



New Zealand's Natural Gas Market: a Distributor's View

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Abstract

New Zealand has 7900 km of high quality and reliable gas distribution pipelines (plus 3100 km of transmission network) serving approximately 197,000 North Island customers with total annual sales of 41 PJ. By world standards our gas distribution pipelines are under-utilised, presenting an excellent opportunity for growth as existing and new gas customers take advantage of natural gas now sourced from competing gas traders.

Deregulation of the industry means that gas traders will be offering supply terms to customers across a number of networks with differing access terms and operational criteria. The Information Disclosure Regulations, New Zealand Pipeline Access Code, Information Memorandums, etc, will all assist potential network users to gain access on a non-discriminatory basis, and for distribution network owners to maximise utilisation of their pipeline investments in the competitive residential and industrial interfuel market.

The gas distribution networks have followed the electricity industry in adopting Optimised Deprival Value (ODV) methods for valuing pipeline assets. However, there are many complex economic valuation issues still up for debate when using this valuation approach for a discretionary fuel like natural gas, particularly as industries in some regions reduce gas demand or move elsewhere and pipeline utilisation falls to marginal levels.

While significant investment has been made in upgrading existing and installing new pipelines, the need to monitor gas flows through both transmission and distribution networks for gas trader reconciliation purposes will become important, and a number of options are available.

The paper discusses these topics and other issues challenging gas distributors in New Zealand.

New Zealand's Natural Gas Market - a Distributor's View

It is my pleasure to talk to you today about the network gas industry in New Zealand, and in particular from the gas distribution viewpoint. For those of you unfamiliar with our terminology, a gas distribution network is generally the pipelines and ancillary equipment that connects to the high pressure gas transmission system, and delivers gas to customers.

The North Island of New Zealand is fortunate in having a very extensive network of natural gas pipelines serving most areas of population from Wellington to Whangarei, and across the country from New Plymouth to Gisborne and Napier. Approximately 3100 km of transmission pipelines and 7900 km of distribution pipelines serve 197,000 industrial, commercial and residential customers with steady growth in all areas. Natural gas is not available in the South Island.

Since the advent of natural gas in New Zealand, gas distributors have invested in network expansion and pipeline rehabilitation programmes, and we now have a network system that has surplus capacity available for further growth at a range of pressures that can provide a reliable supply to customers ranging from large industrial sites to residential customers.

Over recent years we have seen major changes to the way we operate our business. Until recently gas companies had bulk supply contracts with one gas supplier, the Natural Gas Corporation (NGC) which provided for delivered gas prices at nominated delivery points on the transmission network. These contracts contained a number of exclusivity type conditions that linked in with exclusive franchise areas and restrictive supplier/distributor arrangements. While such supply contracts may have been appropriate when natural gas was first discovered, in order to encourage and financially justify investment in new pipelines, they are no longer appropriate for today's commerce and the competitive energy markets now emerging. After some years of discussions and negotiation between gas distributors and NGC, new contracts became available in 1997 that separate transmission services and gas supply. While gas distributors have no choice but to use NGC's high pressure transmission network, they do now have a choice of who they purchase wholesale gas from. In my company's case, our gas trading people now purchase gas from NGC and Contact Energy, and we envisage other suppliers will become part of our gas purchasing portfolio in the future, as well as gas from our own exploration ventures.

A gas distributors large investment is obviously in pipeline networks and the costs associated with holding medium to long term gas supply contracts. The common ownership of these two primary assets is the cause of much debate, and the creation of legislation to ensure that non-contestable and contestable activities are clearly separated so that for our business the distribution pipelines are available on equal terms to all gas traders including our own. I note with interest the recent moves advocated by the Minister of Energy to legislate the complete separation of network and energy assets in the electricity distribution business, which he considers will improve terms and network access conditions for all electricity traders, and in the process increase competition and lower prices. While I do not intend to comment on the appropriateness of such actions by the Minister of Energy, I can comment on what the gas distribution industry is doing to stimulate and encourage the wider use of natural gas and the greater utilisation of their pipelines. As owners of pipeline assets which as I said earlier are generally under-utilised, our primary objective is to offer non-discretionary and competitively priced access terms that ensure all gas traders use our networks to deliver gas to their customers at prices that are competitive. If we fail in this, we can expect our networks to be by-passed, particularly where gas users sites are located close to the transmission system. Obviously this is something we wish to avoid, and is an important driver in our pricing for network related services.

The information disclosure legislation for gas while still in its early days of implementation is designed to monitor in a 'light-handed' manner the activities of gas distributors in respect to the reporting of financial performance and the declaration of network utilisation and available capacity. While the compliance costs associated with this legislation are of some concern to us, we consider that the maximum use of our networks will only be achieved if all gas traders and other network users can readily gain access without recourse to lengthy and expensive legal action. Furthermore with a range of gas traders to choose from, gas users may want the flexibility to contract with gas traders for short to medium terms, so our distribution service contracts must mirror this process, ensuring an uninterrupted network delivery service to gas users when they change from one gas trader to another.

In 1994 my company was instrumental in establishing the gas industry group GasHouse, which over the years has played an active part in bringing together gas suppliers, pipeline owners, and end user representatives, to set protocols and a framework for accessing gas networks on a non-discriminatory basis. In my opinion GasHouse has made considerable progress and while certain issues and vested interests have on occasion been somewhat contentious and taken time to resolve, the outcomes will smooth the process in the now fully deregulated and openly competitive gas industry. One important piece of GasHouse work is the New Zealand Gas Industry Access Code.

The Access Code is a voluntary agreement for a standard of behaviour and disclosure by owners to users additional to the requirements of statute and common law, particularly the Commerce Act 1986, the Gas Act 1992, and the Gas (Information Disclosure) Regulations 1997.

The first draft of the Code should be made public shortly. As the Access Code working party has compromised a changing group of representatives of gas suppliers, pipeline owners and gas users the product is clearly a compromise. The degree of compromise will become clearer as the agreed mechanisms for the establishment and ongoing operation of an open and competitive gas market in New Zealand are empirically tested.

As this open market develops, provision has been made for the Code to be reviewed and updated. The document therefore is intended to keep pace with the realities of the marketplace in order that its relevance is maintained in achieving the desired outcomes.

The owners of pipelines and networks have agreed to the following standards of conduct:

- Always act in a neutral and non-discriminatory manner.
- Recognise as a fit party to hold a service agreement, any bona fide party, including a broker, who meets reasonable prudential tests.
- Accept for transportation any specification gas.
- Supply any bona fide user with a service and access to developable capacity.
- Transport all gas under posted prices or negotiated prices, except where developable capacity is funded by the user or new pipeline systems are constructed which extend outside any limits set by the owner.
- Structure capacity entitlements (if issued) to facilitate tradability.

- Facilitate seamless conveyance across transport systems.
- Offer a service at a posted price that provides access to all installed capacity.
- Allow users to obtain only those elements of a service they desire.

Specific sections of the Code cover:

- Confidentiality of information and 'ring fencing'.
- Developable capacity.
- Receipt points and delivery points.
- Access request process.
- Measurement and reconciliation.
- Dispute resolution.

The Access Code will be the umbrella document on which individual gas pipeline owners will produce information memorandums setting out procedures and policies for accessing their networks and in compliance with the Code. A pipeline owners information memorandum will be the forerunner to a distribution services agreement between the pipeline owner and a gas trader or other party wishing to use that network.

The valuation of pipeline systems has become subject to considerable debate. The optimised deprival value (ODV) method is an internationally accepted approach to valuing network assets and has been applied by Enerco and the other natural gas transmission and distribution companies in New Zealand. Each of these companies has in the recent past adopted ODV as the basis for revaluing network assets for financial reporting purposes. The recent adoption of the ODV method has prompted some commentators to suggest that it is being applied merely to increase financial returns and exploit market dominance.

The ODV method is also applied in the electricity industry in New Zealand. In fact, the Electricity Information Disclosure Regulations require that Transpower (the national transmission company) and the electricity distribution companies disclose an ODV value. This disclosure is designed to assist with the comparison of the financial performance of the electricity companies and to provide a means of assessing the financial returns that they are making from their network businesses which has been deemed to be necessary to curb monopoly behaviour.

This regulatory support of the ODV approach implies the general acceptability of the method conceptually as an appropriate basis for valuing network assets. Likewise, the widespread adoption of the method by the network companies evidences the acceptability of the ODV method for financial reporting purposes, where accounting and valuation standards must be met. Gas network businesses in New Zealand have typically been poor at generating adequate returns for investors. The adoption of the ODV method and its application as a basis for pricing has been of assistance to network businesses in establishing a more appropriate tariff structure. While this has resulted in some increases in tariffs the increases have largely occurred because the gas networks businesses were previously undercharging and not because the network businesses are now wanting to earn extravagant profits.

Asset valuation is not a precise science. If it was there would not be debate about the conceptual basis for different valuation methods and the application of these methods. Asset valuation relies on both 'exact' data and on professional judgement. The issues are complex and challenging, and it is true that for gas network assets in particular the application of the ODV methodology is still subject to debate and further development.

Despite this it appears the ODV method is currently the most appropriate valuation approach available to gas network businesses. It aims to value the business at the level at which it can be sustained and no more. This is important in achieving a balance between meeting valid shareholder expectations and preventing the network companies exploiting their monopoly position.

An important issue for gas network owners is the application and specific assumptions behind the ODV method. Applying the method gives rise to industry specific questions which are yet to be conclusively resolved.

For instance, pipeline economic life estimates used for valuation purposes can vary significantly. In part this reflects different pipeline materials, maintenance practices, operating conditions and experiences of the network owners. It also reflects the technical uncertainty that exists. The range of pipeline economic life estimates that are in use has been the cause of much debate. More work is required to try to reduce the level of technical uncertainty and introduce consistent industry standards. Note that this may not in the end narrow the range of asset economic lives but it should give a greater level of confidence in the valuation process.

Another important issue is the value of network assets when utilisation falls, or if it never reaches its economic throughput. The ODV method requires that network assets are valued at the lower of the optimised depreciated replacement cost (ODRC) and their economic value. The economic value calculation is a check on the willingness of the end-users to pay for services from the optimised network assets. The economic value is generally calculated on a discounted cash-flow basis based on estimates of possible future revenues and costs, capped at the level at which users are prepared to pay.

Economic value is a critical consideration in the gas industry because gas is a discretionary fuel. Substitute energy sources are available to customers. This often constrains the price that customers are prepared to pay for gas. The impact tends to be the greatest in the more remote areas served by long pipelines with relatively low throughput resulting in upward pressure on the tariffs for the transmission system and the distribution network. The competing energy sources constrain the delivered price of gas, high tariffs cannot be charged and the assessed

values of the lines have to be reduced.

Conducting the economic analysis required to value these pipelines is challenging. Estimates of future revenues (which includes analysis of throughput, tariff regimes and the impact of tariff changes on demand for gas) and costs are required. Allocating the valuation impact between the transmission and distribution companies is a difficult issue and I do not believe that the supporting economic analysis has been developed to a point that reflects an equity balance.

A final important issue for gas network owners that I wish to discuss today is the application of rate of return indicators of business performance. Strict adherence to a narrow range of acceptable rates of return may penalise network owners that are undergoing significant expansion. During the early years of network growth throughput is likely to be relatively low. The network owner often invests on the basis of expected future increases in throughput. The revenue generated is likely to increase significantly over the life of the investment as throughput increases. It is generally not feasible to charge customers very high rates in the early years when throughput is low, and lower the charges as throughput increases. Consequently, in the early years of the new investment the rate of return will be relatively low. For the new investment to be economically viable, revenue and the rate of return must be permitted to increase in the later part of the asset life. This needs to be factored into any analysis of the rates of return from the network businesses. It makes it important that analysis of rates of return is conducted over a relatively long period of time and not just on an annual basis.

With a number of gas traders now seeking access to our distribution networks, the need for reliable and accurate reconciliation services is becoming increasingly important. Gas traders using a common delivery point on the NGC transmission system are required to apportion their gas offtakes such that individual reserved capacity can be monitored and if necessary any daily overrun charges allocated to the trader causing the overrun. The question of who provides the reconciliation service is one that is still under review within the industry, but gas trading has commenced on some distribution networks with the network operator providing the reconciliation service. As long as adequate security and confidentiality is maintained between the commonly owned network and gas trading functions of a business, I consider that network operators have the overall system knowledge to provide a cost effective reconciliation service to all gas traders using their networks.

The industry's confidence in the natural gas industry and in particular the gas distribution sector is demonstrated by the work carried out on the network ensuring it meets recognised international standards. An example of the level of commitment is shown in the following projects being undertaken by my company Enerco Ltd.

Network Rehabilitation

Over 1100 km of our older gas mains (cast iron and steel) have been rehabilitated by the insertion of polyethylene pipes and raising operating pressures such that the carrying capacity of these pipelines has been restored to an 'as new' condition with significant reductions in gas leakage and associated maintenance.

North Harbour Pipeline, Auckland

We are nearing completion of a 24 km, \$9.5 million, high pressure pipeline which will boost the supply to the rapidly growing northern regions of Auckland, and supplement our existing gas pipeline on the Auckland Harbour Bridge.

Network Information Management System

In 1995 Enerco began an evaluation of its current asset management processes, focusing on productivity improvements and consolidation of asset management processes, using automated mapping/facility management/geographic information systems. We are now well advanced with this \$5 million project which will capture existing computerised and manual mapping records into one system for all regions, and linked to physical land features via digitised land base data from aerial photography.

Network Scada System

Deregulation of the gas industry and the need for improved information relating to the performance of our distribution network led to our decision to install a new \$4 million telemetering system spanning 180 customer sites and 70 key network monitoring sites located throughout our four regional networks. The information from all sites will be used for network analysis related to reinforcement and network expansion, and where relevant will assist gas traders in providing value added services.

The gas distribution industry is vastly different today when compared with the old highly regulated and protected cost-plus situation that existed in the past. We still have many challenges facing us, but as a major player in the industry, we are on a path that is focused on utilising modern technology and well trained staff to deliver efficient and cost effective services to its customers.

Author

Kevin Johnson was appointed Chief Executive Officer of Enerco New Zealand Ltd in May 1995. During his career Mr Johnson has held senior executive roles with some of New Zealand's leading companies, including Fletcher Challenge Ltd and Carter Holt Harvey Ltd. He has held the positions of Chief Executive Officer of Elders Resources NZFP Ltd, NZFP Ltd, Managing Director of Baigent Forest Industries Ltd, and Chief Executive of NZFP Pulp and Paper Ltd. He has practiced as a consulting engineer and has held a number of directorships with environmental and resource based companies.

Mr Johnson is a professional engineer with a 1st class honours degree in mechanical engineering from the University of Auckland. He also holds an MBA degree and is a member of IPENZ (Institution of Professional Engineers of New Zealand).