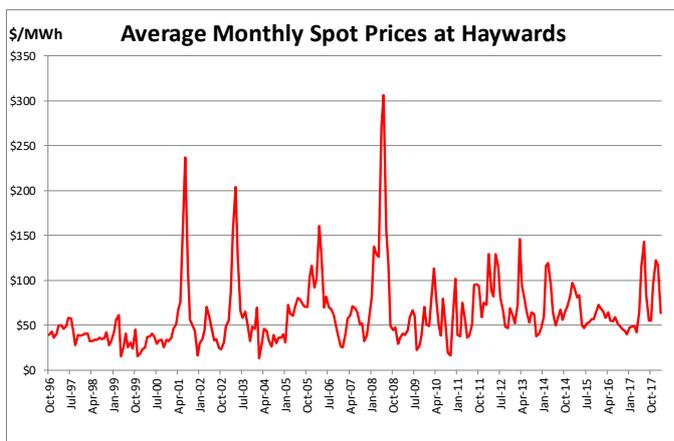


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The following is adapted from a post on our blog<sup>1</sup> which originally appeared in March 2017, updated below with the latest price data.

The events of the last year happened in the gas sector, but it would be an understatement to say that they had a significant impact on the electricity market. In 2018 the natural gas consumption totalled 189 PJ and electricity 155 PJ according to MBIE data. The gas market consists of around 280,000 consumers but electricity has around 2 million consumers, and the two markets between them account for several percent of the nation's annual GDP.



When we look at electricity spot prices it is difficult to discern what drives electricity prices because of the volatility created by the ups and downs of inflows into the hydro lakes.

Residential and SME customers don't typically pay spot prices: the prices they pay prices respond with a significant lag behind the key factors driving spot prices, and they are also influenced by the non-energy costs of electricity including line charges.

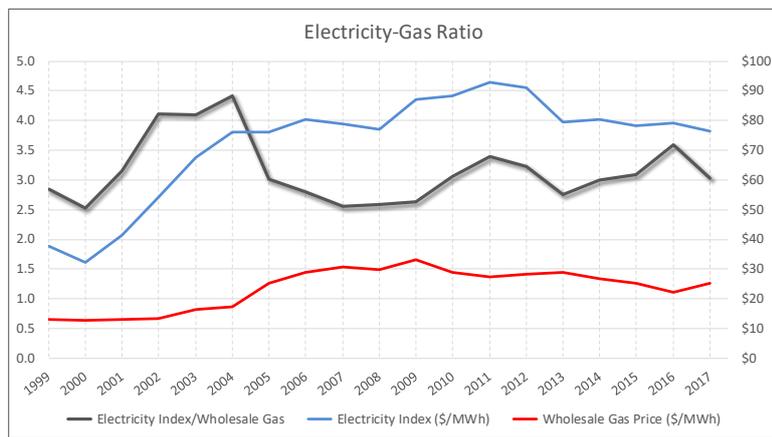
On the other hand, the largest electricity customers and independent retailers regularly go to market for contracts which average 2.5 years in length, and the prices in this market segment respond rapidly to changes in the underlying drivers of spot prices.

Prices of large fixed-price electricity contracts make up the Energy Link fixed price contract indices: the [main index](#) includes all fixed price variable volume contracts (FPVV) over 1 MW in size and all standard hedge contracts (known as contracts for differences or CFDs) over 0.25 MW: details of these contracts are disclosed, as required under the Code, within 10 business days for FPVV and five business days for CFD. Our main index is referenced to the Haywards node in Upper Hutt.

The prices in this market segment are driven to a large extent by market participants taking positions on how they expect spot prices to evolve over time. Energy Link started calculating the index in February 2009 and before that a similar index was published by M-Co (now NZX Energy) and before that by New Zealand Tariff and Fuels, so we have an index reaching right back to August 1996.

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<sup>1</sup> We are not responding to individual questions in the response template due to the large number of questions, and to the fact that most of them are framed for participants in the gas market, which we are not. Our interest is in being able to make sense of the wholesale gas market primarily for use in our electricity forecasting, modelling, and advisory activities.



The chart at left shows the electricity index (in \$/MWh) and also MBIE’s annual average wholesale price of piped natural gas (also in \$/MWh), along with the ratio of the electricity index to the wholesale gas prices.

The gas price average is made up of prices of gas sold under contract to electricity generators, Methanex, gas

retailers, and a few other very large gas consumers. Gas contracts tend to be longer term, so the MBIE average lags behind marginal changes in the wholesale gas price.

The MBIE data is available quarterly at best, which is a long way from standard set in the electricity market where data is available with only days of lag.

What the chart shows is that the electricity-gas ratio barely moved between 1999 and 2017. There is a period from 2001 to 2004 when the ratio shot up with rapidly rising electricity prices, caused by the first dry year price spike in 2001, followed by repricing of gas from the giant Maui field in 2003, but otherwise the ratio has remained within the narrow range between 2.5 and 3.5 and in 2017 it was 3.04, compared to 2.85 in 1999, a change of only 6.7% relative to 1999<sup>2</sup>.

The stability of this ratio is not surprising.

To understand what is going on here we must look at the two major types of generation that may be “on the margin” in the electricity spot market: large hydro systems, and gas-fired thermal stations, which together make up 70% of the market. The gas-fired generators have significant short run marginal cash costs which are driven by the price of natural gas and, in recent years, also by the cost of carbon<sup>3</sup>.

The major hydro generators have very low short run marginal costs, but they must “shadow” the gas-fired generators in terms of the prices they offer for their output. For example, if hydro is offered above the price of gas-fired generation then the lakes will fill up and there will be excessive spill. If the hydro is offered below the price of gas-fired generation then the lakes will empty out and there will be a shortage of electricity.

Either way, it would not be good for the market, nor for consumers. So the major hydro systems tend to “shadow” the gas-fired generators: if the price of gas goes up then the hydro has to be offered at higher prices, and vice versa.

And it just so happens that gas-fired generating stations have efficiencies ranging from 35% to 52%, with marginal stations tending to be at the lower end of the efficiency range: which means that the prices offered by the major hydros are around three times (1/0.35) the price of the gas on average. Hence the electricity-gas ratio tends to sit around three.

<sup>2</sup> There appears to be a general climb in the ratio since 2007, which is partly accounted for by increases in carbon costs driven by increasing NZU prices and the removal of subsidies in the ETS.

<sup>3</sup> There is still some coal-fired generation at Huntly but gas has the larger market share.

Gas pricing therefore has a highly significant impact on electricity prices, which leads directly to the conclusion that inadequate information disclosure for gas is not just about the negative impact on the gas market, but also the negative impact on the electricity market.

The potential impact of inadequate disclosure is not just on 280,000 gas consumers, but also on 2 million electricity consumers.

Weak and ineffective disclosure rules for gas also lead to inefficiencies and sub-optimal outcomes for electricity.

The rules for disclosure in the wholesale electricity market are more comprehensive and tighter than in the gas market. We contend that this needs to be corrected as soon as possible – not next year – and if this can be done in coordination with the Electricity Authority (EA) then we contend that this would achieve a superior outcome for the energy markets in general.

### [Pohokura Outage is a Case in Point](#)

Information about the October Pohokura outage reached the public domain, as far as we know, on 28<sup>th</sup> September when it was reported by media. We checked through data on OATIS and it was clear that the outage actually started on or about 15<sup>th</sup> September.

The EA in its recent UTS decision claimed that information about the outage was in the public domain and they based this claim partly on an item on Energy News<sup>4</sup> in July 2018 which stated that “*Shell will also continue to explore whether to replace the damaged section of the offshore asset [Pohokura]. If that work goes ahead it could be carried out as soon as later this year.*”

This says a lot about the state of disclosure in the gas market: the possibility of outages of a major infrastructural asset, which could directly affect thousands of energy consumers including residential customers on spot-based pricing plans, is signalled by a vague reference, on a premium paid specialist news service, to a possible outage, at some indeterminate point in the future. It’s a pity that Shell didn’t think it important enough to provide updates.

To make matters worse, we then get told in January that there will be another outage for well interventions, which OMV would surely have planned several months in advance, though they chose not to disclose it until a month before it commenced.

We have spoken recently to many that are cynical about the events of the last six months, as they had an impact on thousands of electricity consumers, who paid more for spot electricity, and smaller electricity retailers who suddenly found they could not get hedges at a reasonable price, many of whom no doubt ceased to take on new customers until prices improved.

The impact of these events appears to have extended well past their actual duration to the present day, most notably in the absence from the market of major generation assets who presumably now cannot get fuel at a competitive price. Do we know why? No – we have to guess, the way we have always done when it comes to gas<sup>5</sup>.

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<sup>4</sup> Energy News is premium paid specialist subscription news service which is only subscribed to by participants in the wholesale electricity market and the likes of Energy Link, and certainly not by the general public so cannot be considered to be in the public domain.

<sup>5</sup> We do note however, that there is a growing degree of disclosure in the announcements made by Contact Energy and Genesis Energy, as entities listed on the NZX.

## Improvements

We understand that confidentiality clauses in gas contracts prevent gas market participants from disclosing information concerning outages or other restrictions on supply, along with the price and term of the contracts.

This has been a frustration to us as a company since 2003 when the era of gas prices being driven by the Maui contract ended – up until then the price of wholesale gas effectively increased at half the rate of inflation, and it could easily be determined. We contend that the current situation is no longer tenable and that mandatory information disclosure should be introduced into the gas market: concerning the ability to supply, including outages both planned and unplanned, and of the key details of new gas contracts. This would go a long way to restoring confidence in the gas and electricity markets.

We also contend that the arrangements should mirror those in the electricity sector, where contracts are disclosed on the *electricitycontract.co.nz* web site. As far as we aware, disclosure on this web site has not resulted in commercial disadvantage to any electricity market participants, though we acknowledge that the small number of upstream participants and the large size of the contracts that are traded in the gas market, means it is not entirely analogous to the much larger electricity market (by number of participants).

On specific issues:

1. We support mandatory disclosure to match the relevant rules in the electricity Code, which require disclosure of information which may have a material impact on wholesale prices (with limited exemptions);
2. We support the use of POCP for outage information, as it is already in use by the electricity industry and is publicly available<sup>6</sup>;
3. We support the disclosure of gas contract information on the *electricitycontract.co.nz* web site, also publicly available, alongside disclosed electricity contracts.
4. We think that publication of an outlook for production might be useful, but if outage information is correctly entered into the POCP web site, e.g. timing of outage, TJ/day of outage, etc, then informed parties should be able to work this out for themselves.

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<sup>6</sup> Which means that it is free for anyone to access.