The Gas Industry Transmission Access Working Group

Consultation Paper

Congestion Management Arrangements on the Vector Gas Transmission System

Submissions due by: 29 August 2014

To: anna.casey@vector.co.nz

Foreword

The Gas Industry Transmission Access Working Group is pleased to present its first consultation paper to the industry. This paper focuses on a new way to manage congestion on gas pipelines that aims to achieve greater participation in resolving congestion, should it arise. Having a more effective way to manage physical congestion is expected to allow the pipeline owner to allocate more firm contractual capacity, consistent with prudent operation of the pipeline.

This initiative aims to promote greater confidence in gas transmission arrangements through improvements to transmission access and transparency.

The Group is working towards implementing the arrangements proposed in this paper by the end of 2015. While we acknowledge that other aspects of transmission capacity allocation also need to be reviewed, the Working Group believes that putting the proposed congestion management arrangement in place is an important first step, and one that could be implemented in a shorter timeframe than a broader ranging market re-design. The Group is confident that the proposed arrangements will help to address concerns about future constraints on transmission access, both in respect of the initial allocation of contractual capacity and the management of physical congestion should it arise.

The proposed congestion management arrangement is at an early stage of development. The input of interested parties is particularly valuable at this point to ensure that major issues and opportunities are identified before more detailed design work is carried out. The Working Group therefore looks forward to receiving submissions from the wider gas industry, and to engaging with stakeholders in developing the proposed arrangements to a more detailed level.

The Gas Industry Transmission Access Group
July 2014

CONTENTS

Introduction

The purpose of this consultation paper is to seek feedback from participants in the New Zealand gas industry on proposed congestion management arrangements on the Vector gas transmission system.

Industry workshops will be held in Auckland and Wellington on 12 August and 13 August to facilitate feedback, with final submissions being due on 29 August 2014.

Background

The Gas Industry Transmission Access Working Group (**Working Group**) was set up at the invitation of the Gas Industry Company (**GIC**) to devise an industry-led response to the recommendations made by the Panel of Expert Advisors (**PEA**) in its report to the GIC in July 2013.

One of the key drivers of the PEA process was contractual capacity congestion on the Vector pipeline. The PEA was set up to investigate possible improvements to capacity allocation to avoid or delay the need for investment in a new pipeline.

The PEA recommended changes to capacity allocation methods on the Vector pipeline to better contractually allocate available physical capacity.

The Working Group

The Working Group is made up of Vector, MDL, and those of their joint Shippers who wished to be involved in an industry-led response to the PEA's recommendations. It is working to a timetable to address issues raised by the PEA, and reports its progress to the GIC quarterly.

The GIC is developing a regulatory counter-factual in parallel to the Working Group's timetable. However, the GIC has indicated its preference is for an industry-led solution.

Structure of this Paper

This paper is structured as follows:

- CAPACITY MANAGEMENT: A summary of the issues around capacity allocation and capacity management identified within the PEA process and by the Working Group.
- CONGESTION MANAGEMENT & CAPACITY ALLOCATION: An explanation of the Working Group's decision to focus first on capacity congestion management arrangements.
  - KEY PRINCIPLES AND OBJECTIVES FOR CONGESTION MANAGEMENT:
    - Certainty
    - Simplicity
    - Compatibility
    - Scarcity and Investment Signals
    - Incentives
  - KEY COMPONENTS OF CONGESTION MANAGEMENT:
    - Structure: contract-based vs auction-based
    - Event management
    - Event identification and notification
    - Cost allocation and cost recovery

Capacity Management

Contractual Capacity vs Physical Capacity

A key driver behind the PEA process was a shortage of contractual transmission capacity on Vector's North pipeline in 2009.

Vector must act as a reasonable and prudent operator and comply with the Vector Transmission Code (**VTC**) when allocating capacity on its pipelines. Vector seeks to ensure that the level of capacity allocated will, under normal pipeline operating conditions, allow security of supply to be maintained.[1] An operational reserve (made up of an allowance for winter peaks and survival times) is (in effect) subtracted from the total physical capacity of the pipeline to determine the amount of operational capacity available to be allocated to Shippers (see figure 1).

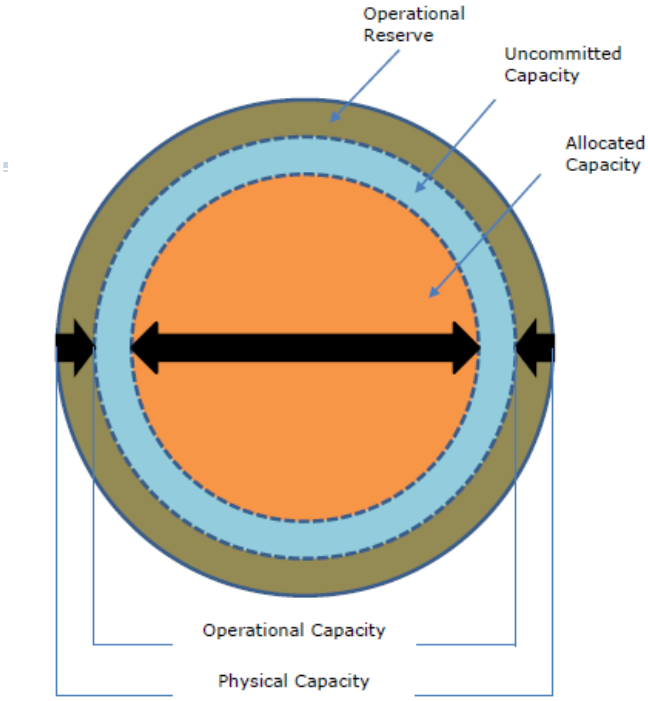

Figure 1

When the amount of allocated contractual capacity reaches 100% of operational capacity, no more contractual capacity can be allocated, notwithstanding that the amount of physical capacity that may be used is less than operational capacity. In such a situation, congestion is caused by the process of allocating contractual capacity and/or the definition of contractual capacity rather than the actual (physical) usage of capacity.

Capacity Management Issues

In its July 2013 report, the PEA raised the following concerns about the current process of allocating gas transmission capacity:

- **The allocation of capacity is not based on its value.** The cost of interrupted gas supply varies across consumers. However, there is currently no mechanism to allocate scarce capacity to those parties that place the greatest value on it. As a result, there is no tool to ensure the cost to society of curtailing gas supply is minimised.
- **There are no transparent price signals to facilitate efficient investment.** Because current arrangements do not reflect the value consumers place on firm capacity, price signals for investment in pipeline expansion, or upstream and downstream assets, are absent or muted. As a result, investment could occur too early or late, and may not be the best use of capital.
- **Information on the physical state of pipelines and contractual agreements for pipeline use is not widely available.** Incomplete information on the physical state of the pipeline increases the possibility that congestion emerges with little or no warning. Keeping the

[1] Security of supply being a pre-defined standard of performance, such as set out in the Gas Governance (Critical Contingency Management) Regulations 2008 and Vector's own Security Standard.

contractual terms of pipeline use confidential raises the concern that some parties are in a favourable position during congestion events, and also restricts the ability of potential pipeline uses to make offers for capacity on a comparable basis.

- **Different arrangements for Maui and Vector create unnecessary costs.** The Maui and Vector pipelines use different methods to allocate capacity. This can result in the duplication of systems and having 'bespoke' arrangements for supporting IT systems, imposing costs on gas shippers that could be avoided if arrangements were more closely harmonised.

Capacity Determination and Transparency

Vector and the Working Group have made progress towards resolving some of these issues. Vector has addressed the immediate contractual capacity constraints which surfaced in 2009 by renegotiating its contracts with power stations, although reduced demand for reserved capacity in recent years has also assisted. Vector has also provided more transparency by carrying out a capacity determination, which it intends to refresh annually.

Currently, unallocated contractual capacity is available at almost all of Vector's delivery points. Availability at a specific delivery point can be provided by Vector on request.[2]

In addition, Vector and its Shippers (through the Working Group) have agreed to make additional contractual information available. A VTC change request implementing these changes is under consultation but much of the additional information is already available, with Shippers' consent, on Vector's Open Access Transmission Information System (**OATIS**).

[2] The Capacity Determination refers to pipeline capacity to specific delivery points. Frequently that capacity exceeds the spare capacity of the delivery points themselves, i.e. a delivery point might need to be upgraded to make the additional capacity available. Also, unallocated capacity at delivery points on the same pipeline is invariably "mutually exclusive" to some degree: as more capacity is allocated at one delivery point the amount available at another delivery point will decrease. Moreover, the relationship may be highly non-linear: 1 GJ more allocated at a delivery point may reduce the capacity at a nearby delivery point by 1 GJ, but at a more distant delivery point by 3, 5 or even more GJ. Further information about the way in which capacity is calculated, and current capacity availability on Vector's pipelines, can be found in its Capacity Consultation Documents as well as in its 2014 Gas Transmission Asset Management Plan

Congestion Management & Capacity Allocation

Capacity Allocation Option Identification

The Working Group began investigating possible ways to improve capacity allocation mechanisms. That process identified a number of possibilities for further investigation. However, the Working Group observed a number of constants across all options:

- Each option involved a relatively long timeframe for design and implementation.
- A new capacity allocation mechanism might well require replacement of OATIS, which would further add to the timeframe as well as cost.
- Each option would require effective congestion management arrangements.

Focus on Congestion Management

As the Working Group started to evaluate the capacity allocation options it had identified, it came to the view that the best way to address the issues identified by the PEA is to focus first on congestion management. The vision is to virtually increase pipeline capacity incrementally, without the need for a step change in capital expenditure or cost recovery. The decision to focus first on congestion management is supported by the following reasons:

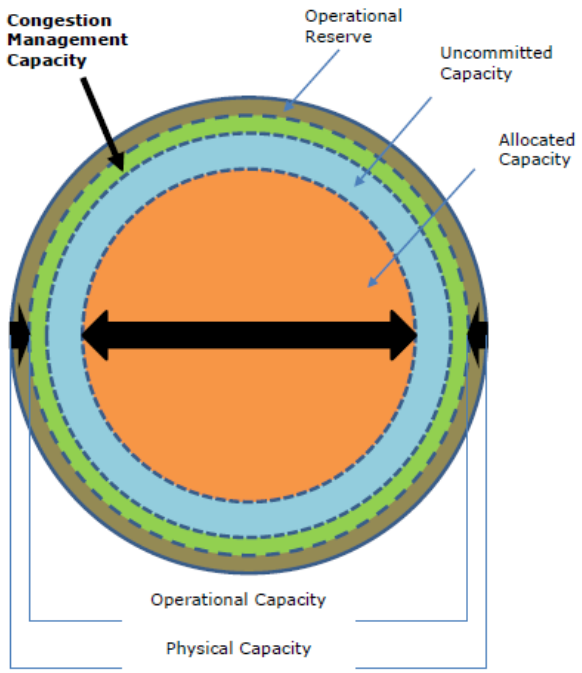

Figure 2

- If Vector has a formalised, reliable method to curtail some of its allocated firm capacity during peak times, then it will not have to make as large a provision when setting its operational reserve. In other words, Vector could "allocate" some of the operational reserve to users prepared to curtail during peak times (see figure 2). This will allow Vector to treat such ("semi-firm") load as being "off" when making its capacity determination, increasing the operational capacity available for allocation as firm contractual capacity in the first place, while still enabling Vector to meet its obligations as an RPO.[3] A similar approach of 'oversubscription' and 'buy-back' has been adopted in the European Union.[4]
- A congestion management arrangement designed to "bolt on" to existing transmission arrangements could potentially be implemented in a much shorter timeframe than a complete redesign of transmission capacity allocation processes. This would achieve swift results to improve both the allocation of contractual capacity and the management of physical congestion should it occur.

[3] Reasonable and Prudent Operator. Vector is require to act as an RPO in all its activities under the VTC.
[4] Annex 1 to Regulation (EC) No 715/2009 as amended by Commission Decision 2012/490 on 24 August 2012

- By focussing first on congestion management, the Working Group would not be delaying implementation of alternative capacity allocation arrangements. Rather, a new congestion management arrangement is the first step in designing changes to capacity allocation. In particular, developing congestion management products may help frame the eventual allocation product.
- There appears to be interest in helping to resolve congestion that is not satisfied by existing arrangements. The GIC's "*Investigation of possible scale of demand management on the Vector North System*"[5] identified around 8.3TJ/day of capacity which interviewees might be prepared to interrupt on more flexible terms than those provided for under current interruptible agreements.[6] A new congestion management arrangement could work in conjunction with existing interruptible arrangements to provide a more flexible menu of interruptible arrangements. This could encourage users to move from firm capacity to semi-interruptible capacity which could in turn free up additional firm capacity.

1. *Do you agree that optimising pipeline usage through congestion management is an appropriate first step to improving capacity allocation?*

[5] 5 March 2014
[6] Copies of Vector's current standard form interruptible agreements can be found in OATIS Publications

Key Objectives of Congestion Management

Overriding Principles

The Working Group's evaluation of proposed congestion management arrangements is guided by its Evaluation Criteria and Guiding Principles, which are:

GUIDING PRINCIPLES:

- The principles set out in the Gas Act 1992 and the Government Policy Statement on Gas: including to promote **safety, efficiency, reliability** and **fairness** through **competition** and open access to infrastructure.
- An aim to build **confidence** in the gas market through transparency, simplicity where possible and enabling conditions for new investment and access for new and existing participants.
- An aim, where possible, to achieve **prompt initial results** without limiting viable long term solutions.
- A willingness to **consider all options**.
- The principle of **Evolutionary Convergence**, which the Working Group has defined as:

  a collaborative process to develop incremental MPOC and VTC improvements having regard to international industry best practice, that enhance regime compatibility or consistency with a particular focus on matters of capacity access, capacity pricing and transparency, with changes assessed according to their costs and benefits.

EVALUATION CRITERIA:

- Accuracy of the **pipeline investment signal** – including scarcity price signals and congestion management arrangements.
- Efficiency of the **allocation of capacity** – including for shippers, and existing and new end-users – and does it facilitate competition in the market including new entry.
- Improvement to the **security of supply** – both perceived and real – for end-users.
- The level of **dynamic efficiency** – including future adaptability from transmission system owner, shipper, end-user and regulator perspectives, and ability to adapt if supply increases significantly (e.g. in the case of a large gas find).
- Appropriateness of the **timing of the change** to the current risk of congestion, and does it **enable further evolution** if and when that risk increases.
- Improvement to **transparency of information**.
- The estimated **cost of implementation** – including the changes which will be needed to governance arrangements, existing contractual arrangements, business processes (such as metering and distribution changes) and IT systems, and the time involved in making those changes.
- Compatibility with the existing **wholesale gas markets**.
- The need for **regulatory changes** in order to be implemented – including any impact on **regulated revenue**.
- Compatibility with both the Maui and Vector pipeline systems and whether it **strengthens connectivity** between them – in particular, whether it allows seamless flow between the two.
- **Acceptability to NZ Inc** – i.e. as New Zealand is presented on the world stage, particularly to potential upstream or downstream investors.

Objectives of Congestion Management

The Working Group has distilled its overriding principles into a set of key objectives for designing a new congestion management arrangement. These objectives have helped the group to identify the key components of its proposed congestion management arrangement, and to highlight the areas where industry feedback will be most valuable.

▲ CERTAINTY

The proposed arrangement should provide certainty for participants on the manner and terms on which they will be called. In particular, we have looked at certainty as to price and the conditions which must be met before curtailment is called for.

For Vector to allocate more than the currently defined operational capacity of a pipeline, it must have certainty about the effectiveness of load curtailment arrangements. Curtailment must be able to be verified, and once a user has agreed to participate, its participation must be compulsory. Curtailment instructions must be promptly complied with.

▲ SIMPLICITY

The details of the proposed arrangement should be as simple as possible to encourage participation. A simple arrangement will be swift and cost-effective to implement, while being able to evolve with future changes to how transmission capacity is allocated. Simplicity will also enhance certainty, and promote transparency and confidence in the market.

▲ INCENTIVISATION AND SCARCITY SIGNALLING

Pricing should be at a level which encourages participation. It should also provide effective signals about increased scarcity on the system, and the need for further investment.

The strength of any price signals will depend in part on how the costs of congestion management are recovered. Cost allocation can also provide an incentive for responsible capacity usage by users who are not participants in the congestion management arrangement.

▲ COMPATIBILITY

The proposed arrangement should be compatible with arrangements on the Maui pipeline. Co-ordination between the two systems will be essential to the effective operation of the arrangements. While this paper focusses on arrangements on the Vector pipelines, Maui Development Limited has been involved in developing the proposed arrangement.

Other Material Informing the Working Group

The Working Group has been informed by other work carried out in congestion management and demand response, including:

- Transpower's Demand Response Management System (**DRMS**)
- The Panel of Expert Advisors (**PEA**) advice to the GIC in July 2012 and July 2013
- The GIC's paper, "Investigation of possible scale of gas demand management on the Vector North System" (5 March 2014)
- Emergency Management and Gas Outages: Economic Issues: Report prepared for the GIC (7 March 2006)
- Gas Supply and Demand Scenarios 2012-2017 (December 2012)
- European Commission Decision 2012/490 amending Regulation (EC) No 715/2009 on conditions for access to natural gas transmission networks.

Key Components of Congestion Management

Overview and Timeline

The Working Group has identified that an additional congestion management mechanism would help to more efficiently re-allocate transmission capacity should actual demand exceed physical pipeline capacity. This mechanism would operate in conjunction with existing congestion management tools, specifically operational flow orders and interruptible agreements. Critical contingency arrangements would still apply where conditions on a pipeline reach the relevant threshold.[7] The proposed arrangements should operate so that critical contingencies do not occur solely because actual demand exceeds the capacity of the pipeline.

Considering how the mechanism would operate within a timeline of an actual congestion event helps to identify the practical steps needed to manage scarce capacity. Figure 3 illustrates on a typical timeline where the congestion management arrangement would come into play in relation to existing arrangements, and some of the key actions that need to be taken.

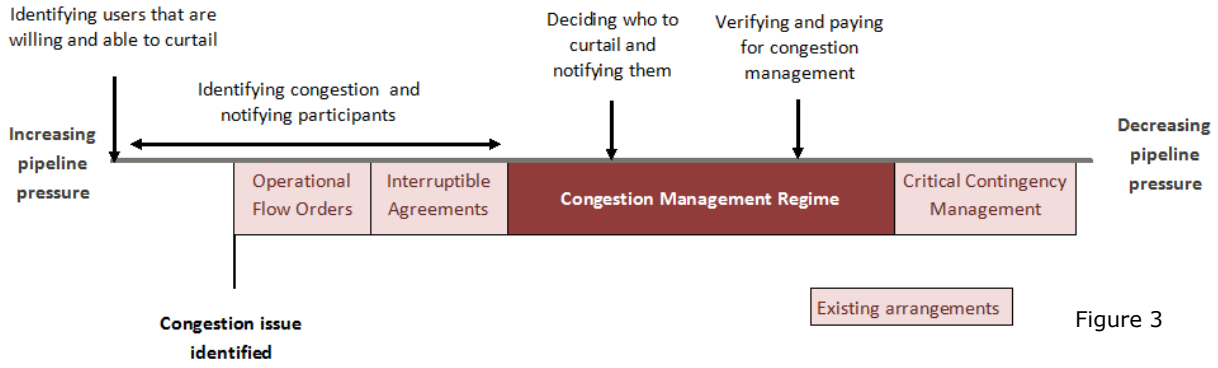

Figure 3

The Working Group has identified that an effective congestion management system would exhibit the following key features (discussed under the sub-headings that follow):

- Acceptable arrangements to govern the process, including to identify users willing and able to curtail: see "Structuring and Operating Congestion Management";
- Appropriate systems to facilitate the process, including systems for adequate exchange of information, and adequate notification periods: see "Structuring and Operating Congestion Management";
- A clear definition of how congestion would be identified: see "Identifying Congestion";
- Clear processes to determine who is to be curtailed: see "Curtailing and Verifying";
- Means to ensure curtailment can be verified: see "Curtailing and Verifying";
- Arrangements for payment and cost recovery: see "Paying for Congestion Management".

[7] Namely, the prescribed time to minimum pressure, or the prescribed minimum pressure, at one or more of the Delivery Points nominated in the Critical Contingency Regulations.

Structuring and Operating Congestion Management

The Working Group has considered the structure of the proposed arrangement. As outlined on page 6, the underlying objective is to maximise the initial allocation of firm capacity by offering new forms of semi-firm capacity, i.e. firm capacity that can be curtailed to some extent at times of physical congestion.

▲ INITIAL CAPACITY ALLOCATION

The proposed arrangement is focussed on congestion management. Vector's initial (i.e. annual) allocation process will remain unchanged[8] (at least until revised in accordance with the Working Group's work plan) except that, to the extent Shippers migrate from their current firm contractual capacity to semi-interruptible products, additional firm capacity will be freed up for allocation.

▲ THE CONGESTION MANAGEMENT PRODUCTS

There are a number of possible ways to define congestion management products. When considering options, the Working Group has been guided by the Demand Response (**DR**) programme developed by Transpower. This programme uses two distinct products:

- The "**security**" product, which uses fixed term contracts. Participants are paid an availability fee for the duration of the contract and an additional delivery fee for participation in an event. A contracted end-user must participate if called, but can set parameters in the contract around the conditions on which they can be called. In an event, Transpower calculates the most cost-effective way of achieving the desired reduction using an automated system called the Demand Response Management System (**DRMS**).

- The "**price-responsive**" product, which uses a bid-offer arrangement. Transpower notifies registered participants of its total required capacity reduction and the price it is willing to pay per unit. Participants can bid in the amount they are prepared to surrender and the price they are willing to accept – which can be lower (but not higher) than the offered price. The DRMS system calculates the most cost effective method of achieving the desired reduction and accepts participant offers on that basis. Participation in an event is optional for price-responsive participants, but if they put an offer in they must participate if selected.

The security product is most effective when there are fewer, and larger, participants, while the price-responsive product is most effective when there are many and smaller participants. The Working Group believes that ultimately a range of congestion management products using similar formats could be available in the gas industry. However, it considers that introducing one approach first would be simpler, faster to implement, and would allow TSOs and the industry to gain confidence in the underlying arrangement.

The Working Group therefore proposes to start by developing a fixed-term contractual arrangement (the "security" product). If this initial arrangement is successful, then the Group anticipates that the development of new capacity arrangements could include a price-responsive congestion management product.

2. *Do you agree that it makes sense to focus first on a fixed-term congestion management ("security") product?*

3. *Do you support the development and introduction of a price-responsive product in the future?*

[8] Subject to any changes needed to implement the proposed congestion arrangements

ELIGIBILITY

Actual load reduction will need to be verified by the TSOs. For that reason, the Working Group proposes that only customers with time-of-use meters[9] will be eligible to participate in the congestion management arrangement.[10]

The Working Group considered whether real time verification (via telemetry, e.g. SCADA) of a participant's reduction in demand would be necessary, but believes that verification after the event (combined with appropriate incentives to comply with curtailment notices), will be adequate.

Other eligibility criteria will require further consideration, such as locational and minimal load offering requirements.

4. *Do you agree that only time-of-use customers should be able to participate?*
5. *Do you agree that real-time verification of a participant's reduction in demand is not required?*

TERMS FOR PARTICIPATION

The Working Group considers that, where possible, congestion management contracts should be flexible to suit the needs of different participants. Terms could include:

- Maximum and minimum quantities for curtailment, and whether variable curtailment within those amounts is possible. This recognises that some users can only curtail load in discrete amounts, while others may have more flexibility.
- The type of curtailment to be provided. Some users may wish to curtail *by* a certain amount, while others might prefer 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. Notice requirements are discussed in more detail later in this paper.
- Price. Price is discussed in more detail later in this paper.
- Confidentiality. It is anticipated that, in line with the Working Group's overall approach to improving market transparency, congestion management contracts will be public.
- Contracting parties. Contracts could be between the TSO and an end user, or the TSO and the end-user's Shipper.[11] If the arrangement is managed by a third party (discussed further below), then contracts could be with that third party instead of the TSO.

[9] Metering incorporating a time-of-use device which records time-stamped hourly quantities.
[10] Note that the GIC's "Investigation of possible scale of demand management on the Vector North System" (5 March 2014) did not identify how much of the 8.3TJ of potentially interruptible load relates to customers with time of use meters.
[11] Current interruptible contracts are structured this way, although they stipulate that Vector will communicate any curtailment instructions direct to the end-user concerned.

- Consequences of breach. The need for certainty in the arrangements means there needs to be adequate disincentives for failure to meet agreed participation levels.

6. *Do you expect that the terms described above will give enough flexibility to encourage a sufficient number of end-users to participate?*
7. *Are there any other terms that you think might be required to attract interest and participation?*

RULES-BASED APPROACH

The Working Group believes that certainty and simplicity of the proposed arrangement will be achieved through comprehensive but straightforward rules as to its operation.

ADMINISTRATION

Congestion management arrangements could be managed by the TSOs. However, the Working Group is aware of other organisations that already have the infrastructure and capability in place to run demand-response programmes. These third parties may be well-placed to manage the proposed congestion management arrangement.

One option for administering the proposed arrangement is to tender out for the role of congestion management operator. This would help to identify the most capable and cost-effective way to administer the arrangement.

Identifying Congestion

INFORMATION REQUIREMENTS

Information flows between TSOs and end-users are critical to the effective operation of a congestion management arrangement:

- TSOs need good information on forecast demand to identify congestion in advance to be able to effectively use congestion management tools.
- End-users need good information on when congestion is likely to arise so that they can adjust their operations to minimise the overall system cost when physical congestion arises.

The Working Group considers that the information currently available to the TSOs is sufficient to identify congestion in the context of the proposed mechanism. However, this should be reviewed as the congestion management arrangements are developed further and after the mechanism has been piloted or used to manage a congestion event. In particular, additional information about predicted demand may enable better congestion identification. The Working Group recognises that maintaining information flows that end-users are already familiar with will advance the objective of achieving simplicity of the arrangements, will reduce the timeframes for implementation and will avoid additional compliance costs.

8. What additional information do you think would be useful to identify impending congestion?

IDENTIFYING IMPENDING CONGESTION AND TRIGGERING CONGESTION MANAGEMENT

Market participants need certainty around what will trigger a congestion event, and about the likely frequency and extent of such events in order to have sufficient confidence to participate in congestion management arrangements. Greater confidence in the congestion regime should lead to greater participation in the congestion management mechanism, which should generally lead to lower curtailment prices and greater available volume.

The main way to provide certainty to end-users is to set out objective and verifiable measures that will trigger a congestion event. The Working Group proposes similar triggers (or thresholds) to those set out in the Gas Governance (Critical Contingency Management) Regulations 2008, in particular the projected number of hours from current time until critical pipeline pressure in reached (at a defined point or points).

The Working Group proposes using thresholds sufficient to avoid a critical contingency, where intervention (by curtailment of demand) should reasonably prevent critical contingency thresholds from being reached. Suitable thresholds for the congestion management system would need to be set by the pipeline technical operator.

9. Do you agree that using thresholds based on pressure is an appropriate measure for triggering a congestion event?

NOTIFYING PARTICIPANTS

The GIC's *Investigation of possible scale of gas demand management on the Vector North system*[12] highlights that the amount of notice required by end-users in order to curtail can vary. Some users would be able to curtail on one to two hours' notice; others would require one to two days or one to two weeks.

The Working Group considers that there are some clear benefits to early notification of congestion. With the expectation of congestion, end-users can make more efficient decisions about their gas usage. For instance, end-users may be able to temporarily switch fuel sources or shift their consumption to a time when pipeline capacity is not scarce. These activities may help to reduce the severity of the congestion event, even if the user is not being directly paid for curtailing their demand.

However, there are practical limitations on how much notice can be given before a congestion event. Most congestion events in the gas industry require a response over the next day or two to ensure that pipeline pressure is at an acceptable level. For the proposed congestion management arrangement, the Working Group therefore considers that notice periods of more than 24 hours would be unworkable, and in most cases significantly shorter notice periods would be necessary.

The Working Group proposes a two-stage notification system. An advance warning will be sent when congestion levels are nearing those set to trigger a congestion event. If congestion levels are reached, further notifications will be sent as follows:

- a notice to participating end-users who have been selected to curtail, requiring them to curtail; and
- a notice to all other end-users advising that the congestion management mechanism has been activated.

To be effective, the congestion management arrangement will need to give adequate notice to participants to curtail their demand. Participants should be able to specify the notice of curtailment they require their agreement with the TSO[13], allowing different notification times to be taken into account depending on the circumstances of the event. Notices will need to be provided through a suitable IT platform, such as OATIS.

10. *Would an advance notice system when conditions are nearing congestion assist in notifying you of the need to curtail?*
11. *Do you have a preferred format for notices under the proposed arrangement?*

[12] 5 March 2014
[13] Noting that the greater the notice required, the lower the value of the participant

Curtailing and Verifying

Curtailment during a congestion event requires the following:

- Identifying which end users to curtail to achieve the necessary level of curtailment for the most efficient cost.
- Verifying actual physical curtailment of the amount called (in close to real time).
- Defining how to measure curtailment for the purposes of compensating participants.

IDENTIFYING WHICH USERS TO CURTAIL

The Working Group proposes that the system set up to administer the proposed arrangements contains an algorithm for identifying the most efficient and cost-effective curtailment available on the basis of the parameters set out in each participant's contract.

If delivery fees are set according to the netback gas price (see "Paying for Congestion Management), this should be straightforward as the algorithm would identify the minimum number of participants required to achieve the desired reduction. However, if delivery fees vary between participants then the algorithm would identify how the reduction could be achieved for the lowest cost, even where that might involve curtailing more than is absolutely necessary.

Using an algorithm would maintain certainty and simplicity as there would be limited discretion involved in deciding who to curtail. The Working Group acknowledges that some end-users may want the party operating the arrangement to retain some discretion to allow for exceptional circumstances that are not anticipated in participant' congestion management contracts. However, the use of discretion would have an impact on the reliability of the proposed arrangements and contracts may need to contain cost consequences for participants who appeal to discretion. The extent to which discretion could be exercised could be limited in the terms of the arrangement to maintain as much certainty as possible.

12. What criteria do you think are important in identifying which users to curtail?

DEFINING AND VERIFYING BASELINES AND CURTAILMENT FOR COMPENSATION

The Working Group considers the following three elements are important when establishing a method for defining and verifying curtailment:

- Enabling fair and accurate measurement of curtailment to ensure proper assessment of compliance and compensation
- Ensuring that baseline measurement takes account of projected usage foregone during an event – i.e. recognition that demand is not static
- Safeguarding against any attempt to "game" the system by participants artificially increasing load when an event is likely – particularly given the proposal for early notification of potential events.

Curtailment calculation and verification would take place no earlier than the month following an event, once all verified metering data was available.

There are several methods of curtailment calculation in use in electricity demand management programmes. The Working Group has had particular reference to that used by Transpower in its DR

programme.[14] Curtailment is calculated by reference to a Customer Baseline Load (**CBL**). A participant's curtailment is calculated by subtracting its actual metered load during an event from its CBL value.

Transpower's CBL calculation uses an historical load average based on comparable days over the 45 days preceding an event. If a congestion event occurs on a Saturday, the baseline is calculated with reference to Saturdays over the previous 45 days, excluding any other Saturdays on which an event occurred. Using this model, weekdays could be compared with any other weekdays, or, alternatively, different weekdays could be treated differently. Transpower allows grouping of weekdays into Mondays, Tuesdays/Wednesdays/Thursdays, and Fridays.[15] The Working Group anticipates a similar calculation method including distinction between weekdays would need to be made for the proposed arrangements.

The historical load average is used to adjust actual load conditions immediately prior to, and during, an event to allow for actual load conditions on the day and provide for probable increase (or decrease) in a participant's load over the course of an event. The adjustment is applied to 6 half-hourly metered quantities immediately preceding the last 1 hour before the event. The 1 hour immediately preceding the event is excluded to prevent incentives for any artificial inflation of metered load.

The curtailment amounts calculated provide the amounts against which delivery fees are calculated (see "Paying for Congestion Management").

13. Do you agree with a similar calculation method being adopted for the proposed arrangements?

[14] For a detailed description, see the DRMS User Guide
[15] Sundays and public holidays are treated together as a separate group

Paying for Congestion Management

This section comprises two parts. First, the setting of prices to be paid to participants in congestion management events and, second, mechanisms for recovering from the industry the costs incurred through congestion management.

▲ SETTING PRICES

While other payment terms are possible, such as set-up and cancellation costs, the proposed contractual arrangements require the setting of two fees:

▼ AVAILABILITY FEES

An availability fee is a retainer paid to participants for the duration of their contract in exchange for their being available to curtail on demand, within the parameters set out in their contract. The fee would be intended to cover the participant's incremental costs involved in participating in the scheme.

It is proposed that this fee would vary according to the extent of the participant's availability. That includes the level of restrictions placed around the timing and quantity of availability, and the amount of notice they would require for an event.

Levels of availability fees need further discussion with potential participants.

▼ DELIVERY FEES

Delivery fees would be paid to participants for meeting their contracted load reduction during a congestion event. This price could be specified in the participant's contract, and be at a set level for the duration of the contract.

Alternatively, the arrangement could have a method for calculating the delivery fee paid to all participants that are called to reduce their demand in an event. The GIC's *Investigation of possible scale of gas demand management on the Vector North system*[16] indicated that there was some support from the participants in that study to linking congestion prices to the netback gas price – that is, the value the gas would generate if it were used to produce electricity.

14. What do you consider would be a fair method of setting availability fees?

15. Do you think a delivery fee should be set for the duration of a congestion management contract, or calculated separately for each event?

[16] 5 March 2014

RECOVERING COSTS

The two main considerations for cost recovery are first, from whom should costs be recovered and, secondly, what mechanism should be used to recover those costs and pay participants.

WHO PAYS

The Working Group examined several options for recovering the costs of a congestion event. It identified issues with charging only causers and/or exacerbators because of the difficulty in identifying who has caused or aggravated an event, especially on the gas transmission system where congestion can build up over a number of days.

The Working Group considers a beneficiary pays to be the simplest and fairest approach to cost recovery. This means that any user who continues to use gas during a congestion event bears their share of the cost of doing so.

This approach has the added incentive of encouraging end-users who are not eligible, or choose not, to participate in the congestion management arrangement to practice responsible demand management and investigate alternative back-up fuel sources. It may also encourage those users who can, to come off the system during a congestion event; even though they are not paid for doing so, they do not have to meet the cost of staying on.

The Working Group has also considered the approach of socialising costs across all end-users. While this may be the simplest option, it does not incentivise end-users that do not participate in the arrangement to reduce load during an event and would dilute investment signals.

COST ADMINISTRATION

The costs of the Transpower DR programme are passed-on through transmission fees. However, that would not be possible for gas congestion arrangements without additional regulation, which is unlikely to enable prompt implementation of congestion management arrangements.

The Working Group's preferred approach would be for costs to be managed through a similar arrangement to the existing balancing and peaking pool. Funds would be paid into, and out of, a separate fund, which could be managed by whichever party manages the overall arrangements.

16. Do you agree with a "beneficiary pays" approach to cost recovery?

17. Do you agree with costs being managed through a separate fund set up for the purpose?

Final Questions

The Working Group firmly believes that a new congestion management arrangement for managing physical congestion and freeing up more contractual capacity will only have value if we can attract sufficient interest and participation.

18. Would you be interested in participating in the congestion management arrangement discussed in this paper?

19. What factors are most important to attract your interest and participation, and are there any particular requirements you would need in order to participate?

Conclusion & Next Steps

The Working Group has decided to progress congestion management arrangements as part of improving the capacity framework on the Vector transmission pipelines. Essentially, congestion management is calling pre-contracted end-users to curtail at times of high aggregate demand, and paying them to do so. This operational tool will not only help to resolve physical congestion should it arise, but should also enable Vector to book more firm capacity. The vision is for congestion management to virtually increase the pipeline size on an incremental basis, without the need for a step-change in capex or cost-recovery. It is also dynamically efficient, and creates opportunities for future adaptation.

This paper is the Working Group's first consultation paper in which the framework is explored at a medium to high level. We have been through a robust process and formed a preliminary view on key characteristics. The Working Group is now at a stage where we invite the whole gas industry to critique the thinking to-date, and, most importantly, to have a say in the medium-high level design.

The next steps are:

- 2 workshops on 12 and 13 August
- Deadline of 29 August for making submissions on this paper
- Working Group to collate and publish submissions
- Working Group to discuss and analyse submissions, reassess the medium to high-level design, and progress some of the more detailed design
- Plan workload thereafter to be able to meet the 1 October 2015 deadline for a finalised design as per the Working Group work plan
- There will likely be further consultation on the detail in due course

The Working Group looks forward to all submissions by 29 August 2014 (email to anna.casey@vector.co.nz).