

THE ROAD TO SMART METERING IN AUSTRALIA

By Phil James

This is the first of three articles that will broadly cover smart metering in Australia. This first article looks at the legislative and regulatory background to energy market reform in Australia and the events that led to the development of smart metering policy.

The second will describe the Victorian advanced metering infrastructure (AMI) programme which is the first large-scale smart meter programme in Australia's history. The third article will look to the future of smart meter/smart grid developments and evaluate the economic and social benefits to consumers.

THE AUSTRALIAN WAY

Australia has a federal system of government. In 1901, the six independent British colonies of Queensland, New South Wales (NSW), Victoria, South Australia, Western Australia and Tasmania agreed to join together to form the Commonwealth of Australia. A national constitution was adopted, a federal parliament established and those colonies became states of the Commonwealth. In Australia's constitution the Commonwealth government is responsible for enacting legislation covering national issues and, for the most part, the states are responsible for the delivery of services (including energy) and retain the constitutional right to make laws in relation to those powers.

This means that those issues, like energy policy, that are of national significance to Australians but which impinge on the legislative powers of the states need the cooperation of different governments and, in many cases, parallel legislation in federal and state parliaments before they can become law.

In the early 1990s Australia's federal and state governments agreed to facilitate this cooperative model by forming the Council of Australian Governments (CoAG). The role of CoAG is "to initiate, develop and monitor the implementation of policy reforms that are of national significance and which require cooperative action by Australian governments..."

In 1995, following a report by the Independent (Hilmer) Committee, the CoAG established and implemented Australia's landmark microeconomic reform programme, the National Competition Policy (NCP). The key principle of the NCP is that competitive markets will, generally, best serve the interests of consumers and the wider community. While both gas and electricity are major areas of reform under the NCP, this article will focus its attention on the electricity sector.

TOWARDS A NATIONAL ENERGY FRAMEWORK

For most of the 20th century the generation, distribution and sale of electricity in Australia was conducted by relatively small state-owned entities that did not operate within a national framework and which acted largely independently of each other. The differing policy objectives of state-based regulators served to further entrench those diverging paths.

Following the adoption of the NCP, state governments, which were then the predominant owners of electricity businesses in Australia, undertook to:

- Restructure their electricity sectors; apply competitive neutrality and review electricity regulation that restricted competition.
- Introduce a fully competitive National Electricity Market (NEM) in southern and eastern Australia and extend competition in supply so that all consumers could have choice of supplier and provide for specific bodies to have operational responsibility in the market.
- Prior to joining the NEM, structurally separate the monopoly electricity transmission function from competitive generation activities and ringfence their retail and distribution businesses.

The NEM operates the world's largest interconnected power system that runs for more than 5,000 km from Port Douglas in Queensland to Port Lincoln in South Australia. It supplies more than AuD\$10 billion (US\$10.1 billion) of electricity annually to meet the demand of over 8 million end users.

Exchange between electricity producers and consumers is facilitated through a pooled system where output from all generators is aggregated and scheduled to meet consumer demand. This allows for sophisticated pricing structures and load shedding arrangements that ensure security of supply despite large fluctuations in demand. A dispatch price is determined every five minutes and six dispatch prices are averaged every half-hour to determine the spot price for each trading interval for each of the regions of the NEM. The NEM operator uses the spot price as the basis for the settlement of financial transactions for all energy traded in the NEM.

The NEM commenced formal operations in 1998 and, today, includes all the states and territories except Western Australia and the Northern Territory whose load centres are too far from the interconnected NEM network.

Following the commencement of the national market, and beginning with the largest consumers of electricity, market contestability (the customer's right to choose suppliers) has been progressively introduced across Australia. Full retail contestability was achieved in NSW and Victoria on 1 January 2002 and other jurisdictions have followed, albeit at substantially different rates.

Among the Australian states, Victoria has played a "lead" jurisdiction role in energy sector reform. In the mid-1990s, after concluding that competitive electricity markets were the natural domain of the private sector, the Victorian government disaggregated and repackaged the disparate pieces of the state's electricity businesses into discrete generation, distribution and retail businesses which it sold by tender. Since then, other states, including South Australia in 2001, Queensland in 2006/07 and, most recently, New South Wales in 2010/11, have followed similar models and divested all or part of their respective electricity (and gas) businesses to the private sector. As a consequence, significant market consolidation has occurred

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in the competitive generation and retailing parts of the electricity sector and major regulatory reform is ongoing in the natural monopoly businesses of transmission and distribution. Victoria again took a lead role in the programmed rollout of smart meters in Australia but significant structural change had still to occur before that happened.

In 2001, the CoAG established the Ministerial Council on Energy (MCE) as the national policy and governance body for Australia's energy markets. The MCE's objectives are to provide both oversight and coordination of energy policy development and national leadership so that energy sector decision making is effectively integrated. The CoAG also agreed to an independent review of energy market directions (the Parer review), to identify the strategic issues for Australian energy markets and the policies required from Commonwealth, state and territory governments. The CoAG requested that the MCE oversee the review process.

The CoAG review found that substantial progress had been made on energy market reform in Australia including considerable integration of the wholesale electricity markets in Victoria, NSW, Queensland and South Australia; substantial investment in new electricity generation and transmission interconnection between states in eastern and south-eastern Australia; vigorous retail competition in the medium and large business segments, and accelerating competition in the newly opened household and small business markets in NSW and Victoria. It also found that significant policy issues were still to be resolved if the full benefits of market reform were to be realized, and recommended a second phase of market reform. The key planks of that phase were the establishment of a national legislative framework and the formation of two new statutory commissions, the Australian Energy Market Commission (AEMC), with responsibility for rule making and market development, and the Australian Energy Regulator (AER), with responsibility for market regulation. These decisions were captured in the Australian Energy Market Agreement of June 2004.

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THE FOCUS SHIFTS DOWNSTREAM

Largely because of its climate, and the increasing penetration of energy intensive applications like residential air conditioning, peak demand is increasing in Australia and approaching supply capacity in many parts of the NEM. One way to address this is to build new generating plant and enhance the peak capacity of the networks, but Australian load duration curves are already among the worst in the world so that option is undesirable in both economic and environmental terms.

An alternative approach is to develop demand side strategies to shift loads away from the peak period. Time-of-use (TOU) pricing is one incentive for consumers to participate in load shifting. However, for this to be effective, price signals need to be provided to the consumer; the closer to real time, the clearer the signal.

Interval meters (smart meters when equipped with two-way communications capability) are a means of achieving this. They also offer other benefits including increased retail pricing efficiency, better incentives for demand side participation in the NEM, increased network efficiency, reduced meter reading costs, greater equity among electricity consumers and increased NEM settlement accuracy.

While the Parer review recommended that interval meters be mandated for all consumers and that installation be achieved over “five to ten years” (from 2002), the MCE recognized that although the potential benefits of interval metering were significant, the costs of implementation would be material and there were no large-scale precedents to draw on. It set out to develop a set of common principles for the assessment of smart meters and directed that “All NEM jurisdictions which have not done so should review the use of interval meters and assess the relative benefits of an interval meter rollout by 2007.”

The results of the costs and benefits analysis were mixed across the various jurisdictions. South Australia declined to proceed (on the basis that the costs outweighed the minimum benefits), Western Australia, Queensland and NSW committed to action but undertook to carry out more analysis and consumer pilots, and Victoria, which already had smart meter legislation in place, commenced its programme. The Victorian regulator, the Essential Services Commission, had announced its decision to mandate interval meters for 2.6 million Victorian electricity consumers in 2004. Clearly, the learning from the early programmes will influence those who start later.

Smart meters provide a mechanism by which consumers can determine both the amount of energy they consume and the time of day at which they consume it. Each affects the total cost of energy at wholesale level in the NEM but other changes are needed to “connect” that wholesale market to household consumption. The first is the development of retail pricing products that reflect time-of-use and the second is the removal of regulatory price caps that limit the development of such products. Both these initiatives are included in the MCE's recommendations.

Once more taking the lead, Victoria lifted retail price caps in January 2009 but, surprisingly, introduced a moratorium on the introduction of TOU pricing ahead of the state election in November 2010 in response to concerns raised by consumer groups.

As this goes to print, the new Victorian government is reviewing the smart meter programme but more on that in the next article.

“The new Victorian government is reviewing the smart meter programme.”



ABOUT THE AUTHOR:

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