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Resources and Environment
Department of Treasury and Finance
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Inquiry into Advanced Metering Infrastructure Program

The Energy Supply Association of Australia (esaa) welcomes the opportunity to make a submission to the Victorian Department of Treasury and Finance's review of the Advanced Metering Infrastructure (AMI) Program.

esaa is the peak industry body for the stationary energy sector in Australia and represents the policy positions of the Chief Executives of over 40 electricity and downstream natural gas businesses. These businesses own and operate some \$120 billion in assets, employ over 52,000 people and contribute \$16 billion directly to the nation's Gross Domestic Product each year.

esaa notes that households and businesses have been raising concerns about the rising cost of electricity. The cost increases associated with the AMI Program were immediate and obvious to consumers compared with the benefits, some of which will accrue in the future. This has created challenges for presenting the program in a positive light to consumers. Media and community reaction indicates that attempts to do so have not been entirely successful, and it's understandable that the Victorian Government feels the need to submit the Program to fresh scrutiny. However, the AMI Program is part of a technological and cultural shift that the electricity sector is facing and the up-front costs are not reason alone to cancel the Program.

Electricity networks: investment requirements and system utilisation issues

One of the key drivers for higher electricity costs is the declining utilisation of the electricity system. Whilst average consumption – at least at the household level – is declining slightly, peak demand continues to rise. In order to meet system reliability standards, networks must invest in infrastructure which is capable of meeting these periods of high demand. However, this infrastructure is required for few days per year but requires large capital investment. This situation is unfortunately an inefficient way to use electricity networks.

The scale of the investment required is increasing rapidly. According to the 2010 State of the Energy Market Report, investment in electricity distribution in Victoria over the current five year regulatory period is expected to be around \$4.7 billion,

exceeding investment in the previous regulatory periods by 33-59 per cent (depending on the network).

Central to efforts to minimise the amounts consumers will have to pay for network services in the future is the AMI program. Its impact goes well beyond the most visible part of the program, the meters. It incorporates the increased flexibility and understanding of the network that can be delivered by the improvements in information and communications technology. Better identification of faults and their causes, and richer information about the stress points on the network, can reduce the need for both investment in network capacity and in ongoing maintenance costs.

However, consumer behaviour is also crucial. Finding a way to flatten demand peaks, and increase use in off-peak times would minimise the need for costly upgrades to the system in the future to cater for relatively few days of very high demand. But for consumers to understand when are the critical times to reduce or shift consumption, they need a price signal – the high reliability of the network means that congestion is not otherwise visible to them (unlike say road users who get stuck in a traffic jam).

Flexible price signals

The Victorian Government has already taken an important step towards clear price signals by removing retail price regulation. esaa notes however that smart meters can bring greater dynamism to the price signalling process by allowing for transparent and flexible price signals to reflect changes in supply and demand to filter through the electricity supply system, from the wholesale energy market, to the networks, to retailers and finally to end use consumers. Importantly, they also create a platform that allows for the provision of timely information about consumption patterns and greater flexibility for consumers to manage variable time of day supply costs.

With the present moratorium on time-of-use (TOU) pricing for networks imposed by the Victorian Government in March 2010, there is little incentive for retailers to develop new products and services incorporating TOU pricing. Certainly, some retailers currently have broad peak/off-peak pricing proposals available but the possibilities to encourage more efficient use of electricity during peak times are limited. If networks are able to adopt charging structures that more accurately reflect the costs to serve, then there is more incentive for retailers in turn to offer consumers a package which incorporates both the networks' charging structure and fluctuation in wholesale energy costs.¹

Tools such as critical peak pricing (CPP), which involves significantly higher prices during short periods of extreme demand or peak time rebates (PTR), which provide a payment to consumers who reduce their demand below a baseline level on days of extreme demand, have been shown to reduce energy demand at peak times.² These mechanisms, facilitated by smart meters, are an important tool in reducing peak

¹ For the avoidance of doubt, a variable energy component in a TOU tariff will not be a pure pass-through of wholesale market costs, given the volatility of NEM pricing. But it will likely reflect, for example the increased costs of hedging against high price events at peak demand times.

² Faruqui, A. (2010b), "The ethics of dynamic pricing", *The Electricity Journal*, 23(6): 13-27.

demand and its associated capital costs. For example, in Queensland, Ergon Energy and Energex are trialling a TOU pricing system where participants are asked to keep their use below a threshold on days of maximum demand.³ Origin Energy has also recently announced a trial of residential energy management systems.⁴ The crucial aspect behind such initiatives is that they require AMI technology in order to be implemented effectively on a widespread scale.

Some of these benefits, as correctly identified in the cost-benefit analysis will be dependent on linking smart meters with Home Area Network (HAN) technology, which will give consumers more information about, and tools to manage, their energy use. There are a number of potential providers of HAN technology and related tools; including networks, retailers and other parties not traditionally associated with electricity supply. Competing customer offers will start to emerge as penetration of smart meters increases, and in this way the market will uncover the best way to give consumers what they want.

Electricity retailers should be allowed to offer pricing packages to suit their customers' needs. This may still include offering flat rates alongside TOU packages but, in this way, the decision to accept TOU pricing will be left to consumers.

Network regulation and regulatory risk

esaa considers it prudent for the Victorian Government to consider the way in which network businesses' revenues are regulated as it undertakes this review. Due to their positions as monopolies, distribution businesses in the NEM are highly regulated; the maximum allowed charges are set by the Australian Energy Regulator (AER) for successive five year periods. The current price control period runs until the end of 2015. The review process for the subsequent five years will begin in 2014. By this time, the AMI rollout will be complete and the network businesses will be able to present business plans that incorporate benefits from the new technology, and the AER will take the expected benefits into account when evaluating these business plans. In this way, future maximum allowed revenues will be lower than if the AMI program had not taken place, and consumers will directly benefit. If the program was halted or delayed, then neither the networks nor the AER would be in a position to take benefits of the program into account in the price determination process.

As part of the mandated roll-out, the Victorian Government passed an Order in Council to set out the basis of cost recovery for the AMI program. Thus, although the process of ensuring that the program is carried out efficiently is still managed by the AER, it is separate from the main regulatory determination. This process includes budget approval by the AER, a cap on the pass-through of costs exceeding the budget and auditing of the actual costs. This process provides a balance of risk-sharing between the networks and consumers. Importantly it is the basis on which each distribution network business has planned its rollout program and entered into contracts to manage its share of the risk. Changing the rules midway through the rollout, as suggested by the Issues Paper, would result in a greater risk for investors and send a damaging signal regarding the stability of policy settings. This policy-

³ <http://www.ergon.com.au/energy-conservation/demand-management/electricity-demand-trials/tariff-trial>

⁴ <http://www.originenergy.com.au/news/article/asxmedia-releases/1299>

created uncertainty could lead investors to demand a greater rate of return to compensate for the increased risk. These costs would ultimately be borne by consumers resulting in higher prices than necessary.

Finally it is worth noting that the charges for one-off services, such as special meter reads and disconnection/reconnection processes have already been reduced for customers at properties where smart meters have already been installed.

Impact on retailers

Electricity retailers also face challenges in adjusting to AMI. They have had to invest in new systems to handle the vast amount of usage data they will regularly receive from customers with smart meters installed. They may also be orienting their business in other ways to the AMI Program, as evidenced by Origin's energy management trial. Cancelling or delaying the program could result in investments made in good faith by retailers being rendered almost worthless. Retailers do not benefit from the regulated returns of network businesses. Any costs incurred by retailers due to delays or cancellations associated with the AMI Program will be passed on through higher prices for consumers.

In relation to the Victorian Government's concern over whether retailers are prepared to offer new packages to consumers, esaa contends that allowing the retail market to decide how and when to introduce new packages and services to complement the AMI rollout is a far more effective approach than government intervention. It may take time for a full range of retail service offerings to emerge, especially given that Victoria is in the early stages of the rollout, but this does not mean that a government-imposed template will deliver better customer outcomes.

Updated cost-benefit analysis

The benefits of AMI range from simple efficiencies such as avoiding the need for routine and special meter reads, to more complex benefits such as a more efficient use of the system reducing the need for costly infrastructure upgrades. Benefits are spread across the electricity system, from networks, to retailers, to consumers. esaa notes that with a regulated network sector and a competitive retail sector, cost reductions at any stage of the supply chain will filter through to consumers in the form of lower prices.

AMI can provide a greater incentive for users to use more energy efficient appliances or to reduce their demand during peak times. At present, efficient users are cross-subsidising those who place the greatest strain on networks at peak times. Smart meters can give households and businesses the tools and information to reduce their bills by adjusting their behaviour. The information that AMI provides to retailers allows a more accurate picture of what their customers' usage profile is, which allows them to manage their energy procurement more efficiently. Distribution networks will be able to identify and respond to faults quicker than with standard meters. Crucially, one of the greatest benefits is one that will be invisible to most consumers: the avoidance of upgrades to the system to cope with increasing peak demand. These costs flow through to consumers via higher service and usage charges. Avoiding the need to upgrade networks to cope with the few days of extreme demand would provide a real benefit to consumers through lower prices than would otherwise occur.

As well as the capital savings, distribution network businesses will also be able to make operational savings from having a greater ability to detect and resolve faults. This could improve reliability in addition to reducing costs.

esaa notes that a comprehensive cost-benefit analysis and demonstration of net benefits is essential to drive the introduction of smart meters into a market and that this exercise has been carried out - more than once – in the Victorian case. The decision to update the cost-benefit analysis provides an opportunity for the Victorian Government to re-evaluate the net benefits of the program. However, any cost-benefit analysis needs to recognise that costs that have been incurred to date are sunk costs. For example, the electricity industry has invested in 'behind-the-scenes' processes to manage the data received from smart meters. This also allows for remote reads, reconnections and disconnections which are vital to the performance of the Program. This investment is placed at risk if the program is cancelled.

Certainly, the cost-benefit analysis will need to acknowledge that some of the benefits of the AMI Program may not be seen for some years. However, simply because they are not immediately visible does not mean that they do not exist and offer real transformative value. In addition, some of the immediate benefits are reliant on broader policy settings, not just the meter being installed. Policies relating to AMI should not overly restrict what can be achieved or prevent the development of new markets. It is important that distributors, retailers and consumers have the opportunity to discover what can be realised with smart meters and learn how to maximise benefits. Delaying or cancelling the program – or even elements of it – will limit the potential for benefits to accrue.

However, considering the AMI program as a standalone project does not allow for full consideration of the benefits that will flow from its contribution, along with other technological changes, to a new model of energy supply and demand. The prevailing physical supply model of a one-way flow of energy from fossil fuel deposits to homes is being disrupted; for example federal and state technology support schemes are resulting in the deployment of intermittent renewable generation embedded in distribution networks.

Widespread embedded intermittent generation places stresses on the grid. Smart grids will help manage these stresses, such as through integration with complementary resources like demand-side management, battery storage, distributed generation and electric vehicles (EVs).

In the smart grid future, digital networks and home area networks will be able to communicate with electric vehicles, using household computers or smartphones as access devices. There is likely to be a process of integration between the energy industry and the communications industry which raises the possibility of new entrants to the sector: the Googles and Microsofts of the world. Google has already partnered with electricity retailers in the US, Germany, and the UK, to offer consumers the possibility of monitoring their energy use online⁵. AMI is the cornerstone of this functionality.

⁵ <http://www.google.com/powermeter/about/index.html>

The advent of electric vehicles could become a significant new source of load on the grid. While it is a big opportunity for the electricity industry, it poses challenges to be managed. If everyone drives their EV home after work and tries to recharge at the same time, that will just exacerbate existing system peaks. However, if charging was 'smarter', such as overnight to flatten generation load, it could have benefits for the electricity system. To unlock this 'smarter' charging potential, the right prices and signals are needed. If not, consumers have no incentive to consider the impact of their decisions on the grid.

Conclusion

The advent of AMI is part of a broader technological and cultural change that the electricity sector is facing. It is hardly surprising that so early on in this shift the benefits are not obvious to customers, but that does not mean that benefits do not exist or that they are not worth pursuing. AMI is the key to the necessary, direct communication links between the consumer, the retailer and networks for a variety of new technologies and products to reduce peak demand, help relieve upward pressure on electricity prices, and enhance consumer choices.

Any questions about our submission should be addressed to Kieran Donoghue, by email to kieran.donoghue@esaa.com.au or by telephone on (03) 9670 0188.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Brad Page', with a stylized flourish at the end.

Brad Page
Chief Executive Officer