Natural Gas in New Zealand's Developing Energy Market

presented by RJ Bentley, Natural Gas Corporation, PO Box 1818, Wellington

at the 1998 New Zealand Petroleum Conference

Introduction

Vertical Integration and Public Policy

Vertical Integration in the Gas Industry

The Competitive Gas Sector

Light Handed Regulation

Developments in Electricity Generation

Risk Management in The Gas Sector

Developments Need Certainty

Integrity of Pipeline Systems

Conclusion

Author

Introduction

The main theme of this session is vertical integration. The main theme of my address is the emerging role of natural gas in New Zealand's energy markets. The two themes are closely linked, as I believe you will see.

Vertical Integration and Public Policy

The issue is when should vertical integration in an industry give rise to public policy concerns.

Vertical integration normally arises as companies seek to avoid transaction costs between different levels in the supply chain which give rise to inefficiencies. This includes, for example, the capturing of efficiencies between raw material processing and product production facilities or between the production and marketing and sale of products.

Vertically integrated firms are found in competitive markets in many industries.

Vertical integration is itself not a concern of competition policy. Where competition policy issues arise is when a vertically integrated company seeks to obtain a position at one level of a supply chain which gives rise to market power at other levels of the chain where it is active.

The concern here is called market foreclosure and this can be readily addressed by appropriate competition law.

But is the situation any different for a utility which owns a true natural monopoly?

Two broad concerns arise. The first is that a company will use its natural monopoly position to foreclose markets. This has been discussed above.

The second is that monopoly rents may be extracted, resulting in less than optimal outcomes - such as less use being made of existing facilities. This concern is general to any monopoly and is not specific to a vertically integrated enterprise. Appropriate information disclosure and effective competition law will also control this practice.

The conclusion is straightforward - vertical integration can be economically efficient as long as market foreclosure outcomes are prohibited.

Vertical Integration in the Gas Industry

I now turn to vertical integration in the New Zealand gas industry.

Twenty years ago the role of the pipeline owner universally was the contracting for gas from producers, transporting it and selling it at the city gate. The local distribution company was both distributor and retailer, and often protected from competition by statute.

So vertical integration is a tried and tested industry structure world-wide for reducing risk and providing seamless service to the benefit of producers and customers.

This was emulated by the New Zealand Government when it gave the failing New Zealand manufactured gas industry new life by underwriting Shell BP and Todd in the development of the Kapuni Field through a long term and exclusive take (or pay) gas purchase contract.

The Crown established the Natural Gas Corporation (NGC) to build the pipelines to markets and assigned its Kapuni obligations to NGC. At the same time the city based utilities were given an exclusive franchise to distribute and market gas in their specified areas.

The outcome is that NGC is a vertically integrated gas transporter, distributer and trader, and that the gas utilities, which, with the exception of NGC's utility and Wanganui Gas are owned by electricity utilities, both distribute and retail natural gas.

NGC was of course driven by its upstream gas obligations to immediately set about seeking customers in non-franchised or unserviced areas throughout the central North Island and the developing dairy and forestry industries in the Waikato and Bay of Plenty. Through the 1970s and 1980s, NGC connected new industrial gas consumers that today take well in excess of 10 petajoules per year.

Gas sales by NGC have continued to grow on the back of new demand for gas for electricity generation. For example, in 1997 NGC's sales totalled 51.9 petajoules, compared with 39.0 petajoules in 1992. A table detailing this growth is included below.

NGC GAS SALES 1992-97 Year ended 30 June - Petajoules						
	1992	1993	1994	1995	1996	1997
Sales to:						
NGC Utilities						
- Industrial IPP	12.70	12.27	14.80	15.10	15.70	19.51
- Retail	2.11	1.99	2.04	2.07	2.21	2.27
- CNG	0.87	0.80	0.68	0.53	0.41	0.30
Total NGC Utilities	15.7	15.06	17.52	17.70	18.32	22.08
Non NGC Utilities	23.3	23.8	24.5	24.3	24.5	24.8
Spot Sales by NGC	--	--	--	--	--	5.0
TOTAL SALES	39.0	38.86	42.02	42.00	42.82	51.88

The Competitive Gas Sector

As vertical integration in the New Zealand gas industry was the outcome of a series of Crown actions, so too has been the move towards competition.

The Crown privatised Petrocorp (including NGC) in 1987 and exited the downstream gas sector.

The 1992 Gas Act ushered in dynamic reforms, including the abolition of exclusive area franchises and price controls. The full suite of deregulatory initiatives was completed in 1997 with the promulgation of the Information Disclosure regulations.

Since 1992, much was happening anyway to make the New Zealand gas sector more competitive. For example:

- capacity can be purchased on NGC's transmission pipelines and distribution networks on published terms and conditions
- a secondary market for transmission capacity is developing
- there are at least three active gas wholesalers in the reticulated market
- the old 1980 bundled NGC/utility contracts, with their exclusivity provisions, have been replaced, and
- utilities are already taking advantage of their freedom to contract gas from competing wholesalers

Like other utility sectors there is no formal regulation, no pricing tribunals, and no permission is required to invest in new assets. Just like a normal business. Concerns about possible misuse of market power are addressed by information disclosure and by various remedies under the Commerce Act.

In my view, this light handed regulatory regime works. It pushes pricing towards truly economic outcomes and it avoids the distractions, the politics, the inefficiencies and the distortions that are inevitable with heavy handed regulation.

In lightly regulated markets there will always be an ongoing debate about the competitive effect of current business practices. For example, some current issues include the efficiency and availability of short term capacity on the secondary market, and how the application of the ODV

methodology can be policed and standardised.

I am confident that the industry recognises and will address these issues without active external interference.

Light Handed Regulation

The Crown's actions to monitor the gas sector require the disclosure of:

- transmission and distribution services contracts and access conditions. NGC is also required to disclose its wholesale gas contracts
- audited financial statements for wholesale, retail trading activities, transmission and distribution services
- financial performance measures
- and the pricing methodology and line charges for transmission and distribution services

In addition, transmission and distribution pipeline owners must disclose:

- performance measures relating to cost efficiency, energy delivery and reliability
- pipeline capacity
- and a raft of other statistics

In terms of access, the gas industry has not witnessed the bitter and protracted confrontations of the telecommunications industry and, as I have noted, a significant obstacle to open access - the old 1980 contracts between NGC and the utilities - has been removed.

In gas and increasingly in telecommunications, and I suspect very soon in electricity, by-pass is a real threat to network owners and a strong factor in pricing decisions. The ability for a new entrant to build competing facilities without regulatory, or Crown, or Court interference is a key factor here and a critical and effective tool in the light handed approach to utility regulation.

A transition from a highly protected, to an openly competitive market environment is never immediate or straightforward. But I believe the New Zealand gas industry can draw some satisfaction from making that transition in a relatively short time through negotiation and consultation, and without the need for regulatory intervention.

Developments in Electricity Generation

The electricity sector seems set to see another round of restructuring and whatever else it achieves I expect to see two outcomes - vertical integration in electricity trading for efficiency reasons, and the beginning of the Crown, and perhaps also local authorities, exiting energy altogether.

The way ahead in generation is gas. Technological developments in gas fired electricity generation continue to provide increasing efficiencies. Medium and even small-scale gas fired electricity generators, located close to and perhaps integrated with a consumer base, are now economic alternatives. If there is a host for the steam so much the better.

Auckland's power problems provide ample demonstration of the opportunities that exist for small scale embedded gas fired generation where a premium is placed on security of supply.

With the splitting of ECNZ into two competing State-owned enterprises and a further breakup envisaged by Government, the responsibility for ensuring adequate reserve margin in electricity generation is becoming grey. If it is the case that New Zealand is moving towards a long term situation involving a number - possibly a large number - of generators where there is no clear responsibility for reserve margin, the market will prevail.

All this could well mean an acceleration towards self reliance through embedded gas-fired generation with long term value implications for large, remote generators and electricity transmitters.

The interesting development, however, is in gas fired micro-turbine technology. It has its genesis in the aerospace industry and is actively being adapted to the broader energy supply industry. Research and development is concentrated primarily in the United States, where companies like Allied Signal and Capstone Turbines are developing units in the 25-75 kilowatt range. Recent developments, however, indicate that even smaller generators can be economic.

The technology, especially at this small end of the range, is still being improved and may need either grid backup or power storage support to cope with transient load.

If this were to really take hold it brings an exciting new opportunity for the gas industry.

Risk Management in The Gas Sector

I turn now to risk management issues in the gas sector.

The Crown owns the New Zealand wide electricity transmission system and, through ECNZ and Contact Energy, is the primary generator. It has the advantage of owning the lowest cost hydro generation and continues to have a major influence in setting trading patterns in the wholesale electricity market, including price.

This makes the Crown a formidable competitor for any new entrant private generator.

The Crown's recognition of the need for further restructuring of its generation assets is applauded, with a caution that the proposed splitting of ECNZ into a larger series of state-owned enterprises will simply maintain the Crown's dominance, albeit more fragmented.

In this scenario, I believe the uncertainties will remain and that they will continue to act as a disincentive to increased public sector involvement in energy generally, and in gas-fired generation particularly.

The Crown's involvement extends also to the gas industry. Having previously withdrawn from reserves ownership as a matter of policy, the Crown nevertheless appears to be content for its agencies to take ownership positions to the exclusion, perhaps, of private operators.

For example ECNZ, whose Maui gas entitlements were transferred to Contact, has secured alternative entitlements by investing in the undeveloped Kupe Field.

It would surely be useful if the Crown were to give a clear indication of what it expects from the private sector and what, if any, commercial positions the Crown intends to retain.

Developments Need Certainty

Apart from the need for some certainty as to the nature and extent of the Crown's commercial involvement in the energy sector, project developers also need a high level of operational certainty. Crucial among these is the integrity of the primary energy supply.

The energy must be delivered in the volumes and at the times required and for this developers must look to producers, to their suppliers and to their transporter.

On the topic of gas supply, the slow wind down of Maui has started, and has already encouraged new gas field initiatives. I can now clearly foresee a multi-field gas supply scenario in Taranaki. In addition the completion of the refurbishment of NGC's gas processing plant at Kapuni, which we celebrate later this week, provides improved reliability of sustained processing of Kapuni gas in the event of a Maui outage.

Customers' supply security is also enhanced by NGC's transmission contract carriage regime, which was introduced in 1994. I would like to spend a moment expanding on this point.

Under contract carriage users receive priority rights to reserved capacity on a first come, first served basis. The transporter's role is to fulfil the orders of those shippers who pay for capacity to be operated or built on their behalf.

The main alternative approach is called common carriage. Under common carriage a transporter provides non-discriminatory access to all-comers, but does not permit capacity to be reserved in advance. Prices are generally related to throughput rather than the real costs driver - capacity - and exhibit a high degree of averaging.

With common carriage there is no certainty of firm services at a predictable price. And, since no capacity rights are allocated to any users, there is no capacity trading on a secondary market. Pricing is less related to costs, is highly averaged and cannot, therefore, lay claim to efficiency. Capacity expansion drivers are also inefficient and are likely to require heavier regulatory intervention.

By contrast, contract carriage is more compatible with a lightly regulated open market and to the concept of economic and resource use efficiency. It provides what the majority of firm customers want, namely:

- defined capacity rights that are tradeable
- agreed and defined rights and obligations for both parties
- price structures that reflect cost structures
- minimal regulatory control, and the freedom to trade capacity on a secondary market without regulatory involvement, and
- system expansion which is undertaken only when it is justified by committed demand

At NGC we have demonstrated that where there is an increase in demand, we will willingly invest in the required capacity expansion to cater for it. I refer to the current $20 million reinforcement and expansion of the Transmission North System to improve gas deliverability into Auckland. This project is about to be commissioned and has involved additional compression at our Rotowaro compressor station, looping of pipeline in South Auckland and the construction of a lateral pipeline to the Otahuhu power station.

Integrity of Pipeline Systems

A further factor of concern to gas users is the integrity and supply risk inherent in gas production, in treatment and in pipeline systems.

For the most part, these facilities are still relatively young, modern and have a good safety and reliability record.

There have been very isolated incidents of vandalism, landslip and third party damage to the high pressure pipeline and distribution systems and the owners are continually looking to improve risk management practices to minimise natural or human threats.

Should there nonetheless be an incident disrupting gas flow, industry emergency response planning prioritises make safe and rapid restoration of supply.

Conclusion

In summary, I believe the New Zealand gas industry is in good shape.

Technological developments in gas fired electricity generation have the potential to significantly change the pattern and security of electricity supply.

As a consequence, I expect the share of natural gas in the input energy mix to continue to increase. This, in turn, will present new opportunities for gas industry participants at all levels of the supply chain.

In making this projection I am also confident that gas will be available to users on commercially attractive terms and at competitive delivered prices.

In addition those sections of the gas industry of which I am part - the transporters, and the gas wholesalers and retailers - are particularly sensitised to the importance of providing formal and robust contract undertakings on gas supply and delivery, removing or minimising supply exposures, and demonstrating that supply lines are secure.

We are also committed to improved customer services everywhere and ongoing innovation in the way we do business.

And, finally, I do not see vertical integration of the gas and electricity industries giving rise to public concern - indeed I see economic advantages for the benefit of consumers providing there is intelligent application of existing competition laws and information disclosure requirements.

Author

Richard J Bentley BE (Hons) Civil, MComm (Econs), MIPENZ, has been the Chief Executive Officer of Natural Gas Corporation since 1989. Following 10 years with consulting engineering firms in England and New Zealand, New Zealand-born Mr Bentley joined Fletcher Challenge Limited in 1980 and held various head office positions with close involvement with energy-related projects. In 1983 he transferred to Fletcher Challenge's Steel Sector and in 1985 was appointed General Manager of Fletcher CSP, a position he held until his appointment in 1989 as Chief Executive Officer of Natural Gas Corporation. Mr Bentley is the Chairman of Natural Gas Waikato Ltd and a Director of Wanganui Gas Ltd and the Institute of Geological and Nuclear Sciences Limited.