



Should Natural Gas Be Used To Power New Zealand ?

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Topic: [Demand/Consumption](#)

Tags: [electricity](#), [gas](#), [kupe](#), [maui](#), [new zealand](#), [pohokura](#) [[list all tags](#)]

Cross posted from [Peak Energy](#).

I seem to have spent half of this week criticising various [energy articles](#) in the [local media](#), however there seems to be an endless supply of them coming down the pipeline.

NZ Petroleum Exploration and Production Association executive officer John Pfahlert had an opinion piece in the NZ Herald this week ("[Minister out of whack on importance of gas](#)") arguing that New Zealand should be building new gas fired power stations instead of trying to become [carbon neutral](#).

The Prime Minister's vision of making New Zealand a carbon-neutral society set the stage for the recently released energy strategy and proposals for a carbon emissions trading scheme. Both should be the subject of intense scrutiny. For example, Energy Minister David Parker's restriction on building new gas- and coal-fired power stations for the next 10 years is a daft decision. What was he thinking? Was he pressured by the Green Party to make this populist concession?

I cannot imagine that officials at the Ministry of Economic Development came up with the idea. Parker clearly didn't want to expose the idea to scrutiny in advance of making the decision, or we would have seen it canvassed in the draft strategy. I look forward to the minister explaining the logic for it.

If he had faith in the emissions trading scheme as a market instrument the best strategy would have allowed the market to determine the optimum mix of electricity generation (type, location) and consumption reflecting real world considerations such as supply, demand, cost-benefit and energy security.

Parker has thrown the gas industry a bone by stating that gas can be used to fire "peaking stations" for electricity generation. He appears to believe gas production can be put on hold or supplied on a drip-feed basis as and when needed for thermal generation. This is based on a misunderstanding of the nature of the gas industry. Having made an investment, gas explorers need a return on investment, otherwise that investment will cease (in production and maintenance of infrastructure).

The idea that base load plants can be throttled back or kept on standby to act as peaking plants is simply wrong. If gas is to be stored in reserve to power thermal peaking stations this implies that someone will be paying gas producers not to sell their gas, at a significant cost to power prices.

The idea that gas fired power plants can be throttled back or kept on standby to act as [peaking plants](#) is pretty much the accepted wisdom over the ditch here in Australia - see [Delta Electricity](#) or [AGL](#), for example.

As coal fired power is much cheaper (in the absence of carbon taxes or emissions caps) to generate, gas tends only to be used when prices rise to the point where it becomes economic to generate power from gas (usually in times of high demand). Gas fired plants can also be throttled up and down much faster than coal fired plants, and are used to provide frequency control and ancillary services, as well as to react to sudden spikes in demand.

Gas fired power does have other advantages over the coal fired power that makes up the majority of supply in Australia - carbon emissions are about half that of the same sized coal plant (but still a long way from carbon free) and water use can be less than 3 per cent of the water a conventional water cooled coal-fired power station would use (about 200 ML versus 8000 ML a year), so it does make sense to look at gas fired power when local gas supply is plentiful, as per the example of [Origin Energy's Darling Downs power station](#).

If power generation was the only use for gas in NZ, then there may still be some merit in the argument presented above, however gas is already required for domestic and industrial use around New Zealand, and presumably the gas industry currently manages supply based on expected demand throughout the year.

Back to the NZ Herald, Pfahlert continues:

It is apparent from ministerial statements that there are also misconceptions around the extent of gas reserves, which could be influencing Government thinking. The Minister of Energy has said he assumes there is not enough gas, and therefore in the future it will come from liquefied natural gas (LNG).

The current position is that at the very least there is 15 years of proven gas supply. Ministry of Economic Development modelling assumes 35PJ (petajoules) a year through new discoveries. There have been some encouraging discoveries of gas and a good prospect of more.

All of this adds up to a valuable indigenous energy resource which, if used judiciously and in "clean-burning" energy-efficient applications, should play a valuable role in our short- to medium-term energy mix. The gas resource has major strategic significance.

It makes sense to use gas for base load electricity generation to ensure security of supply when lakes are low and the wind isn't blowing. A second issue that deserves greater scrutiny is the emissions trading scheme, where there is no provision for a safety valve in the form of capping the price the Government expects industry to pay to buy emissions permits on the international market. There is significant international uncertainty about the future actions of other countries, the future of any Kyoto agreement post-2012, and the future price of carbon permits. ...

It is fashionable to support renewable energy and hybrid cars; accept estimates that "peak oil" is around the corner; and to believe that if Al Gore says the sky is falling this must be the case. I'd like to see us have a more meaningful debate on these matters before we adopt a path to the vision that is unsustainable.

While concerns about having backup options available when other power sources become

unavailable is a valid one (there are concerns about NZ [hydro power supply](#) this summer), the idea that carbon neutral options are "unsustainable" (in a country with a good and growing mix of [geothermal](#), [wind](#), [hydro](#) and [ocean](#) energy supplies) while using gas to supply "baseload" power over the long term is sustainable is a pretty novel one.

Now [complacency about natural gas supplies](#) isn't restricted to New Zealand, but you'd think with NZ already considering the prospect of importing LNG that the long term availability (and price) of gas supplies would be of concern, even to a spokesman for the oil and gas industry.

All of New Zealand's natural gas is [currently produced in the Taranaki](#) region and there is exploration planned and underway both [in Taranaki](#) and in other parts of NZ, primarily the [Great South Basin](#).

The [Maui](#) field has traditionally yielded by far the largest amount of gas, though since it has gone into earlier than expected decline the slack has been taken up by Shell's new [Pohokura project](#).

New Zealand needs Pohokura's gas to make up for the earlier-than-expected decline of the Maui field, which has produced as much as 80 per cent of the country's needs since it began production in 1979.

Electricity generators Contact and Genesis and gas distributor Vector have contracted to take the first portion of Pohokura's gas and want more. Contact and Genesis are considering importing liquefied natural gas starting in 2011 if domestic gas finds are insufficient to meet demand. "Our assets are at risk" without reliable long-term gas supplies, Dean Carroll, Genesis Power's energy trading manager, said this week.

Pohokura is the country's second-largest gas field. Shell and its partners said when the project was approved in 2004 that it might hold 42 billion cubic metres of gas, of which 20 billion could be recoverable. The field's plant can process a peak 2.2 billion cubic metres a year and initial production was targeted at 1.4 billion cubic metres a year.

Pohokura has lifted NZ gas production by almost 6% since last year, though production is still down more than 30% since it peaked in 2001.

Quarterly gas production was the highest in four years at 50,171 terajoules, and up 19.9 per cent up on a year earlier. With the Pohokura field starting operation in the later half of last year, gas production had increased every quarter so far this year, SNZ said. For the year to September, gas production of 169,701 terajoules was 5.7 per cent up on a year ago, but still well down on the peak September year in 2001 when production topped 258,000 terajoules. Crude petroleum production is also increasing, having risen since the latter half of 2006 when the Pohokura field started producing, while significant increases came with the start of production from the Tui field at the end of July.

The only other new field being developed at present is [Origin Energy's Kupe field](#), which is about to commence construction of the [topsides of the offshore platform](#) with completion due mid-2009.

The development will extract natural gas and light oil from the gas field situated approximately 30km offshore southwest of Hawera, in the Taranaki Basin. Approved to proceed in June 2006, the Kupe Gas Project will provide the New Zealand gas supply

network with approximately 253 petajoules of natural gas, as well as Liquefied Petroleum Gas (LPG) and 15 million barrels of light oil (condensate). By introducing a new and alternative supply of gas, the Kupe Gas Project will make a significant contribution towards meeting New Zealand's gas supply for between 15 and 20 years.

In light of this, it seems Mr Pfahlert is recommending increasing consumption of a resource that is in decline and is expected to run out in less than 20 years unless significant new discoveries are made.

Surely the carbon neutral option being pursued by the NZ government, with gas being limited to peaking plants only, is the relatively conservative approach in this situation, rather than an "unsustainable" one ?



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