



Towards a 'smart grid' – *the roll-out of Advanced Metering Infrastructure*



Audit summary

Background

In a world facing the unknown and emerging challenges of climate change, energy efficiency is growing in importance as a community concern.

To achieve energy efficiency, and hence a corresponding reduction in carbon emissions, consumers and the electricity industry both need to work together to:

- reduce energy demand and waste where appropriate and possible
- promote the efficient use of household appliances, and limit the inefficient use of appliances such as air conditioners and pool filters
- shift consumption patterns to maximise the efficient use of power generating assets and smooth out peak consumption periods, which cause spikes in the cost of electricity and create inefficiencies in the allocation of capital to new generation capacity.

Mindful of these objectives, the government approved the Advanced Metering Infrastructure (AMI) project in February 2006. A large and complex project, it aims to record and measure electricity use in more detail than current meters allow. Between 2009 and 2013 the AMI project will replace accumulation meters in 2.4 million homes and small businesses with smart meters.

The *accumulation meter* is the most common type of electricity meter. It records energy consumption over time. However, industry has been increasingly using more advanced meters such as the *interval meter*, which records energy use over short intervals, typically every half-hour. The *smart meter* is even more advanced. It can communicate with the electricity supplier, enabling the supplier to offer new services to consumers.

The expected benefits of smart meters are to:

- improve consumers' ability to monitor and control their electricity use, potentially allowing for cheaper and more efficient energy use
- reduce the cost to industry of planning and managing power supply, potentially leading to lower retail prices for consumers
- increase retail competition through new services, potentially resulting in a greater choice of suppliers for consumers.

This report examines whether the advice and recommendations provided to government on the roll-out of AMI have been sound. It outlines the background to the project (Part 1), and evaluates:

- the effectiveness of project governance by the administering departments (Part 2)
- the robustness of the economic analysis underpinning the project (Part 3)
- the adequacy of technology risk assessment in dealing with implementation uncertainty (Part 4).

The AMI project is a partnership with the electricity industry. Victorian electricity distribution businesses are responsible for installing smart meters and their infrastructure. The government has amended the electricity regulations so that consumers will directly pay for AMI installation costs.

The former Department of Infrastructure (DOI) administered the AMI project until late 2006 when a 'machinery of government' change transferred administrative responsibility to the Department of Primary Industries (DPI).

Overall conclusions

The AMI project has not used the checks and balances that would ordinarily apply to a major investment directly funded by the state. This highlights a gap in the project's accountability framework.

There have been significant inadequacies in the advice and recommendations provided to government on the roll-out of the AMI project. The advice and supporting analysis lacked depth and presented an incomplete picture of the AMI project in relation to economic merits, consumer impact and project risks.

Given the significant uncertainty about the cost of AMI to both industry and consumers, as well as the nature and scale of the market intervention, the project always warranted much stronger departmental governance and central oversight. DPI as the administering department has an enduring responsibility to provide structured and tight oversight of the project's establishment, planning and implementation activities.

During the implementation phase of the AMI project, DPI only has an observer role on the industry steering committee which oversees implementation of the project. DPI claims that this allows the department to make recommendations and give advice to the minister without a direct conflict of interest, but such a limited role inevitably diminishes DPI's ability to deal effectively and proactively with risks and issues.

Main findings

Project governance

The department's project governance has not been appropriate for the nature and scale of the market intervention the project poses. In particular:

- its advice to government on risk assessment has been inadequate
- the level of community engagement has been inadequate, given the significant effect on consumers
- DPI has engaged with the project in only a limited way as an 'observer' during its implementation phase.

As there were not enough staff assigned by DPI to the project, it has not been able to adequately engage with such a large scale and complex project. This highlights a gap in the department's understanding of its governance and accountability role in a non-budget-funded project.

Economic merits

The cost-benefit study behind the AMI decision was flawed and failed to offer a comprehensive view of the economic case for the project. There are significant unexplained discrepancies between the industry's economic estimates and the studies done in Victoria and at the national level. These discrepancies suggest a high degree of uncertainty about the economic case for the project.

Implementation risks

The AMI project has significant implementation risks that have been underestimated in advice to government. These risks, which relate to technology and relationships with national systems and processes, have started to materialise and are likely to erode the projected net benefits.

The advice to government that led to the AMI decision scarcely considered project risks. The risk management approach was to rely on the electricity industry to address and bear technology risks. However, the regulatory regime does not give the industry enough incentive to manage risks and associated costs that consumers are likely to pay. The project risks are therefore very likely to directly affect consumer prices.

The technology risks were underestimated when the government was recommended to commit to the project. Sufficient resources were not allocated to manage equipment trials. The trials did not offer reasonable assurance that the proposed technologies were viable. However, DPI persisted in advising government to proceed.

The department's lack of adequate risk management comes from its belief that industry is responsible for managing technology risks. However, given the extent to which the department promoted the project, the nature of the regulatory intervention, and the implications for consumers, the department is accountable for effectively managing risks that have the potential to undermine the economic case.

Consumer implications

The cost-benefit analysis is unclear about how stakeholders, particularly consumers, will benefit and who should bear which costs. There is little evidence to show that when the project was designed, the resultant benefits and costs were adequately considered. It is therefore possible that there will be an inequitable, albeit unintended, transfer of economic benefits from consumers to industry.

The regulator recently determined that 'on average, customers will pay \$67.97 more in 2010 for metering services than in 2009, with a further increase of \$8.42 in 2011.' DPI estimated that consumers would pay \$40–50 a year for meter costs. Retailers could also pass their costs on to consumers, with one retailer recently indicating in a public statement that consumers may have to pay an extra \$100–150 each year. In another public report, a consumer advocacy group has estimated that the average annual cost of electricity may rise by \$120–170 due to the implementation of AMI.

If the project's emerging risks delay the installation of smart meters it is likely that consumers will face further cost increases and gain fewer benefits.

Recommendations

Number	Recommendation	Page
	Without delay, DPI should:	
1.	Re-examine the existing governance structure of the AMI project to proactively identify, assess, own and manage the project's strategic risks.	20
2.	Develop, appropriately resource and implement a stakeholder engagement plan with a particular focus on addressing consumer issues arising from the AMI project.	20
3.	Actively engage with the relevant regulator to monitor and oversee the transfer of expected benefits to consumers.	20
4.	Commission a program review by the Gateway Unit of the Department of Treasury and Finance on governance and implementation of the AMI project to date.	20
5.	Re-assess the economic viability of the AMI project by updating the cost-benefit analysis to reflect existing and emerging risks as well as the impact of changes to scope and underlying assumptions.	32
6.	Use the Department of Treasury and Finance's business case development guidelines and other advice to produce an updated cost-benefit analysis.	32
7.	Obtain assurance from Victoria's electricity distributors that their candidate technologies for AMI are capable of achieving the expected functionality and service specification prior to the further installation of these technologies in customer premises.	41
8.	Adopt the Department of Treasury and Finance's risk management guidelines as a basis for monitoring and managing the risks that threaten the economic viability of the AMI project.	41