

Information Paper – Gas Storage

Contact Energy to develop gas storage

In December 2007, Origin Energy and Contact Energy purchased the New Zealand assets of Swift Energy and announced, amongst other things, that Contact would develop the Ahuroa field, close to Stratford, as an underground natural gas storage facility. This note briefly explores the importance of this development for the New Zealand gas market.

Growing need to bridge gas supply and demand profiles

Gas market demand is driven by climate (heating load), the needs of industrial processes (process load) and electricity demand (generation load). Gas companies have various ‘flexibility’ tools to match this demand to their supply profile. Currently flexibility is provided from:

- Gas supply arrangements - where producers usually offer some flexibility at a premium price within the technical limits of the geology of their reservoirs and their processing capability
- End user arrangements – where users who can adjust their production schedules or use alternative fuels may accept an interruptible gas supply in exchange for pricing concessions
- Transport arrangements – where transmission pipeline companies allow small daily mismatches between receipts and deliveries

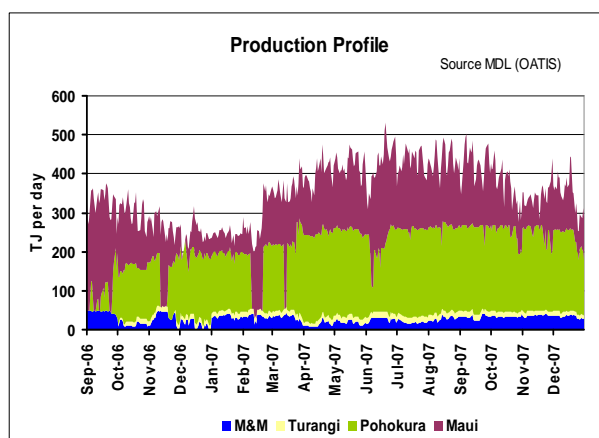
Currently, the bulk of New Zealand’s flexibility is provided by flexible Maui gas supply arrangements. This is a matter of concern because the Maui reserves are now rapidly depleting, with the Maui Gas Contract due to expire in 2009. Also, future demand for gas for electricity generation can be expected to become more volatile as renewables are accommodated into the energy market to meet Government’s strategic target of 90% renewable energy by 2025.

Contact Energy’s announcement that it intends to develop New Zealand’s first gas storage facility is therefore very timely and welcome. The Ahuroa proposal could potentially meet a substantial proportion of the flexibility needed by the New Zealand gas market.

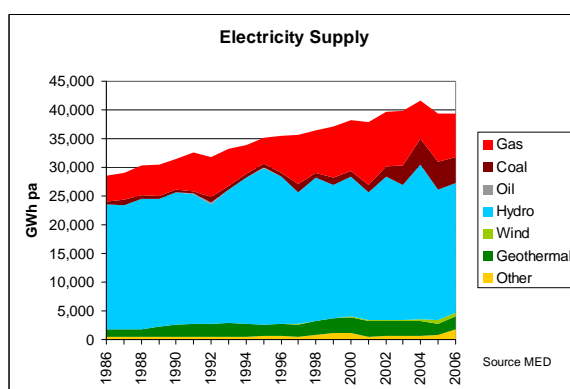
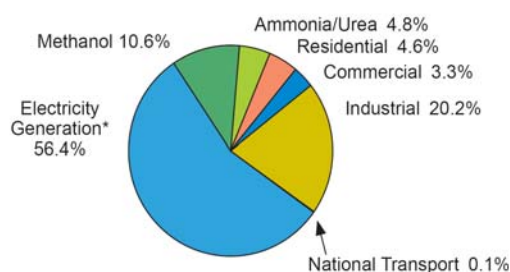
Without significant gas storage, the volatility of gas demand must be followed by producers. The graph below shows how Maui continues to provide most of this flexibility.

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Relative to many overseas markets, the number of significantly sized gas fields in New Zealand is small, and demand is quite volatile. Most of the market is supplied from the Maui and Pohokura fields, and the graph shows that most of the flexibility - in the order of 200TJ/day - is being provided by the Maui field. The production profile from the Pohokura field is much flatter in comparison.



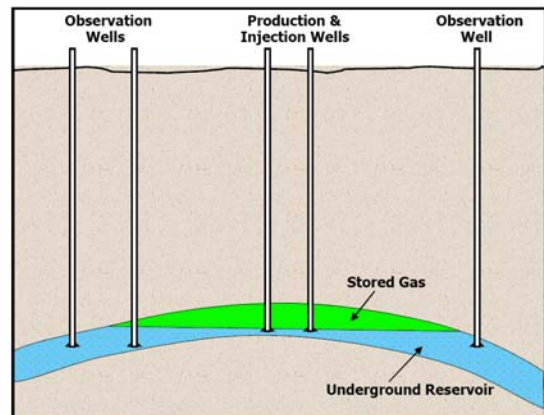
On the demand side, more than half of the gas supply is used for electricity generation. In addition, unlike most overseas markets, the New Zealand electricity market has a relatively high dependence on hydro generation. Since there is relatively little water storage, the electricity market is exposed to rainfall and snow melt variability. The resulting year to year variations are illustrated in the following graph showing the last 20 years of electricity supply. So gas demand is characterized not only by significant weekly and seasonal fluctuation, but also by year-to-year volatility arising from the fuel demand for electricity generation.



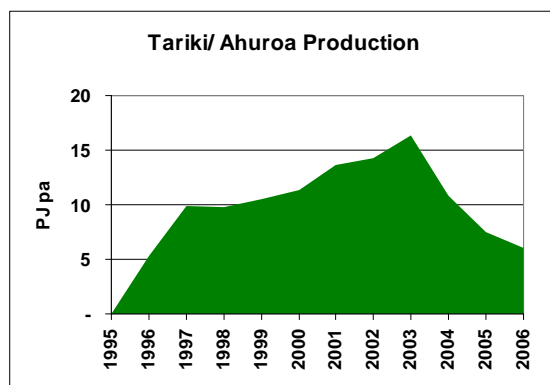
Generation from wind is growing, and is likely to grow more rapidly as the industry responds to Government's Energy Strategy. While gas fired generation is technologically well suited to complement wind because it has rapid start up capability, this will further increase the volatility of electricity generation demand for gas.

A valuable addition to NZ's gas infrastructure

Although some gas storage facilities are built by excavating salt caverns, Contact's facility will use the more common approach of using a nearly depleted gas reservoir. Compressors will be used to pump natural gas from the transmission pipeline into the reservoir – a layer of porous rock – and the performance of the reservoir will be monitored by a series of peripheral observation wells.



Source: Contact Energy "Overview of Gas Storage", a presentation to investors, Queenstown, April 2008



Contact has announced that it will use the Ahuroa reservoir for gas storage. The Ahuroa and nearby Tariki fields have produced well over 100PJ of natural gas since they were first developed in 1996. Contact expects to be able to withdraw gas from the facility at rates up to 170TJ/day, a substantial proportion of the 200TJ/day flexibility currently provided by the Maui field.

Developing the Ahuroa field as a storage facility will involve amending resource consents and mining permits, and adding new wells and compression facilities. Contact estimates the additional investment to be around \$200 million, including the cost of additional gas which will need to be injected to prime the reservoir. Contact is optimistic that the facility can be operational in 2010.

For the future, Contact's announcement that it has purchased the right to own and develop the Ahuroa field as an underground natural gas storage facility brings hope that a large degree of flexibility will continue to be available in the NZ gas market, to the benefit of the wider energy market.

A more detailed description of Contact Energy's storage project can be found at:

<http://www.contactenergy.co.nz/web/pdf/financial/080402%20Presentations%20to%20Contact%20Investors%20Queenstown%20April%202008.pdf>