



DOMESTIC ENERGY USERS' NETWORK

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SUBMISSION ON DISTRIBUTION PRICING METHODOLOGY, 22 Oct 2009

The discussion paper is at

<http://www.electricitycommission.govt.nz/pdfs/opdev/transmis/distrib-pricing/discussionpaper-Sep09.pdf>

Summary

Pricing methodologies for distribution should not lead to any increase in the gap between high domestic electricity prices and the lower prices for “competitive” large consumers. Lines prices (distribution plus transmission) are a significant proportion – 38% - of the price of electricity to an average consumer.

Distribution pricing should encourage not only the expansion of distribution networks, but also the cost-effective use of energy efficiency and distributed generation.

Recommendations on the proposed pricing principles

1. DEUN does not support Ramsay-compliant pricing because it perpetuates price discrimination that keeps domestic prices high and prices to competitive consumers low.
2. The principle of “subsidy-free” for distribution pricing is complex. DEUN must reserve its position until we can do more work on it.
3. DEUN broadly supports the principles of setting prices for network services that reflect the cost of supply, and keeping prices as stable as possible and easily understood by consumers.
4. DEUN agrees with the final principle that price levels and structures should promote efficient usage of electricity and encourage investment in technology innovation including small-scale generation and energy efficiency,
5. DEUN is not concerned about the complexity of distribution tariffs that reflect special circumstances in particular networks, because these

exploit real opportunities to reduce costs. Retailers should pass through such pricing signals unchanged.

6. DEUN generally supports implementing cross-subsidies if provided for in legislation, so long as these are applied as cost-effectively as possible. Rural consumers cost more to supply than nearby urban ones, but the regional economy depends on keeping rural businesses (including farming families) viable, and very high electricity bills could make this impossible.

Introduction

This submission was prepared by Molly Melhuish in consultation with representatives of DEUN member organizations, and other analysts. Much of the material is far too technical for member groups to support in detail, but their broad agreement is very important. Unlike most submissions, this is treated as an educational working paper, especially Appendix 2 which is a work in progress.

For that reason, this submission includes an outline of the issues as presented in the Electricity Commission's workshop on distribution pricing methodologies on October 12.

Why distribution prices matter

Distribution prices are a significant part of domestic electricity bills. Lines charges (including both distribution and transmission) made up 38% of the electricity bill of an "average consumer" using 8000 kWh per year, and rose last year by 0.6 c/kWh.

Distribution prices rose dramatically after energy companies were corporatized in 1992-1993. This transferred some \$2.6 billion of wealth from consumers to companies, and led to regulation under Part IV(A) of the Commerce Act. Prices then stabilized for a few years, but began rising again about 2004, and continue to rise each year.

Distribution network investment matters, a lot. The total value of distribution assets is close to three times the value of transmission assets, though recent rapid investment in transmission may be changing that. Distribution investment has recently increased, and could need to increase massively if peak loads continue to grow fast.

Household electricity demand is the biggest contributor to electricity peaks. There is therefore much to be gained by pricing that rewards those householders who are able and willing to reduce demand peaks. (See appendix) If distribution investment were integrated with true smart metering, this could make supply more reliable and possibly reduce long-term costs of network expansion.

The Electricity Commission's distribution pricing workshop Oct 12

The workshop's agenda was to attempt to resolve differences between distributors and retailers on distribution pricing methodology. (The retailers pay distributors for network services.) David Caygill opened the workshop noting that these disagreements are continuing. He said that the Electricity Commission is particularly concerned about the objectives "efficient", and "fair".

The proposed pricing methodology seeks to ensure prices are set "efficiently", to reduce barriers to retail competition, and to avoid where possible the profusion of distribution tariffs that make life difficult for retailers. The Commission supports a move away from the prescriptive pricing that was proposed by a working group some years ago.

What is the problem?

The workshop presentations gave the impression that the biggest problem with distribution pricing is that it is a barrier to retail competition. Tariff complexity contributes to that. Participants seemed much less concerned about efficient pricing, but did acknowledge that end consumers do pay, in the end, for the whole industry.

Only one of the presentations, by Rob Jamieson of Orion, specifically discussed the end consumer. He said that the context of distribution pricing cannot be ignored. Orion finds that more and more of their consumers are concerned about climate change, and younger folk are very engaged in renewable energy. Consumers could invest, or change behaviour, to do something about these issues. Insulation, efficient heating, solar water heat – all these could be encouraged with smart metering – but not if consumers are hamstrung with "dumb pricing".

Molly Melhuish spoke for DEUN, saying that domestic consumers have a very different problem. Electricity prices are too high, causing energy poverty in an increasing number of households. Prices for distribution, as for all the other components in the supply chain, need to be reduced or at least held in check.

People who so choose should have the opportunity to reduce power bills either through changing their behaviour, or through investment in energy efficiency. Because network costs are significant and increasing, distribution pricing (which incorporates transmission pricing) is the prime opportunity for doing so. But pricing policies must accept that the majority of householders are far better served by a flat tariff. Choosing this must not mark them as "captive", set to be exploited by Ramsey pricing (see below).

DEUN is less concerned about retail competition. Electricity retailers are like peas in a pod – like the oil companies they offer the same product at marginally different prices at different times. Switching suppliers involves some risk of billing errors, which can cause real grief to people on tight budgets. Powershop does offer a real alternative for some, but is not accessible or practicable for much of DEUN's core constituency.

Submission

Pricing principles

The Electricity Commission's proposed principles, on which this submission comments, are modified from principles set by the Commerce Commission to regulate gas network businesses. In brief, and paraphrased and simplified, the Commission proposes that distribution prices should be:

- “subsidy-free”, defined as prices less than the cost of new supply (in this case, of distribution lines), but more than the cost of using existing lines. Legislation may, however, provide for specific subsidies.
- Signalling where possible the cost of using existing capacity and the impact of demand growth on having to build new lines
- “Ramsey-compliant” – meaning the consumers that are most captive are to be charged the highest prices (!)
- Reflecting the quality of supply – people who get less should be charged less.
- Prices as stable as possible and easily understood by consumers
- Easy for retailers to implement, and not favouring one retailer over another
- Price levels and structures should promote efficient usage of electricity and encourage investment in technology innovation including small-scale generation and energy efficiency.

DEUN position on the principles

The biggest difficulty in these principles, for DEUN, is the third - “Ramsey-compliant”. That bit of economic jargon means charging the most captive consumers the highest prices. Economists consider that in a perfect market Ramsey pricing is perfectly efficient. Analysts from the domestic consumer perspective say it is perfectly unjust.

DEUN does not support Ramsey pricing because it perpetuates price discrimination that keeps domestic prices high and prices to competitive consumers low.

The other key issue is the first principle, “subsidy-free”. The application of this principle to distribution pricing is complex. DEUN must reserve its position until we can do more work on it.

The remaining pricing principles are broadly supported by DEUN. It makes sense to set prices for network services that reflect the cost of supplying them. We

certainly agree with keeping prices as stable as possible and easily understood by consumers.

DEUN particularly supports the last principle, which recognizes the potential of distribution pricing to actually promote innovation, small-scale generation, and energy efficiency. Appendix 1 indicates some of the household energy choices that could make use of this pricing principle.

DEUN is not concerned about distribution tariffs that reflect special circumstances in particular networks, because these exploit real opportunities to reduce costs. Retailers should pass through such pricing signals unchanged.

DEUN generally supports implementing cross-subsidies that are provided for in legislation, so long as they are applied as cost-effectively as possible. Rural consumers cost more to supply than nearby urban ones, but the regional economy depends on keeping rural businesses (including farming families) viable, and very high electricity bills could make this impossible.

Applying the principles

The other main issue on which submissions are sought is how these principles should be implemented. This is a technical matter and involves the nature of contracts and agreements between distributor and retailer. Debate on this at the workshop was highly technical and somewhat fraught. DEUN has no wish to enter the debate on implementation.

Suffice it to say that if distribution pricing is to lead to both economically efficient investment, and efficient use of existing assets, the price signal must be passed through to retail tariffs. This is not the case today.

Appendix 1: An example of efficient distribution pricing.

In New Zealand, high demand peaks are closely correlated with cold weather.¹

The rapid introduction of heat pumps is predicted to increase winter peak demands by about 150 MW in Auckland and about 60 MW in Canterbury, with smaller increases in other regions. Winter energy demands will remain constant or even fall due to the greater efficiency of heat pumps compared to electric heaters.²

The efficiency of heat pumps depends strongly on the outdoor temperature. At temperatures close to zero, the heat output of older type heat pumps falls from three times the electricity input to about twice the input, or even lower. The most efficient heat pumps (four times the electricity input) are still somewhat temperature-dependent, though less so than older ones.

Some installers tell their clients that heat pumps are most efficient when they are left on all the time. That is simply not true – it does indicate that householders need to have easy access to independent energy advice. The house should generally be heated when it is occupied, not when the occupants are at work or at school.

An exception however could be when peak loads on the electricity system threaten the ability of distribution (or transmission) lines to carry the load. This almost always occurs between about 5:30 and 7 pm, or on some networks, between 8 and 9:30 am.

To reduce evening peak loads at critical peak times, householders should be offered the option to run their heat pumps in the afternoon, when the outdoor air is warmer, making the heat pump more efficient. This would pre-heat the living area so the heating could be turned off at around 5 pm. Thus at system peak time, there would be little or no heating load from that house – and the occupant would come home to a nice warm house!

Night storage heaters should be returned to use wherever distribution or transmission capacity is approaching constraint. Tariffs which encourage such use should be restored.

To reduce morning peak loads at times of network constraint, those householders who use the heat pump to warm the whole room at breakfast time could instead be invited to use a resistance heater to heat just where they are, instead of the whole room. This could be signaled by a “traffic light” module which goes red at critical peak times. The tariff could be based on the “reward

¹ 2008 Statement of Opportunities, p. 55.

<http://www.electricitycommission.govt.nz/opdev/transmis/soo/2008soo>

² [Regional Heat Pump Energy Loads, BRANZ Report E528, July 13, 2009, Figure 2 – probably not on the web].

pricing system” used by Orion Networks in the 1990s, when every kWh saved (compared to the customer’s recent demand at the relevant hour - perhaps 7-8 am) would be rewarded the following weekend by giving away the same amount of electricity for free (critical peaks virtually never happen on weekends).

Critical peak tariffs are used in other countries, and found to be a very effective way of reducing the cost of meeting rapid demand growth from air conditioning loads. In this case, the electricity retailer automatically sets back the thermostat a couple of degrees, to reduce the cooling load at critical peak times. The tariff conditions specify a small number of days per year this is to occur.

Smart tariffs could mix and match any householder’s preferred means of avoiding demand peaks – if and only if the house has a smart meter that is enabled to record the actual consumption during each half-hour. Most of the new meters are not capable of doing this. Pilot trials are needed in different climate zones to discover just how much peak demands might be reduced.

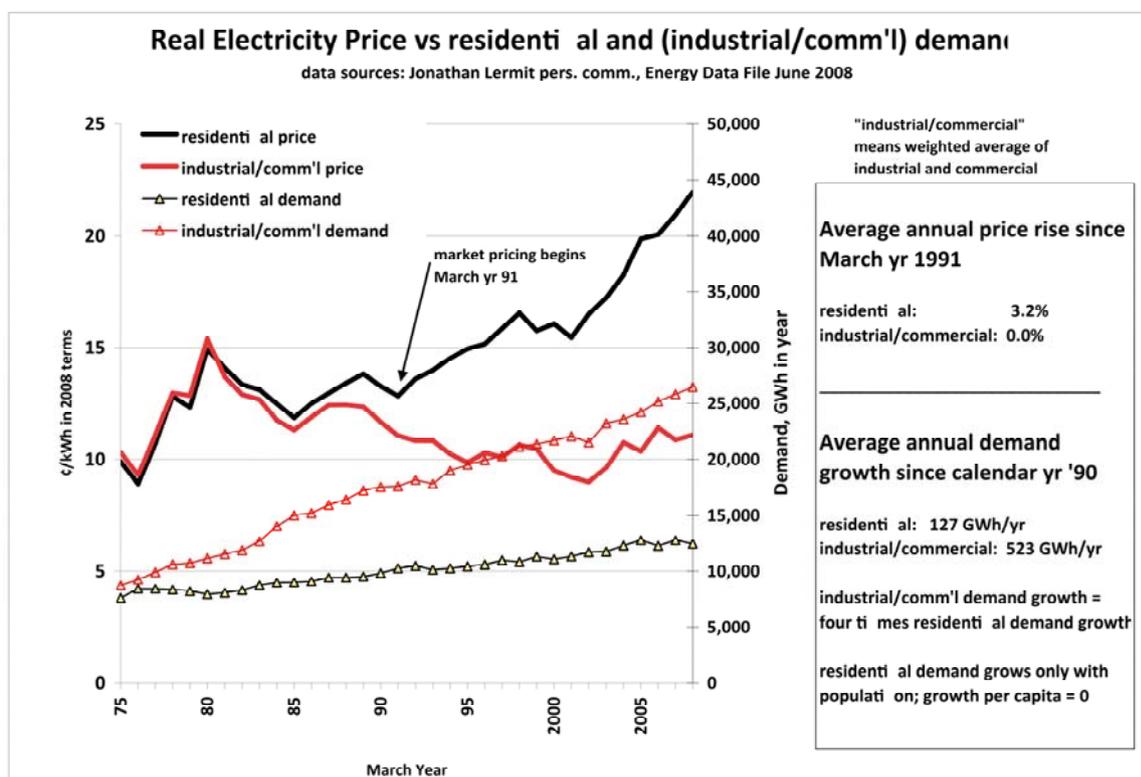
It should not require a very large number of consumers on such smart tariffs to make a real difference in reducing network costs. Critical peak tariffs could be initially targeted at households with high peak demands and who are in areas where networks are reaching their full capacity. In such cases, as few as 5% or 10% take-up of this type of “price-responsive tariff” could well significantly delay the need for new network investment. The majority of householders could then remain on the standard flat tariff (which is preferred by most householders), yet they could still benefit from the reduced cost of expanding the network.

Appendix 2. Pricing principles that might apply to domestic retail prices

Conclusion:

Domestic electricity prices have been rising much faster than non-domestic prices since 1991 when market pricing began. It would appear that the pricing principles being consulted on now for network monopolies might be usefully applied, initially in conceptual terms, to retail electricity markets.

The key enabler would be an acceptance that the market for electricity supply to domestic consumers is distinct from the market for supply to “competitive” consumers that have much larger demand per consumer. This would appear self-evident from the graph of price and demand trends for the two sectors from 1974 to the present.



Electricity market rules maintain the observed separation of price outcomes. They create perverse incentives to build excess capacity using profits gained almost entirely from mass-market consumers. Excess capacity lowers wholesale price trends which in turn feed into contract prices for large consumers.

The optimum margin of installed generating capacity is 780 MW over and above forecasted peak loads. It is now 120 MW higher and expected to remain so for the foreseeable future. Energy generation capability in gigawatt-hours is already some 25-30% higher than would be needed in the driest years, compared to the 17% that would be economically efficient.

Transmission is already being built that will leapfrog present transmission shortages, creating surplus capacity. This in turn is being priced in a way that promotes remote large-scale generation over competing small-scale distributed generators.

The proposed distribution pricing methodology would provide the funding to expand distribution networks. Unless consumer interests are well represented in planning this investment, there is no way to ensure it will be promote the reduction of small consumers' electricity bills.

At each end of the electricity supply chain, opportunities to withdraw services and increase prices are also being exploited.

*The so-called "smart meters" being rolled out do not enable householders to use less electricity when real-time prices are high and more when it is in surplus.

* Gas fields that could supply flexible generation to constrain generating costs at peak times and dry year are being committed instead to export petrochemicals.

DEUN's suggested solution is to treat mass-market (including domestic) electricity supply as a separate monopoly-like market. A targeted control regime should identify excess prices and/ or reduced quality, and identify where thresholds are being breached. Price regulation must be the sanction for persistent transfer of wealth from small consumers to suppliers, and to "competitive" consumers.

The Electricity Act will need to be amended to make the changes that are recommended in the Ministerial Review. One change is to remove "fair" and "environmentally sustainable" from objectives to be met by the electricity market. This is the ideal opportunity for the above suggestions to be properly debated as the Electricity Market Review is implemented.

Implications for ownership structures may follow, but are not part of our recommendations to date.

Appendix 2. Pricing principles that might apply to domestic retail prices

Introduction

Price regulation of Vector's and Powerco's gas pipeline businesses was New Zealand's first example of actual price regulation. It provided much of the rationale for the Commerce Commission's Input Methodologies paper, which in turn formed the basis for the Electricity Commission's discussion paper on distribution pricing.

This Appendix is a summary and commentary on the reasoning behind these decisions. Parallels with the market for domestic electricity are described and discussed.

This is a work in progress, and will be discussed with DEUN representatives, other analysts, electricity businesses and government. We provisionally conclude that the electricity market for domestic consumers is so weakly competitive that it should be regulated.

Regulation under the Commerce Act

The Commerce Act has a single purpose – to promote competition. Recognising that monopoly businesses are not competitive, the Act also sets up procedures for regulating businesses in markets where competition is not practical or not efficient.

Distribution businesses are monopolies. The present consultation on pricing methodology is part of the procedures of Part IV(a). This sets “targeted control regimes” where businesses report their prices and measures of quality, and if these exceed permitted thresholds, they can be put under Part V price control.

If monopoly businesses consistently breach the targets, they will be regulated under Part V of the Act. Vector and Powerco gas pipeline businesses made persistent excess profits and were placed under price control in 2008. It is the reasoning in this decision that we describe below.

Generation and retail businesses are not regulated at all, because it is assumed they are competitive. It is also assumed that any attempt to regulate them will cost more than any benefits that could be gained.

Domestic electricity supply – arguably a separate market.

“Promoting competition” has observably failed to control prices and quality of service to domestic electricity consumers. Large consumers, by contrast, enjoy the benefits of competition.

The Commerce Commission does not consider domestic electricity supply to be a distinct market. But the door is open to consider “special features”:³

Nevertheless there can be special features in individual markets, such as the impact of distributed resources on the retail market, which may need to be recognised when considering the impact of the Arrangement [authorization of electricity market Rulebook]. The Commission is confident that it has been able to do this within the market definition framework it has adopted. [our emphasis]

³ Commerce Commission, authorization of the electricity market Rulebook, Sept 2002, <http://www.comcom.govt.nz//BusinessCompetition/Anti-competitivePractices/Applications/ContentFiles/Documents/EGBL%20Final%20determination.pdf>

The price and quality of supply to domestic electricity consumers is impacted not only by the behaviour of retailers, but by the entire supply chain beginning with fuel for power generation, and ending with the meter into the house.

We therefore conclude that the domestic electricity market is distinct from the market for competitive consumers.

A three stage test for whether domestic electricity should be regulated

The 2008 Authorisation to regulate Vector and Powerco gas pipeline businesses⁴ says there are three things to consider in a decision on whether and how to regulate. Here we suggest how these considerations might apply to the domestic electricity market

- the extent to which competition is limited, or likely to be limited – is there workable competition?
- whether it is necessary or desirable to safeguard the interests of users of the services.
- whether the business is [using its assets] efficiently.

1. Workable competition

The standard of competition that underpins the Commerce Act is not “perfect competition”, a concept based on economic models with very strict underlying assumptions that don’t happen in the real world. It is “workable competition”, a very different matter.

Workable competition is based on observation rather than quantified economic analysis. Its interpretation “owes more to legal precedent than to economic theory”.⁵ [sect 126] This in turn quotes an Australian Trade Practices Tribunal discussion, which says the basic characteristic to look for

⁴ COMMERCE COMMISSION, 30 Oct 2008. Authorisation for the Control of Supply of Natural Gas Distribution Services by Powerco Ltd and Vector Ltd, DECISIONS PAPER, sections 110 ff

<http://www.comcom.govt.nz/IndustryRegulation/Gas/CommissionReportsandDocuments/ContentFiles/Documents/%5BPUBLIC%5D%20Gas%20Authorisation%20-%20Decisions%20Paper%20-%2031%20October%202008.pdf>

⁵ Commerce Commission, Final Determination on Electricity Governance Board Ltd application, Sept 2002, <http://www.comcom.govt.nz/BusinessCompetition/Anti-competitivePractices/Applications/ContentFiles/Documents/EGBL%20Final%20determination.pdf>

is that no one seller has the power to choose its level of profits by giving less and charging more ... the antithesis of competition is undue market power in the sense of the power to raise price and exclude entry.

Generators are evidently able, at times to “choose the level of profits by giving less and charging more.” The Wolak⁶ report found that generators were able to withdraw supply in dry years to force spot prices up. This yielded about \$4.3 billion of excess profits. Generators were able to manipulate bids and offers into the wholesale market to maximize their excess profits.

Of even greater concern to domestic consumers is the ability of retailers to price-discriminate. This means raising prices to domestic consumers so they can cut costs to their “competitive” larger consumers. This is also perfectly legal. We will argue that this opportunity is also exploited to the maximum possible.

2. The interests of users of electricity

The gas pipeline decision says “persistent excess profits are not consistent with efficiency and sharing the benefits of efficiency gains with consumers.” It quotes a paper by Bertram, Dempster, and Terry –

... monopoly profits ... are pure transfers of wealth to the asset owners. They perform no economic function in relation to securing the continued supply of the service.”

We turn this around and ask if any or all businesses in the supply chain get enough excess profits to not only “secure continued supply” – but to expand their asset base at will, at the expense of domestic and other small consumers.

The Ministerial Review of electricity market performance found that margin of generating capacity is now 900 MW, compared to the optimum generating capacity of 780 MW. This excess margin is expected to remain for the foreseeable future. Energy generation margins already amount to some 25-30%, compared to the 17% that would be economically efficient.⁷ This surplus capacity benefits competitive consumers, but domestic consumers pay for it, as explored below.

Domestic consumers’ interests are profoundly impacted by these transfers of wealth. They would value the opportunity to use more electricity if they could afford it, and their health would be improved, to say nothing of their whole quality of life. The excessive prices are therefore a deadweight loss to the economy, as described in s 151 of the gas pipeline decision.

3. Whether supply assets are being used efficiently

⁶ www.med.govt.nz/upload/69725/volume1.pdf

⁷ Improving Electricity Market Performance (First report to the Ministerial Review of Electricity Market Performance), vol 2, sections 73-81. webref.

The gas pipeline decision only touches on this third criterion of whether a business should be regulated. [s 143] Profits may appear to be normal not excessive, but they may disguise “inefficiently incurred” costs – padding. Building surplus capacity is one, but not the only, example of inefficiently incurred costs.

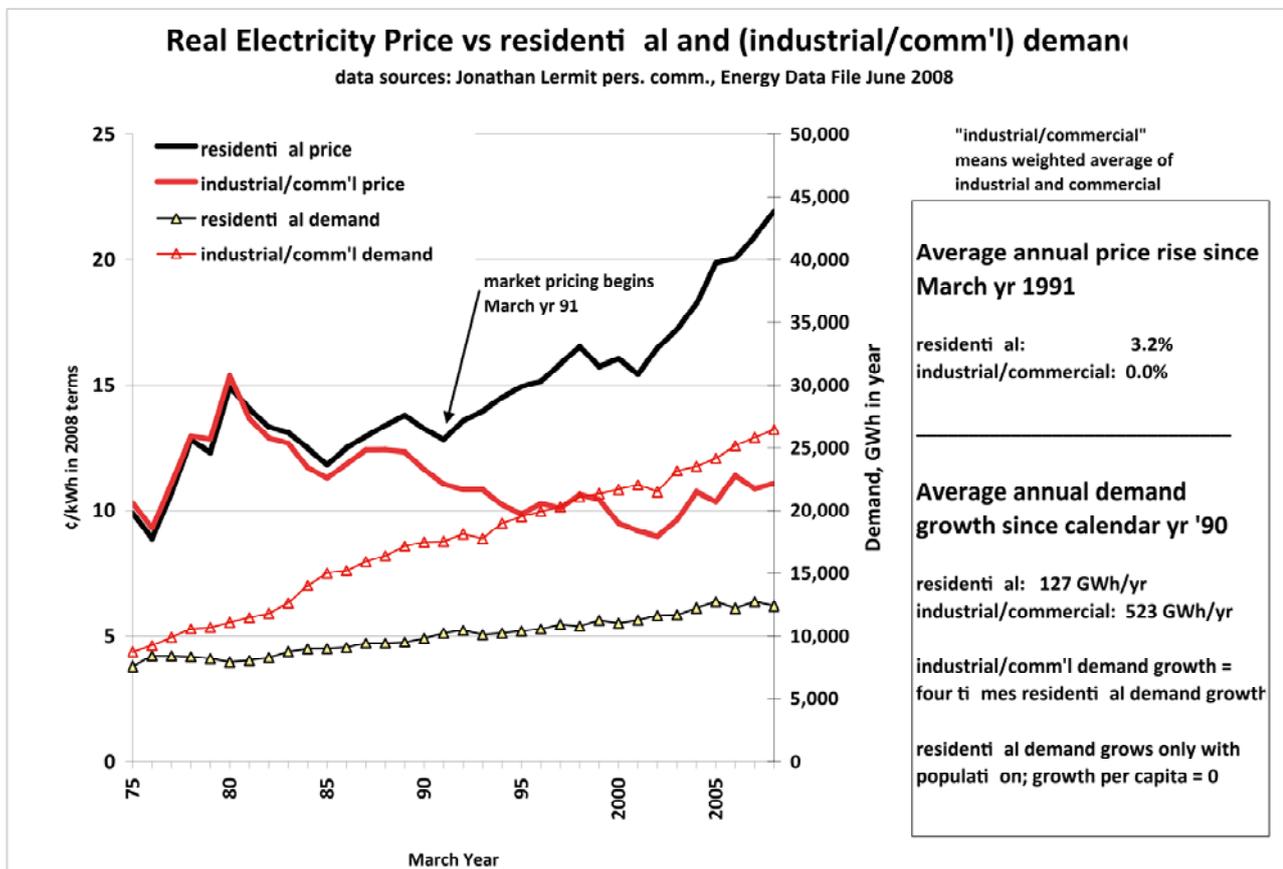
New Zealand is unique in its rapid and costly roll-out of “advanced” (but dumb) meters. No other country has introduced advanced meters without some support by governments – support which has enabled governments to impose policy requirements to ensure that consumers benefit. In New Zealand, retailers can roll out the meters without support. They benefit by reducing the cost of meter reading and the incidence of electricity theft. Benefits to consumers will come much later – if ever.

Applying the three tests - evidence from pricing

The graph below shows how market pricing, which began about 1991, allowed price discrimination to proceed almost unchecked.

Before then, the graph shows domestic and non-domestic prices following each other though with a slowly growing gap resulting from the increasing demand from large industries connected directly to the grid.

After 1991 domestic prices rose dramatically. At the same time, non-domestic (commercial and industrial) prices did not show an increasing trend, but only varied with market conditions.



Residential consumers pay costs of new capacity, others pay costs of electricity from existing assets

The Ministerial Review claims that industrial consumers are now paying the cost of generation from new capacity, which it put as 7c/kWh in Sept 2008. [Vol 1 figure 8] This ignores the costs of distribution and transmission.

In fact the wholesale electricity price has trended upwards and was about 8c/kWh in 2008⁸. Non-residential prices averaged 11c/kWh in 2008 (all these are in real 2008 cents/kWh).⁹ Allowing for network costs, this was approximately the cost of supply from existing capacity, not from new capacity.

Industry spokespersons say that the cost of new generation is not 7c, but 8-12c/kWh. They say residential prices must rise to reflect these cost increases.¹⁰

Contact says after stripping out margins and transmission costs the current cost of energy is about 7c per kWh. The chief executive David Baldwin says cost and therefore price will have to rise as the country looks to secure long term supply. The long run marginal cost of electricity right now is closer to 10 to 12 c per unit, so you see if you continue the track of 7 cents per unit ad infinitum, then what you don't do is create an economic incentive for new generation to get built. And that for us leads to the conclusion which is consistent with the Ministerial Review that electricity will continue to rise until we have a price embedded in tariffs that enables us to create new energy, build new energy, and meet growth in demand.

The average retail price in August 2009 was 23.6c/kWh, three times the wholesale price trendline which was also 8c/kWh in 2009¹¹.

Perverse incentive to build expensive generation capacity

This view that residential tariffs “must” reflect the cost of new capacity creates a perverse incentive. Costly new renewable energy, especially from wind farms, will yield increasing windfall profits as spot prices rise. And there's no incentive to build the cheapest first, indeed if long run marginal cost is a benchmark, there's an industry-wide incentive to downplay the commercial priority formerly given to capital cost.

Meanwhile there's a strong incentive to withdraw older thermal capacity from the market. It costs money to maintain that capacity, and the more renewable energy comes in, the less time the thermal power stations will be earning anything at all.

⁸ DEUN calculation from annual wholesale prices at Haywards, published on ComitFree website, adjusted to real terms using PPI.

⁹ Energy Data File, calendar year 2009, table G.5c

¹⁰ David Baldwin, Contact Energy, on National Programme Morning Business News, 17 Aug 2009

¹¹ The 2009 wholesale price will be about 3c/kWh; this drags the trendline back down to the previous year's 8c/kWh. Growing surpluses are likely to keep spot prices low except in dry years.

Genesis Energy uses that argument to support removal of two of the four Huntly generating units, because they will be uneconomic. For the same reason, Contact Energy removed its Whirinaki generator (immediately replaced by a new one owned by the Electricity Commission), and closed New Plymouth just as a dry hydro year became apparent. That led to New Zealand's highest-ever spot prices.

Renewable energy is desirable not only to reduce carbon emissions, but is commercially highly attractive, leading to windfall profits. And with domestic prices benchmarked around LRMC, there is a perverse incentive to build expensive rather than the most cost-effective generators – especially wind farms where wind speeds are not particularly high.