Final Recommendation on 10 October 2014 MPOC Change Request

Date issued: 28 April 2015

GAS INDUSTRY COMPANY LIMITED

About Gas Industry Co.

Gas Industry Co is the gas industry body and co-regulator under the Gas Act. Its role is to:

- develop arrangements, including regulations where appropriate, which improve:
  - the operation of gas markets;
  - access to infrastructure; and
  - consumer outcomes;
- develop these arrangements with the principal objective to ensure that gas is delivered to existing and new customers in a safe, efficient, reliable, fair and environmentally sustainable manner; and
- oversee compliance with, and review such arrangements.

Gas Industry Co is required to have regard to the Government's policy objectives for the gas sector, and to report on the achievement of those objectives and on the state of the New Zealand gas industry.

Gas Industry Co's corporate strategy is to 'optimise the contribution of gas to New Zealand'.

Executive summary

Maui Development Limited (MDL) has requested a change to the Maui Pipeline Operating Code (MPOC) to introduce a market-based balancing (MBB) regime on the Maui pipeline. The MBB change request (MBBCR) involves daily Cash-Out of pipeline users with excess imbalance. It also allows for trading of Balancing Gas on a wholesale trading platform, such as the emsTradepoint market.

The role the MPOC prescribes for Gas Industry Co in considering MPOC changes does not allow for a proposed change to be amended, or to be rejected because there is a better alternative, or to be conditional on changes to other industry arrangements. Gas Industry Co only considers the change request against the status quo and either supports it or not, following appropriate industry consultation and having regard to the objectives in section 43ZN of the Gas Act.

Accordingly, this Final Recommendation is the end result of a process of consultation, consideration and analysis carried out pursuant to clause 29.4(a) of the MPOC and having regard to the Memorandum of Understanding dated 5 October 2006 between Gas Industry Co and MDL, and the objectives under section 43ZN of the Gas Act 1992 and in the GPS.

On 25 February 2015, Gas Industry Co published a Draft Recommendation[1] supporting the MBBCR and called for submissions. Workshops were held on 10 March 2015 in Wellington and on 11 March 2015 in Auckland to discuss the Draft Recommendation, including the accompanying Cost-Benefit Analysis (CBA) prepared by independent expert Dr John Small of Covec. We received thirteen written submissions on the Draft Recommendation. Gas Industry Co and Covec have now carefully considered all verbal and written feedback.

The revised CBA is attached as Appendix B. It concludes that:

> While there is a small risk of a negative static efficiency effect we consider that it is outweighed by the dynamic efficiency benefits so that the net economic effect of MBB is positive.

Gas Industry Co's revised analysis in this Final Recommendation takes account of the CBA. It also takes account of submitter views that implementing daily Cash-Outs:

- may not increase the amount of primary balancing;
- would accentuate flaws in downstream allocation arrangements; and
- could raise barriers to new-entrant retailers.

[1] http://gasindustry.co.nz/dmsdocument/4879

However, overall we believe there would be broad alignment with the Gas Act objectives and that implementing the MBBCR would otherwise improve the current arrangements. In particular, we conclude that implementing the MBBCR would:

- improve the quality of primary balancing;
- enable more efficient balancing gas procurement; and
- improve price signals by directing costs towards pipeline users who make more use of pipeline flexibility.

On the basis of our analysis of the MBBCR, all the information provided to us, and with due consideration of the objectives in the Gas Act and the GPS and the revised CBA, this Final Recommendation supports the MBBCR.

A key feature of the MBBCR is MDL's proposed 'soft landing' that provides increased tolerances for Cash-Outs during a transition period. MDL has confirmed that the increased tolerances will apply for a period of 18 months following implementation.

Recognising concerns expressed in submissions, relating to the information and tools available to pipeline users to mitigate imbalance risk, and that submitters have been entitled to await this Final Recommendation (and potentially the outcome of other outstanding issues) before taking action, we are concerned that implementation should now be as smooth as possible. Gas Industry Co will progress a proposed 'D + 1' trial and we urge the industry to support this work.

In the wider context of the industry's struggle to improve balancing arrangements, the introduction of daily Cash-Out seems reasonable. Stakeholders generally opposed the balancing rules we proposed in 2009 and, although they could not agree an alternative solution through an 'Industry Code Development' process, they successfully lobbied for more time to find a solution. MDL's subsequent initiatives – the 2011 B2B proposal and the 2014 MBB proposal – were both also generally opposed by stakeholders. A number of submitters continue to argue that a better (but unspecified) 'collaborative solution' ought to be found. We are not persuaded that this is realistic, including because ongoing disagreement reflects the fact that economic interests of stakeholders do not align. The MBB proposal is not ideal, but its central element – daily Cash-Out – is common international pipeline practice; it makes good sense from the perspective of pipeline operations and economics; and it broadly aligns with the Gas Act objectives.

Contents

1 Introduction

1.1 Purpose

This paper presents Gas Industry Co's Final Recommendation on the MPOC MBBCR submitted by MDL on 10 October 2014. This proposes new arrangements for managing differences between nominated and actual flows, known as 'imbalance'.

The MBBCR, Gas Industry Co's Draft Recommendation, including a Cost-Benefit analysis, and all submissions and cross submissions are available on Gas Industry Co's website at http://gasindustry.co.nz/work-programmes/mpoc-change-requests/mpoc-change-request-october-2014-market-based-balancing/

Unless otherwise noted, capitalised terms used in this Final Recommendation have the same meaning given to those terms in the MPOC. A glossary of terms is provided at the end of this report.

1.2 Proposed Change

The MBBCR is more fully described in the Draft Recommendation. In essence, it proposes to change how MDL will buy and sell Balancing Gas (i.e. gas to manage Line Pack) and to replace the existing ILON process with automatic daily Cash-Out of excess imbalance. Associated changes relate to the Balancing Agent's role, peak and daily tolerances, the Transmission Pipeline Welded Party's (TPWP) Balancing Gas scheduling rights, and the Incentives pool.

1.3 Process to date

Prior to submitting the MBBCR, MDL engaged with stakeholders to discuss its balancing proposals, including issuing discussion papers, holding workshops and receiving submissions on a draft of the MBBCR.

MDL finalised the MBBCR and submitted it for Gas Industry Co's consideration on 10 October 2014. Gas Industry Co called for submissions on the MBBCR and, in preparation for considering the costs and benefits of the proposal, issued a report prepared by its economic advisor, Covec, entitled *Daily Cash-Outs on Maui Pipeline: Outline of a Cost-Benefit Analysis*. This report was discussed at an industry workshop held on 5 November 2014, at which John Small of Covec sought feedback on his initial thoughts about the appropriate frame of reference for the analysis and categories of costs and benefits.

15 submissions on the MBBCR were received and on preliminary review of these Gas Industry Co considered that cross-submissions were necessary. All those who made submissions on the MBBCR also made cross-submissions except for Genesis Energy Limited.

Following consideration of submissions and cross-submissions on the MBBCR, including the CBA developed by independent expert Covec, we concluded that the MBBCR would promote the relevant objectives in Part 4A of the Gas Act 1992, and generally improve the efficiency of gas transport arrangements relative to the status quo. The Draft Recommendation supporting the proposal was issued on 25 February 2015. Workshops on that Draft Recommendation, including its accompanying Cost-Benefit Analysis, were held on 10 March 2015 in Wellington and on 11 March 2015 in Auckland.

13 submissions on the Draft Recommendation were received, and are summarised in Section 2.

Following consideration of the submissions on our Draft Recommendation, Covec updated the CBA and Gas Industry Co has now updated its analysis and arrived at a Final Recommendation.

All material relevant to the MBBCR can be accessed at http://gasindustry.co.nz/work-programmes/mpoc-change-requests/mpoc-change-request-october-2014-market-based-balancing/

2 Submissions on Draft Recommendation

2.1 Summary of submitter views

The 13 submissions on the Draft Recommendation were from:

- Carter Holt Harvey Pulp and Paper Limited (CHH);
- Contact Energy Limited (Contact);
- emsTradepoint (Transpower New Zealand Limited);
- Genesis Energy Limited (Genesis);
- Greymouth Gas New Zealand Limited (Greymouth);
- Major Gas Users Group (MGUG) ;
- Maui Development Limited (MDL);
- Mighty River Power Limited (MRP);
- New Zealand Steel Limited (NZ Steel);
- Nova Energy Limited (Nova);
- Shell Exploration NZ Limited (Shell);
- Trustpower Limited (Trustpower); and
- Vector Limited (Vector).

A summary of submissions is provided in Appendix A. Full submissions are available at the Gas Industry Co website.

Broadly, submissions aligned with previous submissions and cross submissions on the change request:

- CHH supports pipeline users paying for costs they impose, but is highly uncertain about what effect MBB would have on them. If the MBBCR is approved there needs to be monitoring and a post-implementation review;
- Contact continues to oppose the proposal, believing it will be too costly and detrimental to primary balancing. It suggests that at least 6 months' implementation notice will be needed if it is supported;
- emsTradepoint continues to support the proposal, and offers further arguments in support;
- Genesis continues to oppose the proposal, believing that the CBA has ignored substantial costs;

- Greymouth continues to oppose the proposal and lists a range of perceived process shortcomings, new information and analytical mistakes that need to be considered;
- MDL supports its proposal and the Draft Recommendation but suggests that Covec and Gas Industry Co have not sufficiently recognised all of the efficiency benefits;
- MGUG continues to believe that the proposed change is substantial and the uncertainty of outcomes is high;
- MRP continues to oppose the proposal while balancing tools are missing. It suggests that D+1 work must become a priority if the MBBCR is supported;
- NZ Steel continues to believe that balancing requires a pan-industry agreement. If the MBBCR is approved there needs to be monitoring and a post-implementation review;
- Nova believes that the net benefit of MBB is barely, if at all positive. It considers better results would be obtained by working through the balancing issues, D+1 and OATIS replacement in a coordinated way;
- Shell supports the MBBCR and believes that the un-quantified benefits should be quantified if the decision to support the change is in doubt;
- Trustpower continues to oppose the proposal, believing that the costs have not been properly recognised in the Cost-Benefit Analysis. If the MBBCR is to go ahead time must be allowed for the development of tools to manage the changes; and
- Vector continues to oppose the proposal, believing that a single unified balancing arrangement across both pipeline systems is the best way to effectively resolve balancing issues and provide the necessary information and tools to all participants.

2.2 Layout of Final Recommendation

In this Final Recommendation:

Section 3 deals with process or legal issues.

Section 4 considers submitters' views on the Draft Recommendation.

Section 5 draws the analysis together in an overall evaluation.

Section 6 is Gas Industry Co's Final Recommendation on the MBBCR.

Appendix A provides a summary of submissions on the Draft Recommendation.

Appendix B attaches the final CBA.

To avoid duplication, matters relating to the CBA are only dealt with in the final CBA in Appendix B, except where they raise broader issues and where considered in our overall evaluation in section 5.

2.3 Evaluation criteria

As discussed in section 3 below, the MoU provides that in assessing code change requests Gas Industry Co will:

a) have regard to relevant objectives specified in section 43ZN of Part 4A of the Gas Act; and
b) prepare, consult on and take account of comments received in relation to an assessment of costs and benefits.

We have also taken account of other material considerations.

Item (a) is dealt with below and in section 5.

Item (b) is dealt with in section 1.3, Appendix B and section 5.

Item (c) is dealt with in sections 4 and 5.

Section 43ZN objectives

Under section 43ZN of the Gas Act, the principal objective of Gas Industry Co (in recommending gas governance regulations and rules under section 43F) is to:

'…ensure that gas is delivered to existing and new customers in a safe, efficient, and reliable manner.'

In addition, the other Gas Act objectives Gas Industry Co considers are relevant to our evaluation of the MBBCR are:

- the facilitation and promotion of the ongoing supply of gas to meet New Zealand's energy needs, by providing access to essential infrastructure and competitive market arrangements;
- barriers to competition in the gas industry are minimised;
- incentives for investment in gas processing facilities, transmission, and distribution are maintained or enhanced;
- delivered gas costs and prices are subject to sustained downward pressure;
- risks relating to security of supply, including transport arrangements, are properly and efficiently managed by all parties;
- consistency with the Government's gas safety regime is maintained; and
- the MoU between Gas Industry Co and MDL specifically requires us to consider these objectives.

GPS objectives

There are also several objectives sought by the GPS that MDL and Greymouth has suggested are relevant.

In particular, MDL suggests[2] that the objective listed in paragraph 12(c) is relevant:

- the full costs of producing and transporting gas are signalled to consumers;

And Greymouth suggests[3] that GPS s12(a), (b) and (d) are also relevant:

- energy and other resources used to deliver gas to consumers are used efficiently;
- competition is facilitated in upstream and downstream gas markets by minimising barriers to access to essential infrastructure to the long-term benefit of end users;
- the quality of gas services where those services include a trade-off between quality and price, as far as possible, reflect customers' preferences.

We agree that these are relevant considerations and have included them in our evaluation.

[2] MDL submission on Draft Recommendation paragraph 23
[3] Greymouth submission on Draft Recommendation p15-16

3 Process and Legal Issues

In this section we address process and legal issues raised in workshops held and submissions received since the Draft Recommendation was issued. This supplements discussion of other process and legal issues in section 2 of the Draft Recommendation.

3.1 Weighting given to Cost Benefit analysis

One question asked at the 11 March 2015 workshop in Wellington was what weighting Gas Industry Co put on the Cost-Benefit Analysis. The Memorandum of Understanding that governs Gas Industry Co's role in considering MPOC change requests provides for the following *inter alia*:

a) Gas Industry Co shall

- prepare an analysis of the issues under consideration, including (unless GIC is satisfied that the issues are minor and will not aversely [sic] affect the interests of an industry participant in a substantial way) a CBA;
- make that analysis available to MDL, Parties and the wider industry for comment (if necessary, as part of a wider consultation process); and
- take any such comments into account as part of its decision making process.

b) 'In performing [its role under the MoU] Gas Industry Co shall also have regard to the objectives specified in section 43ZN of the Gas Act.' In our view a preference for economically efficient outcomes underlies the objectives in section 43ZN of the Gas Act, so the Cost-Benefit analysis also informs our consideration of whether the MBBCR will further those objectives.

The MOU is not intended to create legally binding obligations, but otherwise provides scope for Gas Industry Co to consider what other considerations are relevant, and what weight should be given to all relevant considerations. In this case, we consider that assessment of costs and benefits is important to our overall analysis, and it is for this reason that we have retained Covec to provide a more detailed and independent expert assessment. That assessment is considered along with other relevant considerations in our response to submissions on the Draft Recommendation (section 4 below) and our overall assessment supporting the Final Recommendation (sections 5 and 6 below).

3.2 Vector's material adverse effect notice/Treatment of Cash-Out costs

In Vector's 13 January 2015 cross-submission on the MBBCR it noted that it was preparing a 'material adverse effect' (MAE) notice under its interconnection agreement with MDL. In the

Draft Recommendation Gas Industry Co suggested[4] that '… if Vector believes it is material to Gas Industry Co's consideration of the MBBCR, it may wish to disclose the basis of that notice in a submission on this Draft Recommendation.'

In its submission on the Draft Recommendation, Vector advised that on 27 March 2015 it issued the MAE notice to MDL. As set out in the Draft Recommendation, '[w]hile relevant to balancing issues generally, these concerns should not preclude Gas Industry Co from making its recommendation on the MBBCR.'

3.3 How does Gas Industry Co weigh competing objectives in the Gas Act?

Trustpower submits that the MBBCR is detrimental in relation to the Gas Act's objective to minimise barriers to competition in the gas industry. As set out in section 5 below, we acknowledge that there is some merit in Trustpower's submission. This raises a question about how Gas Industry Co should assess a change request which could promote some Gas Act objectives but negate others.

As noted above, the MOU requires us to have regard to the objectives specified in section 43ZN of the Gas Act. Gas Industry Co applies essentially the same test to any gas governance arrangements we propose under Part 4A of the Gas Act.

Neither the MOU nor the Gas Act specifies how an assessment would work where multiple objectives are relevant, with both positive and negative outcomes. The number and broad nature of the objectives mean that this situation can be expected to occur, and that an overall assessment is required. For example, it cannot be the case that a 'small' negative assessment against one objective could effectively veto a 'large' supportive assessment of several other objectives. We therefore have to balance these objectives.

Trustpower's submission is discussed in more detail in section 4.8 below and in the Covec CBA attached as Appendix B.

3.4 Greymouth Gas process concerns

Greymouth Gas's submission raises several concerns about process.

First, it submits that Gas Industry Co should have consulted on the CBA earlier and before the Draft Recommendation.

Dr John Small participated in three workshops which discussed a proposed framework for the CBA and the initial CBA published with the Draft Recommendation. He then considered submissions on the Draft Recommendation in preparing the final CBA attached to this Final Recommendation. We are satisfied that consultation has been appropriate to inform development of the final CBA. Gas Industry Co has also had appropriate opportunity to review the CBA (framework, initial and final) in preparing the Draft and Final Recommendations.

[4] Draft Recommendation s2.2

Greymouth Gas also submits that there has been insufficient consideration of the matters Gas Industry Co sought further information about in cross-submissions on the MBBCR. In seeking those further submissions, Gas Industry Co wanted to hear further about matters raised in the prior submissions by other parties, and identified several areas of particular interest. We were able to satisfactorily assess all matters raised in both submissions and further submissions in making the Draft Recommendation. We have subsequently had the benefit of workshops and submissions discussing the Draft Recommendation. We have had very full opportunity to consider all matters raised.

Greymouth Gas requests a summary of 'the level and quantum of debate and thoughtful challenge that its board gave to the DR'. We confirm that Gas Industry Co's Board of Directors delegates the determination of MPOC change requests to the Board's Independent Directors Committee, and that the Committee has approved both the Draft Recommendation and Final Recommendation in this case. It is not Gas Industry Co's practice, nor that of any other comparable body we are aware of, to disclose directors' discussions in preparation of decisions. Nor would such disclosure be in the interests of 'debate and thoughtful challenge' for such decision making bodies. The Final Recommendation essentially needs to speak for itself. Gas Industry Co's Independent Directors' Committee (IDC) has approved its release and we are satisfied that all relevant matters have been appropriately considered.

4 Submitter views on Draft Recommendation analysis

In this section we consider the matters raised in submissions on the Draft Recommendation. As far as possible we do not repeat the analysis of submissions on the MBBCR that we set out in the Draft Recommendation. However, we occasionally reference the Draft Recommendation analysis where it appears that submitters have overlooked it.

4.1 What is the problem?

What submitters say

CHH voices[5] frustration that the Draft Recommendation does not contain a problem definition.

GIC comment

Section 1.3 of the Draft Recommendation pointed out that the MPOC code change process does not require a problem definition. However, we noted[6] that:

> In Paragraphs 17 to 27 of its cross-submission MDL draws together the strands of why it considers that pipeline balancing remains a problem. We agree with MDL's summary.

So, although there is no obligation on MDL to define a problem, we believe it has done so and, as we stated, Gas Industry Co agrees with that definition.

Also, the Covec CBA described[7] the problem from an economic perspective:

> The core weakness in the current arrangements is that the ILON process gives quite weak incentives for primary balancing because of the time allowed to correct excess imbalance positions. This has two initial economic effects. It increases the cost of secondary balancing by the pipeline operator, both through the purchase or sale of balancing gas and also through extra use of compressors to manage the pipeline. Additionally, the costs of secondary balancing are not always allocated to the parties whose conduct caused them; this causes a further incentive problem, which reinforces the tendency towards insufficient primary balancing. There may also be a third effect, which is that the physical conditions on the pipeline may inefficiently increase upstream production costs.

[5] CHH submission on Draft Recommendation p1
[6] Draft Recommendation s5.8
[7] Draft Recommendation Appendix B p9

4.2 Are over-pressure incidents really a concern?

What submitters say

Trustpower observes[8] that while incidents of the pipeline operating outside the Target Taranaki Pressure do occur on 50% of days, there have only been 15% of hours beyond target since 2013. It considers that this does not justify imposing wholesale change to the industry, particularly when the costs are borne by downstream participants, and are not recognised in the Cost-Benefit Analysis.

GIC comment

We specifically asked that cross-submissions on the MBBCR comment on the cost of high-pressure situations and the extent to which implementing the MBBCR may reduce high-pressure situations. Submitters did not provide any material information on the cost of high-pressure incidents[9], and there was a range of views on how MBBCR might influence the frequency of incidents. Significantly MDL noted[10] that the MBBCR would not resolve all pipeline pressure incidents, nor was it intended to. MDL considered that the magnitude of any improvement was partially dependant on factors outside the MPOC and beyond MDL's control.

On p43 of the Draft Recommendation we set out our conclusion that, if the MBBCR was introduced, there would still be times when market changes would not be reflected in nominations quickly enough, or when the incentives are not strong enough, or when extraneous factors such as take-or-pay come into play. Any one of these could give rise to significant imbalances, with the potential to lead to over-pressure incidents. So we agreed with submitters that the proposal would not necessarily improve all high-pressure situations, but considered that it would prevent pipeline users from accumulating imbalance in the pipeline which should lead to fewer excursions from the Target Taranaki Pressure envelope of 42 to 48 bar.

Our understanding is that overpressure incidents can potentially trip production stations and that this is a significant concern for gas producers, but none has submitted on the cost consequences of that. Nevertheless, it seems to us that a 15% breach rate of an operating parameter is something that should raise a red flag.

Overall, while we recognise that over-pressure incidents are of concern, the absence of cost information and uncertainty around outcomes mean that we have not counted a reduction in over-pressure incident as being a significant benefit if MBBCR were implemented.

[8] Trustpower submission on Draft Recommendation s4.1

[9] Although Greymouth's submission on Draft Recommendation p5 recognises that, if over-pressure incidents are reduced, there would be a reduction in flaring due to plant trips and an increase in product control. Greymouth was unconvinced that this would translate into greater reserves.

[10] MDL cross-submission on MBBCR paragraph 87-90

4.3 What is the purpose of the adjustment factor?

What submitters say

CHH considers[11] that it is not clear what the purpose of the adjustment factor is, and asks that our Final Recommendation addresses '…the specific circumstances under which any adjustment factor is applied and if any change is made to this factor'.

GIC comment

We consider that MDL has clearly stated[12] the purpose of the adjustment factor:

> The purpose of the adjustment is to incentivise primary balancing.

We elaborated on this in Draft Recommendation s2.4:

> … we agree with Covec that by pushing the Cash-Out prices somewhat away from market clearing prices, the adjustment factor would provide an incentive to improve primary balancing. Without the adjustment factor, Cash-Out gas would be priced at the prevailing market price leaving pipeline users indifferent as to whether they were cashed-out or not. And while the adjustment factor is not strongly related to specific costs, it does generally signal that park and loan services are not costless.

Regarding the circumstances under which the adjustment factor applies, this is most easily seen in the emsTradepoint diagram that we reproduced as Figure 6 of the Draft Recommendation, and reproduce below for convenience (the square bracketed '0-10%' refers to the adjustment factor):

[11] CHH submission on Draft Recommendation p2
[12] MDL submission on MBBCR Application, paragraph 182

We also described how the factor would apply in Draft Recommendation s4.3 p36:

> The adjustment would be a percentage of the Sell or Buy Price (and could be different for each) (MPOC s12.12(d)), would be posted on the BGIX at least a Day before the Cash-Out (MPOC s4.4), and would not exceed 10% (MPOC s12.12(e)).

The reasonableness of the adjustment factor is also discussed in Draft Recommendation s4.3 p41

Regarding possible future changes to the adjustment factor, MDL has noted[13] that:

> …MDL will be guided by this in approaching the task of setting the adjustment percentage factor upon implementation of the new regime.

Aside from the 10% limit and the overarching MPOC requirement that MDL act as a Reasonable and Prudent Operator, there would be no specific constraints on how MDL could adjust the factor. However, MDL has reaffirmed[14] that the adjustment factor will initially be set in the 2.5-4% range. It should also be borne in mind that revenue from the adjustment factor will be washed-up into a tariff adjustment in the next year.

Overall, we consider that the purpose and operation of the adjustment factor are clear.

[13] MDL submission on MBBCR Application, paragraph 11
[14] MDL submission on Draft Recommendation paragraph 20

4.4 Is it unreasonable to incentivise mass market shippers if they do not have the tools to respond to those incentives?

What submitters say

Trustpower notes[15] that mass market shippers only know their positions when the initial allocations are available in the following month. While the MBBCR would increase balancing costs to these shippers, absent D+1, there will be no new information to improve balancing performance. And obtaining better metering information is not a practical solution for the mass market[16].

Even NZ Steel, a major user, noted[17] that it would not have reasonable time to correct its position on the day.

Several submitters make similar points, generally considering it unfair to impose costs on shippers who have no ability to respond.

MDL on the other hand notes[18] that:

> If a party has a relative inability to manage volatility, then under the status quo that will impose relatively higher costs on the pipeline user community – and, as a matter of allocative efficiency, that party should bear those costs (creating an incentive to reduce them).

GIC comment

Balancing behaviour will not improve unless there are appropriate incentives. However, this is a necessary but not sufficient condition: it does not guarantee improvements. It could be that the tools to enable improvements (such as metering data, D+1 and suitable nomination cycles times) are not available, or there may be insufficient time to use those tools, or the cost of developing/implementing the tools may not be justified. For example, we accept Trustpower's view that it will not be economic to install smart meters at every residential ICP. The incentives would be much too weak to justify the cost. However, this does not mean that the incentives would be too weak to cause <u>any</u> improvement to mass market shipper performance.

Retailers are always looking for ways to cut costs, and will invest in improvements where they see an opportunity to reduce costs and become more competitive. They might, for example, choose to install only a few smart meters, just sufficient to get statistically significant real time feedback on demand. Or they might develop better algorithms for predicting demand. It may not be economic to do all of these things, but without an incentive these options wouldn't even be investigated.

Nor do we consider that mass market shippers face an unfair cost incentive. MBBCR will direct balancing costs towards those who require flexibility. And we believe that it is fair that whoever

[15] Trustpower submission on Draft Recommendation s2.3
[16] Trustpower submission on Draft Recommendation s3.4 estimates the cost of installing and reading smart gas meters to be $20/ICP/annum
[17] MDL submission on Draft Recommendation paragraph 4
[18] MDL submission on Draft Recommendation paragraph 16

uses flexibility should pay for it. It should not matter whether the flexibility is used because a shipper chooses to use it, or because it has no economic alternative but to use it.

We therefore consider that it is reasonable to have a cost-reflective incentive, even where the tools to respond to those incentives are not currently in place. We understand MDL's planned implementation date will be extended to 1 October which allows additional time for development of such tools, and the 'soft landing' will also be of assistance.

4.5 Could MBBCR cause primary balancing to get worse, or at least not improve?

What submitters say

Trustpower thinks[19] that shippers will have no new information, so will have little justification for revising nominations.

Genesis considers[20] that because participants will no longer be able to correct their positions on the day after gas flow, fewer participant-initiated corrections will occur leaving MDL to make those corrections. Balancing gas volumes will therefore increase significantly.

Contact foresees similar results[21] and notes that, if primary balancing is reduced in favour of market Cash-Outs, this would defeat the objective of the MBBCR.

NZ Steel also believes[22] that daily Cash-Out can reduce primary balancing (and makes confidential reference to its own supply contract to illustrate why this might apply to NZ Steel).

Greymouth believes[23] that more frequent Cash-Outs reduce the incentive on shippers to maintain balance because they will instead minimise their costs by simply passing the Cash-Outs on to end-users. (Although Greymouth says it has yet to decide if this is what it will actually do.)

GIC comment

Although we believe that incentives are necessary, and will bring a behavioural response, we also accept the view that shippers would not be able to correct their balance positions on the day of gas flow to the same extent they can over the ILON grace period.

However, we think there are two aspects to primary balancing; quantity and quality. The quantity of primary balancing is the amount by which it will improve a pipeline user's balance position. The quality of primary balancing is the overall effect it has on the physical balance across the pipeline. We believe that some pipeline users will have less opportunity to balance, but those that can will be incentivised to do so, and will do so in a time frame that is relevant to the physical balance on the pipeline.

[19] Trustpower submission on Draft Recommendation s2.3
[20] Genesis submission on Draft Recommendation p 1-3
[21] Contact submission on Draft Recommendation p2 'Cost benefit analysis' section
[22] NZ Steel submission on Draft Recommendation paragraph 4
[23] Greymouth submission on Draft Recommendation p5

We think all pipeline users will have an incentive to pay more attention to the balance positions at each Welded Point as the day progresses. For some pipeline users, this is all they may do. Others may decide to do more. Consider the individual market segments:

- For the segment of the market that has metering with telemetry, retailers would weigh up the possible reduction in Cash-Out costs against the cost of more frequently monitoring end user meters and re-nominating as better information comes to hand.
- For the segment of the market that has metering with daily data logging capability, but no telemetry, retailers would weigh up the possible reduction in Cash-Out costs against the cost of more frequent data collection (by, for example, installing telemetry or asking end users to provide meter readings) and re-nominating.
- For the segment of the market that has metering without any data logging or telemetry, retailers would weigh up the possible reduction in Cash-Out costs against the cost of obtaining better predictive algorithms (possibly involving statistical sampling and predictive software).

We know that a significant proportion of end user meters can be interrogated through telemetry (see Figure 1) but it does not follow that retailers supplying this segment will judge more monitoring to be profitable. And while improvements in the other market segments are possible, such improvements would take time to achieve, even if they were justified. In short, shippers may consider that the least cost option is to estimate their demand as they do now ('give it their best shot'), but not to attempt to improve that estimate before the Cash-Out occurs.

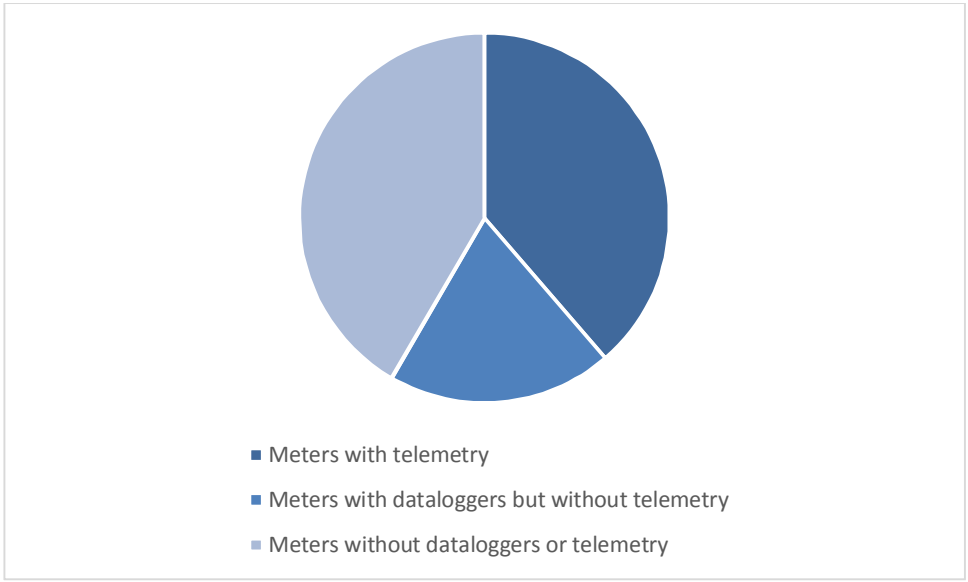


Figure 1 - Meter types downstream of TPWPs by consumption volume (Oct 13 – Sept 14)

However, although the amount of primary balancing activity may decrease, it will be of a higher quality because it will occur 'on the day'. As a result, it may well be that less residual balancing is necessary. The need for residual balancing arises from the physical condition on the pipeline. Because of the ILON arrangements, the link between primary balancing and the physical situation on the pipeline is weak. For example, the graph in Vector's submission on the Draft

Recommendation shows how at present some primary balancing simply involves moving imbalance from one welded point to another without altering the overall physical position of the pipeline. Also the ILON grace period currently allows some primary balancing actions to cause more (rather than less) residual balancing[24]. So the quality of primary balancing is poor.

According to MDL[25]:

> … we expect [implementation of the MBBCR] would improve primary balancing performance – and that, in turn, will decrease net balancing costs paid by end users.

We think that is a realistic expectation because, although the amount of primary balancing is likely to decrease its quality should increase. Whatever the outcome, we believe that from a pipeline operations perspective the correct time frame would apply (ie a day rather than the ILON grace period) and, from an economic perspective, costs will be directed toward those pipeline users who make more use of flexibility (ie: are not so good at forecasting demand).

Our conclusion is that the short time frame and the absence of balancing tools may result in a lower quantity of primary balancing, but the primary balancing that does occur will be more relevant to physical balance on the pipeline.

4.6 Would the combination of the MBBCR with existing poor reconciliation outcomes give inefficient results?

What submitters say

Trustpower observes[26] that in some instances the quality of reconciled information is of such a poor standard that it could lead to inefficient Cash-Outs if MBB is introduced. Trustpower cites an example where the consumption assigned to a gate station residual profile is clearly incorrect, and would probably not be an issue with current balancing cost allocations (because Cash-Outs would be less frequent), but with MBB it would likely result in an inefficient Cash-Out (since they arise out of a mis-allocation of quantities between shippers rather than an overall imbalance).

Trustpower suggests that problems in the reconciliation system need to be ironed out or MBB will lead to inefficient outcomes.

GIC comment

We note that Cash-Outs will only occur where there is overall excess imbalance at a TPWP, and this depends on the aggregate pipeline position, not on individual shippers' downstream mismatches. So Trustpower's example would not necessarily result in a Cash-Out. However, we accept that Cash-Outs would likely be much more frequent under MBB, so any incorrect downstream allocation would result in more mis-allocated balancing cost than before.

While mis-allocation can arise from errors, it can also arise from the inherent inaccuracy of meters. In situations where shippers supply end users on a distribution system that is

[24] For example, an imbalance may require a balancing action to be taken and then, after the imbalance is cleared later in the ILON grace period, a second balancing action may be required to reverse the first balancing action.
[25] MDL submission on Application paragraph 4
[26] Trustpower submission on Draft Recommendation s3

dominated by a single large customer, allocation results can be volatile. The gate meter and the large customer meter may both be within the accuracy tolerance of +/-2% but if the inaccuracies are in opposite directions the errors will be magnified when the residual profile is calculated.

For example, suppose the true demand on a distribution network was 90 units consumed by a large user and 10 units consumed by the mass market. If the gate meter was reading 1% fast, it would record 101 units. If the large user meter was reading 1% slow it would record 89 units (approximately). The reconciliation arrangements will assign the difference between the gate meter and the large user meter to the residual profile (to be allocated among mass market users). In the example, the residual amount is 101 units less 89 units, ie 12 units. This is 20% more than the 10 units actually consumed by the mass market.

If there is a Cash-Out then some of the mass market shippers may receive a greater share of that Cash-Out because of the reconciliation rule, rather than because the shipper was responsible for any physical imbalance. While this is a problem at present, we expect that Cash-Outs would be much more frequent if the MBBCR is implemented, so the incidence of these issues would also be more frequent.

We conclude that implementing the MBBCR would exacerbate the consequences of poor 'bottom-up' reconciliation. However, to the extent that a top-down D+1 process is implemented, the effects of individual errors and inaccuracies as described above will become less relevant.

4.7 Would daily allocation become a necessity?

What submitters say

MRP argues[27] that a daily allocation arrangement would be essential if daily Cash-Out is to be introduced, so the cost of this should be included in the CBA.

GIC comment

MRP notes[28] that it has been arguing for a D+1 reconciliation arrangement since 2008. It considers that:

> The introduction of a Daily Cash-Out (DCO) arrangement without the coordinated implementation of a daily allocation arrangement, does not improve current arrangements in any meaningful way, on the contrary it introduces more uncertainty and inaccuracy. DCOs should only be introduced together with or after the implementation of a daily allocation arrangement. To introduce DCOs in advance of a daily allocation arrangement will create and compound the current inefficiencies in the balancing gas arrangements.

We agree with MRP that the effectiveness of daily Cash-Out would be improved by a daily allocation arrangement, and that implementing the MBBCR would exacerbate the consequences of poor reconciliation (see s4.6). However we think that it is going too far to say that MBBCR

[27] MRP submission on Draft Recommendation p3
[28] MRP submission on Draft Recommendation p1-2

without a daily allocation arrangement would 'create and compound the current inefficiencies'. We consider (see s4.4) that it is efficiency-enhancing for pipeline users who make use of the pipeline flexibility arrangements to pay for them, whether they use them by choice or necessity. We also consider (see s4.5) that primary balancing should be of better quality (ie be more relevant to the physical balance on the pipeline). As shown in Figure 1, good daily demand information is already available for a substantial proportion of the market.

It follows that daily reconciliation is not essential to obtain these improvements. However, we acknowledge that it would be of value to mass-market retailers and has the potential to further improve primary balancing. In that regard, the deferral of the implementation date is helpful in allowing time to work through a D+1 trial prior to implementation (subject to support from industry participants).

4.8 Would the MBBCR increase barriers to new entrants and/or reduce their ability to compete?

What submitters say

We understand (from workshop discussions and submissions) that many stakeholders believe that barriers to entry will increase because:

- A new entrant is likely to have a very small market share initially and it is more difficult to estimate consumption for a small number of end users (the 'law of large numbers'). A new-entrant will therefore have a greater proportion of Cash-Outs[29]; and
- The combination of applying the adjustment factor to the Average Market Price, and any deviation of the Average Market Price from an efficient price would likely mean that the Cash-Out price includes a cost penalty.

The claim is that the combination of a higher proportion of Cash-Outs and a higher price will significantly reduce new-entrant margins, making entry less attractive.

Vector also considers[30] that MDL's discretion around setting the 0-10% adjustment factor makes cost uncertain, and this could deter entry.

GIC comment

To assess the submitters' views we need to consider the end-to-end process for allocating Cash-Out costs.

On the Maui pipeline daily Cash-Outs apply to excess imbalance at each Welded Point. For a retailer supplying a downstream mass market, the relevant Welded Point is usually one of the TPWPs where gas is delivered from the Maui pipeline and received into the Vector pipeline. The imbalance at such a Welded Point is the difference between the metered quantity on a pipeline and the bundled aggregate of nominations from all shippers receiving gas at the TPWP. At this

[29] Eg; Trustpower submission on Draft Recommendation s2 and Nova submission on Draft Recommendation (c)
[30] Vector submission on Draft Recommendation paragraph 12

point the estimated demands and actual demands of all shippers on a day are bundled together into one single Cash-Out (where the imbalance is beyond the tolerance).

This single daily Cash-Out at the TPWP is allocated to each individual Vector shipper by means of the Balancing and Peaking Pool (BPP) algorithm, contained in the VTC. In essence, where Vector buys gas as a result of a Cash-Out, the gas is allocated to, and its cost is recovered from, all parties with negative mismatch positions on the Vector pipeline in proportion to those negative mismatches.

Since there is normally some diversity on the Vector pipeline, and since only excess imbalance is cashed out, the aggregate negative mismatches will always exceed the quantity of Cash-Out. So, the effect of the diversity and tolerance is that each Vector shipper would only have a portion of its negative mismatch cashed out.

(The same logic applies where the Cash-Out is a purchase of gas from Vector, with that quantity being allocated amongst those Vector shippers with positive mismatch. Again, each Vector shipper would only have a portion of its positive mismatch cashed out.)

Nonetheless, it is true that those Vector shippers who estimate their demand less accurately will receive more of any Cash-Out. From a balancing point of view this makes sense since these users are making more use of the available flexibility and should expect to pay for that service. However, it is also true that this cost is currently largely socialised, so these users would face an increased share of this cost if MBB is introduced.

We conclude that the introduction of MBB would increase the proportion of costs faced by a new entrant mass market retailer. This is because costs would be directed to users who make more use of pipeline flexibility. However, as noted[31] in the CBA, although costs would be higher for new entrants, those that do enter the market will have a greater incentive to compete for a greater market share.

Regarding Vector's concern about MDL's discretion in setting the 0-10% adjustment factor, we acknowledge that this does increase uncertainty for all pipeline users, and that this is a particularly acute issue for a party assessing whether or not to enter the market (given that new entrants are likely to rely more on pipeline balancing). However, we think there are MPOC remedies available to provide redress in the event of any abuse in this direction.

4.9 Would introduction of the MBBCR undermine the development of the GITAWG's congestion management arrangements?

What submitters say

Greymouth believes that implementing the MBBCR would 'knee-cap a highly successful and material market design work stream'[32]. This refers to a demand management proposal being

[31] Appendix B CBA s3.1.9
[32] Greymouth submission on Draft Recommendation p4

developed by the Gas Industry Transmission Access Working Group (GITAWG). Greymouth's specific concerns are that:

- if the interruptible user is curtailed after the final nomination cycle, the supplying shipper will be left with a positive mismatch which could be cashed out; and
- even if the previous point is incorrect, there is sufficient uncertainty to discourage uptake of demand management contracts.

GIC comment

If transmission contracts are being interrupted it is likely to be because demand is so high that the pipeline deliverability is being stretched to its limit. Since Vector would be unlikely to approve a scheduled quantity at a TPWP that would allow such a situation to emerge, it seems likely that shippers in aggregate would be in negative mismatch, ie: aggregate deliveries would be in excess of the Scheduled Quantity. So the Cash-Out would involve MDL selling gas to Vector, and Vector allocating that gas (through the Balancing and Peaking Pool (BPP)) to shippers with negative mismatch. But the shippers Greymouth is concerned about are those who were curtailed too late to revise their supplier nominations, ie those with positive mismatch, and unaffected by the Cash-Out.

The inclusion of the second bullet point suggests that Greymouth understands that it is proposing an extremely improbable scenario. We think that the very small risk involved is unlikely to be sufficient to 'kill off' congestion management as Greymouth claims.

Also, if the scenario proposed was a serious concern it would equally be a concern for existing interruptible contracts. In that case we would have expected Vector or the counter-parties to those contracts to have raised the issue. But, other than Greymouth, no-one has raised an issue.

We conclude that the risk, described by Greymouth, that the MBBCR would 'knee-cap' the congestion management arrangements being developed by the GITAWG rests on extremely improbable scenarios, and is therefore not significant.

4.10 Does emsTradepoint becoming a shipper on the Vector system affect the analysis?

What submitters say

Greymouth suggests that now that emsTradepoint is a shipper on the Vector system it can ship gas from its existing market location on the Vector system to supply participants on the Maui pipeline, thereby allowing MDL to trade balancing gas with it as MDL does with any BGX participant. It says[33]:

> In effect, this removes any remaining arguments from MDL that it needs heightened visibility of emsTradepoint flow vs nominations as MDL could now simply buy/sell from emsTradepoint as a shipper, which would be the same as buying/selling from any shipper or participant on the BGX.

[33] Greymouth submission on Draft Recommendation p5

GIC comment

Shippers do not have access to the BGX and even if they did, we consider it unlikely that emsTradepoint would wish to be a counterparty to each trade between MDL and a Vector shipper.

We conclude that emsTradepoint becoming a Vector shipper should not influence our analysis.

4.11 Would the MBBCR result in an easier and cheaper OATIS replacement?

What submitters say

MRP seeks clarification[34] on why Gas Industry Co believes daily Cash-Out arrangements will provide for an easier and cheaper OATIS replacement.

GIC comment

There was no analysis behind our view. We simply commented that finding a system based on a world-wide standard industry arrangement (daily Cash-Out) would likely be easier and cheaper than building a bespoke system customised to non-standard arrangements (such as ILONs). However, it is not significant to our analysis.

4.12 Would removal of the ILON process improve reconciliation?

What submitters say

Greymouth believes that our view[35] that the removal of the ILON grace period should allow for more accurate, efficient and timely reconciliation of upstream gas quantities is wrong. Greymouth's view[36] is that it would make upstream and downstream gas reconciliation a lot more difficult.

GIC comment

We consider Greymouth is voicing the belief of many shippers who see more complexity emerging from MBBCR. We accept that this is true and acknowledge that the view we presented in the Draft Recommendation was not expressed very well. If the MBBCR is implemented, shipper invoices on the Maui pipeline should be unaffected, but Welded Party invoices would contain more line items (for each daily Cash-Out). For completeness, below we will tease out how the various related transactions would be affected.

Shippers and Welded Parties on the Maui pipeline would still buy and sell gas on the basis of shipper nominations, so these transactions would be unaffected. The work of the Gas Transfer Agent would similarly be unaffected: the quantities of gas Vector shippers buy from Maui shippers will be calculated as before[37].

For Vector and its shippers, however, each Cash-Out will trigger an allocation of the Cash-Out quantity through the BPP. Then, depending on how end-user contracts adapt, there will

[34] MRP submission on Draft Recommendation p3
[35] Draft Recommendation p46
[36] Greymouth submission on Draft Recommendation p14
[37] Although there may be a requirement for the Gas Transfer Agent to generate results daily rather than weekly as at present.

potentially be more transactions between Vector shippers (as retailers) and end-users (their customers).

So implementing the MBBCR would increase transactions. However, our comments were looking from the perspective of pipeline flexibility. Here we think that the replacement of the ILON arrangement with daily Cash-Outs would allow for more accurate allocation of costs to whoever is using that flexibility. This would be more efficient in the sense that those costs are directed to users, rather than being socialised. And this would be more timely in the sense that the use of flexibility is being accounted for daily rather than across the ILON grace period.

4.13 Are there better ways of improving balancing for the mass market?

What submitters say

In its submission on the MBBCR Trustpower reminds us[38] of the view it set out in previous submissions[39] that demand forecasting is best done by a centralised operator rather than by individual market participants:

> In most centralised energy markets it is an accepted fact that demand estimates are most accurate when conducted by a central participant using the largest possible data set. Electricity retailers are not required to provide a forecast of their expected load to the System Operator at Transpower; instead the System Operator provides a centralised forecast of conforming (mass market) load, which allows for the most accurate balancing of the electricity market. Transpower correctly identified that forecasting conforming consumption accurately is difficult, expensive and best done with the largest possible sample size by a central participant. For gas, without the benefits of a pooling structure, participants need the ability to manage moderate imbalances over time, otherwise the cost of imbalance will ultimately be passed on to retail customers who do not know what their day ahead consumption accurately. Requiring small consumers to be balanced each day will add cost and create a significant barrier to entry for any new retailer and ultimately increase to cost to the end user due to increased balancing charges. This is in complete contradiction to the Gas Act 1992 to remove barriers to competition in the gas industry.

GIC comment

We agree that centralised forecasting offers the benefit of a large sample size and avoids aggregation of individual errors and biases. This is not a matter that has been raised in Gas Industry Co's stakeholder discussions on our work programme, so it is unlikely to receive attention in the coming year. However we note that it was a concern referenced in the Pipeline Management Working Group's February 2015 Problem Definition Paper, so perhaps it can be progressed in that forum.

Although we believe that Trustpower has raised an important issue, we do not consider it is within the scope of our MBBCR analysis.

[38] Trustpower submission on CR s2.4
[39] Trustpower cross-submission on MBBCR s2.5

4.14 MDL hasn't done enough to implement market based trading under the current MPOC

What submitters say

Contact believes[40] MDL did not satisfactorily substantiate the issues or look for compromised solutions in order to implement the trading of balancing gas under the current MPOC.

GIC comment

Gas Industry Co only has the power to recommend or not recommend the MBBCR, and it has no power to enforce provisions of the MPOC. A shipper that believes that an MPOC party is not fulfilling its obligations is entitled to raise a dispute under the MPOC.

4.15 Gas Industry Co should more carefully consider regulatory changes

What submitters say

Contact's view[41] is that a relatively simple regulatory change to the procurement of balancing gas should not be overlooked.

GIC comment

Gas Industry Co considers that there is no 'quick fix' regulatory solution. Any regulatory 'solution' would require careful and relatively time consuming design and consultation. In the meantime, Gas Industry Co is required to fulfil its MPOC obligation to consider and recommend or not recommend the MBB CR, based on a comparison with the current MPOC.

[40] Contact submission on CR p2
[41] Contact submission on DR p2

5 Overall evaluation

In this section we summarise our conclusions in relation to each of the evaluation criteria set out in Section 2.3. This overall evaluation draws on our previous Draft Recommendation analysis as well as the further analysis set out in this Final Recommendation.

5.1 Relevant Gas Act s43ZN considerations

Ensure that gas is delivered to existing and new customers in a safe, efficient, and reliable manner

The replacement of the ILON process with daily Cash-Out should better direct costs towards pipeline users who make greater use of pipeline flexibility.

MRP believes[42] that MBBCR will result in inefficiencies and costs that will ultimately be passed on to retail consumers. Our analysis shows that MBBCR will result in an overall reduction of costs within the gas industry. And we believe the better targeting of those costs towards pipeline users who make more use of flexibility arrangements is efficient.

The facilitation and promotion of the ongoing supply of gas to meet New Zealand's energy needs, by providing access to essential infrastructure and competitive market arrangements

The MBBCR would allow MDL to obtain balancing gas from a market such as the emsTradepoint market which shippers can access, so competition should improve. This is discussed below.

Barriers to competition in the gas industry are minimised

In the Draft Recommendation and in this Final Recommendation we examine two ways in which the MBBCR could impact competition. One would be to improve competition for the supply of balancing gas. The other would be to put shippers who do not balance their own positions because they have a volatile demand portfolio at a disadvantage to shippers with a more predictable portfolio. This may apply to new entrants with small, volatile demand portfolios.

Our conclusion is that the current restricted access to the BGX is a barrier to competition for the supply of balancing gas. With the introduction of the MBBCR, MDL would give priority to buying gas on a more liquid market that all pipeline users can participate in, allowing for the improvement of competition in the supply for balancing gas. In the Draft Recommendation we acknowledge[43] that the MBBCR is not the only route to obtaining Balancing Gas on a more liquid market, but we consider that would likely be the quickest.

[42] MRLP submission on DR p2
[43] Draft Recommendation p31

In regard to new retail entrants and other shippers who are less able to manage their balance positions, they will attract a greater proportion of the adjustment factor and trading fees than other shippers. Potentially, such higher costs could make these shippers less able to compete. However, it could be argued that having access to an automatic low cost balancing service could make it easier for these shippers to enter the market and grow their portfolios. The CBA also notes that, once a new retailer has entered the market, its steeper cost curve will increase its incentive to compete for greater market share. And, indeed, it is not unusual for new entrants in any market to face lower margins.

Incentives for investment in gas processing facilities, transmission, and distribution are maintained or enhanced

Improved price signals should enhance incentives for investment in alternative forms of flexibility, better forecasting and metering.

Delivered gas costs and prices are subject to sustained downward pressure

In relation to balancing gas, accessing a more liquid market than the BGX should ensure sustained downward pressure on balancing gas purchases. Also, the benefit of any such cost reduction would be shared by all pipeline users through the 'recoverable cost' tariff adjustment mechanism.

Other costs are likely to rise. There will be a significant level of initial investment as market participants develop systems and procedures to process daily Cash-Outs. There is also likely to be ongoing costs as pipeline users manage their balance position more diligently. These costs are addressed in the Covec CBA in Appendix B.

Risks relating to security of supply, including transport arrangements, are properly and efficiently managed by all parties

The greater prescription and transparency around how MDL will manage Balancing Actions builds confidence the risks relating to security of supply are being properly and efficiently managed. MDL will also be able to take Balancing Actions with more confidence because it will no longer face the uncertainty of if and when an ILON notice may be responded to.

Consistency with the Government's gas safety regime is maintained

No effect.

Efficient arrangements for the short-term trading of gas

The MBBCR allows MDL to procure Balancing Gas on a market that is significantly more liquid than the current BGX, and that all pipeline users can participate in.

Accurate, efficient and timely arrangements for the allocation and reconciliation of upstream gas quantities

From the perspective of pipeline flexibility, the replacement of the ILON arrangement with daily Cash-Outs should direct Cash-Outs more accurately to pipeline users with excess imbalance (ie

who make greater use of the flexibility provided by the pipeline). Since this would reduce cross-subsidy it would be more efficient. And since it will occur daily, rather than across the ILON grace period, it will be more timely.

5.2 Relevant GPS objectives

The full costs of … transporting gas are signalled to consumers

Because MBBCR will remove the cross-subsidisation inherent in the ILON process, and better direct costs towards those who make use of the flexibility arrangements provided by MDL, we believe that it will do a better job of signalling the full costs of transportation to pipeline users. Assuming that the market to supply consumers is competitive, we would expect these cost signals to be passed through to consumers.

Energy and other resources used to deliver gas to consumers are used efficiently

The CBA concludes that the net economic effect of MBB is positive.

Competition is facilitated in upstream and downstream gas markets by minimising barriers to access to essential infrastructure to the long-term benefit of end users

As discussed in Section 4.7, we consider that the introduction of MBB would increase the proportion of costs faced by a new entrant mass market retailer because costs would be directed to users who make more use of pipeline flexibility. However this is a consequence of directing costs towards users who make greater use of pipeline flexibility, who are generally new entrants. We would argue that the long-term benefits to end users arise from efficient arrangements and that facilitating entry by system-wide cross-subsidisation is short-sighted. (Also see earlier discussion under the heading 'Barriers to competition in the gas industry are minimised')

The quality of gas services where those services include a trade-off between quality and price, as far as possible reflect customers' preferences

No effect.

It is true that customers (in the sense of being pipeline users) appear to be mostly opposed to the MBBCR. However, we believe this objective would apply in situations where the intent is to avoid a service provider imposing inefficient outcomes such as 'gold plating' their assets and services for its own benefit rather than to meet the needs of its customers. We do not consider that the objective would apply where the intent is for customers to block a move towards more efficient arrangements.

6 Final recommendation

Gas Industry Co agrees with submitter views that implementing daily Cash-Outs:

- may not increase the amount of primary balancing;
- would accentuate flaws in downstream allocation arrangements; and
- could raise barriers to new-entrant retailers.

However, based on the detailed analysis provided in our Draft Recommendation and this Final Recommendation, and having regard to the CBA, we conclude that implementing the MBBCR would broadly align with the Gas Act and GPS objectives and:

- improve the quality of primary balancing;
- enable more efficient balancing gas procurement; and
- improve price signals by directing costs towards pipeline users who make more use of pipeline flexibility.

Covec's revised CBA is attached as Appendix B. It concludes that:

> While there is a small risk of a negative static efficiency effect we consider that it is outweighed by the dynamic efficiency benefits so that **the net economic effect of MBB is positive.** (emphasis added)

On the basis of our analysis of the MBBCR, our consideration of submissions and cross-submissions received and of Gas Act and GPS objectives, and giving due attention to Covec's CBA, Gas Industry Co supports the MBBCR.

In the wider context of the industry's struggle to improve balancing arrangements, the introduction of daily Cash-Out seems reasonable. Stakeholders generally opposed the balancing rules we proposed in 2009 and, although they could not agree an alternative solution through an 'Industry Code Development' process, they successfully lobbied for more time to find a solution. MDL's subsequent initiatives – the 2011 B2B proposal and the 2014 MBB proposal – were both also generally opposed by stakeholders. A number of submitters continue to argue that a better (but unspecified) 'collaborative solution' ought to be found. We are not persuaded that this is realistic, including because ongoing disagreement reflects the fact that economic interests of stakeholders do not align. The MBB proposal is not ideal, but its central element – daily Cash-Out – is common international pipeline practice; it makes good sense from the

perspective of pipeline operations and economics; and it broadly aligns with the Gas Act objectives.

We recognise that there are some remaining issues to address and these primarily relate to the information and tools available to pipeline users to mitigate imbalance risk. We think the industry and Gas Industry Co should also turn our attention to how associated arrangements such as reconciliation and nominations can be improved, and to implementing an OATIS replacement.

7 Next Steps

A key feature of the MBBCR is a soft landing that provides increased tolerances for Cash-Outs during a transition period. In particular, MPOC s12.18(d) allows for the ROIL Multiplier to have a value of:

- 2 (or more as notified by MDL) up to 1 March 2016 (or later date notified by MDL); and
- 1.5 (or more as notified by MDL) for another 6 months.

MDL has confirmed that the increased tolerances will apply for a period of 18 months following implementation.

Gas Industry Co notes concerns referred to in submissions, relating to the information and tools available to pipeline users to mitigate imbalance risk. However, submitters have been entitled to await this Final Recommendation (and potentially the outcome of other outstanding issues) before taking action. We are concerned that implementation is as smooth as possible and urge MDL to continue its work in this area. Gas Industry Co is also progressing its proposed 'D + 1' trial.

After many years of work by ourselves and the industry on longstanding issues in gas balancing, we look forward to a smooth implementation process and the resulting improvement in outcomes. Gas Industry Co will monitor progress and, if this change request fails to be implemented, will intervene to the extent necessary.

Glossary

Note: Definitions obtained from the MPOC are shown in *italics*.

AEOI	'Accumulated Excess Operational Imbalance'. A defined term in the MPOC for amount of OI in excess of tolerance.
Balancing	The management of Line Pack to ensure that it remains within acceptable operational limits.
Balancing Agent	Defined by the MPOC as *'…the balancing agent appointed by MDL from time to time to manage the Line Pack.'* The October 2011 Change Request does not propose changing this definition.
Balancing Gas	Defined in the current version of the MPOC as *'…Gas used to manage line pack on a Transmission Pipeline.'* The October 2011 Change Request proposes changing this to *'… Gas purchased as part of a Balancing Gas Call, or sold as part of a Balancing Gas Put, by MDL.'*
B2B balancing	'Back to back balancing' refers to arrangements that allocate gas transactions taken by the Balancing Agent among Welded Parties with imbalance positions outside tolerance.
BGX	'Balancing Gas Exchange', an online platform that facilitates the trade of Balancing Gas on the Maui Pipeline.
BPP	'Balancing and Peaking Pool'. A mechanism in the Vector transmission regime to ring-fence and allocate balancing costs via a trust account.
Cash-Out	A forcible sale or purchase of gas by the TSO to resolve an outstanding imbalance position.
Contingency Volume	Defined in the current version of the MPOC as *'… the quantity of Gas which is maintained by MDL in the Maui Pipeline as part of the Line Pack and is designated for use in a Contingency Event, Maintenance, or a Force Majeure Event in accordance with this Operating Code.'* The October 2011 Change Request does not propose changing this definition.
D+1	D+1 commonly refers to a system for allocating quantities of gas at a shared station among the parties flowing gas through that station, on the day after gas flow.
Damages	The loss to a user's business caused by another user breaching its obligations. A damages claim is a claim for compensation for costs incurred.

Delivery Point	Defined by the MPOC as *'…a Welded Point to which a Shipper nominates to have Gas transported.'* The October 2011 Change Request does not propose changing this definition.
DOIL	'Daily Operational Imbalance Limit' is a defined tolerance in the MPOC for acceptable DOI.
GPS	'Government Policy Statement' on Gas Governance (April 2008)
IDC	The independent Directors' committee of Gas Industry Co
ILON	Defined in the current version of the MPOC as *'…a notice given by MDL to a Welded Party under section 12.10 requiring that Welded Party to reduce its Accumulated Excess Operational Imbalance to zero, and which states the quantity of, and a time period for reducing, that excess.'* The October 2011 Change Request proposes to delete this definition and all references to ILONs in the MPOC.
Imbalance	Generically this means the flows into the pipeline do not match the flows out of the pipeline. This can be 'operational imbalance' in the MPOC which is the difference in scheduled flows and actual flows at an interconnection point. This can also be the difference between shipper receipt and delivery quantities in both the MPOC and VTC (where it is called 'mismatch'). A positive imbalance is one that increases Line Pack and a negative imbalance is one that decreases Line Pack.
Incentives Pool	Defined by the MPOC as *'…the pool of money held on trust and administered by the Incentives Pool Trustee, into which all Incentives Pool Debits are to be paid and out of which Incentives Pool Claims are to be paid.'* The October 2011 Change Request does not propose changing this definition. The Incentives Pool is essentially a liquidated damages arrangement that permits a Welded Party, who suffers damage as a result of another Welded Party being out of balance, to claim liquidated damages.
Line Pack flexibility	Flexibility in the level of Line Pack over and above that needed to transmit scheduled gas and set aside for security of supply, which is Line Pack flexibility potentially available for balancing.
Line Pack	Defined by the MPOC as *'…the total quantity of Gas in the Maui Pipeline at any time.'* The October 2011 Change Request does not propose changing this definition.
MDL	Defined by the MPOC as *'Maui Development Limited.'* The October 2011 Change Request does not propose changing this definition.

MoU	The Memorandum of Understanding between Gas Industry Company Limited and Maui development Limited dated 5 October 2006
MPOC	'Maui Pipeline Operating Code', the current version of which is dated 1 September 2011.
OATIS	'Open Access Transmission Information System' is the IT system used to manage third party access to the transmission pipelines, including providing operational pipeline information, information exchange between pipeline users and operators, and public information. The single system has segmented functionality for the Maui pipeline and Vector pipelines.
OI	'Operational Imbalance'. The MPOC defines OI as being the difference between the actual quantity of gas that flowed through a welded point on a day and the scheduled quantity for that day.
Peaking Charge	An incentive/penalty charge proposed to apply to Welded Parties whose demand peaks outside proposed Schedule 7 limits, and calculated in accordance with a proposed Section 13.4.
Receipt Point	Defined by the MPOC as *'…a Welded Point from which a Shipper nominates to have Gas transported.'* The October 2011 Change Request does not propose changing this definition.
ROI	'Running Operational Imbalance'. A defined term in the MPOC for the aggregate of imbalance at a welded point over time and therefore represents the total gas parked or loaned from the pipeline at that point. The October 2011 Change Request does not propose changing the definition.
ROIL	'Running Operational Imbalance Limit'. A defined term in the MPOC for tolerance of ROI, outside of which MDL may notify the welded party to take away or return the excess imbalance (see ILON). The October 2011 Change Request does not propose changing the definition.
RPO	'Reasonable and Prudent Operator'. A defined term in the MPOC referring to a standard for performance equal to or better than good industry operating practice relative to recognised international practice. The October 2011 Change Request does not propose changing the definition.
Shipper	A pipeline user that has contracted for the TSO to transport gas (see TSA).

tolerance	An amount of the peak daily flow, DOIL or ROIL (depending on the context) as set in Schedule 7 of the MPOC, below which Welded Parties can operate without consequences.
TSA	'Transmission Service Agreement'. The contract between a shipper and the TSO to transport gas.
UFG	'Unaccounted-for-Gas'. This is a change in Line Pack that cannot be identified to a user, and represents the inherent errors in metering gas.
VTC	'Vector Transmission Code'.
Welded Party	Defined by the MPOC as *'…the person named as a welded party in a valid and subsisting ICA.'* The October 2011 Change Request does not propose changing this definition.

Appendix A Summary of submissions on the October 2014 Change Request

This brief summary identifies the salient points of industry submissions, to provide context. However, it does not purport to cover all points made, or to represent any submission in a particular way, or to be the authoritative reference point on all submissions. All submissions and cross-submissions are available for full reference at www.gasindustry.co.nz. The summary also does not capture all of the matters that Gas Industry Co has taken into account in its determination.

Costs and Benefits	Contact	Contact sees that investing in administrative effort to better manage its position would reduce uncertainty, but would not result in a profit (as Covec suggests). It is possible that shippers may halt primary balancing in favour of market Cash-Outs, which defeats the objective of the MBBCR.
Costs and Benefits	CHH	CHH supports the concept that the causers of balancing costs should pay for them. However, CHH has discussed the possible impact of MBB with its supplier and concluded that balancing charges could vary by a factor of ten, depending on the cost of balancing gas and the value of the adjustment factor. The CBA should not only consider the costs of operating the pipeline, but should include costs from a NZ inc viewpoint. CHH suggests that the final recommendation include an estimate of the ratio of balancing charges to balancing costs so that the potential inefficiencies in user response to balancing charges can be evaluated. The CBA should also include a methodology for reviewing the change after implementation.

Costs and Benefits	Genesis	The Cost-Benefit Analysis fails to account for the cost of providing a more liquid balancing market, fails to quantify the non-financial costs, and does not include the full financial cost to shippers. Because participants will no longer be able to correct their positions on the day after gas flow, fewer participant-initiated corrections will occur, leaving MDL to make those corrections. Balancing gas volumes will therefore increase significantly. If MBB is introduced, shippers would need to provide additional gas to the emsTradepoint market and the cost of doing so could be substantial and would need to be factored into the Cost-Benefit analysis. The consumer cost of the MBB proposal is ignored by the CBA. Any deadweight loss, induced by a price increase to end consumers, must be reflected in the CBA. Other costs (system upgrade costs, brokerage costs, people costs and TOU data costs) amounting to a one-off cost of $200k and ongoing cost of $247k per annum are missing from the Cost-Benefit Analysis.

Costs and benefits	Greymouth	The MBBCR appears to be detrimental to dynamic efficiency because: ● investment in storage/swing is driven by other price signals ● even if producers make gas available to the market when balancing gas is needed, it will be at a higher price ● even if over-pressure situations do reduce this will only reduce flaring and allow more product control, it may not increase reserves ● the development of congestion management will be undermined ● higher and uncertain costs will increase barriers to entry ● shippers will demand more flexibility from producers, so the price of gas will increase The CBA assumes that there will be a reduction in balancing actions, but Greymouth believe they will increase.
Costs and benefits	MGUG	Some investment may be required simply to manage the impact of changing from the status quo, and is therefore a necessary cost that should be included in the Cost-Benefit Analysis. If MBBCR is implemented Gas Industry Co should conduct an ex poste analysis to see if it has worked, possibly looking the metrics of compressor fuel and market spreads.

Costs and Benefits	MDL	MDL expects the unquantified benefits, particularly dynamic efficiency improvements, to dwarf the $1m annual benefit. In relation to allocative efficiency MDL considers the main benefits to be improved price signalling of the cost of line pack flexibility, and a reduction in cross-subsidisation. Currently the CBA seems to ignore the benefit of creating a more efficient distribution of Cash-Out charges which, in total, could bring annual efficiency gains of $5-15m. Regarding market fees, MDL notes that they are analogous to any other cost in that they will only be incurred where a user expects to see a larger benefit. If the cost is to be included in the Cost-Benefit Analysis, so should the benefit. It would be unrealistic to expect a market without fees, and ultimately a market will mean lower delivered prices to end users.
Costs and Benefits	MRP	The inefficiencies of the current system will be compounded as a result of the need for retailers to react to daily Cash-Outs with no information regarding their current mismatch position. At times, a retailer will make the wrong judgement (eg: thinking incorrectly that they have a positive mismatch position when it's actually negative) and as a result will be cashed out (unbeknown to them at the time), which will increase the judgement error and may lead to further and unexpected cash-outs. Cash-Out costs may quickly accumulate without the retailer's knowledge. This will create inefficiencies and costs that will ultimately be passed on to retail consumers. Daily allocation arrangements must be introduced if daily Cash-Out is to be allowed. The cost of a D+1 arrangement should therefore be in the Cost-Benefit analysis. Daily Cash-Out will also increase pressure to introduce more time of use metering, and this cost should also be in the Cost-Benefit Analysis. These additional costs are inconsistent with the objective in section 43ZN(b)(iv) of the Gas Act and paragraph 11(d) of the Government Policy Statement on Gas Government both of which refer to delivered gas costs and prices being subject to sustained downward pressure.

Costs and Benefits	Nova	The potential reduction in fuel cost is overstated. Some transportation benefits will still apply for nominations less than 250TJ. Also, if the proposal results in a lower average pressure then more compression will be required. And, in relation to the costs to shippers of managing pipeline imbalances, these costs should be recognised in the CBA since the countervailing benefit is returned to industry through the subsequent year's tariff adjustment, thereby cancelling out. Nova expects each of the 10 shippers on the Vector pipeline to have costs similar to its own: each $50-$100k/annum
Costs and Benefits	NZ Steel	Supports concerns expressed at workshops about costs missing form the Cost-Benefit Analysis.
Costs and Benefits	Shell	Dynamic efficiency gains and upstream benefits should be evaluated if it looks like the recommendation to support the MBBCR might change.
Costs and Benefits	Trustpower	A wider spread should be assumed in the CBA since, when the pipeline is long on gas, most participants will be selling, pushing the price lower than the 3% deviation in the CBA. The Covec CBA makes no allowance for the increase in transaction costs MBB would cause, particularly the emsTradepoint trading fees, estimated at $550k to $900k per annum.

Costs and Benefits	Vector	Some of the 90% claimed benefit from reduced compressor use relates to packing the pipeline during weekends in preparation for Monday demand. This should not be counted. The ILON regime give shippers 36 hours to resolve their imbalance. The graphs in the Draft Recommendation (Figure 4 of the main report and Figure 1 of Appendix B CBA) showing that most imbalances are resolved is not evidence of an ability to balance on the same day as gas flow. Also, the Cash-Outs may be resolved by moving imbalance from one TPWP to another, without resolving the overall pipeline imbalance. (Vector provides a graph showing examples of this behaviour.) Vector provides additional information on the cost of providing information to support MBB: $365k one-off development costs, and $150k/year staffing and support.
General	CHH	Uncertainty of outcomes is high. MDL should provide its preferred nomination cycle time outcome prior to the Final Recommendation. MDL should be specific about the circumstances under which it would change the adjustment factor. If Final Recommendation supports the MBBCR, a methodology for evaluating the effectiveness of the change should be included.

General	Contact	In respect to the use of a gas market, MDL did not satisfactorily substantiate the issues or look for compromise solutions through its consultation with shippers. A relatively simple regulatory change to the procurement of balancing gas should not be overlooked, especially when the current MPOC (s11.10) already allows for it. At least 6 months' notice of any change is required so that shippers can make any required technical changes to their systems.
General	emsTradepoint	emsTradepoint provides an update on market liquidity, supporting its view that the market is capable of providing sufficient liquidity for industry to hedge both price and volume risk.
General	Genesis	Genesis believes the proposal cannot go ahead in its current form. The Cost-Benefit Analysis must be amended to include significant deadweight costs.
General	Greymouth	Greymouth suggests that now that emsTradepoint is a shipper on the Vector system it can ship gas from its existing market location on the Vector system to supply participants on the Maui pipeline, thereby allowing MDL to trade balancing gas with it as MDL does with any BGX participant. Greymouth believes that more frequent cash-outs reduce the incentive on Shippers to maintain balance because they will instead minimise their costs by simply passing the Cash-Outs on to end-users. (Although Greymouth says it has yet to decide if this is what it will actually do.)

General	MGUG	MGUG supports principles that promote primary balancing to keep transaction costs down. Given the uncertainty around the analysis and the likely financial and practical impacts MGUG strongly recommends a cross submission process. MGUG is concerned that change is being made without a good problem definition. It suggests that a range of practical consideration are addressed in the Final Recommendation.
General	MDL	MDL considers the unquantified efficiency benefits are underplayed in the analysis. It also notes: ● Alignment with common overseas practice would bring a lower cost OATIS replacement. ● An additional GPS outcome that is relevant is that "The full costs of… transporting gas are signalled to consumers." ● The MPOC is a set of terms incorporated by reference into various bilateral agreements. It is not 'a multilateral agreement' as Covec states.
General	MRP	MRP believes daily allocation arrangements must be introduced if daily Cash-Out is to proceed. MRP has no objection to a flexible park and loan service but it needs to be accompanied by daily allocation. A collaborative approach to pipeline management is the best way to resolve some long standing issues. It ensures a better outcome for the majority (or at least several) participants in the industry, as opposed to the MBBCR which only ensures a good outcome for MDL and only attempts to resolve (and we disagree that it does) one issue.

General	Nova	Nova favours improved balancing arrangements but considers the in the NZ context the benefit of MBBCR does not justify the added complexity. Rather, elements of the MBBCR, D+1 reconciliations and OATIS upgrade should be worked through with market participants to realise more sustainable benefits for shippers and gas users.
General	NZ Steel	NZ Steel is concerned that Gas Industry Co is constrained by its MDL code change role because a pan industry solution should be developed for balancing. A compelling case has not been made to support the MBBCR. Also, the work has not been done to assess the impact on end users and possible unintended consequences.
General	Vector	Vector believes that a single unified balancing arrangement across both pipeline systems is the best way to effectively resolve balancing issues and provide the necessary information and tools to all participants.
New entrants/competition	emsTradepoint	Increased costs incurred by new entrant retailers would serve to improve their profitability. Cash-Out costs are transfers between parties so are not a barrier to entry. The trading fee is a transaction cost similar to contract negotiation costs or the costs of administering and hosting the BGX, and should be treated in the Cost-Benefit Analysis in the same way. The substantial allocative efficiency benefits from reducing cross-subsidy should be recognised in the Cost-Benefit Analysis. Unquantified benefits are likely to substantially exceed unquantified costs.

New entrants/competition	MDL	MDL reaffirms that the 0-10% range for the adjustment factor is reasonable, but that it would initially be set in the 2.5-4% range.

New entrants/competition	Nova	The increased complexity and uncertainty of balancing costs - since it is weighted towards more uncertain demand - will deter entry and give larger incumbent retailers a competitive advantage.
New entrants/competition	Trustpower	MBB will increase the complexity that smaller retailers face by increasing the need for more detailed forecasts, increased monitoring of positions, and more frequent management of positions, leading to a decrease in margin. MBBCR removes averaging across time, so results are more volatile. With no new information, primary balancing will not improve.
New entrants/competition	Vector	The uncertainty around MDL's sole discretion on where in the 0-10% range the adjustment factor will be set could be a major risk to new entrants.
Information & Tools	Contact	If GIC believes there are efficiencies to be gained with daily balancing then it should work with industry to implement the tools with which shippers can meaningfully balance.
Information & Tools	MRP	MRP does not believe that the current low level of ILON Cash-Outs implies an ability for shippers to manage their balance positions. ILONs signal an aggregate imbalance and shippers respond to that notice. Mass market shippers have no added information about their own individual positions. Under MBB there is no equivalent to the ILON, so shippers have nothing to respond to. As MRP have been saying for 8 years, the lack of D+1 allocation is the priority issue that needs to be addressed to improve balancing. Introducing daily Cash-Out without D+1 will compound current inefficiencies.

Information & Tools	NZ Steel	NZ Steel notes that it will not have reasonable time to correct its balance position (by renominating) during the day if the MBBCR is implemented.
Information & Tools	Trustpower	The CBA assumes that current arrangements will improve once MBB is implemented. However, in some instances the quality of metering information is of such poor standard that it could lead to costly decisions if MBB is introduced. Trustpower cites an example where the consumption assigned to the residual profile at a gate station is clearly incorrect. With MBB it would result in incorrect Cash-Outs and make primary balancing more difficult since consumption is incorrectly allocated between participants. Yet this is not an issue for the pipeline since it is the total pipeline flows that matters. MBB will result in participants being penalised for bad information, beyond their control.
Overpressure	Trustpower	While 50% of days are beyond the TTP, only 15% of hours had been beyond since 2013.
Process	Greymouth	There has been insufficient consultation on the CBA. Gas Industry Co says it did not consider or form a view on the matters it sought further information about in cross-submissions. Given Gas Industry Co's irrational decision, it should summarise the level and quantum of debate and thoughtful challenge that its board gave to the Draft Recommendation.
Congestion management	Greymouth	The MBBCR may undermine the congestion management product that the Gas Industry Transmission Access Working Group (GITAWG) is developing.

Appendix B Cost-Benefit Analysis

covec

Report | 16 April 2015

Market Based Balancing on the Maui Pipeline:

Cost-Benefit Analysis

Prepared for

Gas Industry Company

Authorship
John Small
john.small@covec.co.nz | (09) 916 1966

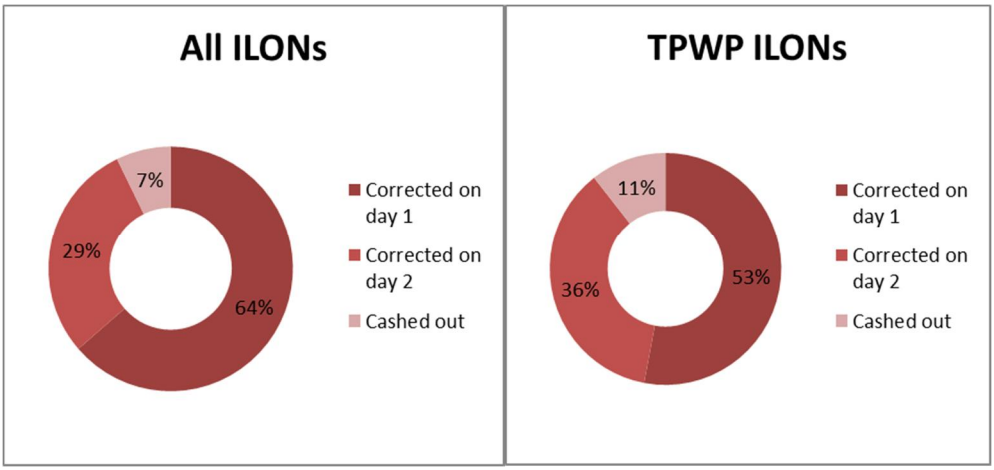
Contents

Executive Summary

Pipeline balancing issues have been discussed by the gas industry for many years. A recent proposal by Maui Developments Limited (MDL) seeks to change from the status quo to a new system referred to as market based balancing (MBB). Under the status quo pipeline users have only weak incentives to ensure their physical positions align with their nominated flows on a daily basis. MBB would change this by instituting a system of automatic cash-outs for excess daily imbalances. This report describes a cost-benefit analysis (CBA) commissioned by the Gas Industry Company (GIC) to assess the MBB proposal.

The likely effect is that there would be more "primary" balancing, meaning that pipeline users will do their own balancing relative to their nominations, leaving less secondary balancing work for the pipeline operator to do. Shippers have argued in submissions that incentives are only part of the barrier to primary balancing and that they in fact have limited *ability* to undertake this role. We accept that users do not have complete information, however historic data shows that reaction is feasible. Figure 2 shows that only a small fraction of existing over-run notices are cashed-out and that the majority being corrected within one day.

Figure 2: ILON Responses in 2014 (Source: MDL)



Nevertheless, there is considerable uncertainty over just how much extra primary balancing will occur, and more generally over the costs and benefits of moving to MBB.

A second effect is that balancing actions will be conducted on a more liquid market with much lower spreads between buy and sell prices. It has been argued that this should occur already, but from an economic perspective what matters are actual changes, so we do count this effect.

Our analysis was conducted at the industry level. Individual participants are likely to experience a range of costs and benefits, depending on whether and to what extent they benefit from the current rather loose arrangements for balancing. However in order to focus on the change in total resources used for balancing, we abstract from these firm-level effects. This leads us to exclude from analysis the financial flows

that would occur as a consequence of daily cash-outs and brokerage paid on market trades.

We have valued resources at market rates which is appropriate for a cost-benefit analysis. The benefits of MBB that have been quantified here are all from what can be described as "static efficiency" effects:

- Fewer and/or smaller balancing actions as pipeline users undertake more primary balancing;
- The use of a more liquid market for balancing actions with much lower spreads between bids and offers; and
- Reduced usage of fuel gas in Mokau compressors to support flows that differ from aggregate nominations.

In aggregate, these benefits tend to increase as more primary balancing is undertaken, however there is an important interaction between them which needs explaining.

Consider first the fuel gas savings: if there is no behavioural response (i.e. if primary balancing does not improve), there will be no benefit from fuel gas savings. This fuel gas benefit is expected to increase in direct proportion to the amount of extra primary balancing.

The other two quantified benefits are bundled together in our analysis. If the balancing agent switched to a more liquid market *and maintained the current level of activity*, there would be a moderately large benefit from the collapse in spreads (using 2014 data, the balancing agent would have made a profit of around $660,000 rather than a loss of over $450,000). However the size of this benefit falls as primary balancing increases, because there are fewer and/or smaller balancing actions required.

Figure 3: Annual Benefits of MBB from Balancing Actions and Fuel Gas sources

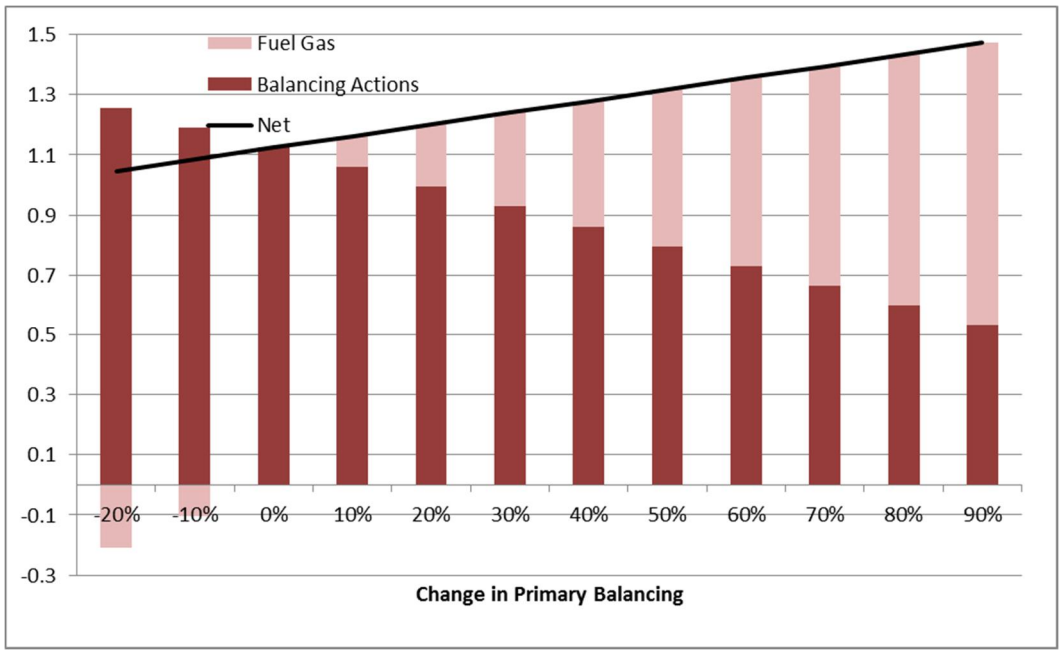


Figure 3 summarises both of these effects as primary balancing improves (from left to right). On the horizontal axis, 0% indicates no reduction in balancing actions or fuel gas while 90% indicates a 90% reduction. To accommodate submissions arguing that primary balancing will worsen we also extend the horizontal axis leftwards from zero by enough to allow for all retailers serving customers without telemetry to abandon any attempt at primary balancing while all other participants make no change to their conduct.

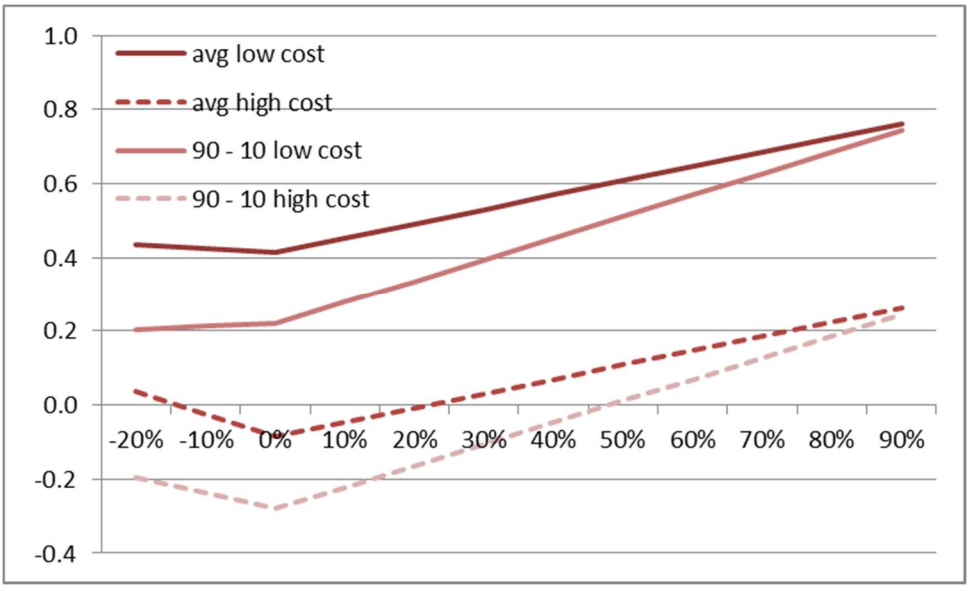
On the cost side, we considered submissions regarding the extra resources that parties would need to employ to manage their affairs under MBB. Whereas the first version of this CBA disallowed some such costs, in this version we have included the full range of costs advanced by submitters. The claimed annual costs range from $710,000 to $1.2m.

The annual benefits are likely to change over time because market activity will change the pattern of balancing actions and fuel gas usage under the status quo scenario. It may also be that evaluating the static efficiency effects at average market prices would over-state the benefits. We report a large number of scenarios to examine these effects, and focus on four particular scenarios which use:

- The previous year that would result in the smallest benefit (2014);
- Sensitivity analysis between average prices and the 90th and 10th percentile; and
- Both the high and low end of submitted cost estimates.

Figure 4 summarises these scenarios. It is possible to generate negative static efficiency results but one would need to expect low or negative response to extra primary balancing incentives, adverse prices and adverse user costs for these to exceed $200,000 per annum.

Figure 4: Static Efficiency Net Effects by Balancing Response Scenario ($m)



Several extra effects are recognised in this analysis but unquantified because of material uncertainties. They are all forms of dynamic efficiency. We sought

submissions on material adverse effects that were omitted and were provided with just one example being higher costs for small retailers due to forecasting accuracy problems. While this is a real effect its impact on competition is offset by the fact that it will enhance the incentive for such firms to gain volume.

Dynamic efficiencies are widely viewed as being more important than static efficiencies. That is because they stimulate the development of new processes and new products, and improve the quality of decision-making. In the present context, increased market liquidity is unambiguously valuable is the discovery of market values for storage. Upstream benefits have also been claimed.

We were invited in submissions to use a very high-level approach to estimating the value of dynamic efficiencies associated with MBB. That approach was not attractive because the estimate would have been difficult to relate to MBB changes themselves. However we do consider that dynamic efficiency would improve under MBB and that these effects are sufficient to outweigh what seems to be only a small risk of a negative static efficiency impact.

Conclusion

- The quantified static efficiency benefits of shifting to MBB arise from less use of fuel gas and reduced cost of balancing actions. They are estimated to range between $1m and $1.5m per annum.
- The quantified costs of shifting to MBB arise from the extra resources incurred in sharing TPWP cash-outs with shippers and in shippers upgrading their internal systems. These are estimated at between $710,000 and $1.21m per annum.
- Several other benefits have been identified but not quantified, including dynamic efficiency gains from better price signals and increased market liquidity.
- While there is a small risk of a negative static efficiency effect we consider that it is outweighed by the dynamic efficiency benefits so that the net economic effect of MBB is positive.

1 Introduction

The Maui gas pipeline is economically crucial infrastructure carrying gas from Taranaki to several geographic markets including the greater Auckland area. End users include gas-fired power stations, major industrial customers such as NZ Steel and Methanex, a commercial sector and residential customers.

The pipeline is owned by a consortium of upstream interests, Maui Developments Limited (MDL). Its revenue is regulated by the Commerce Commission under Part 4 of the Commerce Act 1986. Use of the pipeline is governed by a multilateral agreement, the Maui Pipeline Operating Code (MPOC).

MPOC prescribes a common-carriage system for pipeline users. Shippers are required to make daily nominations of injections and offtakes and these must balance, meaning that nominated injections equal nominated offtakes on a daily basis. Shipper nominations at each Welded Point are confirmed by the Welded Party, and the aggregate of these confirmed nominations is known as the Scheduled Quantity for that Welded Point. It is then up to the Welded Party to manage its Welded Point so as to ensure that the gas that flows (Measured Quantity) reflects the Scheduled Quantity.

Where the Maui pipeline feeds into the Vector pipelines Vector, as the Welded Party, assumes responsibility for imbalances at those Transmission Pipeline Welded Points (TPWP). To the extent that the quantities shippers have nominated to the TPWP do not match the consumption by their customers (mismatch) the TPWP will accumulate imbalance. Vector operates a balancing and peaking pool (BPP) to recover balancing charges from Shippers, *pro rata* with their respective running mismatch positions.

Under current practices, there are only weak incentives for parties to "flow to nomination". If a welded party is in an imbalance position at the end of a day, the pipeline operator can issue an imbalance limit over-run notice (ILON). Typically this occurs on the following morning and the user then has until the end of the next day to get its position back into balance.

There are frequent imbalances as users effectively use the pipeline as a communal buffer: depending on conditions in other markets, they may either store gas in the pipeline (i.e. run a positive imbalance) or borrow gas from the pipeline (running a negative imbalance).

These imbalances can only occur because the Maui line has, on average, enough spare capacity to accommodate them without breaching its operational tolerance limits for high and low pressure (though pressures do in fact exceed target levels very frequently[44]). When imbalances threaten prudent operational limits, the pipeline operator will generally buy or sell balancing gas.[45] These trades currently occur through the Balancing Gas Exchange ('BGX'), which is in effect a tendering system with tenders initiated by the pipeline operator.

[44] MDL Submission 24 November 2014, paragraph 6.
[45] In extreme low pressure situations the critical contingency operator can declare a "critical contingency" which allows it to order particular conduct from users.

MDL has recently sought to reform MPOC by introducing a system known as back-to-back (B2B) balancing which was intended to sharpen the incentives on pipeline users to adhere to daily balancing. As industry regulator, the Gas Industry Company (GIC) has approved the introduction of B2B balancing. However MDL has now promulgated an alternative package known as market based balancing (MBB) which involves cashing out imbalance positions on a daily basis. MDL has also confirmed that it will not consent to the B2B regime being implemented.[46] Accordingly, this analysis is now focused on comparing the MBB proposal with the status-quo.

Information supplied in submissions and at the November 2014 workshop revealed a range of views on the MBB proposal. Among the issues that were raised are:

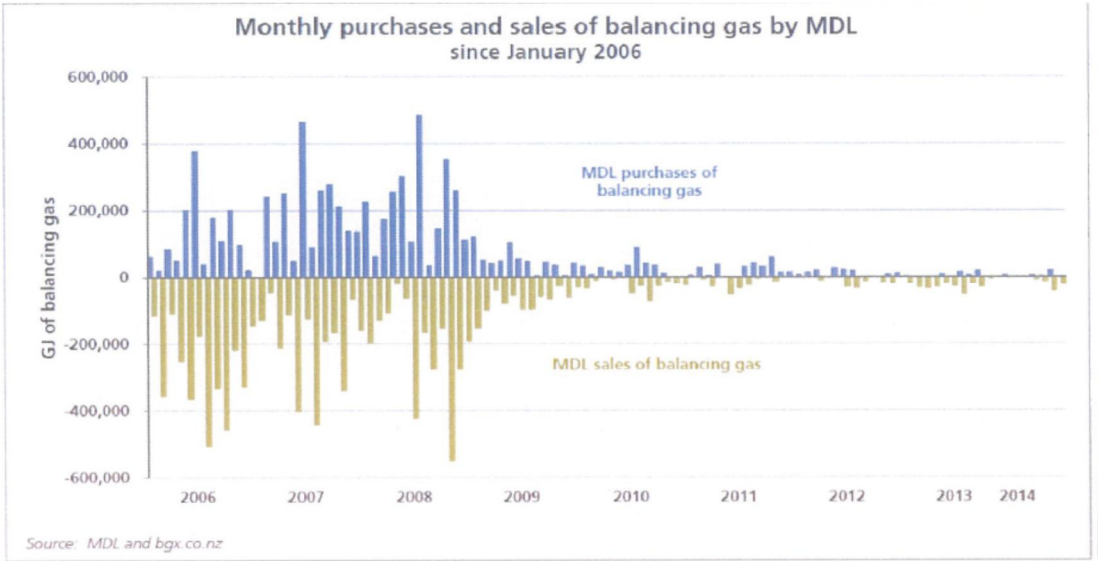
- The impact of MBB-stimulated trades on liquidity in the recently introduced gas spot market;
- The efficiency benefits of signalling to stakeholders the potential cost of their conduct on other parties;
- Information constraints that may make it difficult for pipeline users to ensure balanced positions and hence avoid cash-outs;
- Costs incurred by upstream gas producers under the status quo as pipeline pressures increase;
- Costs that would be incurred by shippers in an effort to gain better information under a MBB regime;
- An increased need for reform of downstream allocation systems so that shippers have greater certainty over the treatment of demand-related imbalances; and
- The potential impact on end-user pricing if shippers effectively bear more risk under MBB.

1.1 Background

The gas industry comprises a small number of quite large firms with rather diverse interests. It is largely self-managed including through two multilateral pipeline access codes: MPOC and the Vector Transmission Code (VTC). As industry co-regulator, the GIC potentially has two roles in respect of code changes.

Pipeline balancing has been discussed for many years. Seven years ago, the GIC published a research paper on balancing, after which there was considerable discussion and debate within the industry, particularly in 2008-09. This work-stream was ultimately put on hold. The following chart shows that balancing gas transactions have declined since that time.

[46] MDL submission, paragraph 5.



Purchases of balancing gas are not the only indicator of the cost of imbalances. MDL says that it has always used the Mokau compressors to support differences between flows and aggregate nominations and that the share of compressor time devoted to that activity has increased markedly since the expiry in May 2009 of the Maui legacy contracts and September 2012 of the Oaonui Operational Balancing Gas (OBG) facility.[47] MDL defines nomination support as occurring when nominations north of Mokau are less than 250TJ. On such occasions, MDL says it is effectively using fuel gas to provide balancing services. It seems that fuel gas costs cannot be washed up in a tariff adjustment (because they are treated as an operating cost for MDL) whereas balancing costs (purchases and sales of balancing gas and cash-outs) are "recoverable costs" and are washed up to give a tariff reduction in the next year..

1.2 Current Status

GIC has asked Covec to undertake a cost-benefit analysis (CBA) of the MBB proposal. A CBA of a rule change needs to compare alternative future scenarios with and without the change. Our first report on this topic was solely focussed on the framework for the cost benefit analysis. Following its release, an industry workshop was convened and submissions were supplied. We carefully reviewed these submissions and a subsequent round of cross-submissions and released a second report containing a full CBA in February 2015. That report was also discussed at two industry workshops and written submissions were received. The present report responds to those submissions and revises the CBA accordingly.

The remainder of this report is structured as follows.

- **Section 2** summarises the scenarios of interest focusing particularly on matters relevant to evaluating the MBB proposal.
- **Section 3** describes the costs and benefits and presents our assessment of their size. It includes a new section responding to submissions.
- **Section 4** offers some concluding comments.

[47] MDL submission, 24 November 2014, paragraphs 72-78.

2 Scenario Description

One of the scenarios to be evaluated is the MBB code-change proposal as promulgated by MDL. We refer to this as the "factual" scenario. In the absence of MBB, the status quo situation would remain, so this is the counterfactual scenario. Our first draft raised the prospect of modelling a third scenario based on the back-to-back (B2B) code change. However MDL has confirmed in submissions that it will not pursue B2B independently of the MBB proposal. It is therefore appropriate to restrict this analysis to two scenarios, the MBB factual and the status quo counterfactual.

2.1 Status Quo

To describe the status quo, we outline the way MPOC deals with pipeline balancing, and note current practices alongside these rules. We then offer some thoughts on the economic consequences of the status quo.

2.1.1 Code Provisions

Section 8 of the MPOC governs the making of nominations, their acceptance by MDL and a range of ways in which they can be adjusted by shippers or curtailed by MDL. Importantly, under s8.2, all nominations must be balanced at the shipper level – i.e. the amount nominated at receipt points must equal the amount nominated at delivery points for each shipper.

Nevertheless, there are two ways in which physical flows may differ from nominations. One is called "mismatch" and occurs due to interruption actions taken either by MDL or by a welded party (sections 15.1, 15.2). In these cases section 11 of MPOC requires shippers to either trade back to a matched position with one another, or trade with MDL as the counterparty via the MDL IX. In the latter case, the prices are known as mismatch prices and there will typically be different prices for positive and negative mismatches. In practice MDL does not put shippers into mismatch.

The second type of deviation between nominations and physical flows is known as "operational imbalance" and is governed by section 12 of MPOC. Operational imbalances can arise for many different reasons including final consumers drawing gas in greater or lesser volumes than forecast. The MBB proposal is aimed at reforming the arrangements for these operational imbalances.

If a welded party has not run-to-nomination, MDL can (under s12.1) issue it with an Imbalance Limit Over-run Notice (ILON) which states a period of time (not less than one day) in which the welded party is required to return to balance. If balance has not been achieved within the stated time period, MDL may then cash out the welded party at the mismatch prices (s 12.11(a)), even if it has not taken any balancing action.

An incentives pool sits alongside these arrangements. There are two triggers for payments into the pool: for excess daily imbalances (s12.7) and for exceeding hourly peak flow limits (s13.3). There are also two triggers for claims on the pool:

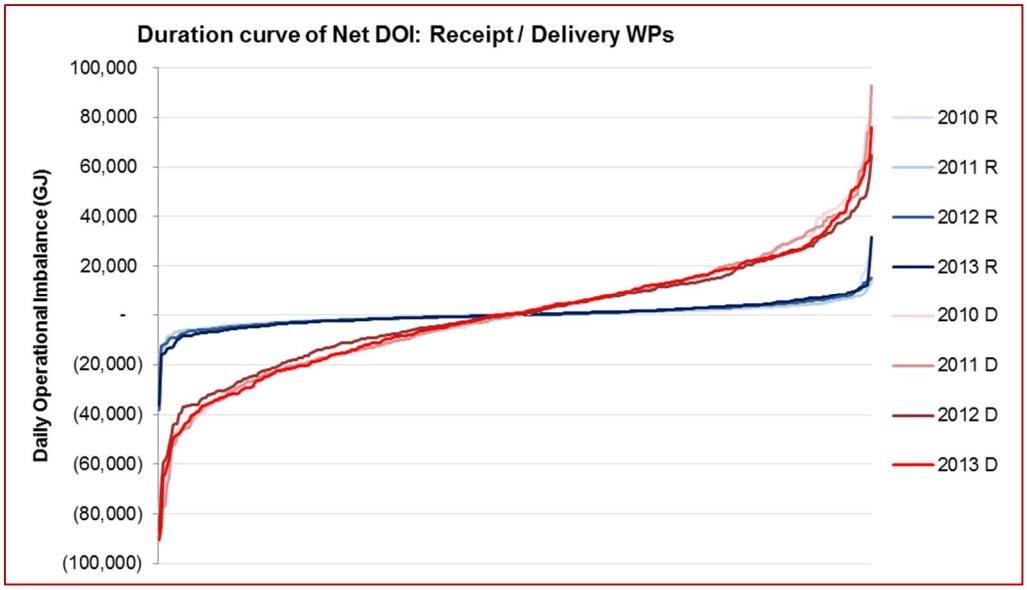
for forced operational imbalances (s12.6) and for payments to the balancing agent (s14.4) which are capped at the pool's level for any day.

2.1.2 Current practice

Under normal conditions[48] MDL can place a 24 hour time limit on the ILONs and enforce cash-outs after this period. However in practice, ILONs are not issued until 10am on the morning after the previous day has ended in an imbalance. Users then have 24 hours to restore balance, which in practice means the end of the next day. There is consequently a "grace period" in excess of 24 hours during which time AEOI can persist without fear of being cashed-out.

It appears (Figure 5) that imbalances primarily occur at delivery points.

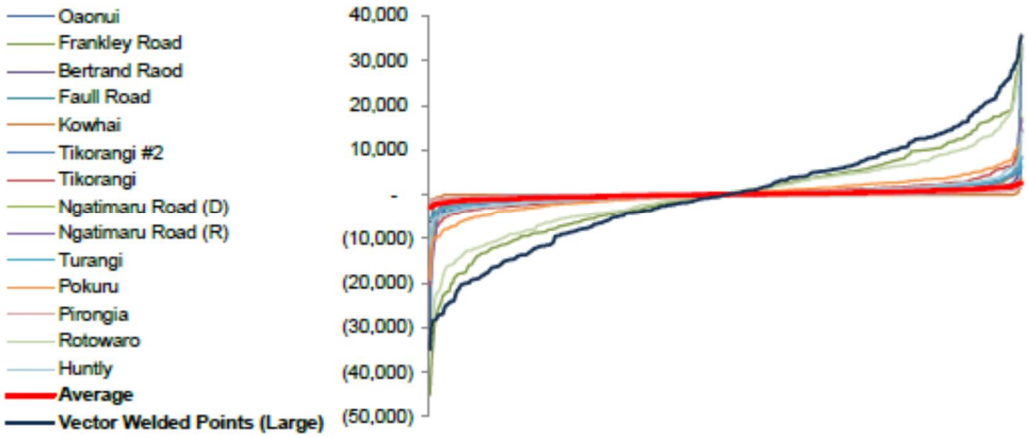
Figure 5: Operating Imbalances by WP Type (Source: EMS Tradepoint)



It further appears (Figure 6) that the Vector welded points are the biggest contributors to imbalances.

Figure 6: Imbalance Duration Curves by Welded Point (source: emsTradepoint)

[48] i.e. excluding the special cases specified in s12.10 of MPOC.



2.1.3 Efficiency Implications

The current arrangements give rise to some inefficiency as a result of unpriced use of the pipeline for what could be described as "park and loan" purposes.

Economic costs are incurred as a consequence of shippers and welded parties not running to nomination. For example, balancing gas costs can only be recovered through the incentives pool to the limit of funds available on a day; any other costs are socialised through the pipeline access tariff. GIC analysis of data from January 2009 – September 2011 showed that 57% of balancing costs were socialised in this way.[49]

Conversely, even when no balancing actions are taken, welded parties can be cashed out if their scheduled quantity is curtailed due to another party being outside its tolerance. Shippers and welded parties therefore face uncertain consequences from running an imbalance. There is a risk of being cashed out but this may well not occur; the outcome depends on the actions of other parties including the balancing agent.

Using the pipeline as a "park and loan" facility is not necessarily inefficient. However in the absence of a clear price signal we can have no confidence that the current usage of park and loan services is efficient. On the contrary, since the effective price is close to zero,[50] we should expect that these services are being over-used and that the incentives to build gas storage are inefficiently weak.

It has also been claimed that some gas producers bear increasing costs as pipeline pressures increase towards the maximum level of 48 bar. We understand from submissions and workshop discussions that high pipeline pressures reduce the efficiency of recovering condensate, leaving some condensate in the gas stream and reducing the overall quality of delivered gas. Section 2.5 of MPOC requires MDL to "use reasonable endeavours to manage the Target Taranaki Pressure to be as low as practicable while maintaining sufficient Line Pack".

The core weakness in the current arrangements is that the ILON process gives quite weak incentives for primary balancing because of the time allowed to correct excess

[49] GIC, Draft Recommendation on 13 October 2011 MPOC Change Request, February 2012, page 18.
[50] There is risk of being cashed-out, but a relatively generous window of time within which this can be avoided.

imbalance positions. This has two initial economic effects. It increases the cost of secondary balancing by the pipeline operator, both through the purchase or sale of balancing gas and also through extra use of compressors to manage the pipeline. Additionally, the costs of secondary balancing are not always allocated to the parties whose conduct caused them; this causes a further incentive problem, which reinforces the tendency towards insufficient primary balancing. There may also be a third effect, which is that the physical conditions on the pipeline may inefficiently increase upstream production costs.

These issues are analysed in more detail in section 3 below.

2.2 Market Based Balancing

MDL has lodged an MPOC change request for a daily cash-out regime referred to as market based balancing (MBB). In doing so, it takes the previously approved B2B change requests as given, so the proposed code changes mostly build on the earlier ones rather than displacing them.

In explaining its MBB request, MDL draws heavily on a Network Code on Gas Balancing of Transmission Networks recently approved by the EU.[51] This is potentially helpful in piggy-backing on negotiated developments in more complex markets, but also carries a risk that local participants may consider these more complex markets less relevant. We also note that while the EU code aims to "*increase(s) the financial responsibility of market players in balancing their portfolio*" it includes measures aimed at "*equipping them both with standardised short-term products and an information framework to do so.*"

The MBB change request defines two types of market: a balancing platform and a trading platform and permits the balancing agent to use either market, or an off-market agreement to trade balancing gas. Subject to conditions (suitability, availability and cost effectiveness) the balancing agent is obliged to trade standard products on a trading platform.

The main impact of the proposed MBB regime is specified in changes to sections 12.10 and 12.11 of the MPOC which effectively provide for daily cash-outs of AEOI at notional and physical welded points, excluding Small Station physical welded points. The proposed cash-out prices are marginal buy/sell prices (rather than averages). No balancing action is required to trigger cash-outs which are also independent of AEOI at other welded points.

Cash-outs in the proposed MBB regime are subject to specified tolerances, which will be higher during a transition period (doubled until at least 1 March 2016).

MDL proposes to delete references to the BGX and instead refer to a BGIX which is a "balancing gas information platform that displays information related to Maui Pipeline balancing". It also proposes to drop explicit references to a balancing agent, including requirements for the agent to provide monthly accounts and audit reports.

[51] http://ec.europa.eu/energy/gas_electricity/codes/gas_en.htm

2.2.1 Economic commentary

The MBB proposal creates stronger incentives for primary balancing by shippers and welded parties. If the change request succeeds, it is likely to have several types of flow-on impact.

There is likely to be a demand for better information. At present, shippers do not have complete information on their physical positions on any given gas day. It seems that even many of the time-of-use (TOU) meters are using manual dial-up reading systems rather than modern automatic pulse telemetry. Daily demand patterns are more opaque in the mass market without TOU meters. There are also challenges for shippers operating through shared gates and behind TPWPs because in those situations reconciliations require multilateral communications. A move to MBB would likely provide new urgency to efforts to reconcile and allocate gas the day after delivery (D+1) and that would result in some extra costs.

Final (end-user) contracts may well change. Since shippers will be bearing some extra financial risk, it would not be surprising if end-user contracts reflected these costs. Such changes could be reflected through higher average prices or perhaps the addition of extra tariff steps that depend on the peaking characteristics of a customer's load, or both.

Over-pressure situations and the associated costs, may persist even if they are less frequent. If over-pressure is caused primarily by a preference for flat production patterns combined with weekday/weekend variability in demand, then more accurate nominations might not substantially reduce the frequency of high pressure situations. Alternatively, it may be that a MBB regime would provide strong enough incentives to upstream welded parties that over-pressure frequencies are reduced by throttling back production so that it better matches demand. Either way, MBB would provide an efficiency benefit by signalling the costs of using the pipeline as a buffer, thereby allowing the most efficient response to be discovered.

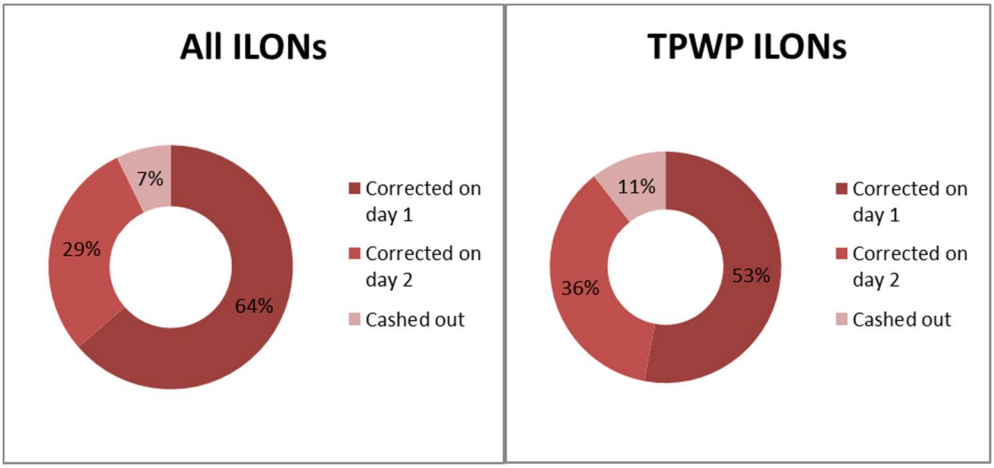
Perhaps the most pressing question however, concerns the reactions of shippers and welded parties to the stronger primary balancing incentives MBB would offer. We consider this matter next.

2.2.1 ILON Response

It is clear that primary balancing performance will not improve materially unless shippers have both the *incentive* and *ability* to better manage their positions under the MBB regime. While it seems generally agreed that MBB will strengthen incentives, a number of parties have argued that shippers have limited ability to adjust their positions on a daily basis. To the extent this is true, it would limit the primary balancing benefits we can reasonably expect from MBB.

To gain insight into primary balancing abilities, we sought information from MDL on the number of ILONs issued in 2014 and the response to those notices. Figure 7 summarises the results.

Figure 7: ILON Responses in 2014 (Source: MDL)



Of the 525 ILONs were issued in 2014 only 38 (7.2%) were cashed out and most were corrected on the first day. The response performance is weaker for TPWPs but not dramatically so. This suggests a reasonably strong *ability* to correct positions, though the *incentive* to do so is currently muted by the fact that parties are not certain of being cashed out.

Submitters (eg Vector) have correctly noted that this evidence arose from a context in which much up to 72 hours are available to correct positions. The data do show however that more than half of the ILONS were corrected on the first day, and notwithstanding the fact that imbalance may have been shifted elsewhere on some of these occasions that is evidence of an ability to respond.

Under MBB, the response would need to occur on the day however, rather than the next day, to avoid cash-out. So the response hurdle would be higher under MBB. For participants serving a mass-market customer base behind a shared gas gate that would require some monitoring of the gate position during the day following by a risk management decision. For example, if the gate appears likely to end the day short of gas, then it may be prudent to purchase extra gas with the aim of erring on the side of surplus at the end of the day. Participants may also consider it worthwhile to install a few smart meters to provide a sampling-based data set for the basis of supporting improved forecasts.

The general point is that while participants lack complete information, they are not bereft of response options currently and nor will that be the case under MBB. These options may currently look undesirable relative to the status quo, and it may also be that if MBB was implemented some participants would simply decide to be cashed-out rather than seek to better manage their own positions. My assessment is that the latter scenario is unlikely for large users who have good information on their own usage.

3 Costs and Benefits

In this section we identify and discuss each potential category of cost and benefit, and then assess the size of these effects. In so doing, we adopt an industry-wide view, meaning that we look for net effects on costs and benefits across the whole sector.

3.1 Description of Effects

3.1.1 Cash-out costs

MDL and pipeline users will exchange payments on a daily basis as users are cashed-out. Each party participating in a cash-out will either pay or receive revenue, and the counter-party's experience will be exactly opposite. The payments will be a transfer between parties, so from the perspective of the industry as a whole, they will net to zero. Accordingly, we make no allowance in the CBA for these payments.

3.1.2 The cost of balancing actions

It is likely that balancing actions (MDL buying and selling of balancing gas) will still occur under MBB. However to the extent that Line Pack is stabilised because more primary balancing is undertaken, MDL will require to take fewer balancing actions involving smaller volumes of balancing gas. The net cost or benefit of balancing transactions is "recoverable" from pipeline users for regulatory purposes under the Commerce Act. This makes MDL indifferent to the net financial impact of balancing actions. Any surplus (or deficit) in a year will be deducted from (or added to) MDL's regulated revenue in the next year.

Pipeline users pay MDL's regulated revenue so they are not indifferent to balancing costs. Other things being equal, users will in aggregate prefer that balancing costs are minimised, on which basis a reduction in balancing actions under MBB would count as a benefit. Other things are not equal however. Balancing actions will only become fewer and/or smaller under MBB if pipeline users undertake more primary balancing, which has its own costs (as discussed below).

Nevertheless, under MBB pipeline users would be able to choose whether to improve their own balance positions, or to bear the financial consequences of not balancing. Thus, provided the cash-out prices are efficient MBB can be expected to at least not increase balancing costs. We therefore consider it would be reasonable to expect the cost of balancing actions to fall under MBB, which counts as a benefit for the CBA.

Some submissions (e.g. Genesis Energy) have queried the view that actions by the balancing agent will be fewer and/or smaller under MBB. That argument requires participants to deliberately undertake less management of their positions than is currently the case, which seems very unlikely. Our treatment of this point is inter-related with the question of pipeline user balancing costs, so it will be explained in section 3.1.4 below.

3.1.3 Balancing-related fuel gas costs

MDL argues that its Mokau compressors are primarily run for the purpose of supporting nominations. This function incurs an annual cost of between $900,000 and $1.2m. It appears from MDL's submission that this approach is cost-efficient in the sense that the alternative (purchasing balancing gas) would cost around three times this amount annually.

For the CBA, this category of cost is treated the same way as the cost of balancing actions discussed in section (3.1.2). We would expect some reduction to occur as a result of an MBB-induced increase in primary balancing. We also consider such reductions a legitimate benefit for the CBA provided pipeline users will face efficient (i.e. cost-reflective) price signals.[52]

Submissions from Nova and Vector queried whether these cost savings are correct. Vector effectively argued that MDL uses its compressors for its own purposes on the weekends to restore pressures before the working week. That view is not consistent with MDL's submission on 24 November 2014 (¶7 – 9), however MDL's most recent submission is silent on the issue. My understanding is that MDL operates its compressors for the purpose of removing pressure from the southern end of its pipeline rather than to add pressure to the northern section. In what follows the treatment of fuel gas is unchanged from the original CBA.

3.1.4 Pipeline user balancing costs

Under MBB, pipeline users will need to decide whether and how to change their conduct in respect of primary balancing. Broadly speaking, users have two options: make no changes in conduct; or seek to avoid cash-outs. Under the first option, cash-outs would be higher and more frequent than under the second option. However we have already noted that cash-outs are transfers between users which do not count in the cost-benefit analysis.

How then should we treat extra costs incurred by pipeline users for the purpose of managing their own physical positions? These outlays are in fact investments aimed at increasing the financial benefit of a pipeline user. On average, we can expect them to be value-enhancing rather than a net cost. For this reason, in the first version of this CBA no allowance was made for these costs.

A number of submissions objected to this treatment, arguing that even though these actions may be undertaken with a view to increasing profit, they also reflect costs that would not be incurred under the status quo. Nova in particular argued that the offsetting benefit expected from these outlays "*is not recoverable by shippers, excepting reducing their daily cash-out costs. That does not represent a saving for the industry however; as any savings made merely reduce the contra-credit on the following year's shipping charges.*"

In what follows, this argument is accepted along with the other implications that flow from it, namely

[52] This approach does not rely on a view that pipeline users will always be able to balance their positions. Some cash-outs are likely to occur even when a user would prefer to have been balanced, due to an imperfect ability to react.

- That retail prices will not increase, notwithstanding the comments above in section 2.2.1; and
- That any party for whom such costs are counted in the CBA will be assumed to be actively managing their position.

Note that the latter implication conflicts with the view that secondary balancing may increase. The CBA needs internal consistency, so we cannot simultaneously assume that costs will be incurred for the purpose of active management and that active management will not occur.

3.1.5 Adjustment factor

The MBB proposal includes provision for an adjustment factor to be included, pushing the cash-out prices somewhat away from market clearing prices. MDL argues that this is necessary for an efficient outcome, but other submitters (e.g. Contact) consider it to be a penalty charge and say it is not cost reflective and therefore not allocatively efficient.

In the absence of the adjustment factor, cash-outs would simply price the imbalance gas at the prevailing market price so that pipeline users would be approximately indifferent as to whether they were cashed-out or not. The market price would be a spot price however whereas most gas is traded on contracted terms. In the absence of an adjustment factor, the difference between these prices would provide an incentive for primary balancing, but only in one direction.[53] We therefore agree with MDL that incentives for primary balancing would not reliably increase without an adjustment factor.

It does also seem clear that there is no close relationship between the adjustment factor and "costs". This follows directly from it being a percentage of the market price (which varies), and from the fact that MDL has not committed to any particular percentage.

On the other hand, there are some real costs to be reflected as we have discussed above. While park and loan services are not currently priced, neither are they costless to provide.

Two of the CBA components discussed above (sections 3.1.2 and 3.1.3) rely on an assumption that cash-out prices will be efficient. This is needed in order to conclude that pipeline users will make efficient choices under MBB. However, while stated somewhat baldly above, what really matters is price signals to pipeline users under MBB will be *more efficient* than is currently the case.

That appears to be a safe conclusion. MDL's submission presented modelling of the adjustment factor that would leave pipeline users indifferent under a range of assumptions. It concluded (at ¶188) that the adjustment factor is likely to be set in the range of 2.5% to 4% initially. The adjustment factor will be applied to prices from the emsTradepoint market however (see section 3.1.6 below), rather than the BGX. Even without MBB-induced trading the emsTradepoint market has much lower spreads than the BGX. An adjustment factor of 4% would not change that fact. So

[53] For example, if a shipper's contracted price is lower than the spot price they would prefer not to be forced to buy spot-priced gas, but may be quite happy to sell spot-priced gas.

when we put both effects together (switch to emsTradepoint plus the adjustment factor) it seems clear that the cash-out prices under MBB would be more efficient than those under the status quo.

3.1.6 emsTradepoint market

There is a disagreement in submissions between MDL and Vector over how a shift from purchasing balancing gas through the BGX to emsTradepoint should be treated in this analysis. Currently, emsTradepoint is located on a Vector pipeline and MDL does not use it to purchase balancing gas. The stated reason is that MDL does not have sufficient confidence that trades will be physically completed.

Under the MBB proposal, the emsTradepoint market would relocate to the Maui pipeline and be used for balancing gas. Vector argues that MDL should already be using emsTradepoint. However from an economic standpoint, it does seem clear that MBB would result in a change to a more efficient market. This is expected to reduce the spreads for balancing gas purchases, which counts as a benefit in the CBA.

While the use of emsTradepoint would be beneficial for balancing gas transactions, the MBB change is also likely to provide a benefit in the reverse direction. We expect a much larger number of market transactions under a daily cash-out regime, which would improve the liquidity and hence efficiency of the emsTradepoint market.

Three arguments were made in submissions that bear on the market topic generally. First it was argued by Genesis that extra gas would be needed to manage balancing, that the market would otherwise be short of gas, and that the cost of that gas needs to be added to the CBA. This seems to omit consideration of situations where users are storing gas in the pipeline, at which time less gas (or equivalently more demand) is required for balance. More generally, it is overall demand that determines the total flow of gas required over a day. Under MBB, trades of balancing gas will have the aim of aligning those flows with deliveries at the level of the shipper. In effect, inter-shipper balancing trades allow the industry to achieve more portfolio diversity. This does not deny the possibility that the market might be short or long on a given day. Rather, it recognises that demand is the ultimate determinant of gas flow and therefore of the total amount of gas required. For these reasons we make no allowance for this effect in the CBA below.

Two arguments were also raised regarding brokerage on the emsTradepoint market. The TrustPower submission argued that brokerage on the emsTradepoint market should be included as a cost in the CBA while emsTradepoint argued that brokerage should be excluded because it occurs under the factual scenario as well. I disagree with both of these arguments. Firstly, it seems very likely that market liquidity will increase under MBB for reasons discussed above. That implies extra transactions and extra brokerage under MBB than under the counterfactual. However in order to count brokerage as a cost we would need to view the market as being somehow separate from the industry, which seems wrong considering the clear benefits associated with having a transparent and liquid market. For these reasons brokerage is excluded from the CBA below.

3.1.7 Upstream costs from over-pressure situations

Submissions from upstream producers (e.g. Shell) argue that the current balancing arrangements have the effect of requiring producers to supply swing services and that they lead to a large number of over-pressure situations. This is said to impose real costs on producers, so there would be a benefit to count in the CBA if (and to the extent that) these costs were reduced by MBB.

Two distinct types of cost are claimed. One arises from producers reacting to swings in demand, and the other is a loss of reserves arising from excessive pipeline pressures. We sought clarification from Shell of its submission on these matters. In respect of swing, we consider that the relevant entry into the CBA is not the gross cost of producer-supplied swing, but any cost *saving* that would arise from MBB permitting lower cost alternatives to be used. For example, if there is no cheaper alternative, then it is efficient for producers to supply swing and the CBA should take no account of this factor.

It seems that gas supply agreements are typically structured in a way that requires producers to supply swing. Contract terms typically include both a peak flow quantity and an average flow quantity; swing is by definition available within these bounds. We would expect competition between producers to result in the implied swing allowance being priced with reference to its cost on the production sector generally. Nevertheless, if spot gas prices would be more efficient under MBB (as seems likely) then shippers may well use other less costly methods to meet variable demand. For this reason, we consider that there is likely to be some swing-related benefit associated with MBB and that there is most unlikely to be a cost.

The claimed loss of reserves is linked to over-pressure situations. We consider that over-pressure situations would indeed be materially reduced under MBB. Since excess gas can no longer be parked in the pipeline for days before being cashed out (as it can under the ILON arrangement), better primary balancing behaviour is encouraged.

3.1.8 Reconciliation costs

The final category of effects concerns reconciliation of gas flows behind TPWPs. Under MBB the relevant welded party (Vector) will have daily imbalances cashed out. These financial flows will then be shared out between Vector shippers.[54] An improved system will be needed to allocate imbalance costs in a reasonably accurate and prompt fashion. There will also be an ongoing cost associated with operating that system.

3.1.9 Dynamic efficiency impacts

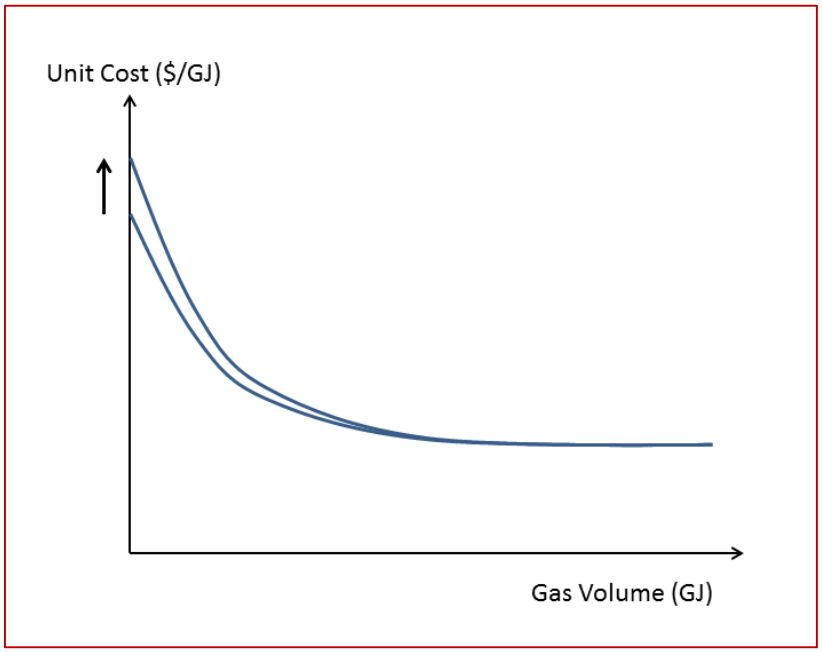
The first version of the CBA noted several impacts on dynamic efficiency but did not quantify them. Submitters commented on two main topics under this heading.

First, it was argued (most strongly by TrustPower) that MBB would increase costs for smaller retailers which amounts to raising the barrier to entry. This is a fair point

[54] We assume that the recent VTC change to pass-through such costs to shippers will be implemented as part of this process.

and should be thought about in the context of competition more generally. The extra costs occur for small retailers, arising largely from their lack of scale which can be expected to increase forecast error variability. We can think of the unit cost curve as shifting as shown in Figure 8 below.

Figure 8: Change in Unit Cost Curve with MBB



This shows that there are two effects. The first is that costs are higher for new entrants because of the forecasting accuracy issue. Secondly, having entered, small firms have more to gain by expanding: their unit cost curve falls more quickly as extra volumes are sold. That will tend to intensify competition by small firms that do enter. Notwithstanding the higher initial cost, it would therefore not be correct to conclude that competition would be weakened under MBB.

The second dynamic efficiency issue discussed concerned the benefits of MBB. On this point MDL suggested adopting a method previously used by the Commerce Commission: using a fraction of industry revenue as an indicator of dynamic efficiency benefit. This is not an appealing approach, mainly because of the quite loose connection between the resulting figure and actual dynamic efficiency benefits.

That said, it is surely correct that the main impacts of MBB will be on dynamic efficiency. It is therefore not particularly satisfying to be discussing relatively small sums of annual value arising from static effects while not quantifying the main impact. Nevertheless, that remains the approach pursued in the quantification below, though some extra discussion of dynamic effects is offered.

3.1.10 Summary of Effects

The above discussion is summarised in Table 1 below.

Table 1: Summary of potential costs and benefits and treatment in CBA

	Cost/benefit category	Treatment in the CBA
3.1.1	Cash-out costs	These are transfers between parties and, net to zero, no allowance in the calculations.
3.1.2	Cost of balancing actions	Cash-out prices are more efficient than the status quo, expect the cost of balancing to fall.
3.1.3	Balancing-related fuel costs	Compressors run "*primarily … for … supporting nominations*". Expect costs to decrease with improvements in primary balancing.
3.1.4	Pipeline user balancing costs	Expected to be profitable investments under MBB, but no information on likely profit. Allowance added for system-related costs incurred by users.
3.1.5	Adjustment factor	The adjustment factor is too small to offset the efficiency improvement of moving from the BGX to a more-liquid spot market.
3.1.6	emsTradepoint market	Question of whether MDL should already be using emsTradepoint to price balancing gas. CBA concluded that the status quo is the appropriate comparison. Reduced spread feeds into lower secondary balancing costs. MBB likely to stimulate more transactions which may improve liquidity and efficiency. No estimate available of this benefit. Brokerage costs excluded on the basis that they are transfers to a market participant, i.e. the market is integral to the industry.
3.1.7	Upstream costs from over-pressure situations	There is likely to be a reduction in over-pressure incidents and some swing-related benefits associated with MBB with no related cost. However, as these cannot be quantified they have been excluded from the CBA
3.1.8	Reconciliation costs	Provided an allowance for additional Vector costs as daily cash-outs may require more timely information than currently exists.
3.1.9	Dynamic efficiency effects	Not directly estimated but reviewed in qualitative terms.

3.2 Quantification

We have modelled the above effects in three categories:

- Balancing actions
- Fuel gas; and
- User costs

Table 2 shows where each of the effects described above shows up in the quantification.

Table 2: Translation from descriptor to quantification

Effect	Location in CBA
3.1.1 Cash out costs	Excluded
3.1.2 Cost of balancing actions	Balancing actions
3.1.3 Balancing related fuel gas costs	Fuel gas
3.1.4 Pipeline user balancing costs	System costs included
3.1.5 Adjustment factor	Excluded
3.1.6 emsTradepoint market	Balancing actions
3.1.7 Upstream costs from over-pressure	Excluded
3.1.8 Reconciliation costs	User costs

Effects are excluded either if they should not be counted as a matter of economic logic or if they cannot be reliably estimated. Cash out costs fall into the first category as discussed in section 3.1.1. They are transfers between participants which net to zero when viewed from the perspective of the industry. As noted above, while the original CBA excluded pipeline user balancing costs on the basis that they would be profitable investments under MBB an allowance is made here for system costs at the pipeline user level.

The adjustment factor was discussed above in order to decide whether the cash-out prices under MBB should be viewed as efficiency enhancing. Having decided that they are, these factors have no further role in the modelling because they relate to the financial flows arising from cash-outs which are transfers between participants.

Regarding potential upstream benefits from fewer high pressure situations, we have been provided with detailed modelling of this issue by Shell. However it is regarded by Shell as commercially sensitive so cannot at this point be exposed for industry scrutiny. We therefore we assign no weight to it in this analysis.

The remainder of this section explains how each of the three main components was estimated, and then presents the results.

3.2.1 Balancing actions

Under the status quo, MDL buys and sells balancing gas on the BGX. During the nine months to September 2014, it received on average $1.20/GJ and paid on average $8.85/GJ. These price differences appear typical of BGX trades and may even understate the spreads on the BGX.[55]

Under MBB, two changes are expected. One is that the spreads will reduce, and the other is that fewer and/or smaller balancing actions will occur. We modelled the spread-narrowing effect by assuming that the above put and call prices ($1.20 and $8.85) applied to all balancing trades under the status quo, whereas under the MBB scenario the corresponding prices would be 3% below and above the VWAP from emsTradepoint of $5.75.

[55] Intraday 4 price stacks on 11 February 2015 are more extreme with puts in the range $0.50 to $1.10 and calls in the range $9.99 to $12.50

Applying these prices to the volume of balancing actions across recent years gives the following annual benefits of spread-narrowing where the 2015 data relate only to trades up to 9 February 2015.

Table 3: Benefits from spread-narrowing only (June financial years)

Year	Call GJ	Put GJ	Net Position by Scenario ($m)		Spread Benefit ($m)
			BGX	emsTradepoint	
2007	1760296	-3017829	-11.96	6.41	18.36
2008	2241171	-2307270	-17.07	-0.40	16.66
2009	1812984	-2144281	-13.47	1.22	14.69
2010	326469	-447000	-2.35	0.56	2.91
2011	262500	-303700	-1.96	0.14	2.10
2012	291500	-87500	-2.47	-1.24	1.24
2013	59500	-246550	-0.23	1.02	1.25
2014	80500	-203000	-0.47	0.66	1.12
2015	47000	-256500	-0.11	1.15	1.26

We take the 2014 year as our estimate of the benefit of spread-narrowing, noting this is a conservative choice because 2014 is the year with the lowest benefit. To illustrate the uncertainty associated with these estimates as requested by MGUG in submissions and respond to TrustPower's view that 90th and 10th percentile prices are more appropriate we have added a number of extra scenarios. As will be seen, these do not materially alter the view that 2014 data provide a reasonable point estimate.

The spread-narrowing effect alone would over-state the benefit of MBB however because it assumes the same pattern of balancing actions. We expect that MBB would induce more primary balancing and therefore fewer and/or smaller balancing actions. We have no reliable way of predicting how much change there will be in balancing actions, so we modelled a range of scenarios from an increase of 20% through to a reduction of 90% in the volume of balancing trades. The increase of 20% responds to submitter views that balancing actions may increase, but it limits this possibility to the proportion of the total gas market that is delivered to customers without telemetry. These are groups AG2, AG4 and AG6. Over the period October 2009 to September 2014 these groups averaged 18% of total gas deliveries, so a 20% increase in balancing actions could be thought of as modelling a scenario in which all firms serving this section of the market abandoned any attempt at primary balancing *and* no other party improved their primary balancing performance.

In revising the benefit model to accommodate these changes we identified a logical error which is also corrected. The original modelling scaled the spread benefit identified in Table 3 by 10% or 20% etc. However under the counterfactual there would be no change in the net position of the balancing agent operating through the BGX. Therefore only the net position of the balancing agent in the factual scenario should be scaled by the change in primary balancing. As will be seen below, this leads to higher benefit estimates as primary balancing improves.

3.2.2 Fuel gas

As discussed above, it is expected that under MBB there would be more primary balancing and therefore less fuel gas used for nomination support. We used MDL's estimate of fuel gas used for this purpose, averaging the amounts used in 2013 and 2014 to generate an annualised volume. We valued this using MDL's approach which is based on the emsTradepoint volume weighted average price.[56]

The next task is to estimate the reduction in fuel gas that would occur under MBB. This is a similar problem to the one discussed above for balancing actions so we addressed it in the same manner, using a range of percentage reductions in total volume, from 0% to 90%. The resulting estimates of cost saving range from zero to $938,000 per annum.

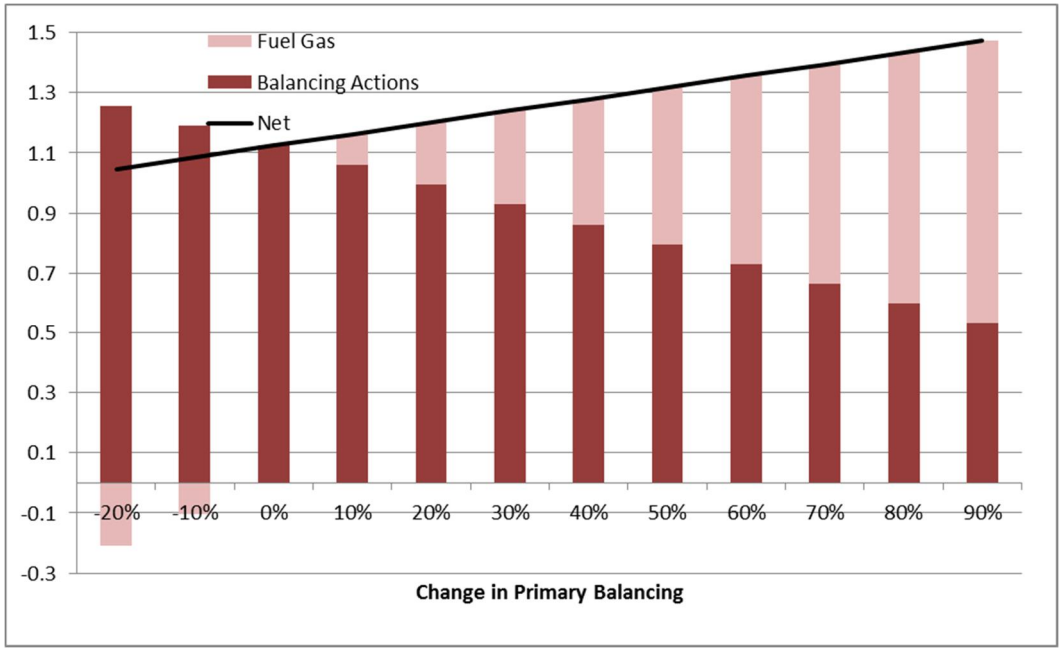
3.2.3 Total of benefits

To model total benefits we combine the above two effects: balancing actions and fuel gas. These respond in opposite directions to increases in primary balancing. As primary balancing increases, the balancing actions benefit falls (because the spread-narrowing benefit is applied to smaller volumes) but the fuel gas benefits rise (because less fuel gas is needed to compensate for imbalances).

We model total benefits across a full range of "more primary balancing" scenarios. In each scenario, we used the same percentage changes for fuel gas and balancing actions. For example, if there is only a small reduction (say 10%) in the need for balancing actions, then this creates a large saving in the cost of balancing because the smaller emsTradepoint spread is applied to most (90%) of the historic balancing actions. However in the case of fuel gas, the same small reduction (10%) implies a much smaller cost saving. Figure 9 shows how the benefits of MBB from these two sources vary with the amount of extra primary balancing. If there is no extra primary balancing, there is a moderately large benefit from the balancing action source and nothing from fuel gas savings. Conversely, if 90% of balancing actions were avoided by enhanced primary balancing and 90% of fuel gas usage was also avoided for the same reason, there relative size of these two benefits would reverse.

Figure 9: Annual Benefits of MBB from Balancing Actions and Fuel Gas sources ($m)

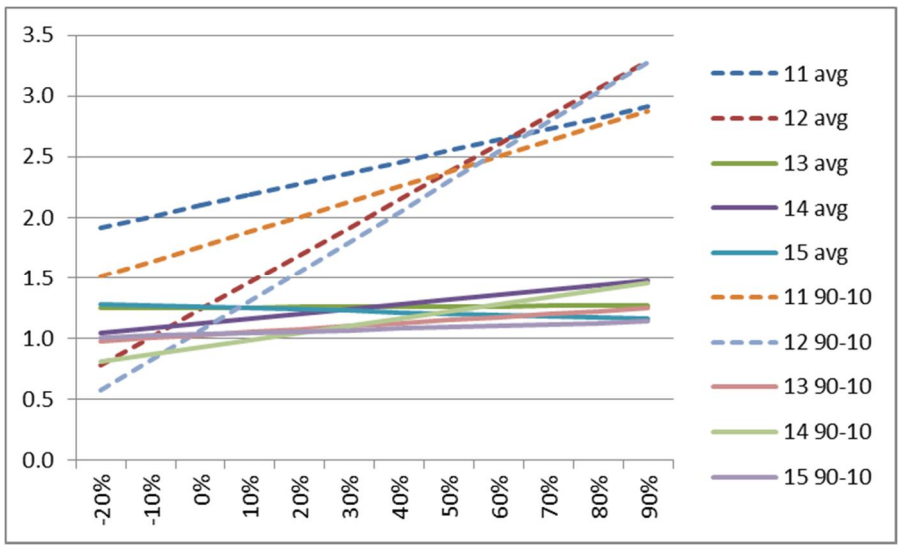
[56] We note that some submitters argue against this valuation method. Whatever access MDL may have had to cheaper gas, it is in our view appropriate to value fuel gas at its opportunity cost.



The chart reflects the same information as the corresponding chart in the original CBA with the calculation of spread benefit corrected and the horizontal scale extended leftwards to accommodate a scenario of a 20% decrease in primary balancing. The black line shows the combined benefit of these two effects.

Next, we illustrate the sensitivity of this combined benefit to various assumptions. Figure 10 uses data from Table 3 the last five years combined with fuel gas cost changes. These lines are labelled "avg" with the associated year (i.e. 11 avg uses average price data for 2011). The next group of lines uses the TrustPower suggestion of 90th and 10th percentile prices, again across each of the last five years.

Figure 10: Sensitivity of Static Benefits to Assumptions ($m)



The scenarios for 2011 and 2011 are shown by dotted lines and it can be seen that the pattern of balancing actions has changed somewhat since then. Over the last

three years the other scenarios are broadly similar with benefits of between $1m and $1.5m if primary balancing improves and somewhat less than that if primary balancing deteriorates.

3.2.4 User costs

There is relatively little information in submissions on the transaction costs pipeline users expect to incur under MBB, with more focus on estimates of cash-out costs to shippers. Nova has however estimated that it would incur between $50,000 and $100,000 extra cost per annum to manage its affairs under MBB and considers this would apply to 10 shippers. Vector estimates a set-up cost of $365,000 plus annual costs of $150,000. Allowing $60,000 per annum for Vector's set-up costs[57] gives the following total estimates.

Vector set-up	$ 60,000
Vector on-going	$150,000
10 Shippers	$500,000 - $1m
TOTAL	$710,000 - $1,210,000

These cost estimates are based on the assumption that all shippers attempt to improve their daily balance position. If some do not, smaller costs would be incurred. For scenarios in which primary balancing deteriorates we therefore scale back user costs, dropping the costs for one shipper in the -10% scenario and for two shippers in the -20% scenario.

3.3 Results

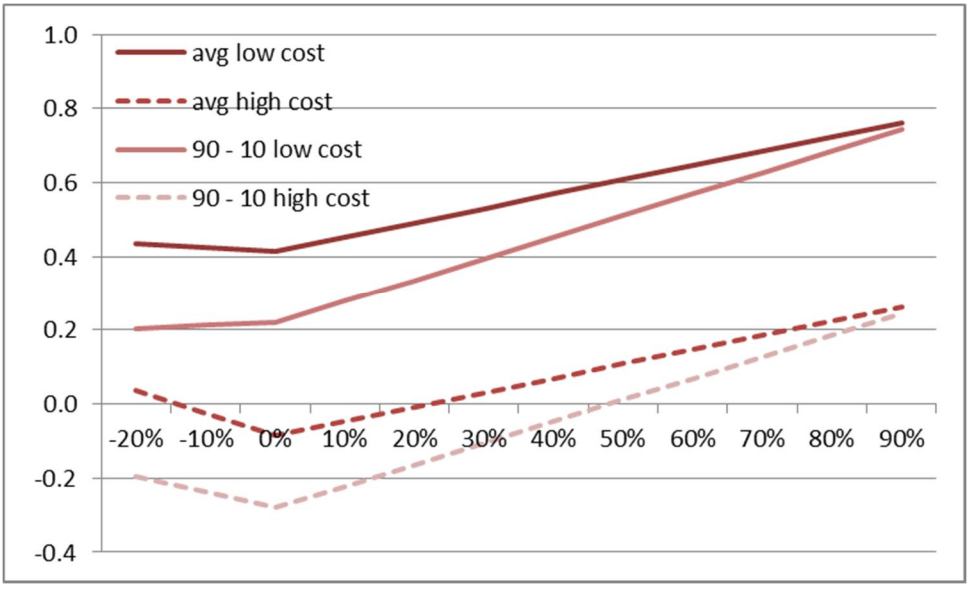
The results of this analysis are split into static and dynamic efficiency effects in what follows.

3.3.1 Static Efficiency

The static efficiency results are summarised in Figure 11 below which uses 2014 data. Four scenarios are shown, two with average market prices and two using the 90th and 10th percentile prices. For each set of prices we show the net effect of assuming costs are at the high and low end of the ranges proposed in submissions.

Figure 11: Total Static Efficiency Benefit or Cost from all Static Efficiency Impacts by Scenario ($m)

[57] This is sufficient to amortise the cost over 10 years using a 10% cost of capital.



The static efficiency results depend mainly on whether user costs are at the high or low end of submitted estimates, but also on the change in primary balancing. If primary balancing improves by 50% all four scenarios would show positive static efficiency effects. Smaller improvements in primary balancing would be sufficient to conclude there is a net static efficiency benefit if average prices were used even with high costs, and if costs are at the low end of submitted values then there are static efficiency benefits even if primary balancing deteriorates overall.

3.3.2 Dynamic Efficiency

It is generally agreed by economists and regulators that dynamic efficiency effects are materially more important than static efficiency effects. Competition is an inherently dynamic process, involving learning and the development of new processes and products.

The modelling above reflects just one dimension of this process by entertaining a range of possible aggregate effects of changes in the way pipeline users manage their positions under MBB. Even that cannot be fully grounded in fact because it relies on historic information and involves predictions about future conduct.
The fact that dynamic efficiency gains are so challenging to quantify does not diminish their importance however. The development of effective spot markets in other situations has stimulated many other efficiencies including in the form of derivative products that allow participants to manage risk. For example, we note that in the USA, forward contract prices for gas are able to be used as a cross-hedge on electricity price risk.[58]

The New Zealand market is certainly much smaller, but with gas being used as a feedstock for electricity it seems likely that a more efficient gas market would have spill-over benefits for a range of gas users who also use or generate electricity. However, while it is clear that extra trades stimulated by MBB would improve

[58] Woo, C.K., I. Horowitz, A. Olson, A. DeBenedictis, D. Miller and J. Moore (2011) Cross-Hedging and Forward-Contract Pricing of Electricity in the Pacific Northwest, *Managerial and Decision Economics*, 32, 265-279.

liquidity on the emsTradepoint market, we have no reliable basis for predicting how that liquidity might be used in the future.

Similar considerations apply to the incentives to build gas storage. It is clear that MBB would provide more efficient price signals of the value of storage and that counts as a form of dynamic efficiency. The present value of that benefit cannot be reliably predicted because we do not know where or when or whether future storage facilities will be built or how important MBB-initiated price signals would be in the decisions to build or not build these facilities.

In the first version of this CBA, such effects were simply noted and none of the effects identified were considered negative. Submitters were invited to describe offsetting dynamic efficiency effects (i.e. detriments). The closest to an example of such an effect was the observation that small entrants will have higher costs. As discussed above, this does not imply that competition will be weaker because unit costs will not change materially for other participants and smaller firms will have a stronger incentive to grow.

We therefore remain of the view that the dynamic efficiency considerations are all positive. Further, since even the worst case of the many static efficiency scenarios considered involves only a modest cost when viewed in the context of the gas industry as a whole it is our view that the overall effect of the MBB proposal would be positive.

4 Conclusion

This analysis has been conducted at the industry level which is considered appropriate. Individual participants are likely to experience a range of costs and benefits, depending on whether and to what extent they benefit from the current rather loose arrangements for balancing.

We have valued resources at market rates which is appropriate for a cost-benefit analysis. The main benefits are from reduced balancing costs and reduced usage of fuel gas to support nominations. These benefits have been assessed across a wide range of scenarios for the response of users and potentially relevant price levels. For most scenarios they outweigh our submitters' estimates of the costs users are likely to incur in managing their positions under MBB, though we do report some scenarios where that is not the case.

The quantified static efficiency benefits of shifting to MBB are estimated to range between $1m and $1.5m per annum. The quantified costs of shifting to MBB are estimated at between $710,000 and $1.21m per annum.

Unquantified dynamic efficiency effects would all tend to increase the net benefits rather than reduce them. Given the widely held view that dynamic efficiencies are more important than static efficiencies and the fact that most scenarios show positive static efficiency effects, we consider that the small risk of a negative static efficiency effect is outweighed by the dynamic efficiency benefit so that MBB would be of net benefit to the industry.