Submission on Transmission Pipeline Balancing Issues

by

New Zealand Steel Limited
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Executive Summary

The Transmission Pipeline Balancing Issues Paper published in August 2008 concerns New Zealand Steel as a consumer of natural gas in that it has the potential to **increase our cost of natural gas** and **impact efficient operation** of our plants.

These increased costs are a result of balancing gas costs (either positive or negative mismatch), and the potential for penalties to be assessed when there is a substantial negative mismatch. It should be noted that the Transmission Pipeline Balancing cost are in addition to the current substantial gas transmission costs. The efficiency may be impacted by placing constraints on our operational flexibility.

The operational constraints would be imposed in an attempt to manage any mismatches between the nomination and consumption on the day. Due to the timing of the nomination period, and allowable re-nominations these actions may not have the intended cost avoidance impact.
The structure and mechanics of any balancing regime must be aligned to the dynamics of the pipeline and the customer environment. The desired net result is to allow customers maximum flexibility whilst keeping the pipeline line pack within the specified operational limits.
To this end, New Zealand Steel raises specific issues and offers suggestions in an attempt to minimize cost and complexity while maximizing operational flexibility of the customer base.

NEW ZEALAND STEEL

Introduction

New Zealand Steel Limited operates a fully integrated steel mill at Glenbrook, South Auckland, and is a substantial industrial user of natural gas. New Zealand Steel wishes to make a submission on the Gas Industry Company Limited's August 2008 issue paper "Transmission Pipeline Balancing Issues"

Company Profile

New Zealand Steel is a subsidiary of an Australian publicly listed company, BlueScope Steel Limited. It produces a range of iron and steel products from raw materials at its single site mill at Glenbrook on the southern shores of the Manukau Harbour. It lies in the Franklin District near the town of Waiuku. It began production in 1968 and major expansions completed in 1987 created an integrated steel mill.

New Zealand Steel produces a range of flat steel products for both domestic and export markets. Slabs are rolled into hot and cold rolled products, which are then on-sold or further- processed into products like hollow sections, galvanised steel, ZINCALUME® steel and COLORSTEEL® steel.

Background:

Natural gas is consumed at the New Zealand Steel Glenbrook site in a variety of processes associated with iron and steelmaking, and steel rolling and finishing operations. Site consumption ranges from 1.8PJ to 2.2PJ per year. The predominant use of natural gas is in the Hot Strip Mill Slab Reheat Furnace, which consumes approximately 50 % of the gas delivered to site, or 1PJ per year. Other uses are of considerably less volume and distributed widely across site. A chart below illustrates this wide number of uses.

NEW ZEALAND STEEL

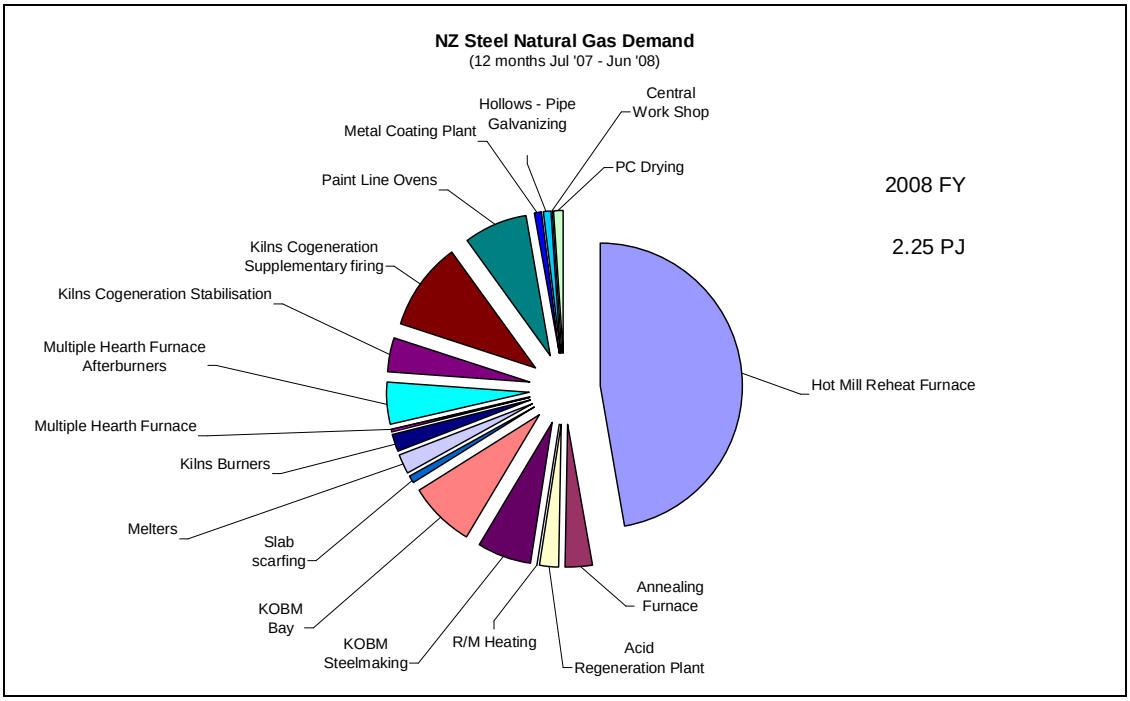

Figure 1 Natural Gas Uses at NZ Steel

While the predominant use of natural gas at NZ Steel is as an energy source, natural gas is also used for specialist purposes such as a coolant in the steelmaking process, and for influencing the ironmaking chemical process as required.
An appendix detailing the uses across site is attached at the rear of this document.

Submission:

New Zealand Steel has reviewed the Transmission Pipeline Balancing Issues Paper published in August 2008 and whist there is agreement with several of the key principles and issues, there are concerns with some of the mechanics.
It should be reinforced that the objective of the exercise is to enable balancing of pipeline line pack for the efficient operation of the pipeline at the lowest economic cost, and not to generate income for operators, shippers, or producers.

Of paramount concern is the increased cost and level of uncertainty which lies ahead as the balancing regime tightens. This uncertainty is manifest particularly in the areas of potential charges, the frequency at which these may fall, and apparent lack of control for an end user, with a diversification of uses for natural gas, to avoid incurring these charges. Consequently, it is envisaged that it is very difficult to forecast any potential associated costs. This is an unacceptable position for industry to be faced with and appears to be contrary to the Gas Industry Company's constitution. Specifically sections 4.1(b)(iv) and 4.2(b)(v) which read:

- delivered gas costs and prices are subject to sustained downward pressure
- Risk relating to security of supply, including transport arrangements, are properly and efficiently managed by all parties

Items of Concern

1. Transparency of Balancing Costs and economic efficiency

Balancing Costs must be transparent and at the lowest total true cost. The balancing costs in aggregate should reflect the efficient true cost of the balancing actions without additional margins. In order to demonstrate this, it would be necessary for these balancing costs and the allocation method to be completely transparent and auditable. A reflection of incurred costs including cost breakdown and reasons should be made available during invoicing.

2. Imbalance threshold or tolerance.

Under best practice, there will always be a level of variation in consumption, and there is a level of tolerance for imbalance due to the dynamics of gas pipelines. There should be an agreed tolerance level (reflective of the pipeline dynamics) within which no costs or penalties are assessed. The tolerance may be a percentage of nomination.

3. Imbalance Penalties

It is New Zealand Steel's position that for consumers of natural gas who are not selling into the electricity market, there is no opportunity for them to 'game' and hence gain at a generator's expense. Consequently, any penalty regime should be applied only to the electric utilities.

In addition, the fact that the balancing issues have been triggered by overpressure events begs the question as to why such penalties should be considered necessary to address the pipeline balancing concerns.

If imbalance penalties are imposed to counterbalance 'gaming' they should be targeted to 'game players' and structured similar to liquidated damages (LD) in that:

- there should be a pre-agreed schedule which may be a monthly penalty rate
- the penalty rate should reflect average costs for the month over past 2 or 3 years
- the penalty is imposed only when an LD claim is made

4. Fit For Purpose

The pipeline balancing mechanism and processes need to be fit for purpose in the New Zealand environment and should be implemented to assist in operation of the pipeline to the extent that the measures are deployable and of use to the end user. The users

should be able to have effective control and effect change where necessary. Owing to the different users and uses of natural gas thereof this may not necessarily be the case For example not all larger users who run 24/7 operations have the capability or staff to manage consumption and nominations outside of normal dayshift hours, nor moving to a position of balancing any mismatches where these may currently be made on their behalf by their supplier.

5. Appropriateness of the balancing and reconciliation period

When considering moving from a position of a daily balancing with 48 hour reconciliation time period to a more frequent balancing and reconciliation regime the impact on the end users need to be appreciated. The need to accommodate the dynamics of the pipeline line pack and daily throughput is understood to be a key factor. However consideration of the end users and how it will affect their ability to manage their mismatch position need to be taken into account.

6. The pipeline balancing mechanism and processes should not be an entry barrier.

The onerous conditions imposed by the forecasting and nomination process may become a barrier to entry for new, smaller gas retailers and effectively stifle competition. This would not support the intent of item 4.2(b)(ii) of the constitution of the Gas Industry Company.

7. Nomination Flexibility and pre-requisite information

New Zealand Steel is concerned with the Pipeline Balancing rules, as contemplated, in that there is a lack of concise information readily available to enable timely actions within the plant to avoid imbalances in the pipeline and mismatches against nominations. Coupled with this there is also currently a lack of flexibility in the re-nomination process.

As we indicated earlier NZ Steel has a wide range of uses for the natural gas it uses, across a number of processes, and therefore unplanned events can have a drastic impact on our daily natural gas consumption. Consequences of this are that there could be either a requirement for more natural gas to support processes in transient conditions, or a reduction due to breakdowns which may necessitate turndown or stoppages of key processes (e.g. Slab Reheat Furnace). A recent example as a breakdown which occurred at 3pm was anticipated to be remedied in 30 minutes. Hence no change in nomination was made. The failure took several hours to fix, which extended beyond the last available re-nomination deadline, and consequently there was a substantial positive mismatch.
Currently, the nomination regime operates on a 24 hourly daily basis from midnight to midnight with the ability to re-nominate at 1000 hrs and 1600 hrs as an end user. Given both the restrictions and the degree of uncertainty this imposes we suggest that the timing of the balancing day is reviewed. We would suggest it may be helpful to start later, and allowing more than 2 nomination adjustments with faster response times .

To enable effective and efficient decision making by larger users (who may or may not be pipeline dynamics aware), information on linepack, past forecast vs actual for the past

period, and current forecast as well as pressure should be made readily available in both table and graph form. Any modeling needed and updates to the model should be the responsibility of the pipeline owner / operator.

8. Balancing and Peaking Pool (BBP) distribution of costs.

BPP distribution of costs should be based on the physical dynamics and not commercial aggregation. The BPP is broken into pipeline zones on the Vector system. If the costs are shared amongst the shippers/sellers according to their 'customer pool' as a subset of the BPP zone, this will result in a natural advantage for those shippers who have a diverse pool of customers. With a diverse pool of customers, their positive and negative mismatches will offset, sheltering their customers from the impacts whilst those shippers in a BPP zone with a small customer base will be more exposed to the balancing costs.

Instead, the balancing costs within a BPP zone should be shared proportionally across all the end-users in the zone, and allocated in proportion to their contribution to the net BPP zone mismatch. This will create more transparency for customers and a "level playing field" of competition for the shippers/sellers.

9. Force Majeure Events

There is no discussion of end user Force Majeure Events. Currently with daily nominations and 48 hour reconciliation, the occurrence of a Force Majeure event can be accommodated by adjusting the following day's nomination. However without the extended reconciliation timeframe there is no opportunity to balance.
How are force majeure events accommodated within the balancing cost scheme?

10. Overall guiding principle is economic efficiency

The overall guiding principle of any scheme of balancing cost allocation and imbalance penalties should be one of economic efficiency. New Zealand competitiveness depends on efficiency and the good of the economy and country should be an overriding concern.

Conclusions

New Zealand Steel is concerned with the additional costs and impact on our efficient operation. As a substantial user of natural gas, we are concerned with the structure and mechanics of the Transmission Pipeline Balancing Issue and are seeking to have a set of rules and mechanics in place which:

- is transparent and has the lowest economic cost
- retains a nomination and reconciliation period which reflects the needs of efficient pipeline operation but also allows efficient operation and administration by the users
- meet the needs of the pipeline and users (ie fit for purpose)
- does not create an entry barrier to competition
- encourages retail competition by equitably assigning any balancing costs based on pipeline layout and dynamics and not conferring an advantage due to commercial aggregation of customers
- does not impose gaming penalties on those who are by their nature outside of the gaming market

New Zealand Steel recognizes and appreciates the efforts of the Gas Industry Company to explore mechanisms to address pipeline balancing, and submits these suggestions and concerns in a constructive spirit.

NEW ZEALAND STEEL

Appendix 1: Natural Gas Use at New Zealand Steel

Natural Gas is used across the Glenbrook site for a variety of uses. The predominant use is for reheating of steel slabs prior to rolling. A specialist use is for cooling of the tuyeres in the KOBM steelmaking vessel to protect them from burn back from the hot metal bath above them present during steelmaking.

Site consumption is roughly 2 Petajoules per annum.
The detailed use is provided as following :

PRIMARY PLANTS

IRON PLANT
Natural gas is used in the Iron Plant area for the following purposes:

(a) Preheating of the 4 Multi-hearth furnaces preheating after maintenance refractory relining every 18 months. This is noted as **Multiple Hearth Furnace** in Figure 1.
(b) Afterburning of the 4 Multi-hearth furnace flammable waste gases to ensure it is burnt and not discharged to atmosphere. Heat is recovered in the MHF cogeneration plant.
This is noted as **Multiple Hearth Furnace Afterburners** in Figure 1.
(c) 4 x Kiln central burners The primary use of the Central Burner is to heat up the Kiln after refractory relining to operating temperature but it may also be used to increase the metallisation of the Kiln product, add excess Carbon Monoxide (CO) gas to the process, or as an extra air burner. There are also some smaller additional burners, which are used for heating up of other kiln equipment. This is noted as **Kilns Burners** in Figure 1.
(d) Kilns Cogeneration boiler flame stabilisation. The use is for stabilising the flame produced by the waste gas incineration in the kilns cogeneration boilers operated by Babcock & Brown.. This is noted as **Kilns Cogeneration Stabilisation** in Figure 1.
(e) Kilns Cogeneration Supplementary natural gas firing. The use is for firing the boiler with additional gas at times when the spot market electricity price is high, and the cost of generating firing natural gas is lower. This is noted as **Kilns Cogeneration Supplementary firing** in Figure 1.
(f) Melters' use is for heating of melter iron and slag tapping launders, for an iron ladle preheater, and for flare stack burners. This is noted as **Melters** in Figure 1.

STEEL PLANT
Natural gas is used in the Steel Plant area for the following purposes:

(a) In the steelmaking vessel, the KOBM, the use is twofold: Firstly, for cooling the oxygen tuyeres protecting them from burn back from the hot metal bath above them present during steelmaking, The gas cracks which is an endothermic reaction that cools the area surrounding the tuyeres.
Secondly, for heating of the vessel refractory after vessel replacement and when the vessel cools during long delays. This noted as **Kobm Steelmaking** in Figure 1.

(b) Iron and steel ladle drying after refractory maintenance and preheating; casting tundish and SEN preheating, and gas cut off torches This noted as **Kobm Bay** in Figure 1.

Slab trimming and scarfing. This is noted as **Slab Scarfing** in Figure 1.

ROLLING MILLS

HOT STRIP MILL

a) Natural gas is used in the Hot Strip Mill for the slab reheat furnace. The use is for the 38 burners used for slab re-heating. This is noted as **Hot Mill Reheat Furnace** in Figure 1.

COLD STRIP MILL

Natural gas is used in the Cold Strip Mill for the following purposes:

(a) Annealing furnace. This is used for heating steel coils via natural gas fired radiant tubes. This is noted as **Annealing Furnace** in Figure 1.

(b) Acid regeneration plant. This is used for firing a burner in each of 2 roasters where waste hydrochloric acid and ferrous chloride are roasted to recover the acid. This is noted as **Acid Regeneration plant** in Figure 1.

In addition there is some heating in the Rolling Mills when required which is noted as **R/M Heating** in Figure 1.

FINISHING PLANTS

PAINT LINE

Natural gas is used in the Paint Line for the following purposes:

(a) Chemcoat dryers
(b) Prime and finish coat ovens
(c) Solvent incineration

(c) This is noted as **Paint Line Ovens** in Figure 1.

METAL COATING PLANT

Natural gas is used in the Metal Coating Plant for the following purposes:

(a) Zinc pot launder heater
(b) Chemcoat dryers
(c) Inert atmosphere flares at oven entries and exits

This is noted as **Metal Coating Plant** in Figure 1.

HOLLOW SECTIONS – Pipe Galvanizing

Natural gas is used in the Pipe Mill for the following purposes:

(a) Zinc pot heating where pipes are galv dipped. This uses 16 radiant wall burners,
(b) Pipe drying oven. This generally uses the exhaust gases from zinc pot heating and fires only when required.
(c) Zinc pot pre heating after maintenance shuts

This is noted as **Hollows – Pipe Galvanizing** in Figure 1.

PRIMARY CONCENTRATE (PC) AND MILLSCALE DRYING
SteelServe Limited operate a small kiln to predominantly dry PC and some millscale for use in the Melter and Vanadium Recovery Unit
This is noted as **Steelserve PC Drying** in Figure 1.

CENTRAL WORKSHOPS
Central Workshops use gas for cutting and heating.
This is noted as **Central Workshop** in Figure 1.