



Transmission Pipeline Balancing

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About the Gas Industry Co.

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

As such, its role is to:

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

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Executive summary

This research paper gathers information relevant to pipeline balancing as a resource for the industry to use in further consideration of the issues, and taking action to resolve them.

The pipeline balancing arrangements introduced as part of the Maui pipeline open access arrangements on 1 October 2005 have not been operating as intended. Many of the difficulties experienced were discussed in a series of industry workshops which followed a number of overpressure incidents at the end of 2006. Although participants put in a great deal of effort to unravel the problems, very little change has resulted.

Some of this inertia may result from the ongoing influence of the legacy Maui gas contract. However, other matters unrelated to those legacy arrangements have also languished unresolved.

During 2007 Vector developed a Vector Transmission Code (VTC) which contains its multilateral shipper arrangements. It is expected that this code will progressively displace existing shipper contracts during this year.

Due to a recent change of practice by MDL, daily imbalance limit overrun notices have been issued to Vector, the interconnected transmission company. These notices are intended to be the primary incentive on parties interconnected to the Maui pipeline to maintain balanced positions. However Vector and its shippers, who ultimately bear the cost of MDL's balancing actions, believe these notices are in breach of the MPOC, and have concerns that the current balancing arrangements may not be reasonable or effective.

To cast light on the suitability of New Zealand's pipeline balancing arrangements, this research paper has measured them against the guidelines for best practice in Europe. The conclusion is that the design of some of the components of the balancing arrangements appears to be flawed, and that the interoperability of the two regimes may be sub-optimal. A number of suggestions are made for further enquiry.

Note that this paper does not seek to identify all of the problems with the current balancing arrangements. Rather it gathers information about the balancing regime as a basis for further discussion. Gas Industry Co now wishes to engage with the industry to consider how further improvements to the balancing arrangements can be achieved.

Contents

1	Introduction	1
1.1	Pipeline balancing	1
1.2	Balancing reviews	2
1.3	Recent developments	5
<hr/>		
2	Contract arrangements	7
2.1	Development of open access regimes	7
2.2	Overview of Balancing arrangements	8
2.3	Daily tolerances	10
2.4	Hourly (peaking) tolerances	11
2.5	Legacy gas	11
<hr/>		
3	Physical balancing arrangements	13
3.1	Operational use of linepack	13
3.3	Ability to self balance	14
<hr/>		
4	Balancing Principles	16
4.1	Principle 1 - Balancing responsibilities	16
4.2	Principle 2 - General requirements for balancing rules	17
4.3	Principle 3 – Frequency of balance	19
4.4	Principle 4a - Balancing costs and incentives for the TSO	20
4.5	Principle 4b - Charges for imbalances	21
4.6	Principle 4c – Trading of imbalance positions	23
4.7	Principle 5 – Tolerance services	23

4.8	Principle 6 – Information on balancing status	25
4.9	Principle 7 – Harmonisation of balancing rules	26
4.10	Principle 8 – Provision of flexibility	26

5	Conclusion	28
5.1	Summary of Principal Concerns	30

	Glossary	28
	Glossary of terms	28

Appendix A	23 February 2007 letter from Gas Industry Co to the MDL Commercial Operator	35
Appendix B	Concluding report on Maui pipeline CO's workshops	37
Appendix C	MPOC and VTC balancing provisions	39
Appendix D	ERGEG Guidelines of Good Practice for Gas Balancing	45
Appendix E	ERGEG Gas Balancing Conclusions Paper	47

1 Introduction

Effective balancing of transmission pipelines is a key element of successful open access. Gas Industry Co is therefore concerned to see that the balancing arrangements on the Maui and Vector pipelines are continuing to cause problems. This research applies overseas experience as a frame of reference in which to measure these balancing arrangements, and point to where improvements might be considered.

Although this is a research paper rather than a consultation paper, Gas Industry Co wishes to use it to open and inform discussion with industry participants on how transmission pipeline balancing arrangements can be improved.

In this chapter the nature of pipeline balancing is described and the development of the Maui and Vector pipeline balancing regimes is reviewed.

1.1 Pipeline balancing

The term pipeline balancing refers to the management of the inventory of gas in a pipeline, generally known as *linepack*. The linepack management tools available to a pipeline operator typically comprise:

- commercial incentives on pipeline users to maintain balanced positions;
- flexible nomination procedures to allow users to signal their changing needs;
- arrangements to buy and sell 'balancing gas';
- providing information to pipeline users to signal the likely need for balancing action (to prompt users to take self-balancing actions); and
- rights of curtailment, release of contingency volumes, and operator instructions to users.

The self-balancing tools available to pipeline users are typically:

- gas supply flexibility provided through producer and storage supply contracts;
- gas demand flexibility provided through interruptible end user contracts; and

- pipeline linepack flexibility provided in the form of tolerances.

1.2 Balancing reviews

Gas Industry Co discussed pipeline balancing in its June 2006 *Transmission Access Issues Review* paper. It concluded that the current pipeline balancing arrangements were potentially inefficient, complex and unfair. However, it recognised that the Maui pipeline had only operated as an open access pipeline since 1 October 2005, so there was very limited practical experience of the balancing regime.

In October 2006 Gas Industry Co issued a paper in which it considered submissions on its June 2006 issues paper, and set out a programme for further work. It was clear from submissions that pipeline users found the balancing procedures to be unclear and uncertain. Pipeline users did not have a good understanding of how the pipelines were being balanced or what risks they were exposed to as a consequence.

Gas Industry Co concluded that it was too early to consider fundamental changes to the balancing arrangements, but there was a need to make the balancing procedures more transparent. It proposed a series of balancing forums with a further review of balancing arrangements in August 2007, by which time some experience of how the regimes operated in practice would have built up. Although several preliminary forum meetings were held, the process was overtaken by events.

During the last few months of 2006 and January 2007, the Maui pipeline experienced repeated overpressure incidents. The Maui pipeline Commercial Operator (CO) had to actively intervene to maintain the linepack (and pressure) within acceptable limits. Initially the CO adopted a targeted approach involving reducing the scheduled quantities at delivery points which were under-flowing, and correspondingly reducing scheduled quantities at associated receipt points. Producers at these receipt points were then instructed to curtail their flows to match the revised scheduled quantities. However, when the validity of these instructions was challenged, the CO took an alternative course of action which involved reducing the scheduled quantities across all receipt points.

The Maui pipeline CO believed that the overpressure problem was primarily caused by shippers nominating in excess of demand. However some shippers disputed this and proposed a range of possible alternative causes, such as:

- weak incentives on shippers to forecast their demand accurately;

- weak incentives on Vector, the owner of the interconnected transmission pipelines, to flow to agreed scheduled quantities¹;
- the treatment of unaccounted for gas (UFG);
- the practice of operating the pipeline close to its upper pressure limit, leaving insufficient 'headroom' for normal linepack variability;
- lack of differentiation between nominations made to meet daily needs and those made to correct previous imbalances;
- uncertainty about when balancing actions are likely to be taken;
- pressure and linepack information on the status of the Maui (and Vector) pipelines being available too late to take effective self-balancing action;
- the ineffectiveness of the MPOC *incentives pool* against positive imbalances; and
- the inability of the Maui production station to flow less than 2TJ/hour, combined with the absence of alternative balancing arrangements.

To settle the question of what the root cause of the overpressure situation was, the Maui pipeline CO held an industry forum on 9 February 2007, and subsequently launched a series of facilitated industry workshops to consider various aspects of pipeline operation which may have contributed to the problem. In a letter to the Maui pipeline CO, dated 23 February 2007, Gas Industry Co set out its views on this process (see Appendix A). In essence, Gas Industry Co supported the facilitated workshop approach, and suspended its own balancing and legacy forums to avoid duplication of effort. Gas Industry Co accepted an invitation to attend the Maui pipeline CO's workshops as an observer.

Summary of conclusions of Maui pipeline CO's overpressure workshops

The Maui pipeline CO's workshops continued through the first half of 2007. The final report was issued on 7 June 2007 and is included as Appendix B. The conclusion of the workshop process can be broadly categorised as 'insights' and 'principles'.

Insights (pieces of information which may cast light on aspects of balancing) were that:

- the Maui pipeline is operated towards the top of the pressure envelope, allowing less opportunity for positive imbalance;

¹ Section 3.14 of the MPOC prevented *ILONs* being issued for welded points receiving legacy gas (mostly Vector welded points) until after month end reconciliations were complete.

- at peak flows the Maui pipeline can accommodate swing of 50TJ/day;
- since the commencement of Maui pipeline open access UFG has been accumulating in imbalance positions²;
- where curtailment was required, the MDL CO would do so using a targeted approach (i.e. not across all receipt or delivery points); and
- Daily reconciliation of downstream deliveries would improve shipper forecasts and allow daily settlement of imbalances and mismatches. The costs and benefits of this approach need to be considered.

Principles (matters on which there was general agreement) were that:

- The industry agreed the 'causer pays' principle should apply to balancing. It was thought that a well designed incentive scheme would minimise the need for operator intervention. Market based balancing options were favoured, but if this was not possible balancing gas prices should at least be cost reflective.

It might have been expected that the workshop process would have prompted changes to occur. For example, changes to the MPOC could have been proposed. However, no change proposals emerged. Possibly the parties found it too hard to find an obvious path through the tangled web of issues, or considered that MDL's right of veto³ would make change proposals futile.

Other possible outcomes could have been: clarification of the policy on how UFG would be treated, a review of the merits of a 'double-sided' *incentives pool*, disclosure of operating procedures, and so on. Gas Industry Co is not aware of any of these taking place.

Review of UFG

One matter of concern arising out of the workshops was the treatment of UFG, and how this may have influenced pipeline balancing. To help settle the matter, Gas Industry Co released an independent expert report in June 2007 entitled *UFG Management and Reconciliation*, which was intended to aid understanding of the significance of UFG to pipeline balancing. This was a matter which had given rise to surprisingly diverse views during the Maui pipeline CO's overpressure workshops.

In summary, the major conclusions of the independent expert were that:

² The CO primarily addressed UFG by issuing frequent, balancing requests at the Oaonui welded point. The ROI at Oaonui became highly negative as a result - to a similar order as the level of UFG.

³ Section 29.4(b) of the MPOC sets out a range of matters which would allow MDL to withhold consent to a change request.

- UFG is primarily the aggregate effect of meter inaccuracies over a period;
- aggregate Maui pipeline UFG over the period from the start of Maui pipeline open access on 1 October 2005 to the end of May 2007 was approximately 1.25PJ (gas gain);
- only a small amount of this UFG had been sold by the Maui pipeline CO. The remainder was primarily manifested as a large negative operational imbalance (OI) at Oaonui (as a consequence of the CO issuing balancing put requests to the Oaonui welded point in order to manage linepack);
- the majority of UFG on Vector pipelines had been bought or sold through a sequence of competitive tenders; and
- the problem of reconciling outstanding UFG was confined to the MDL pipeline.

The report also set out a number of options for reconciling historical, and managing future, UFG.

On 7 August 2007 Gas Industry Co met with representatives of MDL and Vector to discuss the report. Gas Industry Co's view was that it was the responsibility of Transmission System Owners (TSOs) to develop and communicate suitable policies on how UFG would be addressed. On 5 November 2007 Gas Industry Co wrote to MDL asking what action MDL had taken, or intended to take. It has not received a formal response to that letter, nor has MDL made any announcements on how it intends to deal with UFG.

1.3 Recent developments

Although the expected outcomes of the Maui pipeline CO's workshop process have not emerged, some other recent developments may lead to changes in the operation of the balancing arrangements.

The MPOC accommodates legacy Maui gas contract arrangements in a way which can prevent responsibility for daily balancing being allocated to pipeline users. Instead there is an ongoing reliance on flexibility from Maui gas production to balance the pipelines. MDL has now chosen to apply some of the legacy provisions of the MPOC in a different way⁴, which it considers will allow it to issue daily *ILONs*, the principal incentive on welded parties to maintain a balanced position.

MDL shippers and welded parties wrote to MDL rejecting MDL's change of practice. In particular, the change was rejected by Vector, the welded party most affected by the change. The change would result in the costs of balancing actions taken by the Maui pipeline CO being

⁴ Or, in Vector's view, MDL has chosen to ignore these provisions rather than to apply them.

passed to Vector, who would on-charge Vector shippers. Vector shippers have said that they will not accept this. It may be that this matter will only be resolved by legal action. The effect of MDL's action on balancing arrangements will not be known until the matter is settled.

Another matter which could change the influence of legacy provisions is a negotiation between the legacy gas parties which could possibly result in the removal of all references to legacy gas in the MPOC. If the legacy parties can agree to this, the change could then be promoted through the MPOC section 29 change process.

A further development which may improve future balancing arrangements is the development of the VTC. Gas Industry Co's October 2006 *Submissions Analysis and Work Programme* paper concluded that it would be of great benefit if Vector's contract arrangements were structured in a similar way to those of the Maui pipeline. In particular, it was suggested that the multilateral provisions of its contracts be separated out into a code. Vector subsequently agreed to do this and, following very intensive negotiations with its shippers during 2007, issued the VTC in November 2007. With effect from 1 December 2007 most Vector shippers⁵ now transport gas under the terms of the VTC.

The VTC development process allowed the Vector balancing arrangements to be reappraised in light of Vector's experience as a Maui pipeline welded party. This led to a number of refinements to, and clarification of, the operation of the *balancing and peaking pool (BPP)*, which is the mechanism by which Vector reflects the costs and benefits of pipeline balancing through to its shippers.

⁵ It is understood that 6 out of 8 Vector shippers are now parties to the VTC.

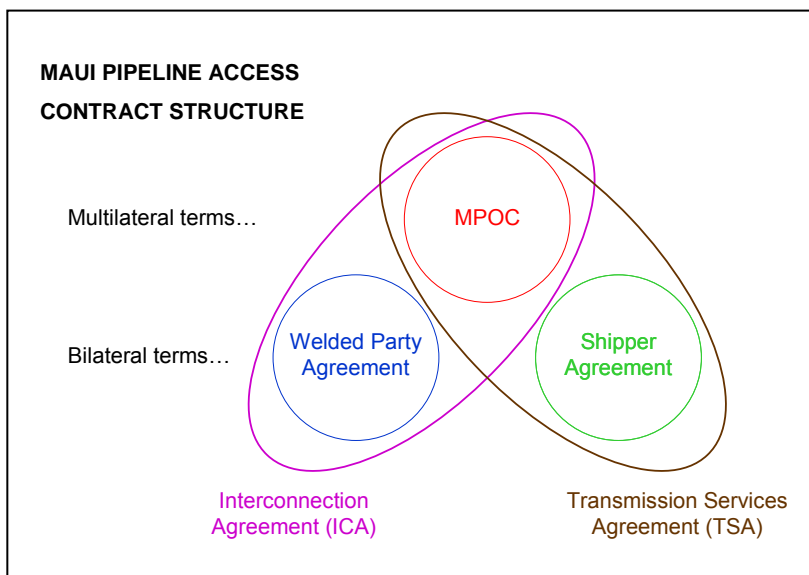
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Contract arrangements

The Maui and Vector balancing regimes are defined in the MPOC and VTC. In this chapter the framework of contracts, and the essential provisions of those contracts relating to pipeline balancing, are described.

2.1 Development of open access regimes

Open access to the Maui pipeline commenced on 1 October 2005. The multilateral access arrangements, which apply to all system users, are set out in the MPOC. The bilateral terms, which are specific to individual users, are contained in *welded party agreements* and *shipper agreements*. The combination of the MPOC and a *welded party agreement* forms the entirety of an interconnected party's agreement and is known as an *interconnection agreement*. Similarly, the MPOC and *shipper agreement* combine to form a shipper's *transmission services agreement*. This arrangement is illustrated below.



Vector introduced its open access regime in 1997. Unlike the Maui arrangement, the multilateral and bilateral terms of transport on Vector's system were initially bundled together in a single document. However, in 2007 Vector and its shippers worked together to unbundle the

multilateral terms of their agreements into a 'code'. The VTC was introduced on 1 December 2007. For the purposes of this report, it is assumed that the provisions of the VTC will apply to most Vector shippers in the near future.

2.2 Overview of Balancing arrangements

A narrative description of the broad operation of the MPOC and VTC regimes, as they relate to pipeline balancing, is provided below. For more detailed information, Appendix C contains a table which provides section references to the essential provisions of the MPOC and VTC related to balancing.

- i Users on both transmission systems are required to use reasonable endeavours to maintain balanced positions.

Maui pipeline balancing arrangements

- ii On the Maui pipeline, each shipper nominates in advance the quantities of gas it wishes to receive and deliver.
- iii The aggregate of shippers' nominations at a receipt or delivery point – a *welded point* – becomes the *scheduled quantity* when agreed between MDL and the welded party.
- iv The difference between the scheduled quantity and the quantity of gas measured as flowing through a welded point on a day is known as the *daily operational imbalance (DOI)*.
- v *Running operational imbalance (ROI)* is the aggregate of *DOI* over time.
- vi It is the responsibility of each welded party to manage its *DOI* and *ROI* within tolerance, or face the consequences. Vector is a welded party at locations where its pipelines interconnect with the Maui pipeline.
- vii In addition to their obligations to maintain daily balanced positions, welded parties have responsibilities to maintain hourly flows within certain limits (so called *peaking limits*).
- viii The MPOC provides for two commercial arrangements related to balancing; a liquidated damages regime for users adversely impacting each other due to their imbalanced positions, and an arrangement to deal with long run imbalance.
- ix Liquidated damages between Maui users operate as follows:
 - a. A user who maintains its balance within limits – the *daily operational imbalance limit (DOIL)* and *peaking limits* - is immune from damage claims from other users.

- b. Outside the *DOIL* and *peaking limits* a user is exposed to damage claims, however claims only occur where another user is actually damaged or the pipeline operator has to use balancing gas to prevent damages from occurring⁶.
 - c. Liquidated damages are set at the maximum of the cash out price or an index to the electricity spot price (to prevent gaming by generators).
 - d. Liquidated damages apply to over-take or under-production of gas and do not cover over production or under take (other than for excess peaking flows by producers).
 - e. Liquidated damages are paid to *welded parties* unable to off-take their entitlement or where their entitlement is curtailed.
- x Long run imbalance arrangements operate as follows:
- a. A *ROI* is a welded party's aggregate imbalance over time and represents the total gas borrowed from, or parked in, the Maui pipeline. ROI must be within tolerance or MDL may notify the welded party to return or take away the excess gas within a defined timeframe. MDL has the option to enforce this by buying or selling the imbalance (*cashing-out*), to the extent the user does not comply with the notice⁷.
 - b. During certain circumstances (such as non-scheduled maintenance, a contingency event, or a force majeure event) nominated quantities may be curtailed and MDL may release gas from linepack to cover the market during the event. This quantity would then manifest as shipper mismatch, and shippers are then responsible to return the gas. This is the only way Maui shippers can enter unbalanced positions.

Vector pipeline balancing arrangements

- xi On the Vector pipeline, shippers are generally not required to make nominations⁸, but are required to maintain a balanced position. In contrast to the Maui pipeline, the consequences of an imbalance on the Vector pipeline are sheeted home to shippers rather than to welded parties.
- xii To the extent that Vector incurs costs as a consequence of an imbalance at its points of interconnection with the Maui pipeline, those costs are passed through to its shippers in proportion to their mismatch positions for the period in question.

⁶ Section 14 of the MPOC actually provides for the *balancing agent* to make claims against the *incentives pool* (and only for the costs of buying balancing gas). However the *commercial operator* is currently responsible for the *balancing agent* functions.

⁷ Section 12.13 of the MPOC also provides MDL with some alternatives to cash-out, such as preventing *nominated quantities* being requested at the Welded Point until such time as the *AEOI* is eliminated.

⁸ Certain TSA's, such as those for transporting gas to power stations, do require nominations.

- xiii Vector may balance its own pipeline by buying or selling balancing gas. It passes on the cost or revenues resulting from these actions to its shippers in proportion to their running mismatch balance. If Vector buys or sells balancing gas, it will do so by means of a tender process if time allows.
- xiv A Vector shipper who cannot uplift its gas due to the misbehaviour of other shippers can claim for liquidated damages at the Maui damages price and receive any Maui contribution via the Maui *incentives pool* and from other contributing Vector shippers in proportion to their contribution to the imbalance.
- xv Vector uses 5 balancing zones called *balancing and peaking pools (BPPs)* to allocate costs to responsible shippers. There is one major Maui welded point per *BPP* (except the small delivery points which are a special case), and costs are allocated in proportion to each shipper's contributing running mismatch balance.
- xvi These mechanisms are designed to ensure that users will buy or sell balancing gas, and possibly incur liability, in proportion to their imbalance/mismatch positions. This is the causer pays principle.

2.3 Daily tolerances

A daily tolerance is the amount by which an actual quantity can be different from a scheduled quantity before other contract provisions come into play. A daily tolerance can provide a 'safe harbour' for pipeline users.

The MPOC minimum tolerances are set out in schedule 7 of the MPOC. The minimum *DOILs* are as follows;

- welded points with controllable load - *DOIL* set at 3% of scheduled quantities;
- welded points with mass market consumers – *DOIL* set at 10% of scheduled quantities; and
- welded points with a mix of load – *DOIL* set at a weighted average of the above.

Note that *DOILs* are one sided, they apply only to imbalances which deplete linepack. A *ROIL*, on the other hand, is two sided, it sets both a positive and negative tolerance, each being no less than the *DOIL*. *ILONs* may only be issued in respect of *ROILs*.

The only consequence of exceeding tolerance under the MPOC is a possible damages claim (where a *ROIL* is exceeded and other parties suffer damage as a result), or exposure to a cash-out (where *DOILs* are exceeded and the position is not corrected within the *ILON* period).

Although the VTC allows Vector to introduce a nominations regime for its larger stations, such nominations would be *for informational purposes only*. So it is not analogous to the MPOC nominations regime. There is no concept of tolerance in the VTC, and no explicit penalty for deviating from nominations if nominations were to be introduced. Substantial revision of the VTC would therefore be required if it was ever considered necessary to introduce a comprehensive nominations regime on Vector pipelines,

2.4 Hourly (peaking) tolerances

The hourly, or peaking, tolerance is the amount by which a peak hourly quantity exceeds the average hourly scheduled quantity before other contract provisions come into play. Like a daily tolerance the peaking tolerance can provide a 'safe harbour' for pipeline users.

The Maui pipeline *peaking limits* are set at 150% for receipt points and 125% for delivery points. The higher receipt point limit is to enable producers to recover from outages.

The only consequence of exceeding the peaking tolerance under the MPOC is exposure to possible damages claims if other parties suffer damage as a result.

The Vector pipeline *peaking limits* generally allow the maximum hourly quantity to be up to 1/16th of the reserved capacity, i.e. 150%, although some *peaking limits* are contract specific. Note that this tolerance is more lenient than that allowed on the Maui pipeline, both at peak times and especially at off-peak times (since it is referenced to reserved capacity, rather than to scheduled quantity).

2.5 Legacy gas

Prior to the introduction of Maui pipeline open access on 1 October 2005, the pipeline was dedicated to the requirements of the *Maui Gas Contract (MGC)*. The *MGC* is a delivered gas contract which bundles the services of gas supply, transmission and balancing. A condition of opening the pipeline to third party users was that the preferential rights of parties to the *MGC* - the 'legacy' parties - were preserved. This has distorted the operation of the intended open access balancing arrangements.

The *MGC* will expire in June 2009, but negotiations among the legacy parties may result in all references to legacy gas being removed from the MPOC before then.

The other option for modifying the legacy arrangements, if it was thought to be necessary, would be to recommend regulatory intervention. However, this would take too long to be of any material benefit. It is therefore appropriate to ignore the *MGC* arrangements for the purpose of this research paper.

However, it is recognised that the TSOs do need to balance their pipelines during the run down to the expiry of the legacy arrangements. If new long term arrangements were developed in time, these may also be of use during that run down period. Alternatively, some short term “fixes” may be required.

3

Physical balancing arrangements

This chapter provides information on the current arrangements for pipeline balancing (i.e. managing linepack), as well as they are understood. This information was provided in large part by the Technical Operator⁹ during the MDL overpressure forums of 2007.

3.1 Operational use of linepack

The minimum required linepack in a pipeline will be determined by the pressure gradient required to achieve the desired gas flow, and the required delivery pressure. This minimum is higher at times of high flow than when flow is low, because the required pressure gradient is greater. Linepack is also set aside to provide a safety margin in contingency and emergency situations. Any remaining linepack provides some flexibility to accommodate variations in flows (i.e. actual quantities being different to nominated quantities). So there is a trade off between capacity, reliability and flexibility.

A further consideration is that at times of low flow on the Maui pipeline, the Mokau compressors need to be shut down and this significantly reduces flexibility. The *technical operator* divides the Maui linepack into categories namely:

- **Flowing linepack**, being gas required to provide the minimum delivery pressure plus a pressure gradient to deliver the scheduled gas flows, which is in the order of 190 to 220 TJ.
- **Emergency linepack**, being gas required to provide emergency shutdown of last resort, which is set at 1.5 hours of typical total scheduled quantities or 25 TJ. This is required as emergency shut down processes take time to initiate and obtain a response.
- **Contingency linepack**, being gas to cover a contingency event such as a producer outage, which is set at 2 hours of the largest producer or 25 TJ.
- **Negative flexibility linepack**, being gas required to provide the tolerances (i.e. the negative operational imbalance limits), which is about 40 to 50 TJ.

The total of these amounts is the target Maui pipeline linepack which varies with conditions but is in the order of 280 to 320 TJ.

⁹ Vector acts as the Technical Operator for both the Maui pipeline and the Vector pipeline.

Depending on conditions, there may be some head-room between the target linepack and the maximum attainable linepack, and this would allow for some positive flexibility (i.e for flows into the pipeline to be higher than expected, or for flows out of the pipeline to be lower than expected).

Although not inconsistent with it, this categorisation of linepack is not provided for in the MPOC. Section 18.1 of the MPOC specifically requires MDL to maintain linepack to deliver legacy gas and approved nominations, and to provide for a contingency volume and *DOIL/peaking* tolerances.

The Vector pipeline system has much less linepack flexibility than the Maui pipeline. There is some linepack flexibility on the pipelines from Kapuni to New Plymouth, and from Kapuni to Wellington, but relatively little on other pipelines.

3.2 Ability to self balance

Large users such as power stations, petrochemical plants and some industrial facilities have 24x7 control rooms and can control gas demand/nominations accurately on a daily basis.

Considering the power generation market in aggregate, if we assume that the market peaks at about 300 TJ per day, and that demand can be managed to nominations within 1%, then the total required flexibility would be in the order of 3 TJ per day. Even if the 1% accuracy is unrealistic for certain power stations in certain situations, such as unplanned outages, there is significant diversity over the number of large users in the market. It seems reasonable to conclude that this market segment could manage to self-balance without the need for pipeline operator intervention.

On the other hand, mass market users usually have infrequent meter reading and little control over gas consumption profiles. So gas retailers can only estimate their deliveries on a day. If we assume that the reticulated market peaks at around 160 TJ per day, and that retailers can only estimate daily demand within 5%, then (ignoring diversity) the potential aggregate error would be about 8 TJ per day. Also, unlike major customers who know what their demand/nomination balance is at the end of day and can correct for it the next day, retailers don't know how good their estimates are until month end reconciliations are done. If all retailers were 5% in error on every day of the month this would accumulate to a 240 TJ error at month end.

A number of factors would mitigate against this result. First, there is likely to be some diversity in retailers' demand estimates. Second, retailers can monitor their aggregate demand/nomination position at each transmission offtake on OATIS. Third, daily telemetry information is available for a proportion of the retail market (probably around half by volume).

However it is still possible that the aggregate retail market imbalance could exceed the 50TJ of available linepack flexibility, so balancing actions would be required.

It is noted that this hypothetical situation of retailers estimating their daily positions within 5% would represent a very substantial improvement on current performance.

4

Balancing Principles

On 6 December 2006 the European Regulators' Group for Electricity and Gas (ERGEG)¹⁰ published new gas balancing guidelines as one of several initiatives to improve the operation of EU gas markets. This was the culmination of a review of its 2003 balancing principles document. The new document was developed through extensive consultation with market participants in EU member states. These guidelines are currently voluntary, but the European Commission may choose to make them binding in future. Appendix D contains a copy of the ERGEG guidelines.

Since gas balancing is a generic issue, and since Europe like New Zealand faces the dilemma of facilitating interoperability of different pipeline regimes, these guidelines seem a very appropriate reference point for the New Zealand industry. However, for simplicity of comparison, a more helpful document is an earlier ERGEG conclusions paper on gas balancing, dated 20 April 2006. Annex 2 of that paper sets out the eight balancing principles on which the final guidelines are based. These are used below as yardsticks against which New Zealand's current balancing arrangements are measured. Appendix E contains a copy of the ERGEG conclusions paper.

4.1 Principle 1 - Balancing responsibilities

Final ERGEG principle

The primary responsibility of network users is to balance their own inputs and offtakes over the relevant period according to the rules and incentives of the respective balancing regime. The TSO retains the overall responsibility for the economic and efficient operation of its system and therefore should retain a residual role to maintain physical balance to ensure the efficient and safe operation of the system.

Consistency of New Zealand arrangements

Regarding user self-balancing, the MPOC and VTC squarely place obligations on users to maintain balanced positions. However the balancing difficulties which have been experienced cast doubt on whether these incentives are sufficient, and whether the tools available to the transmission system operators to enforce the obligations are adequate. A review of the MPOC

¹⁰ ERGEG is an advisor to the Council of European Regulators (CEER), an association of energy regulators from the member states of the European Union and European Economic Area.

and VTC provisions in regard to compliance incentives and enforcement would help establish this.

Regarding TSOs' balancing responsibilities, Vector has an explicit obligation to use its best endeavours to manage linepack within the acceptable operational limits for each Vector pipeline. The MPOC also has a number of explicit linepack management obligations such as to:

- maintain linepack to provide transmission services and to deliver approved nominations;
- maintain capacity consistent with the rolling capacity forecast;
- maintain the minimum delivery pressure; and
- act as a reasonable and prudent operator.

Arguably, these provisions would amount to an acknowledgement that each TSO will 'retain a residual role to maintain physical balance to ensure the efficient and safe operation of the system'. However, it may be helpful to clarify this.

Related to the TSOs' balancing responsibilities are concerns about the allocation of costs when balancing actions are taken. This is discussed in section 4.5 below. Inefficiencies may also be introduced if there is no co-ordination of balancing actions between the TSOs.

4.2 Principle 2 - General requirements for balancing rules

Final ERGEG principle

Balancing rules shall be designed in a fair, non-discriminatory and transparent manner and shall be based on objective criteria. The development of balancing rules and changes thereof should be subject to appropriate consultation with market participants and decisions should be supported by objective criteria and analysis.

Where balancing rules (including imbalance charges) are administered by the TSO they should be equally applied to its own commercial operations and affiliates, where part of a vertically integrated company, as to third parties. This includes ensuring that no information concerning the operation of the balancing regime are provided to an affiliate company of the TSO in advance of being provided to all market participants. The arrangements to meet this requirement should be made publicly available.

Balancing rules should be designed to minimise the residual physical balancing role of the TSO subject to the safe and economic operation of the network and the incentives, information and flexibility and tools provided to shippers to balance their individual portfolio. They should also be designed to facilitate effective competition and market participation between shippers and avoid discrimination particularly in creating undue barriers of entry to new entrants or smaller players.

Consistency of New Zealand arrangements

Gas Industry Co considers that 'balancing rules' should be interpreted to mean all arrangements related to balancing which could substantially affect the risk of industry participants. Such rules may not be entirely contained within the current balancing provisions of the transmission codes. For example, Gas Industry Co would consider instructions given to the *system operator* on what pipeline conditions will prompt a balancing action to be a 'balancing rule'.

From this standpoint it is not clear that the balancing rules are necessarily 'subject to appropriate consultation with market participants'. Certainly both the MPOC and VTC change processes provide for such consultation, but it is quite possible that the Technical Operator could be given instructions by MDL or Vector which are not subject to any external consultation. While this may ultimately be acceptable to the industry (given the RPO backstop), it is certainly worthy of discussion.

Regarding the non-discrimination requirements, it is possible that both the MPOC Schedule 4 confidentiality protocols, and VTC Schedule 8 confidentiality commitment would satisfy this requirement. However, it would be useful to work through some case studies to confirm this.

In relation to whether the rules have been designed with a view to 'minimising the residual physical balancing role of the TSO', it is necessary to consider which balancing rules have that purpose. Although section 12.1 of the MPOC requires welded parties to balance, the same provision acknowledges that they will not balance, and that the sole consequence of exceeding balancing tolerance will be exposure to cash out and possible *incentives pool* claims (but only where the imbalance depletes linepack).

Similarly, section 8 of the VTC requires shippers to use all reasonable endeavours to balance, and the only consequences of not doing so are exposure to a *BPP* charge where balancing actions are taken, the right to claim against other shippers where one shippers action causes non-delivery to another shipper, and possible suspension or termination where a breach occurs.

To date these incentives seem to have been inadequate. It may be that users are simply behaving in a way which allows them to free-ride on the balancing provided by the legacy arrangements. In that case, once the legacy arrangements expire the balancing behaviour of users may improve. However, it could be argued that the MPOC arrangements which do not require *welded parties* to correct their imbalance positions till D+2¹¹ at the earliest, are fundamentally flawed. It is unlikely to minimise the residual balancing role of the TSO as the principle requires.

¹¹ An *ILON* can be issued one day after a welded party has accumulated *excess operational imbalance* and must allow at least one day for the position to be corrected.

Certainly, even in the absence of legacy arrangements, the incentives on users to self-balance are weak compared to those applying in most European countries. For example:

- hourly and daily imbalance charges apply in the Netherlands;
- daily cash out without any tolerance applies in the UK; and
- daily cash out applies in France, and occurs at penalty prices when outside of tolerance.

Also, further afield, in the US and Australia imbalance charges are almost invariably a feature of pipeline tariffs.

4.3 Principle 3 – Frequency of balance

Final ERGEG principle

Daily balancing is preferable unless there are technical/operational reasons that mean that hourly balancing is necessary to ensure that system can be balanced and/or for safety/security reasons.

The choice of an appropriate balancing period clearly needs to be based on a balanced assessment of a number of objective criteria. These should include:

- the operational capabilities of the transportation system to balance the system;
- the flexibility and tools to balance that market participants have over the relevant period, including the availability of linepack services;
- the interaction of balancing period with effective commercial incentives to balance, in particular interactions of shorter balancing periods in electricity markets with potentially longer periods in gas;
- the interaction with balancing periods in connected gas systems to ensure that no undue barriers to cross border trade are created;
- availability and accuracy of the information over the relevant period that is made available to shippers to take balancing actions;
- the costs imposed by particular balancing regimes, for example the IT costs of providing more regular information flows over shorter balancing periods and the transaction costs incurred by shippers from potentially taking more frequent balancing actions; and
- nomination procedures complementary to the frequency of balance.

It is important that shippers are not exposed to undue risks that they cannot manage effectively and/or without incurring inefficient costs that could create a potential barrier to entry to the market.

Where hourly balancing is used market participants have access to appropriate information and flexibility tools so that they can manage their imbalance positions (and therefore risk) efficiently.

Where it is not possible to provide appropriate information and access to flexibility, it is important to consider whether the risks that market participants are exposed to should be mitigated in some way, to ensure that barriers to entry are not created (for example through the use of tolerance bands or by limiting the size of the imbalance charge). Where possible incentive based approaches that allow market participants to manage their own risk efficiently are preferable to solutions that mitigate risk.

Consistency of New Zealand arrangements

The need for daily balancing is generally accepted in New Zealand. Hourly balancing has not been advocated, and only a few participants believe that a return to monthly balancing is credible. Daily balancing appears to be central to both the MPOC and VTC yet, as discussed in section 4.3 above, the incentives for users to ensuring daily balance are weak.

In relation to 'whether the risks that market participants are exposed to should be mitigated in some way', the MPOC does provide tolerance bands. As reported in section 2.3, these are set at 10% of scheduled quantity for a *DOIL*, and are currently the same for *ROIL*¹². This provides some protection.

4.4 Principle 4a - Balancing costs and incentives for the TSO

Final ERGEG principle

TSOs should have commercial incentives to ensure that the costs of taking residual balancing actions and associated operational costs that the TSO incurs are efficient. Unless a TSO is not permitted to accept bids and offers for balancing gas as a means to balance the system it should procure flexibility (including gas) in a transparent and non-discriminatory manner using market based mechanisms where possible. The regime needs to ensure that the TSO remains broadly cost-neutral in relation to the balancing actions it takes so that any revenues or costs provide correct incentives to the TSO in relation to the timing and size of balancing actions to ensure a safe, reliable and economic system.

Where a TSO is not permitted to accept bids and offers for balancing gas as a means to balance the system the TSO should be able to contract for gas in other ways for example accessing gas from storage or with contracts with shippers. It is important that these cost are efficient and that they are charged back to shippers on a non-

¹² The *technical operator* reviews the appropriateness of the *ROIL* from time to time (in light of balancing gas availability, pipeline capacity and security, but currently the *ROILs* is set at the same level as *DOILs*).

discriminatory basis. Information on the costs incurred by the TSO shall be made publicly available where this does not have a negative impact on the commercial position of the relevant market participants.

Consistency of New Zealand arrangements

In New Zealand the TSOs are permitted to accept bids and offers for balancing gas, so the questions which arise from the principle are:

- Do the TSOs have commercial incentives to ensure balancing actions are efficient?
- Is balancing gas being procured in a transparent and non-discriminatory manner using market based mechanisms where possible?
- Are the TSOs broadly cost-neutral in relation to the balancing actions they take?

In section 11.10 of the MPOC, MDL undertakes that, as pipeline operator, it will not seek to make a profit or loss from its activities in relation to the sale and/or purchase of balancing gas, or settling mismatches or ROI. Similarly, in section 8.20 of the VTC, Vector commits only to recover the direct costs of, and not add a margin to, balancing gas transactions, including any third party costs of managing the *BPP*.

This could address the third bullet point question. However, the arrangements seem to provide no incentive for the TSOs to engage only in efficient balancing transactions. The first bullet point question – whether TSOs have sufficient commercial incentive to balance efficiently - therefore remains unanswered.

In relation to transparency of balancing transactions, the MPOC is silent on what process will be followed to buy or sell balancing gas, and whether or not costs will be disclosed. The VTC provides that, where Vector obtains gas through a tender process, it will post the tender prices and quantities on OATIS, but otherwise transactions will not be disclosed. Section 8 of the VTC also provides for the *BPP* Trustee to keep full records of *BPP* transactions which will be audited annually or at a shipper's request.

These arrangements cannot be said to be transparent.

4.5 Principle 4b - Charges for imbalances

Final ERGEG principle

Imbalance charges should not result in a distortion of competition and/or trading activities in wholesale gas and storage and flexibility markets. Imbalance charges shall be cost-reflective to the extent possible, whilst providing appropriate incentives on network users to balance their input and off-take of gas. They shall avoid cross-

subsidisation between network users and shall not hamper the entry of new market entrants. These incentives should be such that, in aggregate, the participants of the system face strong incentives to physically balance the system in an efficient way. They should also be fair and non-discriminatory and based on objective criteria and not hamper entry of new market participants. The method for calculating imbalance charges shall also be made public by the competent authority or the TSO as appropriate.

There should also be accurate targeting of system balancing and operation costs to those participants that caused them to be incurred. Any costs that cannot be targeted should be allocated back to shippers in a non-discriminatory manner.

Consistency of New Zealand arrangements

The MPOC provides for positive and negative mismatch prices to be posted on OATIS from time to time. Currently these prices are set at \$1/GJ and \$6/GJ. It is not known how these prices were derived, or whether they are cost reflective. On these counts the Maui arrangements do not seem to meet the principle.

The VTC uses the *BPP* mechanism to allocate balancing costs to its users. As discussed in section 4.4 above, the costs of balancing would only be transparent where a tender process is followed. Otherwise, each shipper will only know the cost of balancing when it receives an allocation of *BPP* costs in proportion to its running mismatch positions.

Regarding the accurate targeting of balancing costs, the MPOC and VTC regimes seem to give rise to different outcomes.

On the Maui pipeline cash-out prices will reflect the *balancing agent's* costs or the spot price if a spot market should develop (MPOC Section 11.10). These prices will be posted on OATIS from time to time, but do not come into effect until at least 7 days after posting (MPOC Section 4.1). This time delay could prevent cash-out prices from accurately reflecting costs.

Also of concern is the situation where a particular user exceeds its *ROIL* and causes a balancing action to be taken, then subsequently (within the *ILON* period) reduces its imbalance to within the tolerance. Not only would this user avoid the cost of the original balancing action, it may also prompt a reverse balancing action when it corrects its position. In this case the costs of the balancing actions would be socialised, and not accurately targeted.

By its recent action of setting *ROILs* equal to *DOILs* and setting the *ILON* notice period to one day, the scope for the above scenario to arise is reduced, but it is still present. The delay between the time when the price of balancing gas is set (at least 7 days previously), the time when a party's action gives rise to the balancing action, and the time when that party is required to correct its position (at least two day later), is a serious concern.

In contrast, the Vector process appears to have balancing transactions back-to-back with allocation of balancing costs and cash-out. The allocations are in proportion to each shipper's contribution to the then current aggregate mismatch, which should result in costs being correctly targeted to causers.

A common concern in both regimes is where a balancing gas contract involves a fixed price component. In such a case it is unclear how either the MDL or Vector balancing arrangements would recover the cost.

4.6 Principle 4c – Trading of imbalance positions

Final ERGEG principle

Where direct access to flexibility tools/and or information is not sufficient (or there is an absence of a well functioning/liquid within day market) to allow market participants to manage their positions efficiently then other mechanisms should be introduced. This includes ex-ante trading, pooling of imbalance positions and ex-post trading.

The TSO should have systems in place to facilitate the trading/pooling of imbalance positions where these services are provided.

Consistency of New Zealand arrangements

Certainly the flexibility tools available to pipeline users are currently limited. This situation may improve with the introduction of a wholesale market, but in the mean time the availability of other management tools should be considered.

Section 12 of the MPOC provides for the trading of imbalance between welded parties, and the transfer of excess imbalance from small welded points to large welded points. Also, section 11 provides for the trading of mismatch between shippers.

Section 8 of the VTC allows for the aggregation of mismatch between shipper contracts, but only until 30 September 2009.

The conclusion is that user options for trading of imbalance positions are limited.

4.7 Principle 5 – Tolerance services

Final ERGEG principle

The use of tolerance levels aim to mitigate the level of risk that market participants are exposed to in balancing regimes but they can also weaken the incentive on shippers to balance within the specified limits. This weakening of incentives can lead to higher overall system costs. Therefore tolerance levels should only be used where direct access to flexibility tools/or information (or proxy flexibility tools) is such that a degree of risk

mitigation is necessary to ensure that barriers to entry and competition are not created. This may particularly be the case in markets that are less well developed. Over time, as markets develop and access to information, and flexibility tools (both direct and proxy) improve it should be possible to reduce (and minimise) the size of tolerance levels.

Where offered, tolerance levels should be designed in a way which reflects the actual technical capabilities of the transmission system for example taking into account daily effective temperature. However, particular account should be taken of the extent to which tolerances may be utilised by shippers to offer “balancing gas” or cause balancing costs to be incurred by the TSO that are subsequently socialised. In particular, careful consideration is needed in sufficiently liquid and developed markets of the necessity of tolerance where this leads to a significant socialisation of imbalance costs. In any case, the secondary trading of tolerances should be permitted and should be facilitated by TSOs by the introduction of appropriate systems.

In the case of non-market based balancing systems, tolerance levels shall be designed in a way that either reflects seasonality or results in a tolerance level higher than that resulting from seasonality, and that reflects the actual technical capabilities of the transmission system. Tolerance levels shall reflect genuine system needs taking into account the resources available to the transmission system operator. Where the balancing period is shorter than one day, tolerance levels can be a particularly useful tool for mitigating the balancing requirements on system users.

Consistency of New Zealand arrangements

Since New Zealand’s balancing market is not well developed, the principle would suggest that tolerances should be offered. Only the MPOC explicitly provides for tolerances. However there appears to be good reason why Vector should not do so.

First, the principle suggests that tolerances should reflect the technical capabilities of the system. The very limited linepack availability on the Vector pipeline may then be consistent with the lack of any explicit provision of tolerances.

Second, it can be argued that, while Vector does not provide any explicit ‘safe harbour’ tolerances for its shippers, it does provide them with the full benefit of whatever flexibility Vector’s own linepack provides, and fully passes on the tolerances provided to it (as a welded party) by MDL. This is because Vector’s practice is only to take balancing action (and cash-out it shippers) after it has taken full advantage of its Maui flexibility and the flexibility inherent in its own linepack.

The principle proposes that tolerances should be tradable. This would increase efficiency since users who were better able to manage their balance positions – generators perhaps – could sell tolerance to those who valued it more highly – such as retailers. Although the MPOC does not expressly permit the trading of tolerances, there is nothing to prevent gas trading, which could implicitly contain tolerance. For example Vector (which has a number of predominantly

retail welded points) could buy/sell balancing gas from Genesis, say (which has a generation welded point), where Genesis had spare tolerance on a day.

However, in practice the scope for sharing the benefits of tolerance in this way are somewhat limited. The MPOC already tailors tolerances to the type of welded point. For example the Pokuru welded point, supplying predominantly retail demand, is given a *DOIL* of 10% while the Huntly Power Station *DOIL* is only 3%.

The final element of the principle suggests adjusting tolerances to reflect seasonality. At face value, the available linepack would be expected to be higher during low flow periods, so tolerances would be higher then. However the operational capability of the Mokau compressors may weigh against that.

4.8 Principle 6 – Information on balancing status

Final ERGEG principle

In order to enable network users to take timely corrective action, TSOs shall provide sufficient, well-timed and reliable on-line based information on the balancing status of network users. The level of information provided shall reflect the level of information available to the TSO. Where they exist, charges for the provision of such information shall be approved by the relevant authorities and made public by the TSO.

Information should be provided to all participants on a non-discriminatory basis and in a format which is meaningful, quantitatively clear and easily accessible.

Where information flows are a problem TSOs shall use provisional allocations in the calculation of imbalance charges to reduce the risk for shippers. The time period within which charges are confirmed and the method for calculating provisional allocations should be approved by the competent authority after proper consultation with the TSO and relevant shippers as should any subsequent changes to charges once definitive allocations are available.

Consistency of New Zealand arrangements

OATIS displays Maui welded point flows relative to scheduled quantity to all parties on an hourly basis at near real time. It also displays hourly flow for a Vector delivery point to Vector shippers where there is available information and no confidentiality issues.

Since Vector does not currently require nominations at its Delivery Points it cannot show flow versus nomination information.

In addition the party responsible for allocating the gas delivered at shared delivery points between retailers – the *allocation agent* – can provide a daily estimation service. This provides shippers with an alternative to forecasting their own retail demand.

4.9 Principle 7 – Harmonisation of balancing rules

Final ERGEG principle

TSOs should ensure compatibility of balancing regimes (tolerances, imbalance charges etc) in order to facilitate gas trade across borders of different TSO systems. European TSOs shall endeavour to harmonise balancing regimes and streamline structures and levels of balancing charges in order to facilitate trade. Where it is justified that balancing regimes (tolerances, imbalance charges, balancing periods etc) remain different between interconnected networks, “standardised agreements” and procedures between TSOs should be put in place in order to facilitate gas trade.

These agreements could include a number of things including the way in which the balancing regimes interact; identify key differences and the reason why they exist; the impact of any differences on trade and the incentives provided to shippers and TSOs; and how any differences in arrangements for dealing with safety and security impact on trade, incentives and costs. They could also identify areas for harmonisation and a timetable for making changes. To ensure transparency, any agreements should be open to consultation with all market participants and fully involve the relevant NRA.

Consistency of New Zealand arrangements

Vector’s (necessarily complex) *BPP* arrangements ensure that costs and benefits from the MPOC *incentives pool* are passed through to Vector shippers. These arrangements have yet to be fully tested. However, even if these commercial arrangements do prove compatible and operate effectively, it does not follow that the pipelines are being balanced in the most efficient way.

Indeed the commercial obligations on Vector as a welded party may not be compatible with the most efficient balancing arrangements. Strictly managing operational imbalance at each transmission pipeline welded point may result in balancing actions being taken separately on each pipeline which could have otherwise been offset at lower cost. Whether this is the case or not, it may be helpful to explore what the most efficient way of balancing the total pipeline system is, and consider how this could best be reflected in the commercial arrangements.

4.10 Principle 8 – Provision of flexibility

Final ERGEG principle

A balancing regime needs to provide an appropriate balance of risk and incentive for market participants to manage their imbalance positions – otherwise barriers to entry and competition can be created. Flexibility services and tools should be made available to shippers on a non-discriminatory basis reflecting the underlying technical characteristics of the transmission system.

Market participants should have access to appropriate flexibility tools (including the associated information) to manage their risks efficiently. The provision of linepack on an unbundled basis is one way of providing flexibility to market participants – there are others. Where it is possible to provide surplus linepack on an unbundled basis, without undue costs/complexity and undermining the ability of TSOs to balance the system, then this should be considered as an additional flexibility tool that can be used by market participants to manage their risks efficiently. Any decisions on the provision of linepack on an unbundled basis should be objectively justified against these factors.

Consistency of New Zealand arrangements

The principle requires that ‘flexibility services and tools’ are made available to users. In the New Zealand market these tools include:

- some supply flexibility provided through wholesale contracts;
- a (very) few interruptible customers¹³;
- pipeline linepack provided in the form of tolerances;
- the imminent arrival of a gas trading platform; and
- the prospect of gas storage being available post 2010.

The effectiveness of these tools will depend on the suitability/liquidity of the gas trading platform, the accessibility of the gas storage facilities, and the technical capabilities of those facilities.

¹³ Arguably the Huntly Power Station is interruptible because of its dual fuel capability.

5

Conclusion

Although ongoing pipeline balancing problems are being experienced, and industry participants continue to express concern, the TSOs have been slow to address these concerns. Table 1 below summarises the actions taken to address the concerns of industry participants, as these were expressed at the beginning of the Maui pipeline CO overpressure workshops early in 2007.

Table 2 summarises the comparison of NZ balancing arrangements against European best practice.

The chapter concludes with a summary of the principle concerns raised in this paper.

Table 1 **Actions taken in response to overpressure concerns**

Concern	Action taken
Weak incentives on shippers to forecast their demand accurately.	MDL decided to apply some of the legacy provisions of the MPOC in a way which it considers allows it to issue daily ILONS to increase the incentive on welded parties to maintain balanced positions. Vector considers that this action is in breach of the MPOC.
Weak incentives on Vector, the owner of the interconnected transmission pipelines, to flow to agreed scheduled quantities.	Vector has refused to pass on balancing costs arising from the change of MDL practice described above.
The treatment of unaccounted for gas (UFG).	Gas Industry Co released independent expert report UFG Management and Reconciliation in June 2007, discussed it with the pipeline companies in August, and wrote to MDL asking what action had been taken. Gas Industry Co is not aware of any announcements having been made on this matter.
The practice of operating the pipeline close to its upper pressure limit, leaving insufficient 'headroom' for normal linepack variability.	Gas Industry Co is not aware if this is still the mode of operation of the pipeline.
Lack of differentiation between nominations made to meet daily needs and those made to correct previous imbalances.	Gas Industry Co is not aware if this matter has been considered any further.
Parties not knowing what conditions will prompt balancing actions to be taken.	Neither Vector nor MDL have said what their balancing instructions to the pipeline operator are.

Concern	Action taken
Pressure and linepack information on the status of the Maui (and Vector) pipelines being available too late to take effective action.	Gas Industry Co does not know if this matter is still contentious, but notes that a large amount of information is available on OATIS, including: <ul style="list-style-type: none"> • Pressure at the Bertrand Road Welded Point (essentially indicative of <i>taranaki target pressure</i>) which is posted 3 times daily; • Maui pipeline linepack information which is updated hourly; • Hourly scheduled quantities and metered flows are publicly available daily for each large station welded point • Daily scheduled quantities and metered flows are publicly available for the previous transmission day for each large station welded point
The ineffectiveness of the MPOC Incentives Pool against positive imbalances.	Several parties have suggested that an MPOC change request is required to address this issue, but no change request has yet been made.
The inability of the Maui production station to flow less than 2TJ/hour, combined with the absence of alternative balancing arrangements.	The MDL CO has sought alternative balancing arrangements. None are yet in place.

Table 2 Comparison of NZ gas balancing arrangements against European best practice

Principle	Possible shortcomings of NZ arrangements
1. Balancing responsibilities	Pipeline users may not be appropriately incentivised to self balance. Also, there is uncertainty about the level of backstop security that TSOs will provide, the efficiency of the mechanisms for passing on the costs of balancing actions, and the possible inefficiencies which might be introduced by the duplication of balancing actions.
2. General requirements for balancing rules	No consultation on what criteria would prompt balancing actions to be taken. Case studies could be used to confirm the suitability of non-discriminatory arrangements. Some doubt on whether there are sufficient incentives on users to self balance.
3. Frequency of balance	

Principle	Possible shortcomings of NZ arrangements
4a. Balancing costs and incentives for the TSO	There may not be sufficient incentives on the TSOs to only engage in efficient balancing actions. Also, except in the case of a Vector tender, the processes lack transparency.
4b. Charges for imbalances	Except in the case of a Vector tender, the charges for balancing lack transparency.
4c. Trading of imbalance positions	No mismatch trading provisions in the VTC.
5. Tolerance services	MPOC provides tolerances, Vector does not. But Vector probably has insufficient linepack to do so.
6. Information on balancing status	MDL provides flows v scheduled quantities via OATIS. Vector provides flows but, in the absence of a nominations regime, cannot compare these to nominations.
7. Harmonisation of balancing rules	Harmonisation relatively untested. Efficiency of independent balancing of two pipelines is questionable.
8. Provision of flexibility	An effective trading platform could improve the availability of flexibility options. The introduction of gas storage should also assist.

5.1 Summary of Principal Concerns

A range of issues have been raised in the document. At this stage the principle concerns can be identified as:

- Previous approaches to addressing pipeline balancing concerns have not been successful, and TSOs seem to be unable to resolve the issues.
- Although the MPOC and VTC both place obligations on users to maintain balanced positions, these obligations are weak when compared to European practice.
- Parties suffering damage as a result of positive imbalance have no recourse to the MPOC *incentives pool*.
- TSOs may not have sufficient tools to ensure that users maintain balanced positions.
- The incentives on the TSOs to use the most efficient balancing arrangements appear to be weak.
- There may not be sufficient transparency of balancing transactions.

- There appears to be potential for the TSOs to individually take balancing actions which would be sub-optimal from a total system perspective.
- The delay required in the MPOC between posting prices on OATIS and buying or selling balancing gas is likely to prevent cash-out prices from accurately reflecting costs.
- The MPOC arrangements which allow a user to avoid meeting the cost of balancing actions it has caused by correcting its position within the *LON* period may lead to costs being socialised rather than being targeted to causers.
- There is the potential for the cost of any fixed price component of a balancing contract to be socialised in both the Vector and MDL regimes.
- The commercial obligations on Vector as a welded party may not be compatible with the most efficient balancing arrangements.

Glossary

Glossary of terms

Terms used in this paper are generally based around the terminology of the MPOC and VTC.

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 pipeline owner to resolve an outstanding imbalance position.
CO	'Commercial Operator'. An agent to manage the commercial arrangements of the open access regime and in New Zealand either the Maui CO or Vector CO.
contingency volume	An amount of linepack set aside to be used during a contingency event.
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.
DOI	'Daily Operational Imbalance' is a defined term in the MPOC for a welded party's imbalance on a day.
DOIL	'Daily Operational Imbalance Limit' is a defined tolerance in the MPOC for acceptable DOI.
ILON	'Imbalance Limit Overrun Notice' is a defined notice under the MPOC where MDL notifies a welded party that it wants excess ROI resolved (i.e. gas parked or loaned in excess of the ROIL).
liquidated damages	Damages where the quantum of compensation has been pre-agreed.
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 a welded point. A positive imbalance is one that increases linepack and a negative imbalance is one that decreases linepack.
incentives pool	A mechanism in the Maui transmission regime to ring fence and allocate damage costs via a trust account.
legacy gas	The Maui gas contract for delivered gas over the Maui pipeline, that pre-existed Maui open access and retained its special rights.
linepack	The total amount of gas in a transmission pipeline at a point in time.
MDL	'Maui Development Limited'. A Maui joint venture company that operates the Maui pipeline.
mismatch	A shipper's allocated receipt quantities less its allocated delivery quantities. A positive mismatch is an increase in linepack and a negative mismatch is a decrease in linepack.

MPOC	'Maui Pipeline Operating Code', dated 8 August 2005.
nomination	A request to the pipeline to receive/deliver a quantity of gas. On the Maui pipeline an 'approved nomination' is one which is agreed by the shipper, welded party and pipeline owner. On the Vector pipeline nominations are not always required, are not approved and are not binding.
OATIS	The information system and internet site used to manage the day to day operations of open access on the Maui and Vector pipelines (stands for 'Open Access Transmission Information System').
pipeline	Pipeline refers to a transmission pipeline system, however with respect to Vector a 'pipeline' is a defined sub-set that represents a balancing region treated separately from other 'pipelines' for balancing purposes.
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.
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).
RPO	'Reasonable and Prudent Operator'. A standard for performance of obligations, which in this case is a standard of performance equal to or better than good industry operating practice relative to recognised international practice.
scheduled quantity	A defined term in the MPOC for the days confirmed and committed scheduled quantity for a welded party, which is the sum of approved nominations at the welded point.
shipper	A user that has contracted for the pipeline owner to transport gas.
TSA	'Transmission Service Agreement'. The contract between a shipper and the pipeline owner to transport gas.
UFG	'Unaccounted For Gas'. This is a change in linepack that cannot be identified to a user, and represents the inherent errors in metering gas.
Vector	Vector Limited or its subsidiaries, that own or operate the Vector gas transmission pipelines.
VTC	'Vector Transmission Code'. The execution copy of 19 November 2007.
welded party	An interconnected party to a transmission pipeline, particularly on the Maui pipeline. These parties are contractually separate from shippers and may or may not be the same entity as a shipper.

**Appendix A 23 February 2007 letter from
Gas Industry Co to the MDL
Commercial Operator**



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23 February 2007

David Bott
Commercial Operator
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Dear David

Proposed process for addressing Maui Pipeline over-pressure issues

At the industry meeting which MDL convened on 9 February 2007, the recent Maui pipeline over-pressure situation was reviewed and a number of possible causes canvassed. Yesterday the facilitator of that meeting advised participants of a proposed approach to resolving those issues. It involves meetings on seven workstreams to which industry participants have been invited, with the first workstream meeting scheduled for 27 February 2007. Gas Industry Co wishes to make some comments on this proposed approach to resolving the over-pressure issue.

Following its review of transmission access last year, Gas Industry Co launched a number of workstreams. Two of these involved the use of industry forums related to legacy gas and pipeline balancing to assist Gas Industry Co to identify the best means of addressing the issues. Your proposed approach to the over-pressure issue appears to be duplicating some of the work of those forums.

Gas Industry Co has considered how best to deal with this apparent duplication between your proposed process and its own workstreams. In view of the limited resources available to the industry and to avoid duplication of effort, Gas Industry Co has decided to suspend its Balancing Forum and Legacy Forum for the time being. This should avoid confusion and allow for concentrated industry effort and support for your process. Where practical, the work of Gas Industry Co's forums will be shared with the relevant new workstreams.

However, in taking this decision, Gas Industry Co is mindful that it has certain obligations with respect to the achievement of the Government policy objective of establishing access across transmission pipelines on reasonable terms and conditions. In Gas Industry Co's view the difficulties experienced by parties to the Maui Pipeline Operating Code as a result of the overpressure incidents calls into doubt the reasonableness of some of the existing Maui

pipeline access arrangements. Gas Industry Co's support for your initiative is therefore conditional on it making rapid progress towards resolving the issues.

While Gas Industry Co believes that the participation of industry players will help to analyse the problem and identify the best solution, it doubts that there will be unanimous agreement on either of those matters. In particular, the possibility of hold-out could frustrate the efficient development of balancing arrangements as it has previously frustrated the development of other industry arrangements. For this reason Gas Industry Co reserves its right to recommend alternative arrangements to the Minister if it considers that the process you are initiating is unlikely to achieve agreement on, or unable to implement, some aspect of the solution, or will not resolve the matter in a timely fashion.

Gas Industry Co is also concerned that MDL may consider that initiating the proposed process excuses it from making progress on some of the matters raised at the 9 February 2007 meeting. Specifically, Gas Industry Co sees no reason why MDL should not:

- seek additional balancing arrangements^[1];
- decide how it will deal with its accumulated UFG (acting as a reasonable and prudent operator), advise the industry of its decision and take action on that decision;
- review the Schedule 7 minimum tolerances^[2]; and
- investigate the cost of OATIS handling positive operational imbalances in the same way as negative imbalances.

It seems to Gas Industry Co that all these matters need to be attended to at some stage, and there is no merit in delay.

Gas Industry Co is also concerned that legacy parties may use the proposed process as a reason to postpone their discussions. There are at least two changes to the legacy arrangements which (with, as far as we are aware, very little cost or loss of commercial benefit) have the potential to improve the situation. These are:

- to forego the use of hourly nominations and only provide STOS with single daily nominations^[3]; and

^[1] The 9 February 2007 meeting concluded that it was MDL's responsibility as the Maui pipeline operator to put arrangements in place to keep the pipeline in balance and, since the arrangements at Oaonui alone could not achieve this, new arrangements with other balancing providers are required. The Commercial Operator expressed concerns about recovering the costs of such arrangements, but that is a matter fully within MDL's power to resolve.

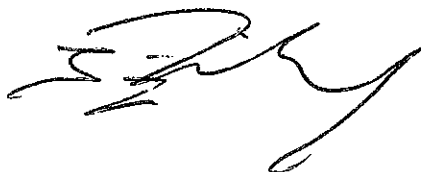
^[2] We understand that a number of parties have been asking for this to be done for some time now, and that MDL has agreed to do it.

- to consider what change to Section 3.14 they would support which would allow ILON's to be issued in respect of non-legacy gas.

Gas Industry Co will be following up on these matters with you and the legacy parties.

The expectation of both Gas Industry Co and the industry is that MDL will be responsible for balancing the Maui pipeline in the short term and that, by next summer, more robust and equitable arrangements will be in place. We will do all we can to assist you to achieve this.

Yours faithfully

A handwritten signature in black ink, appearing to read 'Ian Wilson', written in a cursive style.

Ian Wilson
Senior Advisor - Pipelines

cc: All those to whom Bev Wisnewski's email of 22 February entitled "Maui Pipeline Industry Forum Invite" was sent.

^[3] The resulting reduction in data volumes would make it easier for STOS, as shipper of legacy gas, to provide intra-day nominations and hence improve the accuracy of scheduled quantities

Appendix B Concluding report on Maui pipeline CO's workshops



Maui Pipeline Industry Forum – Over Pressure Issues Meeting Report

**7th June 2007
1pm – 5pm**

Prepared for the Maui Pipeline Commercial Operator

Description	Author	Reviewed	Date Issued
Final Draft	Bev Wisnewski Aretê Consulting		06/07/07

Executive Summary

Maui Development Limited (MDL) invited industry participants to attend a second Industry forum to continue the discussions relating to the over pressurisation issues experienced on the Maui Pipeline. Representatives from each of the work streams identified at the 9th February forum presented a short review reflecting the discussions and progress to date.

The forum provided Industry with an opportunity to:

- receive presentations from the Balancing, Curtailment, Daily Allocation, Legacy and UFG work streams;
- discuss the various concepts presented and express views in relation these solutions going forward;
- decide upon an effective communication process going forward that allows for continued industry consultation regarding pipeline initiatives.

Participants agreed there was a need to continue the communication process as there remained a considerable number of issues requiring further consideration. Participants also agreed there was a need to create a mechanism through which the MDL CO & SO are able to consult with industry regarding pipeline initiatives. It was proposed that meetings were held regularly consisting of a cross representation of industry participants. The frequency of these meetings was anticipated to be bi-monthly though this would be reviewed as the process developed. The MDL CO undertook to circulate a schedule to industry participants.

1. Forum Process

Two broad objectives were identified for the forum:

1. To provide an update to the wider industry progress made by each of the work streams;
2. Discuss the communication process going forward and areas for further consideration;

All key industry participants were again invited to attend the forum, and a summary of all previous work stream notes were circulated in preparation for the discussion. The Gas Industry Company was also present and updated the forum regarding their activities in relation to the over pressure issue.

The discussion covered:

1. Work stream updates
 - Balancing Services
 - Curtailment
 - Daily Allocation
 - Legacy
 - UFG
2. Concept developments
3. Process moving forward

Following the introduction, representatives from each work stream presented the discussions, recommendations and concepts explored by each group to date¹. This allowed individuals who had not participated in that particular work stream to be updated on progress made, query the assumptions made and form an appreciation of the relationship between each of the issues addressed as it was agreed that the over pressurisation is not attributable to just one aspect of operation.

¹ Each of the presentations made will be available for download from “Publications” sections of the MDL IX.

2. Work Stream Presentations

The Forum's primary objective was to inform the wider Industry of the progress made relating to work streams established at the 9th February Maui Pipeline Over Pressure Forum. It provided an opportunity for Industry to offer feedback regarding proposed concepts and the GIC were also able to update the group regarding the initiatives they were undertaking as a result of this Industry led process. For each topic the majority of the discussion centred on the information provided in the presentations by each of the groups.

- **Balancing Services:** The MDL CO presented the commercial aspects of the discussions on behalf of the Balancing Services Group and the MDL TO reported the technical parameters investigated.
 - **Commercial** – The main areas of high level consensus reached by the group were highlighted, including:
 1. the need for a diverse range of balancing sources;
 2. the development of a market-based system – a desire to reduce balancing costs incurred by Industry;
 3. the need to reduce dependency on balancing gas;
 4. the development of fair cost-allocation mechanisms – “causer pays” principle. Deficiencies of current cost-allocation mechanisms.

A status report was then given regarding the key initiatives identified from the group requiring immediate consideration;

<i>Initiative</i>	<i>Status</i>
Commercial Arrangements	Awaiting response to Request for Proposal (RFP)
Pipeline Operating Model	Final stages of development – to be put to Industry for review
Cost Recovery/Allocation	Awaiting outcome of Legacy discussions

In response to the presentation the forum explored the need for a secondary balancing market and the ability/changes required by MPOC to enable this. Again it was agreed that there was a requirement for a diverse range of services that would have to enable access to available deliverability in very short time scales. Recognition was given to the role of the pipeline operator but it was thought that they did not necessarily need to provide the balancing services and that with a better incentive scheme this could be undertaken by other parties through the secondary market. MDL expressed that they were currently reviewing the existing Maui Balancing Gas Instruction but it was preferable to work with

Industry solutions, therefore Industry needed to identify the forward direction for balancing the pipeline. It was agreed that a combination of solutions would eventually resolve Maui Pipeline balancing issues. In the short-term it was noted that further consideration was required for emergency situations and Force Majeure events.

- **Technical Parameters:** MDL TO conveyed to the forum the discussions the Technical Parameters work-stream had in relation to the physical aspects / limitations of the pipeline. The presentation overviewed historical operation of the pipeline and the level of inherent (line pack related) flexibility available on the pipeline system. It was noted that the data presented was based on the pipeline operating at high flow rates which is the situation where the least line pack is available on the system. The TO explained that although inherent flexibility available on the pipeline system should be adequate to account for imbalances on the day (provided flows were within tolerance) the flexibility was inadequate to cope with correction of imbalance positions accumulated over many days of months. The potential to provide two-way flexibility on the pipeline was discussed and the requirements to make this effective outlined. A suggested refinement (including caveats) based on recent experience to formalise the two-way flexibility was proposed. The level of total swing available on the MDL pipeline system under peak flow scenarios was noted as 50TJ (25TJ each way) and it was reiterated that this would not provide sufficient flexibility for significant corrections to Running Operational Imbalance. A question was put by an industry representative as follows “if there is a desire for the “causer” to pay for Balancing Gas services then would be appropriate to adopt lower limits and tolerances”. It was noted that this may be the case if two way swing was a required feature of future pipeline operation, but that a separate internal work stream was considering limits and tolerances and feedback could be facilitated for this through a future communication mechanism.
- ***Curtailment:*** MDL CO combined the Curtailment Group’s discussions with the Balancing Services presentation. The MDL CO outlined the status of the proposal for Shippers to settle their outstanding obligations as a result of Mismatch cash-out, through the physical payback of Gas. The MDL CO has received responses from affected Shippers that raised some queries and is in the process of formulating a response. Whilst the standard operating procedures being produced by MDL CO/SO pertaining to interruptions / curtailment remains a work in progress, the intention expressed was to return to “targeted curtailment” as the standard procedure. The “targeted” approach is where Delivery Welded Points that are not off-taking to Scheduled Quantity are curtailed and the Receipt Welded Points at the corresponding ends of the Nominations are brought down to match. There was general consensus that irrespective of the approach to curtailment that is employed, curtailment will

always have the potential to affect “innocent parties”. It was thought that the targeted approach would result in Operational Imbalance at the VT WP being removed but it was difficult to identify what incentives there were for VT. The MDL SO noted that the root cause of the need for a curtailment response is that Nominations are simply not accurate on the Day. The discussion concluded that negotiations were still occurring to resolve the existing disputes regarding curtailment.

- **Daily Allocation:** Alex Love (Contact Energy Ltd) presented on behalf of the Daily Allocation work-stream. The discussion explored the physical constraints that were thought to make daily allocation necessary, the ability of daily allocation to allow efficient management of imbalance positions, and the issues associated for some retailers to migrate to daily allocation. It was considered that smaller, more frequent corrections to operational imbalances are more desirable than the larger monthly shifts currently experienced. The conclusions from the group discussion were listed as ultimately the best solution would be an industry wide regime but at present this wasn't widely supported and it would not be quickly implemented. In the interim if more information was available it would allow retailers to manage their positions better and reduce requirement for balancing services. It was concluded that before any decisions could be made an independent cost benefit analysis should be undertaken and it was thought this may be best facilitated through the GIC. In response to the presentation the forums queried the need for an industry wide daily allocation regime, as some retailers saw the ability to manage their positions as a competitive advantage, and were already utilising available data effectively. The Auckland Network was used as an example to highlight that daily allocation may not resolve all issues.

<i>Auckland Network Example</i>
Average 25 GJ/Annum = 0.69 GJ/day
70k customer with total demand 4.8 TJ/day
On average forecast out by 25% = 1.2TJ/day which is within tolerance.

It was agreed that allocating on a daily basis had the potential to result in more accurate forecasts. Vector reported that they had envisaged settlement of imbalances daily but this had not occurred to date. Shippers were still waiting until month end rather than allocations issued the day after. Vector also believed they were able to provide the information required for shippers to manage their positions more effectively. The Irish market was raised as potentially applicable to New Zealand but this had to be investigated further. The GIC responded in relation to the cost benefit analysis that they would include this as part of their process to progress all the issues. It was agreed that daily allocation was not a priority issue to be addressed by industry.

- **Legacy:** The legacy discussion was split into three presentations consisting of an overview of the process, and two further concepts that were deemed to merit greater consideration.
 - **Overview:** Murray Jackson on behalf of the Legacy work stream presented a brief summary of the various concepts examined by the group as a whole and the issues associated with them. Two of the concepts considered by the group to merit further consideration were discussed subsequently. It was noted that the Maui JV welcomed the positive evolution of open access but could only consider proposals for changes in respect of its own system.
 - **Vector Wholesale / Contact Energy Comprehensive Concept:** This concept was initiated by Vector Wholesale / Contact Energy as Users of Maui Legacy Gas. However, it was not confined to the consideration of Maui Legacy Gas implications and therefore encompassed some wider pipeline issues. The concept was formulated as a “package”, which is designed to be implemented in its entirety. Alex Love of Contact Energy presented the high level principles to the wider Industry Forum with the central tenet of the concept being that by 1 October 2007 Maui Legacy Gas would be treated the same as all other gas transported under the MPOC. Emphasis was given to the fact that there was a lot of detail to resolve but initial discussions with the Crown and the MMCs had been encouraging. It was proposed that all references to Maui Legacy Gas be removed from MPOC and several changes were identified covering UFG, Balancing Gas, Improved Information, Rights at WP, Positive Operational Imbalance, tolerances and linepack. It was expressed that as the concept was a comprehensive solution it was hoped to secure wide spread support. For this concept to succeed it requires the support of Vector Transmission as certain provisions relating to rights of Vector shippers at Maui Pipeline Welded Points, UFG and operation of the Frankley Road/Pokuru Welded Points would have to be incorporated in to the Vector Transmission Code. In response to the briefing the industry agreed that this was a positive step to resolve the issues experienced on the pipeline but expressed reservations in relation to the requirement that it is implemented as a package in its entirety. It was thought that implementing elements of the concept may be desirable / easier to achieve, but this was not the view of Contact Energy / Vector Wholesale. Support was given for this concept to be developed but concern regarding the time scale intended was made, especially as Vector Transmission wished to understand the full details and impact on their operations. On this basis it was noted that an alternative should continue to be developed in parallel. Vector Transmission expressed their view that they were prepared to work with industry to secure a more efficient system but debate was had regarding whether this was sufficient incentive for them to participate and make the changes to VTC. If the changes were not made then it was queried if section 3 in MPOC would remain under this concept. Vector Transmission

noted they were looking at UFG with MDL and now the GIC, identified the need for a double sided incentive scheme and intend to write to the GIC on this matter and that transparency of Frankley Rd/Pokuru could be achieved if agreement was reached with all parties. The assignment of rights to Shippers was thought to be complex and unlikely to be resolved by 1 October 2007. It was acknowledged that any party could seek changes to MPOC through the change process should they so wish and that it did not just have to fall to Vector Wholesale & Contact Energy.

- **STOS Notional Weld Point Concept:** The second concept developed from the Maui Legacy Gas discussions was presented by Ian Wilson in conjunction with Vector Transmission. This concept is the “alternative” to be developed in parallel with the Vector / Contact Energy concept discussed immediately above. It was considered that Maui Legacy Gas issues were obscuring the debate and that addressing complications arising from legacy provisions would assist in Maui Pipeline balancing arrangements. No actual presentation was given for this concept however in essence it sought to preserve the rights of Maui Legacy Gas Users but move the Maui Legacy Gas provisions out of MPOC and look to have STOS treated as any other Shipper with costs to be borne by STOS if incurred. STOS would also need to be the Welded Party at notional Welded Points in order to isolate the quantities of Maui Gas from “other gas” at existing TP Welded Points. This obviously would require STOS agreement and did raise the issue of liabilities. A mechanism to reallocate costs at month end was required. For this concept to be implemented it could allow for the removal of 3.14 from MPOC which at present prevents the issue of ILONs to Welded Points where Maui Gas is delivered until the processes associated with the retrospective Maui Gas allocation are complete. It was considered that the agreement of Maui Gas Users was not required and that the concept could be implemented relatively quickly. This would need to be done through a party to MPOC to seek changes and not seen as controversial. Whilst it was hoped that the Vector Wholesale / Contact Energy concept was successful, the intention was to continue to flesh out this concept as an alternative. In response to this, clarity was sought with regards to the trigger that would halt the Vector Wholesale / Contact Energy process and seek the alternative for implementation. This was thought to require further consideration. Regarding the time scales for this concept to be implemented it was dependent on the GIC change consultation process but it was acknowledged it was unlikely to occur by 1 October 2007. As Vector Transmission would not be affected by renominations at month end, which would be between the Maui Gas Users and MMCs / STOS, it was thought that getting support for this concept may be easier.

- **UFG:** Ian Wilson (GIC) led the discussion on the UFG work stream and acknowledged that the process had resulted in a useful exchange of information and opinions as well as some agreement being reached on defining UFG and options identified for dealing with it. The definitions agreed were listed as were two possible options for addressing UFG:

Option 1	Option 2
Adjusted meter flows to eliminate UFG (Welded Parties share costs/benefits)	Buy/Sell UFG (Shippers share costs/benefits)
Aligns with metered flows being responsibility of welded party. It would require changes to MPOC but not to OATIS	Appears to align with original intend of MPOC based on 2004 Maui Information Memo. No changes to MPOC or OATIS required.

However, as the UFG work-stream participants were unable to reach consensus on both the treatment of future and historical accumulated UFG, the GIC engaged an independent expert to provide an opinion. The pipeline owners were waiting to see the independent report before responding. It was anticipated that the report would be available via the GIC website from 18th June 07. A review of the expert’s findings will be undertaken and discussions will be held between the GIC and the pipeline owners to understand if the recommendations made will be accepted and if there is a requirement further involvement by the GIC to resolving this issue.

Going forward, the GIC stated that they had supported the MDL/Industry process and as a result suspended some aspects of its Access review. The GIC appreciates that it had accepted the offer to be an “observer” in the over-pressure work-streams, but queried whether in the future it may be more appropriate for the GIC to assume a “participant” role.

3. Future Communication Progress

The forum agreed that whilst the industry led initiative had been a positive exercise resulting in a number of high level concepts being developed to address the over pressurisation issue, these still required further development through Industry consultation.

It was identified that in order to continue to strive to address the difficulties encountered on the Maui Pipeline a communication mechanism needed to be developed and agreed. A proposal was made by the MDL CO that an open industry forum could be held as a means by which Maui Pipeline customers could be updated regarding any pipeline initiatives being undertaken by either the MDL CO or SO. This would be an open invite

and the decision to attend would be at the individual customer's discretion. It was acknowledged that the frequency of the meetings may have to be varied depending on the complexity of the topic being discussed but in principal this would be held monthly. It was thought that this process could assist with the MPOC change process mechanism for parties submitting change requests. Collectively discussing proposed changes prior to submission could result in a more comprehensive application and reduce delays during the consultation process. The GIC would be asked to attend in the capacity as a participant not as previously, an observer to the proceedings.

This approach was supported by the Forum and it was agreed that the communication process needed to remain open to promote consultation with Industry. It was also thought to be beneficial to parties wishing to propose changes to MPOC through the change process to gather the data required to complete the submission. The GIC reiterated their position that they were prepared to assist with an Industry led process so long as it could be demonstrated that progress to find workable solutions to the issues identified was shown. As discussed in the UFG Work Stream presentation where no resolution to issues can be reached through Industry discussions they will undertake to seek independent advice to ensure momentum is maintained. The GIC indicated they would be meeting with the two pipeline owners subsequent to the Forum to discuss in particular the Legacy and UFG issues and then would decide if they would support the continuation of an Industry led process.

To continue the progress from the work streams the MDL CO indicated in the short-term that two areas required immediate consideration from a focused work group;

- Balancing Mechanism
- Emergency Response Mechanism

The MDL CO would issue an invitation and schedule to participate by end of June / early July 07.

Appendix C MPOC and VTC balancing provisions

Table 3 MPOC and VTC balancing provisions by topic

Topic	MPOC	VTC
RPO	Notwithstanding any other provision, MDL, shippers and welded parties shall act as RPOs (2.3).	Vector and shippers shall act as RPOs (2.7 & 2.8).
Provision of services	<p>MDL shall provide transmission services (2.4).</p> <p>MDL shall, acting as a RPO:</p> <ul style="list-style-type: none"> • receive, transmit and deliver approved nominations (2.5(b)); and • use reasonable endeavours to provide Maui pipeline capacity consistent with its capacity forecast (2.5(e)). <p>MDL will not contract with any user for storage services, other than to maintain a contingency volume (2.8).</p>	<p>Vector shall provide transmission services (2.1).</p> <p>Subject to reserved capacity limits, contingency events or maintenance, Vector shall receive gas at the receipt point and make an equivalent quantity of gas available for that shipper to take or transfer at the delivery point (2.2).</p>
Users obligations	<p>Each shipper must ensure that it's nominated quantities balance (8.2) and are given in good faith (8.3).</p> <p>Each welded parties will flow a quantity of gas equal to its daily scheduled quantity (which is the sum of approved nominations), although the sole consequence for imbalance is as per section 12 (12.1).</p> <p>Each welded parties shall use its reasonable endeavours to manage flows so that Running Operational Imbalance (ROI) tends towards zero over a reasonable period of time, except to the extent that in the welded parties reasonable opinion it is attributable to legacy gas (12.9).</p>	<p>Each shipper must use all reasonable endeavours to ensure daily balance on each pipeline, other than to reduce running mismatch (8.1).</p> <p>Where an ILON has been notified to Vector, each shipper must manage its running mismatch position towards zero over "a reasonable period of time" (8.2)</p> <p>Where a shipper has more than one TSA it may aggregate its mismatch on a pipeline (8.8).</p> <p>Each shippers will enter into a Gas Transfer Agreements (2.9 – 2.13), which sets rules for allocating gas received into the system (schedule 6).</p>

Topic	MPOC	VTC
Linepack management	<p>MDL will act as a RPO to maintain sufficient total linepack necessary to deliver legacy gas and approved nominations and to provide the posted flexibility limits (18.1).</p> <p>MDL will make gas available for off-take at not less than 31 bar (18.2).</p> <p>Other than for maintenance, MDL will not knowingly schedule operations which would;</p> <ul style="list-style-type: none"> • result in pressures falling to operationally unacceptable levels; or • otherwise jeopardize the integrity or transmission services of the Maui pipeline or a connected transmission pipeline. (18.3) <p>MDL shall, acting as a RPO, use reasonable endeavours to manage the Taranaki pressure as low as practical while meeting its obligations, and not more than the safe maximum (2.5 (c) and (f)).</p>	<p>Vector will use its best endeavours to manage linepack within the acceptable operational limits for each pipeline (8.3).</p> <p>In doing this Vector is to use reasonable endeavours to minimise costs, and if there is time, follow a defined tender process (see below) (8.4).</p> <p>(Note the Vector delivery point interconnection agreements have a best endeavours obligation to deliver between the defined maximum and minimum delivery pressures. The receipt point agreements have obligations on the parties to ensure pressure remains below a defined maximum.)</p>
Tolerances	<p>Peaking Limit will be set as large as reasonably practicable (18.1).</p> <p>DOILs will be set as high as reasonably practicable, and only in respect of negative operational imbalance (12.8).</p>	
Excess imbalance	<p>MDL may, at its sole discretion, give an Imbalance Limit Overrun Notice (ILON) to a welded party where it's ROI is outside the ROIL, and the welded party will comply (12.10).</p> <p>After the ILON notice period MDL may, at its sole discretion, cash-out some or all of any remaining excess ROI (12.11).</p>	<p>In respect of an ILON, shippers shall use reasonable endeavours to manage running mismatch towards zero on the relevant pipeline.</p> <p>When Vector receives an ILON it will post it, and an estimate of Vector's contribution to it, on OATIS</p>

Topic	MPOC	VTC
Constraints on balancing costs	The cash-out buy and sell price (as above) will reflect the balancing agent's costs in accessing and disposing of gas. If a liquid gas market develops, these prices will reflect the buy and sell spot prices in that market. MDL undertakes that, as pipeline operator, it shall not seek to make a profit or loss from its activities in relation to the sale and/or purchase of balancing gas, or settling mismatches or ROI (11.10).	<p>Vector shall only recover direct costs of balancing gas or MDL cash-out and may not add a margin, but may levy administration costs on aggregate deliveries (8.20).</p> <p>When managing linepack outside limits, where there is time, Vector will (8.4 (c)):</p> <ul style="list-style-type: none"> • issue a request for tenders to shippers and others, • publish the price, quantity and delivery point of each tender, and • accept the lowest priced tender if buying or highest price if selling. <p>Vector shall be entitled to include direct transport costs (8.6).</p> <p>Vector shall use standard tender terms posted on OATIS (8.7).</p>
Aggregation and trading of mismatch and imbalance	<p>A welded party may trade imbalance with other welded parties (12.17 & 12.18).</p> <p>A shipper may trade mismatch with other shippers (11.5 & 11.6).</p>	A shipper may aggregate mismatch between its contracts (8.8), but only till 30 September 2009.

Topic	MPOC	VTC
<p>Interruption of flow</p>	<p>MDL may where necessary for various defined reasons (15.1):</p> <ul style="list-style-type: none"> • interrupt or reduce transmission and curtail approved nominations; and/or • give a welded party notice of an OFO to curtail or shutdown transfer of gas and the welded party shall comply, <p>A welded parties may also interrupt flow for certain reasons (15.2).</p> <p>For interruptions MDL and welded parties will use reasonable endeavours to notify, consult and cooperate etc (15.3 and 15.4).</p> <p>MDL will use reasonable endeavours to maintain a contingency volume of gas for use during a contingency event, maintenance or Force Majeure (15.5 – 15.11).</p>	<p>Vector may curtail or shutdown receipts or deliveries, acting as a RPO, for various reasons with conditions (10.1). In such a case Vector may issue an OFO and the shipper shall use its best endeavours to immediately comply (10.2).</p>
<p>Small Welded Points¹⁴</p>	<p>Very small stations are grand-fathered pre-existing metering standards, so may not have real time telemetry, and imbalances will only determined at month end.</p> <p>At these small stations the welded party will remove any excess imbalance by transferring it to a large station (12.5).</p>	<p>When required by MDL, Vector will transfer a Vector shipper's mismatch to another pipeline used by that shipper (8.9 to 8.11).</p>

¹⁴ The MPOC defines small welded points as a special class of interconnection points that are very small and do not meet the real time metering requirements of the major welded points.

Topic	MPOC	VTC
Damages	<p>An Incentives Pool provides a system of liquidated damages (14.1) which is the sole and exclusive remedy for any inability to take full scheduled quantity on a day (14.5).</p> <p>Each welded party will incur liability to the Incentives Pool to the extent its flow exceeds peaking limits (13.3) or its daily imbalance depletes linepack in excess of its DOIL (12.7).</p> <p>If a welded party is unable to off-take its scheduled quantity or is curtailed due to another welded party being outside tolerance then it may claim via the Incentives Pool at the defined daily incentive price (12.16).</p> <p>The balancing agent may make a claim on the pool, within limits, to meet the costs of buying any gas on a day (14.4).</p> <p>The Maui Mining Companies may make a claim, within limits, for an inability to deliver legacy gas on a day.</p> <p>The trustee shall invoice each welded party that has incurred a liability in proportion to its contribution (14.11) and pay each welded party in proportion to its claim (14.12).</p> <p>Each welded party indemnifies MDL for reasonable costs incurred by the balancing agent replace any ROI outside of tolerance (12.13 (c)).</p>	<p>Where Vector has been an RPO but is required to pay under the MPOC 12.13 indemnity, each shipper who has a negative running mismatch at the relevant time will pay its share of the payment into the BPP account (8.12).</p> <p>If Vector makes a payment to the MDL Incentives Pool arising from excess daily imbalance then Vector is reimbursed from the BPP account and this amount will be allocated in proportion to (Vector/shipper) contributions to aggregate negative mismatch (8.13 (a)).</p> <p>Similarly, if Vector makes a payment to the MDL Incentives Pool as a result of exceeding a peaking limit, then Vector will be reimbursed from the BPP account. Vector then determines a reasonable allocation of this amount to Vector/shippers, and where it is unable to identify who was responsible, to all shippers in proportion to their gas delivered on that pipeline on the day. (8.13 (b))</p> <p>A shipper who is unable to take its gas entitlement may claim damages from the BPP account, and Vector shall verify the damage claim (8.14).</p> <p>Vector may determine an event on the Maui pipeline contributed to a damages claim. In that case any recovery from the Maui Incentives Pool will be allocated in proportion to relevant verified claims. Vector will use all reasonable endeavours to pursue Maui Incentive Pool payments. (8.15)</p> <p>Verified damage claims are paid to shippers at the Maui daily incentive price reduced by the Maui pipeline contribution to the claim and limited to the recovery from causing shippers (8.16).</p> <p>Shippers and Vector shall pay to the BPP account any verified damage claims, in proportion to their negative mismatch on that day.</p> <p>Where Vector buys or sells balancing gas or has an MDL cash-out, each shipper will be cashed-out in proportion to their contributing running mismatch on the relevant pipeline at the relevant price (8.18 and 8.19).</p> <p>Vector shall not correct balancing allocations for corrections in information, but Vector will adjust receipt and delivery quantities (8.21).</p>

Appendix D ERGEG Guidelines of Good Practice for Gas Balancing



EREGEG Guidelines of Good Practice for Gas Balancing (GGPGB)

**E06-GFG-17-04
6 December 2006**

Table of Contents

Scope and objective.....	3
1. Required characteristics of a balancing regime.....	4
- Balancing period.....	4
- Imbalance charges	5
- Penalty Charges.....	6
- Trading and pooling of imbalance positions	6
- Tolerance Levels and Tolerance Services	6
- Market information and transparency of balancing arrangements	7
- Balancing costs and incentives for the TSO.....	7
- Harmonisation of balancing rules	8
2. Role and Responsibilities of ‘relevant national regulatory authority’	9
3. Role and Responsibilities of TSOs	9
4. Role and Responsibility of network users	9
5. Confidentiality requirements	10
6. Changes to these guidelines	10
Annex 1 – Definitions.....	11
Annex 2 – Market information and transparency of balancing arrangements	12
Information for individual network users	12
Information for the market.....	12

Scope and objective

The Gas Regulation¹ (which came into force on 1 July 2006), sets out conditions for access to natural gas transmission networks and includes Articles in relation to gas balancing and imbalance charges. These specify high level requirements for gas balancing regimes including for example the need to ensure that rules are fair and non-discriminatory.

The purpose of the EREGEG Guidelines of Good Practice for Gas Balancing (GGPGB) is to provide more detailed guidance to both Transmission System Operators (TSOs) and the relevant National Regulatory Authority (NRA) on the design of gas balancing mechanisms. This is to help ensure that the mechanisms maintain the safe, secure, efficient and reliable operation of the network and that the rules are based on objective criteria and designed and applied in a fair, non-discriminatory and transparent manner. The GGPGB is applicable from its publication date (15th December 2006) and compliance is fully requested by 1 April 2007.

These GGPGB, approved by EREGEG on the 6th December 2006, represents the advice of the European Regulators' Group for Energy and Gas (EREGEG)² to the European Commission (EC) on its interpretation of Article 7 of the Gas Regulation³.

The GGPGB is not legally binding and no requirement can be made under the GGPGB that contravenes national or European legislation. They are designed to be consistent with and support the existing requirements in the Gas Regulation.

In the event that any party believes that there is a conflict between the requirements of the GGPGB and any national or European legislation that will materially effect either its interests or its ability to comply with the GGPGB, it will without any unreasonable delay notify the relevant national regulatory authority, specifying in detail the exact nature and extent of the conflict. This notification will be made public unless the relevant regulatory authority is satisfied, on the basis of objective justification provided to it, that to do so would unacceptably infringe on commercial confidentiality.

The GGPGB apply to the relevant national regulatory authority and/or the authority to which the Member State has delegated the responsibility for designing and/or operating the balancing mechanism. The GGPGB also apply to TSOs and network users. Where Member States have established one or more entities or bodies set up in compliance with Directive 2003/55/EC for the purpose of carrying out one or more functions typically attributed to a TSO with regard to balancing the GGPGB shall likewise apply to these entities or bodies⁴.

¹ Regulation (EC) No 1775/2005 of the European Parliament and of the Council of 28 September 2005 on conditions for access to the natural gas transmission networks.

² Commission Decision of 11 November 2003 on establishing the EREGEG.

³ Regulation (EC) No 1775/2005 of the European Parliament and of the Council of 28 September 2005 on conditions for access to the natural gas transmission networks.

⁴ Article 1.2 of the Gas Regulation (EC) No 1775/2005.

Subject to compatibility with national requirements, all bodies to which these guidelines apply shall be in compliance by 1 April 2007 unless another date is specified. Where implementation by 1 April 2007 is not achievable the TSO will make public the fact and notify the relevant national regulatory authority and will pursue implementation at the earliest possible date, but in any event not later than 1 July 2007.

1. Required characteristics of a balancing regime

- 1.1 As provided for Article 25.2.b of the Directive 2003/55/EC of the 26 June 2003, “the regulatory authorities shall be responsible for fixing or approving prior to their entry into force, at least the methodologies used to calculate or establish the terms and conditions for (...) the provision of balancing services”.
- 1.2 Balancing rules shall be designed and applied in a fair, non-discriminatory and transparent manner and shall be based on objective market based criteria. Balancing rules shall reflect genuine system and market needs taking into account the resources available to the TSO and to network users.
- 1.3 The development of balancing rules and any subsequent changes should be subject to appropriate consultation (unless the balancing rules are already specified in national legislation where this requirement would not be relevant) with market participants and decisions should be supported by objective criteria and analysis.
- 1.4 Where balancing rules (including rules relating to imbalance charges) are implemented by the TSO they should be equally applied to its own commercial operations and related undertakings, where part of a vertically integrated company, as to third parties.
- 1.5 The balancing rules should be designed to minimise the residual physical balancing role of the TSO subject to the safe and economic operation of the network and other relevant requirements specified in section 3 hereunder.

- Balancing period

- 1.6 The balancing system should generally be based on balancing periods characterised by a settlement procedure at the end of the balancing period. The choice of an appropriate balancing period needs to be based on an objective assessment against a number of criteria and decisions should be published with supporting information. These criteria should include:
 - The operational capabilities of the transportation system to balance the system;
 - The flexibility and balancing tools that are elaborated by the TSO and offered to market participants;
 - Avoiding the creation of any barriers to entry - particularly for new (and smaller) market entrants;
 - Whether consumers’ (daily) offtake profile has, on average, a broadly recurrent pattern;
 - The interaction of the balancing period with effective commercial incentives to balance, in particular interactions of shorter balancing periods in electricity markets with potentially longer periods in gas;

- The interaction with balancing periods in connected gas systems to ensure that no barriers to cross border trade and flows of gas between connected gas transportation systems are created;
 - Availability and accuracy of the information over the relevant period that is made available to network users concerning their imbalance position allowing them to take timely corrective balancing actions;
 - The costs imposed on TSOs and network users by particular balancing regimes, for example the IT costs of providing more regular information flows over shorter balancing periods and the transaction costs incurred by network users from potentially taking more frequent balancing actions; and
 - Nomination and re-nomination procedures complementary to the balancing period.
- 1.7 Where a balancing period is used, daily is preferred (unless a different period is specified in national law) and unless there are technical/operational reasons that mean that a different balancing period is necessary to ensure that the system can be balanced and/or for safety and security reasons.
- 1.8 As an alternative, it is also possible to use a system where there is no **pre-defined** balancing period. As long as the cumulated imbalance of a network user is kept within specified tolerance levels there is no need for a settlement procedure and therefore balancing period.
- 1.9 It is important that network users are not exposed to undue risks that they cannot manage effectively and/or without incurring inefficient costs that could create barriers to entry to the market. Therefore market participants should have access to appropriate information, adequate re-nomination procedures and flexibility tools/services so that they can manage their imbalance positions (and therefore risk) efficiently, taking into account the relevant characteristics of the balancing system, in particular the balancing period and/or the width of the tolerance margins.
- **Imbalance charges**
- 1.10 The tariffs for tolerance services or imbalance charges include all charges due by the network user in the cases where his imbalance remains within the specified tolerance levels. Imbalance charges shall be cost reflective to the extent possible, whilst providing appropriate incentives on network users to balance their input and offtake of gas.
- 1.11 They shall be fair and non-discriminatory and based on objective criteria. They shall avoid cross-subsidisation between network users and shall not hamper the entry of new market entrants.
- 1.12 Any calculation methodology for imbalance charges as well as final tariffs shall be made public by either the relevant authority or the TSO as appropriate.
- 1.13 There should also be accurate targeting of appropriate balancing and operation costs to those participants that caused them to be incurred. Any costs that cannot be targeted should be allocated back to all network users in a non-discriminatory manner.
- 1.14 Where information flows are a problem TSOs shall use provisional allocations in the calculation of imbalance charges to reduce the risk for network users.

1.15 Provisional allocations will be settled as soon as possible and the time period for settlement should be approved where appropriate by the relevant regulatory authority after proper consultation with the TSO and network users should there be any subsequent changes. After the expiry of the settlement period for final allocations no penalty charges should be charged by the TSO.

- **Penalty Charges**

1.16 Penalty charges may be imposed on network users (by the TSOs or via a code or agreement) whose imbalance between input and offtake from the transmission system exceeds the specified tolerance levels, subject to these charges being in accordance with the terms of 1.1.

1.17 Penalty charges which exceed the actual balancing costs incurred, insofar as such costs correspond to those of an efficient and structurally comparable network operator and are transparent, shall be taken into account when calculating tariffs in a way that does not reduce the TSOs interest in balancing and does not create barriers to entry. Penalty charges shall be approved by the relevant national regulatory authority.

- **Trading and pooling of imbalance positions**

1.18 In the absence of a well functioning/liquid within day market, allowing market participants to manage their imbalance positions efficiently, the TSO should have or should allow systems to be put in place to facilitate the pooling and trading of imbalance positions. The period of time allowed for pooling and trading of imbalance positions needs to be consistent with that allowed for provisional allocations made by the TSO. The provision of such systems should not in anyway undermine the primary responsibility of network users to efficiently manage their inputs and offtakes over the relevant period (according to the rules and incentives of the respective balancing regime) and/or the safe, secure and economic operation of the network.

- **Tolerance Levels and Tolerance Services**

1.19 Where provided, tolerance levels and services should be designed in a way that reflects the actual technical capabilities of the transmission system and, where appropriate, adjacent transmission systems.

1.20 In the case of non-market based balancing systems, tolerance levels shall be designed in a way that either reflects seasonality or results in a tolerance level higher than that resulting from seasonality, and that reflects the actual technical capabilities of the transmission system. Tolerance levels shall reflect genuine system and market needs taking into account the resources available to the TSO and the network user.

1.21 In respect of tolerance services particular account should be taken of the extent to which tolerances may be utilised by network users to offer "balancing gas" or cause balancing costs to be incurred by the TSO that are subsequently socialised.

- **Market information and transparency of balancing arrangements**

- 1.22 Each TSO should implement user-friendly systems to make available directly to network users or to the public on the internet, as a minimum, the information relating to the areas specified in Annex 2 of the GGPGB in a timely manner in national language and in English. The level of information published shall be set out by each TSO, based on the balancing regime in place and approved by the relevant national regulatory authority in consultation with network users. Information shall be disclosed in a meaningful, quantitatively clear and easily accessible way and on a non-discriminatory basis taking into account Article 6 and Article 9.1 c) of the Gas Regulation⁵.
- 1.23 Each TSO shall also make available confidentially to each user its balancing status and other information relating to the areas specified in Annex 2 of the GGPGB.
- 1.24 Non-confidential information must be provided promptly and on the same time scale to all users on non-discriminatory bases. Network users may request the TSO not to publish information about the aggregate use of balancing services if such publication would harm the commercial interest of the user(s). In cases of non-publication, the relevant national regulatory authority will, when requested by relevant parties, review the decision not to publish. In doing so, it will balance the commercial sensitivity of information against the public interest for transparency. If it considers that the reasons for non-publication are not proportionate, are unfair, or discriminatory, the relevant national regulatory authority can require that the TSO publishes the information. In any respect, information should always be published by the TSO when three or more users participate in the balancing mechanism in the relevant period. The TSO shall notify the relevant national regulatory authority, without any unreasonable delay, where it has not published specific data (e.g. for reasons of costs, to avoid any potential market abuse or to avoid significant harm to their commercial interests). The relevant national regulatory authority can require further details from the TSO, including substantiated reasons, for non-publication. If the reasons for non-publication are not proportionate, are unfair, or discriminatory, the relevant national regulatory authority can require that the TSO publishes the information.
- 1.25 In addition where they exist, charges for the provision of such information shall be approved by the relevant national regulatory authority and made public by the TSO.

- **Balancing costs and incentives for the TSO**

- 1.26 In relation to balancing costs TSOs should be cost reflective and have the correct incentives to ensure that the costs of taking residual balancing actions are efficiently incurred. The residual balancing actions of the TSO should be minimised subject to the safe, secure and economic operation of the network.

⁵ Regulation (EC) No 1775/2005 of the European Parliament and of the Council of 28 September 2005 on conditions for access to the natural gas transmission networks.

- 1.27 Where a TSO's balancing regime permits the acceptance of bids and offers for the purposes of residual balancing gas as a means to balance the system it should procure flexibility (including gas) in a transparent and non-discriminatory manner using market based mechanisms (where possible).
- 1.28 Where a TSO is not permitted to accept bids and offers for balancing gas as a means to balance the system the TSO should procure the gas in other ways according to transparent non-discriminatory procedures including for example accessing gas from storage or through contracts with network users.
- 1.29 TSOs' balancing costs shall be efficiently incurred and should be charged back to network users on a non-discriminatory basis.
- 1.30 Information regarding the costs incurred by the TSO for this purpose shall be made publicly available. If the TSO is concerned that doing so would have a negative impact on the commercial position of market participants or itself, it should notify the relevant national regulatory authority. The relevant national regulatory authority will then decide whether the information should be published or not.

- **Harmonisation of balancing rules**

- 1.31 National regulatory authorities and TSOs shall endeavour to harmonise (and at least make compatible) balancing regimes and streamline structures and levels of balancing charges in order to facilitate trade between Member States and in particular with regards to:
 - a. tolerances;
 - b. imbalance charges; and
 - c. balancing periods.
- 1.32 Where balancing regimes remain different between interconnected networks, a report shall be produced to identify the key areas of difference and their impact, including on trade and the efficient operation of the market. In addition, where appropriate, an action plan shall be produced between the TSOs to identify the development of measures to ensure greater harmonisation (and compatibility) of balancing regimes and their structures.
- 1.33 These reports should include in particular:
 - the way in which the balancing regimes interact;
 - identify key differences and the reasons why they exist;
 - the impact of any differences on trade and the incentives provided to network users and TSOs;
 - how differences in arrangements for dealing with safety and security will impact on trade, incentives and costs; and
 - areas for harmonisation and a timetable for making changes.
- 1.34 To ensure transparency these reports shall be published following open consultation with all market participants and approved by the NRA.

2. Role and Responsibilities of 'relevant national regulatory authority'

- 2.1 Each relevant national regulatory authority should ensure that the gas balancing regimes are based on the criteria set out in these GGPGB and the Gas Regulation, whether they are directly responsible for the design, fixing or approving of the methodologies used to calculate or establish the terms for the provision of balancing services or for approving proposals developed by the TSO and/or other market participants.

3. Role and Responsibilities of TSOs

- 3.1 Where the TSO has the responsibility to design the gas balancing regime it should ensure that it does in accordance with the requirements in these GGPGB and the Gas Regulation.
- 3.2 Each TSO retains the overall responsibility for the economic and efficient operation of its system and therefore should retain a residual role to maintain physical balance to ensure the safe, secure, efficient and reliable operation of its system, subject to the incentives, information and flexibility and tools provided to shippers to balance their individual portfolio.
- 3.3 When technically and/or economically necessary for providing efficient access to the system, in particular when the balancing regime is characterised by tight tolerance margins or a short balancing period, the TSO should offer cost-reflective flexibility services (based on the available linepack – if appropriate) in a way which reflects the actual technical capabilities of the transmission system and facilitates competition.
- 3.4 TSOs shall provide sufficient, well-timed and reliable on-line based information on the balancing status of network users as indicated in 1.21 to 1.24 and Annex 2 of the GGPGB.
- 3.5 In the case where any network user is subject to special terms and conditions (particularly where a TSO is part of a vertically integrated company and the user is an affiliated company), these terms and conditions should be made available to the relevant national regulatory authority and the TSO should explain the reasons for these terms and conditions. This requirement in no way limits any rights that the relevant national regulatory authority may have under national or EU law.

4. Role and Responsibility of network users

- 4.1 It shall be the primary responsibility of network users to balance their own inputs and offtakes over the relevant period according to the rules and incentives of the respective balancing regime.
- 4.2 The network users shall:
- not operate in a manner that restricts, distorts or prevents competition;
 - provide all data required by the TSO to enable it to carry out its duties as residual balancer as specified in either the relevant network code or national regulation; and
 - put relevant IT in place in order to be able to communicate with TSOs via agreed interfaces and standards.

5. Confidentiality requirements

- 5.1 TSOs should take steps to ensure appropriate arrangements are in place to protect the confidentiality of information, at least including that:
- a. Commercially sensitive information from network users' accounts remain confidential including from any related undertakings.
 - b. No information available to the TSO concerning the operation of the balancing mechanism shall be passed to other parts of the company in advance of being provided to all market participants; staff working for any affiliate business must have no access to information which could be commercially advantageous, such as details on actual or potential network users, where such information is not made available to all market participants. The arrangements to implement this requirement should include a code of conduct for staff and a compliance programme, supervised by a Compliance Officer.
 - c. In any case the relevant national regulatory authority shall be provided full access to information on request in line with national legislation.

6. Changes to these guidelines

- 6.1 These guidelines can be reviewed periodically by ERGEG and any changes will be consulted upon. Following consultation, revised guidelines for implementation by stakeholders and relevant authorities will be published and posted on the ERGEG website.

Annex 1 – Definitions

1. 'Transmission' means the transport of natural gas through a network, which mainly contains high pressure pipelines, other than an upstream pipeline network and other than the part of the high pressure pipelines primarily used in the context of local distribution of natural gas, with a view to its delivery to customers, but not including supply.
2. 'Balancing period' means the period within which the offtake of an amount of natural gas, expressed in units of energy, must be offset by every network user by means of the injection of the same amount of natural gas into the transmission network in accordance with the transportation contract or the network code.
3. 'Network user' means a customer or potential customer of a transmission system operator, and transmission system operators themselves in so far as it is necessary for them to carry out their functions in relation to transmission.
4. "National regulatory authority" means the competent body designated by Member States with the function of regulatory authority within that Member State as provided for in Directive 2003/55/EC of the European Parliament and of the Council of 26 June 2003 concerning common rules for the internal market in natural gas.
5. "Member state" means the countries that belong to the EU.
6. "Tolerance level" means the level of imbalance, within or at the end of the balancing period, under which there is no penalty, either because such tolerance is integrated in the capacity offer, or because the tolerance has been offered and charged separately as a balancing and/or flexibility and/or tolerance service.

Annex 2 – Market information and transparency of balancing arrangements

This annex provides a guide to National Regulatory Authorities (NRAs) and TSOs regarding the information that should be made available to individual network users and to the market more generally. The areas identified in this annex should be seen as a minimum requirement – and it is crucial that all relevant information that is necessary for the efficient and effective operation of the balancing mechanism is made available to users and the market to an appropriate level of detail and frequency.

Information for individual network users

The minimum information that TSOs should make available to network users to enable them to manage their imbalance positions is listed below. Each TSO (following agreement by its relevant national regulatory authority) will provide a list to network users of the information that it will make available (including the level and frequency).

- Network user specific input and output scheduling calculations and charges.
- Network user specific energy imbalance and related charges .
- Network user specific Penalty charges.
- Forecast demands.
- Actual demands.
- Actual and forecast weather information appropriate to the balancing regime.

Information for the market

The minimum information that TSOs should make available to the market is listed below. Each TSO (following agreement by its relevant national regulatory authority) will publish the list of information that it will make available (including the level and frequency).

- Forecast demand.
- Actual demand.
- Shrinkage factors + quantities.
- Pricing information.
- Standard Contract information.
- Aggregate network user imbalance charges.
- Planned and unplanned interruptions.

Appendix E ERGEG Gas Balancing Conclusions Paper

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Gas Balancing

An EREG Conclusions Paper

E06-GFG-17-03
20 April 2006

Table of Contents

Executive Summary	3
Chapter 1: Introduction.....	4
1 Introduction.....	4
2 Purpose of this document	5
3 Responding to this Gas Balancing Guidelines public consultation	6
Chapter 2: Summary of responses and ERGEG’s view	7
1 Balancing period.....	7
2 Provision of linepack as an unbundled service.....	9
3 Pooling and trading of imbalance positions and the use of tolerance levels	10
4 Cross border trade and harmonisation of neighbouring balancing regimes.....	12
5 Graduated incentives for imbalance.....	14
6 Information required by the market	15
7 Transit/Transportation.....	16
ANNEX 1: List of respondents.....	18
ANNEX 2: Final high level gas balancing principles.....	19

Executive Summary

In July 2005, ERGEG published the “Gas Balancing paper” for public consultation. The consultation paper set out the key issues associated with gas balancing and requested comments on proposed changes to the CEER high level gas balancing principles. The July 2005 paper also proposed, based on the high level principles, the development of more detailed Guidelines for Good Practice for Gas Balancing (GGPGB).

16 responses were received to the July 2005 consultation paper.

This document summarises, and sets ERGEG’s view on, the key issues raised by respondents to the July 2005 consultation paper. It includes a final version of the high level gas balancing principles.

In addition, an initial draft of the detailed **gas balancing guidelines** (reference number E06-GFG-17-04) has been produced, for consultation alongside this document, based on the finalised gas balancing principles (Annex 2 of this document). Responses to the Gas Balancing Guidelines (GGPGB) public consultation document (which were published on 25 April 2006) are requested by 20 June 2006 and should be sent to GGPGB@ergeg.org.

A final version of the GGPGB will be published following ERGEG’s consideration of responses to the draft version.

Chapter 1: Introduction

1 Introduction

Gas balancing has a crucial role to play in underpinning the development of a competitive market in gas. If balancing regimes are not designed appropriately and/or there is a lack of access to flexibility tools and services then real barriers to entry to a market can be created. There may also be consequences for security of supply. The Gas Regulation recognises this and requires that there are “...non-discriminatory and transparent balancing systems for gas...”¹

Against this background, ERGEG published a consultation paper on gas balancing issues (“Gas Balancing – An ERGEG Discussion Paper for Public Consultation”) in July 2005. The paper set out the key issues associated with gas balancing and proposed changes to the existing CEER high level gas balancing principles. The gas balancing principles were originally designed to be used by National Regulatory Authorities (NRAs) and Transportation System Operators (TSOs) to design gas balancing regimes. The July 2005 paper also proposed the development of more detailed guidelines for good practice for gas balancing (GGPGB) based on the high level principles with a view to apply to not only the relevant national regulatory authority (and/or the authority to which the Member State has delegated the responsibility for designing and/or operating the balancing rules) but also Transportation System Operators (TSOs) and network users. In case Member States have established one or more entities or bodies for the purpose of carrying out one or more functions typically attributed to a TSO with regards to balancing the GGPGB shall likewise apply to these entities or bodies.

The importance of balancing issues was also highlighted by DG Competition in the preliminary report on the energy sector review. This showed that the way in which balancing regimes are designed can have a negative impact on the development of competition.

¹ Regulation (EC) No 1775/2005 of the European Parliament and of the Council of 28 September 2005 on conditions for access to the natural gas transmission networks, OJ L 289/1 (3.11.2005).

Issues associated with gas balancing may also arise as part of ERGEG's recently launched gas regional initiative² which is made up of a number of Regional Energy Market projects (REMs). The gas REMs are focusing on how barriers to the development of trading at and between gas hubs and regional markets more widely can be overcome.

16 responses were received to the July 2005 consultation paper (see Annex 1 for a list of respondents). Where the responses are not marked as confidential they are available on the ERGEG website.³

2 Purpose of this document

This document summarises, and sets ERGEG's view on, the key issues raised by respondents to the July 2005 consultation paper. It includes a **final version** of the high level gas balancing principles (Annex 2).

The high level gas balancing principles have been used as the basis for preparing draft Guidelines for Good Practice for Gas Balancing (GGPGB). The GGPGB has been **published (25 April 2006) for consultation** alongside this conclusions document. The GGPGB also includes a template which identifies the information that should be provided by TSOs to help ensure that gas balancing regimes work efficiently.

A **final version** of the GGPGB will be published once ERGEG has considered responses to the draft version. The views of respondents are particularly welcomed on the GGPGB and in particular on the information that should be provided to market participants.

The document is structured as follows:

- **Chapter 2 - Summary of responses on key Issues and ERGEG's view**
- **Annex 1 - List of respondents to the July 2005 consultation paper**
- **Annex 2 – Final high level gas balancing principles**

² See "A roadmap for a competitive single gas market in Europe – An ERGEG conclusions document" (March 2006) and the ERGEG website (www.erggeg.org) for information on the Gas Regional Initiative which was launched on 25 April 2006.

³ www.erggeg.org

3 Responding to this Gas Balancing Guidelines public consultation

ERGEG invites comments on the draft Guidelines for Good Practice for Gas Balancing (GGPGB) (document reference number - E06-GFG-17-04) which were published for consultation on 25 April 2006 (see www.erggeg.org).

Responses should be received by **20th June 2006** and sent by e-mail to: GGPGB@erggeg.org.

Any questions on the public consultation document should, in the first instance, be directed to:

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Secretary General
CEER
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Unless marked as confidential, all responses will be published by placing them on the ERGEG website. If there is anything confidential it should be included in a separate annex to respondents' core response document.

Chapter 2: Summary of responses and ERGEG's view

The July 2005 consultation paper set out 9 key questions and requested comments on the proposed changes to the CEER high level gas balancing principles.

This section sets out a summary of the key issues raised by respondents and ERGEG's view.

1 Balancing period

The July 2005 consultation paper explained that shippers have argued that in some instances the balancing period is too short placing strain on information systems and increasing risk to market participants.

The paper also pointed out that the choice of the appropriate balancing period needs to be based on an assessment of a number of objective criteria and that there was not one appropriate answer.

View of respondents

The majority of respondents argued that hourly balancing can create significant barriers to entry to the market for a number of reasons including that:

- traded markets are daily based partly because upstream production contracts are daily based, and as such changing production flows to a higher frequency could impact on efficiency and safety and potentially increase costs;
- many new entrants would not have the capacity to deal with the frequency of data or the higher risk of imbalance (and cost);
- the arrangements tend to be overly complex and lead to low liquidity;
- there is greater exposure to cash-out penalties;
- there is an inability to access flexibility tools and services to match the balancing period and efficiently manage risk exposure;

- it requires costly changes to metering, collection of data and provision of information to the market and hourly nomination; and
- hourly balancing in a country bordering another one that has adopted a daily balancing regime creates distortions on cross border flows and hampers further European harmonisation of gas markets.

GIE indicated that an hourly balancing regime applied on a transparent and non-discriminatory basis is not a barrier to competition. It suggested that it can lead to lower costs for shippers as there are clearer responsibilities and therefore less cross-subsidy between shippers. It did recognise that hourly balancing has to be supported by an adequate operational/commercial framework and metering arrangements.

EREGEG's view

The July 2005 consultation paper indicated that there was no single answer for the appropriate balancing period. Respondents have indicated a number of reasons why hourly balancing can create barriers to entry. ERGEG considers that daily balancing is preferable unless there are technical/operational reasons that mean that hourly balancing is necessary to ensure that system can be balanced and/or for safety/security reasons.

Decisions on the appropriate balancing period need to be objectively justified in a transparent way – and market participants must have an opportunity to contribute to the decision making process. It is also important that where hourly balancing is used that market participants have access to appropriate information and flexibility tools (including “proxy” tools such as trading of imbalance charges and pooling of imbalance positions) so that they can **manage** their imbalance positions (and therefore risk) efficiently.

Where it is not possible to provide appropriate information and access to flexibility, it is then important to consider whether the risks that market participants are exposed to should be **mitigated in some way, to ensure that barriers to entry are not created** (for example through the use of tolerance bands or by limiting the size of the imbalance charge) – i.e. there is a need to consider the trade-off between availability of information and risk management tools and the balancing period. Where possible however **incentive based** approaches that allow market

participants to **manage** their own risk efficiently are preferable to solutions that **mitigate** risk – as this will help ensure that overall system costs are minimised.

Most regimes are based on balancing periods characterised by a settlement procedure at the end of the balancing period (i.e. so that imbalance positions are set back to zero for the beginning of the next balancing period). It may be the case however that there is no settlement procedure (because the network user has not exceeded its tolerance level) to define the end of the balancing period. In these circumstances the balancing period would mean:

- each period for which a penalty is due, as long as the cumulated imbalance is in excess of the tolerance level; and/or
- each period for which an independent imbalance threshold is defined.

2 Provision of linepack as an unbundled service

The July 2005 consultation paper suggested that one way of improving access to flexibility tools would be to require TSOs to make linepack available to market participants on a non-discriminatory basis (and also to facilitate the secondary trading of linepack).

View of respondents

There was general support from respondents for linepack to be provided by TSOs but only as part of a **bundled service** (e.g. reflected in tolerance levels) rather than as a separate/unbundled service. Key issues raised by respondents were:

- devising a workable scheme for the provision of linepack would be complex and costly;
- it is more beneficial to reserve linepack management to the TSO (especially in a daily balancing regime) to minimise overall residual imbalance; and
- system flexibility can be made available to shippers simply and more effectively through the use of imbalance tolerances, storage or the ability to trade imbalance positions on an ex-post basis.

A small number of respondents suggested that provision of linepack as an unbundled service would be beneficial to the market.

EREGG's view

The Gas Directive requires that access to linepack be provided on either a negotiated or regulated basis where it is technically or economically necessary for providing efficient access to the system (Article 19). It is important that the provision of any linepack does not undermine the ability of the TSO to balance the system (i.e. it should be “surplus” linepack to that required by the TSO to balance the system) and that it is not too costly and/or complex to introduce/monitor – where legitimate concerns have been raised by respondents.

Market participants should have access to appropriate flexibility tools (including the associated information) to manage their risks efficiently. The provision of linepack on an unbundled basis is one way of providing flexibility to market participants – there are others. Where it is possible to provide surplus linepack on an unbundled basis, without undue costs/complexity and undermining the ability of TSOs to balance the system, then this should be considered as an additional flexibility tool that can be used by market participants to manage their risks efficiently. Any decisions on the provision of linepack on an unbundled basis should be objectively justified against these factors. As markets develop over time, the ability of TSOs to provide linepack on an unbundled basis should improve (the associated costs and complexity would be expected to fall) and as such this issue will be reviewed as part of ERGEG's future work on gas balancing.

3 Pooling and trading of imbalance positions and the use of tolerance levels

The July 2005 consultation paper explained that another way of allowing market participants to manage their risks efficiently would be to allow them to trade or pool their imbalance positions (mechanisms that can be seen as “proxy” flexibility tools). It also suggested that where risks cannot be managed it may be appropriate to mitigate them in some way – for example through the use of tolerance levels.

Views of respondents

There was significant support from shippers for the proposal to allow ex-post trading of imbalance positions. Key issues raised were that:

- it would improve efficiency as the TSO would not have to process as many imbalance revenues;
- while imbalance markets are illiquid and shippers do not receive timely information that allows them to take prompt action, then shippers should be allowed to trade their imbalance positions ex-post;
- it is important to allow shippers to trade their imbalance ex-post as only aggregate imbalances lead to costs being incurred by the TSO to balance the system;
- this option is of value to new entrants and small operators who are more vulnerable to imbalances (given that they typically have smaller portfolios); and
- trading ex-post helps to ensure that the overall imbalance charges faced by shippers reflect the true economic cost of balancing to the TSO.

One respondent did not support ex-post trading. It argued that it could create a disincentive to shippers to balance their positions as they would rely on trading out their positions ex-post with other market participants.

ERGEG's view

A balancing regime needs to provide an appropriate balance of risk and incentive (coupled with availability of information) for market participants to manage their imbalance positions – otherwise barriers to entry and competition can be created. In a “perfect world” market participants would have access to all of the information and flexibility tools they need to manage their positions efficiently. Where direct access to flexibility tools (and/or a well functioning/liquid within day market) is not sufficient to allow market participants to manage their positions efficiently then other mechanisms should be introduced. These can include ex-ante-trading, pooling of imbalance positions and ex-post trading. These can be seen as **proxy flexibility tools**. All of these mechanisms allow market participants to take action to manage their own imbalance positions which can lead to more efficient balancing regimes and system use. It is unlikely that a shipper would decide not to take action to balance its position ex-ante – as this could expose it to

significant risk (and imbalance charges) unless a counterparty could be found to trade away its position ex post.

The use of tolerance levels aim to mitigate the level of risk that market participants are exposed to in balancing regimes but they can also weaken the incentive on shippers to balance within the specified limits. This weakening of incentives can lead to higher overall system costs. Therefore tolerance levels should only be used where direct access to flexibility tools or proxy tools (or the availability of information) is such that a degree of risk mitigation is necessary to ensure that barriers to entry and competition are not created. This may particularly be the case in markets that are less well developed. Over time, as markets develop and access to information, and flexibility tools (both direct and proxy) improve it should be possible to **reduce (and minimise) the size of tolerance levels.**

4 Cross border trade and harmonisation of neighbouring balancing regimes

The July 2005 consultation paper highlighted that in an increasingly integrated, and competitive European gas market, interactions between gas balancing regimes in different countries are likely to become more important. The paper also highlighted that there are some significant differences in the design of balancing regimes across the EU often between neighbouring TSOs. The paper requested views on whether such differences distort trade or incentives to shippers or have a negative impact on the safety/security of the transportation systems.

Views of respondents

Many respondents suggested that differences in cross border balancing regimes do have an impact on cross-border trade and competition – although it was recognised that this does not necessarily mean that all balancing regimes must be the same. Key issues raised included that:

- the use of similar balancing regimes between neighbouring countries is likely to improve the availability and efficiency of cross border flows;
- balancing regimes should support interoperability but do not necessarily have to be the same;

- whilst convergence criteria could be developed for balancing regimes it is unlikely to lead to completely harmonised balancing regimes;
- many cross-border issues relate to capacity availability and renomination rights and as such any focus of harmonisation should be in these areas;
- the use of OBA's that focus on the interaction between gas balancing regimes in neighbouring countries could help mitigate risk; and
- closer cooperation between regulators, TSOs and system users is important;
- there are benefits in neighbouring regimes having similar characteristics such as balancing periods and cash-out mechanisms.

There was support for the development of balancing zones that could cover more than one TSOs' network although it was recognised that at this stage of development in the competitive single market this may not be appropriate or be technically achievable or deliverable under the current legislative framework.

EREGEG's view

It is clear that interactions between balancing regimes can impact on the flow of cross-border trade and the development of competition. These interactions are likely to increase in importance as the single market develops over time. The development of an internal market in gas – and regional markets as an interim step – requires consideration of trading areas that are not necessarily constrained to one TSO's network. This is recognised in the Gas Regulation which will come into effect from June 2006 and requires that...“Member States shall ensure that TSOs endeavour to harmonise balancing regimes and streamline structures and levels of balancing charges in order to facilitate gas trade”.

One way of facilitating this process would be for TSOs to investigate further the impact of differences in gas balancing regimes and to develop Operational Balancing Agreements (OBAs) and Interoperability Agreements (IAs) between neighbouring (interconnected) TSOs. These OBAs could include a number of things including the way in which the balancing regimes interact; identify key differences and the reason why they exist; the impact of any differences on trade and the incentives provided to shippers and TSOs; and how any differences in arrangements for dealing with safety and security impact on trade, incentives and costs. The OBAs could also identify areas for harmonisation and a timetable for making changes. To ensure transparency,

any OBAs should be open to consultation with all market participants and fully involve the relevant NRA. ERGEG notes that GIE has initiated work on convergence criteria for balancing regimes and also recognises the work of EASEE-GAS in this regard.

ERGEG has also announced the creation of regional initiatives to look at improving the level of market integration and competition across the EU.⁴ If differences between balancing regimes are impacting on the development of competitive markets then it could be investigated further as part of the work on regional initiatives.

5 Graduated incentives for imbalance

The July 2005 consultation paper sought views on whether the incentives to balance become stronger the further away a shipper is from being in balance.

Views of respondents

Although some respondents recognised that greater imbalances could carry higher penalties there was not much support for this type of incentive. Respondents argued that generally there are other mechanisms to incentivise shippers. One respondent also argued that a graduated incentive may have a disproportionate impact on smaller market participants and therefore may create barriers to entry.

ERGEG's view

It is important that there is an appropriate balance of risk that provides incentives to balance without creating undue barriers to entry. The introduction of graduated incentives may change this balance and therefore ERGEG does not intend to recommend the introduction such arrangements at this stage.

⁴ Insert reference to gas and electricity roadmap papers.

6 Information required by the market

The July 2005 consultation paper indicated that market participants (including regulators) feel that there are some problems regarding information flows within balancing regimes. Issues have been raised both about the quality of the information and delays in the final allocation process. Problems of information flow can create unnecessary additional risks that market participants have to manage. If these risks become too large (or unmanageable without incurring significant cost) players may choose not to participate in the market. The problems of information flow can be exacerbated within hourly balancing regimes which tend to require more frequent information. The paper sought views on what information should be provided to help ensure that gas balancing regimes operate efficiently.

Views of respondents

Respondents generally agreed that information transparency was very important in any balancing regime. A significant number suggested that the best way of providing information in a non-discriminatory way would be on the internet. Some respondents pointed out the frequency of information must allow shippers to take actions to change their imbalance positions – some suggested that information should be provided on an hourly basis particularly within regimes that have an hourly balancing period. Some specific information was identified that should be provided including:

- historical supply and demand data;
- inlet and outlet data to each shipper
- maintenance schedules;
- extraordinary events; and
- temperature and demand forecast information.

ERGEG's view

Transparency in information provision is crucial to the development of effective competition and more efficient markets. It is also important that relevant information is provided to all parties in a non-discriminatory basis and arrangements should be put in place to ensure that this is the case.

It is also important to recognise the link between the availability of information and the level of risk to which market participants are exposed. In balancing regimes where the availability of information is such that shippers find it difficult to take balancing actions, consideration should be given to looking at ways of allowing them to manage their own risk better (e.g. through the use of pooling or trading of imbalance positions) or to mitigate it in some way (e.g. through the use of tolerances).

To improve the level of transparency, ERGEG intends to set out in the GGPGGB requirements relating to the provision of information provision. This will include an information template.

7 Transit/Transportation

The July 2005 consultation paper explained that different balancing rules are sometimes applied to transit and transportation flows. It has been suggested that there is a lack of transparency regarding the interaction of the transit and transportation balancing rules and that this uncertainty increases risk and potentially creates a barrier to entry to the market. Views were requested on the interaction between transportation and transit balancing regimes.

Views of respondents

One respondent argued that the different treatment of transit and transportation flows contradicts the principle of non-discrimination. In particular the Directive 2003/55/EC and the Regulation on access to gas transmission networks do not treat such networks separately. Another respondent suggested that as transit and transport serve different purposes different balancing rules may be appropriate. One respondent argued that the level of harmonisation possible will depend on a number of factors including the degree of interconnection and interchange between the relevant transit and transportation systems.

EREGEG's view

The Gas Regulation which will come into effect from June 2006 does not make a distinction between transportation and transit flows of gas. Therefore it is not appropriate to treat them separately for the purposes of the high level gas balancing principles or the GGPBP. As with gas balancing regimes in neighbouring countries this does not mean that everything should be harmonised, but rather that any differences are justified on an objective basis, and that any costs that arise from balancing the different systems are allocated appropriately. Particular attention should be given to the physical characteristics on the respective network. The balancing rules applied should also be non-discriminatory and fair and not distort trade.

ANNEX 1: List of respondents

IFIEC

Plurigas

CEDEC

OGP

Merrill Lynch

Shell

Exxon Mobil

ENEL

Centrica

BP Gas, Power & Renewables

EFET

EDF

GEODE

GTE

Eurogas

Total

ANNEX 2: Final high level gas balancing principles

This Annex sets out the final high level gas balancing principles that will be used as the basis for the GGPGB. These principles reflect the discussion in Chapter 2. Only additional changes to the principles from those published in July are set out and explained here.

Principle 1 (no change from version published in July)

Balancing responsibilities

The primary responsibility of network users is to balance their own inputs and offtakes over the relevant period according to the rules and incentives of the respective balancing regime. The TSO retains the overall responsibility for the economic and efficient operation of its system and therefore should retain a residual role to maintain physical balance to ensure the efficient and safe operation of the system.

Principle 2 (no change from version published in July)

General requirements for balancing rules

Balancing rules shall be designed in a fair, non-discriminatory and transparent manner and shall be based on objective criteria. The development of balancing rules and changes thereof should be subject to appropriate consultation with market participants and decisions should be supported by objective criteria and analysis.

Where balancing rules (including imbalance charges) are administered by the TSO they should be equally applied to its own commercial operations and affiliates, where part of a vertically integrated company, as to third parties. This includes ensuring that no information concerning the operation of the balancing regime are provided to an affiliate company of the TSO in advance of being provided to all market participants. The arrangements to meet this requirement should be made publicly available. Balancing rules should be designed to minimise the residual physical balancing role of the TSO subject to the safe and economic operation of the network and the incentives, information and flexibility and tools provided to shippers to balance their individual portfolio. They should also be designed to facilitate effective competition and market participation between shippers and avoid discrimination particularly in creating undue barriers of entry to new entrants or smaller players.⁵

⁵ It will be necessary to consider how this requirement should be reflected in the design of different aspects of gas balancing rules.

Principle 3 (version published in July)**Frequency of balance**

The choice of an appropriate balancing period clearly needs based on a balanced assessment of a number of objective criteria. These should include:

- ◆ the operational capabilities of the transportation system to balance the system;
- ◆ the flexibility and tools to balance that market participants have over the relevant period, including the availability of linepack services;
- ◆ the interaction of balancing period with effective commercial incentives to balance, in particular interactions of shorter balancing periods in electricity markets with potentially longer periods in gas;
- ◆ the interaction with balancing periods in connected gas systems to ensure that no undue barriers to cross border trade are created;
- ◆ availability and accuracy of the information over the relevant period that is made available to shippers to take balancing actions;
- ◆ the costs imposed by particular balancing regimes, for example the IT costs of providing more regular information flows over shorter balancing periods and the transaction costs incurred by shippers from potentially taking more frequent balancing actions; and
- ◆ nomination procedures complementary to the frequency of balance.

It is important that shippers are not exposed to undue risks that they cannot manage effectively and/or without incurring inefficient costs that could create a potential barrier to entry to the market.

Suggested change

Daily balancing is preferable unless there are technical/operational reasons that mean that hourly balancing is necessary to ensure that system can be balanced and/or for safety/security reasons.

The choice of an appropriate balancing period clearly needs based on a balanced assessment of a number of objective criteria. These should include:

- ◆ the operational capabilities of the transportation system to balance the system;
- ◆ the flexibility and tools to balance that market participants have over the relevant period, including the availability of linepack services;
- ◆ the interaction of balancing period with effective commercial incentives to balance, in particular interactions of shorter balancing periods in electricity markets with potentially longer periods in gas;
- ◆ the interaction with balancing periods in connected gas systems to ensure that no undue barriers to cross border trade are created;
- ◆ availability and accuracy of the information over the relevant period that is made available to shippers to take balancing actions;

- ◆ the costs imposed by particular balancing regimes, for example the IT costs of providing more regular information flows over shorter balancing periods and the transaction costs incurred by shippers from potentially taking more frequent balancing actions; and
- ◆ nomination procedures complementary to the frequency of balance.

It is important that shippers are not exposed to undue risks that they cannot manage effectively and/or without incurring inefficient costs that could create a potential barrier to entry to the market.

Where hourly balancing is used market participants have access to appropriate information and flexibility tools so that they can manage their imbalance positions (and therefore risk) efficiently.

Where it is not possible to provide appropriate information and access to flexibility, it is important to consider whether the risks that market participants are exposed to should be mitigated in some way, to ensure that barriers to entry are not created (for example through the use of tolerance bands or by limiting the size of the imbalance charge). Where possible incentive based approaches that allow market participants to manage their own risk efficiently are preferable to solutions that mitigate risk.

Principle 4a (no change from version published in July)

Balancing Costs and incentives for the TSO

TSOs should have commercial incentives to ensure that the costs of taking residual balancing actions and associated operational costs that the TSO incurs are efficient. Unless a TSO is not permitted to accept bids and offers for balancing gas as a means to balance the system it should procure flexibility (including gas) in a transparent and non-discriminatory manner using market based mechanisms where possible. The regime needs to ensure that the TSO remains broadly cost-neutral in relation to the balancing actions it takes so that any revenues or costs provide correct incentives to the TSO in relation to the timing and size of balancing actions to ensure a safe, reliable and economic system.

Where a TSO is not permitted to accept bids and offers for balancing gas as a means to balance the system the TSO should be able to contract for gas in other ways for example accessing gas from storage or with contracts with shippers. It is important that these costs are efficient and that they are charged back to shippers on a non-discriminatory basis. Information on the costs incurred by the TSO shall be made publicly available where this does not have a negative impact on the commercial position of the relevant market participants.

Principle 4b (no change from version published in July)**Charges for imbalances**

Imbalance charges should not result in a distortion of competition and/or trading activities in wholesale gas and storage and flexibility markets. Imbalance charges shall be cost-reflective to the extent possible, whilst providing appropriate incentives on network users to balance their input and off-take of gas. They shall avoid cross-subsidisation between network users and shall not hamper the entry of new market entrants. These incentives should be such that, *in aggregate*, the participants of the system face strong incentives to physically balance the system in an efficient way. They should also be fair and non-discriminatory and based on objective criteria and not hamper entry of new market participants. The method for calculating imbalance charges shall also be made public by the competent authority or the TSO as appropriate.

There should also be accurate targeting of system balancing and operation costs to those participants that caused them to be incurred. Any costs that cannot be targeted should be allocated back to shippers in a non-discriminatory manner.

Principle 4c (version published in July)**Trading of Imbalance positions**

Network users should be provided with the ability to trade imbalance positions, with each other, for instance as if the two (or more) shippers in questions were acting in aggregate (i.e. in a similar manner to the way a single shipper is able to reschedule its portfolio of flows). Ex-post trading of imbalances should in principle be permitted, at least as interim measure until the development of liquid within day markets, provided it creates an appropriate balance between the necessary flexibility for shippers to avoid exposure imbalance penalties while providing effective incentives, which in aggregate, might be expected to minimise the incidence of residual balancing actions. The TSO should have systems in place to facilitate the trading of imbalance positions where it is allowed.

It may also be appropriate to allow pooling of imbalance positions across shippers as an additional service.

Suggested change

Where direct access to flexibility tools/and or information is not sufficient (or there is an absence of a well functioning/liquid within day market) to allow market participants to manage their positions efficiently then other mechanisms should be introduced. This includes ex-ante-trading, pooling of imbalance positions and ex-post trading. The TSO should have systems in place to facilitate the trading/pooling of imbalance positions where these services are provided.

Principle 5 (version published in July)**Tolerance services**

Tolerance services in particular for less mature or less liquid markets are a useful tool to facilitate competition and a pragmatic means to handle some of the uncertainties surrounding balancing. Where offered, tolerance levels should be designed in a way which reflects the actual technical capabilities of the transmission system for example taking into account daily effective temperature. However, particular account should be taken of the extent to which tolerances may be utilised by shippers to offer “balancing gas” or cause balancing costs to be incurred by the TSO that are subsequently socialised. Therefore, they should be minimised as far as possible as long as this is consistent with the technical capabilities of the transmission system and that it does not impose undue levels of risk on shippers. In particular, careful consideration is needed in sufficiently liquid and developed markets of the necessity of tolerance where this leads to a significant socialisation of imbalance costs. In any case, the secondary trading of tolerances should be permitted and should be facilitated by TSOs by the introduction of appropriate systems.

In the case of non-market based balancing systems, tolerance levels shall be designed in a way that either reflects seasonality or results in a tolerance level higher than that resulting from seasonality, and that reflects the actual technical capabilities of the transmission system. Tolerance levels shall reflect genuine system needs taking into account the resources available to the transmission system operator.

Where the balancing period is shorter than one day, tolerance levels can be a particularly useful tool for mitigating the balancing requirements on system users.

Suggested change

The use of tolerance levels aim to mitigate the level of risk that market participants are exposed to in balancing regimes but they can also weaken the incentive on shippers to balance within the specified limits. This weakening of incentives can lead to higher overall system costs. Therefore tolerance levels should only be used where direct access to flexibility tools/or information (or proxy flexibility tools) is such that a degree of risk mitigation is necessary to ensure that barriers to entry and competition are not created. This may particularly be the case in markets that are less well developed. Over time, as markets develop and access to information, and flexibility tools (both direct and proxy) improve it should be possible to reduce (and minimise) the size of tolerance levels.

Where offered, tolerance levels should be designed in a way which reflects the actual technical capabilities of the transmission system for example taking into account daily effective temperature. However, particular account should be taken of the extent to which tolerances may be utilised by shippers to offer “balancing gas” or cause balancing costs to be incurred by the TSO that are subsequently socialised. In particular, careful consideration is needed in sufficiently liquid and developed markets of the necessity of tolerance where this leads to a significant socialisation of imbalance costs. In any case, the secondary trading of tolerances should be permitted and should be facilitated by TSOs by the introduction of appropriate systems.

In the case of non-market based balancing systems, tolerance levels shall be designed in a way that either reflects seasonality or results in a tolerance level higher than that resulting from seasonality, and that reflects the actual technical capabilities of the transmission system. Tolerance levels shall reflect genuine system needs taking into account the resources available to the transmission system operator.

Where the balancing period is shorter than one day, tolerance levels can be a particularly useful tool for mitigating the balancing requirements on system users.

Principle 6 (no change from version published in July)

In order to enable network users to take timely corrective action, TSOs shall provide sufficient, well-timed and reliable on-line based information on the balancing status of network users. The level of information provided shall reflect the level of information available to the TSO. Where they exist, charges for the provision of such information shall be approved by the relevant authorities and made public by the TSO.

Information should be provided to all participants on a non-discriminatory basis and in a format which is meaningful, quantitatively clear and easily accessible.

Where information flows are a problem TSOs shall use provisional allocations in the calculation of imbalance charges to reduce the risk for shippers. The time period within which charges are confirmed and the method for calculating provisional allocations should be approved by the competent authority after proper consultation with the TSO and relevant shippers as should any subsequent changes to charges once definitive allocations are available.

Principle 7 (version published in July)

Harmonisation of balancing rules

TSOs should ensure compatibility of balancing regimes (tolerances, imbalance charges etc) in order to facilitate gas trade across borders of different TSO systems. European TSOs shall endeavour to harmonise balancing regimes and streamline structures and levels of balancing charges in order to facilitate trade. Where it is justified that balancing regimes (tolerances, imbalance charges, balancing periods etc) remain different between interconnected networks, standardised agreements and procedures between TSOs should be put in place in order to facilitate gas trade. This refers especially to the implementation of Operational Balancing Agreements (OBAs) between neighbouring TSOs ensuring simplification for shippers through appropriately harmonised balancing rules. Such arrangements shall be published and notified to the relevant regulatory authority.

Suggested change

TSOs should ensure compatibility of balancing regimes (tolerances, imbalance charges etc) in order to facilitate gas trade across borders of different TSO systems. European TSOs shall endeavour to harmonise balancing regimes and streamline structures and levels of balancing charges in order to facilitate trade. Where it is justified that balancing regimes (tolerances, imbalance charges, balancing periods etc) remain different between interconnected networks, “standardised agreements” and procedures between TSOs should be put in place in order to facilitate gas trade.

These agreements could include a number of things including the way in which the balancing regimes interact; identify key differences and the reason why they exist; the impact of any differences on trade and the incentives provided to shippers and TSOs; and how any differences in arrangements for dealing with safety and security impact on trade, incentives and costs. They could also identify areas for harmonisation and a timetable for making changes. To ensure transparency, any agreements should be open to consultation with all market participants and fully involve the relevant NRA.

New Principle 8 (version published in July)**Provision of flexibility**

Flexibility should be made available to shippers on a non-discriminatory basis reflecting the underlying technical characteristics of the transmission system. In particular, (where technically available) TSOs should seek, wherever appropriate, to maximize the availability of linepack not needed for system security to all shippers on a non-discriminatory basis in order to help ensure the efficient use of the available flexibility in the system. Where linepack is not sufficient to meet the balancing requirements of system users the TSO shall acquire the additional tools through investments or contractually in order to meet market demand on a non-discriminatory basis.

Suggested change

A balancing regime needs to provide an appropriate balance of risk and incentive for market participants to manage their imbalance positions – otherwise barriers to entry and competition can be created. Flexibility services and tools should be made available to shippers on a non-discriminatory basis reflecting the underlying technical characteristics of the transmission system.

Market participants should have access to appropriate flexibility tools (including the associated information) to manage their risks efficiently. The provision of linepack on an unbundled basis is one way of providing flexibility to market participants – there are others. Where it is possible to provide surplus linepack on an unbundled basis, without undue costs/complexity and undermining the ability of TSOs to balance the system, then this should be considered as an additional flexibility tool that can be used by market participants to manage their risks efficiently. Any decisions on the provision of linepack on an unbundled basis should be objectively justified against these factors.