

NSW Energy Summit
Grace Hotel

20 November 2007

Evaluating Energy Prices in NSW

Michael Keating, AC

Chairman, IPART

The central goal of energy policy and pricing is to ensure the reliable supply of energy at the minimum price. A fully competitive market can be expected to achieve this outcome with little or no government intervention. Competition provides the incentive for firms to minimise their costs, or otherwise their profits will suffer, and/or they will lose market share. Eventually inefficient firms could even go out of business. Competition will also ensure a rate of return that is sufficient to attract the necessary amount of new investment. Excess supplies of electricity will put downward pressure on the rate of return and prices, leading to reduced investment, until those excess supplies are worked off. Equally the opposite will occur if there is a shortage of capacity.

That does not mean, however, that markets will always ensure that supply of capacity always equals the demand for that capacity. Uncertainty about both the future demand for electricity and supply capability means that there is always the possibility of some disequilibrium between supply and demand. In a competitive market for electricity, however, any such disequilibrium will be transmitted to prices, and these prices will then trigger a response. A competitive market is a flexible market, and is likely to adjust most quickly to disequilibria, because those firms which delay their responses to market signals, transmitted through price fluctuations, will lose out.

However, where the market is not fully competitive, then there are not the same pressures to adjust quickly. Indeed monopoly prices may even be permanently higher. This is because a monopoly supplier is typically faced with an inelastic demand for electricity and can earn an economic rent or monopoly profits by setting higher prices and permanently restricting supply.

The case for regulation is therefore strongest in such a monopoly situation. Fundamentally the aim of regulation then is to replicate as far as possible what competitive markets would have delivered. Sometimes regulators are also asked to have regard for the social impact of their determinations, but there is little or any scope to do this through prices without departing from replicating the prices that would flow from a competitive market.

In Australia the price of wholesale electricity received by the generators has now essentially been deregulated. Instead, wholesale prices of electricity are established via the National Electricity Market, which provides for the supply of electricity in the Australian Capital Territory and the states of Queensland, New South Wales, Victoria, Tasmania and South Australia. But in NSW, for example, the Independent Pricing and Regulatory Tribunal of NSW (IPART), is responsible for regulating retail electricity prices.

The retail price of electricity is, of course, the price that customers actually pay. This price has to recover not only the costs of the retailers themselves but also the costs of the producers of the electricity, and of the networks that transport electricity from producers to consumers. Wholesale energy costs represent 40 per cent of the retail price; network costs 46 per cent; retail costs 8 per cent; and the retail margin 5 per cent. Consequently the retail price of energy can have important implications for the willingness of investors to invest in new production facilities and in improving the reliability of the network.

IPART's task in regulating retail electricity prices is complex. Inevitably IPART relies heavily on information supplied by the regulated businesses themselves. IPART then needs to judge likely future cost requirements, changes to demand growth and other factors which can impact on the businesses, in some instances up to five years in advance. At the same time IPART attempts to create an environment in which the regulated retailers are encouraged to seek efficiency improvements. Also IPART must judge whether customers are prepared to pay more to achieve high service quality. However, it is also important that IPART does not assume the role of the regulated business' management by making key operational decisions. Rather price regulation should encourage the best use of existing infrastructure and provide incentives to augment the infrastructure where this is economic.

But even with the best will in the world, regulation is likely to remain only a poor substitute for competition. Second guessing market outcomes and trying to build into regulated prices market type incentives is unlikely to prove as effective as the real thing achieved through genuine competition.

Since 1 January 2002, all electricity customers in NSW have had the option to choose their retail electricity supplier and negotiate a retail supply contract, or to remain on a regulated tariff. Customers in NSW are increasingly exercising choice and negotiating retail supply contracts, but around 70 per cent of customers are still on regulated tariffs. In mid-2007 the Tribunal determined the regulated price from 2007 to 2010, and in making this determination, a key consideration was to promote competition and investment in the NSW electricity industry.

Furthermore, the Council of Australian Governments has agreed to phase out energy retail price regulation where it can be demonstrated that effective competition exists. Reviews of competition in each state will be conducted by the Australian Energy Market Commission. It has commenced its first reviews with the Victorian market and recently released its first draft report – recommending that retail price regulation be removed in Victoria. Subsequently, the

Victorian Government has announced that it will remove regulated prices for small business customers from 1 January 2008. It also said that price regulation for residential customers will be determined after further analysis by the AEMC and Victorian Government. The AEMC will review the NSW market in 2009, by which time the Tribunal hopes the market will be more competitive than currently and will allow the removal of retail price regulation.

In order to achieve this more competitive outcome the regulated retail price must be high enough to encourage new entrants who can then attract new customers by offering a competitive price, while keeping that regulated price low enough that there is still pressure on the three Standard Retailers (Energy Australia, Integral Energy and Country Energy) to pursue efficiencies in the absence of full competition. Probably the most critical element in setting this retail price is the allowance for the wholesale cost of electricity, which accounts for 70 to 75 per cent of retailers' controllable costs (excluding network charges), and about 40 per cent of a customer's electricity bill (which includes network charges). Furthermore, the wholesale price of electricity is especially volatile, sometimes spiking sharply for hours, days or even weeks at a time, while retailers must sell at regulated prices that are fixed for a period of time. This creates risk as retailers may be required to sell electricity at prices that are less than the costs of purchasing this electricity.

Accordingly when retail competition first started to be phased-in in NSW, the Government imposed vesting contracts as transitional arrangements to largely eliminate the risks that retailers faced in offering fixed retail prices. The vesting contracts, which effectively gave the retailers a set energy purchase price, were set at prices roughly equivalent to the long run marginal cost of generation. Vesting contracts were terminated from the commencement of full retail competition.

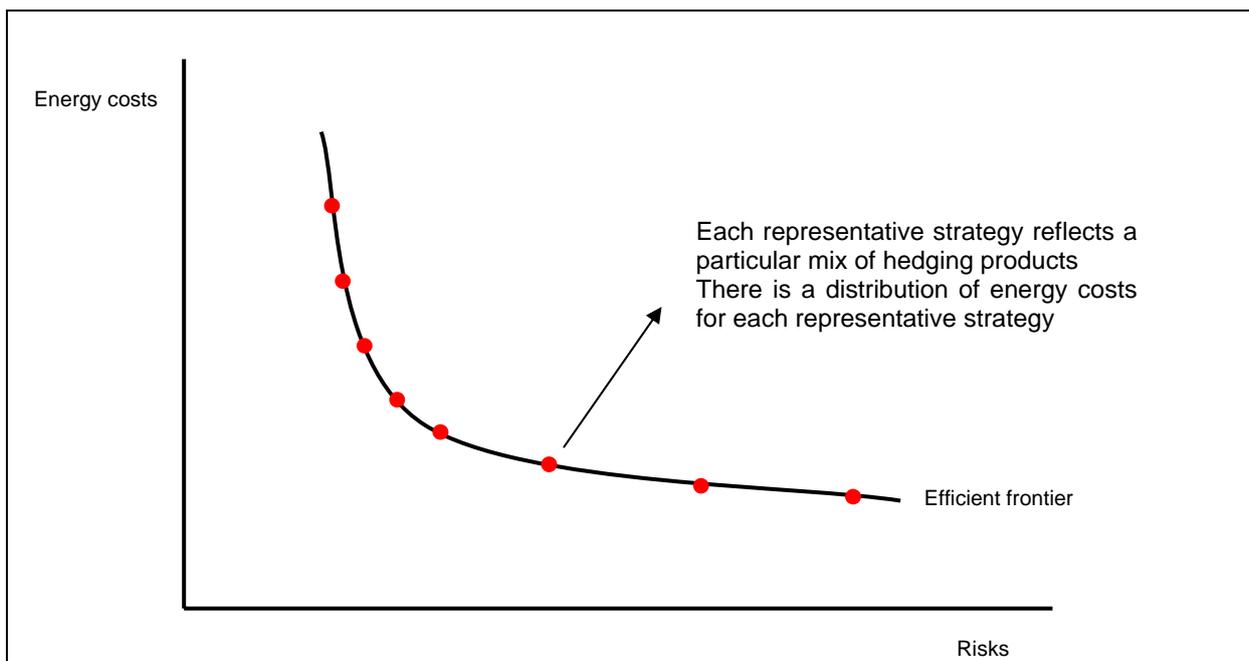
After that, the NSW Government created the Electricity Tariff Equalisation Fund (ETEF), which in effect provided a government guaranteed perfect hedge for the load on regulated tariffs. The ETEF was possible because the NSW Government owned both the incumbent retailers and a large proportion of the state's generating capacity. However, as part of its commitment to full retail competition, in 2006, the NSW government announced that it will phase out the ETEF over the three years to 2010.

The terms of reference for IPART's recent review of retail electricity prices therefore required the Tribunal to consider the risks faced by retailers in the absence of the Electricity Tariff Equalisation Fund (ETEF), taking into account the forecasting risks, hedging risks, transaction costs and the timetable for removal of the ETEF. This shift towards deregulation

and more competition effectively means, however, that regulatory decisions on wholesale cost allowances are more controversial. The Tribunal consulted extensively and sought independent expert advice from Frontier Economics on the wholesale cost allowance.

Frontier Economics proposed that risks and costs should be considered within a consistent framework, and that the concepts of portfolio theory used in finance and investment optimisation could be applied for this purpose. Frontier Economics proposed to use its portfolio optimisation model, *STRIKE*, to determine the efficient mix of energy purchasing instruments (ie, various hedging products of various kinds) for each level of risk. As shown in Figure 1, the results of this analysis can be graphically represented as an “efficient frontier” with the expected cost of the energy portfolio on the vertical axis and the associated risk on the horizontal axis.

Figure 1 *STRIKE* outputs – the “efficient frontier”



In effect, the Tribunal in making an allowance for the cost of wholesale electricity has had to pick a point on this “efficient frontier”. For the individual firm the exact trade-off between risk and the cost of hedging represented by the “efficient frontier” will depend upon that business’ detailed policies and risk appetite. However, in a fully competitive market it is arguable that the individual retailer would tend towards a purchasing strategy for wholesale electricity around the elbow point on this “efficient frontier”, as representing the optimum trade-off between risk and the cost of hedging.

For the Tribunal there are risks associated with both underestimating and overestimating wholesale costs. If wholesale costs are underestimated then standard retailers face a potential financial loss from selling electricity more cheaply than the costs of purchasing electricity. If the cost is overestimated this will provide standard retailers with a windfall that they could use to cross-subsidise their non-regulated customers, so that the standard retailers could win customers in the competitive market. On balance, the Tribunal decided to choose a conservative point on this “efficient frontier”.

In addition, while the conservative point represents the lowest risk position on the efficient frontier, there is residual risk associated with the availability of hedging products at that point. It would be possible, in theory, to purchase additional ‘hedging products’ to substantially remove the residual volatility inherent in the conservative point portfolio. However, such products are not readily available, and are likely to be expensive compared to the cost of factoring this volatility into the overall funding requirements of the business. Instead it was considered that it would be cheaper for the business to effectively self insure by holding sufficient working capital to withstand this residual risk. The Tribunal has therefore also factored in such an allowance for the cost of this working capital into its decision.

The Tribunal released its draft decision on 3 April, 2007. The detailed analysis and modelling of wholesale prices underpinning this draft decision was conducted on data provided to the Tribunal up to November 2006. However, around that time the wholesale market experienced major price changes. Indeed the size and speed with which these increases occurred were unprecedented in the National Electricity Market.

In early March 2007 the Queensland Water Commission (QWC) placed material restrictions on the use of water by power stations in the production of electricity. At the same time Snowy Hydro had been issuing public warnings in its monthly water situation reports that its water levels were low and declining¹ and on 29 March Snowy Hydro said that its water inflows were the lowest over the 105 years that records had been kept.² Other major hydro systems, such as the Southern Hydro facility located in Victoria and Hydro Tasmania have similarly been affected by drought.

¹ Snowy Hydro, Media Releases <http://www.snowyhydro.com.au/media.asp?pageID=53&parentID=3>

² Snowy Hydro (2007), *Snowy provides water security through worst drought*, 29 March, http://www.snowyhydro.com.au/sysfiles/media//SnowyHydro_MR_136.pdf

As a consequence, forward wholesale electricity prices increased substantially from the values used in the Draft Determination. Stakeholders raised concerns about the significant increases in the spot and contract prices.

The Tribunal responded in its Final Determination by including an annual review mechanism for market based electricity purchase cost allowances in 2008 and 2009. These reviews are intended to explicitly address the risk of significant but unforeseeable changes in the wholesale price of electricity. If the annual review concludes that the market based electricity purchase cost allowance for that year differs by 10 per cent or more from the allowance used in the determination, the Tribunal has determined a methodology by which the tariff path may be revised. The Tribunal considers that by incorporating this methodology it has struck the right balance between providing sufficient regulatory certainty and the necessary flexibility to adjust to unforeseeable events.

However, some would argue that retail price regulation is not compatible with a competitive wholesale market that can produce volatile input prices. Indeed, some industry experts warn that if regulators are not careful a Californian type crisis maybe pending.

There are similarities between the 2007 experiences in the National Energy Market and the California crisis. Both Australia and California operate a gross pool, where all energy is purchased through the pool. However, California's electricity market is about twice the size of the entire Australian National Energy Market.

The main factors behind the Californian electricity crisis were a shortage of generating capacity, hydrological shortages and mandated caps on retail prices in a contestable market. But I doubt our problems are as severe or as long-lasting. California's electricity generation prices increased ten fold in 2001, much more than in Australia. And judging by the forward market, wholesale electricity prices are expected to come back down in the next year or so. This fall may be because the hydrological problems are most likely to be resolved in the next year or so.

In addition, Professor Anthony Owen has recently reviewed the need and timing for new base-load generation that maintains both security of supply and competitively priced electricity. The Owen Report concluded that there is a need to be prepared for additional investment in base-load generation from 2013-14. It recommended that the most efficient means of providing for additional investment in base-load generation is to improve the commercial and policy signals used by the private sector when investing in generation

capacity and, therefore, that NSW should divest itself of all State ownership in both the retail and generation sectors of the electricity industry.

The challenge for a regulator, such as IPART, in these circumstances is then to build in sufficient regulatory flexibility that we can guard against the unexpected and ensure continuing availability of electricity supplies. But we also want to preserve reasonable regulatory certainty through a rules-based approach, and so that there is continuing pressure on all elements of the electricity industry to maintain downward pressure on costs.

The Tribunal considers that its recent price determination, through both the form of regulation and the level of regulated tariffs, will reduce customers' reliance on regulated prices and facilitate retail competition, including the potential for new mass market retailers. It should also encourage investment in new generation, where it is efficient and economic. Regulation should be removed in 2010 if, as expected there is sufficient competition in the market. Increased competition should place pressure on all retailers, including the Standard Retailers, to pursue efficiency gains to increase their competitiveness. This is in the long-term interest of customers.

Effective competition between companies providing energy services is, in principle, the most powerful protection for consumers. As I have said, the lure of higher profits and the risk of losing market share, create strong pressure to provide customers with preferred services at minimum cost. Competition should also lead to innovative solutions. But energy is an essential service. Consumer protection in the form of a universal obligation to supply, access to a retailer of last resort in the event of another retailer failing, rights to dispute resolution schemes (such as energy specific ombudsman scheme) and fair dealing provisions will still also be required. However, non-price regulation should impose simple and transparent obligations so as to ensure product innovation is not constrained.