1 Gas pipeline outage history

There have been six significant outages on the New Zealand gas transmission system since it began operating, two of them caused by third party damage, one by severe flooding and two by landslips:¹⁸

- The rupture of the Kapuni North pipeline at Pukearuhe on the North Taranaki coast in 1977, due to a slow-moving landslip.
- The rupture of the Kapuni North pipeline near Inglewood, Taranaki, circa 1985, due to being struck by a mechanical digger.
- The rupture of the Kapuni South pipeline at Himatangi in the lower North Island in 2003, due to being struck by a bulldozer.
- The forced shutdown of the Hawke's Bay pipeline at Awapuni in 2004, when it became detached from a bridge that was swept away during severe flooding in central and lower areas of the North Island.
- The rupture of the Maui pipeline at Pukearuhe in 2011, due to a slow-moving landslip, near the 1977 Kapuni pipeline failure site.
- The planned outage of the Maui pipeline at Tongaporutu in 2018 to create a bypass so that a defect discovered in the pipe could be assessed.

The longest outages, 5–6 days, have been Hawke's Bay (2004) and Maui (2011).¹⁹

The two most recent events occurred after the CCM Regulations came into effect and CCEs were declared. There have also been a number of other CCEs declared due to production failures:

- Pohokura Production Station Outage, March 2012
- Pohokura Production Station Unplanned Outage, May 2016
- System Imbalance Event, May 2017.

2.4.2 Responding to an event

If this imbalance were sufficiently large and left uncorrected, then the pressure in the system could drop sufficiently to endanger the operation of the system and create risks to the health and safety of the public.

¹⁷ The operating pressure of the system – known as 'linepack'—is both used as a threshold for establishing whether a critical contingency exists but is also itself a source of gas that can supply the system during short-term interruptions.

¹⁸ Gas Industry Company (2020b).

¹⁹ The duration of the 1977 Kapuni pipeline failure at Pukearuhe is not known.

The CCM Regulations set out the process to be followed to manage the gas system in these cases.²⁰

Priority is given to maintaining supply to gas distribution networks supplying residential customers, as re-pressurising these networks can involve major safety issues that need to be managed carefully (essentially, each individual user would need to be disconnected from the network, the system re-pressurised, and then individual users reconnected. This could take months). To prevent this, the CCM Regulations allow the Critical Contingency Operator (CCO) (an entity appointed by the GIC to operate the CCM system²¹) to issue instructions to industrial and commercial users to stop using gas (known as 'curtailment').

When a CCE occurs, it is possible that the system can also become unbalanced if drawings exceed injections at different parts of the system. To provide an additional incentive to stop this happening, the CCM Regulations include provisions to encourage users to act in ways that help preserve the integrity of the system, even if they have contractual obligations that might work against this aim. For example, the Regulations specifically refer to avoiding shippers instructing their suppliers of gas to reduce supply during a CCE when those shippers' consumers have been curtailed.²²

2.4.3 Contingency imbalance and the critical contingency price

A key part of the CCM Regulations is a system for paying and charging parties for imbalances that can occur during a critical contingency. The Regulations differentiate between positive and negative contingency imbalances. Positive imbalances occur when:

- A party injects more gas into the transmission system than the party has contractually agreed to inject.
- A party takes less gas than they were contractually entitled to take.
- A shipper and its customers take less gas than they were contractually entitled to take.

Similarly, negative imbalances occur when:

- A party injects less gas into the transmission system than they had contractually agreed to inject.
- A party takes more gas than they were contractually entitled to take.
- A shipper and its customers take more gas than they were contractually entitled to take.

Under the CCM Regulations:

- parties that have a positive contingency imbalance are paid a premium; and
- parties with a negative contingency imbalance are subject to a surcharge.

The amount of the premium or surcharge is the amount of the contingency imbalance times a specially determined 'critical contingency price', which is set by an industry expert after the critical contingency is over, in accordance with the CCM Regulations.

²⁰ For a summary, see: https://www.gasindustry.co.nz/work-programmes/critical-contingency-management/currentarrangements/information-for-consumers-regarding-critical-contingency-events/document/4882.

²¹ The current CCO is a Taranaki-based company, Core Group. See: https://www.cco.org.nz/Home/.

²² CCM Regulation 67 (a).

To put this discussion in context, Table 3 shows the imbalances and corresponding payments and charges that resulted from the most recent CCE in 2017. Note that the imbalances and thus the changes and payments balance. This is by design.

Table 3 Payments and charges after the May 2017 System Imbalance Event

Imbalances are measure in Gigajoules (GJ)

Party	Negative CC imbalance	Positive CC imbalance	Invoices	Credit notes					
Maui welded parties									
Shell Todd Oil Services Limited	0	3,489		\$37,053.18					
Methanex NZ Limited	-69	2,159	\$732.78	\$22,928.58					
Todd Pohokura Limited	0	1,601		\$17,002.62					
Shell Exploration NZ Limited	-9,724	1,561	\$103,268.88	\$16,577.82					
Genesis Power Limited	0	837		\$8,888.94					
Todd Energy Limited	0	765		\$8,124.30					
Greymouth Gas New Zealand Limited	0	335		3,557.70					
First Gas Limited	-1	0	\$10.62						
		VTC shippers							
Contact Energy Limited	0	1,384							
Genesis Power Limited	0	886		9,408.68					
Greymouth Gas New Zealand Limited	-1,774	0	\$18,838.59						
Mighty River Power Limited	-989	0	\$10,501.85						
Nova Gas Limited	-2,688	0	\$28,543.64						
Vector Gas Trading Limited	0	1,581		16,788.88					
Wanganui Gas Limited	-1,372	0	14,574.57						
First Gas balancing linepack adjustment under Regulation 74(2)(c)		2,019		21,443.48					
Total	-16,617	16,617	\$176,470.94	\$176,470.94					

Source: GIC

2.5 The future

The future of gas in New Zealand will be heavily dependent on how various government policies play out. Three major policies are:

- The decision not to grant any further offshore exploration permits.
- The transition to a low carbon economy by 2050, as prescribed by the Climate Change Response (Zero Carbon) Amendment Act 2019.
- The Government's aspirational goal of 100 percent renewable electricity by 2035.

The first policy was given effect by the Crown Minerals (Petroleum) Amendment Act 2018. It is uncertain what effect this policy will have on overall gas production and thus consumption in future. It certainly does mean that the existing offshore fields, once they are exhausted, will not be replaced by other offshore fields. Existing onshore fields contain significant reserves, as shown in Figure 3.

Figure 3 New Zealand still has large onshore gas reserves



P2 ultimate recoverable reserves, in PJs, as at 1 January 2020

Notes

- 1 Maari includes Maari and Manaia.
- 2 Ngatoro includes: Ngatoro, Kaimiro, Windsor, and Goldie.
- 3 Turangi includes: Turangi, Ohanga, Onaero, and Urenui.
- 4 Remainder includes: Cheal, Radnor, Cheal E, Cooper Moki, Sidewinder, Supplejack, Surrey.

Source: MBIE

The second policy – which is in the course of being implemented – aims to see New Zealand reach net zero greenhouse gas emissions (other than for biogenic methane) by 2050, with significant reductions in biogenic methane under a separate timetable. Combustion of gas makes a modest contribution to overall GHG emissions. In 2018 (the latest figures available, natural gas combustion contributed 1,961 kilotonnes of CO₂ emissions, out of a total 8,337 kilotonnes from all energy emissions. This represented about 24% of total energy-related emissions.²³

The third policy – which is a subset of the second – involves moving in time to 100% renewable energy. Advice to the Government from the Climate Change Commission and others is that while it is possible to cost-effectively increase the proportion of renewable generation, achieving the last few percentage points is likely to be very expensive. This is because it will mean that reasonably cost-effective short-term gas generation will not be available to meet any sudden reduction in supply (for example, due to weather conditions

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like no wind or low rainfall.) ²⁴ This is why the Government has referred to this policy as an 'aspirational target'. That said, the Government is working on a range of policy initiatives that are designed to reach a 100% renewable electricity system by 2035.²⁵

²⁴ Interim Climate Change Committee (2019, 98).

²⁵ See, for example New Zealand and Ministry of Business (2019).

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3 Critical contingency price-setting

The purpose of setting the CCP is detailed in section 67 of the Regulations:

- Encourage suppliers to maintain supply irrespective of whether their customers are curtailed.
- Signal to suppliers and consumers that gas is scarce.
- Provide incentives particularly for retailers to make alternative arrangements to minimise the financial cost of a critical contingency.

The first two purposes are directed at the behaviour of parties during a CCE. The third, however, has a longer-term focus and is aimed at encouraging parties to plan for alternatives to curtailment during a critical contingency.

The method for setting a CCP is detailed in section 71 of the regulations and allocates a central role to wholesale electricity prices:

- If supply is curtailed to consumers in bands 0, 1 or 2, then the CCP must be based on the wholesale electricity price.
- Otherwise, the CCP should consider wholesale prices for electricity during the critical contingency period and the economic cost of the loss of gas supply to those consumers who had their gas supply curtailed.

3.1 Increasing certainty through a floor price

While the methodology for setting the CCP is set out in the current regulations, it is, by design, directed at setting a price that reflects the market situation at the time of the CCE.

Therefore, it is not possible for industry participants to forecast what the CCP might be, which reduces its effectiveness in achieving its third purpose. This is shown in Table 4, which shows the CCP set after the previous CCE.



Date	CCE description, duration and response	Final CCP (\$/GJ)
13 Jul 2010	19:30 to 22:32 – no regulatory curtailment	15.00
03 Mar 2012	12:48 to 23:30 – regulatory curtailment of bands 0, 1a and 1b	11.10
24 May 2016	18:30 to 23:00 – no regulatory curtailment	6.66
23 May 2017	11:14 to 18:15 – no regulatory curtailment	10.62

Source: NZIER

Following comments by the industry expert after the 2017 CCE,²⁶ the GIC proposed two changes to the methodology contained in the CCM Regulations.

The GIC has proposed the removal of the first provision (clause 71(3)(a)), which requires the CCP to be determined using wholesale electricity prices. If this change is approved, the CCP would be determined by a combination of the wholesale electricity prices, economic cost of the loss of supply to those customers who had their supply curtailed and other factors considered by the independent expert.

The second proposal is that a price floor for contingency prices be specified in the Regulations.

The GIC stated that it considered that a volume weighted average price (VWAP) calculated from trades on a gas market over 7 days would be an appropriate floor price. It sought comments from industry.





4 Submissions on floor prices

4.1 Introduction

This section reviews the comments about floor prices made by submitters, describes how these align with the concept of the opportunity cost of gas and the extent to which the suggestions made by submitters can be accommodated in a single determination process. Our key criterion for assessing the alternatives suggested in the submissions is that the objective of the floor price is to increase industry certainty about the possible CCP that will be applied but that it is explicitly **not** designed to be an estimate of what the CCP will be, and it should not be higher than the CCP.

We have estimated the 3-day, 7-day and 14-day VWAP with and without balancing trades for the period 15 November 2013 to 15 April 2021. The results are shown in Figure 4 and Figure 5. These charts refer to the submissions on the use of emsTradepoint prices, which included the cost of carbon. We have included versions of Figure 4 and Figure 5, excluding the price of carbon as Figure 9 and Figure 10, and discussed the impact of this adjustment on VWAP in Appendix E.



Figure 4 VWAP including balancing transactions

Source: NZIER analysis of emsTradepoint data provided by Gas Industry Company

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Figure 5 VWAP excluding balancing transactions

Source: NZIER analysis of emsTradepoint data provided by Gas Industry Company

The charts show that since the beginning of 2019:

- Trading has been frequent enough so that a non-zero VWAP could be calculated.
- The 3-day, 7-day and 14-day VWAP are volatile but generally move together.

4.2 Consensus on having a floor price – divergence on how to set the floor

All submitters that commented on the floor price proposal supported the introduction of a floor price. However, submitters had a spectrum of opinions on the appropriateness of using the 7-day VWAP as the floor price ranging from acceptance as proposed through to modification to an alternative method as follows:

- Use of the 7-day VWAP as proposed emsTradepoint, First Gas and Methanex
- Modification of the proposed VWAP:
 - Vector suggested giving more weight to trades within a day of the critical contingency event and excluding balancing transactions.
 - Nova suggested a VWAP of the 75th percentile of prices for short term spot trades over the previous 21 days.
 - Major Gas Users Group observed that the contingency price was unlikely to fall below the 7-day VWAP but suggested the use of the higher of:
 - 7-day VWAP
 - peak gas prices over the past 12 months
 - gas prices implied by wholesale electricity prices.
- Alternative method OMV suggested using prices from previous CCEs.

The above description of the submitters' comments is based on their answers to two separate questions about setting the floor price summarised in Table 5 and Table 6.

Table 5 Review of submissions on Q3 – calculating a floor price

Q3: Do you agree with the proposed calculation method, using VWAP for the 7 days prior to and including the critical contingency day?

Support	Alternative view
emsTradepoint (include carbon price) FirstGas	Nova: gas demand is affected by the weather, but 7-day VWAP may be misleading due to variations in the weather.
Methanex	OMV: does not reflect an efficient market. Use known periods of gas scarcity (previous critical contingency events and/or emsTradepoint data). Express the floor price as a premium over the 7day moving average.
	Vector: market and off-market trades on emsTradepoint within one day of critical contingency should be given greater weight than earlier transactions. Balancing gas transactions should be excluded from the calculation of the VWAP because of the disconnect for prices between transactions involving the system operator and those that do not.
Major Gas Users Group – qualified support – It is reasonable to assume that the contingency price shouldn't fall below the VWAP over the previous 7 days.	Major Gas Users Group: the floor price should attempt to reflect the value transfer between parties forced to forego gas it is entitled to under contract vs parties taking gas it is not entitled to.

Note:

1 emsTradepoint gas prices include the cost of carbon calculated as the closing price of NZUs on the day and converted to a price in \$ per GJ of gas using the MBIE natural gas emissions factor.

Source: NZIER

Table 6 Review of submissions on Q4 – other floor price benchmarks

Q4: Are there other pricing benchmarks that should be used in setting the critical contingency price?

Submitter	Alternative view
Major Gas Users Group	The average of the 12 (or some other number) highest peak prices on in the previous 12 twelve months on the trading platform.
	A 'higher of' number – so the critical contingency price might be the higher of VWAP (as above), average of x highest peaks in rolling y month period, and marginal/ peak electricity wholesale price.
Nova	75th percentile of prices over the previous 21 days (adjusted for volumes, and only including short term spot trades.
OMV	A floor price could be derived using known periods of gas scarcity (either using previous critical contingency events and/or emsTradepoint data).
Vector	A VWAP that gives market trades and off-market trades transacted (excluding balancing transactions by the system operator) on emsTradepoint within a day prior to the critical contingency event being declared greater weight.

Source: NZIER

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4.2.1 Vector submission

We analysed the suggestion by Vector to exclude balancing trades by calculating the difference between the:

- 1-day VWAP and 7-day VWAP (excluding balancing trades for both). The average difference over the period 1 January 2019 to 15 April was \$0.07 with a standard deviation of \$1.22. Our estimate of the difference is shown in Figure 6.
- 7-day VWAP including and excluding balancing trades. The average difference over the period 1 January 2019 to 15 April was \$0.03 with a standard deviation of \$1.07. Our estimate of the difference is shown in Figure 7.



Figure 6 1-day VWAP less 7-day VWAP excluding balancing transactions

Source: NZIER analysis of emsTradepoint data provided by Gas Industry Company





Figure 7 7-day VWAP including less 7-day VWAP excluding balancing transactions

Source: NZIER analysis of emsTradepoint data provided by Gas Industry Company

The difference between the 7-day VWAP, including all trades and excluding balancing trades, is, on average, a small positive number but does not appear to have a systematic bias.

We did not model the effect of Vector's suggestion to give more weight to trades within one day of the CCE because of the lack of definition of 'more weight'. Also, we have argued in other sections of this report for the use of the 7-day VWAP in setting the floor price because it is not as exposed to calculation problems due to thin trading as the 1-day VWAP.

Conclusion on Vector submission

We support the Vector submission to remove balancing trades because it removes a small source of upward bias in the setting of the floor price. We do not support the Vector submission to place additional weight on trades within one day of the CCE.

4.2.2 Nova submission

We analysed the Nova suggestion by calculating the difference between the 75th percentile price of one-day trades over the relevant 21-day period²⁷ and the 7-day VWAP. Over the period 1 January 2019 to 15 April 2021, the 75th percentile price of one-day trades over the relevant 21-day period was on average \$2.16 above the 7-day VWAP with a standard deviation of \$3.49. The calculations required for the Nova option are much more complicated than for the 7-day VWAP and are more likely to generate a floor price that could exceed the CCP. The difference between the 75th percentile price over 21 days and the 7-day VWAP is shown in Figure 8.

²⁷ This is an approximation of the Nova proposal as we did not calculate the volume weighted average of the trades at the 75th percentile price. We were only able to calculate the 75th percentile for the period 3 February 2017 to 15 April 2021 due to the sparseness of spot trades before this date.





Figure 8 75th percentile (over 21 days) less 7-day VWAP

Source: NZIER analysis of emsTradepoint data provided by Gas Industry Company

Conclusion on Nova submission

We do not support the Nova suggestion to use the 75th percentile price of one-day trades over the relevant 21-day period to set the floor price as it is more likely to generate a floor price that could exceed the CCP than the 7-day VWAP.

4.2.3 Major Gas Users Group submission

The Major Gas Users Group suggestion for an average of the 12 highest emsTradepoint prices over the past 12 months is likely to produce a floor price above the 7-day VWAP and, therefore, an increased risk that the floor price would constrain the CCP determination.

Conclusion on Major Gas Users Group submission

We do not support the Major Gas Users Group suggestion to use an average of the 12 highest emsTradepoint prices over the past 12 months to set the floor price as it is more likely to generate a floor price that could exceed the CCP than the 7-day VWAP.

4.2.4 OMV submission

The OMV submission suggested the floor price could be based on previous periods of scarcity and expressed as a premium above the 7-day VWAP and implied that the floor price should be consistent with prices in *"an efficient short-term market that allocated scarce gas resources to the highest value uses"*. In our view, this is the role of the CCP and not the floor price.

OMV did not suggest a value for the premium. A value for the 7-day VWAP was only available for the latest two of the four previous CCP. The CCP was about 18 percent above the 7-day VWAP in the earlier instance (24 May 2016) and 100 percent above the 7-day VWAP in the second instance (17 May 2017). In our view, these two data points do not provide enough information to suggest an average premium.



Conclusion on OMV submission

We do not support the OMV suggestion to base the floor price on previous periods of scarcity and express it as a premium above the 7-day VWAP as it is more likely to generate a floor price that could exceed the CCP than the 7-day VWAP.

4.3 Conclusion

Submitters either support using the 7-day VWAP as the floor price or an alternative calculation based on gas prices observed in the emsTradepoint market. We have reviewed submitters' suggestions for modification of the proposed floor price methodology. We support the Vector suggestion to exclude balancing trades. We do not support the suggestions for different methods of setting the floor price as we think they are more likely to result in a floor price that could exceed the CCP.



5 Potential economic cost of a gas outage

As part of our analysis, we were asked to consider the economic cost of a gas outage to consumers whose supply was curtailed and how applicable these estimates would be to setting the floor price. The economic cost of a gas outage varies with the nature of the outage but, in general, depends on the following factors:

- Size and duration of the outage in comparison to expected supply.
- Cost of alternatives to gas as a fuel.
- Loss of revenue net of the expected cost of gas as a result of the supply outage.

For industrial consumers other than electricity generators, these factors are difficult to observe and quantify after the outage is resolved, let alone at the start of the outage. Accordingly, they are at best a rough cross-check of the floor price. The following sections describe the information that is available on the value of gas to major industrial users.

5.1.1 Consumer classes by use of gas

Gas is used as feedstock for industrial processes (methanol and urea) and as a fuel for electricity generation (baseload and peak), industrial process heat (with and without cogeneration of electricity) and heating (commercial buildings and housing).

Consumers using gas as a feedstock account for the largest share of gas demand in the New Zealand market. These consumers do not have a viable short-term alternative feedstock and would need to reduce production (once any stores of gas are depleted) if their supply is curtailed. Their contracted gas price plus the gross profit per unit of gas is an estimate of the willingness to pay for gas. The demand for gas from these consumers is assumed to be evenly distributed evenly over the day.

The next largest share of gas demand is from electricity generators. The largest gas-fired electricity generator can, in the short term, partially substitute coal for gas, but the other generators must reduce their output if their supply of gas is curtailed. The demand for gas from electricity generators peaks in the early evening and has a secondary peak in the morning.

Industrial process heat consumers have limited options to substitute other fuels for gas and face a reduction in output if their supply is curtailed. For Fonterra in particular, the economic consequences of a reduction in gas supply are more severe than the loss of earnings from output alone as it will need to dump un-processed milk and compensate suppliers.

Buildings using gas for heating or steam are unlikely to have alternative options for heat. Houses using gas for heating and cooking will have partial alternatives gas for space heating but not water heating and cooking.

5.1.2 Industrials with gas feedstock

Calculating the estimated willingness to pay for gas by large industrial consumers (other than electricity generators) is not a useful approach for setting the CCP for the following reasons:

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- Only highly aggregated information on the financial performance of these companies is publicly available. This makes it difficult to make a credible estimate of the average price they pay for gas.
- There is no publicly available information on the commitments these companies have to maintain supply to their customers, which would materially affect their willingness to pay for gas during short-term periods of scarcity.

The following examples of estimates of gas opportunity cost for Methanex and Ballance Agri illustrate the shortcomings of this approach and its lack of suitability to setting a floor price for gas during short periods of scarcity.

Methanex

Natural gas is the main input in the production of methanol. Methanex quarterly performance statements provide data on revenue and cost of sales. Dividing the reported cost of sales by the volume of gas consumed by Methanex provides a rough estimate of the average price paid by Methanex for gas (assuming that the cost of sales is almost all gas). Methanex's gross profit margin is a high estimate of the upper limit of the additional amount that Methanex would be prepared for gas to continue production. The results of these calculations are shown in Table 7.

Table 7 Methanex estimate of gas price tolerance

Revenue and cost in \$m, gas consumed in PJ and prices in \$/PJ

Category	2016	2017	2018	2019
Revenue	1,132.4	1,372.1	850.3	698.7
Cost of sales	913.3	1,110.3	626.0	542.8
Gross Profit	219.1	261.8	224.3	155.9
Gross profit/Cost of sales	24%	24%	36%	29%
Gas used (PJ)	82.1	69.1	55.2	66.7
Implied gas price (\$/GJ)				
Gas is 80 percent of cost of sales	8.89	12.85	9.08	6.51
Gas is 90 percent of cost of sales	10.01	14.46	10.21	7.32
Gross profit per unit of gas (\$/GJ)	2.67	3.79	4.06	2.34
Maximum opportunity cost ¹ (\$/GJ)				
Gas is 80 percent of cost of sales	11.56	16.64	13.14	8.84
Gas is 90 percent of cost of sales	12.67	18.25	14.27	9.66
Note:				

1 'Gas at 80 percent or 90 percent of cost of sales' plus 'Gross profit per unit of gas'.

Source: NZIER

Methanex gas price contracts are 'take or pay' but include a fixed component and a variable component that is linked to methanol prices.

The natural gas supply contracts for our facilities in New Zealand, Trinidad, Egypt and certain contracts in Chile are take-or-pay contracts denominated in United States dollars and include base and variable price components to manage our commodity price risk exposure. The variable price component of each natural gas contract is adjusted by a formula linked to methanol prices. We believe this pricing relationship enables these facilities to be competitive throughout the methanol price cycle.²⁸

An analysis of gas prices and volumes on emsTradepoint over the calendar years 2017 to 2019 indicated that Methanex had not released supply into the market in response to tight supply conditions:

However, deeper analysis of wholesale gas sales information shows that Methanex sold nil gas on the emsTradepoint market throughout all of 2017. ...

On average, Huntly Power Station has the largest influence on emsTradepoint prices and the Ahuroa Gas Storage Facility has the largest influence on emsTradepoint volumes.²⁹

Ballance Agri

Ballance Agri financial statements do not provide data on the cost of sales or gross profit from urea production. However, we can infer a range of gas prices for urea from the following information:

- Urea is an internationally traded commodity. Its price has fluctuated between USD 201 and USD 265 per tonne over the past 12 months. This price range converts from about NZD 310 to about NZD 408. After allowing for freight costs, this price would be an indication of the cost of an imported substitute for locally produced urea.³⁰
- Kapuni uses about 26.4 GJ of gas to produce 1 tonne of urea (based on annual gas use of 7,000 TJ divided by annual production of 265,000 tonnes of urea).
- Production cost estimates for urea³¹suggest that fixed costs of production are about USD 150 (NZD 230) per tonne in US Gulf and about USD 200 (NZD 310) per tonne in Australia.
- Based on this information, we can make the following 'high' and 'low' estimates of average gas prices for Ballance Agri:
 - Combining the international price of urea with the gas required to produce a tonne of urea suggests that if gas were the only input, then the maximum price would be prepared to pay for gas would be NZD 11.70 to NZD 15.50 per GJ

²⁸ Methanex Corporation Annual Report 2019 page 25.

²⁹ 'The Impact of Methanex Plant Outages on the Gas Wholesale Market, Prepared for Gas Industry Co. by Contract Strategies Limited, 4 February 2020, page 8.

³⁰ The price for urea is volatile and has traded in a range of USD 140 to USD 305 over the five-year period 2016 to 2020.

³¹ 'AMMONIA PRODUCTION COSTS AND GAS PRICES', Duncan Seddon', page 2, available at https://www.duncanseddon.com/docs/pdf/ammonia-production-costs.pdf .

 If the estimates of fixed production cost for Australia were applied to the Kapuni urea plant, then the average price that Ballance-Agri would be prepared to pay for gas would be NZD 4.20 per GJ to NZD 7.90 per GJ.

5.1.3 Electricity generators

A thermal generators' maximum willingness to pay for gas for a short period³² is the:

- wholesale price of electricity (P_{Wh}) less the variable cost of generation (VC_{Gen}) both expressed in \$/MWh.
- divided by generators heat rate (HR_{Gen}) gas required to generate electricity measured in GJ/MWh.
- less other variable costs related to gas:
 - Gas transmission charges (TC_{Gen}) in \$/GJ
 - Carbon cost CC_{Gen} in \$/GJ and calculated as the current price of an NZU multiplied by the natural gas emissions factor and assuming a 100 percent surrender obligation.

The formula for calculating willingness to pay for gas (WTP) is:

 $WTP = (P_{Wh} - VC_{Gen}) / HR_{Gen} - TC_{Gen} - CC_{Gen}$

All of the inputs required for this calculation are publicly available.

³² The formula excludes the generators 'fixed costs' and therefore yield a fuel price that is higher than the long run average price that generators would be willing to pay for gas.

Table 8 Thermal generator willingness to pay for gas

Estimated net back price of gas (less carbon costs¹) in \$/GJ at electricity prices per MWh of \$100, \$125 and \$150

Plant name	Variable cost (\$/MWh)²	Heat rate (GJ/MWh) ²	Fuel Delivery Costs (\$/GJ)	Wholesale electricity price (\$per MWh)		
				\$100 per MWh	\$125 per MWh	\$150 per MWh
Baseload						
Huntly unit 5 (e3p)	5.2	7.4	0.50	10.20	13.58	16.96
Huntly gas units 1, 2 & 4	9.6	10.9	0.50	5.68	7.98	10.27
Huntly unit 6 (P40)	9.7	10.5	0.50	5.97	8.35	10.72
Taranaki CC	5.2	7.4	0.44	10.26	13.64	17.02
Peaker						
Stratford	9.4	8.9	0.44	7.62	10.43	13.24
МсКее	9.4	9.0	0.00	7.96	10.73	13.51
Junction Road	9.4	9.0	0.00	7.96	10.73	13.51

Notes:

1 Carbon cost is calculated at \$2.11 per GJ of gas based on: MBIE natural gas emissions factor for 2018 of 0.05402 t CO2 per GJ multiplied by the NZU price of NZD 39.05 (2 March 2021) and assuming a 100 percent surrender obligation.

2 Data for variable cost of generation and heat rate are from '2020 Thermal Generation Stack, Update Report, Prepared for The Ministry of Business, Innovation & Employment, 29 OCTOBER 2020'. Table 3-3 pages 14 -15. Data for gas transmission costs from Huntly are from "Determination of Critical Contingency Price in respect of the critical contingency of 23rd May 2017', Tim Denne.

Source: NZIER

Other major users

The estimated average price paid by Refining New Zealand³³ for natural gas in 2019 was \$10.15 per GJ.

We have not been able to find data on average prices paid for gas or gross profit margins that would inform an estimate of the short-term opportunity cost for gas of the other three major users of gas: NZ Steel at Glenbrook, Oji Fibre Solution at Kinleith or Fonterra.

NZ Steel and Oji Fibre short-term opportunity cost for gas is likely to be at or below the cost for thermal electricity generators as their gross profit is sensitive to both electricity and gas cost, and they have the capacity to reschedule production in response to high energy prices.

Fonterra's opportunity cost is considerably higher than for the other major users because Fonterra processes a perishable input – milk and does not have viable alternatives to gas at most sites that use gas.

^{&#}x27;Refining New Zealand Annual Report 2019' page 73, reports natural gas recovery costs of \$39.6 million for the year ended 31 December 2019. This cost divided by gas used by Refining New Zealand of 3.9 PJ. It is not clear from the report how carbon cost has been treated.

5.2 Value added associated with gas

In a previous report³⁴ to the GIC, NZIER estimated the value added by industries that use gas.

Value added is that part of the value from production which comes from and is returned to workers and owners. It is the sum of profits and wages calculated by Statistics New Zealand in New Zealand's National Accounts and gross domestic product (GDP) statistics, also known as 'contribution to GDP'. It is the value that is directly at stake if a firm ceases production. This estimate, therefore, provides additional information about the economic effects of curtailment. As our previous report stated, however, care is needed in interpreting this figure:

The numbers in this document provide a guide to the relative magnitudes of potential value at risk due to demand curtailment. They do not account for the willingness of firms to pay for uninterrupted supply or the extent to which firms can substitute to other forms of energy and as such they should not interpreted as full assessment economic value at risk. In addition, the value added we refer to is connected to gas use but, ... there are a range of other inputs which can be used in production including alternative sources of energy. The estimates we have produced should not be interpreted as being value added resulting exclusively from the use of gas. (Stephenson and Schilling 2012, 4)

This section updates those estimates for industries that are major users of gas based on the following data sets:

- Energy end use database published by the Energy Efficiency and Conservation Authority (EECA) (Table 20and Table 21).
- Contribution to GDP by industry published by Statistics New Zealand.

The following table shows the industries that account for 95 percent of non-residential gas as recorded in the energy end use database and lists their estimated gas costs and the industry contribution to GDP.

Industry	Value added (\$m)	Estimated gas cost ¹ (\$m)
Petroleum, Basic Chemical and Rubber Product Manufacturing	1,441	227
Other Food Product Manufacturing	2,481	90
Dairy Product Manufacturing	3,094	46
Pulp, Paper and Converted Paper Product Manufacturing	897	27
Primary Metal and Metal Product Manufacturing	878	16
Non-Metallic Mineral Product Manufacturing	1,199	14
Accommodation and Food Services	6,836	30
Meat and Meat Product Manufacturing and Seafood	2,766	12
Health Care and Social Assistance	18,302	22
Indoor Cropping	120	18
Arts, Recreational and Other Services	9,657	17
Retail Trade – Food	3,693	10
Wood Product Manufacturing	1,604	5
Textile, Leather, Clothing and Footwear Manufacturing	672	5
Fabricated Metal Product, Transport Equipment, Machinery and Equipment Manufacturing	7,667	4

Table 9 Large gas users – value added and cost of gas for 2019

Note:

- 1 Gas cost is estimated as the gas consumption from the Energy end use database (EECA) multiplied by the:
 - a estimated gas price for Methanex for the 'Petroleum, Basic Chemical and Rubber Product Manufacturing' industry
 - b MBIE average industrial gas price for all manufacturing industries
 - c MBIE average commercial gas price for all other industries.

Source: NZIER

5.3 Conclusion

Aside from electricity generators, there is insufficient data to estimate consumer willingness and major industrial users willingness to pay for gas. The values that have been estimated for Methanex and Ballance Agri are not usable in the calculation of the floor price because they:

- Require assumptions about the value of gas used that are difficult to verify using publicly available information (unlike the estimate of electricity generator willingness to pay for gas).
- Relate to annual averages rather than periods of short-term scarcity.
- Are below the 7-day VWAP calculated for transactions listed on emsTradepoint and electricity generator willingness to pay for gas.

6 Setting a floor for the critical contingency price

6.1 Floor price purpose

The purpose in setting a floor price is to increase industry certainty about the possible CCP that will be applied. It is explicitly **not** designed to be an estimate of what the CCP will be.

As the industry expert appointed to set the CCP after the 2012 Critical Contingency observed:

Section 71(2) makes clear that the intent of the critical contingency price is that it mimics what a competitive short-run market price would be if the market was allocating the limited quantity of gas available during the critical contingency. Normally this would be the outcome of interactions between supply and demand, ie the volume which gas suppliers would be willing to supply at a given price and the volume which consumers would consume at that same price. (Denne 2012, 5).

To be effective, the floor price must be:

- Able to be calculated simply and quickly enough so that it can be set at the start of the crisis without information on how long the scarcity may evolve.
- High enough to encourage large gas users (particularly those regularly consuming more than 15 TJ per day³⁵) to consider altering their usage.
- Low enough so that it is at or below the CCP which will be determined by an independent expert after the event. (Based on past experience this price will be at or above the estimated willingness of thermal electricity generators to pay for gas.)

6.2 What we have considered

In suggesting a process for setting the floor price, we have considered the following factors:

- Regulations for setting the critical contingency, which emphasise the prices in the wholesale electricity market whether supply is curtailed or not.
- Economic value of gas to major users and their willingness to pay for gas. This provides an indication of the price that would be required to encourage some consumers to forego their use of gas.
- History of gas pipeline outages and the critical contingency price determinations to provide a reality check on the effectiveness of the floor price as a consistent and reliable indicator of CCP.

Looking at each of these considerations in turn:

- The CCM regulations and past CCP decisions are the main determinants of our suggested approach to setting the CCP floor. The current CCM regulations include three criteria that the industry expert needs to consider:
 - the prices in the wholesale market for electricity during the critical contingency

³⁵ These users are Methanex, Ballance Agri, and Genesis (Huntly plant) and Contact (Taranaki Combined Cycle plant). Fonterra also uses more than 15 TJ per day for up 145 days per year but has a much higher opportunity cost for gas than other major users because it cannot defer processing of milk and because the cost of gas is low in comparison to the economic cost of not processing milk.

- the economic cost of the loss of gas supply to those consumers who had their gas supply curtailed and
- any other matters that the industry expert considers relevant.
- The economic value of gas to major users (other than electricity generators) and their willingness to pay for it is difficult to calculate other than on an annual or quarterly average basis because of the lack of information on the amount they pay for gas and their pattern of use. For a CCE, the relevant question is the value of marginal quantities of gas that can be reallocated at short notice. Estimates of annual or quarterly average gas costs are not a good indicator of the value of gas in a CCE. The observed prices for gas in the emsTradepoint market provides a better indication of the marginal willingness to pay for major industrial users (other than electricity generators).
- The history of gas price outages provides a rough consistency check on the proposed floor price methodology, but its usefulness is limited by the following changes in the gas and electricity markets:
 - trade information from emsTradepoint was not available for two of the four CCEs, and the emsTradepoint market volumes were much higher for the second CCE than they were for the first
 - the volatility and average level of electricity prices have increased, which causes a slightly larger increase³⁶ in the calculated generator willingness to pay for gas.

6.3 An average price

A volume weighted average of recent gas prices provides an indication of what gas users were willing to pay before a CCE. It is aligned to the concept of opportunity costs once a scarcity occurs for the following reasons:

- The market provides a mechanism for gas users, suppliers and shippers to trade gas 'immediately' in response to changes in supply and demand.
- As it is an average, it combines the willingness to pay of users with higher and lower opportunity costs and obscures the response of individual gas users to arise in price.

Suggestions to use an average of past peak prices (Major Gas Users Group, Nova and OMV) would provide a better indication of prices in previous periods of gas scarcity, but the current scarcity may be more or less severe than previous periods of gas scarcity. Also, as the floor price is supposed to be an indicative minimum of the price that will be determined after the event relying on past peaks is likely to set the floor price at too high a level.

That said, as a floor price, as opposed to an estimate, an appropriate average of observed prices has advantages:

- It is, by definition, observable by all market participants.
- It will at least be closely correlated to the opportunity cost of gas.
- It is an easily understood metric that does signal that gas will become scarce during a critical contingency.

³⁶ For example, if wholesale electricity prices increase from \$100 per MWh to \$200 per MWh (100 percent) the calculated gross willingness to pay for gas at Huntly Unit 5 increases from \$12.31 per GJ to \$25.82 per GJ (105 percent).

To reflect the willingness to pay for gas alone and be consistent with the CCP methodology (which excludes carbon prices), the VWAP should exclude carbon prices. The VWAP excluding carbon prices is calculated by reducing the value of gas sold each day by the cost of purchasing NZU to cover CO₂ emissions per GJ of gas and then dividing this reduced value by the volume of gas sold to calculate a VWAP excluding carbon costs. Carbon prices are readily available. The adjustment process is explained in more detail in Appendix E.

6.4 Wholesale electricity prices

6.4.1 While baseload generation continues

The regulations require the consideration of wholesale electricity prices, and gas used for electricity generation accounted for about 20 percent of net gas supply in 2019.

In practice, it is much more straightforward and less open to challenge to calculate the willingness of thermal generators to pay for gas than it is to assess the potential economic loss to industries using gas as fuel for process heat (rather than primarily as a feedstock). This is because a key driver of economic harm to users of gas process heat is their ability to defer processing until the outage is over. Those industries that can defer activity at short notice and where gas is a substantial proportion of their input costs face a much lower cost from an unplanned curtailment of gas supply than industries such as food processors, for which a large proportion of their input costs are perishable raw materials.

6.4.2 After gas-fired baseload generation is replaced by renewables

However, the current Government's aspirations for 100 percent renewable electricity generation, as well as forecasts of the increase in costs of gas as a fuel and the intentions of Genesis (the owner of Huntly power station), all suggest that the gas will cease to be used for baseload electricity generation within the next 10 years.

While gas will continue to be used to meet peak load requirements, forecasts completed for the Climate Change Commission suggest two different outlooks for the use of gas in electricity generation depending on the assumption about the timing of the closure of Methanex and the aluminium smelter at Tiwai Point.

Forecasts prepared for the Climate Change Commission³⁷ draft advice suggest that total gas demand in 2029 will be less than 40 percent of 2020 levels primarily due to the closure of Methanex. According to these forecasts:

- Gas demand from electricity generators in 2029 will be about 35 percent of demand in 2020.
- The share of total gas demand from electricity generation will be 22 percent in 2021, decline to 11 percent by 2026 and then recover to 23 percent in 2029 and remain around this level until 2035.

³⁷ Output from ENZ model, 10 February 2021 - '2021-Draft-Advice-Scenarios-dataset-v2.xlsx', 'Our Path to 2035' worksheet, rows 210 to 219, Concept Consulting' available at <u>https://www.climatecommission.govt.nz/get-involved/sharing-our-thinking/data-and-modelling/</u>

Forecasts prepared for the Climate Change Commission³⁸ final advice suggest that total gas demand in 2029 will be around 60 percent of 2020 levels primarily due to reduced demand from Methanex. According to these forecasts:

- Gas demand from electricity generators in 2029 will be about 40 percent of demand in 2020.
- The share of total gas demand from electricity generation will be 23 percent in 2021, decline to 1 percent by 2025 and then recover to 19 percent in 2029, increase to 24 percent in 2030 and reach 27 percent by 2035.

6.5 Minimum of willingness to pay and 7-day VWAP (ex-carbon prices)

As noted at the beginning of this section, the purpose of the floor price is to increase industry certainty about the possible CCP that will be applied but increase industry certainty about the possible CCP that will be applied. It is explicitly **not** designed to be an estimate of what the CCP will be and to be effective, so it must be at or below the CCP, which will be determined by an independent expert after the event.

Wholesale electricity prices may decline or rise over the course of the CCE due to factors unrelated to the gas market.³⁹ Electricity prices vary widely during the day depending on whether demand is at peak, shoulder or off-peak levels, which can, in turn, affect the calculation of generator willingness to pay by a factor of two or three. To lower the risk of the floor exceeding the CCP, we suggest that the floor is based on the minimum of the willingness to pay calculated based on wholesale electricity prices and the 7-day VWAP (excluding balancing transactions and carbon prices).

6.6 Alternatives considered but discounted

We have also considered using either quarterly gas prices published by MBIE and our estimate of the gas price paid by Methanex (see section 5.1.2). We have discounted these options primarily because they are averages over 3 months. They are also calculated with a lag and, therefore unlikely to indicate the value of gas close to the time of the CCE. Quarterly MBIE gas price data is usually published three to four months after the end of the quarter. Methanex statements required to calculate the quarterly average are published 4 weeks after the end of the quarter. (An additional objection to the use of the estimated Methanex price is the need to assume a percentage of the cost of sales that applies to gas purchases in the absence of any independently verifiable of this percentage.)

We also note that these alternatives were not suggested in submissions made by stakeholders on the GIC proposal for a floor price.

³⁸ Output from ENZ model, 9 June 2021 - 'Scenarios-dataset-2021-final-advice.xlsx', 'Demonstration Path' worksheet, rows 244 to 247, Concept Consulting' available at <u>https://www.climatecommission.govt.nz/our-work/advice-to-government-topic/inaia-tonu-nei-a-low-emissions-future-for-aotearoa/modelling/</u>

³⁹ The CCE on 24 May 2016 is an example of this situation. The wholesale electricity price fell from \$75.48 per MWh at the start of the CCE to \$60 per MWh within half an hour (one trading period) and remained in a range of \$53.10 per MWh to \$58.79 per MWh for the rest of the CCE.

6.7 Conclusion

In our view:

- A key determinant of the desirable price floor is that it is a floor, not an estimate of the CCP and therefore, the risk that the floor could exceed the CCP should be made as low as possible.
- The cost of a gas outage to consumers is not observable at the beginning of a CCE.
- Recent prices (excluding balancing transactions and the cost of carbon) paid by consumers in the emsTradepoint market provide the best observable indication of the value of marginal quantities of gas to those consumers.
- The regulations require the consideration of both wholesale electricity prices and the cost of a gas outage. Therefore, the electricity generator willingness to pay for gas needs to be considered in setting the floor along with recent prices.

We suggest that the proposed approach that best satisfies these requirements and is consistent with the common themes of stakeholder submissions analysed in section 4 is:

- While the Huntly Unit 5 is in operation, the minimum of:
 - The 7-day VWAP of gas in the emsTradepoint system excluding balancing trades and adjusted to remove the allowance for carbon prices⁴⁰ (as long as there were trades within the last 7 days)
 - The willingness to pay for gas of the Huntly Unit 5 plant based on the wholesale electricity price⁴¹ at the time the CCE is declared and using the methodology and assumptions described in section 5.1.3.
- Otherwise, the 7-day (VWAP) of gas in the emsTradepoint system excluding balancing trades and adjusted to remove the allowance for carbon prices.⁴²

⁴⁰ emsTradepoint gas prices include the cost of carbon calculated as the closing price of NZUs on the day and converted to a price in \$ per GJ of gas using the MBIE natural gas emissions factor. This element will need to be deducted.

⁴¹ Up to date electricity prices for selected nodes are available at https://www.em6live.co.nz/Default.aspx. More detailed real time pricing data are available as a subscription service through https://www.em6live.co.nz/Default.aspx. More detailed real time pricing data are available as a subscription service through https://www.em6live.co.nz/Default.aspx. More detailed real time pricing data are available as a subscription service through https://www.ems.co.nz/services/em6/

⁴² If there were no trades within the last 7 days, the floor should be based on the most recent 7-day VWAP within the past month.

7 Comparison of floor price to past outages

This section compares our proposed approach (see section 6.7) for setting the floor price to critical contingency events that occurred on:

- 13 July 2010 the CCM gas price was based on the price paid in the balancing gas market.
- 03 March 2012 the CCM gas price was based on the willingness of combined cycle gas turbine (CCGT) plants at Huntly and Otahuhu B⁴³ but set above the price other thermal generators would be willing to pay.⁴⁴
- 24 May 2016 Netback of gas price for Huntly e3P (baseload generator) but above the
 - willingness to pay of the highest cost thermal generators (McKee and Stratford peakers) operating during the CC event
 - highest price paid in the gas market of \$5.85/GJ.⁴⁵
- 23 May 2017 Netback of gas price for Huntly e3P (baseload generator) but above the willingness to pay of the highest cost thermal generators (McKee and Stratford peakers) and prices paid in the gas market.⁴⁶

The proposed floor price was less than the final CCM price but above gas market prices for two of the four CC events.

- ⁴³ Otahuhu B has been decommissioned.
- ⁴⁴ Denne (2012, 9).
- ⁴⁵ Op cit page 5.
- ⁴⁶ Op cit page 8.

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Table 10 Comparison of floor price to past outages

Contingency floor price actually set and the proposed floor price – the minimum of the 7-day VWAP (excluding carbon prices) and the estimated willingness to pay for gas based on Huntly Unit 5

Date	CCM description	Final CCM	Proposed CCM floor price calculation ¹					
	duration and response	price (\$/GJ)	CCM Floor (\$/GJ)	Generator netback (\$/GJ)	Wholesale price ² (\$/MWh)	7-day VWAP (\$/GJ)²		
13 Jul 2010	19:30 to 22:32 – no regulatory curtailment	15.00	11.64	11.64	95.05	N/A		
03 Mar 2012	12:48 to 23:30 – regulatory curtailment of bands 0, 1a and 1b	11.10	9.02	9.02	75.63	N/A		
24 May 2016	18:30 to 23:00 – no regulatory curtailment	6.66	5.58	8.62 ³	75.48	5.58		
23 May 2017	11:14 to 18:15 – no regulatory curtailment	10.62	5.25	7.82 ³	71.72	5.25		

Notes:

1 The CCM floor price calculation is the minimum of the:

a Generator netback as explained in section 5.1.3 with the relevant NZU surrender obligation.

b 7-day VWAP exclusive of the price carbon as explained in Appendix E (if the VWAP was available).

2 Wholesale electricity price at node HLY2201 for the trading period at the beginning of the CCM.

3 Net of the cost of CO_2 emissions of \$0.38 per GJ in 2016 and \$0.67 per GJ in 2017.

Source: NZIER



8 Conclusion and recommendations

8.1 Discussion

In our view, the key determinant of the desirable price floor is that it is a floor, not an estimate of the CCP.

What the GIC is proposing is to reduce, not eliminate, uncertainty by signalling that users can plan on the basis that while the CCP will still be determined based on the industry expert's view of the three relevant factors, it will never be lower than a knowable floor.

Likely future developments in the gas industry suggest that electricity generator willingness to pay for gas (estimated from the wholesale price of electricity less the variable costs of a gas-fired electricity generator) may become a less useful indicator floor price, especially if the Government's 100% renewable generation target is met. While it has advantages in being readily observed, it will become less indicative of the economic cost of the loss of gas supply to those consumers who have supply curtailed.

This takes us back to the GIC's original proposal of using a weighted average of observed prices of gas as a **floor**. Given that a critical contingency, by definition, means that supply is constrained compared to demand, it will always be the case that the declaration of a critical contingency will lead to prices increasing: less supply, with demand in place, will, according to fundamental economic principles, lead to higher prices. The practical difficulty, of course, is that this price increase is not observable in real-time. Hence the need for an industry expert to set a CCP *ex-post*.

8.2 Recommendation

Based on the proposed change to the regulations and the outlook for limited change in demand and supply over the next five years and provided that Huntly Unit 5 is in operation at the time of the CCE, we recommend that the floor price setting methodology is the minimum of:

- The 7-day moving average of the volume weighted average prices (7-day VWAP) of gas in the emsTradepoint system (excluding balancing trades) adjusted to remove the allowance for carbon prices⁴⁷
- The willingness to pay for gas of the Huntly Unit 5 plant based on the wholesale electricity price⁴⁸ when the CCE is declared and using the methodology and assumptions described in section 5.1.3.

We propose that the floor is set at the lower of the 7-day VWAP (excluding carbon prices and balancing trades) and the willingness to pay for gas of the Huntly Unit 5 plant to minimise the risk that the floor could be set above the CCP.

If Huntly Unit 5 is not generating electricity at the time of the CCE, we recommend that the floor price is based on the 7-day VWAP of gas in the emsTradepoint system (excluding balancing trades) adjusted to remove the allowance for carbon prices.

⁴⁷ emsTradepoint gas prices include the cost of carbon calculated as the closing price of NZUs on the day and converted to a price in \$ per GJ of gas using the MBIE natural gas emissions factor. This element will need to be deducted.

⁴⁸ Up to date electricity prices for selected nodes are available at https://www.em6live.co.nz/Default.aspx. More detailed real time pricing data are available as a subscription service through <u>https://www.ems.co.nz/services/em6/</u>

The proposed approach is the simplest option that is consistent with the regulations and the determinations of the CCP for the previous four CCEs.

The simplicity is achieved at the justified expense of a more detailed consideration of the short-term variations in the demand for gas (particularly for electricity generation) and the expected duration and severity of the CCE.



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Appendix A Regulations⁴⁹

A.1 Section 67 – Purpose of critical contingency price

Critical contingency price for contingency imbalances

67 Purpose of applying critical contingency price to contingency imbalances.

The purpose of regulations 68 to 71 is to determine a critical contingency price to be applied to the contingency imbalances sustained by interconnected parties and shippers during a critical contingency to—

- (a) avoid shippers instructing their suppliers of gas to reduce supply during a critical contingency when those shippers' consumers have been curtailed; and
- (b) signal to suppliers and consumers of gas that it is a scarce and valuable product during a critical contingency; and
- (c) provide incentives before a critical contingency, particularly for retailers who supply gas to consumers who are unlikely to be curtailed, to make alternative arrangements to minimise the financial consequences of a critical contingency.

A.2 Section 71 – Setting the critical contingency price

71Determining critical contingency price

- (1) The industry expert must determine the critical contingency price in dollars per gigajoule of gas.
- (2) The industry expert must seek to set the critical contingency price at a level that reflects the price that would be established by an efficient short-term market that allocated scarce gas resources to the highest value uses during the critical contingency.

(3) If—

- (a) only consumers in curtailment bands 0 and 1, or 0, 1, and 2, were curtailed during the critical contingency, the industry expert must base his or her determination on the prices in the wholesale market for electricity during the critical contingency except where that would be contrary to subclause (2); and
- (b) any other circumstances apply, the industry expert must take into account the following matters:
 - (i) the prices in the wholesale market for electricity during the critical contingency; and
 - (ii) the economic cost of the loss of gas supply to those consumers who had their gas supply curtailed; and
 - (iii) any other matters that the industry expert considers relevant to achieving subclause (2).

⁴⁹ See Gas Governance (Critical Contingency Management) Regulations 2008 at https://www.legislation.govt.nz/regulation/public/2008/0426/latest/DLM1683495.html

Appendix B Gas price data

B.1 Introduction

This section includes additional data on the estimates of prices paid by major purchasers of gas as well as indications from major suppliers of the values they attach to the gas they sell to different market segments. These are both compared to the MBIE datasets on gas prices, which seem to be estimated from surveys of retail prices.

B.2 Methanex

The following table shows revenue and cost of sales data obtained from Methanex New Zealand Annual Reports⁵⁰ and uses methanol production data from Methanex 'fourth quarter' reports.⁵¹

The annual reports do not explain what is included in the cost of sales and do not provide information on the paid for gas. However, the annual reports from 2016 and earlier provide more detail than those in later years about what is and is not included in the cost of sales. In particular:

- Wages included in the cost of sales in 2016 accounted for less than 4 percent of the cost of sales.
- Other expenses from normal activities such as distribution and administration were not included in the cost of sales.
- Depreciation and rental payments were not included in the cost of sales.
- No indication that Methanex NZ was purchasing methanol for on-sale.

This information rules out the inclusion of several potential non-gas costs in the cost of sale and provides supporting evidence that the main component of the cost sales Is payment for gas.

Estimates of the price paid by Methanex for gas in Table 11 are defensible despite the fact that they are well above the MBIE estimates of the wholesale price of gas and the price of energy attributed to gas by Genesis and Contact.⁵² However, as noted in section 5.1.2, these estimates are not suitable as estimates of the floor price.

⁵⁰ The reports used were for the years ended 31 December: 2010 (pages 17-18), 2012 (pages 17-18), 2014 (pages 17-18) 2016 (pages 19-20), 2017 (page 6), 2018 (page 5) and 2019 (page 5). These reports are available from the NZ Companies Office.

⁵¹ The reports used were for the quarters ended 31 December: 2010 (page 2), 2012 (page 3), 2014 (page 3) 2016 (page 2), 2018 (page 5) and 2019 (page 4). These reports are available at https://www.methanex.com/investor-relations/financial-reports.

⁵² Genesis Energy and Contact are the main suppliers of gas for which we can obtain financial accounts.

Table 11 Methanex estimate of gas price tolerance

Revenue and cost in \$m, gas consumed in PJ and prices in \$/PJ

Category	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Revenue	621.4	711.9	818.0	1,193.8	1,501.2	1,220.6	1,132.4	1,372.1	850.3	698.7
Cost of sales	498.0	574.9	649.0	904.7	1,116.9	1,024.3	913.3	1,110.3	626.0	542.8
Gross Profit	123.4	137.0	168.9	289.1	384.3	196.3	219.1	261.8	224.3	155.9
Gross profit/Cost of sales	25%	24%	26%	32%	34%	19%	24%	24%	36%	29%
Gas used (PJ)	28.3	28.3	37.7	51.8	84.8	67.8	82.1	69.1	55.2	66.7
Implied gas price (\$/GJ)										
Gas is 80 percent of cost of sales	14.09	16.27	13.76	13.98	10.54	12.09	8.89	12.85	9.08	6.51
Gas is 90 percent of cost of sales	15.85	18.30	15.48	15.73	11.85	13.60	10.01	14.46	10.21	7.32
Gross profit per unit of gas (\$/GJ)	4.37	4.85	4.48	5.58	4.53	2.90	2.67	3.79	4.06	2.34
Maximum opportunity cost ¹ (\$/GJ)										
Gas is 80 percent of cost of sales	18.46	21.12	18.24	19.56	15.07	14.99	11.56	16.64	13.14	8.84
Gas is 90 percent of cost of sales	20.22	23.15	19.96	21.31	16.38	16.50	12.67	18.25	14.27	9.66

Note:

1 'Gas at 80 percent or 90 percent of cost of sales' plus 'Gross profit per unit of gas'.

2 Estimated for 2010 and 2011 based on gas to methanol conversion rate of 34TJ per tonne of methanol in 2012. Over the period 2014 to 2019, Methanex's volume of gas input per tonne of methanol varied between 34.4 and 38.9 TJ of gas per tonne of methanol.

Source: NZIER

B.3 Gas suppliers

Genesis Energy⁵³ and Contact both operate gas-fired thermal generation and supply gas to commercial and residential customers. Their annual reports provide the following indications of the value of gas to generate electricity and commercial and residential users.

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⁵³ Genesis operates the Huntly (baseload) generation plant and accounts for about 65 percent of the gas used for electricity generation. Contact owns the Taranaki Combined Cycle (baseload), Stratford (peaker) generation plant and the Te Rapa cogeneration plant which is supplies the Fonterra plant with steam and electricity. Todd Generation Taranaki owns the McKee, and Junction Road generation plants.

Table 12 Genesis Energy gas valuesRevenue and cost in \$m, gas consumed in PJ and prices in \$/PJ

Category	Q3 FY18	Q4 FY18	Q1 FY19	Q2 FY19	Q3 FY19	Q4 FY19	Q1 FY20	Q2 FY20	Q3 FY20	Q4 FY20	Q1 FY21	Q2 FY21
Gas Netback (\$/GJ)	8.89	8.10	8.70	8.80	10.10	9.21	9.40	9.80	10.60	10.60	10.50	10.50
VWAP ¹ (\$/GJ)												
Residential	53.18	31.13	25.80	34.30	57.40	32.15	27.20	36.30	51.40	32.80	28.60	37.60
SME	18.76	15.35	14.40	16.80	19.20	15.50	14.56	16.30	17.60	17.30	15.40	17.00
C&I	9.59	9.91	10.00	10.90	10.80	10.27	10.41	11.10	10.90	10.80	10.50	12.20
Gas Sales (PJ)												
Residential	0.3	0.7	1.1	0.6	0.3	0.7	1.0	0.6	0.3	0.7	1.1	0.6
SME	0.2	0.4	0.5	0.4	0.3	0.5	0.6	0.4	0.3	0.3	0.5	0.4
C&I	0.8	1.0	1.0	0.9	0.8	1.1	1.1	0.8	0.8	0.9	1.2	0.7
Total	1.4	2.1	2.7	1.8	1.4	2.3	2.7	1.8	1.4	2.0	2.8	1.6
Internal electricity generation (PJ)												
Gas used	6.7	5.7	5.3	3.4	5.9	5.7	5.5	4.6	6.5	8.0	5.7	5.0
Coal used	1.7	3.3	1.2	5.7	5.7	3.3	4.2	3.5	4.5	3.1	6.3	4.1
Weighted average cost												
Gas burn cost (\$/GJ)	8.43	8.80	8.26	8.44	9.12	8.80	9.10	9.70	9.20	8.55	9.00	9.00
Coal burn cost (\$/GJ)	5.38	6.83	5.61	5.91	6.63	6.83	7.10	7.10	6.58	6.30	6.10	6.00
Fuel Cost - Thermal (\$/MWh)	69.66	76.82	68.54	68.65	78.13	76.82	81.44	79.33	81.88	71.72	78.95	81.33
Fuel Cost - Portfolio (\$/MWh)	42.89	47.23	30.03	38.30	56.76	47.23	47.79	44.97	60.59	52.74	49.25	48.48

Note:

1 'Volume weighted average price

Source: NZIER

Table 13 Contact gas price data

	FY17	FY18	FY19	FY20	FY21 (f)
Gas used (PJ)					
Residential	1.6	1.6	1.6	1.6	
SME	0.9	1.3	1.5	1.4	
Tariff (\$/GJ)					
Residential	32.00	31.60	31.50	33.10	32.00
SME	17.50	15.50	15.10	15.50	17.50
Gas values (\$/GJ)					
Gas costs	5.80	5.60	5.90	7.90	5.80
Carbon costs	0.30	0.70	1.00	1.40	0.30
Total energy cost	6.10	6.30	6.90	9.30	6.10
Thermal plant fuel cost (\$/MWh) ¹	59.00	62.00	76.00	77.00	81.00
Notes:					

1 Includes cost of carbon.

Source: NZIER



Appendix C Submissions on floor price setting

C.1 Submitters

This section summarises the views in submissions on questions 3 and 4 of the Gas Industry Council Statement of Proposal for amending CCM Regulations from:

- emsTradepoint (question 3 only).
- First Gas.
- Fonterra.
- Major Gas Users Group on behalf of: Ballance Agri-Nutrients Ltd, Fonterra Cooperative Group, New Zealand Steel Ltd, Oji Fibre Solutions (NZ) Ltd and Refining NZ
- Nova Energy.
- OMV.
- Vector.

Transpower and Haast Energy trading made submissions on the amendment but did not submit on questions 3 and 4.

These submissions need to be assessed on the extent to which they are likely to set a floor price that meets the objectives of the regulations and is below the CCP that is likely to be determined by the industry expert. This suggests the floor price should be:

- above market prices immediately before the critical contingency event (to signal scarcity of supply).
- influenced by the price generators are willing to pay for gas based on current wholesale electricity prices (because this price is likely to be similar to or lower than the estimated willingness to pay of other major gas users).

Table 14, Table 15 and Table 16 include submitters comments on question 3 about the calculation of the floor price and Table 17 and Table 18 include submitter comments on question 4 other benchmarks for calculating the floor price.



Table 14 Submissions on Question 3 emsTradepoint, FirstGas and Fonterra

Q3: Do you agree with adding a floor price to the calculation of the contingency price? Do you agree with the proposed calculation method, using VWAP for the 7 days prior to and including the critical contingency day?

Submitter	Submission
emsTradepoint	Overall, we support the use of emsTradepoint's Volume Weighted Average Price (VWAP) as a floor price in a critical contingency event, but we think that the price calculation method needs to consider the following factors.
	1 The graphs included in the consultation document differentiate between market and off-market trades. It is unclear If the differentiation is deliberate, explaining why would be helpful.
	 emsTradepoint suggests this carbon component element of the gas price is considered if the emsTradepoint price is used for calculating a floor price in a CCM event.
	3 We therefore suggest that in a Critical Contingency event the relevant price is published on the emsTradepoint public website, the regulator's website, or the Critical Contingency Operator website so it is available industry-wide for that day.
	4 As highlighted in the consultation document, volume going through emsTradepoint can often be 'peaky'. There may be days where no volume is traded through emsTradepoint. emsTradepoint agrees the floor price should use the average VWAP of seven days leading to and including the event. This would account for either a lack of volume, or anomalous prices.
	From a price perspective, it has been observed that the emsTradepoint VWAP may not be fully representative of market conditions, this is predominantly due to the fact the Gas System Operator (SO) uses the spot market to buy and sell for pipeline balancing purposes. In this case the SO is often a price taker, pushing prices up or down depending on if they are a net seller or net buyer.
	emsTradepoint notes that these peaks and troughs in prices are beneficial in setting a floor price. The market still captures the value of scarcity. The contingency price floor therefore needs to be reflective of that scarcity.
First Gas	Yes. It feels sensible to have a floor price to ensure that the CC price should always reflect the scarcity of gas and incentivise the correct behaviour from gas users. Such a mechanism would have been an appropriate safety net when circumstances like the May 2016 critical contingency event presented themselves.
	Yes, 7-days feels like the right balance to strike for the reasons set out in the GIC's paper.
Fonterra	No additional comment. (See Major Gas Users Group submission).

Source: NZIER

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Table 15 Submissions on Question 3 – Major Gas Users Group, Methanex

Q3: Do you agree with adding a floor price to the calculation of the contingency price? Do you agree with the proposed calculation method, using VWAP for the 7 days prior to and including the critical contingency day?

Submitter	Submission
Major Gas Users Group	We agree with setting a floor price if the current methodology of independent post-event valuation continues (see our alternative suggestion in response to Q4).
	The floor price should attempt to reflect the value transfer between parties forced to forego gas it is entitled to under contract vs parties taking gas it is not entitled to. The trading market should be a reasonable reflection of the marginal value of gas under various demand/ supply conditions, although not necessarily for tight supply conditions. However, it is reasonable to assume that the contingency price shouldn't fall below the VWAP over the previous 7 days.
Methanex	Methanex supports use of a price floor based on gas market VWAP and the use of a 7-day rolling average represents a reasonable compromise between a price which reflects current conditions without at same time being too volatile or relying on a price where market depth or trading activity may have been insufficient.
	Methanex generally supports strengthening incentives for participants to follow curtailment instructions. However, it is also critical that curtailment instructions are as far as practicable, provide consumers with a reasonable opportunity to shed load in a safe, efficient and orderly manner to minimise exposure to "no-fault" imbalance penalties. In a number of respects, the proposals made in Section 5 and 6 if the SOP run counter to this.
	In this regard, Methanex Is particularly concerned with proposed changes to curtailment band definitions and curtailment orders that increase the prospect of inadvertent and uncontrollable contingency imbalances being incurred by consumers.
Nova	Nova agrees with adding a floor price.
	The 7-day VWAP may not be a good indicator of the value of gas on the day of an outage. Given gas demand is related to the weather, a critical contingency could easily occur on a cold snap following a week of warm weather, in which case prices on the previous week would be misleading.

Source: NZIER
Table 16 Submissions on Question 3 – OMV and Vector

Q3: Do you agree with adding a floor price to the calculation of the contingency price? Do you agree with the proposed calculation method, using VWAP for the 7 days prior to and including the critical contingency day?

Submitter	Submission
OMV	We also support the proposed introduction of a floor price to ensure that the Critical Contingency Price remains broadly predictable. However, we do not think that a pricing mechanism for the floor price that refers to recent historic pricing prior to a Critical Contingency Event I s consistent with the objective of having a price that reflects the scarcity of gas during the Critical Contingency Event. Almost by definition, the minimum pricing during the event must be some margin above the pricing immediately prior to the event.
	Yes, a floor price would reduce the pricing uncertainty during a critical contingency event.
	However, an average of the pricing in the (7) days immediately prior to an event would not price the gas that is available during an event consistent with "an efficient short-term market that allocated scarce gas resources to the highest value uses" and therefore would not be a suitable floor price.
	Alternatively, a floor price could be derived using known periods of gas scarcity (either using previous critical contingency events and/or emsTradepoint data). This floor price could be expressed as a premium for gas that is available during an event above the 7-day volume-weighted emsTradepoint average price and could be calculated conservatively such that it acted as an effective minimum.
Vector	Yes, we agree with adding a floor price to the calculation of the critical contingency price. This should provide certainty to those parties who can deliver more gas into the system when needed. We would favour market trades and off-market trades transacted on emsTradepoint (i.e. within a day prior to the critical contingency event being declared) to be given greater weight in the calculation of a floor price. Those transactions on emsTradepoint are more relevant than those that have occurred over the prior week. We would caution against the inclusion of balancing gas transactions in the calculation of VWAP. This may result in a materially higher floor price that exceeds the value of gas to any other buyer. This is because there appears to be a disconnect for prices at certain times between transactions involving the system operator and those that do not.

Source: NZIER

Table 17 Submissions on Question 4 – FirstGas, Fonterra, Major Gas Users Group, Methanex and Nova Energy

Q4: Are there other pricing benchmarks that should be used in setting the critical contingency price?

Submitter	Submission
FirstGas	No. We consider that there are now sufficient pricing parameters to guide the industry expert in setting the critical contingency price, while providing a degree of flexibility to deal with the potentially unique circumstances associated with each critical contingency contingency event.
Fonterra	No additional comment. (See Major Gas Users Group submission)
Major Gas Users Group	The preferred benchmark should be the actual marginal price of the gas reflecting its scarcity as per regulation 71(2).
	A benchmark that might better reflect that value could be to use the information embedded in historical peak traded gas prices. For example, using the average of the 12 (or some other number) highest peak prices on in the previous 12 twelve months on the trading platform.
	For the two events noted in the SOP (23 May 2017, 24 May 2016), the respective numbers would have been \$7.42/GJ (\$10.62/ GJ)4 and \$12.35/ GJ (\$6.66/ GJ).
	While this may not be the "right price" when compared to the actual calculated prices the concept of using historical peak prices to value scarcity can be experimented with different combinations of weighting or combination of peak prices, or ratios between peak and average prices.
	This alternative benchmark could also be included as part of a "higher of" number – so the critical contingency price might be the higher of VWAP (as above), Average of x highest peaks in rolling y month period, and marginal/ peak electricity wholesale price.
	An advantage of this concept is that the contingency price would be known in advance of the CC event, i.e. calculated daily and posted on say First Gas or CCO website and thereby act as a further incentive for parties to follow the curtailment instructions. It could also incentivise voluntary curtailment from bands not called for to assist a more rapid recovery.
	We also considered whether there is merit in using a "reserve price" in the same way that the electricity market uses reserve price. While there are practical differences in the concept to consider, the analogy of a reserve market where gas producers are offering available capacity e.g. through Ahuroa Gas Storage or swing capacity in production facilities might offer (some) replacement gas into the market at a time when it is needed. The concept might require some modification of the use of the trading platform products.
Methanex	No
Nova	Nova believes it more appropriate to base the floor price on the 75th percentile of prices over the previous 21 days (adjusted for volumes, and only including short term spot trades, rather than longer term strips.) This would even out the influences of weather, and better reflect the circumstances of constrained supply

Source: NZIER

Table 18 Submissions on Question 4 – OMV and Vector

Q4: Are there other pricing benchmarks that should be used in setting the critical contingency price?

Submitter	Submission
OMV	Depending on the liquidity and activity it may be the case that the emsTradepoint market is appropriate for setting the critical contingency price.
	The current regulations do not prevent the expert from considering emsTradepoint data under 71(3)(b)(iii) the expert may consider "any other matters that the industry expert considers relevant to achieving subclause (2).
Vector	No, we consider the proposed benchmarks to be sufficient in informing the setting of the critical contingency price.

Source: NZIER



This section includes tables of gas consumption data from MBIE, major gas users and the EECA energy end use survey all stated in PJ per calendar year.



Table 19 Gas consumption⁵⁴

PJ per calendar year

Consumer	2011	2012	2013	2014	2015	2016	2017	2018	2019
Energy Transformation	78.6	80.4	78.2	65.9	63.3	55.1	66.2	57.0	56.9
Electricity Generation	51.3	53.0	54.1	42.0	41.0	36.6	45.7	36.4	37.0
Cogeneration	17.8	18.9	17.1	16.5	15.4	12.6	13.9	12.8	12.6
Other Transformation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Production losses and own use	8.6	7.8	6.1	6.6	6.1	5.4	5.9	7.2	6.5
Transmission and distribution losses	0.9	0.9	0.9	0.8	0.8	0.6	0.7	0.7	0.8
Non-Energy Use	24.4	31.7	39.6	59.2	50.2	58.2	53.3	45.1	50.8
Consumption	58.0	66.5	69.5	83.5	81.1	78.6	77.9	74.3	84.6
Agriculture/ Forestry/ Fishing	1.7	1.6	1.5	1.6	1.6	1.3	1.4	1.4	1.3
Industrial	45.0	50.7	54.0	66.4	63.5	62.8	61.6	57.6	67.9
Food Processing	15.2	16.6	14.2	15.8	17.0	14.1	17.2	18.3	21.7
Wood, Pulp, Paper, and Printing	5.0	5.5	3.9	4.0	3.8	3.5	4.7	4.8	4.7
Chemicals	18.9	22.7	28.2	40.0	37.1	39.7	33.4	28.2	34.8
Basic Metals	2.9	3.1	4.5	3.0	2.4	2.4	2.6	2.5	2.8
Other	2.9	2.9	3.2	3.6	3.1	3.0	3.7	3.7	3.8
Commercial	5.7	7.9	7.8	8.9	9.0	8.1	8.1	8.6	8.5
Residential	5.6	6.3	6.2	6.6	6.9	6.4	6.8	6.8	6.8

Source: NZIER Natural Gas data tables, Produced by Markets Team Ministry of Business, Innovation & Employment, energyinfo@mbie.govt.nz,

⁵⁴ Transport is not included in the table as the value for the reported years is 0.0 PJ.

Table 20 Energy end use database – selected agriculture and industrial sectors

PJ per calendar year

Sector	ANZSIC Code	2017	2018	2019
Indoor Cropping	A0111, A0114, A0122	1.3	1.2	1.2
Forestry and Logging	A03	0.0	0.0	0.0
Mining	В	0.1	0.2	0.2
Industrial	B-E	0.6	0.4	0.2
Meat and Meat Product Manufacturing and Seafood	C111-C112	1.4	1.5	1.7
Dairy Product Manufacturing	C113	5.3	5.7	6.7
Other Food Product Manufacturing	C114-C119, C12	10.5	11.2	13.3
Textile, Leather, Clothing and Footwear Manufacturing	C13	0.5	0.5	0.7
Wood Product Manufacturing	C14	0.7	0.8	0.7
Pulp, Paper and Converted Paper Product Manufacturing	C15	3.9	3.9	3.9
Printing	C16	0.1	0.1	0.1
Petroleum, Basic Chemical and Rubber Product Manufacturing	C17-C19	33.4	28.2	34.8
Non-Metallic Mineral Product Manufacturing	C20	2.2	2.2	2.1
Primary Metal and Metal Product Manufacturing	C21	2.2	2.2	2.4
Fabricated Metal Product, Transport Equipment, Machinery and Equipment Manufacturing	C22-C24	0.5	0.5	0.5
Construction	E	0.5	0.5	0.5

Source: NZIER (from Energy End Use Database 2017 to 2019 available at https://tools.eeca.govt.nz/energy-end-use-database/)

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Table 21 Energy end use database – selected commercial sectors and the residential sector

PJ per calendar year

Sector	ANZSIC Code	2017	2018	2019
Wholesale and Retail Trade - Non Food	F33, F34, F35, F37, F38, G39, G40, G42, G43	0.6	0.6	0.6
Wholesale Trade – Food	F36	0.0	0.0	0.0
Retail Trade – Food	G41	0.6	0.7	0.7
Accommodation and Food Services	Н	2.0	2.1	2.1
Transport, Postal and Warehousing	146-151	0.0	0.0	0.0
Transport, Postal and Warehousing (Commercial - Non-Transport)	152, 153	0.3	0.3	0.3
Information Media and Telecommunications	J	0.0	0.0	0.0
Financing, Insurance, Real Estate and Business Services	K, L, M, N72	0.6	0.6	0.6
Central Government Administration	0751	0.3	0.3	0.3
Local Government Administration	0753	0.4	0.4	0.3
Defence	076	0.2	0.2	0.2
Education and Training: Pre-School, Primary and Secondary	P80	0.4	0.4	0.4
Education and Training: Tertiary Education and Other Education	P81-P82	0.3	0.3	0.3
Health Care and Social Assistance	Q	1.5	1.5	1.5
Arts, Recreational and Other Services	R, S	1.0	1.1	1.2
Residential	Z001	6.8	6.8	6.8

Source: NZIER (from Energy End Use Database 2017 to 2019 available at https://tools.eeca.govt.nz/energy-end-use-database/)

Appendix E Carbon price adjustment

E.1 VWAP calculation

The VWAP for one day is calculated by dividing the sum of daily value⁵⁵ of each gas trade by the sum of the daily volumes traded.

E.2 Adjustment for carbon prices

Gas prices provided by emsTradepoint include carbon prices. However, the CCP determinations exclude the carbon price. Therefore, the floor price estimate based on the 7-day VWAP will need to use VWAP that are adjusted for the price of NZU to ensure the floor price methodology is consistent with the CCP methodology.

The carbon price in \$ per GJ of gas = NZU Spot Price * Surrender Obligation * Emission Factor where:

- NZU spot prices are available from emsTradepoint, or Jarden Commtrade (available at www.commtrade.co.nz/) or Carbon Forest Services (available at www.carbonforestservices.co.nz).
- The surrender obligation is one NZU per tonne of CO_{2.}⁵⁶
- The emission factor is 0.05402 tonnes of CO₂per GJ of gas.⁵⁷

E.3 Historical VWAP adjusted for carbon prices

Carbon prices are much less volatile than the gas prices quoted on emsTradepoint. Therefore, the adjustment of the VWAP to exclude carbon costs does not materially alter the shape of the comparison of the 3-, 7- and 14-day VWAP. Figure 9 and Figure 10 below show the 3-, 7- and 14-day VWAP excluding carbon costs, including and excluding balancing transactions, respectively.

⁵⁵ 'Unit price' multiplied by 'Quantity' from emsTradepoint data.

- ⁵⁶ Prior to 1 January 2017 non-forestry ETS participants only had to surrender 0.5 NZU per tonne of CO₂e (1 NZU for every 2 tonnes of CO₂e). This increased to 0.67 NZU per tonne of CO₂e (1 NZU for every 1.5 tonnes of CO₂e) from 1 January 2018 and then to 1 NZU per tonne of tonne of CO₂e from 1 January 2019.
- ⁵⁷ Emission factors for calendar years are available from www.mbie.govt.nz/building-and-energy/energy-and-naturalresources/energy-statistics-and-modelling/energy-statistics/new-zealand-energy-sector-greenhouse-gas-emissions/. The last published factor was for 2018. We have used this factor for our adjustment for 2018 to 2021.



Figure 9 VWAP excluding carbon cost and including balancing transactions

Source: NZIER analysis of emsTradepoint data provided by Gas Industry Company and carbon prices



Figure 10 VWAP excluding carbon cost and excluding balancing transactions

Source: NZIER analysis of emsTradepoint data provided by Gas Industry Company and carbon prices

ABOUT GAS INDUSTRY CO

Gas Industry Colis the gas industry hody and
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co-regulator under the Cac Act. Its role is to:
concerned and a line gas Act. Its lote is to.
develop arrangements including
regulations where appropriate which
regulations where appropriate, which
improve
improve.
 the operation of gas markets.
 access to infrastructure: and
 develop these arrangements with the
principal objective to ensure that gas is
delivered to existing and new customers
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in a safe efficient reliable fair and
environmentally sustainable manner: and
chivitorinientany sustainable manner, and
 oversee compliance with, and review such
arrangements.
Gas Industry Co is required to have regard to
the Government's policy objectives for the
gas sector, and to report on the achievement
of those objectives and on the state of the
New Zealand gas industry.

ENQUIRIES: grace.burtin@gasindustry.co.nz