

The Gas Industry Transmission Access Working Group



Consultation Paper

Straw Man for Congestion Management Arrangements on the
Vector Gas Transmission System

Submissions due by: 6 April 2015

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1 Executive Summary

The Gas Industry Transmission Access Working Group (Working Group) is pleased to present a complete 'straw man' for congestion management arrangements for the Vector Transmission System (VTS) that will:

- **Allow participating end-users** to get paid for reducing their gas use in times of physical congestion
- **Provide the gas industry** with a way for additional contractual capacity to be released when needed
- **Reduce the probability of critical contingency events** when physical congestion arises.

As a whole, these arrangements will help to allocate gas to its most efficient uses in times of scarcity and help to provide more efficient signals for new investment in gas pipelines. These arrangements are part of the Working Group's process to improve access arrangements on the VTS and address concerns that have been previously identified.

Summary of the Working Group's straw man for congestion management

Table A summarises the core elements of the Working Group's straw man, structured around the 'atoms' in the 'molecular structure' presented in Figure 4.1 of this report. This represents the Working Group's view on how the regime should initially be implemented, but has been designed to be flexible enough to evolve over time with other sector changes.

Table A: The Working Group's Straw Man for Congestion Management

Atom	The Working Group's Straw Man
<i>Triggers</i>	The congestion management operator (CMO) will trigger congestion management events in accordance with published standard operating procedures (SOPs)
<i>Notice</i>	Participants will receive a maximum of 3 hours' notice to curtail
<i>Eligibility</i>	Participants must have time of use TOU metering. Initially, it is likely that only large end-users on pipelines that have a higher risk of congestion will be accepted
<i>Paying for Congestion Management</i>	Participants will receive delivery fees for verified curtailment. Availability fees will also be provided for, but will initially be set at zero to reflect the fact that there is currently no contractual congestion. Fees will be negotiated. The CMO will use a merit order (based on cost and location) to select who to curtail in any particular congestion management event

Atom	The Working Group's Straw Man
Cost Recovery	The cost of an event will be spread across all end-users who consume gas on the affected pipeline on the event day. Where availability fees apply, these will be recovered via shippers from end-users that use the relevant pipeline
Incentives to Curtail	A participant who fails to curtail will lose its availability fee for the relevant period and will not receive any delivery fee. It will also be liable (through their Shipper) for losses suffered by the TSO due to its failure to curtail
Baselines for Compliance	Curtailment will be assessed against a participant-specific baseline that reasonably reflects their expected gas usage during the event
Legal Structure	The CMO (Vector—at least initially) will operate a trust similar to the Balancing and Peaking Pool. Payments from beneficiary end-users and to participants will be administered by the CMO through this trust. Individual terms for congestion management will be set out in a contract between the TSO and the relevant shipper—and then flowed through from shipper to participant
Other Terms and Conditions	Congestion management contracts will include further details of the participant's agreement to curtail and any situations (e.g. force majeure) when there will be no liability for failing to curtail

Next steps to implement congestion management

Table B sets out the Working Group's process to finalise and implement congestion management.

Table B: Next Steps to Implement Congestion Management

Now	Before 1 August 2015
Consult with industry (submissions due 6 April 2015)	Initiate consultation under the new VTC change request process by issuing: <ul style="list-style-type: none"> ▪ Proposed changes to the VTC ▪ Congestion management contract ▪ CMO SOPs
Collate and publish submissions summary	Follow new VTC change request process (May 2015 to July 2015)
Revise congestion management arrangements in light of industry feedback	Implement congestion management before 1 August 2015—ready for the next gas year

2 Introduction

The Working Group is pleased to present the gas industry with its second consultation paper on proposed congestion management arrangements for the VTS.¹ The Working Group aims to have congestion management arrangements implemented for the gas allocation round in October 2015, so that the arrangements are in place for winter 2016.

Industry workshops will be held in Wellington (10 March) and Auckland (11 March) to present the Working Group's progress and seek feedback from the industry. Final written submissions on this paper are due on 6 April 2015. This feedback will be incorporated into the final design of the congestion management regime, which will be given effect through a VTC change request. A draft change requested is expected to be released in early May 2015.

Congestion management will work with the existing and developing arrangements on the Vector and Maui transmission systems

One of the Working Group's major work streams is to design a new set of initial capacity allocation arrangements on the VTS. The Working Group is conscious that any congestion management arrangement must therefore provide value both under the current approach to allocating capacity at the start of the gas year, and once new arrangements are implemented.

The congestion management arrangements discussed in this paper are flexible and should work for any system of initial capacity allocation (whether based on contract or common carriage philosophy, or a hybrid of the two). The Working Group considers that the following features of congestion management will be required regardless of the final design of the new transmission regime:

- Identifying when physical congestion is likely to occur and the curtailment required to minimise the likelihood of a critical contingency
- Identifying the users who could curtail and alleviate congestion and determining how much those participants should be paid to curtail if called
- In a congestion event, deciding which participants to curtail to minimise costs
- End-users funding payments to curtailed participants²

¹ For background on the Working Group's role and membership and the Working Group's first consultation paper on congestion management, please see the Working Group page on the GIC's website: <http://www.gasindustry.co.nz/work-programmes/gas-transmission-investment-programme/industry-led-process/>.

² This paper uses the following terminology: 'participants' for those end-users who have signed up to be available to curtail when called; 'curtailing participants' for those participants who are called on to curtail in an event, 'curtailed participants' for those participants who verifiably curtail, and 'beneficiary end-users' for all end-users who consume gas during a congestion event.

- Having an administrative process that facilitates the steps described above—including a legal framework, a process for how payments are managed, and a dispute resolution system.

Under any initial capacity allocation design, congestion management will allow those end-users that place the highest value on using the pipeline to use it when capacity is scarce (i.e. when physical congestion exists). This will signal the value of scarce pipeline capacity and will also help to better inform future pipeline investment decisions.

Although the arrangements in this paper are flexible, the role that congestion management plays will differ under different approaches to allocating initial pipeline capacity:

- Under a **contract carriage-based regime**, congestion management arrangements aim to give the TSO the confidence to issue additional firm capacity at the start of the gas year
- Under a **common carriage-based regime**, congestion management arrangements aim to give end-users the confidence to make long-term investment decisions based on reliable access to gas pipeline capacity that is booked over short time periods.

The Working Group is also working closely with MDL to design congestion management arrangements in coordination with the access arrangements on the Maui pipeline system.

Structure of this paper

In this paper, we:

- Summarise the Working Group's first consultation paper on congestion management and industry's submissions (Section 3)
- Present the Working Group's straw man for congestion management (Section 4)
- Describe the high-level costs and benefits of the straw man (Section 5)
- Explain the Working Group's next steps to finalise and implement the regime—subject to the outcomes of this consultation (Section 6).

3 Summary of First Consultation Paper and Submissions

The first round of consultation confirmed that congestion management arrangements are a sensible first step in designing new transmission access arrangements for the VTS.³ In addition, it highlighted the value of continuing to engage with industry throughout the development of the arrangements, and the need to design the arrangements in a way that maximises industry confidence in their ability to manage congestion.

3.1 Progress to the first consultation paper

The First Consultation Paper presented the Working Group's high level framework for new congestion management arrangements which aim to:

- Provide a more efficient way to resolve congestion, should it arise, by allocating gas pipeline capacity to its highest value use by making payment to parties that are willing to temporarily reduce their use of gas pipelines
- Give the TSO the confidence to issue additional capacity at the start of the contractual gas year—increasing the efficient utilisation of the VTS.

The Working Group proposed to focus initially on congestion management (rather than initial capacity allocation), seeing this as a first step as part of wider reform of the access arrangements on the VTS. Congestion management can be implemented quicker than the re-design of initial capacity allocations, and so will help alleviate contractual and physical congestion in the short-term while the Working Group progresses its wider reform programme.

Within congestion management, the Working Group identified two types of product:

- **Security products**—fixed term contracts under which a participant agrees to curtail on agreed terms, if called, for a given price
- **Price-responsive products**—fixed term contracts under which a participant can, for any congestion management event, bid in the amount of capacity they will curtail and the price they will accept, with the congestion management operator determining the least-cost bids and notifying those that must curtail based on their bids.

³ The Working Group's first consultation paper on congestion management is accessible at: <http://www.gasindustry.co.nz/work-programmes/gas-transmission-investment-programme/industry-led-process/>.

3.2 Submissions were supportive, and highlighted the value of further industry consultation

Industry positively engaged with the Working Group's initial consultation paper, with the Working Group receiving submissions from emsTradepoint, Fonterra, Genesis, the Major Gas Users Group (MGUG), and Trustpower.

Industry:

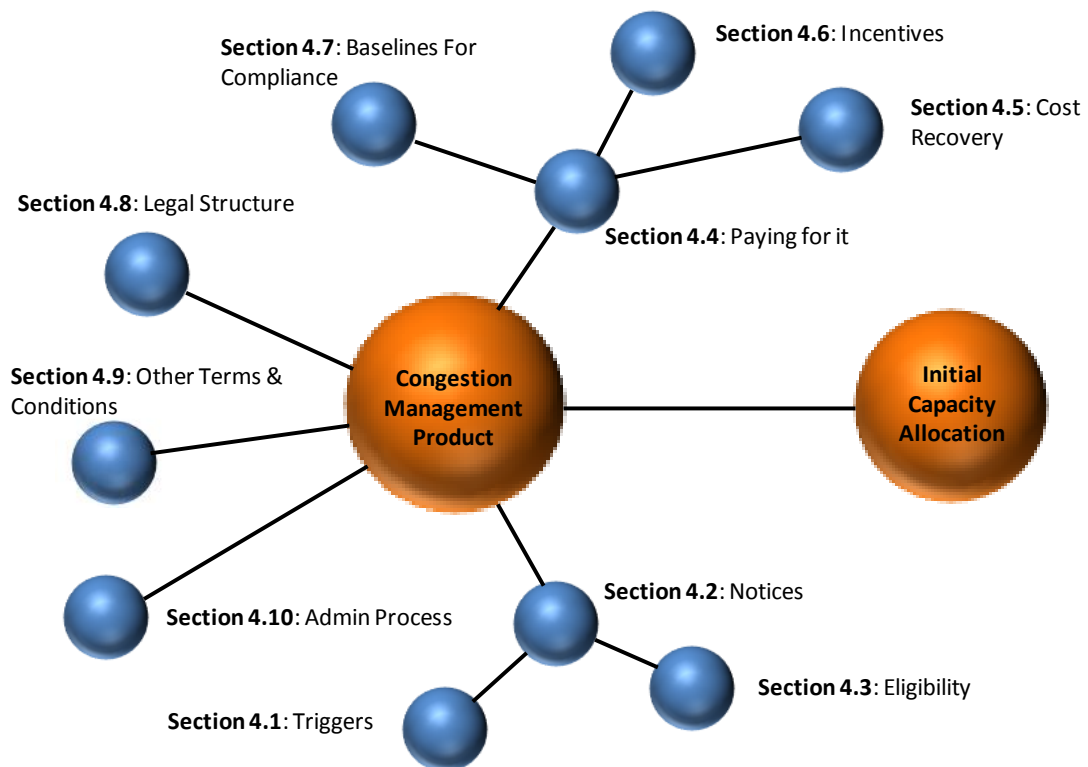
- Was supportive of the Working Group prioritising flexible congestion management arrangements
- Was broadly supportive of the Working Group's proposal to introduce a congestion management mechanism on the VTS to maximise the firm capacity available for allocation
- Had differing views on whether a price responsive product should be prioritised over the Working Group's proposed initial "security" product, with some suggesting that a price responsive product would actually be simpler than a security product (despite the Working Group's initial view)
- Was keen to understand more about how fees would be set and recovered—particularly ensuring there are no unnecessary costs to other system users, and ensuring costs were distributed appropriately across end-users.

4 The Working Group’s Straw Man for Congestion Management

Building on the first consultation paper, this section presents the Working Group’s detailed straw man for congestion management. We structure this section around the ‘molecular structure’ diagram shown in Figure 4.1.

Each subsection below describes one ‘atom’ within this molecule. We start with the technical considerations of how the CMO will trigger congestion management, and then describe the commercial, legal, and administrative arrangements that make up the regime.

Figure 4.1: ‘Molecular Structure’ of Congestion Management



4.1 Triggers for entering Congestion Management

The congestion management operator (CMO) will need to identify when and where congestion is likely to arise, and when to trigger congestion management “events”. Congestion management is needed when, without intervention, pipeline pressure could fall below specified minimum acceptable levels at one or more specified points on a pipeline—potentially resulting in a critical contingency event. Congestion is therefore a function of current pressure and forecast gas demand.

Given that forecasting gas demand is not straightforward, the Working Group considers that triggering congestion management will require the CMO to exercise its reasonable judgement. This judgement will be informed by and conform to documented ‘standard operating procedures’ (SOPs). The overall objective of the SOPs will be to ensure that, as far as reasonably practicable, congestion management is used when it is needed and not invoked unnecessarily.

Predicting congestion is not simple because rapid pressure changes may be normal

Identifying when a congestion issue may arise is not straightforward because of the way the pressure(s) in a pipeline may vary during normal operations. In many pipelines, particularly in sections furthest from the relevant “pressure source⁴”, pressures may regularly deplete significantly (typically during the day), bottom out and then recover (typically overnight). The uncertainty as to how low pressures will go and whether they will recover sufficiently for the coming day’s demand means that predicting congestion is not straightforward. Moreover, the rates at which pressures periodically decline may be quite high, making such measures an unreliable indicator of impending congestion.

Figure 4.2 illustrates the above phenomena and the nature of the prediction challenge for the CMO. It plots pipeline pressure at two points on the Rotowaro-north pipeline in the week of 15-21 August 2011. This week was the worst cold snap in nearly 100 years, and came at a time when capacity on the Rotowaro-north pipeline was very heavily committed. It therefore provides a useful example of how valuable congestion management could be, considering that the amount of curtailment needed to maintain pipeline pressures above minimum values could be quite a small proportion of total flow.

⁴ For example, a Receipt Point and/or a compressor station.

Figure 4.2: Pipeline Pressures in the Week of 15-21 August 2011

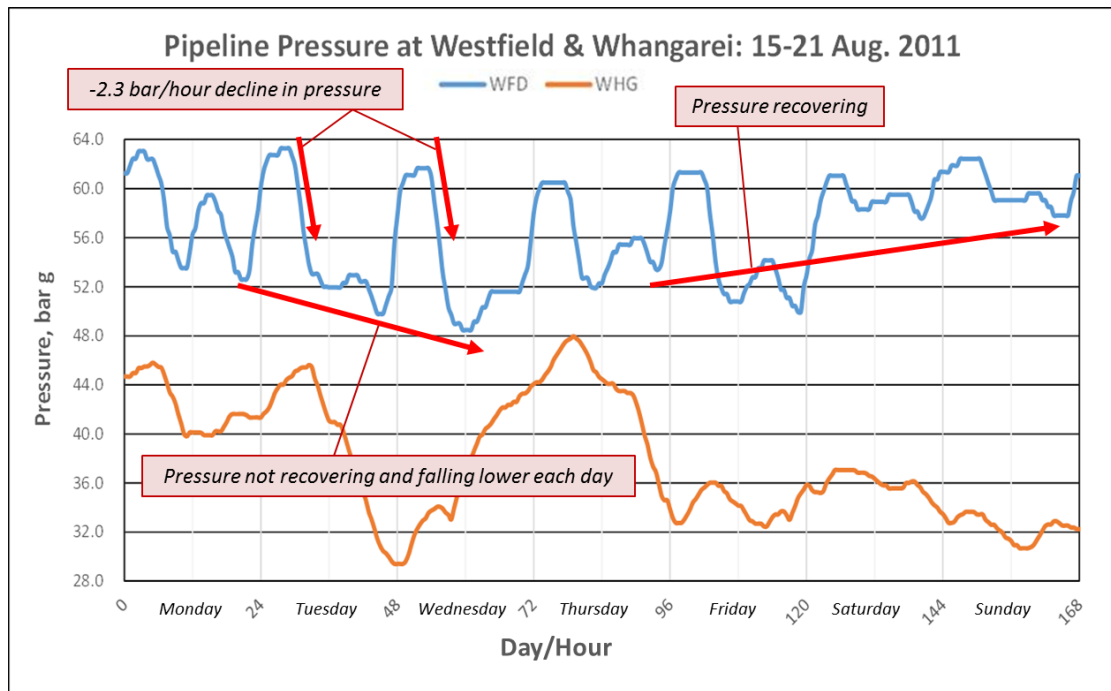


Figure 4.2 shows that the rate of change of pressure (dP/dt) at Westfield in the early hours of both Tuesday (24–48h) and Wednesday (48–72h) was -2.3 bar/hour. The minimum pressure reached was lower on each day from Monday to Wednesday. On Tuesday, the rate of change in pressure (dP/dt) at Whangarei (~ 1.1 bar/hour) was less than at Westfield, although the actual reduction in pressure (i.e. maximum–minimum) was greater. A CMO scrutinising and “extrapolating” this data would have at least considered the possibility of congestion manifesting at Westfield on Thursday (72–96h).

In the event, offtake in the Auckland Zone on Thursday was 3.6 TJ (6.2%) lower than on Wednesday, offsetting a rise in power station offtake of 2.2 TJ (2.4%). This net reduction in demand north of Rotowaro was sufficient to reverse the previous trend of decreasing daily minimum pressure at Westfield.

The CMO will use an empirical, incremental approach to congestion management

Given that it requires a measure of prediction, the Working Group's view is that triggering congestion management will always involve both judgment and experience, as does the critical contingency management (CCM) regime.

The CMO will determine when congestion management is likely and curtailment is required based on its observation of the state of the relevant pipeline following its SOPs, experience and applying reasonable judgment. The CMO will apply curtailment incrementally based on its empirical observation of the effect of the curtailment. Provided the SOPs are sufficiently robust, the Working Group's view is that Vector should be able to discharge its obligation to act as an RPO as required under the VTC, and build industry confidence in the congestion management regime. The Working Group will create a set of draft SOPs consistent with this consultation paper, and circulate them as part of the industry consultation process in May 2015.

The Working Group is investigating the cost and feasibility of a pipeline simulator to help inform the CMO on when congestion might arise

The Working Group is investigating the feasibility and cost of a pipeline simulator which would help inform the CMO's judgement. This would allow the CMO to model future pipeline scenarios to assist in determining whether congestion might occur. This simulator would:

- Hold a physical model of each pipeline
- Link to SCADA so as to maintain a full set of actual pipeline pressures to keep each model "initialised"
- Be able to model the effect of different flow scenarios on pipeline pressures, allowing the CMO to predict what load increases might trigger congestion and what load curtailments might avoid it.

The Working Group supports developing this simulator once the congestion management regime develops (if feasible and subject to a cost-benefit analysis). This option would be particularly valuable as participation in the congestion management regime grows, as it could enable the CMO to better determine:

- The time lag between any load reduction and a pressure response
- The integrated effects of load reductions in different locations on the pipeline.

1. Do you think that the application of SOPs give the industry certainty and confidence in the CMO's approach to triggering a congestion management event?

A congestion management event will end if the pipeline enters CCM

Congestion management will be used to, where possible, avoid critical contingency events arising from pipeline congestion. The CCM regime will retain its existing role in dealing with events affecting the physical integrity of any part of the VTS. To avoid potential conflict, it must be clear what happens when CCM is triggered during a congestion management event. The options are to:

- Keep congestion management in place and implement critical contingency management on top for any extra curtailment required
- Honour curtailment payments up until CCM is triggered, with CCM then replacing congestion management.

Under the congestion management arrangements, payments up until CCM is triggered will be unaffected, but once CCM is triggered, curtailment obligations will cease. The Working group believes it is simpler to have one party (the critical contingency operator) managing an event, rather than risk conflicting instructions being given to end-users and shippers.

Where the critical contingency operator notifies of a “potential” critical contingency event, the operation of congestion management will be unaffected.

2. Do you agree that congestion management should end if CCM is called, and that curtailment payments should therefore be honoured only up until CCM is called?

4.2 Notices

The Working Group's development of the triggers for congestion management (discussed above) reinforces our view that short notice periods are necessary in most cases. The Working Group expects that the notice period will be set at a maximum of three hours.

Technical constraints necessitate a relatively short notice period

In the first consultation paper, the Working Group identified potential benefits to giving participants and end-users as much notice as possible of congestion events. These included giving end-users time to self-manage their gas usage, and potentially switch to using other fuels. Industry expressed a preference for longer notice periods in the consultation process, with some large gas users indicating that they might be interested in participating, but would be precluded from doing so if notice periods are short.

While the Working Group understands end-users' preference for longer notice periods, the ability of the CMO to operate a functional congestion management regime requires shorter notice periods. A longer notice period would increase the likelihood of congestion management being called unnecessarily, or for longer than needed. This is because the CMO would be less certain about the amount of curtailment required and would have to factor in a longer time for curtailment. While this may narrow down the pool of potential participants, the Working Group considers this unavoidable given the technical limitations in identifying congestion.

One benefit of short notice periods is that they will significantly reduce the potential for participants to 'game the system' by increasing their pre-congestion gas usage (that is, inflating the baseline against which their curtailment is assessed against).

3. Would a three hour notice period affect your ability to participate in a congestion management regime?

4.3 Eligibility requirements

To be eligible to participate in congestion management, end-users must have daily offtake large enough to have a material effect on the relevant pipeline if curtailed,⁵ and TOU metering to allow the CMO to verify load reductions after the event. The CMO will also prioritise signing congestion management contracts with participants supplied from pipelines with a higher risk of congestion. The CMO will look to other pipelines as the regime develops. In this way, a participant's 'usefulness' will be part of the selection process.

In terms of the required load, as an indication, the Working Group considers that on major pipelines (such as Vector's Rotowaro-north pipeline) the minimum curtailable offtake per end-user on heavily-used parts of the VTS is likely to be around 500 GJ/day. This amount will vary by region, and will be less on smaller pipelines. The Working Group considers it is necessary to balance the desire to have a greater number of participants with the need to minimise the CMO's administrative costs.

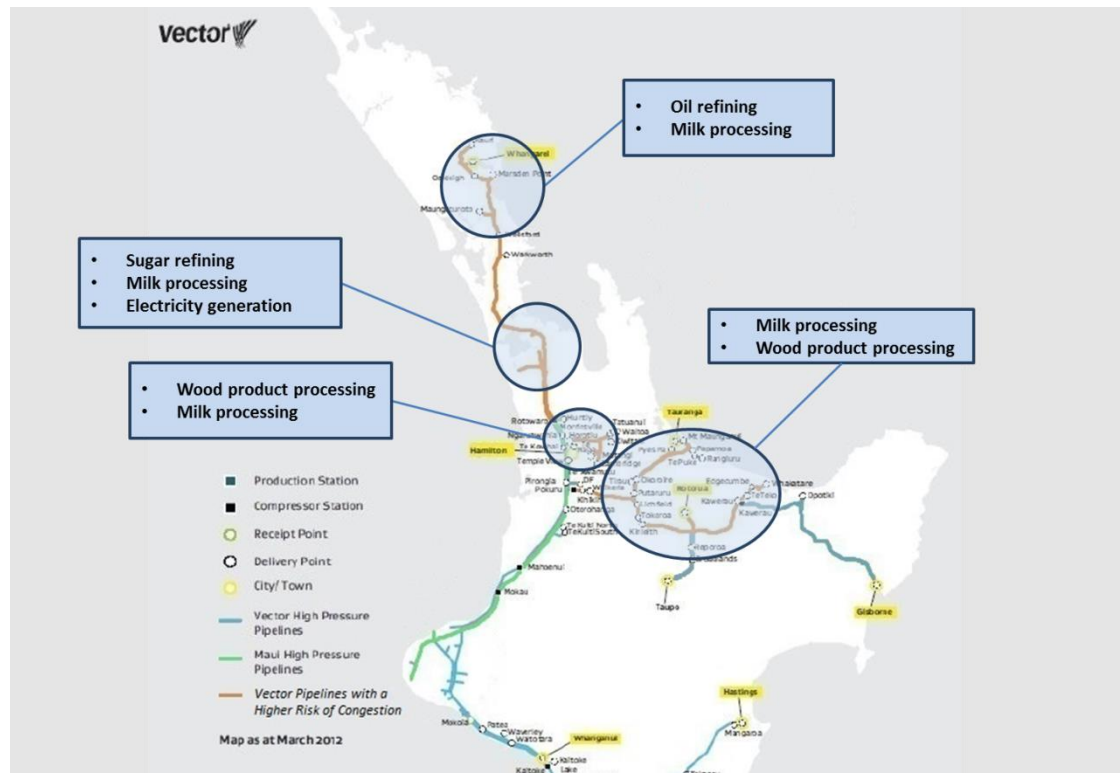
The GIC's previous investigations found that there are 15 end-users willing to curtail on terms that are more flexible than those set out in Vector's current interruptible agreements. The GIC found the aggregate load of these users was 8.3 TJ/day, which coincidentally averages out at a little over 500 GJ/day per user.⁶ Starting with a simple, low cost regime, the CMO will have the option to expand the scope of congestion management by reducing the minimum quantity requirements once the initial scheme proves its value.

As an initial indication, Figure 4.3 shows the pipelines that the CMO sees as having a risk of congestion. These are the Rotowaro-north pipeline, laterals off the Bay of Plenty pipeline, and downstream sections of the Morrinsville pipeline. Figure 4.3 also indicates the types of major end-users on each pipeline.

⁵ The Working Group intends that the CMO will start with signing congestion management contracts that relate to the load of major end-users, but that there will be potential scope for aggregators to play a role in congestion management as the regime develops.

⁶ See GIC 'Investigation of Possible Scale of Demand Management on the Vector North System' dated 5 March 2014, accessible at: <http://www.gasindustry.co.nz/dmsdocument/3176>.

Figure 4.3: Map of Pipelines with a Higher Risk of Congestion



4. *Would the suggested minimum load requirements (500 GJ/day of curtailable load for major pipelines) affect your ability to participate in congestion management?*

4.4 Paying for congestion management

When a congestion management event is called, the CMO will first call on participants who are the cheapest to curtail—identified based on the curtailment amount, location, timeframe (and other similar factors), and participants' fees.

This section describes how the Working Group will set these fees. In the first consultation paper the Working Group proposed that curtailing participants receive two payments:

- **An availability fee:** A regular, fixed fee paid to those who will curtail on demand
- **A delivery fee:** An event-specific fee for those end-users who meet their contracted, notified load reduction.

Availability fees will be renegotiated periodically, but are expected to initially be zero-rated

In the first consultation paper, the Working Group proposed that the availability fee's role was to ensure adequate participation in congestion management. After further reflection, the Working Group considers that these fees will be negotiated with end-users, but that initially they will be zero-rated.

The potential sources of value reflected in availability fees include:

- Enhancing the TSO's confidence to issue additional firm contractual capacity beyond the current limits on the pipeline
- Reducing the probability of calling critical contingency events
- Avoiding costs through deferring pipeline investments.

Currently, there is spare contractual capacity on the VTS—so the main value of congestion management will be managing physical congestion, rather than giving the TSO confidence to issue additional firm contractual capacity. As a result, availability fees will be zero-rated at first, but as congestion management starts to play a role in giving the TSO the confidence to issue additional firm capacity, the CMO will consider negotiating availability fees with participants. Availability fees might then vary between participants, with the CMO having a suite of contracts to choose from which give differing levels of confidence (and price) over the amounts that participants can curtail. When the CMO chooses to negotiate availability fees, the CMO will need a basis for setting limits on these fees to minimise the costs recovered from end-users.

5. *Do you agree that availability fees should be zero-rated at first, and negotiated with end-users as circumstances change and the regime develops?*

Delivery fees should be set in a way that obtains the cheapest effective curtailment response

Delivery fees should compensate participants for their costs of curtailing, and so should at least reflect the value that participants place on gas during congestion events. The Working Group considered whether to:

- Set a common delivery fee for all participants
- Set individual delivery fees based on the value each participant places on gas.

If a common delivery fee was used, it would need to be set at the highest value any participant places on gas. Otherwise, valuable but expensive end-users would not participate because they would not be compensated for their costs of curtailing. One such potential option is the 'netback' gas price—the value of gas as an input in generating and selling electricity. This would be a simple and effective way to capture the value of gas to some of the most significant gas users. However, this simplicity is only valuable when participants place a similar value on gas, particularly during times of congestion. The available evidence suggests that in fact the value users place on gas differs greatly.⁷

Individual delivery fees will be negotiated with each participant

Because the value users place on gas differs, delivery fees will be specific to each participant and be set for the duration of a congestion management contract.

The level of delivery fee could be set either through individual negotiations or a tender process. A tender process would maximise the chances of obtaining the cheapest curtailment options. However, running a tender process has costs and takes longer to implement. As a result, delivery fees will initially be set by negotiation and will then be set through a tender process after one or two years—once participants are more familiar with the regime. In either case, for transparency the CMO will release the terms and prices of all congestion management contracts once all are signed.

Delivery fees could be event-specific if they are set through a pre-agreed, objective mechanism

The Working Group considers that event-specific delivery fees might be permitted so long as the way the price is calculated is objective, and the price can be determined before the CMO triggers an event. This option would be attractive for those participants whose value for gas fluctuates greatly. The price must be able to be determined in advance so the CMO has certainty over how much it will cost to curtail each participant and therefore the cheapest curtailment sources to call.

⁷ NZIER "Value added associated with gas demand" 11 October 2012

6. *Do you agree with the Working Group's proposal to initially implement a Security Product, with the option of developing a Price Responsive Product at a future date?*
7. *Do you agree with the Working Group's proposed approach of setting delivery fees initially by negotiation, moving to a tender process once the regime is established?*
8. *Do you agree that fees and terms should be published once all contracts are agreed?*

4.5 Cost recovery

Compensating curtailed participants requires a pool of money—this section describes how the costs of congestion management will be recovered.

The costs of congestion management should be recovered from those who benefit from the regime

The Working Group considers that the full costs of congestion management should be allocated in a simple and fair way. To the extent possible, cost recovery should also incentivise users to self-manage their gas use (by being exposed to higher prices during times of scarcity) to the extent possible. As discussed in the first consultation paper, the Working Group considers that a beneficiary pays approach best satisfies these criteria.

Since the previous consultation paper, the Working Group has further examined who qualifies as a beneficiary of congestion management. Such parties might be:

- All end-users regardless of when and where they consume gas—because congestion management gives the TSO the confidence to issue more firm capacity
- Those end-users who continue to consume gas on the affected pipeline during a congestion event who would otherwise have been curtailed under CCM
- All end-users who continue to consume gas on the affected pipeline during a congestion event—regardless of whether they would have been curtailed under CCM.

To keep cost recovery simple and fair, the costs of congestion management will be recovered through charges to all end-users on the affected pipelines that consume gas on the day of the congestion event—as notified by the CMO. This includes any end-users who use gas and are subsequently curtailed—on the basis that they are being paid only for the usage they do curtail, not that usage which has already contributed to the congestion event. The ‘congestion event’ will be the time during which participants are required to curtail. These charges will be managed through the administrative arrangements described in Section 4.8.

9. Do you think charging those users on the congested pipeline on the day of the congestion event adequately captures the beneficiaries of a congestion management regime?

High-level congestion scenarios on the Rotowaro pipeline indicate that the costs recovered from end-users might vary from \$0.20/GJ to \$8/GJ

The Working Group has undertaken some high level scenario analysis set out in Table 4.1 to determine the upper and lower bounds for the costs that will be recovered from beneficiary end-users. The Working Group has considered two capacity allocation scenarios:

- 2 TJ of curtailment is required
- 7 TJ of curtailment is required, due to an over-allocation of 5 TJ of contractual capacity—all of which is being used.

In all cases the CMO will call on the cheapest possible curtailment sources available, but the scenarios in Table 4.1 give an indication of the upper and lower bound for the costs that will be recovered from end-users. This analysis uses high-level estimates for the value of gas for different types of end-user ranging from \$20/GJ to (over) \$200/GJ. To put this in perspective, an indicative retail rate of \$20/GJ would mean:

- 2 TJ of congestion would add a 'congestion premium' of between 1% and 11% to retail rates on the day
- 7 TJ of congestion would add a congestion premium of between 4% and 40% to retail rates on the day.

Table 4.1: Potential Cost Recovery Scenarios

Contractual capacity allocation	Curtailment required	Cost of curtailment source	Estimated 'congestion premium' per GJ (based on an estimated 175 TJ of beneficiary end-users)
Within existing levels	2 TJ	Low (\$20/GJ)	\$0.23
		High (\$200/GJ)	\$2.28
Over-allocation by TSO of 5TJ	7 TJ	Low (\$20/GJ)	\$0.80
		High (\$200/GJ)	\$8.00

4.6 Incentives on participants to curtail

The congestion management regime's success relies on participants curtailing when called—and the TSO having confidence that they will do so. If this does not happen, the TSO will not have the confidence to issue additional firm contractual capacity, and during an event, the CMO might have to call on other participants to curtail—or the event may become subject to CCM. To avoid these situations, participants who fail to curtail will lose the delivery fee and availability fee (if any) they would have been paid. Non-complying participants will also be liable for any costs suffered by the TSO as a result of their non-compliance.

Participants who fail to curtail will lose their delivery and availability fees

As a minimum, participants who fail to curtail should lose the compensation they stood to gain, being:

- The delivery fees they would have received had they met their curtailment offer, and
- The availability fee (if any) they would have been paid during the period (for example, the month) when the congestion event occurred (because they have demonstrated their unavailability).

Where a participant partially curtailed, these fees would be adjusted proportionally. In addition, the CMO will have rights to terminate for material or persistent breaches of a participant's obligations to curtail, and the Working Group expects that historical performance will be taken into account in the periodic negotiation of new congestion management contracts.

Participants will face additional incentives to curtail

Participants who fail to curtail must also compensate the TSO for any loss the TSO suffers as a result of the participant failing to curtail. The Working Group considers that this is reasonable because participants will have every opportunity to specify when they are available to curtail, and negotiate the exceptions where they are not liable for failing to curtail, for example, for force majeure events.

10. *Do you agree with the incentives framework the Working Group proposes?*

4.7 Baselines for compliance

To measure a reduction in gas usage, the CMO must estimate a 'baseline' for how much gas a participant would have used if they were not curtailed. As described in the first consultation paper, the CMO will then use a calculation similar to that used by Transpower for its demand response programme.⁸ The CMO will subtract the metered amount of gas the participant consumes to determine how much the participant curtailed. As described in the first consultation paper, the Working Group considers that the process for defining and verifying curtailment must:

- Enable fair and accurate measurement of curtailment to ensure proper assessment of compliance and compensation
- Ensure that baseline measurement takes account of forecast usage foregone during an event—that is, recognition that demand is not static.

The Working Group had originally included the objective of safeguarding against any attempt to 'game' the system by participants artificially increasing their load. However, so long as the baseline is measured more than 3 hours before an event (the length of the notice period), this is unlikely to be a concern.

The baselines for compliance will be negotiated with end-users and could include historical gas usage on comparable days

The baseline will be negotiated with end-users to be reasonably reflective of the participant's expected gas usage. This might, for example, be set using an average historical (hourly) offtake for comparable days over the 45 days preceding an event. Alternately, it might be based on a historical (hourly) offtake 'profile'—if that better reflected the end-user's load. Another option is that an end-user may agree to have a baseline set based on running to an agreed Maximum Hourly Quantity.

11. *Do you agree with calculating baselines for compliance using the Working Group's proposed approach?*

⁸ For a detailed description, see the [DRMS User Guide](#)

4.8 Legal structure

There will be a legal structure that establishes the rights and obligations of all parties involved in congestion management. This includes requiring curtailing participants to curtail, and creating an obligation on beneficiary end-users to pay for that curtailment. Set out below are the Working Group's arrangements for:

- The overall legal framework—what contracts there will be and who they will be between (Section 4.8.1)
- How payments will be administered (Section 4.8.2)
- The role shippers will play in administering payments (Section 4.8.3)
- The role the CMO will play in managing and resolving disputes (Section 4.8.4).

4.8.1 The overall legal framework

The Working Group see two broad options for the legal structure:

- **A regulatory solution** which establishes the CMO's rights to charge end-users for the costs of congestion management, for example by allowing it to be incorporated in transmission charges (similar to Transpower's demand response programme)
- **A contractual solution** which involves beneficiary end-users paying amounts (either directly or through shippers) to curtailing participants in a way that avoids those payments being treated as forming part of Vector's regulated revenue (similar to the existing balancing and peaking pool (BPP)).

The Working Group prefers a contractual solution because it is simpler and faster to implement than a regulatory solution (which would also require the resources and agreement of the Commerce Commission).

Under a contractual solution, either beneficiary end-users can pay amounts directly to curtailing participants (via a pool) or pay through shippers as intermediaries who then pay the pool. The Working Group's approach is for shippers to aggregate payments because:

- Shippers aggregating payments allows congestion management to be incorporated into existing contractual relationships and existing billing processes, reducing up-front time and costs and ongoing costs
- End-users paying direct would involve the CMO billing end-users directly, likely involving significant cost to set up payment systems, and difficulty in requiring end-users to pay a separate bill for congestion management.

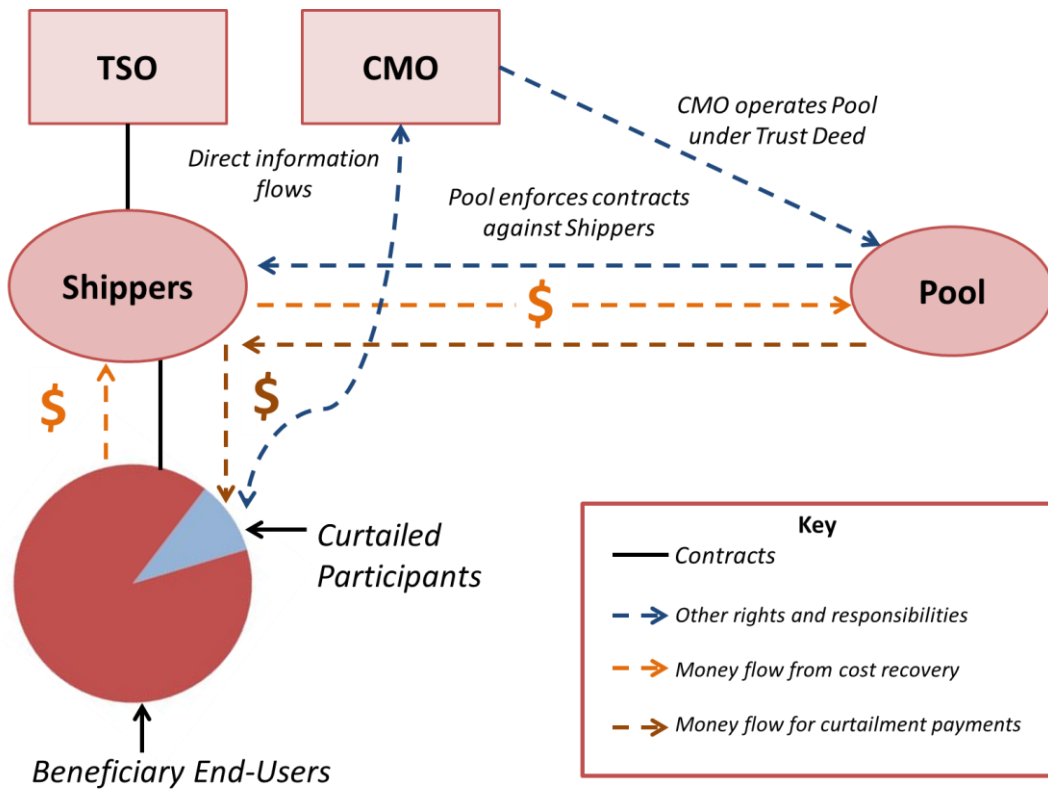
A contractual solution will be implemented, that is similar to the BPP, by:

- Establishing a trust that is legally separate from Vector (the Pool) (but operated by Vector as CMO, at least initially) under which the CMO operates the Pool, collecting payments and paying fees

- The negotiated terms on which participants can be curtailed being incorporated into existing agreements between the TSO and shippers (including the VTC)—and those terms being flowed through to shippers’ contracts with participants.

Figure 4.4 illustrates the Working Group’s proposed contractual framework.

Figure 4.4: Proposed Contractual Framework for Congestion Management



The Working Group considers that this solution will work within Vector’s regulation under Part 4 of the Commerce Act 1986—avoiding payments being treated as forming part of Vector’s regulated revenue. Payments by shippers to the Pool arising under the VTC and supplementary agreements (which Vector is a party to) should not be considered part of Vector’s regulated revenue on the basis that Vector has no right to the funds flowing through the Pool—other than in its capacity as CMO.

4.8.2 How payments will be administered

There needs to be defined arrangements that give all parties certainty around when payments are due into the Pool and when they will be paid out of the Pool.

Regarding payments out of the pool, the Working Group sees two options:

- Payments are made immediately after a congestion event ends—requiring funds to be held in the Pool, ready for payment
- Payments are made only when the Pool has been paid—not requiring funds to be held in the Pool, but extending the period until curtailed participants are paid.

The Working Group's preference is for payments to be made out of the Pool when funds are available to pay curtailed participants because it:

- Eliminates the cost of keeping funds continually in the Pool that would otherwise be required to meet claims
- Should not materially affect participants' desire to participate in congestion management.

Regarding when payments into the Pool must be made, for simplicity these will be incorporated into the current periodic payment arrangements for transmission charges. Since shippers will aggregate payments, the due date for payment to the Pool will be set after the end of a shipper's typical billing cycle to allow shippers to on-charge these amounts and recover them before they need to be paid.

Payments will then be washed-up as part of the existing downstream reconciliation process to ensure that shippers' costs reflect actual gas use.

4.8.3 The role shippers will play in administering payments

Within the legal framework described above, shippers will play a role in administering payments between curtailed participants, the Pool, and beneficiary end-users. The Working Group considers that shippers might either:

- Act as an intermediary, only having the obligation to use their best endeavours to get beneficiary end-users to pay the Pool
- Take the primary responsibility to pay congestion fees, taking on the risk of beneficiary end-users not paying them fees in the same way as not paying a shipper's usual invoice.

Shippers will have the primary responsibility to pay the Pool

The Working Group's preferred approach is for shippers to take the primary responsibility for paying the Pool because it:

- Maintains consistency with the industry structure of shippers having the only direct relationship upstream

- Minimises costs by incorporating congestion management into the parties' existing relationships
- Reduces dispute costs through the CMO having only to deal with shippers, and the CMO having a single claim for non-payment rather than an additional claim against the shipper (based on its obligation to use its reasonable endeavours to get end-users to pay the Pool)
- Should not involve shippers taking significant risk over and above the typical credit risk they take on end-users because the likely amount of curtailment required (and therefore the risk) should not be large.

The Working Group expects that shippers will then flow these costs through to end-users, and will recover the additional cost of performing this role from end-users.

12. *Do you agree with implementing the congestion management arrangements through the Working Group's proposed contractual solution?*
13. *Do you agree with shippers aggregating payments and paying the Pool on behalf of beneficiary end-users?*
14. *Do you agree with shippers having the primary obligation to pay the Pool?*

4.8.4 The role the CMO will play in managing and resolving disputes

There needs to be a clear framework that allocates responsibilities for resolving disputes between shippers, the Pool, the CMO, and the beneficiary end-users who are paying for a congestion event. That framework will depend on the role the CMO plays. The Working Group sees two options for the CMO:

- The CMO takes on the obligation to resolve disputes between the Pool and both curtailed participants and end-users (or shippers on their behalf)
- The CMO only acts as a payment administrator, with all parties to a dispute resolving it directly.

The CMO will resolve all disputes with the various parties

Because of the potentially large number of parties involved in resolving a dispute directly, the Working Group's preference is for the CMO to take on the obligation of resolving disputes. Building on this approach, Table 4.2 sets out the Working Group's proposed way of resolving the six types of dispute that might arise between the various parties.

Table 4.2: How the Six Types of Disputes Likely to Arise will be Resolved

Dispute	Working Group Preference
Disputes on the side of beneficiary end-users	
Congestion event unnecessarily triggered or not triggered when should have been (resulting in CCM)	No ability to challenge whether congestion event should have been called. However, if the CMO role is contracted out this may be amended
Late payment of congestion fees into the Pool	Additional compensation payable by shipper/end-user based on estimated cost of delay. Costs include delayed payments to curtailed participants
Non-payment of congestion fees into the Pool	Since shippers have the primary obligation to pay the Pool, the CMO will bring a claim against the shipper for non-payment. If a shipper is insolvent, this will be dealt with in the same as the current regulatory regime for insolvent retailers—which involves cost socialisation across end-users
Incorrect calculation of congestion fees payable into the Pool	Refund/additional charges as required, with payment of additional compensation for time delay
Disputes on the side of curtailed participants	
Failure to curtail	As discussed in Section 4.6, participants who fail to curtail will: <ul style="list-style-type: none"> ▪ Lose their availability fee for the relevant period ▪ Not be entitled to the delivery fee for the congestion event ▪ Be liable for the TSO’s costs as a result of their non-compliance ▪ Have their poor performance taken into account in subsequent congestion management contract rounds
Incorrect calculation of curtailment fees payable by Pool to curtailed participant	Refund/additional charges as required, with payment of additional compensation for time delay

15. Do you agree with the CMO being responsible for resolving disputes?

4.9 Terms for congestion management contracts

The Working Group will create a template congestion management contract for consultation with industry and will release this as part of the consultation in May 2015. Once this is revised to incorporate any industry feedback, the CMO will use it to contract with individual participants (via their shipper). The contract will incorporate the relevant points discussed throughout this paper, including the following:

- **Maximum and minimum quantities for curtailment**, and whether variable curtailment within those amounts is possible. This recognises that some users can only surrender load in chunks, while others may have more flexibility
- **The type of curtailment to be provided**. Some users may agree to curtail **by** a certain amount, while others could agree to curtail **to** a particular level (e.g. minimum operating level)
- **Restrictions on when the participant may be called**. For example, a participant may be unable to curtail during certain hours on certain days, or for a sustained period over a particular time of year
- **Restrictions on how many times a participant may be called**. This could be phrased in terms of an overall limit for the duration of the contract, or be more specific, such as no more than 2 calls in a month
- **Minimum notice requirements**. This is likely to be a maximum of three hours for any event—see Section 4.2
- **Delivery and availability fees**. These fees are discussed above in Section 4.4
- **Public disclosure**. Terms and fees in congestion management contracts will be made public once all are signed
- **Consequences of breach**. Participants will lose their delivery and availability fees (if any) for failing to curtail, and will be liable for the TSO's costs as a result of their breach—discussed in Section 4.6
- **Force majeure provisions**. The parties' obligations will be suspended when specified events occur that are outside their control.

These terms and conditions will be negotiable, but will include a common dispute resolution framework for consistency across participants—as set out above in Section 4.8.4.

16. *Are there any terms not listed above that will be particularly important to your interest in participating in congestion management?*

4.10 Summary and administrative process

Bringing together the Working Group’s straw man, Table 4.3 summarises the congestion management arrangements, and Figure 4.5 provides an overview of how the CMO will administer the congestion management regime in practice.

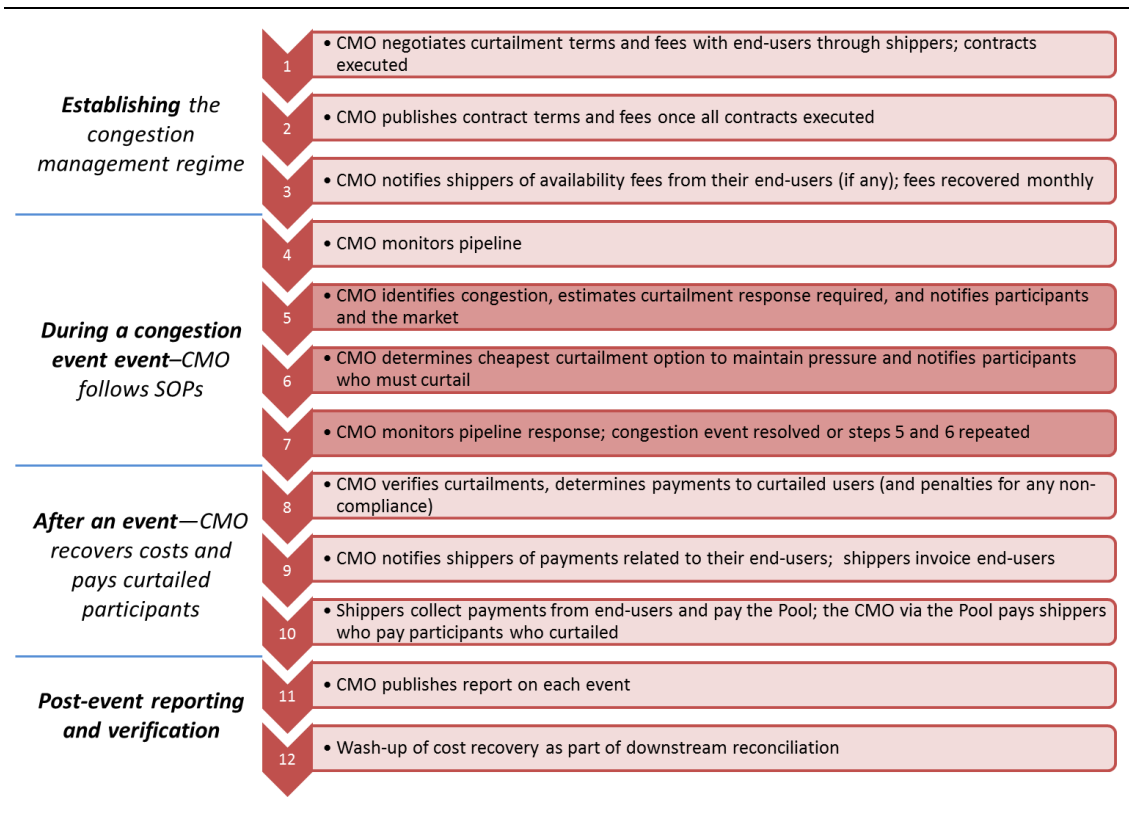
Table 4.3: Summary of Straw Man for Congestion Management

Atom	The Working Group’s Straw Man
Triggers	The congestion management operator (CMO) will monitor the pipeline and trigger congestion management, based on its expert judgement and following a set of published standard operating procedures (SOPs). The CMO will take an incremental approach to calling for curtailment; calling for further curtailment as necessary
Notice	The CMO will provide a maximum of three hours’ notice to participating end-users of a requirement to curtail—to ensure the right balance between minimising unnecessary curtailment, whilst giving the CMO confidence it will work, and giving participants time to prepare to curtail
Eligibility	Participating end-users must have TOU metering. The CMO will initially prioritise signing up large end-users on pipelines with a higher risk of congestion (in particular, the Rotowaro-north Pipeline). The Working Group sees ‘large’ end-users as those consuming more than 500 GJ/day (on major pipelines)—to ensure the right balance between administration costs and maximising participation
Paying for Congestion Management	<p>Curtailed end-users will be paid the fees that they negotiate in their congestion management contract. Negotiated fees consist of a delivery fee—an event-specific fee for those users who meet their contracted, notified load reduction; and potentially a periodic availability fee. The periodic availability fee is expected to be zero initially to reflect the spare contractual capacity on the VTS, and to minimise the costs of congestion management. The CMO will reconsider availability fees as part of the periodic evolution of the regime.</p> <p>During a congestion event, the CMO will call on participants who are the cheapest to curtail—identified based on the curtailment amount, location, timeframe (and other similar factors) and participants’ delivery fees</p>

Atom	The Working Group's Straw Man
Cost Recovery	<p>All end-users who consume gas on the affected pipeline will bear the cost of a congestion management event on the basis that they benefited from being able to continue to use gas on the day. The total delivery fees to be paid will be spread across all the gas consumed on the pipeline during the day of the event.</p> <p>Where there are availability fees, these will be recovered periodically from end-users (via shippers) that use the relevant pipeline</p>
Incentives to Curtail	<p>Where end-users fail to curtail as promised, they will: lose their availability fee (for the relevant period, if any) and delivery fee they would have been paid; and be liable for any costs suffered by the TSO as a result of their failure to curtail</p>
Baselines for Compliance	<p>Curtailment will be assessed against a baseline of what each participating end-user's gas use would have been if they were not curtailed. This will be negotiated as part of congestion management contracts</p>
Legal Structure	<p>The CMO (Vector—at least initially) will operate a congestion management trust similar to the BPP. Participants will provide congestion management through their shipper, and beneficiary end-users will pay for congestion management through their shipper. The CMO will administer payments into the Pool from shippers (on behalf of beneficiary end-users) and out of the Pool to shippers (on behalf of curtailed end-users).</p> <p>The terms on which Participants agree to provide congestion management will be set out in a congestion management contract between the TSO and the relevant shipper. Shippers will then flow through end-users' curtailment obligations in their individual contracts with end-users</p>
Other Terms and Conditions	<p>Congestion management contracts will include the limitations on when an end-user agrees to be available to curtail and, including the exceptions (e.g. force majeure events) when they are not liable for failing to curtail</p>

Figure 4.5 provides an overview of how congestion management will work in practice.

Figure 4.5: Overview of How Congestion Management Will Work in Practice



During the regime, the CMO will periodically carry out auditing and simulation assessments that ensure the congestion management arrangements are ready and can operate when required. The Working Group intends any 'live' testing that involves participants curtailing as in a real event will be minimised to reduce the costs of the regime.

17. *Should the congestion management arrangements be 'live' tested?*
18. *Would you be willing to participate in congestion management on the basis of the arrangements set out in this consultation paper?*
- If yes, please indicate the location of the load you would be willing to have participate, and its daily curtailable load.*

5 Costs and Benefits of the Proposed Regime

Based on the preferred approach outlined in this consultation paper, the Working Group considers that congestion management will have the costs and benefits set out in Table 5.1. The Working Group anticipates that the consultation documents released in May will include a quantification of these costs and benefits.

Table 5.1: Costs and Benefits of Congestion Management

Costs	Benefits
<ul style="list-style-type: none"> ▪ End-user costs, including: <ul style="list-style-type: none"> – Availability fee (reflecting the fixed up-front and ongoing costs to establish systems, provide information, and monitor congestion) – Delivery fee (reflecting the value of foregone gas consumption when participants are curtailed) ▪ CMO costs, including: <ul style="list-style-type: none"> – Set up costs – Ongoing administrative costs 	<ul style="list-style-type: none"> ▪ Value of being able to allocate more contractual capacity (increased efficiency in pipeline access) ▪ Value of avoiding critical contingency events ▪ Value of avoiding balancing gas purchases ▪ Growth in gas use through increasing confidence in the gas market ▪ Timeliness ▪ Avoid 'lumpy' capital expenditure (to the extent not counted in the value of being able to allocate more capacity) ▪ Savings to 'NZ Inc' from an industry-led and industry-preferred approach

Some of these costs and benefits depend on the extent to which the congestion management arrangements are used in practice. However, the costs and benefits will move in the same direction whether the use of the congestion management regime is low or high. When congestion events are rarely called, there will be little foregone value from consuming gas. At the extreme the cost-benefit equations comes down to the fixed costs of setting up the system versus the benefit of being able to allocate more capacity. When congestion events are called more often, the cost of foregone consumption increases, but so do the benefits of avoiding CCM and deferring investment.

19. *Does Table 5.1 capture all the costs and benefits of the congestion management arrangements? Are there any additional costs or benefits you would add?*

6 Next Steps

This paper is the Working Group's second consultation paper which describes the Working Group's full straw man for congestion management. The Working Group is now at a stage where we invite the whole gas industry to critique the Working Group's straw man, and to have a say in how the arrangements will be implemented.

The Working Group's intention is to release a formal VTC change request on 1 May 2015, with the consultation under the new VTC change request process then being from May to July 2015. The Working Group aims to have the regime implemented on 1 August—ready for the capacity bookings in the next gas year. To achieve this, the next steps are:

- Working Group to release the following drafts for consultation:
 - Congestion management contract
 - Proposed changes to the VTC to implement congestion management
 - SOPs that the CMO will follow to implement the congestion management arrangements
- Two workshops on 10 March (Wellington) and 11 March (Auckland)
- Vector to receive submissions by 6 April 2015
- Working Group to collate and publish submissions by 17 April 2015
- Working Group to discuss and analyse submissions
- Working Group to finalise the design of congestion management arrangements taking into account industry feedback
- Working Group to issue formal consultation under new VTC change request process on 1 May 2015.

The Working Group looks forward to receiving submissions by 6 April 2015 (email to anna.casey@vector.co.nz).

Appendix A Acronyms and Abbreviations

Beneficiary end-user	An end-user who consumes gas on an affected pipeline during a congestion event
BPP	Balancing and peaking pool
CCM	Critical contingency management
CMO	Congestion Management Operator
Curtailed participant	A participant who curtails their gas consumption in accordance with a direction of the CMO
GIC	Gas Industry Company
GJ	Gigajoule
Participant	An end-user who participates in the congestion management regime, offering to curtail when called
PEA	Panel of Expert Advisors
Pool	The trust established to collect and pay fees for congestion management, operated by the CMO
RPO	Reasonable and Prudent Operator, as defined in the VTC
SOPs	Standard operating procedures that the CMO will use follow in operating the congestion management regime
TSO	Transmission System Operator
TOU	Time of use, referring to a device which stores metering data hourly
TJ	Terajoule
VTC	Vector Transmission Code
VTS	Vector Transmission System
Working Group	Gas Industry Transmission Access Working Group