



Vector Gas Transmission

Critical Contingency Management Plan

**Prepared in accordance with the
Gas Governance (Critical Contingency Management) Regulations 2008**

Approved by Gas Industry Co
18 December 2009

Contents

1. Introduction	4
1.1 Purpose.....	4
1.2 Scope	4
1.3 Relationship with Vector Transmission Code.....	5
1.4 Consultation.....	5
2. Pre-Critical Contingency.....	6
2.1 Potential Critical Contingency	6
2.2 Likely events that may cause threshold breaches and remedy actions	6
3. Communications Plan	8
3.1 Purpose and objective.....	8
3.2 Target audience	8
3.3 Communication of notices.....	8
3.4 Communications on declaration of Critical Contingency.....	9
3.5 Communications during a Critical Contingency	9
3.6 Communications at the termination of a Critical Contingency	11
3.7 Communication with CCO	12
4. Information requirements.....	13
4.1 General	13
4.2 Information systems.....	13
4.3 Operational pipeline data to be provided to CCO.....	13
5. Intra-Critical Contingency processes.....	15
5.1 Safety statement.....	15
5.2 Pipeline thresholds	15
5.3 Curtailment arrangements	15
5.4 Normal demand restoration arrangements	16
5.5 Alternative demand restoration arrangements	17
6. Imbalance section.....	19
7. CCMP Appendices	20
Appendix 1 Process for declaration of Critical Contingency	21
Appendix 2 Process during a Critical Contingency	21
Appendix 2 Process during a Critical Contingency	22
Appendix 3 Process for termination of Critical Contingency.....	23
Appendix 4 Contact details	24
Appendix 5 Proforma notices	26

Appendix 6 Designated TSO representative details 32
Appendix 7 CCO Contact Details 33
Appendix 8 Imbalance Calculation Methodology 34

1. Introduction

1.1 Purpose

This Critical Contingency Management Plan (CCMP) has been prepared by Vector Gas Limited (Vector) in compliance with its obligations as a Transmission System Owner (TSO) under the Gas Governance (Critical Contingency Management) Regulations 2008 (the Regulations).

The stated purpose of the Regulations is “to achieve the effective management of critical gas outages and other security of supply contingencies without compromising long-term security of supply” (Regulation 3).

All capitalised terms in this CCMP have the same meaning as those terms in the Regulations.

1.2 Scope

The content to be included in a CCMP is specified in Regulation 25 covering the following elements:

- (a) Information relating to the thresholds that will be used by the Critical Contingency Operator (CCO) to determine whether or not a Critical Contingency should be declared.
- (b) A description of the events which Vector considers may result in a breach of the thresholds.
- (c) Actions that Vector could take to remedy a breach of the thresholds.
- (d) A process based on schedule 2 of the Regulations outlining the manner in which curtailment and restoration arrangements will be implemented during a Critical Contingency.
- (e) A communications plan which includes a description of the types, mode, and timing of communications initiated and received by Vector before and during a Critical Contingency.
- (f) Contact details of suitably qualified personnel at Vector who will be responsible for receiving communications from the CCO and giving directions in accordance with the CCMP.
- (g) A description of the circumstances under which Vector may choose to restore supply to the Vector pipeline in an order different from that described in the curtailment arrangements specified in the Regulations including the reasons why changing this order would better achieve the purpose of the Regulations and objectives of the specified curtailment arrangements.
- (h) A process outlining the manner in which Critical Contingency imbalances will be calculated for each affected party.
- (i) A list of contact details for the parties specified in Regulation 25(i).
- (j) A description of how transmission system information referred to in Regulation 38 will be provided by Vector to the CCO.

- (k) Any other items appropriate to give effect to the purpose of the Regulations.

It is also a requirement that the CCMP is consistent with VTC arrangements.

The scope of the CCMP reflects the distinction between the roles of the CCO and the role of Vector as a TSO during a Critical Contingency. These roles are defined in the Regulations. Vector's role as a TSO during a Critical Contingency is to comply with the directions of the CCO. Based on these directions Vector must issue directions to retailers and large consumers in accordance with the Regulations, and in a manner consistent with this CCMP and the CCO communications plan.

1.3 Relationship with Vector Transmission Code

The Regulations define the relationship between a TSO CCMP and its operating code as follows:

- Regulation 25(2) *"A proposed critical contingency management plan must be consistent with MPOC, VTC, or any other transmission system code except to the extent necessary to comply with these regulations."*
- Regulation 13(2) *"MPOC, VTC, and any other transmission system code must be read subject to these regulations."*
- Regulation 81(1) *"A payment under these regulations in relation to a contingency imbalance discharges in full any payment obligation or liability under MPOC, VTC, or any other transmission system code in respect of the same contingency imbalance."*
- Regulation 81(2) *"This regulation does not limit regulation 13(2) and (3)."*

1.4 Consultation

The initial Proposed CCMP Version 1.0 dated 25th February 2009 was submitted for consultation with those parties identified as being affected by the proposed plan. There were seven subsequent revisions resulting from analysis of the consultation submissions. Version 7.0 dated 10th December 2009 was approved by the Gas Industry Company on 18th December 2009.

2. Pre-Critical Contingency

2.1 Potential Critical Contingency

The VTC sets out Vector's rights and obligations ahead of, and to some extent during, a Critical Contingency. Consistent with the VTC, if Vector suspects that an Emergency¹ will occur (and a curtailment or shutdown is necessary), it will give notice to Shippers as early as reasonably practicable prior to such curtailment or shutdown of Vector's intention to take such action.

If it is likely that such an Emergency may result in a breach of a threshold for the Vector pipeline then Vector will also inform the CCO by telephone and confirm the details in writing. Information will include details of the parts of the transmission affected and predictions on when the issue causing the potential Critical Contingency will be resolved.

When the issue causing the potential Critical Contingency situation has been resolved Vector will inform the CCO by telephone and confirm the details in writing.

2.2 Likely events that may cause threshold breaches and remedy actions

The following events may result in a breach of a Critical Contingency threshold:

- Loss or reduction of supply from a gas producer or interconnected pipeline.
- Loss or reduction in compression capacity.
- Pipeline defect causing temporary de-rating of pipeline.
- Pipeline defect or damage causing loss of containment.
- Main line valve malfunction causing isolation of downstream pipeline.
- Shippers taking more Gas than they have nominated to inject into the relevant Vector pipeline.

Prior to any breach of a Critical Contingency threshold, each of these events will be dealt with in accordance with the VTC. Accordingly, remedial actions may include, where practicable, increasing the volume of gas taken from other injecting or interconnected parties (including through tendering for gas injection), maximising throughput through other compressors, curtailments and shutdowns.

The introduction of off-specification gas or loss/reduction in odorant injection are considered to be credible system threats. However it is unlikely that either of these events would give rise to a breach of a threshold limit. Vector employs a number of controls and monitoring procedures to protect against these types of events occurring and has plans and equipment available to deal with such events.

Vector has comprehensive emergency response plans, which are activated by a variety of scenarios including physical damage or limitations to the system and unplanned supply interruptions. Vector operates a 24/7 Gas Operations Control Centre (GOCC) which is also used as an emergency control centre when emergency response plans are activated. Emergency response capability is tested and evaluated by either a trial exercise or training exercise on a regular basis.

¹ For the definition of Emergency refer to VTC.

Once a Critical Contingency has been declared by the CCO these remedial actions may continue to be taken, if appropriate, in combination with load curtailment instructions from the CCO.

Note that information relating to Critical Contingency thresholds is provided in Section 5.

3. Communications Plan

3.1 Purpose and objective

The purpose of this communications plan is to describe the notices that Vector will issue to affected parties during a Critical Contingency event, the reciprocal communications and the timeframes under which those communications will take place.

This plan also contains the contact details for pipeline stakeholders who might be involved in a Critical Contingency event as well as the contact details of the Vector representative who will be responsible for communicating to the CCO.

The overriding objective of the plan is to meet the requirements of Regulations 25 (e), (f), (i), (j).

3.2 Target audience

The target audience for communications under the CCMP is defined in Regulations 25 (e) and (i) and includes the following:

- Critical Contingency Operator
- Transmission System Owners
- Gas distributors
- Shippers
- Retailers
- Large Consumers
- Operators of gas storage facilities
- Operators of upstream gas production facilities
- Interconnected parties, retailers, and shippers who are trading across or utilising the relevant part of the transmission system

The operational contact details for these groups are contained and regularly updated in OATIS.

There is also a requirement for Vector to nominate a person who will be responsible for giving communications to the CCO under the Communications Plan and for giving directions in accordance with the CCMP (r25 (f)). The details for this person are provided in Appendix 6.

3.3 Communication of notices

Vector intends to use the operational contact details contained in the 'Contact Details' screen of OATIS which includes the 'Operational Contact', 'Email Address', 'SMS' and 'Telephone Number' fields for the purpose of communicating notices.

All notices will be posted on OATIS as critical notices. Written notification alerting affected parties of the existence of posted notices will be sent direct from OATIS using email and SMS text messages. The notice will be considered received by the recipient on the date and at the time it is first posted on OATIS.

Should it not be possible for an affected party to be set up in OATIS to view notices and/or receive notice alerts from OATIS, alternative systems for transmitting email and SMS text messages will be considered.

For ease of access all notices posted in OATIS will be available in the public domain.

Vector will also communicate all notices to storage facilities and Large Consumers in curtailment bands 0, 1a and 1b by telephone.

If the notice functionality on OATIS is unavailable Vector will use standard PC applications to communicate written notices.

If the communication of notice alerts by SMS text message and email is unavailable via OATIS, Vector will utilise alternative SMS text messaging and email communication using standard PC applications.

In the event that standard PC applications are unavailable to Vector, Vector will communicate notices by telephone and provide written confirmation as soon as reasonably practicable afterwards. If land line and cell phone services are unavailable to Vector, Vector will use its satellite phone service to communicate notices by telephone.

3.4 Communications on declaration of Critical Contingency

This section describes the notices that will be issued during declaration of a Critical Contingency. A process flow chart is included in Appendix 1 illustrating the process for communications during a Critical Contingency declaration.

The CCO will issue a notice of declaration to Vector in accordance with Regulation 49.

Vector will communicate by way of giving notice of the declaration to all parties listed in Appendix 4.

Notice of Declaration of Critical Contingency

As soon as reasonably practicable after Vector has received notification from the CCO that a Critical Contingency has been declared Vector will send this notice to affected parties.

The purpose of this notification is to advise that the CCO has declared a Critical Contingency. The notice will give details of the areas of the transmission system that are affected, advice that CCO directions must be complied with, communications described in the communications plan have commenced and CCO guidance on classification as a Regional Critical Contingency.

A proforma of this notice is included in Appendix 5.1.

3.5 Communications during a Critical Contingency

This section describes the notices that may be issued during a Critical Contingency. A process flow chart is included in Appendix 2 illustrating the process for communications during a Critical Contingency.

The CCO will issue notices and directives to Vector in accordance with Regulation 53.

Vector will communicate by way of giving notices to parties affected by the directives given by the CCO in relation to the Critical Contingency.

All notices will be sent to all parties listed in Appendix 4 regardless of whether or not they may be affected by a Critical Contingency. It will be the responsibility of these parties to determine what actions they may need to take as result of receiving a notice.

If at any time during or after a Critical Contingency Vector becomes aware of, or obtains information pertaining to, the non-compliance with directives to curtail demand, revise demand curtailment or restore demand, it will inform the CCO. Vector will provide this information to the CCO in writing.

Notice of Direction to Curtail Demand Communication

As soon as reasonably practicable after Vector has received notice from the CCO giving a direction to curtail demand Vector will send this notice to affected parties.

The purpose of this notice is to give directions in accordance with the directive issued by the CCO to curtail load to stabilise the affected parts of the transmission system. The directive will be in accordance with the curtailment bands in section 5. The notice may contain directions to curtail subsets of load within a curtailment band or subsets of geographically located load within a curtailment band.

Retailers and Large Consumers will be requested to give regular updates by issuing notices to Vector on their compliance with the direction.

A proforma of this notice is included in Appendix 5.2.

Notice of Direction to Revise Demand Curtailment Communication

As soon as reasonably practicable after Vector has received notice from the CCO giving a direction to revise curtailed demand Vector will send this notice to affected parties.

The purpose of this notice is to give directions in accordance with the directive issued by the CCO to revise load curtailment for the purpose of further stabilising the transmission system. The directive will be in accordance with the curtailment bands in section 5. The notice may contain directions to curtail subsets of load within a curtailment band or subsets of geographically located load within a curtailment band.

For the avoidance of doubt this notice supersedes the original Notice of Direction to Curtail Demand and any previous notice(s) of Direction to Revise Demand Curtailment. It includes all demand previously directed for curtailment and all additional demands that now require curtailment.

Retailers and Large Consumers will be requested to give regular updates to Vector on their compliance with the direction.

A proforma of this notice is included in Appendix 5.3.

Notice of Direction to Restore Demand Communication

As soon as reasonably practicable after Vector has received notice from the CCO giving direction to restore demand Vector will send this notice to affected parties.

The purpose of this notice is to give directions in accordance with the directive issued by the CCO. The CCO will have determined that the transmission system has stabilised to the extent that demand can be restored. Demand restoration will normally occur in the reverse order in which it was curtailed. However, the notice may contain directions to restore demand in an alternative order. The notice may also contain directions to restore demand in accordance with the requirements of CDEM legislation.

For the avoidance of doubt this notice supersedes any previous notice(s) of Direction to Restore Demand. It includes all demand previously directed for restoration and any additional demands that can now be restored.

The notice will also contain guidance for Retailers to follow gas distributors instructions when restoration notices are issued in the interests of restoring demand in an orderly and safe manner.

Shippers and Large Consumers will be requested to give regular updates to Vector on their compliance with the direction.

A proforma of this notice is included in Appendix 5.4.

In addition to communications received by Vector from the CCO during a Critical Contingency, Vector will receive regular communications from affected parties. These will most likely be in the form of regular updates from Large Consumers and Retailers giving details about their compliance with Vector directions during a Critical Contingency in accordance with Regulation 55. Retailer and Large Consumer Compliance Updates will be provided to the CCO by as soon as reasonably practicable after Vector has received the updates.

Notice of Retailer & Large Consumer Compliance Update

Retailers and Large Consumers must follow directions for curtailment, revised curtailment and restoration of demand and provide Vector with regular updates of compliance in accordance with Regulation 55.

Updates on compliance are required at hourly intervals or at times agreed with Vector from the time a notice has been issued.

A proforma of this notice is included in Appendix 5.5.

3.6 Communications at the termination of a Critical Contingency

A process flow chart is included in Appendix 3 illustrating the process for communications during a Critical Contingency termination.

The CCO will issue notice of termination to Vector in accordance with Regulation 61. Vector will communicate by way of giving notice of the termination to all parties listed in Appendix 4.

Notice of Termination of Critical Contingency

As soon as reasonably practicable after Vector has received notice from the CCO that a Critical Contingency has been terminated Vector will issue this notice.

The purpose of this notification is to advise that the CCO has determined that the Critical Contingency has been terminated. The notice will contain details on the time and date that the Critical Contingency terminated.

A proforma of this notice is included in Appendix 5.6.

3.7 Communication with CCO

Vector will communicate with the CCO by telephone and in writing by use of email using standard PC applications.

In the event that standard PC applications are unavailable to Vector, Vector will communicate by telephone and provide written confirmation by email as soon as reasonably practicable afterwards.

Vector may elect to hand deliver written communications if standard PC applications are unavailable.

If land line and cell phone services are unavailable to Vector, Vector will use its satellite phone service to communicate by telephone or use face to face communications if possible.

4. Information requirements

4.1 General

The information which Vector is required to provide to the CCO is described in Regulation 38 as follows:

- (a) Metering (or other equipment) data on the amount of gas received in to or taken from, and the pressure at or near, an interconnection point.
- (b) In respect of each day, the net quantity of gas agreed between Vector and an inter-connected party, or otherwise expected or requested, to pass through each interconnection point.
- (c) Data concerning the composition and quality of gas in its parts of the transmission system.
- (d) Technical pipeline information referred to in clause 1 of Part 5 of Schedule 1 of the Gas (Information Disclosure) Regulations 1997.
- (e) Any notices issued pursuant to a transmission system code by Vector in respect to Maui Pipeline.
- (f) Any of the following data that Vector has access to and is reasonably requested (for the purpose of performing its obligations under these regulations) by the CCO:
 - (i) mismatch or operational imbalance data.
 - (ii) historical flow information, linepack, or pressure data.

The CCO will have access to information contained in the Vector OATIS and SCADA systems. Any additional information not readily available, which may be required by the CCO under Regulation 38 (f) will be requested in writing by the CCO.

4.2 Information systems

The CCO will be granted an appropriate level of access to the OATIS and SCADA systems to allow visibility of system conditions.

4.3 Operational pipeline data to be provided to CCO

Vector will provide information to the CCO to assist in the determination and declaration of a Critical Contingency, the management/monitoring during the Critical Contingency and the determination to terminate the Critical Contingency. The information provided may include all or some of the following:

- (a) Interconnection point data including pressure and volumes of gas received.
- (b) Injecting production station data including pressure and volumes gas being injected.
- (c) Gas quality data from the injecting production stations in (b).

- (d) Scheduled, and nominated quantities of gas to be received into system from (a) and (b).
- (e) Expected quantities and levels of system imbalance.
- (f) Rate of change of imbalance.
- (g) Expected time to reach the P_{\min} Critical Contingency threshold.
- (h) Parts of the transmission affected.
- (i) Historical flow, line pack and pressure data.
- (j) Technical pipeline and equipment information.
- (k) Performance and status of load shedding.
- (l) Progress and status of event that triggered the Critical Contingency.
- (m) Expected time until termination criteria are reached.
- (n) Recovery of line pack, pressure levels.
- (o) Security of any supplies reinstated from Producers.
- (p) Reinstatement of the nominations and scheduling processes.
- (q) Expected gas demands upon termination of Critical Contingency.
- (r) Historical flow rates, line pack and pressure data.

5. Intra-Critical Contingency processes

5.1 Safety statement

If Vector deems that compliance with any part of the Regulations or any direction issued by the CCO (or any other party) in pursuance of the Regulations would endanger the life or safety of any person then Vector may elect not to comply and/or take alternative actions deemed to be appropriate under the prevailing circumstances.

Should Vector elect to not comply with the Regulations on the grounds of safety and to take alternative actions it will inform the CCO and any other affected parties. Information will be communicated by telephone and confirmed in writing giving reasons for electing to not comply and details of any appropriate alternative actions.

5.2 Pipeline thresholds

The Critical Contingency thresholds for the Vector pipeline are measured at the points in Table 1. The thresholds themselves are expressed both as a minimum pressure threshold (P_{min}) and in terms of the time remaining to reach P_{min} . The time thresholds are based on the need to allow sufficient time for load curtailment directives to be issued and complied with by the affected consumers in the selected curtailment bands during a Critical Contingency.

The pressure thresholds are selected to ensure that connected gas distribution networks continue to be supplied with gas in sufficient quantities to prevent pressure falling to dangerous or unsustainable levels and to continue to supply gas in sufficient quantities to domestic consumers and essential service providers.

Table 1 pipeline thresholds

Pipeline Name	Point Of Measurement	Pmin (barg)	Threshold Time (Hours to reach Pmin)
South	Waitangirua	37.0	10
Hawkes Bay Lateral	Hastings	32.0	5
Frankley Road to KGTP	KGTP	37.5	3
Bay Of Plenty	Gisbourne	32.0	5
Bay Of Plenty	Taupo	32.0	5
Bay Of Plenty	Tauranga	32.0	6
Bay Of Plenty	Whakatane	32.0	5
Morrinsville Lateral	Cambridge	32.0	5
Central (North)	Westfield	42.0	4
North	Whangarei	25.0	5

In the event of pipeline damage or other major physical asset failure threshold time to reach P_{min} may be significantly shorter than the times indicated in the above table.

5.3 Curtailment arrangements

During a Critical Contingency Vector will receive and follow the directions given by the CCO as specified under Regulations 50 and 54.

The CCO is responsible for ensuring its directions (including any curtailment directions) meet the objectives set out in Schedule 2 to the Regulations. Vector's arrangements as described in this plan, have been designed to complement CCO directions and are consistent with these objectives.

If Vector believes any CCO issued curtailment direction is inconsistent with the objectives set out in Schedule 2 to the Regulations, it will immediately contact the CCO by telephone to discuss the issue.

Vector will issue notices to all parties listed in Appendix 4 as soon as reasonably practicable following receipt of directions from the CCO as described in section 3.

The curtailment bands are provided below in Table 2.

Table 2 curtailment bands

Curtailment band	Consumption in terajoules (TJ)	Description
0	N/A	Gas off taken for injection into gas storage.
1a	More than 15TJ per day	Consumers (excluding essential service providers) supplied directly from the transmission system who have an alternative fuel capability. If minimal load consumer then manage wind-down of plant.
1b	More than 15TJ per day	Consumers (excluding essential service providers) supplied directly from the transmission system who do not have an alternative fuel capability. If minimal load consumer then manage wind-down of plant.
2	More than 10TJ per annum and up to 15TJ per day	Consumers (excluding essential service providers) with alternative fuel capability. If minimal load consumer then manage wind-down of plant.
3	More than 10TJ per annum and up to 15TJ per day	Consumers (excluding essential service providers) without alternative fuel capability. If minimal load consumer then manage wind-down of plant.
4	More than 2TJ per annum and up to 10TJ per annum	Consumers, excluding essential service providers. Minimal load consumers in curtailment bands 1a to 3 curtailed in full.
5	More than 2TJ per annum	Essential service providers.
6	2TJ or less per annum	All remaining consumers.

The CCO will issue demand curtailment directives to Vector who will then issue directions based on the CCO directive as described in section 3 to the parties listed in Appendix 4.

CCO curtailment notices may contain directions to curtail subsets of load within a curtailment band or subsets of geographically located load within a curtailment band. Vector will assess these directives and suggest to the CCO any alternatives it feels would better serve the purpose of the Regulations.

5.4 Normal demand restoration arrangements

Curtailed demand will normally be restored in the reverse order in which it was curtailed i.e. last to be curtailed is first to be restored.

The CCO will issue demand restoration directions to Vector who will then issue directions to the parties listed in Appendix 4 as described in section 3.

If Vector believes any CCO issued restoration direction is inconsistent with the objectives set out in Schedule 2 to the Regulations, it will immediately contact the CCO by telephone to discuss the issue.

During demand restoration Vector will monitor the transmission system stability and capacity. Should the system be adversely affected Vector will contact the CCO immediately by telephone and discuss suggested actions to rectify the situation. Suggestions may include requirements for modifications to existing restoration directives or delays in issuing further restoration directives.

CCO directions to restore demand are based on the transmission system pressure and linepack having stabilised to a level which will allow restoration. However restoration of demands on the downstream connected distribution systems will need to be managed by the gas distributor to ensure that the process takes place in a safe and orderly manner. Therefore, directions issued to Retailers to restore demand from Vector indicate that demand can be restored from the transmission system only. Retailers are required to consult with and comply with any instructions from gas distributors regarding the order and timing of demand restoration.

5.5 Alternative demand restoration arrangements

Curtailed demand will normally be restored in the reverse order in which it was curtailed i.e. last to be curtailed is first to be restored.

However, Vector will ensure that restoration of supply occurs in such a manner that prevents any further threat to safety or system security. Economic and social considerations will also be taken into account. The following factors will be considered when determining if load should be restored in a different order to the reverse curtailment order;

- (a) The current level of curtailment.
- (b) Which consumers have been affected.
- (c) Current and forecast demand conditions.
- (d) Current supply availability and whether or not those supplies are sustainable.
- (e) Available quantities of linepack.
- (f) Availability and use of storage gas.
- (g) Maximisation of gas availability.

Restoration order will be based on following priorities (highest to lowest priority order):

- (a) Health and safety of employees, service providers and the public.
- (b) Minimisation of integrity risks of gas transmission and distribution networks and to customer appliances.
- (c) Any directions issued as a result of a Civil Defence Emergency.
- (d) Restoration of supply of gas to essential service providers.
- (e) Minimisation of physical damage to key industries and plant.
- (f) Allowance for minimal load consumer supplies.

(g) Retailer/consumer contractual rights to gas supplies.

Vector and the CCO will consider these factors and priorities prior to the CCO issuing directions to restore demand.

If Vector considers that curtailed demand should be restored in an order different to the normal restoration order it will inform the CCO by telephone and confirm the details in writing.

Following consultation between the Vector and the CCO, the CCO will issue demand restoration directives to Vector who will then issue directions based on the CCO directive as described in Section 3 to the parties listed in Appendix 4.

Some circumstances where alternative demand restoration arrangements which meet the objectives in Schedule 2 Part 1 are described below.

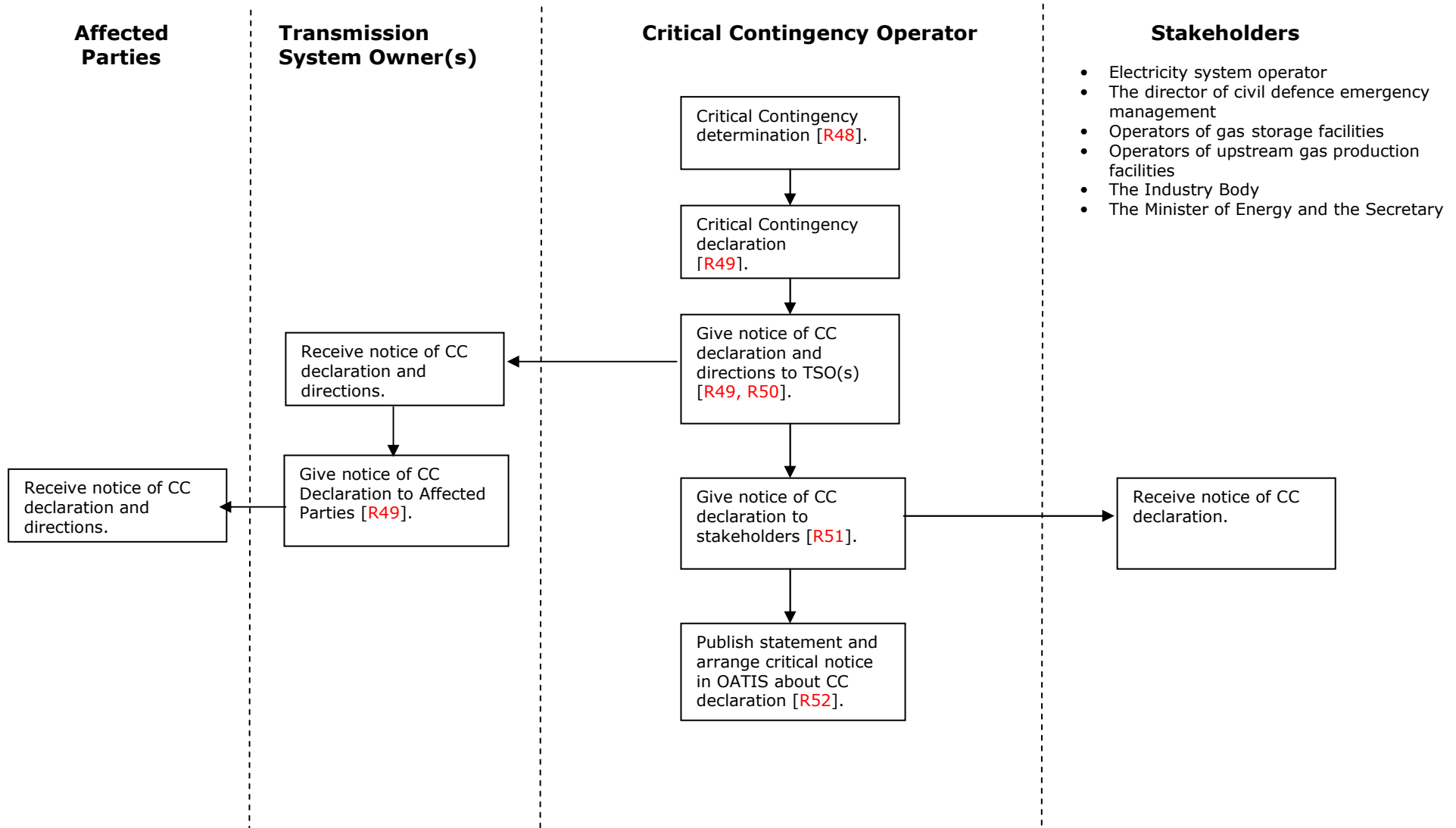
- (a) Partial restoration of consumers in curtailment bands 1a, 1b and 2 ahead of, or at the same time as consumers in bands 3 - 6. This would allow large consumers to make preliminary preparations for a return to full production (for example performing a "cold start" on large plant). The individual circumstances and requirements of each large consumer would be considered by Vector in conjunction with the CCO.
- (b) Full or partial restoration to electricity generation facilities classified as large consumers ahead of curtailment bands 2 - 6. This may be required in circumstances where the Electricity System Operator requests support from gas fired generation facilities to prevent widespread electricity outages. The decision to use this alternative restoration approach would be made in conjunction with the CCO, the Electricity System Operator, and CDEM.
- (c) Consumers in bands 0, 1a, 1b, and 2 being restored ahead of consumers in bands 3 - 6. This could occur where technical and operational issues have resulted in a longer term outage on a discreet section of the pipeline located downstream from the main gas supply, leaving some parties unaffected by the outage. The decision to use this alternative restoration approach would be made in conjunction with the CCO.
- (d) In the event of non-specification gas having entered the system, demand to consumers in bands 0, 1a, 1b and 2 may be restored ahead of bands 3 - 6 if the non-specification gas can be consumed safely and efficiently by these consumers. In these circumstances venting of large quantities of non-specification may be avoided.

6. Imbalance section

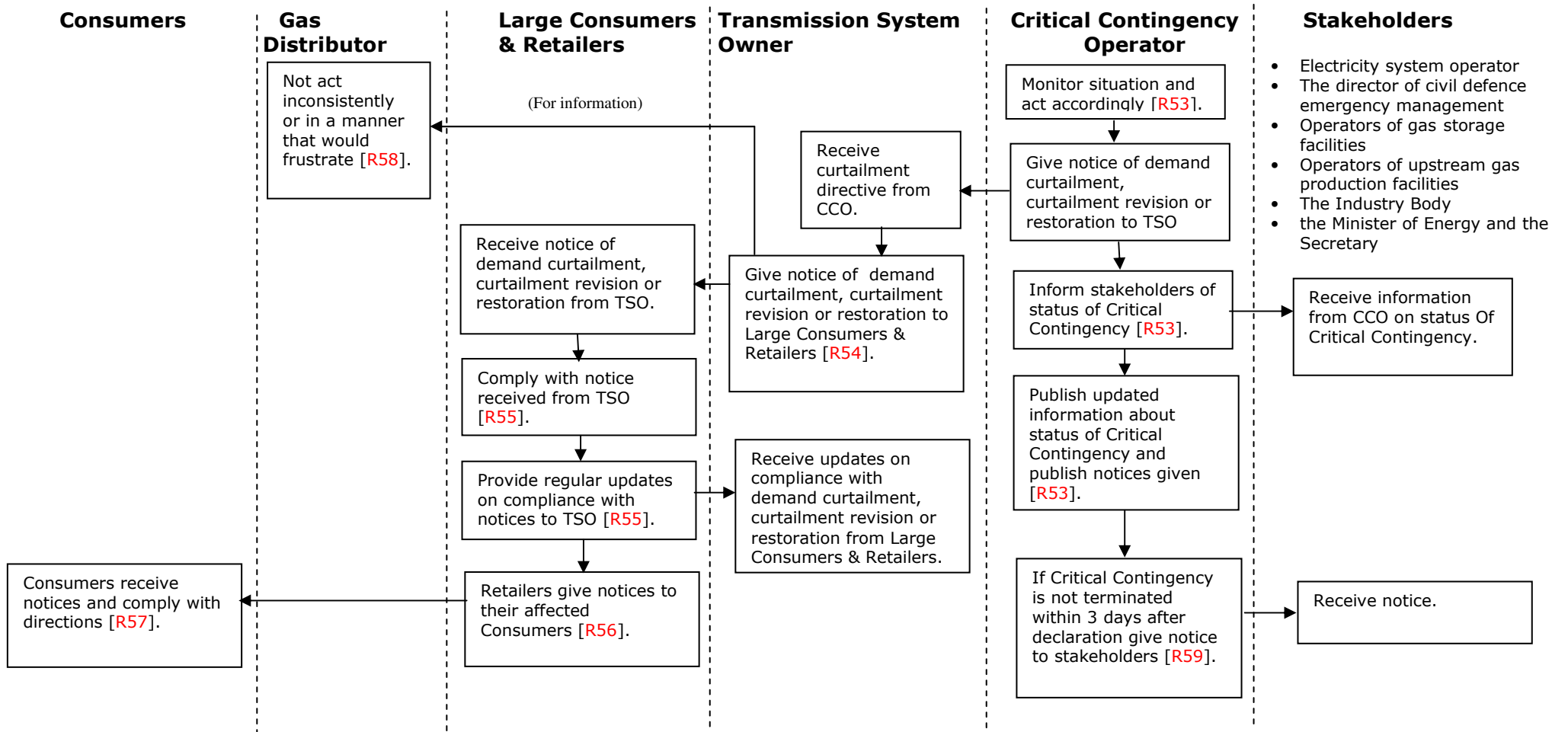
Vector's Imbalance Calculation Methodology is set out in a paper included as Appendix 8 to this CCMP.

7. CCMP Appendices

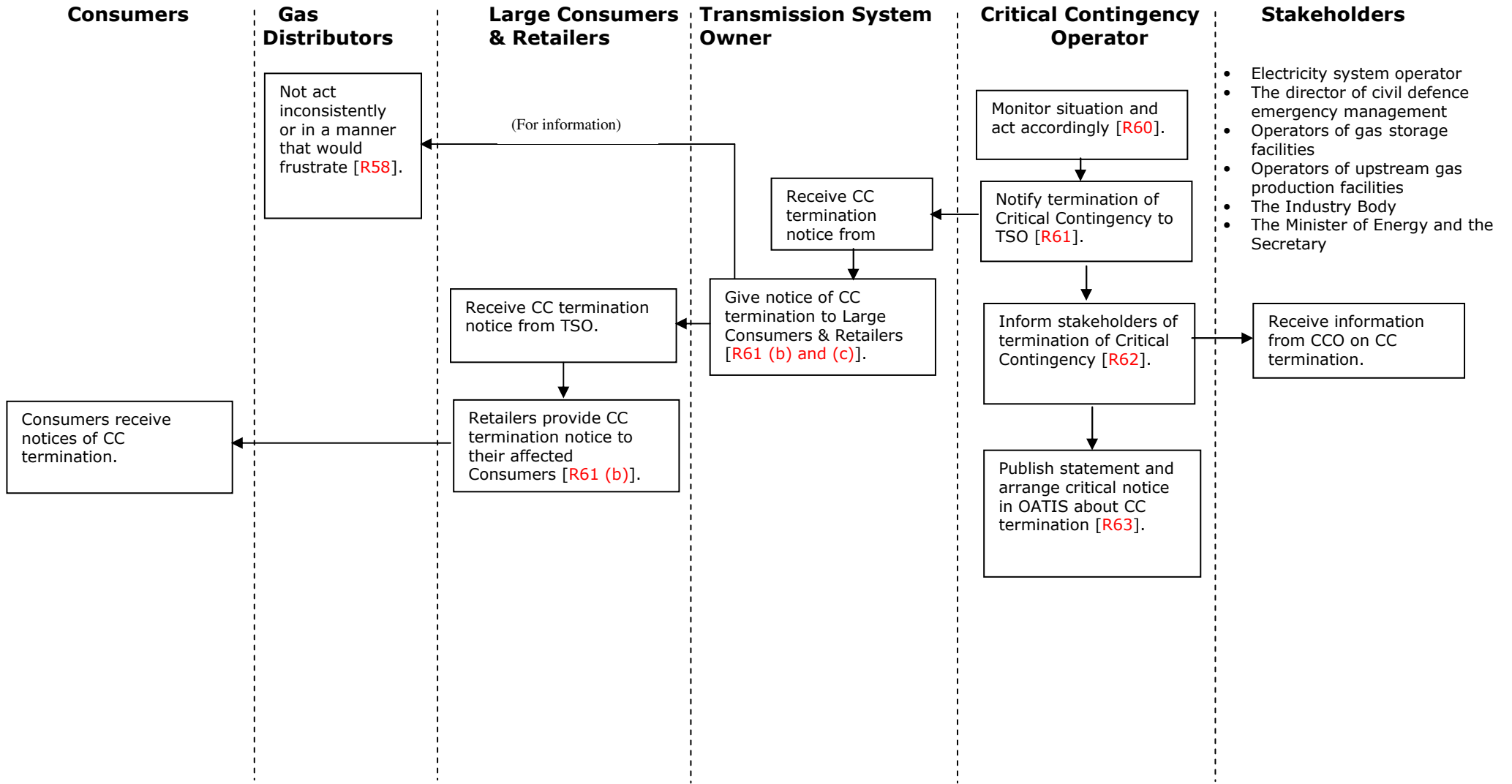
Appendix 1 Process for declaration of Critical Contingency



Appendix 2 Process during a Critical Contingency



Appendix 3 Process for termination of Critical Contingency



Appendix 4 Contact details

Contact details for affected parties are contained and updated within OATIS. It is the responsibility of the identified affected parties to maintain and keep up to date contact details in OATIS.

An updated OATIS contacts report is generated every day and these reports are stored outside of OATIS. In the event that OATIS is unavailable during a Critical Contingency the most recent contacts report will be used.

Vector will check that contact details are completed in OATIS for each party prior to the go-live date and at six monthly intervals thereafter. Regular reminders will be issued to affected parties to check and amend their details as appropriate.

Contact details for these parties will be updated using existing OATIS processes. These parties include the following.

Category	Individual Organisations
Transmission System Owners	<ul style="list-style-type: none"> Maui Developments Limited
Gas Distributors	<ul style="list-style-type: none"> Vector Powerco Nova Gas Gasnet
Shippers	<ul style="list-style-type: none"> Contact Energy Limited E-Gas 2000 Limited Genesis Power Limited Greymouth Gas New Zealand Limited Mighty River Power Limited Nova Gas Limited On Gas Limited Shell New Zealand Limited Vector Gas Contracts Limited Wanganui Gas Limited
Retailers	<ul style="list-style-type: none"> Contact Energy Genesis Energy Wanganui Gas Energy Direct Mercury Energy Auckland Gas Company Nova Gas Bay of Plenty Energy On Gas Vector Gas Contracts Greymouth Gas New Zealand Limited
Gas Producers	<ul style="list-style-type: none"> Vector Wholesale - Kapuni Gas Treatment Plant Greymouth Gas New Zealand Limited - Kaimiro Production Station Origin Energy - Rimu Production Station Origin Energy - Waihapa Production Station
Storage Facilities	<ul style="list-style-type: none"> Contact Energy Limited - Ahuroa Storage Facility
Large Consumers	<ul style="list-style-type: none"> Mighty River Power Limited - Southdown Power Station Contact Energy Limited - Otahuhu Power Station Contact Energy Limited - Stratford Power Station Ballance Agri-Nutrients (Kapuni) Limited Fonterra - Te Rapa Dairy Factory

CCO Contact Details

Vector will communicate with the CCO as described in section 3.7.

Contact Name	Steve Ilkovics Critical Contingency Operator Normal contact numbers: 06 759 6525 027 496 1980
Contact Alternative Contacts	Mark Richards CCO Assistant Normal contact number: 06 769 8202
Email Address	cco@vector.co.nz
Internet Site	https://www.oatis.co.nz/Ngc.Oatis.UI.Web.Internet/Common/CCOHome.aspx
24/7 Contact Phone Numbers and during Critical Contingencies in order of preference	021 0219 8170 (cell) 06 759 6516 0800 CCO 123 0088 163 144 7406 (satellite)

Appendix 5 Proforma notices

A5.1 Declaration of Critical Contingency

Notice of Declaration of Critical Contingency

This notice is issued in accordance with the Vector CCMP. The CCO declared a critical contingency at [time] [date] under **Regulation 49** of the Gas Governance (Critical Contingency Management) Regulations 2008.

This Critical Contingency [has/has not] been designated as a Regional Critical Contingency.

It is advised that all directions issued by the Critical Contingency Operator pursuant to the declaration of the critical contingency must be complied with.

The communications described in the CCO Communication Plan and Vector CCMP are now activated.

Load curtailment is not required at this stage and instructions are awaited from the CCO.

1. Event causing Critical Contingency

2. Areas of transmission system affected

3. Summary of actions being taken to resolve event

Notes:

- (a) This notice will be considered received by the recipient on the date and at the time it is first posted on OATIS.
- (b) Alerts regarding this notice will also be communicated by email and SMS text message.

A5.2 Direction to curtail demand

Notice of Direction To Curtail Demand

This notice is issued in accordance with the Vector CCMP. The CCO gave direction to curtail demand at [time] [date] under **Regulation 53 (1) (d) (i)** of the Gas Governance (Critical Contingency Management) Regulations 2008.

It is advised that all directions issued by the Critical Contingency Operator pursuant to the declaration of the critical contingency must be complied with.

Retailers and Large Consumers must comply with this direction as soon as reasonably practicable and provide Vector with updates on compliance in accordance with Regulation 55 at hourly intervals or at agreed times from the time this notice was issued. Updates to be communicated to Vector at the contact details in Appendix 6 using the proforma notice included in Appendix A5.5.

The communications described in the CCO Communication Plan and Vector CCMP continue to be activated.

- 1. Event causing Critical Contingency**
- 2. Areas of transmission system affected**
- 3. Summary of actions being taken to resolve event**
- 4. Curtailments now directed**

Curtailment band	Description of consumers to be curtailed	Location of customers to be curtailed
0		
1a		
1b		
2		
3		
4		
5		
6		

Notes:

- (a) The notice will be considered received by the recipient on the date and at the time it is first posted on OATIS.
- (b) Alerts regarding this notice will also be communicated by email and SMS text message.

A5.3 Direction to revise demand curtailment

Notice of Direction to Revise Demand Curtailment

This notice is issued in accordance with the Vector CCMP. The CCO gave direction to revise demand curtailment at [time] [date] under **Regulation 53 (1) (d) (ii)** of the Gas Governance (Critical Contingency Management) Regulations 2008.

For the avoidance of doubt this notice supersedes the original Notice of Direction to Curtail Demand and any previous notice(s) of Direction to Revise Demand Curtailment. It includes all demand previously directed for curtailment and all additional demands that now require curtailment.

It is advised that all directions issued by the Critical Contingency Operator pursuant to the declaration of the Critical contingency must be complied with.

Retailers and Large Consumers must comply with this direction as soon as reasonably practicable and provide Vector with updates on compliance in accordance with Regulation 55 at hourly intervals or at agreed times from the time this notice was issued. Updates to be communicated to Vector at the contact details in Appendix 6 using the proforma notice included in Appendix A5.5.

The communications described in the CCO Communication Plan and Vector CCMP continue to be activated.

1. Event causing Critical contingency

2. Areas of transmission system affected

3. Summary of actions being taken to resolve event

4. Revisions to curtailments now directed

Curtailment band	Description of consumers to be curtailed	Location of customers to be curtailed
0		
1a		
1b		
2		
3		
4		
5		
6		

Notes:

- (a) The notice will be considered received by the recipient on the date and at the time it is first posted on OATIS.
- (b) Alerts regarding this notice will also be communicated by email and SMS text message.

A5.4 Direction to Restore Demand

Notice of Direction to Restore Demand

This notice is issued in accordance with the Vector CCMP. The CCO gave direction to restore demand at [time] [date] under **Regulation 53 (1) (e) (i)** of the Gas Governance (Critical Contingency Management) Regulations 2008.

For the avoidance of doubt this notice supersedes any previous notice(s) of Direction to Restore Demand. It includes all demand previously directed for restoration and any additional demands that can now be restored.

It is advised that all directions issued by the Critical Contingency Operator pursuant to the declaration of the critical contingency must be complied with.

Retailers and Large Consumers must comply with this direction as soon as reasonably practicable and provide Vector with updates on compliance in accordance with Regulation 55 at hourly intervals or at agreed times from the time this notice was issued. Updates to be communicated to Vector at the contact details in Appendix 6 using the proforma notice included in Appendix A5.5.

This direction indicates that demand can be restored from the transmission system only. Retailers are required to consult with gas distributors and comply with any of their instructions to ensure that restoration takes place in a safe and orderly manner on the connected distribution system.

The communications described in the CCO Communication Plan and Vector CCMP continue to be activated.

1. Event causing Critical contingency

2. Areas of transmission system affected

3. Summary of actions being taken to resolve event

4. Demand restoration now directed

Curtailment band	Description of consumers to be restored	Location of customers to be restored
0		
1a		
1b		
2		
3		
4		
5		
6		

5. Details regarding order for restoration of demand

Notes:

- (a) The notice will be considered received by the recipient on the date and at the time it is first posted on OATIS.
- (b) Alerts regarding this notice will also be communicated by email and SMS text message.

A5.5 Retailer & Large Consumer Compliance Update

Retailer & Large Consumer Compliance Update

Retailers and Large Consumers must follow directions for curtailment, revised curtailment and restoration of demand and provide Vector with regular updates of compliance in accordance with Regulation 55.

Updates to be communicated to Vector at the contact details in Appendix 6 using this proforma at hourly intervals or at agreed times following the issue of the relevant notice.

Name of organisation	
Large Consumer or Retailer	Large Consumer / Retailer *
Type of notice update provided for	Curtailment / Curtailment Revision / Restoration *
Reference Number of Notice Compliance Being Updated On	

Curtailment band	Description of consumers curtailed/restored*	Location of customers curtailed/restored*	Compliance update details i.e. magnitude and time curtailed/restored*
0			
1a			
1b			
2			
3			
4			
5			
6			

* delete as appropriate

A5.6 Notification that Critical Contingency has Terminated

Notice of Termination of Critical Contingency

This notice is issued in accordance with the Vector CCMP. The CCO terminated the Critical Contingency at [time] [date] under **Regulation 61** of the Gas Governance (Critical Contingency Management) Regulations 2008.

It is advised that all directions issued by the Critical Contingency Operator pursuant to the declaration of the Critical Contingency must be complied with.

Under Regulation 61 (b) Retailers are directed to advise their consumers that the CC has been terminated. Retailers must comply with this direction as soon as reasonably practicable.

Retailers must continue to follow any instructions given by gas distributors with regard to demand restoration.

The communications described in the CCO Communication Plan and Vector CCMP are deactivated at the time and date that the Critical Contingency is terminated.

1. Time and date Critical Contingency terminated

2. Event that caused Critical Contingency

3. Areas of transmission system affected

4. Details of event resolution

Notes:

- (a) The notice will be considered received by the recipient on the date and at the time it is first posted on OATIS.
- (b) Alerts regarding this notice will also be communicated by email and SMS text message.

Appendix 6 Designated TSO representative details

Individual	Email address	Cell phone number	Direct dial number
System Duty Officer (contactable 24/7 via Gas Operations Control)	gas.controller@vector.co.nz	027 442 9051	06 755 0861 or 06 759 6499 or 0088 162 141 3928 (satellite phone)

Appendix 7 CCO Contact Details

Contact Name	Steve Ilkovics Critical Contingency Operator Normal contact numbers: 06 759 6525 027 496 1980
Contact Alternative Contacts	Mark Richards CCO Assistant Normal contact number: 06 769 8202
Email Address	cco@vector.co.nz
Internet Site	https://www.oatis.co.nz/Ngc.Oatis.UI.Web.Internet/Common/CCOHome.aspx
24/7 Contact Phone Numbers and during Critical Contingencies in order of preference	021 0219 8170 (cell) 06 759 6516 0800 CCO 123 0088 163 144 7406 (satellite)

Appendix 8 Imbalance Calculation Methodology



**Vector Imbalance Calculation Process and
Contingency Imbalance Calculation Methodology
Gas Governance (Critical Contingency Management)
Regulations 2008**

[Designed to meet the 'Maui and Vector' calculation approach]

December 2009

INTRODUCTION

Purpose

The purpose of this Appendix is to describe the business process that Vector Gas Limited (**Vector**) will use to integrate the Contingency Imbalance regime prescribed by the Gas Governance (Critical Contingency Management) Regulations 2008 (**Regulations**) with the business-as-usual balancing regime operated by Vector, pursuant to section 8 of the Vector Transmission Code (VTC).

This Appendix does not apply to Regional Critical Contingencies.

Background

The Gas Industry Company (**GIC**) is required under the Regulations to determine and resolve Contingency Imbalances that arise out of a Critical Contingency (regulations 73 to 82). The GIC must ensure that its functions under this part of the Regulations achieve the objectives of ensuring that fair, effective, and transparent arrangements are implemented to accurately determine Contingency Imbalances and allocate them to affected parties (regulation 73).

Transmission System Owners are required to determine the negative or positive Contingency Imbalances for each affected party over the period of the Critical Contingency (regulations 74 (1) and (2)). Vector will determine the Contingency Imbalances on its Transmission System based on shipper Mismatch positions during the Critical Contingency.

DEFINITIONS

In this Appendix:

BPP Account has the meaning given to it by the VTC;

BPP Allocation Day has the meaning given to it by the VTC;

BPP Commencement Day has the meaning given to it by the VTC;

BPP Trustee has the meaning given to it by the VTC;

CC Day means a Day on which a Critical Contingency is in effect;

CC Month means a month containing a CC Day;

CC Period (or CCP) means, in respect of each Critical Contingency, the period starting at 0000 hours on the CC Day on which the Critical Contingency is declared and ending at 2400 hours on the CC Day on which the Critical Contingency is terminated;

CCP – 1 means the Day before the Day on which a Critical Contingency was declared;

CCP + 1 means the Day after the Day on which a Critical Contingency was terminated;

Contingency Imbalance has the meaning given to it in the Regulations;

Critical Contingency has the meaning given to it in the Regulations;

Critical Contingency Price has the meaning given to it in the Regulations;

Day has the meaning given to it by the VTC;

Delivery Quantities has the meaning given to it by the VTC;

Incentive Pool Debits has the meaning given to it by the MPOC;

Line Pack has the meaning given to it by the VTC;²

Maui Contingency Pool means the contingency pool (representing the Maui Pipeline), reconciled in accordance with the MDL Critical Contingency Management Plan approved under regulation 30 of the Regulations;

Maui Pipeline Operating Code (MPOC) has the meaning given to it by the Regulations;

Mismatch has the meaning given to it by the VTC;

Non-Code Shipper has the meaning given to it by the VTC;

OATIS has the meaning given to it by the VTC;

² "line pack" as calculated by reg 75 (f) (i) and (ii) includes both a change in physical Line Pack as well as the Vector Imbalance accumulated during the Critical Contingency.

Operational Imbalance (or OI) has the meaning given to it by the MPOC;

Peaking Limit has the meaning given to it by the MPOC;

Pipeline has the meaning given to it by the VTC;

Positive Mismatch Price has the meaning given to it by the MPOC;

Receipt Quantities has the meaning given to it by the VTC;

Regional Critical Contingency has the meaning given to it by the Regulations;

Residual means, in respect of each shipper or Vector, the difference between that party's adjusted Contingency Imbalance calculated under regulation 75 (f) (ii) and that party's Contingency Imbalance determined under regulations 74 (2) (a) and (b);

Running Mismatch has the meaning given to it by the VTC;

Running Operational Imbalance (or ROI) has the meaning given to it by the MPOC;

TP Welded Point has the meaning given to it by the MPOC;

Transmission System Owner (TSO) has the meaning given to it by the Regulations;

Vector Contingency Pool means the contingency pool representing the Vector Transmission System, reconciled in accordance with the process in this Appendix;

Vector Imbalance has the meaning given to it by the VTC;

Vector Running Imbalance has the meaning given to it by the VTC;

Vector Transmission Code (VTC) has the meaning given to it by the Regulations; and

Welded Point has the meaning given to it by the MPOC.

Amendments: A reference to the Regulations, the MPOC or the VTC includes any amendment made to the Regulations, the MPOC or the VTC.

PROCESS

To properly integrate the Contingency Imbalance regime prescribed in the Regulations with Vector's business-as-usual regime under section 8 of the VTC (which relates to balancing and peaking), Vector will carry-out the following process:

Brief Overview

- Contingency Imbalances will be removed from shipper Mismatch on all CC Days, so that opening Running Mismatch on CCP +1 is identical to the closing Running Mismatch on CCP - 1. Please note that regulation 75 (a) and (b) specify that Contingency Imbalances should be determined using

either a daily (whole-day) basis or part-day basis. Furthermore, Vector is unable to obtain hourly downstream allocations and therefore cannot determine Contingency Imbalances on a part-day basis;

- In circumstances where there are excess positive Contingency Imbalances in the Vector Contingency Pool then regulation 75 (f) (ii) will apply. This means that after adjustments under regulation 75 (d), any Residual Contingency Imbalance that wasn't "cashed-out" under the Regulations must be returned to the BPP;
- Any Residual will be returned to shipper Running Mismatch on CCP +1;
- The return of any Residual will be pro-rated across the Pipelines where it was created, so that shippers will not receive more positive Mismatch back into a Pipeline than was removed from Shipper Mismatch on all CC Days, referred to above;
- A similar process is also used to return any Residual back to Vector Running Imbalance; and
- Business-as-usual balancing costs will continue to flow through the BPP on CCP +1. These balancing costs will be allocated based on Running Mismatch and Vector Running Imbalance positions calculated using 0 GJ Mismatch and Vector Imbalance for all CC Days.

Detailed Methodology

Preparation

When: As soon as is reasonably practicable after declaring the BPP Commencement Day for a CC Month.

1. Upload Receipt Quantities and Delivery Quantities into OATIS for the CC Month and then calculate the shipper Mismatch positions in OATIS for that CC Month.
2. Copy all shipper Mismatch positions on all CC Days from OATIS into a spreadsheet.

Extract Contingency Imbalances from Running Mismatch and Vector Running Imbalance (respectively)

Why: So that each GJ of Gas dealt with under the Regulations sits outside of the BPP.

When: As soon as is reasonably practicable after declaring the BPP Commencement Day for a CC Month and before allocating balancing costs for that CC Month³.

3. Remove (set to zero) all shipper Mismatch on all CC Days and in respect of all Pipelines.

To use existing OATIS functionality, the mechanism that will be used to extract Contingency Imbalances from Running Mismatch is to process a \$0/GJ BPP payment named "Removal of Contingency Imbalance" through the BPP on the Day before each CC Day.

4. Remove (set to zero) Vector Imbalance on all CC Days and in respect of all Pipelines.

The regulations don't allow us to treat Vector Imbalance as a shipper Contingency Imbalance. This is because regulation 74 (2) does not allow a TSO to have a Contingency Imbalance due to an under/over take of Gas and regulations 74 (2) (a)(iii) & (b)(iii) can only apply to shippers.

Vector Imbalance is still factored into the imbalance calculation, because it is rolled into the decrease/increase in TSO line pack under regulations 74 (2) (c) and 75 (f)(ii), along with the change in Line Pack.

Return a physical decrease in Line Pack to Vector Running Imbalance

Why: If Vector had an aggregate decrease in Line Pack across all Pipelines⁴ during the Critical Contingency, then the Line Pack must be restored to normal

³ If a Critical Contingency spans two separate months (e.g. 31 July and 1 August), Contingency Imbalances cannot be calculated and Residuals cannot be returned to the BPP until after the BPP Commencement Day is declared for the second month (August). However, Mismatch and Vector Imbalance will be removed from the first month (July) once its BPP Commencement Day has been declared.

⁴ "line pack" as calculated by regulation 75 (f) (i) and (ii) includes both a change in physical Line Pack as well as the Vector Imbalance accumulated during the Critical Contingency.

levels as soon as possible to ensure security of supply is maintained. Actions in respect of this decrease in Line Pack need to be reflected in Vector Running Imbalance.

When: As soon as is reasonably practicable after declaring the BPP Commencement Day for the CC Month and before allocating balancing costs for the CC Month.

5. Determine if Vector had a decrease in Line Pack across all Pipelines during the CC Period, using the following calculation:

$$\Delta \text{Line Pack}_{(\text{All Pipelines})} = \Sigma \text{Line Pack}_{\text{end}} - \Sigma \text{Line Pack}_{\text{start}}$$

Where:

$\Delta \text{Line Pack}_{(\text{All Pipelines})}$ is the change in Line Pack during the CC Period on all Pipelines.

$\Sigma \text{Line Pack}_{\text{start}}$ is the Line Pack on all Pipelines, calculated at 0:00 hours (NZST) on the Day the Critical Contingency was declared.

$\Sigma \text{Line Pack}_{\text{end}}$ is the Line Pack on all Pipelines, calculated at 24:00 hours (NZST) on the Day the Critical Contingency was terminated.

If this results in a positive $\Delta \text{Line Pack}_{(\text{All Pipelines})}$, skip Steps 6 and 7, then go on to Step 8.

6. If Step 5 resulted in a negative number this indicates a decrease in Line Pack. In this situation, add the decrease in Line Pack to Vector Running Imbalance on CCP +1, by pro-rating $\Delta \text{Line Pack}_{(\text{All Pipelines})}$ across the Pipelines with a decrease in Line Pack using the following formula⁵:

$$\text{Pro-rata adjustment (on a Pipeline)} = \Delta \text{Line Pack}_{(\text{All Pipelines})} * (\text{Line Pack}_{(\text{decrease})} \text{ (in a Pipeline)} / \Sigma \text{Line Pack}_{(\text{decrease})})$$

Where:

Pro-rata adjustment (on a Pipeline) is the amount that will be added back into Vector Running Imbalance on a Pipeline, on the Day after the Critical Contingency was terminated.

$\Delta \text{Line Pack}_{(\text{All Pipelines})}$ is a negative number calculated by Step 5.

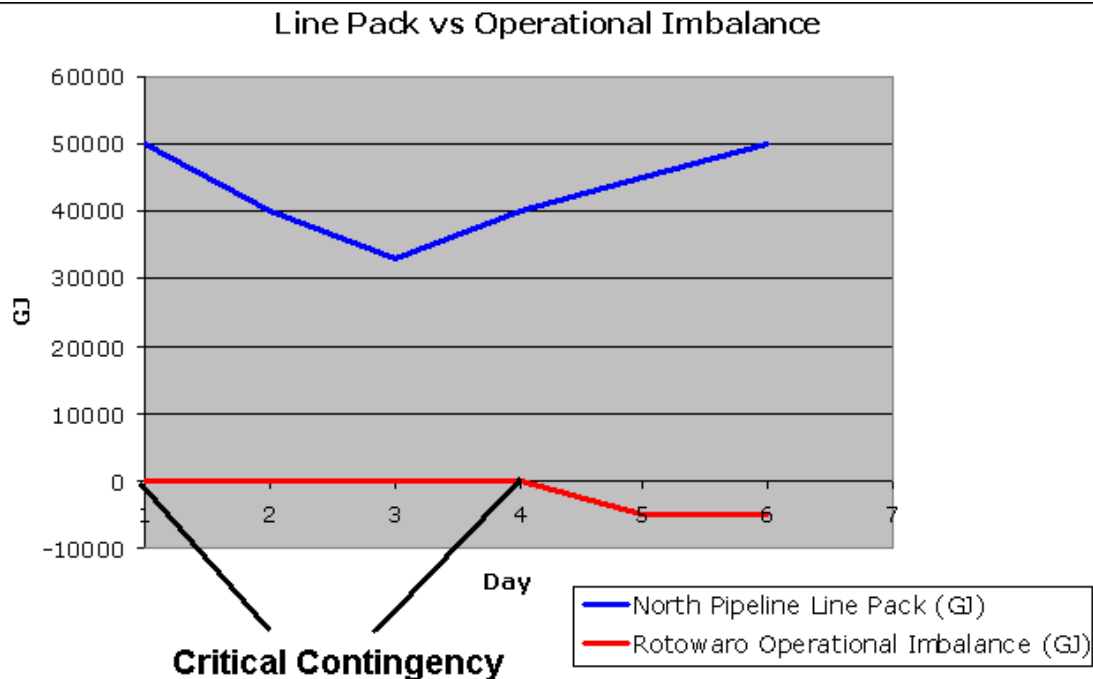
Line Pack_(decrease) (on a Pipeline) is the decrease in Line Pack on a Pipeline calculated as $\text{Line Pack}_{\text{end}} - \text{Line Pack}_{\text{start}}$, provided the result is a negative number.

$\Sigma \text{Line Pack}_{(\text{decrease})}$ is the sum of all Line Pack_(decreases)

7. If Vector purchased Gas to replenish Line Pack depleted by a Critical Contingency, after the Critical Contingency, then add the quantity of Gas purchased on a Pipeline to Vector Running Imbalance on the relevant Pipeline, on the relevant Day.

⁵ Pro-rating is necessary because there may be Line Pack increases in certain Pipelines that partially offset a larger decrease in Line Pack.

In the example below, MDL has set the Operational Imbalance at Rotowaro to 0 GJ in respect of CC Days 1-4, in line with the MDL Critical Contingency Management Plan. When the Critical Contingency is terminated on Day 4, Vector draws Gas across the Welded Point to restore the Line Pack. This will cause negative Operational Imbalance on CC Days 5 and 6 if Vector does not purchase this Gas from a party who shipped it to the Welded Point.



Returning to business as usual after the Critical Contingency

Why: So that the balancing regime detailed in section 8 of the Vector Transmission Code can resume normal operation as soon as possible.

When: On CCP + 1.

- On the Day after the Critical Contingency is terminated all MPOC and VTC balancing provisions will resume. This means that “cash-outs”, Incentive Pool Debits and Peaking Limit charges will resume flowing through the BPP in accordance with those codes but based on Running Mismatch and Vector Running Imbalance positions that do not include Mismatch or Vector Imbalance generated on the CC Days, other than any Residual.

Determine all Contingency Imbalances

Why: To comply with the Regulations (regulations 74 and 75).

When: As soon as is reasonably practicable after the BPP Commencement Day for the CC Month and before allocating balancing costs for the CC Month.

- In the spreadsheet (referred to in Step 2), sum each shipper’s Mismatch position across all Pipelines and all CC Days. This will calculate a single positive or negative Contingency Imbalance figure for each shipper in the Vector Contingency Pool, in accordance with Regulation 74 (2) (a) (iii) and (b) (iii).

10. Calculate Vector's Contingency Imbalance in the Vector Contingency Pool at each TP Welded Point as follows:
- Enter the Operational Imbalance at each TP Welded Point on each CC Day into the spreadsheet;
 - Sum the Operational Imbalance on each CC Day together at each TP Welded Point, to calculate an aggregate Operational Imbalance in respect of each TP Welded Point; and
 - Multiply the aggregate Operational Imbalance at each TP Welded Point by -1, to calculate Vector's Contingency Imbalance in respect of each TP Welded Point, pursuant to regulation 74 (2)(a)(i)-(ii) and regulation 74 (2)(b)(i)-(ii).

The Aggregate Operational Imbalance is multiplied by -1, because when Vector has a positive Operational Imbalance at a TP Welded Point during a Critical Contingency, it has a negative Contingency Imbalance in the Vector Contingency Pool and an opposing positive Contingency Imbalance in the Maui Contingency Pool⁶.

11. Calculate the aggregate positive Contingency Imbalance in the Vector Contingency Pool by summing all the positive Contingency Imbalances determined in Step 9 and Step 10 together.
12. Calculate the aggregate negative Contingency Imbalance in the Vector Contingency Pool by summing the absolute value of all the negative Contingency Imbalances calculated in Step 9 and Step 10 together.
13. In the event that the aggregate negative Contingency Imbalances are less than the aggregate positive Contingency Imbalances then this reflects a gain in Vector's "line pack"⁷ during the Critical Contingency. In this situation, adjust all positive Contingency Imbalances in accordance with the formula in regulation 75 (f) (ii), namely:

$$M_A = M_{+ve} \times (\Sigma M_{-ve} / \Sigma M_{+ve})$$

Where:

M_A is an adjusted positive Contingency Imbalance.

ΣM_{-ve} is the absolute value of the aggregate negative Contingency Imbalances in the Vector Contingency Pool.

ΣM_{+ve} is the aggregate positive Contingency Imbalances in the Vector Contingency Pool.

The Residual positive Contingency Imbalance (being the difference between M_A and M_{+ve}) will be put back into the BPP on CCP +1 in Steps 16 and 17.

A reduction in Vector's positive Contingency Imbalance in the Vector Contingency Pool due to the adjustment means that Vector will pay the

⁶ These two Contingency Imbalances may not be equal-and-opposite if each TSO uses different adjustment factors when applying regulation 75 (f) (ii) (see Step 13).

⁷ "line pack" as calculated by reg 75 (f) (i) and (ii) includes both a change in physical Line Pack as well as the Vector Imbalance accumulated during the Critical Contingency.

Critical Contingency Price for a gain in "line pack". This is due to a shortfall between the funds Vector paid into the Maui Contingency Pool for a negative Contingency Imbalance and the funds Vector received back from the Vector Contingency Pool for its adjusted positive Contingency Imbalance.

14. In the event that the aggregate negative Contingency Imbalances exceed aggregate positive Contingency Imbalances then this reflects a decrease in Vector's "line pack"⁸ during the Critical Contingency. The difference will be treated as a positive Contingency Imbalance for Vector in accordance with regulation 74 (2)(c) and regulation 75 (f)(i).
15. Vector will not modify Contingency Imbalances in accordance with regulation 75(d) unless explicitly instructed to do so by the GIC. By taking this approach, Vector assumes shippers acted on curtailment instructions issued by the CCO (regulation 75 (c)).

Return the Residual to Running Mismatch

Why: So that title to Gas is maintained under the VTC when positive Contingency Imbalances are adjusted by Step 13.

When: As soon as is reasonably practicable after the BPP Commencement Day for the month containing CCP +1 and before allocating balancing costs for this month⁹.

16. If Step 13 adjusted the positive Contingency Imbalances in the Vector Contingency Pool, then calculate the Residual in respect of each shipper with a positive Contingency Imbalance¹⁰, as follows:

Residual =

Σ Shipper Mismatch – Positive Contingency Imbalance

Where:

Σ Shipper Mismatch is the sum of that shipper's Mismatch across All Pipelines, on all CC Days¹¹; and

Positive Contingency Imbalance is the shipper's adjusted positive Contingency Imbalance that is determined under Step 13.

If Step 13 did not adjust positive Contingency Imbalances in the Vector Contingency Pool, then skip Step 17 and go on to Step 18.

⁸ "line pack" as calculated by regulation 75 (f) (i) and (ii) includes both a change in physical Line Pack as well as the Vector Imbalance accumulated during the Critical Contingency.

⁹ This means that balancing costs allocated from CCP +1 onwards are based on Running Mismatch positions inclusive of any Residual.

¹⁰ Note that shippers with negative Contingency Imbalances will not have a Residual calculated, or returned to the BPP, because all negative Contingency Imbalances are "cashed-out" via the contingency cash pool (regulation 78).

¹¹ This is the original Mismatch shown in the BPP, before it was removed from the BPP as Critical Contingency Imbalance in Step 3.

17. For each shipper with positive Contingency Imbalance, return its Residual to the BPP by adding an amount (*Amount*) to its Running Mismatch in respect of each Pipeline on CCP +1.

The Amount is calculated as follows, in respect of each shipper with a positive Contingency Imbalance and in respect of each Pipeline:

Amount =

(Positive Mismatch / Total Positive Mismatch) * Residual

Where:

Positive Mismatch is the sum of the shipper's positive Mismatch¹², on all CC Days, on a Pipeline;

Total Positive Mismatch is the sum of the shipper's positive Mismatch¹³ on all CC Days, across All Pipelines; and

The Residual is calculated in Step 16.

To use existing OATIS functionality, the mechanism that will be used to return the Residual to Running Mismatch is to enter \$0/GJ BPP payments into OATIS, titled "Return of Residual Contingency Imbalance", on the Day before the Residual is returned.

Return Residual Contingency Imbalances to Vector Running Imbalance

Why: So that title to Gas is maintained when positive Contingency Imbalances are adjusted by Step 13¹⁴.

When: As soon as is reasonably practicable after the BPP Commencement Day for the month containing CCP +1 and before allocating balancing costs for this month¹⁵.

18. Calculate Vector's Residual¹⁶ during a Critical Contingency for each Pipeline as follows:

Vector's Residual =

Residual OI - Σ Amounts

¹² This is the original Mismatch shown in the BPP, before it was removed from the BPP as Critical Contingency Imbalance in Step 3.

¹³ This is the original Mismatch shown in the BPP, before it was removed from the BPP as Critical Contingency Imbalance in Step 3.

¹⁴ Vector's Residual is the portion of Vector's change in "line pack" that was not cashed-out under the Regulations. Vector's Residual must be returned to Vector Running Imbalance, because otherwise Vector's title to Gas will be altered without Vector transacting at the Critical Contingency Price.

¹⁵ This means that balancing costs allocated from CCP +1 onwards are based on Running Mismatch positions inclusive of any Residual.

¹⁶ Vector's Residual could be either a positive or negative number, because a gain in "line pack" isn't cashed-out under the Regulations. If Vector's Residual is negative, then Vector has had a gain in "line pack" in the relevant Pipeline during the Critical Contingency.

Where:

Σ Amounts is the sum of all Amounts (calculated in Step 17), in the relevant Pipeline.

If Step 17 was skipped (due to positive Contingency Imbalances not being adjusted), then Σ Amounts = 0 GJ.

Residual OI is the remaining Operational Imbalance on CC Days that MDL returned to the relevant TP Welded Point, calculated as follows:

$$\text{Residual OI} = \Sigma \text{ OI} + \text{CC Cash-Out}$$

Where:

Σ OI is the sum of the Operational Imbalance at the relevant TP Welded Point on all CC Days.

CC Cash-Out is the "cash-out" MDL put through the Operational Imbalance report at the relevant TP Welded Point on CCP +1, to remove the positive and negative Contingency Imbalances from Running Operational Imbalance.

19. Return Vector's Residual in each Pipeline to the BPP, by adding it to Vector Running imbalance in the relevant Pipeline on CCP +1.
20. Post the following information on OATIS as a public notice:
 - Each shipper's negative Contingency Imbalance;
 - Each shipper's positive Contingency Imbalance, both before and after any adjustment under regulation 75 (f)(ii);
 - Vector's positive or negative Contingency Imbalance at each TP Welded Point, both before and after any adjustment under regulation 75 (f)(ii); and
 - Vector's positive Contingency Imbalance (if any), both before and after any adjustment under regulation 75 (f)(ii).

Send the Contingency Imbalances to the Gas Industry Company.

Why: To comply with regulation 77.

When: Between the publication of BPP invoices for the CC Month and the deadline specified by regulation 77 (1), being 36 business days after the end of the month in which the Critical Contingency was terminated.

21. Receive the Critical Contingency Price in dollars per gigajoule from the industry expert.
22. Calculate the dollar value of each Contingency Imbalance, in accordance with regulation 75 (h).
23. Send the following Contingency Imbalance figures to the GIC in accordance with regulation 77 (1) (a) and (b):
 - Each shipper's adjusted positive or negative Contingency Imbalance calculated in Steps 9 and 13;

- Vector's adjusted positive or negative Contingency Imbalance at each TP Welded Point, as a party that injects gas into its Transmission System under regulation 74 (2)(a)(i) and regulation 74 (2)(b)(i), as calculated in Steps 10 and 13;
 - The positive Contingency Imbalance attributed to Vector, as TSO, by regulation 74 (2)(c) (refer to Step 14);
 - No Contingency Imbalance for each interconnected party injecting Gas into Vector's transmission system (e.g. Kapuni, Mokoia, TAW, Kaimiro, etc.)¹⁷; and
 - The dollar value of each Contingency Imbalance, calculated in Step 22.
24. If Vector considers that it has been allocated a Contingency Imbalance in error, then Vector will advise the GIC as required by regulation 80 (1).
25. If the GIC determines that a material error has affected the Contingency Imbalance calculations and directs Vector to recalculate them under regulation 80 (3), then Vector will recalculate the Contingency Imbalances (and new Residuals) by repeating Steps 3 – 16 (inclusive), using the best information available.

Vector will supply the recalculated Contingency Imbalances to the GIC. Then;

(A). for shippers;

Vector will return any difference between the old and new Residuals to Running Mismatch, by repeating Step 17, replacing all references to 'Residual' with 'Difference' (defined as the new Residual – the old Residual); and

(B). for Vector;

- i. Vector will recalculate the new Vector's Residuals by repeating Step 18, using the new Σ Amounts calculated in Step 25 (A); and
- ii. Vector will return the difference between the old and new Vector's Residuals to Vector Running Imbalance, by repeating Step 19, replacing all references to 'Vector's Residual' with 'Difference' (defined as the new Vector's Residual – the old Vector's Residual).

Please note that the Residuals are considered as Information under section 8.21 of the VTC. Accordingly, any cash-out allocations, between CCP +1 and the date when the new Residuals are determined, will not be reopened by the recalculated Contingency Imbalances.

¹⁷ Vector considers that interconnected parties on the Vector Transmission System injecting Gas into the Vector Transmission System are not intended to be treated as "interconnected parties" under the Regulations. The GIC has acknowledged this. Interconnection agreements on the Vector Transmission System set out the terms on which a party may connect to the Vector Transmission System, with any under or over injection captured by shipper Mismatch.

Vector's Operating Procedure after the Critical Contingency

When a Critical Contingency has been terminated and Vector suffered a decrease in Line Pack as a result of the Critical Contingency, Vector will need to purchase Gas to restore the Line Pack to pre-Critical Contingency levels (including by buying Gas by way of MDL "cash-out"). If the net payment Vector receives under the Regulations in respect of both the Vector and Maui Contingency Pools is either less or more than the cost of purchasing this replacement Gas, then Vector will issue an additional invoice or credit note to the BPP Trustee (as applicable), calculated by reference to that shortfall/surplus (*Additional Payment*).

The value of the Additional Payment shall be the difference between the net payment Vector receives under the Regulations in respect of both the Vector and Maui Contingency Pools and the cost incurred by Vector in purchasing gas to restore the depleted Line Pack, less the dollar value of any negative Vector Imbalance removed in Step 4 that was not returned to Vector Running Imbalance as Vector's Residual in Step 19, priced at the Positive Mismatch Price.

The BPP Allocation day applicable to these Additional Payments shall be CCP +1.

Where Vector issues the BPP Trustee with an invoice in respect of an Additional Payment, the BPP Trustee shall make a payment out of the BPP Account to Vector for the amount of the invoice (*Invoiced Amount*). Each Shipper who has a negative Running Mismatch on the relevant Pipeline on the BPP Allocation Day shall pay into the BPP Account the proportion of the Invoiced Amount that such Shipper's negative Running Mismatch on that Pipeline on the BPP Allocation Day bears to the aggregate of all Shippers' and all Non-Code Shippers' negative Running Mismatch, in each case on that Pipeline and on the BPP Allocation Day.

Where Vector issues the BPP Trustee with a credit note in respect of an Additional Payment, the BPP Trustee shall invoice Vector for the amount of the credit note (*Credited Amount*). Each Shipper who has a positive Running Mismatch on the relevant Pipeline on the BPP Allocation Day shall be entitled to receive from the BPP Account the proportion of the Credited Amount that such Shipper's positive Running Mismatch bears to the aggregate of all Shippers' and all Non-Code Shippers' positive Running Mismatch, in each case on that Pipeline and on the BPP Allocation Day.

Invoices to be issued referred to above, and payments to be made into or out of the BPP Account referred to above, shall be issued and made in accordance with sections 15 and 16 of the VTC.