# Consideration of Recent Industry Balancing Initiatives

**December 2009**

GAS INDUSTRY COMPANY LIMITED

152021.7

## About Gas Industry Co.

Gas Industry Co was formed to be the co-regulator under the Gas Act.

Its role is to:

- recommend arrangements, including rules and regulations where appropriate, which improve:
  - the operation of gas markets;
  - access to infrastructure; and
  - consumer outcomes;
- administer, oversee compliance with, and review such arrangements; and
- report regularly to the Minister of Energy and Resources on the performance and present state of the New Zealand gas industry, and the achievement of the Government's policy objectives for the gas sector.

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# Executive summary

This paper investigates whether any industry activity on balancing matters since the development of Gas Industry Co's October 2009 Statement of Proposal would cause it to reassess the conclusion of that paper.

Two matters are considered: a package of proposed code changes being prepared by Maui Development Limited; and a proposal for an integrated gas balancing regime developed by a group of industry participants.

The analysis concludes that neither of these developments should cause Gas Industry Co to reconsider the conclusion of its October 2009 Statement of Proposal that a 'participative regulation' option best meets the Government's objectives in respect of transmission pipeline balancing.

# Contents

# 1 Introduction and purpose

## 1.1 Purpose of this paper

This paper assesses whether recent initiatives by gas industry participants to improve transmission pipeline balancing should cause Gas Industry Co to reassess the conclusion of its October 2009 Transmission Pipeline Balancing Statement of Proposal.

Two initiatives are considered:

- a package of proposed changes to the Maui Pipeline Operating Code (MPOC) being prepared by Maui Development Limited (MDL)[1]; and
- a Memorandum of Understanding (MOU) for an integrated gas balancing regime developed by a group of industry participants.

## 1.2 Background: the balancing review

Gas Industry Co has reviewed transmission pipeline balancing with the objective of improving the current balancing arrangements. The review accorded with the Gas Act 1992 (the Gas Act) and included:

- consulting with the industry through documents and meetings with a balancing advisory group (as per section 43L(1));
- identifying and assessing all reasonably practicable options for achieving the objective of the regulation (as per section 43N(1)); and
- publishing a Statement of Proposal (as per section 43N(2)).

In July 2009, Gas Industry Co released the Transmission Pipeline Balancing Second Options Paper (Second Options Paper) and invited submissions. Our conclusion was that regulation was necessary to ensure balancing arrangements fulfil the objectives of the Gas Act and the Government Policy Statement on Gas Governance (GPS). The regulatory objective for balancing is:

[1] However, this paper was written before the detailed Change Request was received.

To provide an efficient, unified balancing arrangement for managing pipeline imbalance.

The Second Options Paper identified participative regulation as one possible approach to meeting the objectives. A subsequent Statement of Proposal recommended that this option should be pursued. The Statement of Proposal also contained the Draft Gas Governance (Balancing) Rules (Draft Rules) necessary to implement the participative regulation option.

However, in responding to the Second Options Paper the industry was strongly of the opinion that an alternative solution could be developed, which would be superior to a participative regulation option. We decided to facilitate a process aimed at industry participants coming together to develop such a solution. The process was called the industry code development (ICD) process.

To meet our commitment to make a recommendation to the Associate Minister by the end of December 2009, Gas Industry Co decided to run the ICD process in parallel with the development of the participative regulation option.

## 1.3 MDL's proposed MPOC changes

In MDL's submission on the Second Options paper MDL advised of a package of improvements it intends to make:

> MDL intends to:
>
> - improve and expand the information on balancing available on the BGX;
> - set out steps that will allow balancing gas suppliers located beyond TP Welded Points to supply balancing gas services to the Maui Pipeline;
> - issue revised Standard Operating Procedures that maximise line pack flexibility, and set rules for the management of line pack, UFG and any socialised gas;
> - develop MPOC changes that will allow the introduction of a back to back cash-out balancing regime and submit them in accordance with the MPOC change process;
> - develop MPOC changes that incorporate a description of the Balancing Agent's role and function into the MPOC; and
> - consider the development of MPOC changes that would adopt the GIC rulings panel for the settling of disputes related to balancing.
>
> In addition MDL will be continuing discussions with industry participants on the introduction of extended nomination options. If there is sufficient agreement for them to proceed, any necessary MPOC amendments will be prepared and submitted.
>
> (Maui Development Limited: Submission on the GIC's Transmission Balancing Second Options Paper, 17 August 2009, p 12)

In a letter to Gas Industry Co, dated 1 September 2009, MDL set out a proposal that would allow for the participation of Vector pipeline users on MDL's balancing gas exchange. This may be a component of MDL's proposed MPOC changes.

In MDL's submission (dated 2 November 2009) on the Statement of Proposal, it advised that:

> the ICD process is occurring during the same period that these submissions are required on the Statement of Proposal and MDL is completing its proposed Change Request. This fails to recognise the resource and cost constraints to which industry participants are subject.
>
> (p 13)

and:

> MDL is committed to evolving balancing arrangements in a timely, calculated manner, and is committed to working with GIC to achieve that end. MDL will present its Change Request as soon as possible to enable this process to continue.
>
> (p 16)

From these various references it is clear that MDL is preparing a package of MPOC changes intended to address some of Gas Industry Co's regulatory concerns. However, the 'devil is in the detail' and until the package is received we can only speculate on its worth.

## 1.4 The industry code development process

The objective of the ICD process was:

> To design and implement a unified balancing regime for the New Zealand gas transmission system that will avoid or minimise the need for regulatory intervention to achieve the relevant objectives of the Gas Act and GPS.[2]

Each company participating in the ICD process was required to:

- attend weekly half-day workshops (begininning September 2009 and running until the end of the calendar year or until the objective was achieved);
- accept the ICD process terms of reference; and
- contribute towards funding the process.

[2] Industry Code Development process Terms of Reference, available on Gas Industry Co's website.

11 companies chose to participate in the ICD process, and generously contributed executive time. Gas Industry Co appointed an independent chair to facilitate the weekly ICD meetings.

## Outcomes of the ICD process - the MOU

In addition to the participation of pipeline users, the ICD process required the participation and co-operation of both Transmission System Owners (TSOs) – Vector and MDL – to be successful. Although the TSOs made several attempts to agree on a complete, integrated balancing regime, they were unable to do so. Nevertheless, the ICD group believed it worth documenting the matters that were agreed. To do this, the group developed a non-binding MOU to set out the essential features of the integrated balancing arrangement that had been discussed and substantially agreed.

## Gas Industry Co response to the MOU

The Statement of Proposal noted that the outcome of the ICD process may affect Gas Industry Co's recommendation to the Associate Minister at the end of 2009. It also noted that, if the outcome substantially changed the scope or content of the proposed rules, Gas Industry Co would issue a revised statement of proposal. This paper evaluates the MOU in this context.

# 2 Approach to assessment

## 2.1 Assessment methodology

Our assessment is primarily qualitative, following the approach taken in the Second Options Paper and Statement of Proposal. In addition, although we have reservations about the quantification of costs and benefits[3], we have asked NZIER to provide a quantitative analysis, and include it to give an alternative perspective.

## 2.2 Qualitative analysis

As mentioned earlier, the scope of the MOU is wider than the participative regulation option, and both are wider than the anticipated MDL code change package (which only relates to the Maui pipeline). Also, the MPOC changes resulting from the MOU process (although they have not yet been drafted in detail) can be expected to be broadly similar to the MPOC changes likely to be proposed by MDL (although at the time of writing we have not seen these). Our conclusion is that it should only be necessary to compare the features of the MOU against those of participative regulation. The rationale is that if the best anticipated outcome from the MOU process would not cause us to reconsider our selection of the participative option, then neither would MDL's package of changes since it would be no better than the MOU proposal.

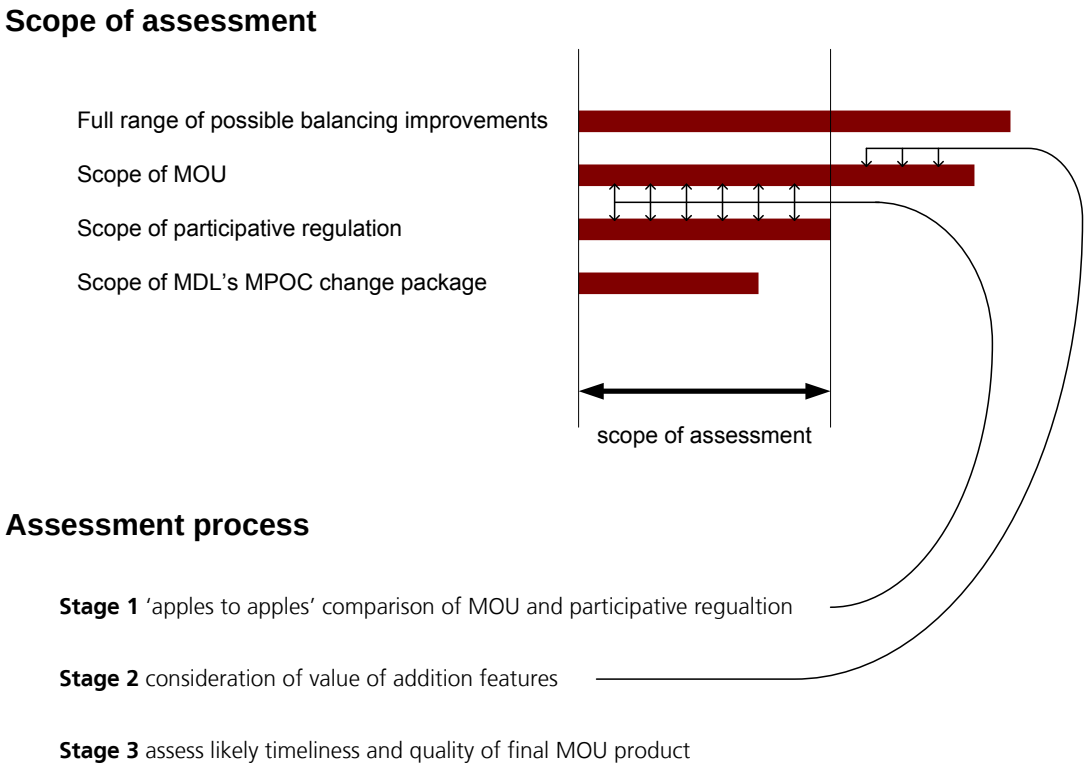
However, in addition to the 'apples to apples' comparison of features between the MOU and participative regulation, it is necessary to consider whether the additional benefits brought by the wider scope of the MOU proposal will bring additional value. It is also necessary to consider whether we have confidence that the outcomes will be as described in the MOU, ie can we be confident that the detail finally negotiated will reflect the principles. To allow for the structured consideration of all these matters we will take a three stage approach:

- Stage 1 is to only assess those features of the MOU that have analogous features in the participative regulation option. At this stage we will assume that the MOU is fully committed to and enforceable (ie we assume that the detail will reflect the principles, and that it would come into effect as written);

[3] There are considerable uncertainties around the costs and benefits of the alternatives.

- Stage 2 is to assess the additional benefits that could be brought by the extended scope of the MOU proposal; and
- Stage 3 is to assess the level of confidence we have that the detail of the MOU proposal can be negotiated in a timely fashion, without substantially 'watering down'. The degree of commitment to the MOU will be a key consideration.

This approach is illustrated below:




For the Stage 1 assessment of the MOU against the participative regulation option, Gas Industry Co's qualitative assessment uses the same evaluation criteria applied in our Second Options Paper and Statement of Proposal.[4]

**Table 1 Evaluation criteria**

| Category | Criterion | Meaning |
|---|---|---|
| Efficiency | Production | maximise productive efficiency |
| | Allocation | maximise allocative efficiency |

[4] For a complete explanation of the criteria and reasons for including each criterion see section 3 of the Second Options Paper. The paper is available on Gas Industry Co's website.

| Category | Criterion | Meaning |
|---|---|---|
| | Security | maximise security of gas transportation |
| | Risks | ensure user risks are reasonable and manageable |
| Cost | Agreement | minimise cost of agreeing arrangements |
| | Implementation | minimise cost of implementing arrangements |
| | Operation | minimise cost of operating arrangements |
| Governance | Transparency | ensure transparency and non-discrimination |
| | Adaptability | ensure arrangements able to adapt to future circumstances |
| | Enforcement | ensure effective enforcement and dispute resolution |
| | Balance | ensure balance between stakeholder interests |
| | Stability | ensure stability of regime |

Source: Second Options Paper, p16, Table 3.

The MOU and participative regulation proposals are each assessed against the criteria listed. The assessment process is:

1. For each criterion, the evaluation assigns a numerical score. The score represents the anticipated performance of each alternative against the criterion, and ranges from 1=poor to 5=excellent.

2. A category rating is calculated by averaging the ratings for each criterion within that category.

3. An overall rating is calculated by averaging the category ratings.

For many criteria, the MOU and participative regulation alternatives are assigned a rating that is a range, rather than a single value. Therefore category and overall ratings have been calculated to provide a 'low end' and 'high end'.

Note that there may be minor variations in the ratings of the participative regulation option compared to the ratings given in the Statement of Proposal. This reflects the greater degree of defininition on some aspects of the proposal, following refinement of the draft rules.

The relative importance of the different criteria and categories can, in principle, be reflected by using weighted averages. However, a 'base case' is first established using unweighted averages. Weights are then applied to each category to assess the sensitivity of the results to efficiency, cost and goveranace.

## 2.3 Quantitative analysis

NZIER has also compared the MOU and participative regulation proposals. The costs and benefits of each is assessed against a base case, which assumes that there would be ongoing improvements to balancing even if neither proposal was introduced.

# 3 Content of MOU

The MoU for an integrated balancing regime comprises agreed principles, schedules containing the changes to meet those principles, and a timetable for implementing the changes. This section summarises the principles and the expected content of the schedules. Appendix A contains a full copy of the MOU. In addition, Section 3.8 notes the key differences between Vector and MDL in relation to the MOU.

## 3.1 Principles

The key principles are:

- the balancing operator(s) operate, as a Reasonable and Prudent Operator(s) (RPO) to clear pre-defined policies and operating procedures when deciding the need for a balancing action;
- the balancing operator(s), as a RPO, buy balancing services at least cost and at arms length on a market that can be a development of the current balancing gas trading platform;
- the balancing market is open to all eligible providers of balancing services;
- balancing costs are recovered on a pay-first-dispute-later basis and, as far as possible, allocated to causers of balancing actions;
- good information and balancing tools are available to all transmission system users to minimise the need to draw on balancing services; and
- balancing activity is transparent, fully reported, and auditable.

## 3.2 Schedule 1

### Balancing operator(s) appointment and costs

TSOs appoint balancing operator(s) for their respective pipelines. The MOU allows each TSO to appoint a balancing operator, but does not advocate a single balancing operator for both pipelines, as the participative regulation option does. A new component of the pipeline tariff funds the net costs of the balancing arrangements. These costs are recovered such that users on one pipeline do not subsidise

users on the other. The TSO's transmission codes, the Maui Pipeline Operating Code (MPOC) and Vector Transmission Code (VTC), will be amended to take these changes into account.

### Balancing operator(s) role definition

The balancing operator(s), acting as RPO(s), buy and sell balancing gas to manage linepack within defined thresholds and according to Standard Operating Procedures (SOPs). Balancing Gas trading is conducted through a web-based platform. The balancing operator(s), will also perform the related commercial support functions.

### Balancing operator(s) operating procedures

Each TSO develops SOPs to describe how the linepack of its pipelines is managed. The SOPs cover:

- circumstances in which the balancing operator(s) buy and sell balancing gas;
- balancing operator(s) discretion and transparency;
- the process for setting any cap and floor prices;
- the allocation of balancing costs in accordance with the codes;
- co-ordination of balancing for areas of the transmission systems that interconnect; and
- critical contingency interfaces with balancing arrangements.

The SOPs are subject to change request procedures defined in the codes.

## 3.3 Schedule 2

### Procurement of balancing services

The relevant TSOs develop code change requests to provide for the balancing operator(s) to administer a balancing gas trading platform, buy and sell balancing gas at least cost, set cap and floor prices, and disclose information on market transactions.

The cash-out price of the balancing gas on each day is set at the weighted average price.

## 3.4 Schedule 3

### Participation in the Balancing Gas Exchange

To maximise balancing market participation, Vector will provide a daily nominations regime on its pipelines. OATIS users will also be able to view aggregate daily nominations and deliveries at all major

receipt and delivery points and (where relevant) balancing pools. (This will be achieved through a VTC change.)

A web-based balancing gas trading platform will be open to Vector shippers and interconnected parties, once a daily nominations regime is in place and some further conditions are fulfilled. One of these conditions is that Vector or its Shippers agrees to pay, on a pay-first-dispute-later basis, all balancing costs and peaking charges at the relevant transmission pipeline welded point (TPWP). Alternatively, all shippers in the balancing zone downstream of the TPWP, and Vector (in respect of its own-use-gas) enter into arrangements for unbundling responsibility for the operational imbalance (OI) at that point. However, the MoU records that there were differing views on who should pay for these balancing costs.

### TPWP cost allocation

Subject to the successful unbundling of OI at TPWPs, the Maui balancing operator will deal directly with:

- large stations on the Vector transmission system;
- the Welded Party in respect of any Pooled Delivery Point (although the MOU records that there were differing views on whether Vector, the users, or another entity would be the notional Welded Party in respect of any Pooled Delivery Point); and
- Vector in respect of its own-use-gas within a balancing zone.

Flows at these points will be measured by the appropriate means.

## 3.5 Schedule 4

### Balancing gas allocations

Balancing gas cash-outs occur only on days where the balancing operator(s) buy or sell balancing gas. Balancing gas is allocated in proportion to running imbalance positions; quantities are calculated at the end of each day (as defined in the MPOC and VTC). Any balancing cost not recovered through cash-outs is recovered through peaking charges or other mechanism and the codes will make provisions for Welded Party claims.

### Adjustment of allocations

Allowance is made for corrections to balancing costs and peaking charges that result from metering corrections and downstream allocation revisions (the MOU records that there were differing views on whether the allocation of balancing costs and peaking should be adjusted retrospectively where errors were identified).

## Tolerances

Tolerances are reduced to minimise the extent of socialisation of costs (the MoU records that there were differing views on whether tolerances should be eliminated or a small tolerance be retained to minimise transaction costs).

## Unbundling OI

The amendments necessary to unbundle OI at Vector's TP Welded Points and to create direct obligations between shippers on the Vector pipelines and the balancing operator(s) will be proposed by the TSOs.

Once unbundled, shippers at the TP Welded Points are obliged to use reasonable endeavours to balance throughout each day. They are also subject to provisions relating to liability, prudential requirements, and payment of balancing costs and peaking charges.

Small stations on the Maui pipeline will also be reviewed to see if tracking OI is justified. The Rotowaro, Pokura, and Pirongia Welded Points will be unbundled by MDL for the purposes of balancing.

## Transmission System Unaccounted-for Gas (UFG)

Transmission system UFG is:

- managed in a co-ordinated manner across both pipeline systems[5];
- bought or sold at regular intervals; and
- explicitly accounted for.

## Allocation of balancing charges to TSOs

TSOs are allocated balancing charges for imbalances arising from UFG, fuel gas, and management of linepack.[6]

## Financial risks for balancing operator(s)

The pay-now-dispute-later principle applies to balancing costs, peaking charges, and balancing tariff charges. Parties subject to this principle have the right to invoke dispute resolution procedures to recover any disputed payments. Default interest applies on unpaid and disputed amounts and current prudential requirements under the codes will be reviewed and revised to reflect the new balancing arrangements and proposed balancing tariff.

[5] The MoU records that there were differing views on whether MDL should be liable for UFG.
[6] The MoU records that there were differing views on whether MDL should be liable for fuel gas, UFG, and linepack changes.

## 3.6 Schedule 5

### Information for users

Transparency is a general principle regarding information for users. MPOC and VTC changes will be introduced to provide:

- visibility on the volumes of transmission services purchased and the cost and revenue resulting from the balancing actions;
- an annual audit of balancing gas transactions, the terms of reference and results of which are published; and
- that any party or parties may demand a performance audit, the cost of that audit will be met by that party or parties.

### Balancing corrections

A process will be developed to allow users to signal their intention to reduce imbalance (that is, distinguish between the balancing and demand components of their nominations).

### D+1

It might be possible to develop a D+1 algorithm (allocations on the day after gas flow) to provide allocations closer to the 'interim' allocation than the 'initial' allocation. If so, then all gas deliveries will be allocated to MDL and Vector users on the day after gas flow using that algorithm. The development of such an algorithm depends on benefits outweighing costs and any costs of the regime being met by the beneficiaries.

### Access to balancing tools

Once the conditions for participating in the balancing gas trading platform have been met, all participants have access to the same tools as MPOC Welded Parties.

The timing, number, and notice periods for intraday nomination opportunities are periodically reviewed to ensure that pipeline users can effectively manage their balance positions.

## 3.7 Schedule 6

### Disputes

An independent qualified authority hears and determines any balancing-related disputes that are not resolved by parties within 10 days. Redress is allowed if one party considers the determination to be wrong in law.

## 3.8 Key differences between Vector and MDL

For completeness, we also set out here the key differences between the Vector and MDL in relation to the MOU. These differences relate to the treatment of nominations, liability, and allocations to Vector balancing cost allocation pools.

Vector and MDL both proposed solutions comprising phased implementation, with one of the key differences being the phase within which linked nominations would be implemented. MDL proposed that in phase 1 there would be integrated balancing without interlinked nominations, which would not be introduced until later in phase 2. Alternatively, Vector's proposed solution would require interlinked nominations in phase 1.

With respect to liability, MDL proposed that the residual risk or liability associated with non-payment would be treated as follows. Large stations would be primarily responsible for liability; Vector would be primarily liable for own-use gas, small stations, and mass market; and Vector would be secondarily liable for any unpaid or unallocated amounts. In contrast, Vector proposed that users should be responsible for the residual risk.

The third key difference related to allocations to Vector pools. Under MDL's solution, Vector would continue to allocate to its pools, whereas under the Vector proposal, the MDL Balancing Agent would have a direct contract with each user and therefore be responsible for allocating to those users. The timing and sequencing of the two proposals also differed.

# 4 Qualitative assessment of MOU: Stage 1

Stage 1 of the qualitative review will assess the features of the MOU that have analogous features in the participative regulation option using the analysis framework used in the Statement of Proposal. The assessment assumes that the MOU will lead to a balancing regime consistent with its intent. The possibility that this may not occur is considered in Stage 3.

## 4.1 Productive efficiency

The objective of productive efficiency relates to the effectiveness of the balancing arrangements in minimising the direct costs of balancing.

Productive efficiency may be promoted by arrangements that:

- encourage participation and promote competition in balancing gas supply;
- ensure that balancing gas is purchased only when, and only to the extent, necessary;
- purchase from the cheapest source of balancing gas; and
- maximise the use of linepack, subject to TSO thresholds.

### Encouraging participation and promoting competition in balancing gas supply

The MOU sets out arrangements to ensure:

- '…the balancing operator(s) will procure balancing services through a balancing market at least cost on an arm's length basis.' (Schedule 2)
- '[t]he balancing market will be open to all potential providers of balancing services.' (Schedule 3)

Draft Rule 16.2.1 provides that:

> [t]he balancing market must be open to any person who has gas available for sale, or who wishes to purchase gas, no matter where on the transmission system the gas is made available

> or where on the transmission system the person wishes to take the gas from, so long as the gas is able to be transmitted to or from the required balancing zone.

Draft Rule 16.2.2 requires that such a person:

> meets any technical requirements relating to procurement of balancing gas specified in the balancing plan; and meets and agrees to be bound by the reasonable terms and conditions for the sale and purchase of balancing gas.

Gas Industry Co must approve the balancing plan so it can be assumed that the plan would not have any unreasonably restrictive provisions.

The MOU identifies the prerequisites for participation in a balancing gas trading platform as:[7]

- participants accept the terms of the balancing gas trading platform and sign the necessary contracts;
- any delivery point or receipt point where balancing service is provided meets the MPOC metering standards;
- nominations for delivery and receipt at TPWPs are linked to enable title tracking and facilitate the management of any curtailment; and
- users and the balancing operator(s) exchange information to determine the provision of service.

We assess that the MOU could be at least as effective as the Draft Rules in broadening participation in the balancing market. However, we also note that the requirement to link nominations across TPWPs is likely to cost several hundred thousand dollars to implement. It may also take time to implement depending on complexity. Overall, we assess the MOU to offer a similar range of outcomes as the participative regulation option on this feature, but that the outcomes are more uncertain. The uncertainty arises from the precondition of linking nominations at transmission pipeline interconnection points.

### Ensuring that balancing gas is purchased only when, and only to the extent, necessary

Schedule 1 of the MOU provides that '[t]he balancing operator(s) will operate to clear pre-defined policies and operating procedures when making decisions on the need for balancing action.' The concept is that SOPs will cover:

- the circumstances in which the balancing operator(s), as a Reasonable and Prudent Operator (RPO), will buy or sell balancing gas;

[7] Schedule 3, 5th bullet

- the balancing operator(s) scope to exercise discretion, and the means of providing transparency to those decisions;
- the process for setting any cap and floor prices;
- the allocation of balancing costs in accordance with the codes;
- coordination of balancing policy for interconnected transmission systems; and
- critical contingency interfaces.

The SOPs will be subject to SOP change request procedures contained in the relevant transmission code. These procedures will allow for:

- timely determinations;
- independent overview;
- all users of the relevant transmission system able to request changes and to participate in consultation; and
- all change requests, submissions, and determinations to be published.

These provisions appear to provide a means of ensuring balancing gas is purchased only when, and only to the extent, necessary. However, the SOP change request procedures are not yet written. Gas Industry Co's reservation is that the procedures might not provide for change requests to be considered against wider efficiency concerns.

We are also concerned that, under the MOU, the balancing operato(s) could purchase balancing gas to manage linepack to a target, rather than to within upper and lower thresholds. The result would be over purchasing of balancing gas.

A further Gas Industry Co concern is the lack of an objective test for price cap or floor. While the MOU allows for consultation, it does not set out an objective standard and process to challenge a SOP. Therefore, under the MOU the balancing operator could purchase more or less gas than was necessary because of unsuitable cap and floor prices.

Despite these concerns, we assess that, on this feature, the MOU could achieve a similar range of outcomes as the participative regulation option.

## Purchasing from the cheapest source of available balancing gas

The MOU provides that 'the balancing operator(s) will buy and sell balancing gas services on a least cost and greatest revenue basis…'.[8] Similarly, the Draft Rules provide that: '…the balancing agent must accept, or partially accept, the lowest priced offers necessary to meet the balancing agent's obligation…'[9].

While these provisions seem similar, the two pricing approaches may lead to different behaviour by parties offering balancing gas. The MOU provides that 'balancing service providers will receive (or pay) the price they bid into the balancing gas trading platform…'[10] By contrast, the Draft Rules provide that '…the balancing agent must: pay the same clearing price to each person whose offer to sell gas is fully or partially accepted as part of a balancing action…'[11].

In Gas Industry Co's view, the marginal cost approach specified in the Draft Rules is the efficient solution when there are no transaction costs because each user receives and pays on the basis of the marginal value of balancing gas in the market at the time of the balancing transaction.

The reasons for this are that, when the balancing agent is buying gas, each potential supplier has an incentive to offer gas at a price equal to its own marginal value of the gas. At a higher price, the supplier risks the offer being rejected. If the clearing price is higher than the supplier's marginal value, then it will receive the clearing price, so it has no incentive to offer above its own marginal value for the gas.

Alternatively, if each potential supplier is paid on the basis of its own offer, then each will offer at the maximum price it believes will be accepted by the balancing agent, provided that this price is above the value of the gas to it. A supplier will sometimes overestimate this price and end up not providing gas when it would have been beneficial for it to do so. Paying all suppliers of balancing gas on the basis of the value of the marginal unit in the transaction, irrespective of what each offered at, results in the lowest marginal cost provision of balancing gas.

Similarly, using the value of the marginal unit to settle transactions leads to an efficient outcome when the balancing agent wants to sell gas, rather than buy it. The users causing imbalances will also face the marginal value of the gas the balancing agent needs to buy or sell to correct the imbalance, also resulting in efficient outcomes.

In addition there is potential for two balancing operators under the MOU. This would split the market and prevent balancing gas being available at least cost.

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[8] Schedule 2, Section I. Procurement of balancing services, first bullet
[9] Draft Rule 6.4.2
[10], Schedule 2, Section II
[11] Draft Rule 16.4.3

On this basis Gas Industry Co prefers the marginal pricing approach specified in the Draft Rules. Accordingly, we assess the MOU average pricing approach will lead to inferior outcomes on this feature.

### Maximising the use of linepack, subject to TSO thresholds

Making the balancing action thresholds as wide apart as reasonably practical maximises use of linepack flexibility. The MOU does not contain any specific requirement to maximise flexibility in this way. Additionally the potential for two balancing operators could mean uncoordinated balancing actions that underuse linepack flexibility and create unnecessary balancing actions.

Potentially the MOU solution could deliver the same benefits as the Draft Rules if there were to be a single balancing operator and TSOs choose to maximise the use of linepack flexibility.

Accordingly, we assess the MOU could lead to results as good as the participative regulation option, but could also result in inferior results.

### Overall productive efficiency assessment

We conclude that the MOU could lead to results that are almost as good as the participative regulation option, but could also result in significantly inferior outcomes. A rating of 2-4 is given.

| | MOU solution | Participative regulation option |
|---|---|---|
| **Encourages participation and competition in balancing gas** | Possibly yes (MOU Sch5, IV, but depending on SOPs) | Yes (draft rule 16.2) |
| **Balancing gas only purchased when necessary** | Yes (MOU Sch2, I) | Yes (draft rule 15) |
| **Balancing gas purchased from cheapest source** | Yes (MOU Sch2, I) | Yes (draft rule 16.4) |
| **Maximum use of linepack flexibility** | Possibly yes (MOU Sch1, III, but depending on SOPs) | Yes (draft rules, Balancing Plan Schedule, B) |
| **Overall rating (1-5)** | 2-4 | 3-4 |

## 4.2 Allocative efficiency

The balancing arrangements are allocatively efficient if they provide the 'right' amount of balancing service to the right users. That is, users receive balancing service only where they are unable to self-

balance at a lower cost; and, conversely, users self-balance only where residual balancing is more expensive.

In some cases, users may use their balancing gas to either self-balance or to offer it to a balancing agent. Therefore, allocative efficiency also means balancing gas is used where it has most value.

Allocative efficiency is ensured when:

- the marginal price to users of balancing service is equal to the marginal cost of the balancing agent providing that service; and
- where the price paid by the balancing agent to balancing gas providers equals the marginal value of that balancing gas to the balancing agent.

Allocative efficiency may be promoted by arrangements that:

- ensure a common price is paid for all equivalent balancing gas;
- ensure that the marginal price for balancing service is equal to the price paid for the balancing gas; and
- give users flexibility over whether to use their balancing gas resources for self-balancing or to offer them for use by the balancing agent.

### Ensuring a common price is paid for all equivalent balancing gas

The Draft Rules provide that:

- all users providing or taking balancing gas are to be paid or to pay the balancing agent at the price at which the marginal unit of gas necessary to fulfil each balancing transaction was offered or bid; and
- all users whose imbalances gave rise to the balancing transaction are to be paid or to pay the balancing agent at the price at which the marginal unit of gas necessary to fulfil each balancing transaction was bid or offered.

By contrast the MOU provides for pay-as-bid clearing, and average price cash-outs. This means that balancing gas providers and users will not see the true marginal cost of balancing. They may therefore not invest in flexibility or information systems as efficiently as they could.

Gas Industry Co assesses the MOU as slightly inferior to participative regulation option on this feature.

### Ensuring that prices are reflected through to users

The MOU and Draft Rules both provide similar arrangements for back-to-back balancing. The MOU explicitly provides for large users on Vector pipelines to be treated as 'virtual Welded Points' on the Maui pipeline.[12] This provision should improve cost allocation to these users, but treating Vector pipelines as virtual Welded Points is an outcome that might not be obtained under the participative regulation option.

There is no agreement under the MOU that TSO's are cashed-out like other users when their behaviour contributes to a balancing action. (Examples are the use of compressors or failure to adjust linepack when target levels are changed.)

Gas Industry Co assesses the MOU and participative regulation option as broadly equivalent on this feature.

### Flexibility to offer balancing gas

The MOU and Draft Rules provide similar arrangements regarding flexibility to offer balancing gas. Like the participative regulation option, the MOU acknowledges the balancing market should be open as late as possible. However, it contains conditions for including VTC connected providers (discussed later in this section), which may restrict participation.

### Overall allocative efficiency assessment

We conclude that the MOU could lead to results that are almost as good as the participative regulation option. We assess a rating of 4-5.

| | MOU solution | Participative regulation option |
|---|---|---|
| **Common price paid for all equivalent gas** | Pay-as-bid clearing, and average price cash-outs | Marginal price clearing, and marginal price cash-outs |
| **Prices reflected through to users** | Yes, except to TSOs | Yes, but possibly no virtual welded points |
| **Flexibility to offer balancing gas or not** | Yes | Yes |
| **Overall rating (1-5)** | 4-5 | 4-5 |

[12] Schedule 5, Section IV Access to balancing tools by users across whole transmission system.

## 4.3 Security

Balancing ensures linepack remains within the limits necessary to support an uninterrupted transportation service. If linepack is outside these limits, deliveries or receipts may need to be curtailed. These limits are formalised in the Draft Rules as the 'thresholds'.

Security means:

- setting thresholds so that transportation is secure whenever linepack is within these thresholds; and
- minimising the time linepack is outside these thresholds.

There is a natural tension between productive efficiency and security. A Balancing Agent may improve security by reducing the thresholds or purchasing balancing gas more readily, but this adds to costs and reduces productive efficiency.

### Thresholds set to provide optimal security

Gas Industry Co believes that the Draft Rules introduce several concepts that make the management of linepack more transparent. These concepts include a balancing plan, balancing zones (which can be either directly or indirectly managed), upper and lower thresholds for the taking of balancing action, and target linepack. The Draft Rules provide the balancing plan to set thresholds. The thresholds:

- must give the maximum practicable flexibility for managing linepack without unreasonably interfering with the transmission of gas;
- may vary for different periods of the day, week or year; and
- may be defined by reference to a formula with measurable variables.

The MOU has adopted some of the concepts in the Draft Rules, such as actively managed zones. The MOU provides that the balancing operator(s) will [manage line pack, as an RPO, on an actively managed balancing zone by buying and selling balancing gas in accordance with SOPs'. [13]

It can be assumed that the thresholds would be set in the SOPs, because SOPs will be:

> subject to SOP change request procedures… [that] allow for: timely determinations; independent overview; all users of the relevant transmission system to request changes and to participate in consultation; and all change requests, submissions and determinations to be published.[14]

[13] Schedule 1, Section II. Role of the balancing operator(s), 1st bullet
[14] Schedule 1, III. Defined policies and operating procedures of the Balancing Operator, 4th bullet

The Draft Rules consider the transmission system as a whole. In contrast, the MOU allows for each TSO to set its own linepack limits for their respective pipeline, which could potentially lead to sub-optimal outcomes.

Gas Industry Co considers that the setting of appropriate thresholds is one of the most difficult aspects of the balancing regime. The MOU and Draft Rules each have the potential to achieve a range of results.

### Minimise number of excursions outside thresholds

As with the setting of the thresholds, Gas Industry Co considers that both the balancing plan set under the Draft Rules and the MOU would lead to similar outcomes.

### Overall security assessment

From the above, we conclude that the MOU and participative regulation options should have similar ratings of 3-5.

| | MOU solution | Participative regulation option |
|---|---|---|
| **Thresholds set to provide optimal security** | allows for independent overview and users can request changes and participate in consultation | maximum practicable flexibility without interfering with transmission of gas |
| **Minimise number of excursions outside thresholds** | SOPs provide for TSO input | balancing plan provides for TSO input |
| **Overall rating (1-5)** | 3-5 | 3-5 |

## 4.4 User risks

Back-to-back balancing creates risks for users, because the quantity and price of imbalances are uncertain. Higher risks might reduce profitability and lead to the exit, or perhaps delayed entry, of some market players. To the extent that smaller participants face proportionately greater risks, back-to-back balancing could reduce competition.

Alternatively, higher risks might lead higher retail margins and hence higher retail prices. Risks might also be passed on directly to end-users.

Risks might be managed through:

- improved self-balancing (for example, better forecasting);

- ensuring balancing gas is sourced from an open market that maximises available capacity;
- arrangements that allow balancing prices to be moderated or costs socialised (eg through price caps or user tolerances);
- ensuring a common price to balancing gas providers and users, so that a user with balancing gas can self-hedge by offering that gas to the Balancing Agent; and
- providing timely information to users on individual and aggregate imbalances.

### Better forecasting

Improving forecasting is out of scope for the purpose of this evaluation.

### Openness of balancing market

As discussed in the productive efficiency section, the MOU recognises several conditions must be met before allowing Vector pipeline users to participate in the balancing market. In particular, participation depends on nominations and linking nominations at pipeline interface points. This could delay the participation of Vector users in the balancing market.

However, we assess that the MOU could be at least as effective as the Draft Rules in broadening participation in the balancing market.

### Socialisation of costs

Earlier we concluded the MOU and participative regulation option should lead to thresholds being set at similar levels. Given this conclusion, we give the same assessment on this feature.

### Ability to hedge price

As discussed earlier, the MOU proposes a pay-on-bid approach to clearing the balancing market; and the Draft Rules provide for marginal price clearing. The latter offers participants a better ability to hedge their price risk. We therefore rate the Draft Rules as superior on this feature.

### Timely imbalance information

Provision of timely imbalance information is out of scope for the purpose of this evaluation.

## Overall user risk assessment

We conclude that the MOU might have a slightly lower rating than the participative regulation option because of the lower ability of users to hedge price risk. However, we note that users were unanimous in supporting the MOU pricing arrangements. We therefore believe it is unfair to assume this feature of the MOU increases user risk. We give both the MOU and participative regulation option a rating of 3-4.

| | MOU solution | Participative regulation option |
|---|---|---|
| **Better forecasting** | Out of scope | Out of scope |
| **Openness of balancing market** | Conditions set to allow wider participation in balancing market | Balancing Plan may allow wider participation in balancing market |
| **Socialisation of costs** | Low | Low |
| **Ability to hedge price** | Low | High |
| **Timely imbalance information** | Out of scope | Out of scope |
| **Overall rating (1-5)** | 3-4 | 3-4 |

## 4.5 Agreement cost

The direct cost of balancing is discussed in the previous section under the productive efficiency criteria. Here we consider overhead and transaction costs. For ease of analysis these costs are considered in three categories: agreement cost, implementation cost, and operating cost.

Agreement cost is the time taken to agree on the future balancing arrangements. Direct costs (for example negotiating time) and indirect costs (the relative cost of continuing under the current arrangements) are relevant.

**The features to include in the cost of agreement**

While the Draft Rules set the balancing criteria, the more detailed processes and parameters are set in the balancing plan. For example the plan sets out such matters as:

- the appointment of the balancing agent;
- the boundaries of balancing zones;
- whether the balancing zone will be directly managed or indirectly managed;
- the upper and lower threshold for the taking of balancing action, and the target linepack;
- processes for notifications;
- details relating to the procurement of balancing gas;
- price thresholds for procuring balancing gas; and
- a cost allocation model.

All these matters, except the appointment of the balancing agent, need to be discussed in the detailed negotiation that follows from the MOU.

We assess that the MOU has set out the scope of the possible solution and now has to consider the same matters as the balancing plan.

### Policy for implementing features

The Draft Rules contain all the policy necessary for the balancing arrangements proposed by Gas Industry Co. The MOU solution also contains a complete policy prescription, but some matters are not

agreed, and require further negotiation. However, we note that there is a much greater degree of detail in the Draft Rules.

We assess the Draft Rules to be a more complete policy prescription, with the cost of developing that policy mostly sunk. By contrast, the MOU solution has significant areas yet to be agreed.

### Detailed implementation of policy

The MOU solution is implemented through code changes and the development of SOPs. The Draft Rules are implemented by developing a balancing plan and, if necessary, code changes.

While the MOU covers many of the features of the Draft Rules, detail is absent. However, even the Draft Rules leave much detail to be provided in the 'balancing plan'. Gas Industry Co assesses the negotiating time to be similar for both.

The process for reaching an approved balancing plan is quite different from the negotiation process for developing code change proposals. The Draft Rules set out deadlines for developing a balancing plan, but negotiation on MOU matters could be more protracted. For MOU negotiations, there is no mechanism to break deadlocks. Contentious issues can protract the process and potentially remain unresolved.

### Overall cost of agreement assessment

We conclude the MOU has some distance to go before all high-level aspects of the solution are agreed. The costs of then finalising the detail are likely to be similar to the costs under the participative regulation option; it may take longer, however. We therefore give the MOU solution a rating of 2-3 and the participative regulation option a rating of 3-4.

| | MOU solution | Participative regulation option |
|---|---|---|
| **Which features to include** | Settled | Settled |
| **Policy for implementing features** | Some further negotiation required | Substantially complete |
| **Detailed implementation of policy** | SoPs and Code Changes to follow | Balancing plan and Code Changes to follow |
| **Overall rating (1-5)** | 2-3 | 3-4 |

## 4.6 Implementation cost

Implementation costs depend on the degree of change from the existing arrangements and the implications of this change for IT systems.

The industry will incur some direct costs (mainly related to IT development and to possible re-organisation of balancing-related staff and resources) and indirect costs (related to the implementation time). Costs incurred by the Balancing Agent, by TSOs and by users must all be considered.

Implementation costs will mainly be driven by:

- mechanism changes (changes to allocation and reporting of balancing gas prices allocations which may result in changes to OATIS); and
- organisational changes (changes to balancing roles, responsibilities, and business processes that influence non-OATIS IT costs and other operating costs.

In each case, the cost will be in proportion to the degree of change from the status quo.

### Mechanism changes (driving OATIS costs)

Under participative regulation, if the TSOs fail to agree on the appointment of a balancing agent then Gas Industry Co appoints one, possibly through a tender. It is likely the existing TSO service providers would bid competitively for this work, and additional set up costs avoided. If the existing TSO service providers did not bid, or bid high prices, Gas Industry Co may appoint an independent[15] balancing agent. In that case, set up costs would need to be met. Gas Industry Co has previously estimated these costs at $2m.[16] However, this is the worst case outcome.

Under the MOU solution it is likely that existing balancing agent arrangements would continue, substantially unchanged. There might be little, if any, incremental cost.

The MOU requires the introduction of extended nominations and Operational Balancing Agreement (OBA) arrangements to major stations on Vector pipelines. However, this may also be necessary under the participative regulation option, depending on the content of the balancing plan.

In summary, both the participative regulation option and MOU could achieve low cost outcomes; but the participative regulation option has potential for additional cost, particularly if a new external service provider is appointed.

[15] That is, independent from a TSO, and therefore able to take decisions that are not at risk of being infoluended by other interests of that TSO.
[16] See section 5 of the Transmission Pipeline Balancing Options Paper, available on Gas Industry Co's website.

### Organisational changes (driving non-OATIS IT costs)

Both participative regulation and MOU involve some organisational change through additional business processes.

The participative regulation option could potentially involve participation of a new balancing agent. The agent would need to interface with existing users and service providers. If an external service provider is appointed this interface would introduce additional IT costs.

The MOU solution involves new nomination processes for linked nominations at pipeline interconnection points. This arrangement would require some process redesign. Depending on the content of the balancing plan, this may also be required under the participative regulation option.

### Likely IT costs

Gas Industry Co's assessment is the participative regulation option could be implemented by an existing service provider at no significant increase in cost. But implementation could have a set-up cost, as noted above, of up to $2m, a significant component of which would be IT related.

### Organisational changes (driving re-organisational costs)

As noted above, both participative regulation and MOU involve some organisational change through additional business processes. However, the participative regulation option potentially involves a new balancing agent who would need to interface with existing users and service providers. If an independent service provider were appointed, additional business process redesign would be required.

### Likely non-IT re-organisational costs

It is unlikely the business process redesign cost will be significant under the MOU, but these could potentially be higher under the participative regulation option.

### Overall implementation cost assessment

We conclude the MOU is likely to cost less to implement, especially if the participative regulation option involves the appointment of an independent balancing agent. We therefore give the MOU solution a rating of 3-4 and the participative regulation option a rating of 1-3.

| | MOU solution | Participative regulation option |
|---|---|---|
| **Mechanism changes (driving OATIS costs)** | Introduction of extended nominations | Possible introduction of extended nominations and appointment of external balancing agent |
| **Organisational changes (driving non-OATIS IT costs)** | Some organisational changel | Some organisational change and possible external balancing agent |
| **Likely IT costs** | Low to Moderate | Low to High |
| **Organisational changes (driving re-organisation costs)** | Likely minimal | Mimimal if existing service provider, otherwise high |
| **Likely non-IT re-organisation costs** | Low | Moderate |
| **Overall rating (1-5)** | 3-4 | 1-3 |

## 4.7 Operational cost

The criterion related to operational cost refers only to the overheads associated with the balancing arrangements (not the direct cost of the balancing gas itself).

Overheads will be incurred by the balancing arrangement and will therefore depend on their structure, for example, whether they are independent of the TSOs.

Operating costs also include the transaction costs associated with balancing. Transaction costs include the trading and analysis processes undertaken by users to offer balancing gas and manage balancing risks, as well as the Balancing Agent's trading and settlement processes. The level of these costs, other things being equal, depends upon the complexity of the balancing arrangements.

The cost of operation is likely to be driven by:

- the complexity of the balancing arrangements (including the possible need for new nomination arrangements); and
- the extent to which balancing must be carried out separately from related pipeline functions such as transportation.

### Complexity of balancing mechanisms

The new arrangements will introduce some additional complexity, particularly relating to accounting for back-to-back cash-out. This is a feature of participative regulation and the MOU solution.

The MOU solution requires nominations on the Vector pipelines to include Vector connected balancing gas providers, and for those nominations to be linked at pipeline interconnection points. However, this may also be a feature of the balancing plan under the participative regulation option.

### Organisational separation of balancing and transport

Gas Industry Co is not persuaded by MDL's view that it is complex to separate balancing and transportation. No explanation of how this complexity will manifest itself has been made, other than a perceived difficulty that might arise if the balancing agent notifies the TSO that commercial arrangements have failed, making curtailment necessary. We also note that Vector does not appear to have a similar concern.

However, the complexity that can arise from the operation of two balancing operators (as is possible under the MOU), rather than a single balancing agent (as the participative regulation option requires), appears to be of concern to all industry participants other than MDL.

### Overall operational cost assessment

We conclude the MOU solution and participative regulation option introduce broadly similar complexity and concerns. We therefore give both a rating of 2-4.

| | MOU solution | Participative regulation option |
|---|---|---|
| **Complexity of balancing mechanisms** | More complexity | More complexity |
| **Organisational separation of balancing & transport** | Two balancing agents is a concern | Separation of balancing and transport is a concern |
| **Overall rating (1-5)** | 2-4 | 2-4 |

## 4.8 Transparency and non-discrimination

Gas Industry Co believes good governance is necessary for balancing arrangements to be efficient. The analysis below considers five aspects of governance: transparency and non-discrimination, adaptability, enforcement, balance, and stability.

The MOU solution and participative regulation option allow for greater transparency of balancing costs and operations, but stop short of structural separation of the balancing function. The design of both regimes has also been open and transparent.

| | MOU solution | Participative regulation option |
|---|---|---|
| Transparency of operation | Yes | Yes |
| Transparency of design | Yes | Yes |
| Overall rating (1-5) | 4 | 4 |

## 4.9 Adaptability

Industry participants emphasise adaptability as an essential feature of a balancing solution.

The Draft Rules allow for the development of a balancing plan that can be amended from time to time as described in rule 48. The Draft Rules themselves can change in accordance with the requirements and processes set out in the Gas Act. These two tiers of change process are described below.

The MOU proposal would also allow for two tiers of change process; one for the SOPs and one for the codes. These processes are different depending on whether the change relates to Maui pipeline arrangements or Vector pipeline arrangements. These are also described below.

### Amendments to the balancing plan

TSOs or the Industry Body[17] may propose amendments to the balancing plan. One or more user may also suggest an amendment of the balancing plan to the Industry Body.

If the TSOs believe a proposed amendment to be minor and technical, or urgent, it can be submitted directly to the Industry Body. The Industry Body can approve the amendment if it agrees that it is minor and technical or urgent. The amendment takes effect immediately. Urgent amendments expire after 60 business days unless the Industry Body consults on it and approves it. If the Industry Body disagrees the amendment is minor and technical or urgent, the amendment needs to go thought the formal consultation process. All other amendments are to be submitted directly to TSOs, who formally consult on the amendment.

[17] The 'industry body' means the body approved by Order in Council under s43ZL of the Gas Act, which, at present is Gas Industry Co.

Once consultation is complete, the TSOs provide copies of the submissions to the Industry Body. The Industry Body may or may not approve the proposed amendment. If the Industry Body does not approve the proposed amendment, it may, under the proposed rules, propose amendment(s) to the proposed amendment.

Once the amendment is approved, the TSOs are notified and the amended balancing plan published.

## Amendments to the Rules

Amendments to the Rules follow Gas Industry Co's Guidelines for the management of proposed changes to gas governance rules and regulations (the Guidelines).[18] The Guidelines were designed to deal with rule change proposals for the Gas (Downstream Reconciliation) Rules 2008 but are framed so that they can apply to all gas governance rules and regulations.

Proposed changes to the balancing rules would be first submitted to a register. Once a significant number of proposals is accumulated, Gas Industry Co consults on them and develops a statement of proposal. (We recognise some situations might require a change to be processed on its own.)

Proposed rule changes can be initiated in several ways, including:

- as an outcome of consultation processes carried out for other purposes;
- to remedy an acknowledged gap in the rules or a need to cover unanticipated circumstances;
- through a general policy review initiated by Gas Industry Co; and
- by the submission of a rule change proposal by an industry participant.

The steps involved in a rule change are broadly as follows:

- proposal received and assessed by Gas Industry Co;
- proposed rule changes discussed with the Ministry of Economic Development (MED);
- proposal assessed as required by section 43N(1) of the Gas Act;
- draft statement of proposal is prepared, and consulted on;
- a recommendation is made to the Minister;

[18] Available on Gas Industry Co's website.

- the Minister considers the proposal and has 90 days to either accept or reject the recommendation;
- if approved, the rule changes are published in the *Gazette;* and
- after 28 days, the rule changes take effect.

### Amendments to SOPs

The MOU provides that SOPs will be adjusted subject to change request procedures contained in the relevant transmission code. Although such provisions are not yet written, the MOU provides that they:

> …will allow for: timely determinations; independent overview; all users of the relevant transmission system to request changes and to participate in consultation; and all change requests, submissions and determinations to be published.[19]

However, the MOU has no agreed objective test such as improving overall market efficiency or bringing improved unification.

### Amendments to Codes

Section 29 of the MPOC sets out code change arrangements which involve:

- any Party to the Code proposing a Change Request;
- Gas Industry Co consulting on the Change Request and making a recommendation to MDL supporting, or not supporting, the Change Request;
- MDL consenting to the Change Request unless it would cause capital or operating expenditure that can not be recovered, or materially adversely affect the pipeline business of MDL or an interconnected pipeline; and
- Typically this process takes about three months.

Section 25 of the VTC sets out the code the amendment process which involves:

- any Party to the code requesting a change;
- Vector consulting with all shippers on the proposed change;
- the change being adopted if Vector and 75% of all shippers who respond consent to the change;

[19] Schedule 1, III. Defined policies and operating procedures of the Balancing Operator, 4th bullet

- certain Parties having a right of appeal (whether or not the change request was successful); and

- Gas Industry Co reviewing and making a recommendation on change request appeals and making a final recommendation supporting, or not supporting, the change requrest or finding that Vector has, or has not, validly withheld consent.

Typically the appeal process takes about three months.

The Change Request process and Gas Industry Co role under the VTC is different from that of the MPOC, because the Gas Industry Co becomes involved only if approached to act as an appeals body. Decisions made by Gas Industry Co on appeals are final and binding. The differences in the Change Request process and Gas Industry Co's role are outlined in the table below.

## Overall adaptability assessment

We conclude that both the MOU solution and participative regulation option can provide rigorous change control arrangements allowing for input from affected parties. Both offer two tiers of change: SOP and code for the MOU solution; balancing plan and Rules for the participative regulation option. Depending on the final form of the SOP change process, it may be faster than the process for changing the balancing plan under the rules. The process for changing the codes is faster than the process for changing the Rules.

One undesirable feature of the MOU proposal is that the change arrangements are different for each pipeline.

We conclude that a rating of 3-4 is appropriate for the MOU solution, and a rating of 4 for the participative regulation option.

| | MOU solution | Participative regulation option |
|---|---|---|
| **How changes are implemented** | Changes to codes and/or SOPs | Changes to the balancing plan and/or rules |
| **How changes are developed** | Parties to codes can propose changes | TSO or Gas Industry Co can propose balancing plan changes |
| **How deadlock is broken** | Gas Industry Co decision | Gas Industry Co decision |
| **Overall rating (1-5)** | 3-4 | 4 |

## 4.10 Enforcement

The rights and obligations of all parties to the balancing arrangements—the Balancing Agent, users, and TSO—must be properly enforced. Enforcement requires that activities are properly monitored, breaches are identified, and appropriate sanctions imposed on the non-compliant participant.

Where potential breaches are disputed, arrangements should allow the disputes to be resolved quickly and at a cost commensurate to the cost of the breach. Vexatious or immaterial disputes should be discouraged.

The participative regulation option provides for the reporting of breaches and access to the disputes panel.

There is no breach reporting allowed for under the MOU. In relation to enforcement schedule 6 proposes that 'balancing activity will be transparent and subject to full reporting and audit processes.' In particular:

> Disputes will be resolved by an independent process, if not resolved between the parties within 10 working days and any party to the dispute requests referral to the process. The process will provide for: disputes to be heard by an appropriately qualified authority; timely resolution; low cost determinations; and redress in the event a party considers determination is wrong in law.[20]

We assume that this will be put into effect through changes to the current dispute resolution provisions in the MPOC and VTC.

### Overall enforcement assessment

Gas Industry Co has found breach reporting to be a particularly potent element of other rules and regulations that it administers. We believe it has deterrent and educational effects, and is useful in identifying where changes to rules would be beneficial. The MOU proposal does not provide for breach reporting.

Another unfortunate feature of the MOU proposal is that it continues the current situation in which each pipeline has its own dispute resolution arrangements.

We conclude that a rating of 3-4 is appropriate for the MOU solution, and a rating of 5 for the participative regulation option.

[20] Section 6, I. Dispute resolution process

| | MOU solution | Participative regulation option |
|---|---|---|
| **Enforcement** | Under Contract | Under Rules |
| **Dispute resolution** | As now, possibly modified to give access to rulings panel | Single, streamlined dispute resolution process |
| **Overall rating (1-5)** | 3-4 | 5 |

## 4.11 Balance

Balance requires the interests of all stakeholders to be recognised in the balancing arrangements: for example, in change and enforcement processes and in the exercising of discretion in decisions related to these. Balance is particularly important where stakeholder interests are in conflict. Balance ensures that costs and benefits are allocated fairly and efficiently between stakeholders.

The participative regulation option provides a process for developing and agreeing a balancing plan which carefully balances the interests of all stakeholders. As an example, the process allows Gas Industry Co to raise, and consult on, issues on behalf of a stakeholder ignored or not adequately considered by TSOs.

The MOU solution will introduce substantial changes. In particular, it extends the existing arrangement to cover SOP as well as code changes. It may allow access to the disputes panel (as a possible 'expert', under the code dispute resolution processes). However, the balance still tends to favour TSOs and larger users, who have the resources to devote to code change consultations.

### Overall enforcement assessment

From the above, we conclude that a rating of 4 is appropriate for the MOU solution, and a rating of 5 for the participative regulation option.

| | MOU solution | Participative regulation option |
|---|---|---|
| **Areas of instability** | Favours TSOs and 'large players' | Policy development process designed to ensure balance |
| **Overall rating (1-5)** | 4 | 5 |

## 4.12 Stability

Changes to the balancing arrangements may be costly and disruptive. To the extent that they are driven by parties external to the industry such as regulators or government, they increase the perceived level of regulatory or sovereign risk. This perception can increase the cost or decrease the amount of investment in gas supply. Thus stability, and perceived stability, is important in encouraging efficient investment and reducing costs.

The participative regulation option provides a framework under which balancing arrangements can continue to evolve driven by stakeholders and with minimal intervention by Gas Industry Co (that is, only to break deadlock or to pick up issues not adequately addressed by TSOs).

Although the multilateral contract foundation of the MOU solution may be perceived as less stable than the Draft Rules, relatively few code changes have been made since their inception. A greater concern is the potential for changes to the code or SOPs of one pipeline triggering changes to the code or SOPs of the other.

### Overall stability assessment

We conclude a rating of 3 is appropriate for the MOU solution, and a rating of 4 for the participative regulation option.

| | MOU solution | Participative regulation option |
|---|---|---|
| **Areas of instability** | Conflict between MDL code and SoPs and Vector code and SoPs | Gas Industry Co breaking of deadlock on outstanding issues on balancing policy |
| **Overall rating (1-5)** | 3 | 4 |

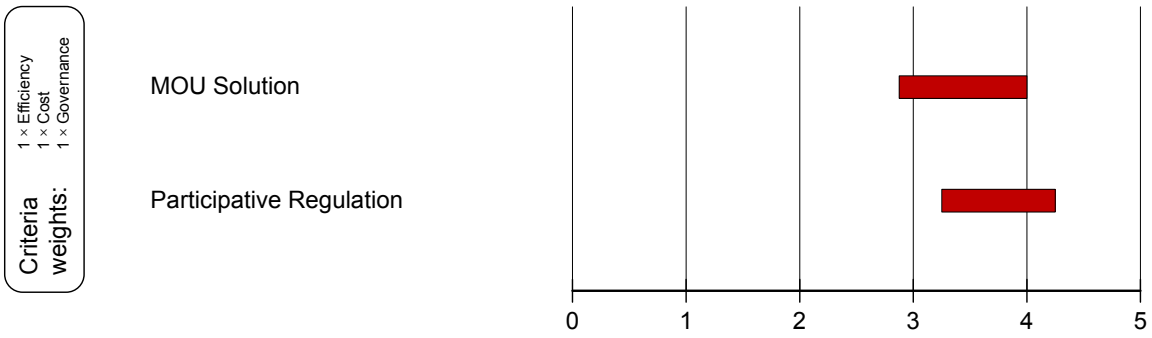
## 4.13 Stage 1 conclusion

The overall results are presented in the table below. It illustrates that the best results from the MOU process are equal to the best results from the participative regulation option in respect of efficiency and cost.

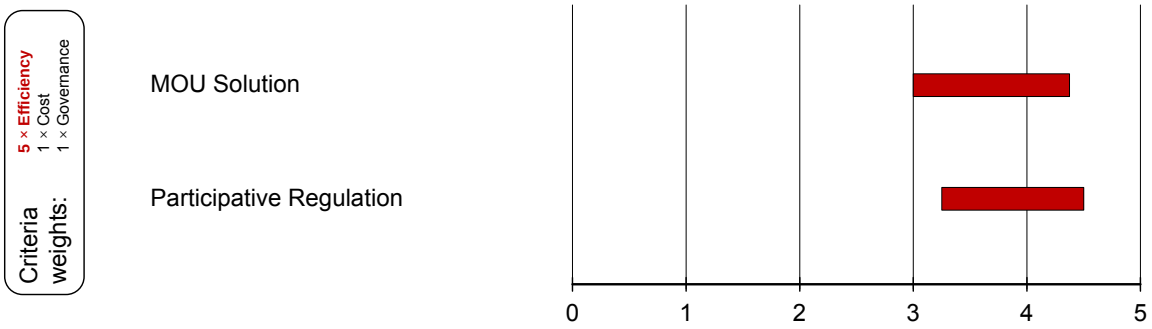
The diagrams below the table illustrate the base case analysis and three sensitivity cases. The first sensitivity case shows how the results would change if efficiency is given a weight of five times that of cost and governance. The second and third sensitivity cases are similar, but put the five times weighting on cost and governance respectively.

| | | MOU solution | | Participative regulation option | |
|---|---|---|---|---|---|
| | | From | To | From | To |
| Efficiency | Productive efficiency | 2 | 4 | 3 | 4 |
| | Allocative efficiency | 4 | 5 | 4 | 5 |
| | Security of supply | 3 | 5 | 3 | 5 |
| | Manageable risks | 3 | 4 | 3 | 4 |
| Cost | Costs of agreement | 2 | 3 | 3 | 4 |
| | Costs of implementation | 3 | 4 | 1 | 3 |
| | Costs of operation | 2 | 4 | 2 | 4 |
| Governance | Transparency | 4 | 4 | 4 | 4 |
| | Adaptability | 3 | 4 | 4 | 4 |
| | Enforcement and disputes resolution | 3 | 4 | 5 | 5 |
| | Balance | 4 | 4 | 5 | 5 |
| | Stability | 3 | 3 | 4 | 4 |
| | Efficiency | 3.0 | 4.5 | 3.3 | 4.5 |
| | Cost | 2.3 | 3.7 | 2.0 | 3.7 |
| | Governance | 3.4 | 3.8 | 4.4 | 4.4 |
| | Overall | 2.9 | 4.0 | 3.2 | 4.2 |

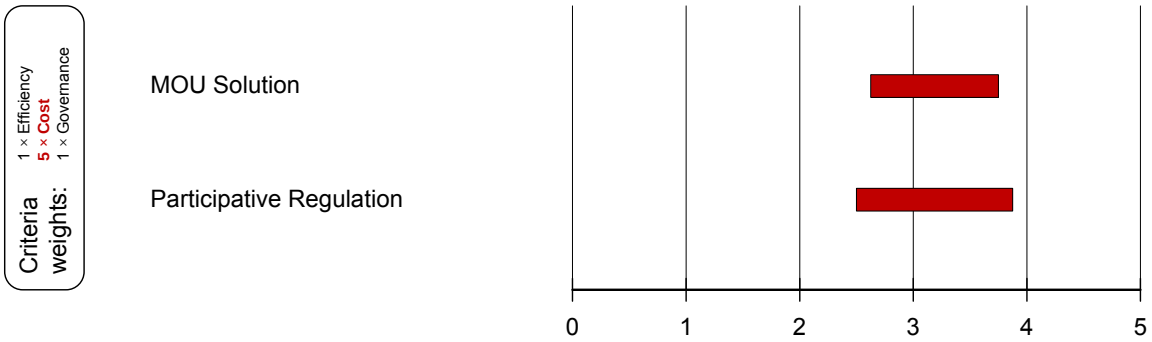
**Base Case: Overall Result if equal weightings are given to Efficiency, Cost and Governance:**



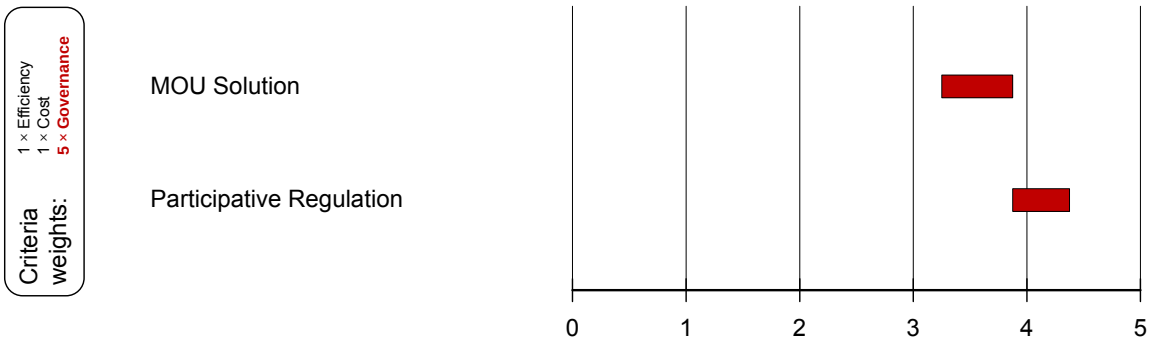

**Sensitivity Case 1: Overall Result if Efficiency is weighted more heavily:**




**Sensitivity Case 2: Overall Result if Cost is weighted more heavily:**




**Sensitivity Case 3: Overall Result if Governance is weighted more heavily:**



# 5 Qualitative assessment of MOU: Stage 2

Stage 2 of the qualitative assessment will assess the additional benefits that could be brought by the extended scope of the MOU proposal.

## 5.1 Wider scope of the MOU

Gas Industry Co set out the scope of its proposed balancing options in the Statement of Proposal (Section 5.2). The paper noted that limiting the scope of the solutions gave them focus. They considered only the management of pipeline imbalance between linepack limits through the buying and selling of balancing gas.

The scope of the MOU is wider. The MOU considers matters that the Statement of Proposal categorised as out of scope, but recognised as important aspects of balancing. These matters included:

- allocation of gas quantities among pipeline users on-the-day-after gas flow (known as 'D+1 allocation');
- allowing major station on Vector pipelines to be treated similarly to Maui pipeline Welded Points (known as 'extended nominations' or 'virtual Welded Points'); and
- reviewing tolerances.

### D+1

Schedule 5 of the MOU describes how 'Good information and balancing tools will be made available to all transmission system users to minimise the need to draw on residual balancing services.'

However, in relation to D+1 allocations, the MOU sets a goal rather than describing the means of achieving the goal. It provides that:

> 'If a D+1 algorithm can be developed which will provide allocations closer to the 'interim' allocation than the 'initial' allocation, all gas deliveries will be allocated to MDL and Vector users

> on the day after gas flow using that algorithm…D+1 implementation must also pass a cost/benefit test.'

Also, although D+1 allocation is outside the scope of the Draft Rules, it is nevertheless a matter which Gas Industry Co is continuing to investigate. We do not believe the D+1 goal set in the MOU adds much to the work already done, and being done, to investigate the viability of D+1.

### Virtual Welded Points

Schedule 4, IV sets out the basis for unbundling OI at points where the Maui pipeline interconnects with the Vector pipelines. We believe this does provide a basis for the better management of this OI and commend the industry participants on agreeing the matter. However, we see no reason why this should not be progressed as MPOC and VTC rule changes, regardless of whether the participative regulation option proceeds or not.

### Reviewing tolerances

Schedule 4, III provides that tolerances will be reduced to minimise extent of socialisation of costs, but notes that there were differing views on whether tolerances should be eliminated or a small tolerance retained. We accept that the recognition that tolerances are currently too large is valuable. However, we believe that this will play out through MPOC rule changes whether or not the participative regulation option proceeds.

## 5.2 Limitations of scope

The participative regulation option would set the residual balancing arrangements for all users of the open access transmission pipelines. The MOU solution would only apply to users subject to the MPOC and MOU. Since substantial volumes of gas are transported on the Vector pipeline under 'non-code' arrangements, this gap of coverange may cause difficulties.

## 5.3 Stage 2 conclusion

From the above, it is clear that the MOU proposal will not provide significant additional benefits as a result of its wider scope. The additional matters addressed can be achieved through MPOC and VTC changes regardless of whether participative regulation proceeds or not. The lack of coverage over non-code shippers is also a concern.

# 6 Qualitative assessment of MOU: Stage 3

Stage 3 will assess the level of confidence we have that the detail of the MOU proposal could be negotiated in a timely fashion, without substantially 'watering down'. The degree of commitment to the MOU will be a key consideration.

## 6.1 Degree of commitment

All participants in the ICD process were given an opportunity to sign the MOU. Of the 11 participants in the ICD process, signed copies of the MOU were received from:

- Contact Energy;
- Genesis Energy;
- Greymouth Gas (with some annotated changes);
- MDL;
- Mighty River Power;
- Multigas;
- New Zealand Steel;
- OMV; and
- Todd.

Gas Industry Co also received a letter from Vector Limited (dated 3 December 2009) explaining why Vector as a pipeline owner and operator would not sign the MOU. It noted that:

> 'An integrated package of measures is key to an improvement in balancing performance. The non-binding nature of the MOU and the points of significant difference in the industry, make such an integrated package an unlikely product of any continuation of the ICD process; but, importantly, an achievable outcome under a regulated solution.'

A letter was also received from Vector Gas Contracts Limited (dated 4 December 2009) explaining why Vector as a gas wholesaler and retailer would not sign the MOU. It noted that:

> '…Vector has serious concerns that this package of changes will not be implanted without participative regulations, therefore will not be signing the MoU.'

Considering that the MOU would be put into effect by an integrated set of MPOC and VTC changes, some of which require the agreement and/or co-operation of the interconnected pipeline owners, Gas Industry Co considers that Vector's position considerably reduces confidence that the MOU can be developed into a detailed set of code changes.

## 6.2 Process difficulties

During the ICD process we observed that, when industry participants disagree, there is no effective means of resolving the impasse. In these situations the issue is either 'parked' or 'watered down' to the point where it can be agreed. This puts MDL in an advantageous position because, when the MOU is finally translated into code changes, MDL can veto a change if, among other matters, the change would materially adversely affect its Maui Pipeline business or tariffs; or the business of an interconnected pipeline; or the compatibility of the open access regimes of MDL and an interconnected pipeline. (MPOC, section 29.4(b)) Similar concerns apply to Vector and the VTC, but to a lesser extent[21] .

In addition, the ICD process was frustrated by the difficulty in pinning down MDL's position on difficult issues. MDL was usually represented by its Commercial Operator, Transact, who was often not empowerd, or not able, to express views on behalf of MDL.

## 6.3 Timetable

Because it was a contentious issue, the phasing of changes is not addressed in the MOU. Rather it assumes that all changes will come into effect on 1 October 2010. Some participants believe that the introduction of 'virtual welded points' will require IT changes to allow for seamless nominations to be made through interconnection points between the MDL and Vector pipelines. Gas Industry Co has serious doubts that this could be achieved by 1 October 2010.

Aside from this concern, Gas Industry Co believes that the ICD process would need new governance arrangements to deliver changes by the 1 October 2010 deadline. Although it developed the MOU in 10 weeks, it is often easier to agree general principles that to agree the detail of how they will be implemented, or how the costs of doing so will be shared. Without some means of breaking

[21] The Vector Transmission Code change process allows decisions on code changes to be appealed to Gas Industry Co, whose recommendation is final and binding.

deadlocks, Gas Industry Co does not believe that the collective agreement approach of the ICD process is capable of delivering this detail, and implementing it, by 1 October 2010.

Even if the issues of phasing, IT, and ICD governance can be settled, there are only 34 weeks between 1 February 2010 (when work might begin) and 1 October 2010 (when the arrangements are to be implemented). It seems extremely unlikely that the work could be done in this time.

## 6.4 Stage 3 conclusion

The changes proposed by the MOU have a high level of support. However, the MOU is non-binding, still has significant areas of disagreement, and does not contain the detailed changes necessary to implement it. This, together Vector's lack of confidence that the MOU can be implemented, raises doubts that the set deadline of 1 October 2010 is realistic.

# 7 Quantitative assessment of MOU

The results of the quantitative assessment performed by NZIER (attached as Appendix B) demonstrate that the participative regulation is superior by a significant margin, followed by ICD, provided that this could be implemented by October 2010.

If participative regulation was not put in place initially, and the ICD process extended beyond October 2010, the net benefits are higher if it fails and is replaced with participative regulation. In other words, it would be better to implement participative regulation as soon as possible than to extend the ICD process.

# 8 Conclusion

## Conclusion on changing circumstances

Gas Industry Co has tested the robustness of its selection of participative regulation against the changing circumstances described in this paper. Essentially the qualitative analysis shows that:

- if the MOU were to lead to a balancing regime consistent with its intent, that regime could rate as high, on efficiency and cost criteria, as the participative regulation option, but that the governance aspects of participative regulation could be superior (section 4.13);
- the wider scope of the MOU proposal will not provide significant additional benefits (section 5.3); and
- the MOU is well supported by participants in the ICD process, however, there are still has significant areas of disagreement, it does not contain the detailed changes necessary to implement it, it does not cover non-code shippers. In addition Vector does not believe the content of the MOU is achievable without regulation or by the set deadline of 1 October 2010.

The anticipated MPOC change request was not explicitly analysed because Gas Industry Co did not have sufficient detail on its content, and considered that its scope would be less than that of the SOP solution or the participative regulation option, and would therefore not score as well.

The quantitative analysis shows that:

- both participative regulation and the MOU proposal would achieve significant net benefits over the baseline scenario of gradual improvement through code changes;
- participative regulation is indicated to be the superior alternative by a significant margin; and
- if the MOU proposal is implemented later than October 2010, the net benefits would be significantly higher if it failed and was then replaced with participative regulation.

# Appendix A The ICD process MoU

# Memorandum of Understanding

# Integrated Gas Balancing Regime

# MEMORANDUM OF UNDERSTANDING

**DATED** 2009

**BETWEEN**

**Contact Energy Limited**
**Genesis Energy Limited**
**Greymouth Petroleum Limited**
**Maui Development Limited**
**Mighty River Power Limited**
**Multigas Limited**
**NZ Steel Limited**
**OMV Limited**
**Vector Gas Contracts Limited**
**Todd Energy Limited**
**Vector Gas Limited**

each a "**party**" and together the "**parties**",

**AND ACKNOWLEDGED BY** Gas Industry Company ("**Gas Industry Co**") in its capacity as convenor and facilitator of the ICD process (being the Industry Code Development process).

## BACKGROUND

A. Gas Industry Co has completed a review of the current transmission pipeline balancing arrangements in New Zealand and has determined that on the basis of the current facts a regulatory solution is necessary to provide efficient residual balancing of pipelines. Gas Industry Co is required to take into account the possibility of non-regulatory solutions as part of the process it follows in recommending new gas governance arrangements. The submissions received prefer non-regulatory solutions.

B. At that time, Gas Industry Co also agreed to facilitate a parallel process aimed at developing a more integrated balancing regime, to be achieved primarily through changes to the existing contractual framework, and known as the ICD process which if successful may obviate the need for, or reduce the scope of, regulation.

C. The parties have each committed to participating in the ICD process.

D. As part of the ICD process and in furtherance of the parties' preference that an integrated balancing regime is based on contractual agreements rather than regulation, the parties have agreed principles and a package of changes and a timetable, set out in this Memorandum of Understanding and attached Schedules, that would provide for the introduction of an integrated balancing regime through changes to the existing contractual framework.

E. The purpose of this Memorandum of Understanding is to provide a high level of confidence that an industry solution is achievable within an established timeframe.

## PURPOSE AND STATUS

### 1. PURPOSE OF MoU

1.1 The parties wish to enter into this Memorandum of Understanding to record:
(a) the intention of the parties with respect to the process for the development of the package of changes to the existing contractual framework as described in the attached schedules;
(b) Gas Industry Co's acknowledgement of those intentions; and
(c) each party's support for the intended changes.

### 2. STATUS OF MoU

2.1 Although this Memorandum of Understanding is intended to reflect the parties' good faith intentions and support for the package of changes set out in the attached schedules, at the date of this Memorandum of Understanding, nothing in this Memorandum of Understanding is intended to create any legally binding obligation on any party.

### 3. INDUSTRY CODE DEVELOPMENT PROCESS

3.1 In December 2009, Gas Industry Co intends to recommend to the Minister of Energy whether or not to regulate unified residual balancing of gas transmission pipelines.

3.2 Each of the parties prefers an integrated balancing regime based on the development of the contractual framework, rather than based on regulation.

3.3 The parties have a vision of an integrated balancing regime extending across the whole transmission system.

3.4 The parties recognise that this vision will take time to achieve, and is not achievable before December 2009 when Gas Industry Co will recommend whether or not to regulate for residual balancing.

3.5 Accordingly, the parties have developed a package of changes, to be implemented through changes to the contractual framework, and intend that all changes impacting the flow of balancing charges between parties are to come into effect on 1 October 2010.

### 4. PRINCIPLES AND PROCESS FOR CONTRACTUAL CHANGES TO CODES

4.1 The parties agree that the package of changes that would provide for the introduction of an efficient integrated balancing regime through the contractual arrangements reflects the following principles:

- The balancing operator(s) will operate, as a Reasonable and Prudent Operator(s) (RPO) to clear pre-defined policies and operating procedures when making decisions on the need for a balancing action.

- The balancing operator(s), as a RPO, will procure balancing services through a balancing market at least cost on an arm's length basis. It is the parties' view that the balancing gas trading platform currently in operation can be developed to meet this requirement.
- The balancing market will be open to all eligible providers of balancing services.
- Balancing costs will be recovered on a pay-first-dispute-later basis and, as far as possible, will be allocated to parties that cause the balancing actions.
- Good information and balancing tools will be made available to all transmission system users to minimise the need to draw on balancing services.
- Balancing activity will be transparent and subject to full reporting and audit processes.

4.2 The changes needed to the contractual framework to meet the principles set out in paragraph 4.1 above have been defined (in detail or at a general level) and are described as 'expected content' in the attached Schedules.

4.3 The parties each support the package of changes to the contractual framework as described in the attached Schedules.

## 5. GENERAL

5.1 Each party shall bear its own costs in preparing this Memorandum of Understanding and attached Schedules any work carried out in relation to the development of the changes to the contractual framework.

5.2 Unless expressly agreed to the contrary, no matters discussed in relation to the matters set out in this Memorandum of Understanding will be confidential.

***Signed for***

*Company:*

*By:*

*Job Title:*

*Date:*

***Acknowledged by***

Gas Industry Company

# *Schedules 1-6*

# *Schedule 1*

*The balancing operator(s) will operate to clear pre-defined policies and operating procedures when making decisions on the need for balancing action.*

## I. Appointment of balancing operator(s) and recovery of costs of balancing arrangements

*Expected content:*

- Balancing operator(s) will be contracted and appointed for each pipeline by the pipeline owner, and may be removed and reappointed, in respect of the Maui pipeline by MDL and the Vector pipelines by Vector. The balancing operator(s) may be agents for the pipeline owners, or principals by contract.
- The net costs of establishing, operating and monitoring the balancing arrangements will be funded by new components of the pipeline tariffs. For the Maui pipeline the balancing operator's costs will be payable by Maui pipeline users and for Vector pipelines by Vector pipeline users. These costs will include the remuneration and expenses of the balancing operator(s), the costs associated with premises, IT etc., and the costs of obtaining prudential, insurance and other securities/assurance. Any unallocated or unpaid balancing costs and peaking charges on the Maui and Vector pipelines respectively will be recoverable by a tariff specific to the pipeline and paid so that users on one pipeline do not subsidise users on the other.
- The MPOC and the VTC will be reviewed and changed to take account of the changes noted above, and of the role and function of the balancing operator, including any distinction in the service definition between transportation and balancing.

## II. Role of the balancing operator(s)

*Expected content:*

The role of the balancing operator(s) will be fully described in the MPOC and VTC (as appropriate), and is to:

- Manage line pack, as an RPO, on an actively managed balancing zone by buying and selling balancing gas in accordance with Standard Operating Procedures (SOPs);
- Provide or procure access to a balancing gas trading platform;
- Allocate costs and GJs of purchased balancing services to causers of balancing actions in accordance with the relevant code;
- Manage the commercial arrangements for participation on a balancing gas trading platform;
- Notify and apply any cap and floor prices for balancing gas;
- Buy and sell balancing gas and receive and pass title to that gas;
- Invoice and provide credit control on the sales of balancing gas services;
- The balancing operator(s) will buy and sell balancing gas through the process outlined here on an arm's length basis and without prejudice or favour to any buyer or seller of balancing gas; and
- The balancing operator(s) will disclose the following information:
    - the process for entering bids to buy and sell balancing gas;
    - the volume and price of offers of balancing services for a day prior to the commencement of that day; and
    - all balancing gas puts and balancing gas calls entered into by the balancing operator(s).

## III. Defined policies and operating procedures of the Balancing Operator

*Expected content:*

- MDL and Vector will develop SOPs to describe how the line pack of the Maui and Vector pipelines respectively will be managed in a coordinated manner.
- The SOPs will be developed by MDL and Vector in consultation with users.
- The SOPs will address:

- the circumstances in which the balancing operator(s), as a RPO, will buy or sell balancing gas;
- the balancing operator(s) scope to exercise discretion, and the means of providing transparency to those decisions;
- the process for setting any cap and floor prices;
- the allocation of balancing costs in accordance with the codes;
- coordination of balancing policy for interconnected transmission systems; and
- critical contingency interfaces.

- The SOPs will be subject to SOP change request procedures contained in the relevant transmission code. These procedures will allow for:
  - timely determinations;
  - independent overview;
  - all users of the relevant transmission system to request changes and to participate in consultation; and
  - all change requests, submissions and determinations to be published.

# *Schedule 2*

*The balancing operator(s) will procure balancing services through a balancing market at least cost on an arm's length basis. It is the parties' view that the balancing gas trading platform can be developed to meet this requirement.*

## I. Procurement of balancing services

*Expected content:*

The relevant TSOs will develop code change requests to provide for:

- the balancing operator(s), acting as a RPO, will use all reasonable endeavours to buy and sell balancing gas in accordance with the following principles:
    - the balancing operator(s) will buy and sell balancing gas services on a least cost and greatest revenue basis by first accepting the lowest priced offer(s) of call gas or first accepting the highest priced offer(s) of put gas available on a day;;
    - the balancing operator(s) will calculate and apply the cap and floor prices as set in the relevant code;
    - the balancing operator(s) may be the shipper of balancing gas; and
    - the balancing operator(s) will buy and sell balancing gas on an arm's length basis;
- the balancing operator(s) will publish on a balancing gas website the standard terms and conditions upon which balancing gas calls are bought and balancing gas puts are sold by the balancing operator(s). Such standard terms and conditions shall, without limitation, provide for the following criteria:
    - passing of title to balancing gas sold and purchased under each balancing gas put and balancing gas call entered into by the balancing operator(s);
    - the timeframes and procedures for the notification of requests for balancing gas calls and balancing gas puts and the price of such transactions;
    - the timeframes and procedure for the notification of acceptance of balancing gas calls and balancing gas puts;
    - invoicing and payment procedures for balancing gas puts and balancing gas calls;

- rules for the operation of the balancing gas trading platform;
- liability for failing to perform the obligations under the terms and conditions governing balancing gas calls and balancing gas puts; and
- publication of any non-standard terms and conditions.

## II. Determination of the price of balancing gas

*Expected content:*

- Balancing service providers will receive (or pay) the price they bid into the balancing gas trading platform (if their bid is accepted).
- The balancing gas cash out-price on each day will be set at the volume weighted average price of all offsetting balancing gas market transactions on that day.

# *Schedule 3*

*The balancing market will be open to all potential providers of balancing services.*

## I. All transmission system users will have opportunity to provide balancing services

*Expected content:*

- Vector will introduce, implement and operate a daily nominations regime and, except as noted below, Operational Balancing Agreement (OBA) allocation and title transfer and tracking on its pipelines.
- The balancing gas trading platform shall be open to welded parties and shippers on the Maui pipeline (other than welded parties at Small Stations and the Rotowaro, Pokuru and Pirongia Welded Points whilst they remain combined, and shipments made to and from those welded points).
- The balancing gas trading platform will also be open to shippers and interconnected parties on the Vector pipelines once all of the following conditions are fulfilled:
    - Vector has introduced and, implemented daily nominations and OBA allocation and title as above;
    - the shipper complies with all MPOC shipper information and communications requirements and the relevant interconnected party complies with all MPOC welded party information requirements;
    - the shipper and relevant interconnected party make all other arrangements as are necessary or appropriate with Vector; and
    - either:
        - Vector agrees to pay, on a pay-first-dispute-later basis, all balancing costs and peaking charges at the relevant Transmission Pipeline Welded Point (TPWP); or
        - all the shippers in the balancing zone downstream of that TPWP, including Vector in respect of its fuel gas, UFG and linepack changes, enter into all arrangements required for the unbundling of the OI, and the allocation, payment (on a pay-first-dispute-later basis), and recovery of all balancing costs and peaking charges, at the relevant TPWP.

[There were differing views on whether Vector, the users or another entity would in the first instance agree to pay (on a pay-first-dispute-later basis) all balancing costs and peaking charges a the relevant TPWP.]

- To maximise balancing market participation offers of balancing services shall be accepted as late as reasonably possible.
- The prerequisites for participation on the balancing gas trading platform are that:
    - participants have accepted the terms of the balancing gas trading platform and signed the necessary contracts;
    - any delivery point or receipt point where balancing service is provided meets the MPOC metering standards;
    - nominations for delivery and receipt at TPWPs will be linked to enable title tracking and facilitate the effective management of any curtailment; and
    - users and the balancing operator(s) will exchange information to determine the provision of service.

# II. Cost allocation issues relating to TPWPs

*Expected content:*

- Subject to OI unbundling at TPWPs successfully being completed, in respect of balancing the Maui balancing operator will deal directly with:
    - Large Stations[22] within each Vector balancing zone on the Vector transmission system;
    - the Welded Party in respect of any Pooled Delivery Point (which point will aggregate all non-TOU and mass market users and any non-compliant Large Stations within the balancing zone); and
    - Vector in respect of its fuel gas, UFG and linepack changes within that zone.

[There were differing views on whether Vector, the users or another entity would be the notional Welded Party in respect of any Pooled Delivery Point.]

[22] The term 'Large Station' refers to a station with the characteristics of a Large Station as defined in the MPOC.

- Flows will be measured at Large Stations by meter, with respect to the Pooled Delivery Point by inferred meter, and with respect to pipeline fuel gas, UFG and linepack changes by whatever means is appropriate, including calculation.

- There must always be a party responsible for allocation of gas and title for a Pooled Delivery Point. That party will be responsible and liable for balancing charges at the Pooled Delivery Point. That party may allocate responsibility and liability for balancing charges at the Pooled Delivery Point to the shippers or the interconnected parties using that Pooled Delivery Point.

# *Schedule 4*

*Balancing costs will, as far as possible, be allocated to parties that cause balancing actions.*

## I. Core allocation issues

*Expected content:*

- Balancing costs in respect of cash-outs will:
  - only occur on days where the balancing operator(s) has bought or sold balancing gas;
  - be calculated daily, at the end of each day (as defined in the MPOC and VTC);
  - be allocated to each MPOC welded party and each VTC shipper in proportion to running imbalance positions and up to the limit of their excess contributing OI position; and
  - in aggregate, not exceed the quantity of offsetting balancing gas bought or sold on the balancing gas trading platform.
- Balancing gas cash-outs will occur without notice at the end of each day.
- Any balancing costs not recovered through cash-out will be recovered through peaking charges or other mechanisms.
- Imbalance Limit Overrun Notice (ILON) arrangements will be deleted from the MPOC.
- The MPOC and VTC will make provision for WP claims, in the event the WP is unable to receive or deliver gas.

## II. Adjustment of allocations

*Expected content:*

- Provision will be made for corrections to balancing costs and peaking charges that result from metering corrections and downstream allocation revisions.

[There were differing views on whether the allocation of balancing costs and peaking charges should be adjusted retrospectively where errors were identified.]

## III. Tolerances

*Expected content:*

- Tolerances will be reduced to minimise extent of socialisation of costs.

[There were differing views on whether tolerances should be eliminated or a small tolerance be retained to minimise transaction costs.]

## IV. Unbundling OI

*Expected content:*

- MDL and Vector will propose amendments to the MPOC, the VTC and to Vector's Interconnection Agreement (ICA) to unbundle Vector TPWPs and to create direct obligations as between shippers on the Vector pipelines and the balancing operator(s).
- The unbundling of OI at Vector TPWPs will be subject to:
    - direct liability of the shippers or Vector to the balancing operator(s) for their individual imbalance;
    - payment of allocated Balancing Costs and Peaking Charges on a pay-first-dispute-later basis providing shippers and Vector have full rights to participate in resolution of those disputes;

    - prudential security and assurance;
    - each shipper and Vector having a reasonable endeavours obligation to balance each day and throughout a day; and
    - otherwise, conditions of the kind noted in respect of the opening of the balancing gas trading platform to users on the Vector pipelines above.
- Small stations on the Maui pipeline will be reviewed to see if tracking OI is justified.
- For the purpose of balancing, the Rotowaro, Pokuru and Pirongia welded points will be unbundled by MDL.

## V. Transmission system UFG

*Expected content:*

- Transmission system UFG will be managed in a coordinated manner across both pipeline systems;
- Transmission system UFG will be bought or sold at regular intervals; and
- Transmission system UFG will be accounted for explicitly.

[There were differing views on whether MDL should be liable for UFG.]

## VI. Allocation of balancing charges to TSOs

*Expected content:*

- TSOs will be allocated balancing charges for imbalances arising from:
    - UFG;
    - fuel gas; and
    - management of linepack.

[There were differing views on whether MDL should be liable for fuel gas, UFG and linepack changes.]

## VII. Financial risk for Balancing Operator(s)

*Expected content:*

- Pay-now-dispute-later principle will apply to payment of balancing costs, peaking charges and balancing tariff charges;
- Prudential requirements under the MPOC and VTC will be reviewed to reflect the new balancing arrangements and proposed balancing tariff;
- Default interest will apply on unpaid and disputed amounts; and
- Parties subject to the pay-now-dispute-later principle will have the right to invoke dispute resolution procedures to recover disputed payments.

# *Schedule 5*

*Good information and balancing tools will be made available to all transmission system users to minimise the need to draw on residual balancing services.*

## I. Information for users

*Expected content:*

- There will be a general principle of transparency that will apply to TSOs and all pipeline users.
- The balancing arrangements will provide that the balancing operator(s) will publish:
  - during and following each transmission day, a full range of information to facilitate balancing;
  - following each transmission day, a full range of information to allow it to confirm balancing actions; and
  - the information published will include metered and scheduled quantities for each user and the cost and revenue resulting from the balancing actions;
- The balancing operator(s) will conduct their operations transparently.
- There will be an annual audit of balancing gas transactions. The cost of the audit will be recoverable via the proposed balancing tariffs. The terms of reference and results will be published.
- Any party or parties may require a performance audit. The cost of that audit will be met by that party or parties.
- The purpose of a performance audit is to assess any aspect of:
  - the performance of the balancing operator(s) in terms of compliance with codes and procedure; and
  - the systems and processes of the balancing operator(s) that have been put in place to enable compliance with codes and procedures.
- The person appointing the balancing operator(s) must appoint as auditor a person who is independent to and not in a position of conflict of interest with the balancing operator(s) or a transmission system owner.

- In conducting an audit, the auditor must not consider any action, circumstance, event, or inaction that occurred 24 months or more before the date the audit was requested.
- The auditor may:
    - request any information from the balancing operator(s), the industry body, any transmission system owner and any user; and
    - request to examine any processes, systems and data of the balancing operator(s), provided such processes, systems and data are directly relevant to the performance of the balancing agent in terms of compliance with the codes and procedures;
- Any request by the auditor must be reasonable and strictly for the purposes of the audit.
- In providing information to the auditor, a transmission system owner, the balancing operator(s) or a user may indicate to the auditor where such information is considered to be confidential.
- The timing, number and notice periods for intraday nomination opportunities will be periodically reviewed to assist pipeline users to effectively manage their balance positions.

## II. Balance corrections

*Expected content:*

- A process will be developed to allow users to signal intention to reduce imbalance (i.e. distinguish between the balancing versus demand components of their nominations).

## III. D+1 allocations

*Expected content:*

- If a D+1 algorithm can be developed which will provide allocations closer to the ‘interim’ allocation than the ‘initial’ allocation, all gas deliveries will be allocated to MDL and Vector users on the day after gas flow using that algorithm. For clarity, these algorithms only apply within a Pooled Delivery Point and have no effect or relevance as far as the balancing operator(s) is concerned.

- D+1 implementation must also pass a cost/benefit test and costs of any such regime will be recovered from beneficiaries.

## IV. Access to balancing tools by users across whole transmission system

*Expected content:*

- Once the prerequisites to participation on the balancing gas trading platform and unbundling of OI at TP Welded Points have been met, it is intended that all eligible participants on the Vector pipelines will have equivalent rights and obligations as MPOC welded parties including:
    - right to manage imbalance effectively at point of interconnection on a Vector pipeline but (legally and in fact) at the unbundled TP Welded Point;
    - right to renominate through MPOC intraday cycles as provided for in the MPOC;
    - allocation of tolerance;
    - rights and obligations equivalent to those under s15 of the MPOC upon evidence of compliance;
    - right to trade imbalance; and
- The timing, number and notice periods for intraday nomination opportunities will be periodically reviewed to assist pipeline users to effectively manage their balance positions.

# *Schedule 6*

*Balancing activity will be transparent and subject to full reporting and audit processes.*

## I. Dispute resolution process

*Expected content:*

- Disputes will be resolved by an independent process, if not resolved between the parties within 10 working days and any party to the dispute requests referral to the process. The process will provide for:
  - disputes to be heard by an appropriately qualified authority;
  - timely resolution;
  - low cost determinations; and
  - redress in the event a party considers determination is wrong in law.

# Appendix B NZIER quantitative assessment

nzier
authoritative analysis

Confidential draft

# Improved balancing arrangements

## Cost-benefit analysis

### Report to Gas Industry Co

**Draft of 16 December 2009**

## About NZIER

The New Zealand Institute of Economic Research (NZIER) is a specialist consulting firm that uses applied economic research and analysis to provide a wide range of strategic advice to clients in the public and private sectors, throughout New Zealand and Australia, and further afield.

NZIER is also known for its long-established *Quarterly Survey of Business Opinion* and *Quarterly Predictions*.

Our aim is to be the premier centre of applied economic research in New Zealand. We pride ourselves on our reputation for independence and delivering quality analysis in the right form, and at the right time, for our clients. We ensure quality through teamwork on individual projects, critical review at internal seminars, and by peer review at various stages through a project by a senior staff member otherwise not involved in the project.

NZIER was established in 1958.

## Authorship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# Executive summary

Gas Industry Co has reviewed current balancing arrangements on New Zealand's two high pressure gas transmission pipelines. It has concluded that these arrangements need improving to address problems experienced by the gas industry and to meet the government's objectives for the industry. In particular, it has determined that there is a need to move to a single balancing agent and unified balancing regime, which it proposes to achieve by "participative regulation".

Market participants have been working together to develop an alternative contracts based approach to meeting Gas Industry Co's regulatory concerns and providing a unified balancing regime, known as "industry code development" (ICD). There is some uncertainty about how long the ICD process will take to complete and whether or not it will be successful in reaching a final agreement.

Independent of both the participative regulation and ICD alternatives, continuing changes to the Maui Pipeline Operating Code and the Vector Transmission Code are expected to improve balancing arrangements over time. In particular, Maui Development Limited (MDL) is currently progressing a package of changes to the Maui Pipeline Operating Code.

Gas Industry Co has asked NZIER to assess the costs and benefits of four possible scenarios. Scenarios 1 and 2 represent agreement being reached and recommendations made to the Minister in time for either participative regulation or ICD to be implemented by October 2010. Scenario 3 represents the ICD process being recommended to the Minister, but not ready for implementation until one year later. Scenario 4 represents the possibility that the ICD process continues but fails to reach agreement by December 2010, at which point it is abandoned and participative regulation is implemented.

We assess these scenarios relative to the baseline scenario of the continuation of current balancing arrangements, subject to the changes that MDL is progressing to meet balancing objectives and possible changes that Vector may introduce achieving gradual improvement in balancing over time.

This cost-benefit analysis finds that, due to the considerable benefits of the improved balancing arrangements, all four scenarios would achieve significant net benefits within the first 10 years, over the baseline scenario of gradual improvement through MDL's current process alone. Participative regulation, under scenario 1, is indicated to be the superior alternative by a significant margin. This is followed by ICD, provided that this could be agreed and implemented by October 2010. A longer ICD process would provide lower net benefits, regardless of whether or not it was successful in reaching agreement. Indeed, the net benefits would be significantly higher if it failed and was then replaced with participative regulation. In effect, this reduces the choices to two – implement participative regulation by October 2010 or

implement ICD by October 2010. It would be better to implement participative regulation as soon as possible than to extend the ICD process.

The magnitudes of the costs and benefits of the improved balancing arrangements are as yet somewhat uncertain. Sensitivity analysis confirms, however, that market participants can be very confident that the improved balancing arrangements would provide net benefits and that these net benefits would be higher if policy proposals could be agreed and implemented in time for October 2010, significantly more so under participative regulation unless ICD would be just as effective in achieving improved balancing arrangements.

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# 1. Purpose

Gas Industry Co has reviewed current balancing arrangements on New Zealand's two high pressure gas transmission pipelines[1].

Balancing refers to maintaining the gas inventory in a pipeline ("linepack") within limits to ensure the reliable delivery and receipt of gas. Balancing is necessary to keep the gas pressure in the pipeline above the minimum required to maintain supply of gas to customers, but below the safe physical operating limit for the pipeline. Users of the pipeline have an obligation to balance their inputs and outputs so as not to consume linepack or park gas in the transmission system beyond allowed tolerances. This is known as primary balancing. There remains a need for residual balancing, given common use of the pipeline by multiple users. Currently, this is the responsibility of the two transmission system owners (TSOs) Maui Development Limited (MDL) and Vector Transmission (Vector).

Gas Industry Co has concluded that these arrangements need improving to address problems experienced by the gas industry and to meet the government's objectives for the industry. In particular, it has determined that there is a need to move to a single balancing agent and unified balancing regime, which it proposes to achieve by regulation[2].

Gas Industry Co has asked NZIER to provide an analysis of the costs and benefits of four possible scenarios, to assist its decision on whether there is anything that may cause it to defer its proposed recommendation to the Minister. This report outlines the method and results of this cost-benefit analysis (CBA).

# 2. Scenarios

In its statement of proposal on transmission pipeline balancing, Gas Industry Co concludes that the preferred option for achieving better alignment with Gas Act and Government Policy Statement objectives is "participative regulation". Many of the market participants believe that a better approach would be to modify existing multi-lateral pipeline access contracts, thereby minimising the scope of any required regulation. Gas Industry Co has been working with these market participants to explore this approach. The two alternatives under consideration are therefore:

- participative regulation – under which TSOs would have first opportunity to develop, consult on and agree a "balancing plan", for approval by Gas Industry Co; if TSOs cannot develop an acceptable balancing plan, Gas Industry Co would take over developing the balancing plan and

[1] Gas Industry Company (2008) *Transmission Balancing Options Paper*, December 2008; Gas Industry Company (2009) *Transmission Balancing Second Options Paper*, July 2009.

[2] Gas Industry Company (2009) *Statement of Proposal Transmission Pipeline Balancing,* October 2009.

- industry code development (ICD) – under this process, Gas Industry Co is working with market participants to explore whether further improvements to balancing arrangements are possible through changes to existing industry contracts.

There is some uncertainty about how long the ICD process will take and whether or not it will be successful. Gas Industry Co has therefore asked NZIER to assess four possible scenarios involving the above two alternatives:

- scenario 1 – participative regulation
- scenario 2 – ICD (fast)
- scenario 3 – ICD (slow) and
- scenario 4 – ICD (slow and failed), followed by participative regulation.

Scenarios 1 and 2 represent agreement being reached and recommendations made to the Minister in time for either participative regulation or ICD respectively to be implemented by October 2010. Scenario 3 represents the ICD process being recommended to the Minister, but taking until December 2010 to reach agreement on the details of its implementation and being implemented by October 2011. Scenario 4 represents the possibility that the ICD process continues but fails to reach agreement by December 2010, at which point it is abandoned and participative regulation is implemented by January 2012.

# 3. Method

## 3.1 Cost-benefit analysis

CBA provides a formal, structured method for systematically assessing proposals in terms of their outcomes relative to their use of resources. In the analysis of government policy, CBA is normally undertaken from a national economy perspective, weighing up the relative costs and benefits to New Zealand as a whole.

The CBA process comprises 10 steps:

1. define the problem
2. select the options for assessment
3. specify the baseline scenario
4. identify the impacts of the options – positive (benefits) and negative (costs)
5. where possible, quantify the impacts
6. where possible, value the impacts
7. adjust for differences in the timing of the impacts
8. calculate decision criteria
9. analyse the sensitivity of the results and
10. document the CBA

## 3.2 Baseline scenario

A critical step in any CBA is specifying the baseline scenario – the default or prevailing situation or conditions that would occur in the absence of the alternatives under consideration. It is relative to this baseline that the costs and benefits of the alternatives are measured.

For the purpose of assessing the costs and benefits of the two alternatives under the four scenarios outlined above, we define the baseline scenario as the status quo – continuation of the current balancing arrangements, subject to the changes that MDL is progressing to meet balancing objectives. We do not assess the costs and benefits of balancing versus not balancing, but instead compare the additional costs of developing, implementing and operating the balancing agent and unified balancing regime with the additional benefits such improvements would achieve, relative to gradual improvement over time through MDL's current process.

## 3.3 Costs and benefits

The main costs of improving balancing arrangements under participative regulation and ICD comprise:

- develop and agree policy proposals
- draft and establish balancing plan and code changes
- establish single balancing agent
- develop standard operating procedures
- install improved information systems for increased primary balancing
- administer balancing agent and manage funding arrangements
- operate improved information systems for increased primary balancing
- oversee and monitor balancing agent and balancing market and
- amend balancing plan, as required in future.

The main benefits are:

- reduction in cost of residual balancing actions
- reduction in cost of disputes over balancing
- cost savings to TSOs of administering balancing and managing funding arrangements
- efficiency benefits from greater participation in the balancing market and better signalling of balancing costs.

We do not model as a benefit any reduction in frequency of contingency events and producer shut-ins when gas pressure falls below or rises above safe limits. We assume that these would have the same frequency under the improved balancing arrangements as under current balancing arrangements, rather that the number and cost of balancing actions to avoid these incidents would be reduced.

The ICD process is, in reality, somewhat broader in scope than Gas Industry Co's policy proposals for participative regulation and may therefore achieve some additional improvements in related areas. ICD may, however, be somewhat less effective than participative regulation in implementing a unified balancing plan, covering non-code bound contracts and achieving compliance and therefore achieve somewhat less of the above benefits than participative regulation.

Given that the magnitudes of the above costs and benefits are uncertain, we test the sensitivity of the results across a range of values for each type of cost and benefit (see Section 4.3 below).

### 3.3.1 Develop and agree policy proposals

Work to date on developing and agreeing policy proposals, for both participative regulation and ICD, constitutes a sunk cost. It is already spent regardless of which alternative is selected and which scenario eventuates. For the purpose of the CBA, we consider the costs and benefits from the beginning of 2010, following recommendations to the Minister in December 2009.

#### *a) Participative regulation*

By the end of 2009, Gas Industry Co will have completed developing the policy proposals for participative regulation, including consulting with industry on these proposals and draft rules and making recommendations to the Minister., Further work would, however, be required in 2010 to workshop the draft rules. We model the further costs as:

- 10 market participants review final legal drafting of rules, taking one day each, at $1,000 per participant
- 10 market participants attend one meeting, at $1,000 per participant plus travel costs of $600 for 50% of participants
- lawyer finalises legal drafting of rules, taking one week, at $400/hour
- one full time equivalent (FTE) at Gas Industry Co finalises the regulatory proposals and set of rules and submits to the Minister, taking two weeks, at a standard rate of $140,000/FTE and
- two government officials analyse and provide advice to the Minister, taking two weeks each, at $140,000/FTE.

#### *b) ICD*

The ICD process involves market participants working together to develop policy proposals, facilitated and supported by Gas Industry Co. In 2009, ICD participants met weekly for 10 weeks to agree a relatively high-level prescription of the proposed improvements to balancing arrangements. This multilateral negotiation would need to continue to the point where the policy proposals were sufficiently well-developed to enable drafting of code change proposals.

We model this as requiring a further:

- 20 meetings of 10 market participants, at $1,000 per participant per meeting plus travel costs of $600 for 50% of participants
- facilitated by an independent chair, at $2,000 per meeting
- six weeks of one FTE at Gas Industry Co in providing support to meetings, at $140,000/FTE and
- final legal drafting of policy agreement, taking one week, at $400/hour.

### *c) Scenarios 3 and 4*

For scenario 3, under which the ICD process takes until December 2010 to reach agreement, we model the above ICD costs to mid 2010 followed by costs to mid 2011 of:

- an additional 15 meetings of 10 market participants, at $1,000 per participant per meeting plus travel costs of $600 for 50% of participants
- facilitated by an independent chair, at $2,000 per meeting and
- an additional one month of one FTE at Gas Industry Co in providing support to meetings, at $140,000/FTE.

For scenario 4, under which the ICD process continues for a further year but fails to reach agreement and is then replaced with participative regulation, we model the above ICD costs to mid 2010, with the exception of final legal drafting of policy agreement, followed by costs to mid 2011 of:

- an additional 10 meetings of 10 market participants on the ICD process, at $1,000 per participant per meeting plus travel costs of $600 for 50% of participants
- facilitated by an independent chair, at $2,000 per meeting
- an additional one month of one FTE at Gas Industry Co in providing support to meetings on the ICD process, at $140,000/FTE
- three months of one FTE at Gas Industry Co to revise policy proposals and draft rules for participative regulation, at $140,000/FTE, assuming that some time can be saved by using previous development work for participative regulation
- one meeting of 10 market participants on participative regulation policy proposals and draft rules, at $1,000 per participant plus travel costs of $600 for 50% of participants
- preparation of submissions by 10 market participants on participative regulation policy proposals and draft rules, taking one week each, at $140,000/FTE
- one month of one FTE at Gas Industry Co to analyse submissions, to finalise the regulatory proposals and set of rules and to submit them to the Minister, at $140,000/FTE
- final legal drafting of rules, taking one week, at $400/hour and
- two government officials analyse and provide advice to the Minister, taking two weeks each, at $140,000/FTE.

### 3.3.2 Draft and establish balancing plan and code changes

#### *a) Participative regulation*

Under participative regulation, the rules would require TSOs to develop a balancing plan in consultation with industry and subject to Gas Industry Co's approval, before the improved balancing arrangements could take effect. We model the costs of this as:

- one FTE at each TSO prepares draft balancing plan, taking six weeks each, at $140,000/FTE.
- eight market participants review draft balancing plan and submit comments, taking one day each, at $1,000 per participant and
- one FTE at Gas Industry Co reviews and approves the draft balancing plan, taking two weeks, at $140,000/FTE.

#### *b) ICD*

We model the costs of completing negotiations on the design of the improved balancing arrangements and progressing the required code changes under ICD as:

- legal drafting of code changes, taking four weeks, at $400/hour
- 10 market participants review and prepare submissions on code changes, taking one day each, at $1,000 per participant and
- one FTE at Gas Industry Co reviews submissions on code changes and makes determinations, taking six weeks, at $140,000/FTE.

A small number of rules may still be required to target some residual matters[3]. Following agreement on policy proposals, we model the costs of drafting and establishing these rules as:

- one FTE at Gas Industry Co drafts regulatory proposals and set of rules, taking two weeks, at $140,000/FTE
- legal drafting of rules, taking four weeks, at $400/hour
- 10 market participants review and comment on legal drafting of rules, at $1,000 per participant
- one FTE at Gas Industry Co finalises regulatory proposals and set of rules and submits to the Minister, taking one week, at $140,000/FTE and
- two government officials analyse and provide advice to the Minister, taking one week each, at $140,000/FTE.

[3] One reason why rules may still be required is that the outcome of the ICD process is a set of proposed changes to transmission system codes (multi-lateral contracts), but balancing arrangements should also apply to parties with bi-lateral contracts (known as non-code shippers). The latter would need to be achieved through regulation.

### 3.3.3 Establish single balancing agent

In its initial analysis, Gas Industry Co indicates that setting up a single balancing agent could cost up to $2 million[4]. Gas Industry Co considers this an upper bound and existing TSO service providers likely to submit competitively priced bids to perform the functions of the single balancing agent, avoiding additional set up costs. Assuming a 50% probability, we therefore model the expected cost of establishing a single balancing agent under participative regulation as $1 million.

### 3.3.4 Develop standard operating procedures

We model the costs of developing new standard operating procedures to put into effect the improved balancing arrangements, under both participative regulation and ICD, as:

- two TSOs develop proposed standard operating procedures, taking three months each, at $140,000/FTE
- eight market participants attend one meeting for consultation on proposed standard operating procedures, at $1,000 per participant plus travel costs of $600 for 50% of participants and
- one FTE at Gas Industry Co assesses and approves[5] proposed standard operating procedures, taking two weeks, at $140,000/FTE.

### 3.3.5 Install improved information systems for increased primary balancing

In response to the balancing agent charging its balancing costs to causers of imbalances, pipeline users could be expected to take efforts to reduce their exposure to these costs through better primary balancing of their inputs and outputs. The two main obstacles to this currently are insufficient incentive and information. Charging causers of imbalances would provide the incentive.

We model the costs to users of installing improved systems for recording, analysing and reporting data on inputs and outputs, to enable users to increase their primary balancing, to be $200,000 per user per year, for the first two years, for eight users, under both participative regulation and ICD.

### 3.3.6 Administer balancing agent and manage funding arrangements

In its initial analysis, Gas Industry Co assumes, cautiously, that a single balancing agent would cost as much to administer as it currently costs the two TSOs together to administer their balancing functions[6]. The transfer of this responsibility from TSOs to the balancing agent would therefore involve simply the transfer of this cost from one

[4] Gas Industry Company (2008) *Transmission Balancing Options Paper*, December 2008, p.22.

[5] This assumes that standard operating procedures would, in future, be subject to a change request procedure process under the codes.

[6] Gas Industry Company (2008) *Transmission Balancing Options Paper*, December 2008, p.22.

party to another – a cost to the balancing agent and an equivalent cost saving to TSOs – therefore of no net cost or benefit to the market as a whole. We therefore do not model this cost, and the equivalent cost saving, explicitly.

The same approach applies to the costs of managing funding arrangements to recover balancing costs. The cost of performing this function would be transferred from TSOs currently to the balancing agent in future (even though the way in which these costs are allocated between users would differ).

### 3.3.7 Operate improved information systems for increased primary balancing

We assume that the improved systems for recording, analysing and reporting data on inputs and outputs, installed to enable users to increase their primary balancing and thereby to avoid the balancing costs levied by the balancing agent, cost $10,000 per year to operate, for each of eight users, under both participative regulation and ICD.

### 3.3.8 Oversee and monitor balancing agent and balancing market

We model the costs to Gas Industry Co of overseeing and monitoring the balancing agent and balancing market as one quarter of an FTE, $35,000 per year, under participative regulation and somewhat lower, at $20,000 per year under ICD.

### 3.3.9 Future amendments to balancing plan

We model future amendments to the balancing plan as costing half as much as developing the initial balancing plan, as outlined in Section 3.3.2 above, with amendments assumed to be required on average every three years.

### 3.3.10 Reduction in cost of residual balancing actions

In its initial analysis, Gas Industry Co indicates that the benefits of moving to a single balancing agent and allocating its balancing costs to the causers of imbalances could be in the order of $10 million per year[7]. This estimate is based on the number and value of balancing actions observed in a four month period in 2008. We understand that, with the removal of legacy provisions from the Maui Pipeline Operating Code, balancing performance has now improved substantially and the number of balancing actions required may have halved.

The improved balancing arrangements would further reduce the number of balancing actions required, as pipeline users increase their primary balancing to avoid charges for the balancing agent's balancing costs. The direct effect of this reduction in balancing actions is simply a transfer between market participants – a reduction in balancing costs to users, with some reallocation in remaining balancing costs between users who are paying too much currently and those who are paying too little currently, and an equivalent reduction in balancing revenues to TSOs, with remaining balancing revenues in future collected by the balancing agent instead. As simply a

[7] Gas Industry Company (2008) *Transmission Balancing Options Paper*, December 2008, p.21.

transfer of costs and revenues between market participants, directly, this constitutes no net benefit to the industry as a whole.

Indirectly, however, a likely consequence of lower levels of balancing and more accurate allocation of balancing costs to causers of imbalances is increased efficiency. These efficiency benefits are discussed in Section 3.3.13 below.

### 3.3.11 Reduction in disputes over balancing

We model the improved balancing arrangements under participative regulation as averting one major dispute every two years, at an average cost of $50,000 per dispute for audits undertaken specifically to resolve disputes over balancing (i.e. additional to routine audits).

We model ICD as achieving 80% of this reduction in dispute costs, given that it is likely be somewhat less effective in implementing a unified balancing plan, covering non-code bound contracts and achieving compliance.

We assume that under the baseline scenario, relative to which the benefits of the four scenarios are measured, MDL's current process to improve balancing arrangements would also achieve some gradual reduction in disputes over time. For the purpose of the CBA, we model the baseline scenario as reducing annual dispute costs in 2009/10 by 2% of the annual reduction achieved by participative regulation or ICD and by a further 2% with each successive year. In other words, by year 10, the baseline scenario reduces annual dispute costs by 20% of the reduction achieved by participative regulation and ICD. These benefits are subtracted from the dispute reduction benefits of participative regulation and ICD to give the additional benefits of these alternatives over the baseline scenario.

### 3.3.12 Cost savings to TSOs of administering balancing and managing funding arrangements

As noted in Section 3.3.6 above, the transfer of these functions from the two TSOs currently to the balancing agent in future is assumed to cost the same amount to perform and therefore result in no net cost or benefit to the market as a whole. We therefore do not model explicitly this cost, nor the benefit of the equivalent cost saving to TSOs.

### 3.3.13 Efficiency benefits

The improved balancing arrangements would achieve efficiency benefits through reducing residual balancing to efficient levels, paid for by the causers of imbalances. Pipeline users would seek to manage their inputs and outputs to avoid causing imbalances where it is less costly for them to undertake this primary balancing than to be charged the balancing costs of the balancing agent. In this way, the transmission pipelines would not only be kept in balance at a lower total cost, but, ultimately, used more efficiently, as users adjust the timing or volume of their inputs and outputs according to pipeline capacity and the value of their inputs and outputs.

With more efficient levels of balancing and more accurate allocation of balancing costs, market participants would have greater certainty about the actual costs and benefits to them of buying and selling gas and improved confidence that they would secure the actual net benefits of the gas they supply or demand. This may in turn increase or decrease the amount of gas they are willing to supply or demand and increase competition. Increased competition between participants would exert downward pressure on the sale price and supply cost of gas and enhance the incentive to pursue future cost reductions, with all of which to achieve an advantage over competing participants.

The consequence is therefore better – in terms of more economically efficient – production and consumption decisions, where the three components of economic efficiency are:

- allocative efficiency – the price and quantity of gas supplied
- productive efficiency – the cost of supplying gas and
- dynamic efficiency – investment and innovation to pursue reduction over time in the cost of supplying gas.

The magnitude of efficiency benefits from improving balancing arrangements is unknown. For the purpose of assessing whether the benefits of the improved balancing arrangements are likely to outweigh the costs, we model potential competition benefits as follows.

The improved balancing arrangements would promote allocative efficiency through providing greater certainty about costs and increased competition between participants. If, under participative regulation, these effects lowered the price at which gas is supplied by just 1%, at an average price of around $8/GJ, this would reduce the average price by $0.08/GJ. For existing demand, this reduction in price is simply a transfer from producers to consumers, resulting in no net benefit. Under a price elasticity of demand of -0.1, a 1% reduction in price would increase total demand by 0.1%, which would be around an additional 0.15 PJ per year. For this additional demand, there is a benefit to additional consumers who did not consume gas at the previous higher price, in the form of a "consumer surplus" of half[8] the price reduction, applied across the increase in quantity demanded. This suggests allocative efficiency benefits to the market of around $6,000 per year under participative regulation.

The improved balancing arrangements would also promote productive efficiency through increased competition between participants improving the efficiency with which gas is produced and supplied. If, under participative regulation, this effect lowered the average unit cost of supplying gas by again just 1%, at an average price of gas of around $8/GJ, this would reduce the average cost by $0.08/GJ. Across around 150 PJ of gas supplied through the transmission pipelines each year, these benefits would amount to around $12 million per year under participative regulation.

[8] To give the area of the consumer surplus triangle formed by the intersection of the demand and supply curves.

Unlike the immediate allocative efficiency benefits above, however, improvements to production and supply processes take time to develop and implement. We therefore phase in these benefits over the first five years of the improved balancing arrangements.

We model ICD as achieving 80% of the above allocative and productive efficiency benefits, given that it is likely be somewhat less effective in implementing a unified balancing plan, covering non-code bound contracts and achieving compliance.

Over time, dynamic efficiency benefits have potential to outweigh by far the above static efficiency improvements. These are much longer term, however, so we assume for simplicity that they are beyond the time horizon of the CBA.

Under the baseline scenario, relative to which the benefits of the four scenarios are measured, MDL's current process to improve balancing arrangements is also likely to achieve some gradual increase in efficiency over time. For the purpose of the CBA, we model the baseline scenario as achieving efficiency benefits in 2009/10 of 2% of the above annual allocative and productive efficiency benefits achieved by participative regulation or ICD, and increasing by a further 2% with each successive year (allowing for the phasing in of productive efficiency benefits over the first five years). In other words, by year 10, the baseline scenario achieves 20% of the annual efficiency benefits achieved by participative regulation and ICD. These benefits are subtracted from the efficiency benefits of participative regulation and ICD to give the additional benefits of these alternatives over the baseline scenario.

## 3.4 Time horizon

We model the above costs and benefits over a period of 10 years from 2009/10 to 2018/19 (June years). This time horizon seeks to capture enough of the ongoing costs and benefits after initial implementation to provide a robust assessment of the scenarios.

Under each of scenarios 1 and 2, recommendations are made to the Minister in December 2009 and the necessary rules are gazetted and/or agreement signed by mid 2010. Assuming work on establishing the balancing agent and developing a balancing plan can commence following Ministerial approval of the recommendations, we model the improved balancing regime coming into effect around October 2010. Under scenario 3, the ICD process achieves agreement and recommendations are made to the Minister in December 2010, rules are gazetted and agreement signed by mid 2011 and the improved balancing regime is operational from October 2011. Under scenario 4, the ICD process is abandoned in December 2010, recommendations for participative regulation are made to the Minister in March 2011, rules are gazetted by September 2011 and the improved balancing regime is operational from January 2012. The latter assumes that the policy proposals for participative regulation are at least partly developed, as it becomes clear that the ICD process is unlikely to succeed, so that when the ICD process is abandoned, there is only a three month delay before recommendations

can be made to the Minister, instead of the full seven months required to develop the policy proposals for participative regulation.

We model the timing of development and implementation costs accordingly, with ongoing annual costs and benefits commencing when the improved balancing regime becomes operational.

So that we can compare directly costs and benefits occurring at different points in time, we adopt a discount rate of 10% to convert future costs and benefits to their present values in 2009. In the sensitivity analysis, we also model discount rates of 6%, to reflect a public policy perspective, and 12%, to reflect a commercial perspective[9].

# 4. Results

## 4.1 Annual costs and benefits

The total annual costs and benefits of the two alternatives under the four scenarios are shown in Figure 1 to Figure 4. Recall that these are the additional costs and benefits of introducing the improved balancing arrangements relative to the baseline scenario of gradual improvement over time through MDL's current process. This explains the negative "additional" benefits initially, when the improved balancing arrangements have yet to come into effect, whilst MDL's process is already achieving some modest improvement. It also explains why annual benefits decline from 2015/16, as the benefits achieved through the MDL process continue to grow with further gradual improvement over time.

Recall also that the costs to the balancing agent of administering balancing and managing funding arrangements, and the equivalent cost savings to TSOs from no longer having to perform these functions, are not modelled explicitly, as they cancel each other out. In the figures below, the effect of including these would be to raise the annual cost and annual benefit by the same amount.

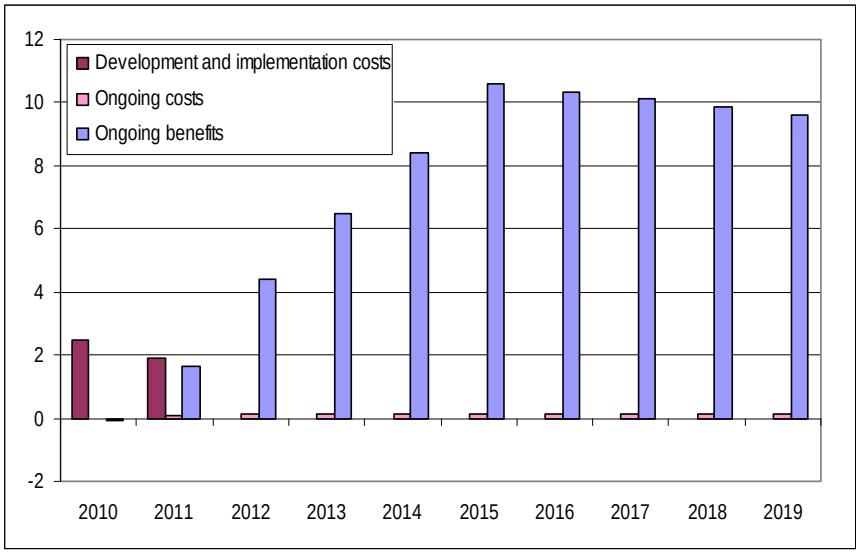
Scenarios 1 and 4 have the same ongoing annual costs and benefits, once participative regulation is implemented, but initial development and implementation costs are higher under scenario 4 due to the longer and ultimately unsuccessful ICD process. This delay also causes ongoing annual costs and benefits to start a year later under scenario 4.

Similarly, scenarios 2 and 3 have the have the same ongoing annual costs and benefits, once ICD is implemented, but initial development and implementation costs are higher under scenario 3 due to the ICD process taking a year longer to reach agreement. This delay also causes ongoing annual costs and benefits to commence a year later under scenario 3.

[9] Treasury now recommends an 8% real discount rate for energy and water infrastructure projects. This is covered by the range we model in the sensitivity analysis.

### *Figure 1 Annual costs and benefits under scenario 1 – participative regulation*

$ million, year ending June, relative to baseline scenario of gradual improvement through MDL's current process

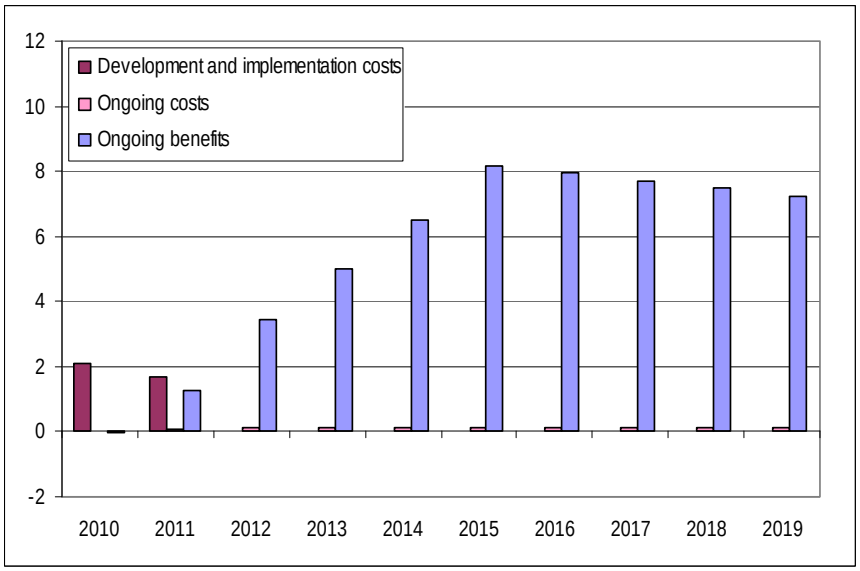



Notes: In 2009 dollars

Source: NZIER

### *Figure 2 Annual costs and benefits under scenario 2 – ICD (fast)*

$ million, year ending June, relative to baseline scenario of gradual improvement through MDL's current process

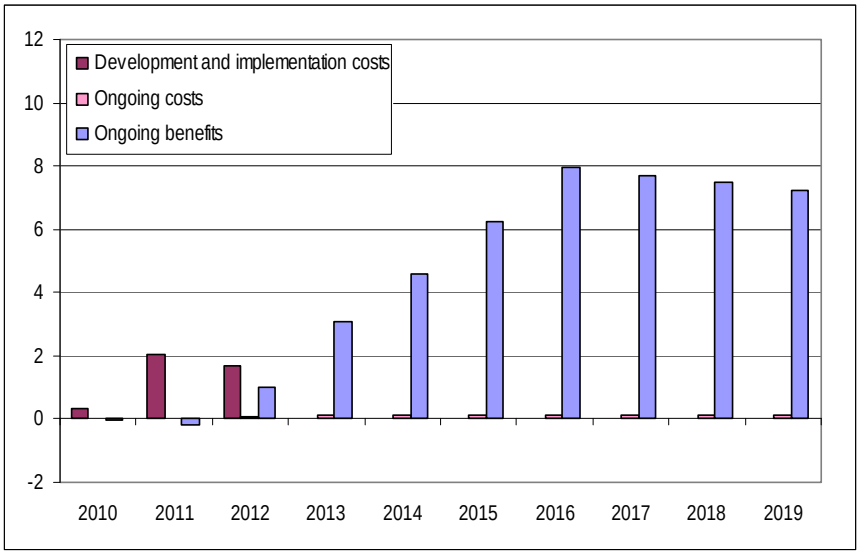



Notes: In 2009 dollars

Source: NZIER

### *Figure 3 Annual costs and benefits under scenario 3 – ICD (slow)*

$ million, year ending June, relative to baseline scenario of gradual improvement through MDL's current process

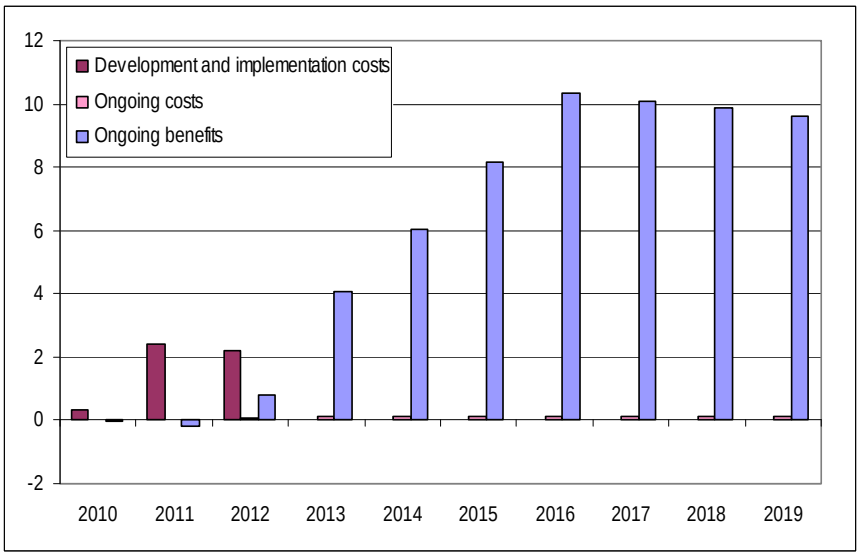



Notes: In 2009 dollars

Source: NZIER

### *Figure 4 Annual costs and benefits under scenario 4 – ICD (slow and failed), followed by participative regulation*

$ million, year ending June, relative to baseline scenario of gradual improvement through MDL's current process




Notes: In 2009 dollars

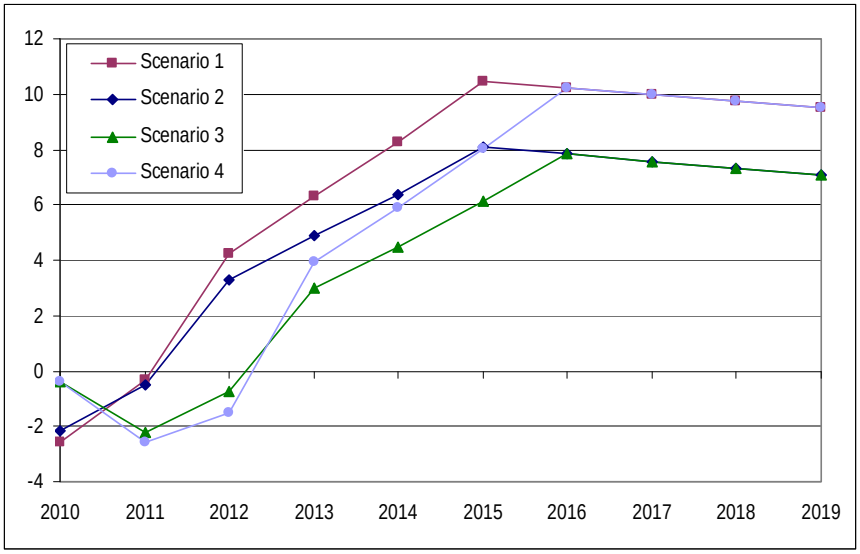
Source: NZIER

Due to the considerable benefits of the improved balancing arrangements, all four scenarios achieve positive annual net benefits relatively soon, as shown in Figure 5,

although scenarios 3 and 4 do so a year later due to the longer ICD process. Scenario 4 has higher initial development and implementation costs than scenario 3 and a slight further delay to ongoing annual costs and benefits, due to the failure of the ICD process and its replacement with participative regulation, but thereafter higher ongoing annual benefits due to the somewhat greater effectiveness of participative regulation in achieving improved balancing arrangements. Scenarios 1 and 4 provide the same annual net benefits from 2015/16, once the full efficiency benefits of the improved balancing arrangements under participative regulation are achieved. Similarly from 2015/16, scenarios 2 and 3 achieve the same annual net benefits, once the full efficiency benefits of the improved balancing arrangements under ICD are achieved.

***Figure 5 Annual net benefits***

$ million, year ending June, relative to baseline scenario of gradual improvement through MDL's current process




Notes: In 2009 dollars

Source: NZIER

## 4.2 Total costs and benefits

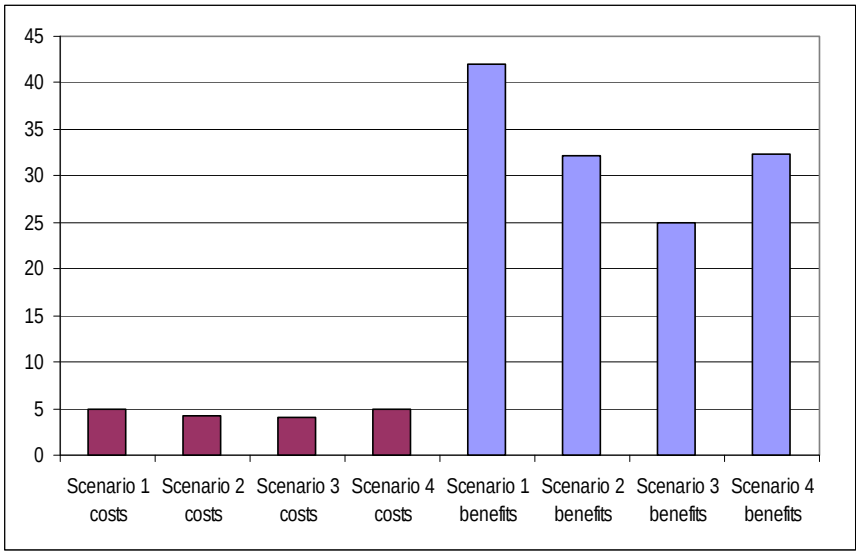
With discounting to reflect their relative timing, the above annual costs and benefits imply present value total costs over 2009/10 to 2018/99 of $4.997 million under scenario 1, $4.290 million under scenario 2, $4.099 million under scenario 3 and $4.950 million under scenario 4. Participative regulation, whether implemented immediately (scenario 1) or after the failure of the ICD process (scenario 4), incurs higher costs for establishing the single balancing agent, monitoring compliance with the balancing rules and making future amendments to the balancing plan.

The improved balancing arrangements deliver present value total benefits over the next 10 years of $41.962 million under scenario 1, $32.227 million under scenario 2, $24.962 million under scenario 3 and $32.384 million under scenario 4. Participative regulation, under scenarios 1 and 4, is more effective in improving balancing

arrangements, but the longer ICD process under scenarios 3 and 4 delays when benefits commence.

***Figure 6 Present value total costs and benefits over 2009/10 to 2018/19***

$ million, relative to baseline scenario of gradual improvement through MDL's current process




Notes: In 2009 dollars

Source: NZIER

The net benefits are highest under scenario 1 at $36.965 million and lowest under scenario 3 at $20.863 million. Scenario 2 has marginally higher net benefits than scenario 4, $27.937 million and $$27.434 million respectively.

Due to the considerable benefits of the improved balancing arrangements, all four scenarios achieve significant net benefits within the first 10 years, over the baseline scenario of gradual improvement through MDL's current process alone. For each dollar of cost, scenario 1 returns $8.40, scenario 2 returns $7.51, scenario 3 returns $6.09 and scenario 4 returns $6.54. Scenarios 1 and 2 break even within three years and scenarios 3 and 4 take five years to accumulate sufficient surplus of annual benefits over annual costs to cover the development and implementation costs incurred initially.

Participative regulation, under scenario 1, is therefore indicated to be superior by a significant margin (over $9 million). This is followed by ICD, provided that this could be agreed by December 2009 and implemented by October 2010. A longer ICD process would provide lower net benefits, regardless of whether or not it was successful in reaching agreement. Indeed, the net benefits would be significantly higher (by over $6 million) if it failed and was then replaced with participative regulation. In effect, this reduces the alternatives to two – implement participative regulation by October 2010 or implement ICD by October 2010. It would be better to implement participative regulation as soon as possible than to extend the ICD process.

Under all four scenarios, the largest cost component is the cost to pipeline users of installing improved information systems to enable increased primary balancing (56% to 71% of the present value total costs over the first 10 years), followed by the costs of establishing the single balancing agent (18% to 20%) under scenarios 1 and 4. Ongoing annual costs are small relative to these initial development and implementation costs. The benefits are dominated under all scenarios by the efficiency benefits resulting from the improved balancing arrangements (over 99%).

## 4.3 Sensitivity analysis

As noted above, the costs and benefits used in the CBA are somewhat uncertain. We therefore test the sensitivity of the above main results across a range of values for each type of cost and benefit. The results of this sensitivity analysis are shown in Table 1. This table shows how adopting 10% or 25% lower or higher unit costs or benefits would alter the present value total net benefits under each scenario over the next 10 years.

The net benefits under the four scenarios are most sensitive to the magnitudes of efficiency benefits resulting from the improved balancing arrangements, but remain positive down to allocative and productive efficiency effects reducing the price and unit cost of gas by just 0.17% for scenario 3, 0.16% for scenario 4, 0.13% for scenario 2 and 0.12% for scenario 1. On the cost side, the net benefits are most sensitive to the costs to pipeline users of installing improved information systems to enable increased primary balancing, followed by the costs of establishing the single balancing agent under participative regulation.

***Table 1 Sensitivity analysis***

Present value net benefits over 2009/10 to 2018/19, $ million, relative to baseline scenario of gradual improvement through MDL's current process

| | | Net benefits ($ million) | | | |
|---|---|---|---|---|---|
| | | Scenario 1 | Scenario 2 | Scenario 3 | Scenario 4 |
| Main results | | 36.965 | 27.937 | 20.863 | 27.434 |
| *Costs* | | | | | |
| Develop and agree policy proposals | -25% | 36.978 | 28.020 | 20.999 | 27.578 |
| | -10% | 36.970 | 27.970 | 20.918 | 27.492 |
| | +10% | 36.959 | 27.904 | 20.809 | 27.377 |
| | +25% | 36.951 | 27.855 | 20.727 | 27.290 |
| Draft and establish balancing plan and code changes | -25% | 36.976 | 27.977 | 20.899 | 27.444 |
| | -10% | 36.969 | 27.953 | 20.877 | 27.438 |
| | +10% | 36.960 | 27.921 | 20.849 | 27.430 |
| | +25% | 36.954 | 27.898 | 20.827 | 27.424 |
| Establish single balancing agent | -25% | 37.209 | 27.937 | 20.863 | 27.651 |
| | -10% | 37.062 | 27.937 | 20.863 | 27.521 |
| | +10% | 36.867 | 27.937 | 20.863 | 27.347 |
| | +25% | 36.720 | 27.937 | 20.863 | 27.217 |
| Develop standard operating procedures | -25% | 36.986 | 27.958 | 20.882 | 27.453 |
| | -10% | 36.973 | 27.945 | 20.871 | 27.442 |
| | +10% | 36.956 | 27.929 | 20.855 | 27.427 |

| | | | | | |
|---|---|---|---|---|---|
| | +25% | 36.944 | 27.916 | 20.844 | 27.416 |
| Install improved information systems for increased primary balancing | -25% | 37.728 | 28.701 | 21.557 | 28.128 |
| | -10% | 37.270 | 28.243 | 21.141 | 27.712 |
| | +10% | 36.659 | 27.632 | 20.585 | 27.156 |
| | +25% | 36.201 | 27.173 | 20.169 | 26.740 |
| Operate improved information systems for increased primary balancing | -25% | 37.103 | 28.075 | 20.979 | 27.545 |
| | -10% | 37.020 | 27.992 | 20.909 | 27.478 |
| | +10% | 36.909 | 27.882 | 20.817 | 27.390 |
| | +25% | 36.826 | 27.799 | 20.747 | 27.323 |
| Oversee and monitor balancing agent and balancing market | -25% | 37.013 | 27.965 | 20.886 | 27.473 |
| | -10% | 36.984 | 27.948 | 20.872 | 27.450 |
| | +10% | 36.945 | 27.926 | 20.854 | 27.419 |
| | +25% | 36.916 | 27.909 | 20.840 | 27.395 |
| Amend balancing plan in future | -25% | 36.974 | 27.937 | 20.863 | 27.442 |
| | -10% | 36.968 | 27.937 | 20.863 | 27.437 |
| | +10% | 36.961 | 27.937 | 20.863 | 27.431 |
| | +25% | 36.955 | 27.937 | 20.863 | 27.426 |
| *Benefits* | | | | | |
| Reduction in disputes over balancing | -25% | 36.930 | 27.902 | 20.834 | 27.406 |
| | -10% | 36.951 | 27.923 | 20.851 | 27.423 |
| | +10% | 36.979 | 27.951 | 20.875 | 27.445 |
| | +25% | 36.999 | 27.972 | 20.892 | 27.462 |
| Efficiency benefits | -25% | 24.797 | 18.202 | 12.939 | 17.654 |
| | -10% | 32.097 | 24.043 | 17.694 | 23.522 |
| | +10% | 41.832 | 31.831 | 24.033 | 31.346 |
| | +25% | 49.133 | 37.672 | 28.787 | 37.215 |
| Discount rate | 6% | 46.107 | 34.905 | 26.893 | 35.357 |
| | 12% | 33.237 | 25.095 | 18.437 | 24.248 |

Notes: In 2009 dollars
Source: NZIER

This sensitivity analysis highlights how robust the CBA's findings are. Throughout the sensitivity analysis, all four scenarios remain of positive net benefit, scenario 1 retains the highest net benefits and scenario 3 the lowest. The difference between scenarios 2 and 4 remains small, but only if the discount rate is reduced to 6% does scenario 4 become preferable to scenario 2 (given that scenario 4 has higher initial development and implementation costs, but also higher ongoing annual benefits, once participative regulation is implemented, which have higher present values the lower the discount rate).

If ICD could be just as effective as participative regulation in achieving improved balancing arrangements and therefore the same magnitudes of efficiency benefits and avoided dispute costs, scenario 2 would provide the highest net benefits ($37.672 million), closely followed by scenario 1 ($36.965 million). Scenarios 3 and 4 would be significantly, and similarly, inferior ($28.787 million and $27.434 million respectively). In this case, ICD would become the superior alternative provided that it could be agreed by December 2009 and implemented by October 2010, but, if it could not, implementing participative regulation would be significantly superior to extending the ICD process regardless of whether or not this process was successful.

The findings of the sensitivity analysis therefore indicate that market participants can be very confident that the improved balancing arrangements would provide net benefits and that these net benefits would be higher if policy proposals could be agreed by the end of 2009, significantly more so under participative regulation unless ICD would be just as effective in achieving improved balancing arrangements.