Request for Expressions of Interest: Gas supply and demand outlook

Purpose

Gas Industry Co intends to engage consultants to assist in the development of a gas supply/demand outlook study and invites expressions of interest from suitable parties. This document sets out the expected outline of the project and the information required of interested parties.

Background

Gas Industry Co is the gas industry body under the Gas Act 1992 and is responsible for developing industry arrangements that ensure gas is delivered safely, efficiently and reliably to new and existing customers. Our strategy is to optimise the contribution of natural gas to New Zealand.

In response to industry concerns over the long-term outlook for gas transmission capacity availability in the Auckland region, Gas Industry Co has embarked on the Gas Transmission Investment Programme (GTIP).[1] The GTIP is a series of interlinked projects that aim to:

- ensure that existing and future gas transmission assets are used efficiently;
- establish the need for gas transmission investment; and
- develop an effective pathway for efficient gas transmission investment to take place.

The outlook for supply and demand for natural gas in the Auckland region[2] under a range of scenarios is a crucial component of the GTIP. It will help to inform the work regarding the efficient use of existing gas transmission capacity, and it will allow project stakeholders, including potential investors, to assess whether further gas transmission investment is likely to be economic, and under what conditions.

Unlike electricity, the New Zealand gas market does not have an independent body responsible for commenting on the potential futures for supply and demand at a regional level. Instead, industry participants form their own positions on supply and demand, based on their individual views of the gas market. The fragmented nature of the New Zealand gas market supply chain and the diversity in size and type of natural gas consumers mean that no single entity has an overview of the supply/demand outlook for the industry as a whole. A consolidated and

[1] *Gas Transmission Investment Programme (GTIP): Structure and Scope*, published September 2011, contains a full discussion of the GTIP, its associated projects, and its rationale. It is available at http://gasindustry.co.nz/sites/default/files/u254/gtip_scoping_study_-_gic_final_174870_0.pdf

[2] The transmission pipeline in this area is known as the North Pipeline and is owned and operated by Vector Limited. The pipeline extends from the end of the Maui pipeline at Rotowaro (near Huntly to Auckland and Whangarei). A schematic of the gas transmission system is available at http://www.gasindustry.co.nz/work-programme/market-administration/critical-contingency-operator

consistent set of information on projected gas supply and demand under a range of scenarios will address this information gap and assist the industry to plan for the future.

Because the GTIP focusses particularly on gas transmission capacity in the Auckland region, the supply/demand outlook model will, ultimately, need to generate regional demand scenarios that will help to answer if, and when, investment may be required in new gas transmission capacity or alternative measures. Gas Industry Co does not intend that the supply/demand outlook model will attempt to predict the future; rather, the intent of the model is to assist in identifying the range of possible futures that investment may be required to cater for.

A draft of the supply/demand outlook model will be publicly consulted on before it is finalised, and the final version will be made publicly available. Gas Industry Co envisions that the model could, at a later date, be transferred to a government department or agency to maintain and update.

Objective of the project

To develop a set of national gas supply/demand scenarios, regional gas demand scenarios, and peak demand projections that can assist the industry and large users to assess the need for, and timing of, investment in pipeline infrastructure or alternatives in the Auckland region. Essentially, the goal is to provide the information required to enable potential investors to make investment decisions that are of the right size and at the right time. .

The time horizon of the project is 15 years; that is, the scenarios should project gas supply and demand to 2027.

Specific details of work

Gas Industry Co envisages that there will be three stages to the model development: supply scenarios, demand scenarios, and peak demand modelling. The broad outlines of these stages are discussed below. It is anticipated that more specific terms of reference for the work will be developed in conjunction with the selected consultant(s) and based on input from the panel of expert advisors appointed to provide input to the GTIP project.

1. Supply and cost scenarios

Unlike gas markets in many other countries, the New Zealand gas market has no links with other countries, either through interconnection pipelines, as in Europe, or through import/export terminals, as in Australia and Japan. What this means is that, in the absence of gas importation, gas supply is constrained by the amount of gas produced domestically, and gas demand is constrained by gas supply and cost.

This phase of the project will involve developing a range of potential supply and cost scenarios, with a time horizon of 15 years. The scenarios should encompass the spectrum from little or no significant gas discoveries to major gas discoveries. Although there is the potential for natural gas discoveries in a number of basins, the scenarios developed for this model should concentrate on those in which discovered gas could feasibly and economically be injected into

existing pipeline infrastructure. Such scenarios are expected to include gas discoveries in the Taranaki or Northland regions; gas discoveries in other regions may also be able to use existing transmission infrastructure if it is economic to transport the gas from where is it produced to a transmission injection point.

Another possibility for future domestic gas supply is to import either CNG or LNG, and the linkage with regional or world natural gas markets would presumably cause New Zealand to become a price-taker. The supply and cost scenarios developed in this phase of the project should include the possibility of gas importation, its likely scale, and its implications for the domestic price of gas.

Conversely, there may be a future natural gas discovery of such magnitude that gas exportation becomes a feasible option. As with the gas importation scenario, this outcome would presumably cause domestic gas prices to be linked to world gas prices (net of transport and liquefaction costs), and these price movements should be included in the supply/cost scenarios.

It is envisaged that the work on supply and cost will reference published estimates of New Zealand's existing reserves[3] and draw heavily on the simulation and financial modelling undertaken by the Ministry of Economic Development to estimate potential gas production profiles from new discoveries.[4] Where appropriate, Ministry of Economic Development (MED) data will be updated. Other estimates of New Zealand's reserves and production potential may also be used. For the import scenarios, there are reports published on MED's website that explore the cost implications of LNG imports, although the conclusions may need to be updated. CNG has also been considered previously as a supply option for New Zealand, and there may be published reports that the consultants could draw upon to develop the supply/cost scenarios.

2. Demand scenarios

This phase of the project will begin with the supply scenarios developed in phase one and then examine the range of demand scenarios that could result.

There are a number of market segments comprising the demand-side outlook:

- petrochemicals (the methanol plant, ammonia-urea plant and peroxide plant);
- gas-fired electricity generation;
- large industrial users, such as meat and dairy processing and timber processing factories;
- other industrial and commercial users, including hotels, laundries, and restaurants; and
- residential customers.

[3] The Ministry of Economic Development publishes estimates of gas reserves; see http://www.nzpam.govt.nz/cms/pdf-library/petroleum-publications-1/2010%20NZ%20Petroleum%20Basin%20Report-WEB.pdf and http://www.med.govt.nz/templates/StandardSummary____15169.aspx

[4] See *New Zealand's Energy Outlook 2010* and *Technical Guide: Energy Outlook Modelling*, both by Ministry of Economic Development, at http://www.med.govt.nz/templates/MultipageDocumentTOC____45552.aspx

Regional projections will be needed for each of these market segments that take into account the relevant drivers for gas consumption in each case, such as the willingness to pay, the price of alternative fuels, the rate of economic growth, and the rate of population growth. That analysis, in turn, will require research into the relationships between historical demand and relevant metrics.

For some gas-intensive sectors, such as methanol production, the appropriate drivers for gas consumption will not be domestic measures but international metrics, such as projections of world methanol price. In such cases, a range of scenarios of activity within these sectors will need to be developed.

Given the potential for gas-fired electricity generation to dominate pipeline usage, it will also be important to factor in projections of the likely use of, and investment in, gas-fired generation. New Zealand's electricity system is dominated by hydro generation, and the amount of installed wind generation is steadily increasing. Gas-fired generation is likely to remain an important back-up source of electricity, for coping with both dry years and times without wind. The modelling will need to consider not just the role of gas in the electricity market but also the likely location of gas-fired electricity generating plant. It is expected that modelling work done by the Electricity Commission will be an important input into this aspect of the work.[5]

As the focus of the GTIP is on gas transmission in the Auckland region, this phase of work should prioritise detailed demand/supply modelling and scenarios for the North Pipeline, with less detailed modelling for other regions..

3. Peak demand modelling

The third phase of the project is to develop a series of peak daily demands by region,[6] based on the demand scenarios developed in phase two. For this phase, it will be necessary to develop seasonal profiles for the major market demand segments identified above. From there, expected daily fluctuations above and below the seasonal profiles will need to be developed.

The gas demand from thermal generation stations will play a large part in this modelling. For this, it will be necessary to model the possible capacity factors of gas-powered generation stations in the Auckland region, as well as the likely scale and timing of peak usage. Other large gas users in the Auckland region may also have seasonal and/or peaky consumption profiles that need to be included in the analysis; dairy factories, the steel plant at Glenbrook, and the Marsden Point oil refinery are possible examples.

[5] *2010 Statement of Opportunities*, published September 2010; available http://www.ea.govt.nz/industry/ec-archive/soo/2010-soo/
[6] Each region should be defined by reference to the Vector network. For example, the areas served by the North Pipeline would comprise a region.

Finalisation of terms of reference and project timeframe

Gas Industry Co will meet with the selected consultants to develop a detailed terms of reference and to determine an appropriate timeframe for project deliverables. Set out below is a preliminary timetable for the key tasks in this project.

Task	Who	When
GIC issues RFP	GIC	Nov 2011
Agree terms of reference for model development	Consultant/GIC/MED	Dec 2011
Information gathering	Industry/Consultant/GIC	Jan/Feb 2012
Model development	Consultant/GIC	Feb/Mar 2012
Initial scenarios published	Consultant/GIC	Apr 2012
Workshop to review scenarios	GIC/Consultant/Stakeholders	Apr 2012
Scenarios revised/published	Consultant/GIC	May/Jun 2012

Application process

Interested consultants are invited to submit expressions of interest including the following information:

1. Cover letter
2. Description of the consulting firm and its capabilities relating to this project
3. Descriptions of relevant past projects
4. Resumes/CVs of key staff and their hourly rates
5. Outline of how the consultant(s) would approach the three project phases described above (supply and cost scenarios, demand scenarios, and peak demand modelling)
6. Budget estimate based on the consultant's (consultants') interpretation of the project
7. Confirmation that the key personnel are available to undertake the work

Expressions of interest should be forwarded no later than **5pm Monday 5 December** to:

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