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Uploaded to the Gas Industry Company website

Dear Andrew

Long term gas supply and demand scenarios – 2019 update

The Firstgas Group welcomes the opportunity to comment on the Gas Industry Company's (GIC) draft "*Long Term Gas Supply and Demand Scenarios – 2019 Update*" (2019 update).

As the owner of significant natural gas and LPG infrastructure, Firstgas has a strong interest in the future of New Zealand's gas sector. We think the supply and demand updates are an important initiative given the perceived and real uncertainty facing the gas sector. We support future updates and efforts to continually improve the information presented in the report. Our submission has two focus areas:

- Firstgas' general observations and comments on the 2019 update; and
- Areas where we would support more analysis in future updates.

Nothing in this submission is commercially sensitive and we are happy for the submission to be posted on the GIC website.

General observations on the 2019 update

Overall, we thought the 2019 update was consistent with previous editions. Our key observations and concerns focus on ensuring the most up-to-date information is used in the supply and demand analysis, and that the analysis provides useful insights into the key issues and opportunities facing the gas sector out to 2050.

Analysis of the most recent field reserve and resource information

We support the inclusion and analysis of the most recent reserves and resource information published by MBIE. We are reassured to see that potential remains for existing fields to continue to produce gas for many years.

It is also useful to see PEPANZ's view on future supply and some modelling of what proportion of contingent resources could be converted to reserves. We support publication of such models, but at the same time, acknowledge that they need to be caveated carefully due to the inherent uncertainty associated with reserve and resource calculations.

Expansion of "issues in focus"

Context is king. Since the last update in 2016, there have been many changes to the gas sector and the broader energy sector, which we think will influence future supply and demand trends. Some of these contextual changes are subtle but important. We think participants and stakeholders could have benefited from more analysis of these changes in the 2019 update. We expand on this in our recommendations below for additional analysis.

The future of gas

We think the 2019 update provides a positive message for the sector – gas use will progressively concentrate in high value uses as part of the overall energy transition. For example, peaking electricity generation to support growing renewables and high temperature process heat to support the competitiveness of industrial processes in the presence of higher carbon prices. We believe that the way the report is drafted does not emphasise this shift. Therefore, it risks stakeholders perceiving that

the forecast reduction in gas supply and demand diminishes the important role that gas will continue to play in supporting economic activity.

Another area we think deserved more coverage in the 2019 update was the role of alternative gases. We consider that a section highlighting the potential for products like biogas and hydrogen to be blended into the existing gas stream would have been useful. Blending of alternative gases may help extend the life of New Zealand's reserves in the future, can reduce CO₂ emissions, and it's possible that this option may happen in the next 30 years.

LNG importation

LNG importation is becoming a viable supply option for New Zealand. It was good to see LNG considered in the modelling, but we think it deserved more analysis. The economics of the LNG imports are improving annually, and there is growing potential for New Zealand to become an importer some time during the next 40 years. For example, it would be good to see a view on potential catalysts for an investment decision into LNG importation facilities in New Zealand. If two to three large gas users suddenly took long term contracts over the majority of New Zealand's remaining gas, would that drive remaining gas users to import LNG?

Energy system flexibility and the growing role of gas storage

The flexibility provided by natural gas to New Zealand's broader energy system has recently become obvious with gas field interruptions and reduced field deliverability over the last 18 months.

Gas storage as a source of energy system flexibility is becoming increasingly important and we clearly have a strong interest in the development of that market. We think gas storage will play an important role in the energy sector for many years, especially as the need for flexibility increases as production becomes more focused onshore and deliverability from large legacy fields diminishes.

Carbon price and decarbonisation

We note that carbon futures for 2024 are currently trading at \$28/t. The mid-CO₂ scenario in the study has those prices rising to \$75/t in 2024. We think it would be worthwhile understanding the market dynamics (other than legislation) that would lead to a rapid increase in carbon price and whether the increase in carbon prices is reasonable for the base case scenario.

We also note that the 2019 study doesn't discuss coal to gas conversions. At higher CO₂ prices we would have thought that might drive some large users to convert to gas. In addition, opportunities to lower emissions were described in Ministry of Business Innovation and Employment and the Energy Efficiency and Conservation Authority's recent (early 2019) technical paper - "Process Heat in New Zealand: Opportunities and barriers to lowering emissions". We thought it would have been useful to consider some of those in the 2019 update.

Growing gas demand in some segments

Commercial and residential gas connections are increasing year on year across all three major natural gas networks in New Zealand. However, the analysis in the 2019 update seems to suggest that we are at peak gas usage in the commercial/residential sector. We think this is surprising given continued economic growth and growth in connection numbers. We suggest that the report identifies and reviews the assumptions that lead to an immediate reduction of demand in this customer group. Growing commercial and residential gas use seems to fit more consistently with the broader theme of gas use focusing on high value customer segments (discussed above).

Market dynamics in response to short term supply disruption

The gas supply constraints in 2018/19 impacted a range of broader energy sector participants. In terms of recent trends and sector developments, it was good to have some commentary on the gas market situation in 2018/19 and we would welcome similar analysis in the future.

Suggestions for future updates

There are several areas where we suggest additional information could be included in future updates. In particular, more sector context and more detail on the changing supply (field) characteristics.

More analysis of sector context

We thought the information in the 2019 update could have included more detail on key sector changes since 2016. We think that some of these factors will have a bearing on future supply and demand

dynamics and deserve some analysis. Some of our observations (not exhaustive) of the changing context are outlined below:

New Zealand's exploration and production sector is rapidly evolving (future supply)

- The total number of exploration permits has decreased by around 40% since 2016. Some of this reduction was driven by a severe global sector downturn which troughed in 2016;
- Offshore exploration drilling in New Zealand is about to increase with the beginning of one of the most important offshore campaigns in the last two decades. The results of this drilling activity will be known in the short term (1 – 2 years) and will set the direction for New Zealand's oil and gas sector for the next 20 or 30 years. The results of the drilling could be a catalyst for sector growth or significant contraction;
- There has been significant investment in conversion of 3P reserves and contingent resources continues onshore. The investment in onshore field development is particularly important for future supply;
- Ownership of gas reserves and resources has consolidated and concentrated following corporate activity in New Zealand's oil and gas sector (in dollar terms between 2016 - 2018 New Zealand had the 4th highest level of merger and acquisition activity globally) and this may have a range of market implications in the future;
- Aging gas fields. Operators of legacy fields are focusing on finding additional gas volumes in an around those existing fields. Success or failure to extend the life of Maui will have an important impact on overall system deliverability over the short and medium term; and
- New Zealand's newest gas fields, developed 10-15 years ago, are either nearing or in mid-life and require additional investment to maintain existing production levels.

Gas imports are an increasingly viable supply option

- New Zealand already imports LPG when indigenous volumes aren't available to the market; and
- As highlighted above, the global natural gas trade (LNG) is growing. LNG import and export technology costs are continuing to fall. Importantly, scalability of LNG importation is improving with the introduction of improved Floating Regasification Units. This makes the New Zealand market more viable for an LNG regasification terminal.

Changing field deliverability characteristics

We think a dominant trend over the next 10 years will be the transition from production from conventional offshore legacy fields to production from deep, less permeable, onshore reservoirs. Based on the latest MBIE figures, about 80% of New Zealand's 2C contingent resource is held in the latter category. In the next update it would be useful to understand the importance of this trend in the context of progressive loss of system flexibility and the combination of alternatives that might replace that system swing.

A further step that would be useful to non-producers would be to include more information about the physical steps needed (rather than the commercial hurdles) in the process of converting resources to reserves. For example, it would be good to understand whether resources will require increased compression, additional wells, or some other type of risked investment. An indication of the forecast timing for these activities would also be useful.

Role of gas in the future

Based on the analysis in the 2019 update, it appears gas is becoming a fuel of necessity rather than the cheapest option. We think it would be useful to understand to what extent this is true. The next update could combine demand curves with volume forecasts to provide an estimate of value addition from having gas each year over the forecast period.

Future availability of gas

Natural gas is not always sold at the highest price (e.g. contract term is also important) and there are other commercial and technical factors that can impact gas availability. We thought it would be useful to assess future trends in the way gas is purchased and how that could drive future market behaviour. We have had a glimpse of this over the last 18 months as markets responded to gas field outages.

We also thought more discussion on the evolving wholesale gas spot market would be useful. The spot market went live in ~2011, volumes increased providing more options for users and producers, volumes have decreased recently, and prices are elevated on low volumes. It would be useful to see

some analysis of the drivers for the changes in the spot market and any impacts on users. In particular, the role that the spot market might play as the sector heads towards 2050.

Contact details

If you have any questions regarding this submission, please contact me on (04) 830 5306 or via email at josh.adams@firstgas.co.nz.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'Josh Adams', with a stylized flourish at the end.

Josh Adams

Transmission Commercial and Ahuroa Business Case Support