

Recharging Electricity Reform

Amid all the reforms undertaken by Governments over recent years, the sector that held the most significant promise of a large economic dividend was the electricity industry. The grand plan was for a national (or at least Eastern States) electricity market, where competition would exist; where there would be vertical separation of electricity generation and retailing from transmission functions; and resources would be allocated on economic rather than political or engineering considerations.

This plan seems to have stalled somewhat, a casualty of pragmatic Government, adroit union pressure, and general 'reform fatigue' amongst the broader populace. Despite stalled progress on the grand plan, however, significant reforms have occurred in the industry. How far these reforms fall short of the ideal is a question now being given serious consideration.

Amongst the range of reforms proposed or implemented by the Governments of Australia during the 1990s, reform of the electricity industry had two features that made it different from many other areas of Government that were subject to reforms.

The first is that the electricity industry, unlike almost all other public utilities, actually started as private enterprise. From the day Australia's first electric streetlights were turned on in Tamworth in 1889, the electricity industry that developed was composed of many small-scale, privately owned suppliers. By the 1940s most of the 140 suppliers in NSW were owned by either State or Local Government, and were subsequently amalgamated. So despite the perceptions of current generations that the supply of electricity has generally been a role of Governments, this was not always the case.

The second important feature of the electricity industry is the size of the 'reform dividend' estimated to be available if a fully-competitive industry was developed in Australia. Electricity reform was estimated to generate a benefit of almost \$6 billion (1993-4 dollars) per annum, the single

biggest benefit likely to be generated by the Hilmer National Competition Policy reforms initiated in 1994.¹

Electricity is generally not a major input for agriculture, however:

- many intensive agricultural enterprises rely heavily on electricity
- most post-farm processing industries are large users
- increasingly farmers are reliant on computers and other technology that depend on reliable electricity supplies
- farm operations depend heavily on equipment and inputs that are produced using electricity-dependent technology.

Consequently, while the direct cost of electricity consumed on a farm is obviously an issue for individual farmers, probably of more importance for agriculture are the indirect costs the electricity industry imposes throughout the entire economy, much of which will be passed on to farmers in the form of higher input costs.

The COAG electricity reforms

The Commonwealth Treasurer established an Industry Commission inquiry into Australia's electricity industry in 1990, and the report of which was tabled in May, 1991. It recommended that significant national productivity increases could be achieved by:

- restructuring the electricity supply industry by vertically separating electricity generation and retailing from the natural monopoly elements of transmission and distribution;
- introducing competition into electricity generation and retailing by providing access to the transmission and distribution systems on a non-discriminatory basis, and
- enhancing and extending the interconnection systems of NSW, ACT, Victoria and South Australia to eventually include Queensland and Tasmania.²

¹ Short et. al (2000) Competition issues in the Australian electricity market. ABARE Outlook 2000, Canberra

² ACCC (2002) The National Electricity Market. www.accc.gov.au

From July, 1991, there was a series of special Premiers conferences and COAG meetings that progressively agreed on aspects of reform in electricity markets, which were subsequently incorporated into the National Competition Policy agreements signed in April, 1995.³

Structural changes

The first stage of the reform process undertaken by the States was the separation of their transmission and distribution systems from generators and retailers. Most of the States (certainly the eastern States) went through a process of corporatising and separating generation, transmission and retail distribution during the period up to 1998. Victoria took a lead in this regard, having separated the different businesses in 1993, and having sold its five distribution businesses to the private sector by 1995. Subsequently it has also sold its generation and transmission businesses to the private sector.

South Australia undertook similar structural changes slightly later than Victoria did, and the generation companies created as a result have now been privatised.

Queensland and NSW have both restructured and corporatised their electricity industries, but have stopped short of privatising these businesses. The NSW Government did propose to privatise its generators, but this decision was subsequently stopped by pressure from unions. Queensland appears committed to retain generation, in particular, in Government ownership but with private funding. Tasmania has also restructured its electricity industry, while retaining State ownership.

It should perhaps be noted that the NCP agreements do not explicitly require that State-owned electricity assets be privatised. They do, however, require competitive neutrality between public and private entities.

National electricity market

The National electricity market (NEM) is the core component of reforms designed to bring about a more efficient electricity industry. Subjecting the relevant components of the industry to competition was seen as the most appropriate way to ensure long-term, sustainable productivity gains occurred, with benefits for the entire economy. The objectives of a fully competitive NEM were:

- the ability for customers to choose the supplier (including generators, retailers and traders) with which they will trade
- nondiscriminatory access to the interconnected transmission and distribution network;
- no discriminatory legislative or regulatory barriers to entry for new participants
- no discriminatory legislative or regulatory barriers to intrastate or interstate trade.⁴

³ NCC (1998) Compendium of National Competition Policy Agreements – Second edition. June 1998. National Competition Council.

⁴ NCC (2001) Assessment of performance against National Competition Policy agreements. June 2001. National Competition Council.

It was initially agreed that the NEM would be established by July 1995, however it was not commenced until December 13, 1998. The NEM is essentially a wholesale market, which is now divided into five regions – NSW-ACT, Victoria, Queensland, South Australia and the Snowy Mountains.

The NEM operates by requiring generators to submit bids a day in advance to supply electricity to match demand in 48 half-hourly trading intervals in a day. The bids are resolved starting with the cheapest supplier for each trading period, and a dispatch schedule is prepared based on anticipated demand. Generators are subsequently able to “rebid” their supply offer at different prices, up until the time the trading period starts. On the other side of the market, retailers and high-volume consumers can submit demand bids for each trading interval, although this is not yet a major part of the market.

National electricity code

There are several other components of the COAG reforms that have either been implemented, or are in the process of being. One important aspect is the access code, which is the rules that govern access by any generator to the electricity supply grid (the lines and poles) that deliver electricity to consumers.

This code – the National Electricity Code (NEC) – was authorised (with significant qualifications) by the Australian Competition and Consumer Commission (ACCC) in December, 1997, and accepted as an access code under the Trade Practices Act in September, 1998.⁵ It was recognised at that time that the NEC still contained a number of important deficiencies, such as price caps and floors, which had the potential to make the market uncompetitive.

Interconnection

A further vital component of the reforms was the establishment of interconnection capacity – the establishment of links between State electricity grids so that interstate trading can occur. If there is no, or limited ability to transfer electricity interstate (given that electricity cannot be efficiently stored) then the potential for real competition to drive productivity will be limited.

The development of interconnections has only progressed slowly, for several reasons. There has been some obvious commercial conflicts at play – for example it was not in the interests of South Australia to have its State-owned generating industry exposed to competition at the same time that it was attempting to sell these generators to the private sector. NSW also has excess generation capacity, and it may not be in the interest of these (State-owned) generators to have interstate competition potentially flattening higher prices that are available during peak demand periods. Regulatory approval processes (especially for the link between S.A. and NSW) have also resulted in considerable delays.

⁵ NCC (2000) NCP Second Tranche Assessment Report – Electricity. National Competition Council

Interconnections are currently being upgraded, established or planned between Queensland and NSW (QNI), South Australia and NSW (SNI), Victoria and NSW (Murraylink), and Tasmania and the mainland (BassLink). Having all these established and operating will significantly advance competitiveness in the industry, and also create greater flexibility in times of peak demand or generator outages.

Full Retail Competition

The final step in the reform process is introducing competition in retail electricity supply for all consumers.

A timeframe for retail contestability was agreed by COAG, with the implementation date originally being July, 1999. This deadline was not met, although each State has been progressively introducing contestability, commencing with the largest volume users.

NSW and Victoria introduced full contestability for all consumers in early 2002. Queensland has introduced contestability for large-volume users, but apparently put further moves to introduce retail competition on hold. South Australia is in a similar position, with all consumers due to have retail competition available by January, 2003, although the SA Government did not recommit to that date at the June 2001 COAG meeting.⁶

Western Australia has committed to its introduction in 2005, and the ACT has deferred finalising contestability and referred the issue to an inquiry that will assess the likely public benefits that might result.

Assessing the results of electricity reform

As noted earlier, the projected benefits arising from reform in the electricity industry were the largest of any of the National Competition Policy reforms. Even though they are incomplete, it would be anticipated that benefits should now be flowing through the economy, given that reforms have been underway for almost ten years.

One estimate available of the overall benefits of the reforms was provided in early 2001.⁷ It concluded, based on computer modelling simulations, that Gross Domestic Product for the Australia economy will by 2010 be 0.26% higher than it would otherwise have been in the absence of the reforms. This translates to \$2.4 billion per year (2001 dollars). Of that total, it was estimated that about 62% of the benefits had already been achieved.

The total net present value of benefits to the Australian economy over the fifteen years since 1995 were estimated to be \$15.8 billion, in 2001 dollars. These results are within the range of other recent estimates that have been made, although fall somewhat short of the initial estimates (approximately \$6 billion p.a.) that were made prior to the reforms being implemented.

⁶ NCC (2001) op. cit.

⁷ Short et. al. (2001) Electricity Reform. The benefits and costs to Australia. ABARE Outlook Conference. Feb. 2001.

Significant gains have been made in a number of areas of the electricity industry. For example, "Labour productivity has more than doubled, from 9.6 gigawatt hours per employee in 1991, to 20.7 gigawatt hours per employee in 1999. In Victoria, where reforms were introduced earliest, labour productivity has increased more than threefold." This report found.

Generator-sector capital utilisation and efficiency measures were also found to have dramatically improved. Similarly, international comparisons of productivity measures in the distribution sector showed performance to have increased substantially, and to have reached worlds best practice levels.

Of interest, given the current introduction of full retail contestability was the finding that this would only increase GDP by a further \$109 million over the current level. This amounts to around 5% of the total benefits to be received from all the reforms to the industry. Part of the reason this figure is so small is that individual domestic consumers, due to limitations in household metering systems, have no real mechanisms available to respond to changes in electricity prices throughout the day which arise as a result of demand changes. Consequently, consumers have no incentive to manage consumption during peak demand periods, thereby reducing the need for capital to be invested in sufficient generation capacity to meet these demand peaks.

A slightly different approach to assessing the benefits of electricity reform involves analysis of the extent to which the current market falls short of the ideal. Recent studies by ABARE^{8,9} have examined aspects of competitive behaviour by electricity generators in the NEM. These studies calculated that non-competitive behaviour by generators was reducing national GDP by about \$412 million in 2001. This was occurring as a result of a number of generators simultaneously withholding generation capacity during peak periods, creating extreme price spikes. In two separate periods analysed for the study, it was found that "Market outcomes in NSW showed evidence of non-competitive behaviour in every month considered. Also, not only are the deviations from competitive outcomes occurring more frequently, they are generally occurring at a higher level." Similar problems were observed in electricity markets in other states, although not as consistently.

Overall, it was concluded that market outcomes are a substantial distance from the most efficient outcomes that may have been expected prior to the reforms occurring, and that consumers are not obtaining the benefits they should be.

The need for further reforms

A stocktake of progress to date in electricity reform in Australia would certainly highlight some dramatic improvements over the last fifteen years, which are delivering benefits. Whether or not the rate of progress is

⁸ Short et. al. (2001) op.cit.

⁹ Short & Swan (2002) Competition in the Australian national electricity market. ABARE Current Issues. January, 2002.

adequate is difficult to judge, given that the industry was obviously not internationally competitive in its former state, and hence had plenty of room for improvement.

Structurally, major change has occurred, with the separation of generation, transmission and retail functions generally completed. A competitive market of sorts has been established (the NEM), although its performance indicates that it is not yet delivering the results that would be expected in an ideal arrangement.

Access rules for the transmission grid seem to be generally regarded as appropriate, meaning that new competition, especially amongst generators, should be able to occur unfettered by any artificial market entry constraints.

Greater integration of the electricity market in the eastern states via the establishment of increased interconnection capacity is obviously something that needs to occur, and is work-in-progress. A link between Tasmania and the mainland, as well as the various other interconnection links currently being implemented will significantly contribute to the efficiency of the market, and should deliver further benefits.

These gains aside, international and Australian experience suggests that further progress may not be without risk. The Californian experience, to some extent mirrored in Victoria and South Australia over recent years, highlights the risks inherent in what are substantially deregulated electricity markets.

The artificial barriers that may have prevented market entry in the past are largely removed. However, the sheer scale of required investments, combined with the sovereign risk inherent in markets with competitive supply-side and regulated demand-side sectors (as a result of various State-imposed price caps for domestic electricity prices) make it unlikely that significant new investment will occur in the generation sector in a timely manner. Combining this with the reality of steady annual growth in electricity demand suggests at best a 'choppy' market, where supply and demand coincide on average but experience significant periods of imbalance.

A further complication arises due to the nature of electricity consumers. Limitations to metering mean that the vast bulk of small-volume domestic consumers are unable to adjust their consumption in response to prevailing prices. They are also much more likely to be concerned about a series of short-term power outages than they are about domestic electricity tariffs that may be consistently five or ten percent above their ideal levels. On the other hand, large volume power-users such as non-ferrous metal, paper, cement and glass industries depend on efficient delivery of electricity in order to remain internationally competitive, and are therefore critically interested in price levels, as well as reliability of supply.

The crucial question is obviously whether further gains can be achieved in the efficiency of delivery of electricity to consumers, without incurring politically unacceptable risks.

The answer seems to be that further gains can be achieved, without increasing risk. For example, further breaking up the generation capacity in NSW and Queensland so that each entity represents a smaller proportion of the total supply (potentially to the single power-station level) could result in a significantly more competitive NEM, without sacrificing generation efficiency. While such a change may not require that these entities should be transferred to private ownership, it is difficult to identify the comparative advantage that Governments have in operating an electricity generator in a competitive market, especially when that same Government is ultimately responsible for regulation of the market. Doubling the number of players involved in the NEM within NSW, for example, and having these entities directly answerable to shareholders seems to be more likely to produce a fully competitive market.

An additional fairly logical move to enhance the competitiveness of electricity markets seems to be the establishment of a single national regulatory regime, rather than the multitude of State-level regulations that still exist. As was pointed out recently, there are up to fourteen different regulators that an energy-market investor may need to deal with in implementing a new investment in Australia, and such complications inevitably act as a dampener on further investment.

As interconnection capacity increases, State-owned generators in States such as NSW and Queensland will increasingly be exposed to full-blooded commercial competition with interstate generators. NSW taxpayers have already experienced the risks inherent in such competition, with Pacific Power (subsequently Eraring Energy) reportedly incurring a loss of \$600 million in August 2000 as a result of a contractual agreement entered into with a Victorian electricity distributor. The full extent of this loss was not clear, because the NSW Government quickly restructured the entity, and subsequently exempted it from revealing its full financial situation under the NSW Public Finance and Audit Act. This highlights that once elements of the industry have been privatised and commercialised, retention of Government ownership and control seems likely to increase risk, rather than reduce it.

A continuation of reforms in the electricity industry has the potential to generate substantial additional economic benefits, without necessarily incurring additional risks. Calling a halt to reforms at their present point therefore would be highly illogical.

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This paper originally appeared as an edition of the Primary Report published by NSW Farmers' Association. Re-published in 2004 by the Australian Farm Institute.