Realising the Benefits of Smart Meters

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VAGO
Victorian Auditor-General's Office
Auditing in the Public Interest

The Hon. Bruce Atkinson MLC
President
Legislative Council
Parliament House
Melbourne

The Hon. Telmo Languiller MP
Speaker
Legislative Assembly
Parliament House
Melbourne

Dear Presiding Officers

Under the provisions of section 16AB of the *Audit Act 1994*, I transmit my report on the audit *Realising the Benefits of Smart Meters.*

The audit examined whether the Department of Economic Development, Jobs, Transport & Resources (DEDJTR) can demonstrate that the Advanced Metering Infrastructure (AMI) program is delivering expected consumer benefits and is set up to maximise longer-term benefits.

I concluded that, while VAGO's 2009 recommendations have been substantially addressed, these changes have not been sufficient to overcome manifest problems with the program's design—that the control of costs to consumers and their realisation of benefits cannot be directly controlled by the state. Approximately only 80 per cent of original benefits are forecast to be realised, and consumers may experience a higher net cost than the most recent $319 million estimate.

However, significant opportunities to maximise benefits exist and it is the responsibility of DEDJTR to ensure that the maximum value of benefits will be passed on to consumers from the AMI program, who have paid for it.

Yours faithfully

John Doyle MBA FCPA
Auditor-General

16 September 2015

Contents

Auditor-General's comments

John Doyle
Auditor-General

In 2006, the Victorian Government mandated the rollout of smart meters to all households and small businesses across Victoria. Consumers have been paying for this since 2009, not through tax dollars, but through additional charges applied to their electricity bills. When the rollout was announced, the benefits were promoted widely. However, when the government reviewed the program in 2011 it was clear there would be no overall benefit to consumers, but instead a likely cost of $319 million. When the continuation of the rollout was announced at this time it was said to be the 'better option' for Victoria, but it was not made clear that this was based on excluding the costs that consumers had already incurred.

By the end of this year, Victorians will have paid an estimated $2.239 billion in metering charges, which includes the cost of the rollout and connection of smart meters. Worryingly, the Department of Economic Development, Jobs, Transport & Resources does not have a good understanding of the cost of the program, which it does not track. I do not agree with the department's views that it should not report publicly on costs and its assertion that to do so would take on the role of the regulator. Nor do I accept the department's assertion that the costs incurred to date do not warrant monitoring and reporting as these are 'sunk', noting instead that only benefits tracking is what is important. Of course benefits tracking is crucial, but the success or otherwise of the smart meters program cannot be properly scrutinised without an understanding of the costs of achieving the benefits.

Further, none of the arguments raised by the department absolve it from providing full transparency to consumers and government. After all, consumers had no choice in paying for the rollout, but they are surely entitled to clear and transparent reporting of all aspects of the program.

I also found a real risk that the expected benefits will not be achieved. Current forecasts predict consumers will only receive approximately 80 per cent of the benefits identified in the most recent 2011 cost-benefit analysis—provided that all issues and risks are effectively mitigated—and as costs are likely to increase over the life of the program, the final net cost to consumers is also likely to rise above $319 million.

Further, the single largest benefit achieved to date—which accounts for around 40 per cent, or $1.4 billion of the total expected $3.2 billion benefits from smart meters over the life of the program—relates to the avoided costs of accumulation meters for things such as their installation and manual meter reading. These costs are saved as smart meters replace the old accumulation meters, but they do not represent any additional value generated by the program. Furthermore, the overall costs of the smart meters program significantly outweigh these savings.

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The reality of the smart meter rollout is that the state approved a program, many of the costs of which it could not directly control, nor drive many of the benefits ascribed to it. Nevertheless, the rollout is now complete and Victoria has infrastructure in place that might lead to future innovation and benefits to consumers. Government's role must now be to help consumers to get the most out of what they have paid for.

Achieving these benefits relies heavily on the majority of consumers changing behaviour, including by finding a better electricity deal and changing consumption patterns. In this respect, a key role for government is in providing consumers with a better understanding of the benefits that smart meters can provide and encouraging the required behaviour change. Yet despite improvements to consumer education since our 2009 audit, market research conducted in early 2014 found that two-thirds of Victorians do not understand what the benefits provided through smart meters are, and many are still unaware of their ability to help minimise energy bills.

Consumers who do take action will not only benefit directly, but changes in behaviour will also achieve cost savings for electricity distributors and retailers. Over the longer term, these cost savings are expected to flow through to all customers in the form of smaller increases in bills. However, this relies on factors such as retail competition and the regulator passing these savings on. Again, these processes are beyond the direct control of the state and may take many years. Nevertheless, the department must do all it can to ensure that all benefits are passed on to consumers.

I have made a series of recommendations, including to track and report on costs, improve consumer education and facilitate benefits pass-through, which if addressed will maximise the benefits to consumers. Disappointingly, the department has failed to satisfactorily respond to the issues raised by my report. I strongly urge the department to review its position in the interests of all consumers, and to fully address my recommendations. I intend to closely monitor the department's progress in this regard.

Lastly, I note the department has misleadingly suggested that my report exhibits 'systematic pessimism' that is not justified by the evidence. This assertion fails to recognise that my audits must be conducted in accordance with the Australian Auditing and Assurance Standards which require auditors to exercise professional judgement and scepticism in assessing the sufficiency and appropriateness of audit evidence supplied by agencies. The conclusions I have reached in this report reflect such an assessment, on the quality of the evidence supplied by the department.

John Doyle MBA FCPA
Auditor-General

September 2015

Audit summary

Introduction

In 2006, the Victorian Government committed to the Advanced Metering Infrastructure (AMI) program which involved replacing existing electrical metering infrastructure in all Victorian residential and small business premises with digital smart meters by December 2012. At that time, this was expected to involve the rollout of 2.6 million meters to 2.4 million sites. Before the rollout commenced in 2009, the deadline for completion was changed to December 2013.

The 2005 business case anticipated a net incremental benefit of $79 million[1] relative to a 2004 cost-benefit analysis for the rollout of interval meters. Key expected benefits of smart meters were 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 retail offerings to consumers.

In 2009, VAGO released its report, *Towards a 'smart grid'—the roll-out of the Advanced Metering Infrastructure,* which was highly critical of the original business case. It also made a number of recommendations including to improve governance and stakeholder engagement, reassess the economic viability of the smart meter program by updating the cost-benefit analysis (CBA) to reflect existing and emerging risks, and to assess the impact of changes to scope and underlying assumptions.

In 2011, the government reviewed the AMI program and decided to continue to roll out smart meters to all Victorian residential and small business customers by 31 December 2013.

This audit assessed whether the Department of Economic Development, Jobs, Transport & Resources (DEDJTR) has effectively addressed recommendations from VAGO's 2009 audit, and can demonstrate that the AMI program is delivering expected consumer benefits and is set up to maximise longer-term benefits.

[1] in present value terms at 2005 in 2005 dollars

Conclusions

By the end of 2015, Victoria's electricity consumers will have paid an estimated $2.239 billion[2] for metering services, including the rollout and connection of smart meters. The net position of the program has changed significantly since its inception, and there is now expected to be a substantially increased net cost to consumers over the life of the program.

In contrast, while a few benefits have accrued to consumers, benefits realisation is behind schedule and most benefits are yet to be realised. Current estimates suggest that approximately 80 per cent of the expected benefits could be achieved. However, there are significant uncertainties and risks associated with achieving these benefits, which are not within the control of the state.

There is a risk that the AMI program's most recent 2011 estimate of a net cost of $319 million[3] to consumers may worsen as costs are projected to increase and benefits remain decidedly uncertain. Other factors increase this risk even further, such as the move to national competitive retail metering from 2017, which could further diminish the benefits of the AMI program and expose those consumers who choose to have the smart meters installed under the AMI program replaced by other, competitively provided meters to additional costs.

The 2011 CBA is the fourth time that the costs and benefits of the AMI program have been analysed in just 10 years. In each analysis since our 2009 audit the estimated costs have increased and the benefits have diminished. This continual change highlights the serious flaws in the program’s original business case which we identified in our 2009 audit, as well as the unrealistic assumptions around the achievability of the costs and benefits which were beyond the control of the state. DEDJTR has advised that it is now reassessing the expected benefits of the program for a fifth time, as many of the 2011 assumptions have materially changed.

The three departments which have administered the AMI program have taken action to address most of the recommendations from VAGO's 2009 audit. They have strengthened program governance structures, the oversight and management of risks, improved communications with consumers and regulators, and increased the scrutiny of costs to inform regulatory decisions. However, these changes have not been sufficient to overcome the manifest problems with the estimation and control of costs and benefits, and to ensure the realisation of the projected benefits for consumers.

[2] nominal dollars, undiscounted
[3] in present value terms at 2008 in 2011 dollars

By the end of the 31 December 2013 deadline, 92.79 per cent of the installation of smart meters was completed. By June 2014, the installation was 98.62 per cent complete, however, approximately 13.5 per cent of households and small businesses did not have a smart meter that could be remotely read.

Given that consumers have been progressively paying for the program since 2009 and ultimately pay the full costs, DEDJTR must focus now on actions that will accelerate the achievement of any benefits to consumers and avoid any further increase in the net costs of the program.

Findings

Costs will increase

The average residential household has paid around $760[4] since 2009 in metering services, which included the costs associated with installing and maintaining smart meters and related infrastructure and systems. These fees are applied to electricity bills but are not itemised.

Despite departmental action to influence the Australian Energy Regulator's (AER) scrutiny of metering costs, total metering charges imposed on consumers over the period 2009 to 2015 have been approximately $285.7 million[5], or 11.4 per cent, over the distributors' original forecasts. The costs for 2014 and 2015 are forecast to be 88 per cent and 28 per cent over budget respectively due to a delay in the installation of meters.

Costs are forecast to reduce from 2013 to 2023 but increase again sharply from 2024, if the meters are replaced from that time as anticipated by the 2011 CBA. Consequently, there is a risk that the expected net cost to consumers over the life of the program may increase above the most recent estimate of $319 million[6].

Benefits realisation is falling behind schedule

In 2011, the government commissioned a CBA which has become the benchmark against which DEDJTR measures benefits realisation.

Benefits realisation as at 2014 had already fallen behind the 2011 CBA forecast and current projections are that consumers can only expect to achieve approximately 80 per cent of the full benefits to 2028. However, achieving these benefits is subject to many assumptions that have not materialised, and is dependent on the actions of many stakeholders.

[4] nominal dollars, undiscounted
[5] nominal dollars, undiscounted
[6] in present value terms at 2008 in 2011 dollars

The single largest benefits category of the AMI program relates to the avoided cost of replacing and manually reading the old accumulation meters. However, accumulation meter costs have been replaced with smart meter costs that are much higher. While the program has reported $591.99 million[7] in these avoided costs to 2014, which is in line with the 2011 forecast schedule, this does not represent any additional value generated by the AMI Program.

Meanwhile, the other benefits categories, which represent actual added value from the AMI program, are falling well behind schedule. This is due, in part, to the delay in the finalisation of the smart meter rollout, the fact that initial flexible tariffs did not necessarily compare favourably with flat tariffs and a perceived waning interest in flexible pricing. These are:

- benefits associated with the uptake of innovative **tariffs and demand management**—which has achieved only 2.5 per cent of expected benefits to be realised by 2014
- **benefits that come from network operational efficiencies**—which have achieved 49.32 per cent of expected benefits to be realised by 2014.

Benefits realisation by consumers is uncertain

Few of the benefits accrue directly to consumers, and they clearly rely on consumer action to take advantage of these services. For instance, consumers can take up flexible pricing offers that may result in savings on their electricity bills. Similarly, consumers may benefit directly if they move house and take advantage of the cost reduction in de-energising and re-energising power supply, arising from the ability of power companies to now do this remotely using smart meters.

The majority of expected benefits for consumers from the AMI program are cost savings that accrue first to distributors and to retailers that must be passed on to consumers through a chain of action, including regulatory decisions and competitive action. However, the state cannot directly control these processes.

As an example, consumers' reaction to flexible pricing—which provides higher electricity prices at peak times—is assumed to reduce overall peak electricity consumption. This is expected to reduce or defer distributors' need to upgrade electricity networks to meet demand, which results in cost savings for distributors. However, these cost-savings can only be realised by consumers if they are passed on to retailers through regulatory pricing decisions made by the AER. Retailers must then pass these savings on to consumers through competitive pressures. As such, the actual transfer of these types of benefits to consumers is unclear as these actions cannot be fully determined in advance.

[7] All benefits values are expressed in net present value at 2014 in 2011 dollars, unless stated otherwise

Most of the cost savings achieved by distributors from smart meters are yet to flow through to retailers and on to customers. The AER is currently preparing for its next Victorian distribution pricing decision which will take effect from 1 January 2016. This provides an opportunity for cost savings achieved by distributors to be passed on to retailers and then to customers. DEDJTR should be vigorously prosecuting this process with its own rigorous analysis of the distributors' ongoing costs to determine the benefits that should be flowing to retailers and to consumers.

The amount of expected benefits may no longer be valid

The amount of overall benefits from the AMI program as calculated in the 2011 CBA relied on many assumptions being met. For instance, the 2011 CBA estimated that $778 million of benefits associated with the uptake of flexible tariffs and demand management would be realised by consumers over the life of the program to 2028. However, this figure is based on complex assumptions around the rate at which households will take up new pricing offers.

These assumptions are not currently being met. By 2014, the 2011 CBA expected 4 per cent of consumers to have taken up flexible electricity price offers, however, only 0.27 per cent have done so. This is due to a slower than expected smart meter rollout, the moratorium on the introduction of flexible pricing, the fact that initial flexible tariffs did not necessarily compare favourably with flat tariffs and perceived waning interest in flexible pricing. At this rate, it is unclear whether the expected uptake of 15 per cent by 2017 will be achieved. Accelerating the uptake and benefits from flexible price offers relies on retailers providing better value-for-money options compared to the existing flat tariffs, and increasing consumer awareness of the availability and benefits of such offers.

The department is re-evaluating the expected benefits

DEDJTR now acknowledges that some key assumptions underpinning the expected benefits realisation as defined in the 2011 CBA may no longer be valid. It proposes to review these assumptions but remains committed to achieving the targets outlined in the 2011 CBA. This review is again likely to change the value of anticipated benefits through to the end of the program.

We acknowledge that the nature and amount of benefits may change—especially as the technology is rolled out and market participants, policy makers and customers experience and better understand the potential of AMI over time. In this context, it is encouraging that DEDJTR will actively review the expected benefits. However, it is concerning that the fundamental assumptions underpinning the 2011 CBA, which were used to justify the continued rollout of smart meters, have become so uncertain as to require, yet again, a review of future targets for benefits realisation.

Program governance and risk management

DEDJTR has recognised its leadership role with respect to the AMI program and has put in place governance structures to strengthen its oversight and management of program risks.

It has established clear accountabilities and responsibilities to enable it to better identify and manage risks, including establishing the AMI Program Steering Committee, Ministerial Advisory Council, and Program Management Office. DEDJTR has also developed a risk management plan to identify, evaluate and mitigate future risks, which is reviewed regularly by its Program Steering Committee.

DEDJTR has taken action to address program issues. For example, it has provided distributors with an incentive to complete the rollout by requiring them to pay a rebate of $125 to customers at premises where:

- **the distributor had failed to attempt to install a smart meter by 30 June 2014**—this rebate was payable by 31 October 2014
- **the smart meter installed was not functioning as required by 31 March 2015**—this rebate was payable by 30 June 2015.

Six hundred and eighty households have received the first rebate as they do not yet have a smart meter installed, and approximately 90 per cent of eligible account holders received the tranche two rebates. DEDJTR has also been effective in influencing the AER in its scrutiny of distributors' metering costs that are recovered from customers through charges.

Consumer engagement and education

DEDJTR has demonstrated a strong focus on improving communications with consumers, including addressing consumer issues arising from the AMI program. Various evaluations of DEDJTR's communications campaigns have found that they have increased consumer awareness, and consumer use of My Power Planner as a tool to find a better electricity plan and save money.

However, despite the work to date, market research conducted in early 2014 found that two-thirds of Victorians did not understand what the benefits of smart meters were and many were still unaware of the link between their smart meter and saving money on their electricity bills. A very small number of Victorians still had a negative perception of smart meters due to misinformation and a lack of understanding.

DEDJTR needs to improve its communications to further promote the active use of smart meters to inform household energy consumption, and to encourage the uptake of flexible pricing. Consumer action is a key determinant of any future benefits realisation.

Future developments impacting on smart meter benefits

The amount of benefits that are expected to be achieved by the AMI program may be impacted by the introduction of competitive metering and network tariff reform.

National reforms to metering that are expected to be introduced from mid-2017 could mean that smart meters installed under the AMI program may be replaced by other, competitively provided meters, under nationally agreed arrangements. DEDJTR has acknowledged that the removal of distributor exclusivity in Victoria is a risk to the realisation of the benefits of the AMI program. It may also expose consumers to increased costs.

Network tariff reform, enabled by smart meters, is intended to create a fairer cost structure for consumers by removing cross-subsidies that exist in the current cost structure. However, the impact that network tariff reforms will have on different community groups is not yet well understood, and for some consumers network costs could increase.

DEDJTR should focus on developing a customer engagement program to explain the reasons behind these reforms, but also to protect vulnerable consumers from potential adverse impacts. It should also engage with the AER to introduce metering competition in a way that maintains AMI benefits for Victorian consumers.

Future actions to enhance benefits realisation

Despite expecting significant consumer and other benefits when the AMI program commenced in February 2006, the state has few options to influence—and no ability to directly control—costs to consumers and drive many of the benefits.

Nevertheless, DEDJTR has a responsibility to take an active role in implementing the AMI program to contain any further costs and adverse impacts and to maximise and accelerate the available benefits for consumers, who have paid for the rollout and connection of smart meters to date. The recommendations in this report highlight the key areas on which DEDJTR must focus its efforts so as to protect consumers and maximise their benefits realisation.

Public reporting

Reporting on the AMI program has been inadequate. While consumers pay for the costs of the smart meter rollout on the promise of future benefits, there is limited public reporting on the program in DEDJTR's annual report and in the Budget Papers. In particular, there is little clear and transparent knowledge of costs to consumers to date and no public reporting of either the costs or benefits of the program.

What exists does not provide sufficient information for consumers to assess the program's performance in terms of the costs incurred to date and whether benefits have been realised. This reduces transparency and accountability for this program.

Recommendations

Number	Recommendation	Page
That the Department of Economic Development, Jobs, Transport & Resources:		
1.	develops Budget Paper measures that report performance against the objectives of the Advanced Metering Infrastructure program, and publicly reports annually on costs incurred and benefits achieved	39
2.	improves its consumer education to focus on the opportunities to use smart meters to reduce energy consumption, and to take up flexible retail pricing offers, and use other tools, to reduce bills	50
3.	works with distributors and retailers to identify and implement clear systems and processes for monitoring the changes in energy consumption and peak demand	50
4.	works with distributors and retailers to develop and implement systems and processes to more effectively measure and track network benefits to enable these to be passed on to consumers	50
5.	effectively influences the Australian Energy Regulator's: • decisions related to the passing on of network efficiency benefits to consumers in the 2016–2020 distribution price review • annual process for assessing whether excess costs are efficient and prudent and should be passed on to consumers	50
6.	works with relevant stakeholders to analyse the impact of network tariff reform on consumer groups, particularly vulnerable consumers	50
7.	develops a strong and persistent customer engagement program in relation to network tariff reform that: • enables consumers to make informed decisions to realise the potential benefits of more cost-reflective network tariffs and to assist in reducing the load on electricity infrastructure during peak periods • educates vulnerable sectors of society so that they can minimise any unfair disadvantage	50
8.	identifies and implements actions to protect Victorian consumers from additional costs associated with the pending rollout of new competitive metering processes, and ensures that essential Advanced Metering Infrastructure program benefits are preserved	50
9.	in conjunction with industry and the Essential Services Commission, considers options to improve the information available to consumers on electricity bills.	50

Submissions and comments received

We have professionally engaged with the Department of Economic Development, Jobs, Transport & Resources, and the Department of Treasury and Finance throughout the course of the audit. In accordance with section 16(3) of the *Audit Act 1994* we provided a copy of this report, or relevant extracts to those agencies and requested their submissions or comments.

We have considered those views in reaching our audit conclusions and have represented them to the extent relevant and warranted. Their full section 16(3) submissions and comments are included in Appendix B.

1 Background

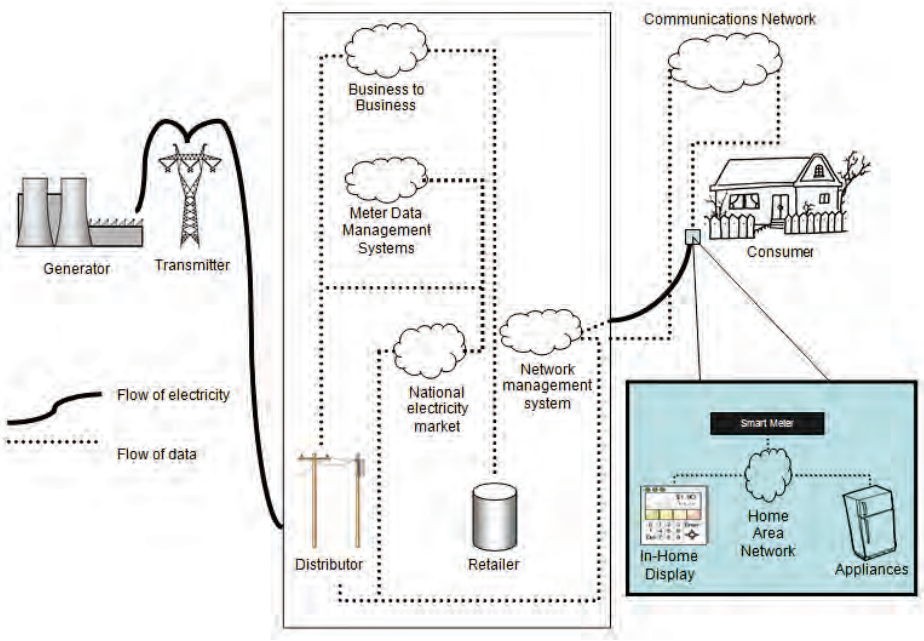
1.1 Introduction

When an electrical appliance is switched on, power is instantly transmitted from a power station to the appliance. Although this occurs instantaneously, a specific sequence of events takes place to ensure the required electricity is delivered.

Key players involved in the supply of electricity are:

- **generators** who produce the electricity in power stations, using either fossil fuels, such as coal or gas, or renewable energy sources, such as wind, water or the sun
- **one transmission company** that owns and operates the high voltage electricity transmission network that transfers electricity from generators to distributors
- **distributors** who own and manage the network of poles and wires that takes electricity to the consumer
- **retailers** who buy electricity from generators through wholesale markets, pay transmission and distribution businesses for the use of their networks to transfer the electricity and then sell the electricity to their customers at different rates.

Figure 1A
How smart meters work



Source: Victorian Auditor-General's Office.

1.1.1 What is an electricity meter?

Electricity meters are used by retailers, distributors and transmission companies to monitor and manage the performance of the network and to identify the amount of electricity used by customers, including small businesses and households for the purposes of billing. They are also used by the Australian Energy Market Operator (AEMO) for the purposes of settling the wholesale electricity market. Figure 1B summarises the differences between common types of electricity meters.

Figure 1B
Types of electricity meters

Accumulation meters—are manually read and measure the accumulated electricity used between meter reads. A small number of accumulation meters are still in use in Victoria.

Interval meters—are manually read and measure electricity use over short intervals, typically every half hour and differentiate consumption at different times of day. This allows electricity companies to offer more innovative tariffs such as where electricity use is charged differently at different times of day. This also allows the wholesale electricity market to be settled based on actual rather than estimated half hourly data.

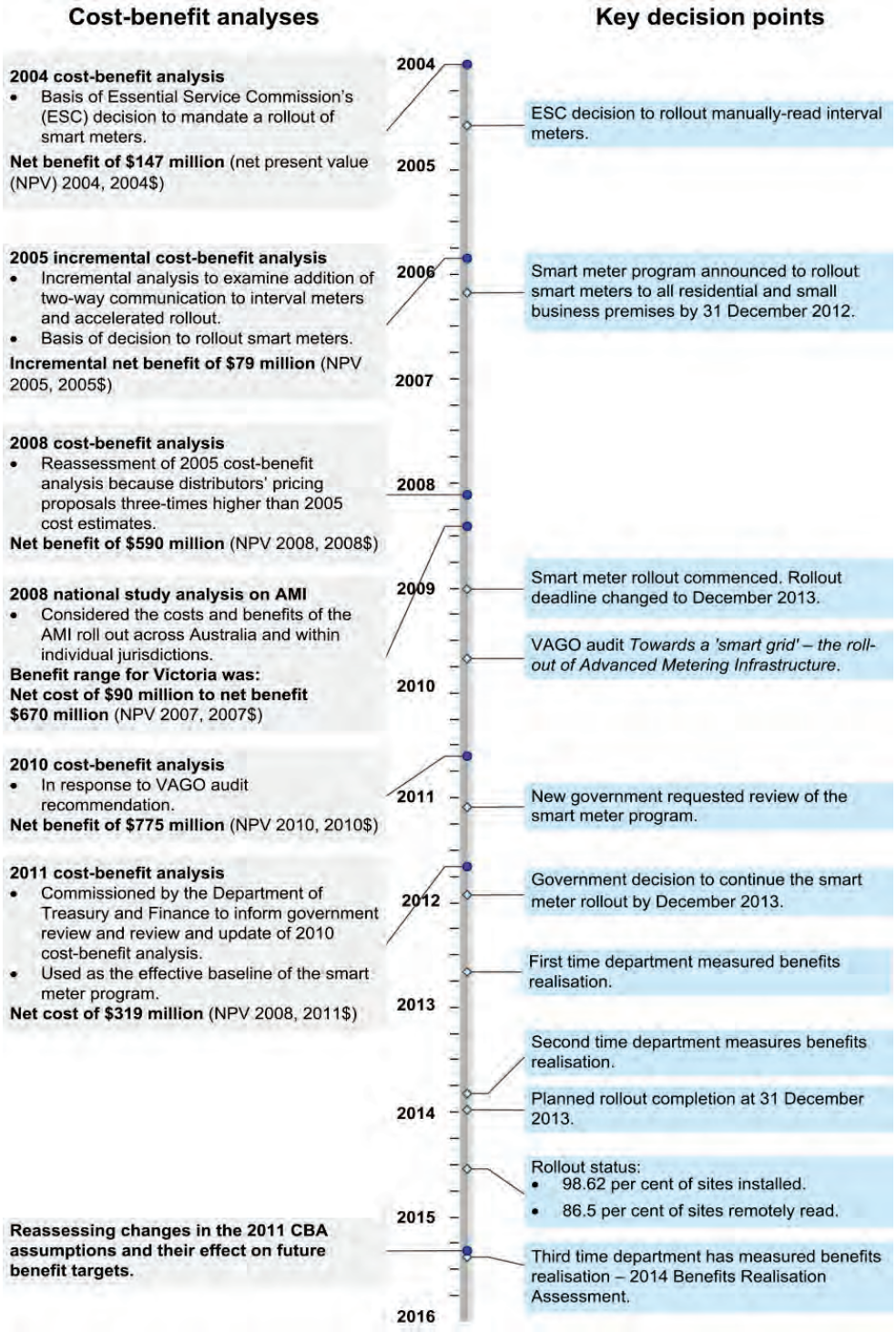
Smart meters—are also interval meters with the key difference of remote communications. They allow for remote meter reading (and eliminate the need for estimated meter reads), remote re-energisation and de-energisation (connection and disconnection) and remote outage and supply quality detection. They also allow for the automated control of appliances, such as a temporary adjustment to the thermostat setting of a connected air conditioner. Information from smart meters provides consumers with better consumption information, giving them more control over how they manage usage, and the ability to compare retail pricing offers and services.

Source: Victorian Auditor-General's Office.

1.1.2 Origins and development of the Advanced Metering Infrastructure program

Figure 1C shows significant decisions and milestones associated with the Advanced Metering Infrastructure (AMI) program and key cost-benefit analyses (CBA) which have informed decision-making.

Figure 1C
Time line of key events of the AMI program



Note: The net benefits from each of these studies cannot be directly compared as assumptions in each CBA are different, in particular the reference year, dollar values, length of time over which the analysis has been undertaken, the discount rate and the number of customers assumed.

Source: Victorian Auditor-General's Office.

2004 decision to mandate the rollout of interval meters

In 2004, prior to the government decision to roll out smart meters under the AMI program, the Essential Services Commission (ESC) mandated the replacement of traditional accumulation meters throughout Victoria with manually-read interval meters. The ESC's decision was based on assessments that:

- market forces alone would fail to deliver a timely rollout of interval meters on a scale sufficient to make meter manufacture, installation and reading economical
- a net economic benefit would arise from the timely, mandatory rollout of interval meters.

In light of developments in metering technology, the then Department of Infrastructure (DPI) commissioned a CBA in 2005 that examined the incremental effect of adding two-way communications to the manually read interval meters and accelerated the rollout compared to the schedule that the ESC mandated for rollout in 2004. The study reviewed various assumptions used in the 2004 CBA but did not re-examine the basis for estimated costs and benefits in the 2004 study. Rather the 2005 CBA took the ESC's rollout decision as the base case.

However, as noted in our 2009 report, *Towards a 'smart grid'—the roll-out of Advanced Metering Infrastructure*, the incremental analysis approach used in the 2005 CBA introduced a number of uncertainties because:

- there was no visibility of the total costs and benefits of the AMI rollout on a consolidated basis—the characteristics of the AMI project were sufficiently different from the 2004 project to warrant a complete, separate review, and not an incremental analysis
- the reliance on the 2004 CBA meant that the validity of the assumptions used in that study were not confirmed against contemporary data.

2006 decision to roll out smart meters under the AMI program

The 2005 CBA underpinned the government's decision to suspend the rollout of interval meters and announce the AMI program, which mandated the rollout of smart meters to all of the 2.4 million residential and small business premises in Victoria at the time. The rollout was to occur over an accelerated period commencing in 2009 and ending in December 2012, later changed to December 2013. Victoria's five electricity distributors were responsible for the rollout and could recover their costs from consumers through a cost-recovery framework. Victoria was the only Australian jurisdiction to mandate a distributor-led rollout of smart meters.

Prior to the installation of smart meters, Victoria's residential and small business electricity consumers were paying ongoing metering service charges for their meters through their electricity bills. From 1 January 2009, these consumers started paying for smart meters through these charges. However, the Department of Economic Development, Jobs, Transport & Resources (DEDJTR) advised that it was only from 1 January 2010 that these metering services charges increased noticeably. This is because charges for 2009 were set on the same basis as the charges set by the ESC from 2006 to 2008 and the number of smart meters rolled out increased significantly from 2010.

The 2005 CBA expected the benefits of the AMI program to include:

- lower electricity costs because consumers would have both the information and the opportunity to better manage their energy use
- greater retail competition through the introduction of new services, such as prices tailored to suit consumers' needs
- more efficient electricity suppliers as a result of the ability to read meters and turn the electricity supply on or off without visiting the premises
- improved service quality through better network management, such as detecting and fixing faults remotely.

Since the 2006 decision, the AMI program has undergone a number of reviews and CBAs that have influenced critical program decisions. A full discussion of the historical detail is covered in our 2009 report.

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

In 2009, VAGO tabled its report *Towards a 'smart grid'—the roll-out of Advanced Metering Infrastructure*. The audit examined the advice and recommendations provided to government on the AMI program.

The report concluded that there were significant inadequacies in the advice and recommendations provided to government and that the CBA around the AMI decision was flawed and failed to offer a comprehensive view of the economic case for the program.

In particular, it questioned the 2005 CBA used to support the AMI program, as this CBA was based on the previously planned interval meter rollout. The characteristics of the AMI program were sufficiently different to warrant a complete, separate review and the consumer impact—including the benefits and costs—and the program risks were not clear.

The report also concluded that DPI needed to provide stronger governance and oversight of the program. DPI had failed to adequately communicate to consumers the purpose of smart meters and there was a need for a greater focus on the associated consumer issues.

The report made eight recommendations including to improve governance and stakeholder engagement, and to reassess the economic viability of the AMI program by updating the CBA to reflect existing and emerging risks, as well as the impact of changes to the scope and underlying assumptions.

In response to our 2009 audit, DPI commissioned reports in 2009 and 2010 to separately assess the costs and the benefits of the program. These reports became the basis of the 2010 CBA. All CBAs up to and including this one showed net benefits from the AMI program.

2011 government review and decision to continue the mandated rollout

After the change in government in late 2010, the new Minister for Energy requested that a full review of the program, including its costs and benefits, be undertaken by the Department of Treasury and Finance (DTF). The review was to:

- determine whether the mandated and accelerated rollout of smart meters by December 2013 to all residential and small business premises was the best option going forward
- respond to concerns about the program raised in the Auditor-General's report
- consider options to maximise and bring forward net benefits to consumers
- identify risks to the program and strategies to address these risks.

At this point in time approximately 700 000 smart meters had been installed. In 2011, DTF commissioned a full CBA that modelled three scenarios, with the following results:

- **total AMI program over 2008 to 28**—expected to result in net costs to customers of $319 million[1]
- **continuing the mandated rollout of smart meters from 2012**—expected to result in net benefits to customers of $713 million[2]—this was on the basis of not including the significant amount of costs already incurred between 2008 and the end of 2011
- **removing the AMI mandate from 2012,** where distributors are most likely to roll out smart meters only for new customers and to replace accumulation meters—expected to result in $343 million[3] net benefits.

This 2011 CBA was the first analysis that predicted a net cost to consumers over the life of the AMI program from 2008 to 28. This significant change was driven by the assessment that AMI costs had increased, and even though some additional benefits had been identified, the total expected benefits had reduced and would be delayed.

The 2011 CBA was the key external report informing the 2011 DTF review and government decision to continue with the AMI program.

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[1] in present value terms at 2008 in 2011 dollars
[2] in present value terms at 2012 in 2011 dollars
[3] in present value terms at 2012 in 2011 dollars

DTF's advice to government recommended that it remove the mandate to complete the rollout on an accelerated time frame to the end of 2013. Instead, it recommended that government allow the electricity distributors to determine the rate at which smart meters are rolled out. Overall, this preferred option was thought to enable similar benefits to be realised as those estimated under a mandated rollout, but for lower total cost. DTF's advice suggested that this option would:

- provide an incentive to distributors to roll out smart meters to those remaining areas where they could provide the greatest value, rather than mandating the rollout to all relevant customers by 31 December 2013
- shift some responsibility and risk for the rollout back to the industry, and increase the acceptance of smart meters
- allow consumers to self-select and request a meter if they did not already have one installed.

However, the Department of Premier and Cabinet (DPC) did not support DTF's preferred option on the grounds that this particular option was not modelled in the 2011 CBA and the rollout would be contingent on the commercial decisions of the distributors. It also thought that:

- this option was inherently uncertain and may involve unidentified and unquantifiable risks
- charges for consumers could not be estimated at the time
- it would be difficult to communicate this option to consumers.

On the basis of the 2011 DTF review and advice from DTF and DPC, government decided to continue with the mandated rollout, scheduled for completion by the end of 2013, but with several changes aimed at bringing forward the benefits and reducing the risk of further cost increases. These changes included reforming program governance, discussed in Section 2.5.1, amending the cost-recovery framework for distributors, discussed in Section 2.4 and implementing initiatives such as subsidising in-home displays, discussed in Section 2.5.2.

Government announcements around continuing the rollout

The 2011 decision to continue with the rollout of smart meters by 31 December 2013 was based on not including the costs that consumers had already incurred to that date. When including all the costs associated with the program from 2008, the 2011 CBA found a net cost to consumers over the life of the program.

The government announced its decision to continue with the mandated rollout from 2012 as the 'better option' for Victoria, stating that 'at this stage of the program's life, the maximum benefit is delivered by continuing the rollout'. The government announcement did not make it clear that this was based on excluding the costs that consumers had already incurred. It also did not mention that continuing the mandated rollout would result in a net cost of $319 million to consumers over the life of the program.

Moratorium on flexible pricing

In its review, DTF also recommended removing the moratorium on flexible pricing that had been in place since March 2010. This moratorium was designed to ensure that retailers did not mass-market tariffs until a price comparator was in place for consumers, and until retail tariffs were aligned with distribution tariffs.

DTF recommended its removal because:

- it contributed to retailers not offering time-of-use tariffs to consumers on a mass scale
- time-of-use tariffs are essential to realising the full benefits associated with smart meters
- it contributed to the negative public perception surrounding time-of-use tariffs and other innovative tariff structures.

However the government agreed to extend the moratorium on time-of-use tariffs to the end of 2012. This was to ensure that any future flexible tariffs be voluntary and that flat tariffs continue to be available, and that any future introduction of flexible tariffs be supported by appropriate consumer protections. Effectively, this policy decision delayed the benefits to consumers associated with more innovative and cost effective tariff structures.

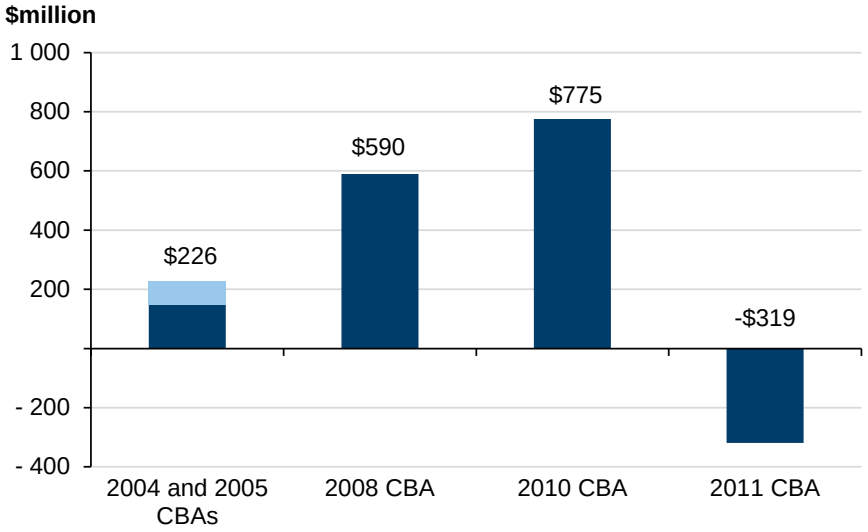
2014 Public Accounts and Estimates Committee Review

A 2014 *Review of the Auditor-General's Reports 2009–2011* by the Public Accounts and Estimates Committee (PAEC) found that, in the main, the then Department of State Development, Business and Innovation (DSDBI) had implemented the recommendations from VAGO's 2009 audit report. PAEC noted 'fundamental changes in how the department has approached' the program, noting that it 'appears that these changes have been lasting, with the department continuing to take an active leadership role in the AMI project and placing a focus on realising the consumer benefits'. PAEC urged 'DSDBI to remain vigilant about these issues to ensure consumer interests continue to be served'.

1.2 Expected costs and benefits

A high degree of uncertainty existed around the economic case for the program. As shown in Figure 1D, the net position of the program has changed significantly since its inception, and the fact that there is now expected to be a substantial net cost to consumers over the life of the program substantiates the flaws identified in our 2009 report.

Figure 1D
Results of cost-benefit analyses showing the net benefits and costs of the AMI program 2008 to 28



Note: Light blue shows the 2005 net result, which is $79 million and incremental to the 2004 net benefit, which is $147 million. The net benefits from each of these studies cannot be directly compared as the assumptions in each CBA are different, in particular the reference year, dollar values, length of time over which the analysis has been undertaken, the discount rate and the number of customers assumed.

Source: Victorian Auditor-General's Office.

1.3 National move to competitive metering

In Victoria, electricity distributors are currently solely responsible for providing metering and related services to residential customers. However, the Australian Energy Market Commission (AEMC) is currently considering a rule change proposal to introduce competition in smart meter services to small customers.

This would mean that any person, including distributors, retailers or third parties, could install and maintain smart meters and could collect and process metering data, provided that person is registered and accredited with the AEMO.

Under the new arrangements, which are unlikely to commence before July 2017:

- smart meters installed under the AMI program could be replaced by other, competitively provided meters
- a national smart meter functionality specification and a shared market protocol will be developed by the AEMO, however, jurisdictions may choose to adopt only part of this specification—Victoria's policy position is currently being considered.

DEDJTR has acknowledged that the removal of distributor exclusivity in Victoria is a risk to the realisation of the benefits of the AMI program. It may also expose consumers to increased costs, in particular those who choose to have the smart meters installed under the AMI program replaced by other, competitively provided meters. This is further discussed in Part 4.

1.4 Electricity prices in Victoria

Victoria is part of the National Electricity Market and associated regulatory system, and prices for the transmission and distribution of electricity are approved by a national regulator—the Australian Energy Regulator (AER).

Customers' electricity bills are comprised of a number of different costs, including:

- **a consumption cost**—which includes:
  - the variable component of the network tariff—which is made up of distributors' charges for the use of their poles and wires and transmission lines to get electricity to household and commercial customers in their distribution zone as approved by the AER
  - the retailer's energy cost purchased from the wholesale market
- **a supply charge—**which includes:
  - the fixed component of the network tariff
  - a metering fee—the cost of installing, operating and maintaining electricity meters—since 2009, this fee has covered the metering costs associated with the rollout and connection of smart meters under the AMI program.

The amounts charged to customers for the network tariff and metering fee are not individually shown on electricity bills.

Consumption costs

Since 2002, Victorian small businesses and households can choose their electricity supplier from 20 retailers currently selling electricity in Victoria.

Victoria removed the regulation of retail electricity prices in 2009. This means that retail businesses can charge whatever prices they choose, subject to competitive pressure. Retailers supply energy under:

- **standing contracts**—where customers can arrange for electricity connection on the retailer's standard terms, in which prices for are set by retailers
- **market contracts**—where customers choose from a number of market retail contracts with different prices, incentives and other terms and conditions—customers can shop around for the contract that suits their needs and must give explicit informed consent before taking up an offer.

Electricity retailers offer three common types of tariffs:

- **Flat rate**—this is the most common type for residential consumers. The same rate is charged for electricity consumed at any time of the day or night.
- **Time-of-use**—this is where a different price is charged according to when the electricity is used and usually involves peak and off-peak pricing, which means users are charged less for electricity during 'off-peak' or low demand periods and a higher rate for electricity used during high demand or 'peak' hours.
- **Flexible tariffs**—this is an extended time-of-use tariff, with peak, shoulder and off-peak rates.

The AER reported that approximately 15 per cent of Victorian households are on standing contracts, the price of which rose by 5 to 12 per cent in 2013 across the state's five distribution network areas, following increases of 20 to 25 per cent in 2012. As retail prices are unregulated, limited information is available on the reasons for these increases. However, market contracts in Victoria discount bills on average by between 16 and 19 per cent. DEDJTR asserted that this information does not reflect the price decreases that have occurred since the removal of the carbon tax and that some market offers can discount bills by approximately 30 per cent if prompt payment is made.

The ESC reported that retailer margins on standing contract tariffs Victoria have increased by 15 per cent since the removal of retail price regulation. This means increased profits for retailers, and increased bills for customers.

Network tariffs

According to the AER, network tariffs represent around 40 per cent of the total cost of supplying electricity to residential customers in Victoria, since it approved increases in network tariffs in 2015.

The AER estimates that this led to increases in electricity bills of about 4 per cent on average in 2015, however, the exact amount charged also depends on where a customer lives. All else being equal, the AER estimates that for a household with an average annual bill of around $2 100, using a single flat rate, the new network tariffs would mean an annual increase of around $53 for people living in the south east region and around $144 for those living in the outer north east region. This includes the recent impact of smart meter charges. DEDJTR asserted that network tariffs now represent a smaller proportion of the total cost, however, it did not provide any evidence to support its claim.

Metering fees

Metering fees are applied to consumers' electricity bills and have surpassed the original cost estimates for the rollout and installation of smart meters. This issue is discussed in Part 3.

1.5 Roles and responsibilities

1.5.1 Department of Economic Development, Jobs, Transport & Resources

Since the 2015 machinery-of-government changes, DEDJTR is responsible for managing and overseeing the AMI program. Its governance arrangements and key activities are discussed in Part 2. Previously, the AMI program was administered by the former DSDBI.

The AMI program was provided funding of $25 million from 2012–13 to 2015–16 to implement the government's decision to continue the accelerated rollout of smart meters, and to make significant changes to the AMI program to reduce the risk of further cost increases and bring forward benefits for consumers. The specific goals of the program team are to:

- inform and clarify the government's policy position on a range of critical energy reforms, such arrangements for a flexible pricing environment and any consumer protections that may be required around flexible pricing
- implement a robust governance structure that provides the leadership, direction and accountability essential to the timely achievement of AMI program benefits
- engage with and deliver reliable information to consumers about the nature, impacts and benefits of the changes being enabled by smart metering.

1.5.2 Department of Treasury and Finance

DTF provides economic, financial and resource management advice to help the government deliver its policies. It oversaw the 2011 review of the AMI program, and commissioned the 2011 CBA. It also manages the Gateway Review Process, which provides independent scrutiny to projects and programs at key decision points and is aimed at providing assurance that projects can proceed successfully to the next stage.

The AMI program has been subject to three Gateway Reviews.

1.5.3 Essential Services Commission

The ESC is the independent regulator of the retail energy industry in Victoria. It licenses the distribution and sale of energy in Victoria and ensures that licensees comply with its codes and guidelines. However, its role does not extend to regulating retail electricity prices given there is a competitive market for the sale of electricity in Victoria.

Prior to 1 January 2009, the ESC was also responsible for the economic regulation of Victorian electricity distribution networks, including metering services. However, responsibility for this transferred to the AER under the National Electricity Rules.

1.5.4 Australian Energy Market Commission

Victorian is part of the National Electricity Market which is underpinned by the National Electricity Rules. These rules are made and amended by the AEMC and:

- govern the operation of the National Electricity Market—the competitive wholesale electricity market and associated national electricity system
- govern the economic regulation of the services provided by monopoly transmission and distribution networks
- facilitate the provision of services to retail customers.

The AEMC conducts independent reviews and provides advice to governments on the development of electricity markets. In both of these functions, it is required by law to have regard to the National Electricity Objective, which is to promote efficient investment in, and the efficient operation and use of, electricity services for the long-term interests of electricity consumers. It considers the price, quality, safety, reliability, and security of supply of electricity, as well as the reliability, safety and security of the national electricity system.

1.5.5 Australian Energy Regulator

In Victoria there are five electricity distributors that are for-profit businesses, each responsible for one geographic zone. As this creates a 'natural monopoly', there is a need for regulation to determine the charges that distributors can charge retailers, who are not restricted by geographic zones.

The AER is responsible for the economic regulation of electricity transmission and distribution networks across the National Electricity Market, as well as monitoring and enforcing compliance with the National Electricity Rules. Its functions, which mostly relate to energy markets in eastern and southern Australia, include:

- determining the revenues to be earned by network providers and approving the prices charged for using energy networks—electricity poles and wires and gas pipelines—to transport energy to customers
- monitoring wholesale electricity and gas markets to ensure suppliers comply with the legislation and rules, and taking enforcement action where necessary
- publishing information on energy markets, including the annual *State of the energy market* report as well as more detailed market and compliance reporting, to assist participants and the wider community
- assisting the Australian Competition and Consumer Commission with energy-related issues arising under the *Competition and Consumer Act 2010*, including enforcement, mergers and authorisations.

1.5.6 Australian Energy Market Operator

The AEMO is responsible for settling the wholesale electricity market on a half hourly basis. That is, it determines how much each electricity retailer pays for energy and how much each generator receives for energy supplied. The market is settled based on half hourly meter reads, where these are available (interval or smart meters are installed), and estimates of the half hourly meter reads, where these are not available (accumulated meters are installed).

1.6 Audit objective and scope

This audit examined the extent to which deficiencies in the AMI program have been addressed and whether benefits for consumers are being realised. It assessed whether DEDJTR:

- has effectively addressed recommendations from VAGO's *Towards a 'smart grid'—the roll-out of Advanced Metering Infrastructure* report
- can demonstrate that the AMI program is delivering expected consumer benefits and is set up to maximise longer-term benefits.

DEDJTR was the primary focus of the audit as it has responsibility for delivery of the AMI program. The audit also included DTF as it commissioned the 2011 review of the program and has undertaken several Gateway Reviews.

1.7 Audit method and cost

The method for the audit included:

- desktop research and interviews with relevant departmental and agency staff
- examination of relevant policy and procedure documents
- review of key studies, reports and analyses that have informed the AMI program, including PAEC hearings, testimony and reports, and DTF Gateway Reviews
- document and file examination of other relevant evidence held by departments.

All benefits' values are expressed in net present value at 2014 in 2011 dollars, unless stated otherwise.

The audit was performed in accordance with the Australian Auditing and Assurance Standards. Pursuant to section 20(3) of the *Audit Act 1994*, unless otherwise indicated any persons named in this report are not the subject of adverse comment or opinion.

The cost of the audit was $465 000.

1.8 Structure of the report

The report is structured as follows:

- Part 2 examines the current status of the AMI program, including the implementation of VAGO's 2009 audit recommendations
- Part 3 examines the benefits realised by the AMI program to date
- Part 4 examines opportunities to maximise the benefits of the AMI program.

2 Status of the rollout and AMI program improvements

At a glance

Background

The Advanced Metering Infrastructure (AMI) program mandated distributors to roll out smart meters to all small business and residential customers by the end of December 2013. It also set up a framework for distributors to recover their costs from consumers through electricity bills. VAGO's 2009 audit found significant deficiencies in the AMI program in relation to governance, risk management, consumer education and engagement with the relevant regulator for the purpose of monitoring and overseeing the transfer of expected benefits to consumers.

Conclusion

Despite the installation being 92.79 per cent complete at the end of December 2013, even now not all installed smart meters are fully functioning. The Department of Economic Development, Jobs, Transport & Resources (DEDJTR) can demonstrate that it has undertaken actions that address most of VAGO's 2009 recommendations, however, the state has few policy levers or any ability to directly control costs and drive any of the consumer benefits. Consumers are yet to see the benefits from smart meters flow through from electricity distribution businesses.

Findings

- By 31 December 2013, 92.79 per cent of smart meters had been installed but only 85.9 per cent were being remotely read. By June 2014, this increased to 98.62 per cent of smart meters installed, but still 13.5 per cent of sites are not being remotely read.
- DEDJTR has improved governance arrangements to better manage risks, and has required distributors to pay a rebate to customers who did not have fully functioning smart meters installed by 30 March 2015.
- Communications with consumers and regulators have improved, but the uptake of flexible tariffs is low.
- DEDJTR cannot directly control the rollout costs that are passed on to consumers, although it has taken action to increase the scrutiny of these costs.
- DEDJTR needs to strongly engage the regulator to ensure that network efficiency benefits are passed on to consumers.

2.1 Introduction

In 2006, the Advanced Metering Infrastructure (AMI) program was approved. It aimed to replace accumulation meters in Victorian homes and small businesses with smart meters between 2009 and 2013.

In 2009, VAGO tabled the report *Towards a 'smart grid'—the roll-out of Advanced Metering Infrastructure.* The report concluded that there were significant inadequacies in the advice and recommendations provided to government on the rollout of the AMI program. The report made eight recommendations that focused on updating the program's costs and benefits and improving governance, risk management and stakeholder engagement. This report is discussed in more detail in Section 1.1.2.

2.2 Conclusion

The Department of Economic Development, Jobs, Transport & Resources (DEDJTR) has taken action to address most of the recommendations from VAGO's 2009 audit, with the exception of Recommendation 3—engaging with regulators to monitor and oversee the transfer of expected benefits to consumers—which has been partially addressed.

Since the program reset in 2011, DEDJTR has taken on a greater leadership role and has put in place governance structures to strengthen its oversight and management of program risks. It has also improved communications and has taken action to address delays to the smart meter rollout and increase the scrutiny of costs.

However, despite considerable improvement in the relevant program areas, significant challenges to consumers' understanding of the benefit of smart meters remain. Similarly, while DEDJTR has had preliminary discussions with the Australian Energy Regulator (AER) and is preparing to engage further with respect to passing on network benefits to consumers, it is not clear whether this will be successful. DEDJTR needs to strongly influence this process with its own rigorous analysis of the distributors' ongoing costs and determine the benefits that should be flowing to retailers and ultimately to consumers.

2.3 Status of the rollout

The objective of the rollout was to have a smart meter installed at all residential and small business premises by 31 December 2013. This equated to approximately 2.4 million homes and small businesses at the time of the 2006 decision, however, due primarily to population increases and development, that number has increased and now stands at approximately 2.67 million sites. As some sites may have two meters, the number of total meters installed by March 2015 is reported to be 2.79 million.

The full status of the smart meter rollout is outlined in Figure 2A.

Figure 2A
Status of smart meter rollout

Category	As at 31 December 2013		As at 30 June 2014	
	Number	Percentage of target	Number	Percentage of target
Total number of target sites visited	**2 552 132**	**95.75%**	**2 831 255**	**99.98%**
Total number of target sites with installed smart meter	**2 473 441**	**92.79%**	**2 792 660**	**98.62%**
• Total number of target sites with installed meters remotely delivering data	2 124 685	85.90 %	2 415 650	86.50%
Total number of target sites with issues	**78 691**	**2.95%**	**38 595**	**1.36 %**
• Customer refused access/installation	13 829	0.52%	12 238	0.43%
• Access issue prevents installation (i.e. locked gate)	35 440	1.33%	26 213	0.93%
• Other	29 422	1.10%	144	0.01%
Total sites not yet visited	**113 381**	**4.25%**	**425**	**0.02%**
Total number of sites (target)	**2 665 513**		**2 831 680**	

Source: Victorian Auditor-General's Office using DEDJTR's analysis.

By the end of the 31 December 2013 deadline, 92.79 per cent of the rollout target was completed, with 2.47 million households and small businesses having had smart meters installed. However, only 2.12 million, or 85.9 per cent of those sites, were being remotely read. By 30 June 2014, the number of households and small businesses with installed meters increased to 2.79 million, however, still only 86.5 per cent of those sites were being remotely read.

The lower than expected percentage of remote meter reading is mainly attributable to one distributor that has experienced technology and communications failures which prevents 270 000 meters from being remotely read. These failures relate to its choice of technology and have affected rollout timing and benefits realisation, as well as creating the risk that its customers pay for these failures. DEDJTR continues to investigate and closely monitor developments, as described in Section 2.5.3.

The outstanding installations of smart meter infrastructure across Victoria are a combination of:

- sites where the distributor had failed to attempt to install a smart meter
- sites where the smart meter installed was not functioning as required
- sites where the customer refused the smart meter
- non-economic sites where access to remote communications is not available at economic cost, such in remote locations or in concrete basements.

2.3.1 Actions to address delays to the rollout

Approximately 7 per cent of sites did not have a smart meter installed by 31 December 2013. The key reasons for this were:

- the distributor had not yet attempted to install a smart meter
- the customer at the premises had actively refused the installation of a smart meter for health, privacy or other concerns
- access issues, such as a locked gate or an aggressive dog prevented installation
- other issues, such as defects or technical issues.

DEDJTR acknowledges that delays in smart meter installations, and in ensuring that installed meters are able to remotely read, defers the realisation of benefits. These delays also mean that distributors have had to operate dual meter reading services for smart meters and accumulation meters in some areas, resulting in lost benefits.

However, the government took action in 2014 to address delays in the rollout by implementing changes to the regulatory regime which creates financial incentives for distributors and customers to install remaining meters.

Penalties for not completing the rollout

Government introduced regulations to require distributors to pay a rebate of $125 to customers at premises where:

- the distributor had failed to attempt to install a smart meter by 30 June 2014—this rebate was payable by 31 October 2014
- the smart meter installed was not functioning as required by 31 March 2015—this rebate was payable by 30 June 2015.

The rebate is an incentive to distributors to complete the rollout, so that all premises have a smart meter in place by 30 June 2014, with the exception of those premises where a distributor has been unable to install a smart meter for reasons beyond its control. It also seeks to compensate those customers who do not have a smart meter, or have a smart meter that is not functioning as required, but who have paid the metering fee through their electricity bill. Customers who refused the installation of a smart meter are not entitled to this rebate. Distributors are prevented from recovering the costs of this rebate through general metering or network charges.

Distributors must report to the Minister for Energy and Resources and the Essential Services Commission (ESC) on the number of eligible households and amount of rebate paid. On 30 November 2014, distributors reported that 680 households were eligible for the first tranche of rebates and received payments by 31 October 2014. As at 30 June 2015, approximately 90 per cent of eligible account holders received the tranche two rebates.

Addressing community concerns and encouraging smart meter acceptance

The delay in completing the smart meter rollout was also impacted by the active refusal of customers, based on concerns relating to health or for other reasons.

DEDJTR has sought to address the specific community concerns that were contributing to refusals. It commissioned several reports, including a study into the health impacts of electromagnetic emissions from smart meters, and found that their emissions are well below the established exposure limits.

Introducing manual meter reading fees

Since April 2015, the government has also allowed distributors to charge customers who refuse a smart meter a manual meter reading fee, which is approved by the AER.

This has the dual purpose of discouraging smart meter refusal and ensuring that at least a portion of the costs associated with maintaining separate systems for manual meter reads are borne by these customers.

2.4 Increasing scrutiny of distributors' costs

The smart meter rollout began in 2009 and metering costs associated with the rollout and connection of smart meters have been paid upfront by consumers since 2009. These costs have been applied annually to Victorian electricity bills since that time. However, as costs are managed by distributors and approved or rejected by the AER, DEDJTR has no direct influence over costs.

Under the framework, budgets for the AMI rollout are established by the distributors and agreed with the AER at the beginning of the budget period. Annual charges are then determined based on a combination of forecast and actual expenditure verified with the AER.

This process requires distributors to provide an initial budget to the regulator, which the regulator must approve, unless it can establish that the expenditure is for activities that are out of scope or are not prudent. Our 2009 audit noted two important issues arising from this process:

- Distributors were allowed to claim up to 20 per cent of costs above budgeted expenditure for the 2009–2011 period and 10 per cent for the next budget period, 2012–2015, without the need to justify the overspend. This reduced the incentive for distributors to minimise costs.
- The AER faced a substantial challenge in effectively examining the prudence of expenditure, even when the actual costs exceeded the budgeted cost by 20 per cent, due to the inherent technical complexity and risks involved in the implementation of the AMI program.

A key finding of the 2009 audit was that there had been little analysis to understand the potential risks of following this approach—such as the risk that consumers will incur higher than expected costs, arising from cost overruns of 20 per cent, before the AER is able to investigate the prudence of any expenditure above the approved budget.

Since our 2009 audit, DEDJTR has amended the cost-recovery framework to introduce more cost scrutiny and has engaged directly with the AER. This action has been effective to:

- grant the AER greater guidance in assessing the prudence and efficiency of excess expenditure
- give the AER more time to assess the distributor overspends
- remove distributors' 'as of right' ability to recover expenditure up to 10 per cent above budget without the need to justify the overspend—this means that, for the period 2012–15, distributors have been required to justify any expenditure incurred in excess of budget as prudent and efficient, however, it is noted that the excess expenditure for the 2009–2011 period was 6 per cent, significantly below the 20 per cent threshold that applied for that period.

In addition, DEDJTR also actively seeks to influence the outcome of the AER's annual metering cost reviews, in which the AER decides whether distributors can recover costs above their budgeted expenditure.

Despite departmental action, consumers have already paid an estimated $2.239 billion[1] in metering charges, including the rollout and connection of smart meters, and this is likely to increase further. This is discussed in Section 3.3.

2.5 Addressing the 2009 recommendations

Our 2009 VAGO audit made a number of recommendations aimed at addressing the key deficiencies identified in the AMI program. Figure 2B summarises our assessment of the effectiveness of DEDJTR's actions in response to these recommendations.

Figure 2B
DEDJTR response to VAGO's 2009 recommendations

No.	Recommendation	Addressed
1	Re-examine the existing governance structure of the AMI project to proactively identify, assess, own and manage the project's strategic risks.	✓
2	Develop, appropriately resource and implement a stakeholder engagement plan with a particular focus on addressing consumer issues arising from the AMI project.	✓
3	Actively engage with the relevant regulator to monitor and oversee the transfer of expected benefits to consumers.	**Partly**
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	✓
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.	✓
6	Use the Department of Treasury and Finance's business case development guidelines and other advice to produce an updated cost-benefit analysis.	✓

[1] nominal dollars, undiscounted.

Figure 2B
DEDJTR response to VAGO's 2009 recommendations – *continued*

No.	Recommendation	Addressed
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.	✓
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.	✓

Source: Victorian Auditor-General's Office.

Actions against these recommendations are discussed further in the following sections.

2.5.1 Governance and risk management

VAGO's 2009 audit found that the then Department of Primary Industries' (DPI) program governance was not appropriate for the nature and scale of the market intervention the program posed. In particular, it found that:

- DPI engaged with the program in only a limited way as an 'observer' during its implementation phase
- it had not been able to adequately engage with such a large scale and complex program
- there was a gap in DPI's understanding of its governance and accountability role in a non-budget-funded program.

It also identified inadequate management of program risks by DPI, which were linked directly to the governance model and risk transfer approach.

Recommendations 1 and 8 required DPI to review the existing governance structure of the AMI program to identify, assess, own and manage the program's strategic risks.

In 2011, following the Department of Treasury and Finance's (DTF) review of the AMI program, the government agreed to continue the mandated rollout of AMI but with significant changes. These aimed to 'reduce the risk of further cost increases and to bring forward tangible benefits for customers', including by immediately reforming the governance of the AMI program in accordance with our recommendations.

Since the 2009 audit, the former DPI and subsequently the former Department of State Development, Business and Innovation (DSDBI) made significant changes to the overall governance structure with clear accountabilities and responsibilities for particular aspects of the program. In particular, the following elements were established:

- **AMI Program Steering Committee**—responsible for leading the effective development and implementation of the AMI program. In particular, it is responsible for overseeing program risks, providing strategic policy advice to the Minister for Energy and Resources and ensuring that benefits and outcomes are realised.

- **Ministerial Advisory Council**—responsible for providing advice on the implementation of smart meters and the realisation of their benefits.
- **Program Management Office**—responsible for reporting on progress and issues related to the program, including undertaking annual assessment of the benefits realised and identifying risks to the realisation of future benefits.

The former DSDBI also developed a Risk Management Plan that is reviewed at its Program Steering Committee meetings, to identify and evaluate future risks and put in place plans to mitigate them.

An example of how DEDJTR is monitoring the program's risks can be seen in its management of technology risks through its continued oversight of the delay to the smart meter rollout caused by one distributors' significant communications and other system issues. This is outlined in Section 2.5.3.

2.5.2 Improving consumer engagement and education

Our 2009 audit found that there was a lack of communication with consumers about the purpose of smart meters. Ensuring that consumers understand smart meters and how they can be used to derive benefits is fundamental to ensuring that benefits are maximised.

Recommendation 2 of the 2009 audit required DPI to implement a stakeholder engagement plan with a particular focus on addressing consumer issues. The critical role of consumer education was also identified as a key issue in the 2011 cost-benefit analysis (CBA), the 2011 DTF review of the AMI program, and the 2012 government decision to continue the mandated rollout of smart meter infrastructure.

Since the 2009 audit, DEDJTR has demonstrated a strong focus on improving communications, including by establishing:

- The Switch On website and My Power Planner tool to provide practical tips to manage energy consumption and provide independent comparisons of different retail deals for customers.
- The Energy Information Fund, which provides grants to consumer organisations to adapt information from mainstream campaigns about the electricity market and flexible pricing for specific groups. These include hard-to-reach consumers across Victoria, such as seniors, people with a disability, and culturally and linguistically diverse audiences. In total, 15 community organisations have been provided with grants totalling around $870 000 since the program was established in 2013. An evaluation of the Energy Information Fund will occur in early 2016.
- The inclusion of in-home displays in the Energy Saver Incentive scheme. The scheme aims, among other things, to make energy efficiency improvements more affordable and thereby contribute to the reduction of greenhouse gases. In 2009, under the scheme, the cost of a basic in-home display, which allows consumers to access information about their electricity use, is effectively reduced from $60–$100 to $10–$50 through the scheme. As at 30 June 2014, 17 253 in-home displays had been installed under the Victorian Energy Efficiency Target scheme.

Despite the concerted effort to improve consumer education, market research conducted in early 2014 to gather information on perceptions and awareness of the AMI program made the following observations:

- two-thirds of Victorians do not understand what the benefits of smart meters are
- many are still unaware of the link between their smart meter and saving money on their electricity bills
- there still exists a very small number of Victorians—less than one in 10—who have a negative perception of smart meters due to misinformation and a lack of understanding.

DEDJTR has since developed the *AMI Communications and Engagement Strategy 2014–16*, which seeks to address the issues identified by the market research. It also incorporates lessons learned from an evaluation of the 2013 Switch On/Flexible Pricing campaign, which provided recommendations to increase market penetration and raise public awareness of the potential for smart meters to help save money on energy bills. The strategy is complemented by the *AMI Stakeholder Engagement Strategy 2014–16*, which is supported by a number of plans that address specific engagement strategies for hard to reach community groups, such as seniors, people with a disability and those for whom English is not their primary language.

DEDJTR acknowledges that future communication activities may need to be refined to address misinformation that is still evident in the market and to better promote the uptake of new tariffs and products. A large proportion of expected consumer benefits are reliant on consumers taking action, however, the uptake of flexible pricing offers remains much lower than anticipated in the 2011 CBA. This is discussed further in Parts 3 and 4.

2.5.3 Other recommendations

Engagement with regulators to oversee the transfer of benefits

Recommendation 3 was to actively engage with the relevant regulator to monitor and oversee the transfer of expected benefits to consumers.

DEDJTR regularly engages with the AER and ESC, including through the Ministerial Advisory Council, in relation to the AMI program and national developments. It also engages with the Australian Energy Market Commission with regard to the transition to national competitive metering and with the AER in relation to increasing the scrutiny of AMI costs incurred by distributors and passed on to consumers.

DEDJTR has also engaged with the regulator in relation to the realisation of AMI benefits for customers through direct meetings, formal consultation processes, and through such forums as the AMI Ministerial Advisory Council. However, a key process for passing the network efficiency benefits of smart meters on to consumers is the Electricity Distribution Price Review (EDPR) for the 2016–20 period. This provides an opportunity to pass on the efficiencies that distributors have captured during the 2011–15 regulatory period to customers from 2016 onwards.

DEDJTR advised it intends to make comprehensive representations to the AER throughout this EDPR process, including to ensure that the AER considers the network efficiency benefits enabled by smart meters and that these are passed on to customers.

DEDJTR is aware of the risk of the distributors understating the operating benefits of AMI metering. It procured expert advice to assist with the examination of distributors' proposals and to inform its formal submissions to the AER Issues Paper and Draft Determination. The 2014 Benefits Realisation Assessment expected benefits of $218.94 million[2] to be passed on to consumers.

While it appears that DEDJTR is planning and preparing for this EDPR process, we have assessed this 2009 recommendation as having been only partly met given that it is still largely prospective and the outcome of this process is unclear. DEDJTR needs to rigorously scrutinise the distributors' proposals and clearly identify the potential efficiencies it believes should be passed on to consumers. The issue and barriers that exist in transferring the benefits to consumers through this process are discussed further in Section 4.4.

Gateway reviews

Recommendation 4 of VAGO's 2009 audit required DPI to commission a program review by the Gateway Unit of DTF on the governance and implementation of the AMI program.

Since then, the AMI program has undergone three Gateway Reviews. The first two, undertaken in 2010 and 2012, made a number of recommendations, which were implemented on a timely basis. The third Gateway Review, completed only recently in 2014, focused on benefits realisation and its findings were largely consistent with our analysis. The review found that:

- the AMI program governance, management of contractual relationships and stakeholder engagement had improved significantly
- there was some difficulty in identifying a consistent definition of the program benefits to be achieved—including their expected value and measurement—as key program documentation provides differing definitions of program benefits
- certainty over the delivery of benefits is impacted by many factors, including the capacity to extract network operations improvements, capability of the regulatory framework and the AER to pass such savings on to the consumer, and consumer education and uptake of available improvements and resulting benefits.

[2] All benefits values are expressed in net present value at 2014 in 2011 dollars, unless stated otherwise.

The 2014 Gateway Review made 10 recommendations including three 'red' rated recommendations where action is judged to be critical to the success of the program. One of the red recommendations was to summarise the various targets and actual benefit measurements, realised and unrealised, with a view to removing confusion, reconciling the historical position and establishing one clear baseline to be used for evaluation purposes. In DEDJTR's response to the Gateway Review, it accepts all the recommendations of the report.

In response to the red recommendation on benefits, DEDJTR has committed to:

- **clarifying the baseline of the program**—this involves reviewing the 2011 CBA and the range of potential benefits, because it has become increasingly unclear whether the assumptions that underpin the 2011 CBA continue to be valid
- **reviewing the costs of the program**—the changed costs approved by the AER, that are attributable to the rollout and operation of AMI, will also be taken into account when clarifying the baseline and undertaking the overall evaluation of the program
- **developing a new benefits tracking framework**—including the means by which the potential benefits will be tracked and the production of a one-page summary of the achievement of benefits against the baseline, which will be updated on an annual basis.

Updating the cost-benefit analysis

Recommendations 5 and 6 of our 2009 audit required DPI to reassess the economic viability of the AMI program by updating the CBA to reflect existing and emerging risks as well as the impact of changes to scope and underlying assumptions.

These recommendations have been addressed by the 2011 CBA which was commissioned by DTF. However, as noted above, DEDJTR is clarifying the baseline of the program by considering how changes affecting the key assumptions made in the 2011 CBA—some of which are not under the control of the program—could be incorporated into future benefits targets. This is discussed further in Section 3.4.2.

Addressing the technology risk

As at January 2015, one distributor had approximately 270 000 meters that could not be remotely read due to technology failures. This has inevitably affected completion of the rollout, but also benefits realisation and has created a risk that its customers pay for these failures.

Our 2009 audit found that DPI underestimated the technology risks of the program and that trials did not offer reasonable assurance that the proposed technologies were viable. The risk management approach by DPI was to rely on the electricity industry to manage and bear technology risks. However, risks remained concerning the deployment and performance of the smart meters which could ultimately affect consumers, including through increased prices. Therefore, recommendation 7 of the report required DPI to seek appropriate assurances from the electricity distributors about the smart meters technologies they proposed to use before any further installations occurred.

Following the 2009 audit, the Minister for Energy and Resources sought assurances regarding its use of technology and its risk management plan from the distributor that went on to have technological failures. In October 2009 the distributor provided assurances that its preferred technological solution was technically feasible. However, DEDJTR advises that the current issues stem largely from its information management systems failing under the high data load, and that this issue would not have been identified in technical testing of the different available technologies.

Further, it is clear that DEDJTR is currently actively overseeing this issue:

- There are regular status meetings between AMI program managers and distributor management.
- The Minister for Energy and Resources has formally requested the distributor's risk management strategy and materials in connection with the technology failure.

DEDJTR has also recently implemented measures to penalise the distributor for its slow rollout progress under the rebate policy, which provides an incentive for the distributor to resolve these issues as quickly and efficiently as possible. The rebate policy creates a liability of approximately $32.5 million for the distributor.

Finally, the relevant departments have been proactive in making submissions to the AER to ensure that the costs associated with the technology problems are not borne by consumers. For example, DEDJTR made a submission to the AER's assessment of the 2015 metering charges, urging the AER to robustly assess the prudence of the distributor’s application to adjust their 2015 metering services charges by over 40 per cent to recover an additional $70.5 million from consumers.

In particular, it argued that the distributor should not be able to recover from consumers the costs of any excess expenditure that relate to its choice of technology. The AER decided that only $47.8 million of the $70.5 million was ‘prudent and efficient’ expenditure to be passed on to customers. The remaining $22.7 million was deemed to be excess expenditure that the distributor incurred due to its continued implementation of its chosen technology and therefore rejected. This addressed, in part, the departmental submission.

3 Costs and benefits of the AMI program

At a glance

Background

Benefits realisation of the Advanced Metering Infrastructure (AMI) program is measured against the 2011 cost-benefit analysis. It expected a net cost to consumers of $319 million[1].

Conclusion

There is a risk that the program's most recent 2011 estimate of a $319 million net cost to consumers will continue to worsen. Costs are forecast to increase and benefits remain decidedly uncertain. In contrast, while a few benefits have accrued to consumers, benefits realisation is behind schedule and most benefits are yet to be realised. Current estimates indicate that benefits realisation potential to 2028 is approximately 80 per cent of the amount estimated in the 2011 baseline. However, there are significant uncertainties and risks associated with achieving these benefits, most of which are beyond the control of the state.

Findings

- By the end of 2015, Victorians will have paid an estimated $2.239 billion[2] in metering charges—including the rollout and connection of smart meters—and total costs are forecast to increase.
- As at December 2014, the program reported $746.58 million[3] benefits achieved.
- Most of these benefits relate to the avoided costs of accumulation meters. These costs have been replaced by higher costs for smart meters and do not represent additional value generated by the smart meter program.
- There is no public reporting on the costs to consumers or the benefits achieved.

Recommendation

That the Department of Economic Development, Jobs, Transport & Resources publicly report information on the ongoing costs and benefits of the AMI program.

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[1] in present value terms at 2008 in 2011 dollars

[2] nominal dollars, undiscounted

[3] All benefits values are expressed in net present value at 2014 in 2011 dollars, unless stated otherwise.

3.1 Introduction

In August 2011, the Department of Treasury and Finance (DTF) commissioned a cost-benefit analysis (CBA) to inform the review of the Advanced Metering Infrastructure (AMI) program. This 2011 CBA has become the implicit baseline of the program against which costs and benefits are evaluated.

Costs associated with the rollout and installation of smart meters are paid for by consumers through metering costs that are applied to electricity bills.

Consumer benefits from smart meters rely on the behaviour and decisions of a number of energy market participants and are derived in a variety of ways, including:

- **reduced energy consumption**—AMI is intended to provide consumers with the information needed to make direct and informed decisions about their energy use
- **flexible tariffs**—as customers shift their electricity load from peak to off-peak times, it was expected their electricity costs would decrease because of time-of-use tariffs
- **network efficiencies**—are intended to be passed on to consumers through a national regulatory approval mechanism.

3.2 Conclusion

There is a risk that the AMI program's most recent 2011 estimate of a $319 million[4] net cost to consumers may worsen. The 2011 CBA forecasts that costs would reduce from 2013 to 2023 but increase again sharply from 2024, if the meters are replaced from that time, as anticipated. At the same time, benefits remain uncertain.

Consumers have realised only a few direct benefits from smart meters. AMI program benefits have fallen behind projections of benefits expected by 2014, with only 90 per cent of expected benefits realised to date. The majority of these claimed benefits relate to the costs of replacing accumulation meters, which have been avoided, but have been replaced by higher costs for smart meters and does not represent any additional value generated by the AMI program.

The 2014 Benefits Realisation Assessment currently estimates that benefits realisation potential to 2028 is $2 603 million[5], approximately 80 per cent of the amount anticipated in the 2011 CBA baseline. However, this projection assumes:

- all categories of benefits anticipated in the baseline remain relevant and are acted upon
- the vast majority of all known and unknown risks will be mitigated, including competitive metering and the risk that consumers do not understand benefits
- benefits realisation will broadly follow the trajectory anticipated in the baseline.

[4] in present value terms at 2008 in 2011 dollars

[5] All benefits values are expressed in net present value at 2014 in 2011 dollars, unless stated otherwise.

The Department of Economic Development, Jobs, Transport & Resources (DEDJTR) has acknowledged that many of the assumptions on which the 2011 CBA was based have materially changed. It is reassessing the expected benefits of the program. This will change the expected costs and the value of anticipated benefits, yet again.

While there is some public reporting on the AMI program in departmental annual reports and in the Budget Papers, this does not provide any meaningful information on the performance of the program or the realisation of expected outcomes. There is no public reporting on the costs of the AMI program or progress in achieving the benefits identified in the CBA.

3.3 Costs of the AMI program

By the end of 2015, Victoria's electricity consumers will have paid an estimated $2.239 billion[6] in metering charges, including the rollout and connection of smart meters. According to the 2011 CBA, annual costs are forecast to reduce from 2013 to 2023 and increase again from 2024 through to the end of 2028, if meters need to be replaced as anticipated.

The figure of $2.239 billion was provided by DEDJTR. However, this is an estimate because DEDJTR does not know the exact cost of the program, noting that this figure:

- is based on distributors' yearly submissions to the Australian Energy Regulator (AER) which are provided in nominal dollars
- includes costs for corporate overheads and an outage management system that are not related to the AMI program, but which DEDJTR estimates to be approximately 10 per cent
- includes the business as usual metering service costs, including ongoing metering data service costs and the costs of the remaining accumulation meters
- includes costs for 2014 that have not been evaluated or assessed by the AER, and costs for 2015 that are forecast distributor costs and have not been subject to any evaluation.

These costs are being applied annually to consumers' electricity bills as metering fees, which form part of the supply charge, but are not itemised on bills. The average residential household has paid around $760[7] since 2009 in metering fees for a typical single element, single phase Victorian Smart Meter.

[6] nominal dollars, undiscounted

[7] nominal dollars, undiscounted

Metering fees are based on submissions by electricity distributors to the AER about their forecast and actual costs and demand for the periods 2009–11 and 2012–15, and any overspend that the AER may approve annually as being prudent and efficient. By the end of 2015, distributors will have paid $2.785 billion[8] for metering services, including the AMI Program. This is 11.4 per cent higher than their forecast budgets for that period. In particular, costs for 2014 and 2015 are forecast to be 88 per cent and 28 per cent over budget respectively and these costs are passed on to consumers.

As there are still 13 years of the program left to run, total actual costs are likely to be higher still. In the 2011 CBA, it was assumed that the up-front capital costs would largely occur over the period 2008–2013. However, with the delay in the rollout of meters, the costs incurred in 2014 and 2015 are forecast to be higher than budgeted. These costs will be reflected in 2017 metering charges that will be higher than they would if the costs incurred had been in line with budget, but noting that metering charges are forecast to decrease significantly in 2016. Costs will increase again when meters are required to be replaced

Other factors indicate that costs will rise even further than expected. DEDJTR has advised that the distributors actual program costs profiles have changed significantly since forecasts were completed in the 2011 CBA. The program cost reductions forecast in the 2011 CBA were shaped by key primary assumptions around:

- full completion of the rollout by 2013
- economic/depreciable life of the meters
- economic/depreciable life of the IT and communications systems
- subsequent replacement costs at the end of the economic lives of the assets.

While costs are expected to drop until 2023, the 2011 CBA anticipated costs to increase substantially again from 2024 to account for the replacement of smart meters and related communications equipment. This cost is assumed in the CBA to mirror the initial AMI rollout.

3.4 Benefits realisation is behind schedule and uncertain

Benefits realisation is still at a relatively early stage, with the bulk of consumer benefits assumed to be realised over the next 13 years to 2028. However, by December 2014, benefits realisation had already fallen behind the levels forecast in the 2011 CBA.

[8] nominal dollars, undiscounted

The key issues affecting benefits realisation to date, as identified by the 2014 Benefits Realisation Assessment, have been:

- a slower than anticipated rollout of AMI metering and communications infrastructure, particularly due to the communications and other systems failures experienced by one distributor, community resistance to the AMI program and refusals by some customers to have a smart meter installed
- the continuation of manual meter reading for longer and more extensively than anticipated
- a lower than expected number of distribution services being performed remotely—specifically remote re-energisations and de-energisations of power supply.

The long-term achievement of the full expected benefits is subject to many assumptions and is uncertain. According to the 2014 Benefits Realisation Assessment—which included an analysis of the nature and measurement of the AMI program benefits realised to date and forecast to be realised through to 2028—the AMI program is now projected to achieve only approximately 80 per cent of the $3 235 million benefits identified in 2011 CBA through to the end of 2028. However, even this 80 per cent figure is indicative and relies on significant assumptions being met and various actions being taken by a range of stakeholders—including government, distributors, retailers, national regulators and consumers, and assumes that:

- all categories of benefits anticipated in the baseline remain relevant and are acted upon
- the vast majority of all known and unknown risks will be mitigated, including competitive metering and the risk that consumers do not understand benefits
- benefits realisation will broadly follow the trajectory anticipated in the baseline.

For long-term AMI benefits realisation, the 2014 Benefits Realisation Assessment states that DEDJTR will be required to:

- better understand and quantify the impact of the barriers, issues and risks facing benefits realisation
- ensure proactive identification of new opportunities for benefit realisation from the program as they emerge
- identify actions that government can take to address the barriers, issues and risks facing both these existing and emerging areas of benefit realisation.

Without attention and a commitment on the part of government to these sorts of activities, the final 2014 report notes that it is 'almost certain that the long-term realisation of AMI program benefits will be less than anticipated, potentially significantly less than anticipated, and far less than ultimately possible'. The report also states that ‘a full scenario-based risk assessment has not been performed and therefore the forward estimates of benefits over twenty-years should be considered indicative (at best) and the context of any reference to these values carefully and cautiously explained’.

While some individual benefits categories may be higher than expected over the life of the program, nowhere in the final 2014 report does it state that the overall benefits potential may be higher than originally expected, or is likely to be higher than the 80 per cent.

Very late into the conduct of the audit DEDJTR provided a report summarising the final 2014 Benefits Realisation Assessment. This summary report includes an entirely new assertion that 'on the balance of probabilities, there is likely to be as great a likelihood of over achieving as under achieving the benefits detailed in the 2011 cost-benefit study'. However, this is not reflected in the final 2014 Benefits Realisation Assessment report.

3.4.1 Benefits realised by 31 December 2014

DEDJTR has measured benefits realisation against the 2011 CBA baseline three times, in 2012, 2013 and 2014.

Overall, the 2011 CBA expected that $834.05 million of benefits would have accrued by the end of December 2014. However, by that time, only $746.58 million benefits had been realised, approximately 90 per cent of what was expected.

Figure 3A shows the major anticipated benefits that the 2011 CBA expected to have accrued up until the end of December 2014. Combined, these major benefit categories accounted for 93.79 per cent of the total $746.58 million benefits realised by the end of 2014. However, overall they fell below forecasts, achieving only 86.72 per cent of their expected value.

Figure 3A
Major anticipated benefits realisation to 2014 against the 2011 baseline ($ million)

Benefit category	2011 CBA forecast benefit 2008–14	Actual benefit realised 2008–14	Percentage of 2008–14 forecast realised	Contribution to $746.58 million realised by Dec 2014
Avoided cost of accumulation meters	$579.31	$591.99	102.19%	79.30%
Network operational efficiency	$218.94	$107.98	49.32%	14.46%
Tariffs, products and demand management	$9.19	$0.23	2.50%	0.03%
Total	**$807.44**	**$700.20**	**86.72%**	**93.79%**

Note: Figure 3A does not include all benefits categories.
Source: Victorian Auditor-General's Office based on the 2014 Benefits Realisation Assessment.

The following sections summarise the key issues relating to these main benefit categories.

Avoided cost of accumulation meters

This benefits category accounts for approximately 79.29 per cent of the total realised benefits claimed by the end of 2014. It is the largest single benefit category predicted by the 2011 CBA to be realised over the life of the program, with a total expected value of $1 341.69 million to 2028.

It consists of the following sub-categories:

- avoided cost of accumulation meter installations
- avoided cost of regular/routine meter reads
- avoided cost of installing import/export metering
- reduced testing of meters.

However, the 2013 Benefits Realisation Assessment states ‘this benefit, although significant, does not represent any additional value generated by the AMI program’. The 2014 Benefits Realisation Assessment confirms this and notes that it is an estimate of the cost of continuing to provide accumulation metering and related services. It also noted that this benefit is a result of the smart meters simply being in place, compared to the other benefits that require one or more stakeholders to undertake what is essentially a discretionary action.

Benefits derived from network operational efficiencies

Data collected by smart meters can be used by network engineers to make the electricity network run more efficiently and reliably. The key anticipated efficiency improvements relate to faster detection and restoration of outages, remote re-energisation and de-energisation of supply, avoiding the need for special reads, and improvements in asset management and maintenance.

Some efficiency improvements accrue direct benefits to consumers. Should, for example, they move house and take advantage of the cost reduction in remotely re-energisating and de-energisating power supply. They may also avoid the cost of a final meter read. Similarly, faster detection and restoration of outages avoids the need for consumers to report these outages and ultimately reduces the length of supply disruptions to consumers.

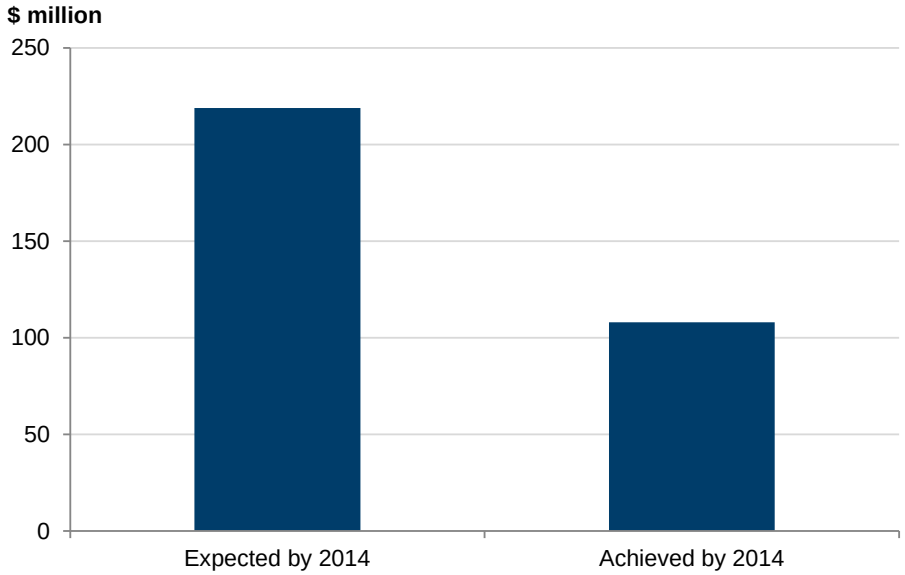
However, distributors are the primary beneficiary of this benefits category through improved efficiency in their operations. There have been fewer wasted truck visits, quicker identification and restoration of unplanned interruptions and more effective targeting of planned maintenance works or capital investments in the network. These efficiencies should flow through to consumers through 'lower than usual' network costs on electricity bills, however, this is dependent on intermediaries passing the benefits on.

The AER must identify the cost savings in its decisions on distributors' network charges. In order to be passed on, a thorough examination of the distribution businesses' revenue proposals is necessary. DEDJTR advised it is aware of the risk of the businesses understating the operational benefits of AMI metering and that it is investing significant resources into obtaining expert advice for its formal submissions into the process. However, consumers only realise the benefit if retailers also pass on the reduced network charges, which relies on effective retail competition.

The 2014 Benefits Assessment Survey notes that the transfer of benefits to consumers can take time.

The 2011 CBA expected a total of $218.94 million network operational efficiencies to be realised by distributors by 2014. However, the 2014 Benefits Realisation Assessment identified that only $107.98 million had been achieved, as shown in Figure 3B.

Figure 3B
Benefits from network operational efficiencies



Source: Victorian Auditor-General's Office based on the 2014 Benefits Realisation Assessment.

The 2014 Benefits Realisation Assessment concluded that, over the full life of the program, network operational benefits are currently forecast to fall below expectation.

However, as the realisation of many benefits is dependent on accurate measurement and on regulators, distributors and retailers passing these benefits on, there are several barriers to these benefits being transferred to consumers. These issues are discussed further in Part 4.

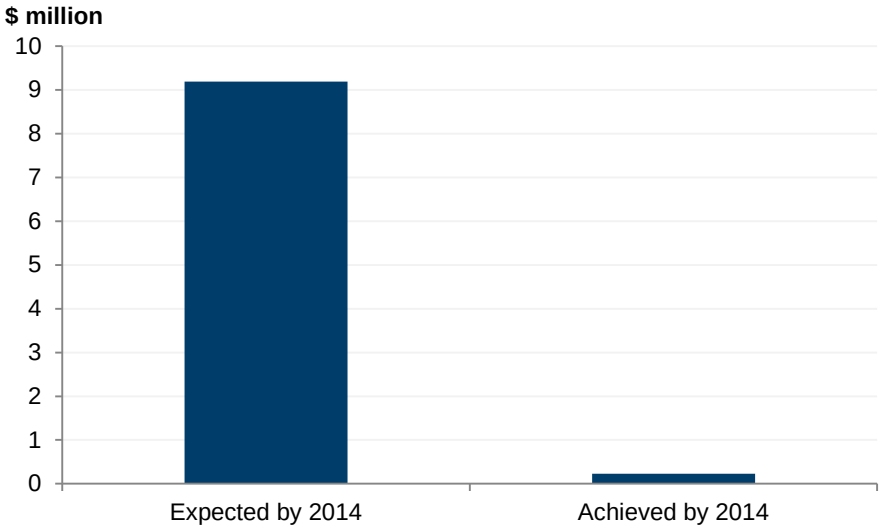
Benefits generated from innovative tariffs and demand management

Benefits from this category are well below expectation, having achieved only 2.5 per cent of what was anticipated by 2014. This category is made up of:

- energy conservation from time-of-use tariffs
- avoided costs in having to upgrade the network due to peak demand response to innovative tariffs
- energy conservation from in home displays and enhanced billing.

As shown in Figure 3C, $9.19 million benefits from tariffs and demand management were expected to be realised by 2014, of which $0.23 million was achieved. The 2014 Benefits Realisation Assessment notes that, without a significant change, this may continue fall behind expectations in the long term.

Figure 3C
Benefits generated from innovative tariffs and demand management



Source: Victorian Auditor-General's Office based on the 2014 Benefits Realisation Assessment.

The 2011 CBA estimated $778 million benefits associated with innovative tariffs and demand management over the life of the program. However, this figure is highly dependent on competitive market tariffs being available so that consumers can save money, as well as considerable consumer responses to take up these offers and change consumption habits. As such, the 2011 CBA considered this category the most difficult to estimate and the greatest risk to the success of the AMI program.

In order to achieve the expected $778 million over 2008–28, the 2011 CBA relied on the following assumptions in relation to consumer behaviour:

- time-of-use tariff uptake of 4 per cent in 2014, increasing to 15 per cent by 2017, with:
  - reduced energy consumption of 0.1 per cent per household, resulting in total reduction in Victorian residential and small business customer energy consumption of 0.02 per cent from 2017 onwards
  - reduced peak demand of 1.5 per cent per household, resulting in a total reduction in Victorian peak demand of 0.1 per cent from 2017
- critical peak pricing—where electricity prices are increased sharply for a limited duration at times when demand needs to be reduced—initial uptake of 2 per cent in 2014 increasing to 33 per cent by 2020 with peak demand reduction of 15 per cent per household, resulting in total reduction in Victorian peak demand of 2 per cent from 2020
- direct load control—where communications devices are used to reduce or cancel the supply of electricity to controlled appliances at times of peak demand—uptake of 1 per cent at 2014, increasing to 25 per cent by 2020, and peak demand reduction of 15 per cent per household, delivering a total reduction in Victorian peak demand of 2 per cent from 2020
- in home displays and enhanced billing uptake rate of 1 per cent in 2014 increasing to 15 per cent in 2020 with energy reduction of 1 per cent in 2014 reaching 6 per cent by 2020 per household, resulting in a 1.5 per cent reduction in Victorian domestic customer energy consumption from 2022.

Collectively, these assumptions rely on 75 per cent of Victorian residential customers changing their consumption behaviour in response to incentives delivered by the AMI rollout. However, the rollout of flexible pricing offers by electricity retailers was suspended by government through a moratorium until the end of 2012. This in part has contributed to a delay in consumer acceptance and uptake of flexible pricing offers which remains very low with only 6 885 customers having accepted such an offer by December 2014. This represents approximately 0.27 per cent of customers of a total of 2 489 961 installed functioning meters as at September 2014. This is much lower than the projected 4 per cent uptake—around 100 000 households—of flexible pricing offers at 2014. On current rates of uptake, it is doubtful this 75 per cent will be achieved.

The 2014 Benefits Realisation Assessment confirmed this and noted that:

- the availability of innovative tariffs, and the associated consumer response anticipated by the 2011 CBA, are not being realised as expected and, for a variety of reasons the implications for related AMI benefits over the next decade are uncertain
- some stakeholders, such as consumer groups and retailers, are of the opinion that enthusiasm for flexible pricing has waned—the main reasons identified were that flexible pricing may not deliver much value to consumers when compared to flat tariffs and consumer understanding of energy pricing, and the relationship between billed amounts and consumption patterns is low.

Given that the benefits of smart meters are reliant on considerable consumer action, ensuring that consumers understand how they can use smart meters to their advantage is fundamental to ensuring that benefits are realised. The more engaged consumers are, the greater the potential benefits of the AMI program. Until addressed, resistance to change is expected to remain.

Even though DEDJTR has demonstrated an increased focus in educating consumers, as noted in Part 2, communications will still need to be improved in order to address this issue. This is discussed further in Part 4.

The benefits to consumers associated with deferred investment in upgrading the network will accrue through lower network charges and are dependent on the AER's determinations of charges. Generation augmentation deferral will accrue through lower energy charges in a competitive wholesale market, and the competitive retail market passing these savings on through lower electricity bills.

3.4.2 Reviewing benefits targets

The 2014 Gateway Review noted that the magnitude of benefits expected by the AMI program as stated in the 2011 CBA is subject to many assumptions and is therefore uncertain. In its management response to the review, DEDJTR noted that the 2011 CBA should be reviewed in light of the considerable developments in the program since that time. In particular, it has become increasingly unclear whether the assumptions underpinning the 2011 CBA continue to be valid and DEDJTR has committed to review the 2011 baseline.

Key assumptions underpinning the 2011 CBA include:

- considerable consumer behaviour change, as discussed in relation to benefits associated with innovative tariffs and demand management
- the growth of the economy and the number of new customers connecting to the networks
- the value that can be attributed to each benefit area, such as network value of reducing expenditure to meet peak demand.

Further, the amount of benefits that are expected to be achieved may be impacted by the introduction of competitive metering and network tariff reform, as noted in Part 4.

We acknowledge that benefits may change and additional benefits may be added, especially as the technology is rolled out and market participants, policy makers and customers experience and better understand the potential of AMI over time. In this context, it is encouraging that DEDJTR will actively review the expected benefits. However, it is concerning that the fundamental assumptions underpinning the 2011 CBA, which was used to justify the continued rollout of smart meters, have become increasingly unclear so as to require a review of future targets for benefits realisation.

3.5 Reporting on the AMI program

3.5.1 Public reporting on the delivery of benefits

While there is some public reporting on the AMI program in departmental annual reports and in the budget papers, this does not provide enough meaningful information to understand the costs or performance of the program, or the realisation of expected outcomes and benefits.

Reporting in budget papers

Figure 3D summarises the reported performance measures for the AMI program in Budget Paper 3 from 2012–13 to 2013–14.

Figure 3D
Reported performance measures for the AMI program

	2014–15		2013–14		2012–13	
	Target	Expected outcome	Target	Actual	Target	Actual
Delivery of AMI program in line with planned program milestones (per cent)	100	100	100	100	100	New measure
Meetings of the AMI Ministerial Advisory Council (number)	4	5	4	4	4	4

Source: Victorian Auditor-General's Office from 2012–13 to 2013–14 Budget Papers.

Budget Paper 3 is intended to provide an update on how the government is meeting its targets for delivery of outputs, and how these outputs are contributing to meeting key objectives. However, the reporting on the AMI program shown in Figure 3D does not provide sufficient information to understand the effectiveness and efficiency of output delivery. There is no description within the budget papers of what the AMI 'project milestones' are. While the second measure—number of 'Meetings of the AMI Ministerial Advisory Council conducted in accordance with terms of reference and strategic agenda'—is more self-explanatory, it does not explain how this output contributes to meeting key objectives.

It is unclear how DEDJTR could report 100 per cent achievement of project milestones, especially for the 2013–14 year given that the key milestones listed here were not completed in 2013–14:

- **the effective completion of the rollout**—the rollout was not completed by its 31 December 2013 completion date
- **Gateway Review completed as planned prior to the completion of 2013–14**—this review was finalised in November 2014, which is the 2014–15 financial year.

The 2012–13 Budget Paper 3 also contains minimal information on outcome measurement, as shown in Figure 3E.

Figure 3E
Reported benefits realisation in 2012–13 Budget Paper 3

	2015–16	2014–15	2013–14	2012–13	2011–12
Realising the benefits of the AMI program	$2.5m	$3.4m	$4.7m	$9.2m	New measure

Source: Victorian Auditor-General's Office from 2012–13 Budget Paper 3.

This was a new measure in 2011–12 and, although it indicated an estimate for the following years, this measure was not reported on in the 2013–14 or 2014–15 Budget Papers. This is of minimal value in explaining the realisation of AMI program benefits, because there is no supporting information provided that explains the results against expected targets.

Annual reports

We reviewed the four annual reports of the Department of State Development, Business and Innovation (DSDBI) between 2010–11 and 2013–14. Only the 2013–14 annual report contains any information on the AMI program, stating that:

- DSDBI is currently ensuring that smart meters are the standard meter for households and small business across the state
- in 2013–14, the rollout of more than 2.6 million meters neared completion
- smart meters enable Victorians to better monitor and manage their energy usage, and support the transition of consumers to flexible pricing
- the government awarded 15 Energy Information Fund grants in 2013–14—these grants offer up to $120 000 for not-for-profit organisations to help vulnerable and hard to reach Victorians—such as seniors, people with a disability and those for whom English is not the primary language—to better understand the energy market and find ways to save money on their power bills.

The 2013–14 annual report also includes the two measures from the Budget Papers outlined in Figure 3D. This is not an adequate amount of information to help the public understand the program's outputs or outcomes.

There is no public reporting on the costs of the AMI program or progress in achieving the benefits identified in the 2011 CBA.

Recommendation

1. That the Department of Economic Development, Jobs, Transport & Resources develops Budget Paper measures that report performance against the objectives of the Advanced Metering Infrastructure program, and publicly reports annually on costs incurred and benefits achieved.

4 Maximising consumer benefits

At a glance

Background

The state has a responsibility to take an active oversight role in implementing the Advanced Metering Infrastructure (AMI) program to deliver the expected benefits. While it has no ability to directly control benefits realisation, the Department of Economic Development, Jobs, Transport & Resources (DEDJTR) can play a critical influencing role in engaging regulators and informing consumers on how to maximise benefits. The imminent introduction of competitive metering means that smart meters installed under the AMI program could be replaced by other meters.

Conclusion

DEDJTR has strategies and initiatives in place to promote consumer benefits and maximise their realisation. However, it must now focus on actions that will accelerate the achievement of available benefits to consumers. Work is required to effectively measure the benefits that distributors accrue and to facilitate these being passed on to consumers through the regulator. DEDJTR should also focus on improving customer engagement and protecting vulnerable consumers from any potential adverse impacts of reforms to network tariffs and competitive metering.

Findings

- Communications activities need to be refined to encourage behaviour change and increase the uptake of flexible pricing.
- Many retailers and distributors lack the data to allocate the benefits to specific initiatives, which reduces the ability to attribute benefits to the smart meter program.
- Network tariff reform is likely to address inequitable cross-subsidies, but may negatively affect vulnerable customers.
- Competitive metering has the potential to erode AMI benefits and increase costs.

Recommendations

That the Department of Economic Development, Jobs, Transport & Resources focuses on maximising benefits and protecting vulnerable consumers from increased costs.

4.1 Introduction

The realisation of consumer benefits from smart meters relies on the actions of a wide range of players. Many of these are beyond the direct control of the Department of Economic Development, Jobs, Transport & Resources (DEDJTR), although it can play a critical influencing role in engaging with regulators and industry and in informing consumers.

Consumer benefits are derived from two main sources:

- **New tariffs and products that will help reduce energy consumption and/or the cost of electricity bills**—this is ultimately dependent on consumers' own decisions to change consumption patterns and/or take up new retail offers, such as flexible pricing, but is aided by a sustained customer engagement campaign by government. Reducing peak demand results in savings in negating or deferring peak network and generation investment, which must be passed on to customers.
- **Network operational efficiencies**—these can only be realised by consumers when cost savings for supply-side participants are accurately measured and passed on through regulatory processes (for distributors) and through competitive pressures (for retailers). While the state has a role in making submissions to the Australian Energy Regulator (AER), this mechanism for passing benefits on relies on a considerable chain of action on the part of government, distributors, retailers and consumers.

DEDJTR has few options to influence—and no ability to directly control—costs to consumers and drive many of the benefits. However, as the administering department, it still has an enduring responsibility to actively oversee the program so it can be appropriately governed and implemented to deliver the expected benefits. The 2014 Benefits Realisation Assessment states that it has become increasingly clear that many benefits are realised first by retailers and distributors, before they are passed on to consumers. Ensuring these benefits are passed on is therefore critical to the realisation of consumer benefits.

4.2 Conclusion

While DEDJTR has strategies and initiatives in place to promote expected consumer benefits and maximise their realisation, it must now focus on actions that will accelerate the achievement of available benefits to consumers to avoid any further increase in the net costs of the program. This is crucial given that benefits realisation is already behind schedule and the full, anticipated benefits of the program are not expected to be realised.

More work needs to be done to effectively measure the expected benefits from innovative tariffs and network operation efficiencies, and facilitate these being passed on to consumers through the regulatory system and competitive market.

DEDJTR should also focus on improving customer engagement to better inform consumers of the options available to them through their smart meter, and to protect them from the potential adverse impacts of reforms to network tariffs and competitive metering.

4.3 Maximising benefits from innovative tariffs and demand management

Customers' electricity bills are comprised of a number of different costs, including:

- a consumption cost
- a supply charge, which includes a network tariff and a metering fee.

These costs are detailed in Section 1.4.

AMI allows for innovations in both flexible consumption tariffs and more cost reflective network tariffs.

4.3.1 Encouraging the uptake of flexible tariffs

As noted in Part 3, the $778 million[1] benefits associated with the uptake of innovative tariffs predicted in the 2011 cost-benefit analysis (CBA) relies on the assumption that 75 per cent of Victorian residential customers will change their consumption behaviour in response to incentives delivered by the Advanced Metering Infrastructure (AMI) program.

For this very significant change to occur, Victorian electricity customers need:

- a sustained customer engagement program
- appropriate market offers
- further government programs to encourage customer participation, such as the deployment of in-home displays, to improve this anticipated effect.

Further, the transfer of benefits from reduced consumption that should ultimately lead to lower network costs for consumers depends on a range of matters, including:

- the ability to measure benefits
- regulatory decisions and competitive action.

Therefore, the actual benefits consumers can expect are unclear as these actions cannot be fully determined in advance.

Customer engagement program

For competition to be effective, consumers must be able to make informed choices on the energy product that best meets their needs.

[1] All benefits values are expressed in net present value at 2014 in 2011 dollars, unless stated otherwise.

As outlined in Part 3, the uptake of flexible pricing offers remains very low. On current rates of take up, it is doubtful that enough consumers will participate in innovative tariffs for the $778 million of benefits expected from these tariffs and from demand management, to be achieved by 2028. However, network tariff reform and an enhanced communication campaign may encourage enough participation in innovative tariffs in the future.

DEDJTR has acknowledged that future communications activities may need to be refined to communicate the potential value of flexible pricing and to address misinformation that is still evident in the market. Its current focus is to:

- further strengthen consumer awareness of the My Power Planner (MPP) tool and the range of information resources provided by the Switch On website
- work with consumer groups to engage hard to reach customers, such as culturally and linguistically diverse customers, seniors and people with a disability
- work closely with industry to deliver accurate and consistent messaging to the community and raise awareness of retailer and distributor websites, in-home displays and emerging home energy management systems.

The government's commitment to improve communications is also demonstrated by:

- its acceptance of the 2014 Gateway Review recommendation to continue to seek ways to promote the Switch On website and MPP tool
- its development of on an online campaign promoting Switch On and MPP scheduled for the second quarter of 2015, as well as a larger campaign, involving social media, to coincide with the release of the enhanced MPP tool in the second half of 2015
- the creation of a Strategic Communications Manager position to oversee the formulation of strategic communications for the program, focused on the realisation of benefits for customers.

DEDJTR should also engage with retailers and the Essential Services Commission to consider how to identify opportunities for customers to reduce their consumption, and associated electricity costs, on their electricity bills. For example, retailers could provide more information, such as the amount of consumption in peak times and tips on how bills could be reduced by decreasing consumption during these hours.

Reviewing the competitiveness of retailers

Effective retail competition is essential to ensure that the market provides appropriate offers for consumers to take up flexible tariffs that better suit their needs. As new tariffs begin to provide more value through increased competition, this should help to improve consumer enthusiasm for flexible pricing and increase the uptake of these offers. Increased uptake will help to transfer AMI benefits to customers via lower price retail offers, over time.

While the current uptake of flexible pricing is lower than anticipated, there is already a range of flexible price retail offers available. Some retailers are starting to generate their own offers, which may allow customers to save more on their electricity bills and will therefore be more competitively priced relative to other offers, including flat tariffs. For example, one retailer is offering free electricity all day on Saturdays and another is offering free electricity between 6 am and 7 am every day.

MPP data analysis conducted by DEDJTR indicates that retail flexible tariffs are becoming more competitive. From November 2013 to April 2014, flexible pricing was the 'top offer'—providing the lowest estimated annual bill cost—for 2.5 per cent of consumers who used the website. More recently—from May 2014 to October 2014—flexible pricing was the top offer for 16 per cent of website users. Research currently being prepared by DEDJTR suggests that around 75 per cent of Victorian customers would be better off on flexible pricing today than the best flat offer available to them. Nevertheless, DEDJTR acknowledges that the full realisation of benefits stemming from the uptake of flexible tariffs remains uncertain as it relies on customers taking action to change plans.

Ability to measure and track benefits

The uptake of flexible tariffs is also expected to result in reduced energy consumption and reduced peak demand, and it is assumed that this will result in direct savings in network and generator investments, which will then be passed on to customers. Therefore, accurately measuring these changes in energy consumption and peak demand is an important step for the AER in considering these cost savings that should be transferred to customers via retailers.

Retailers and distributors closely monitor the number of consumers who take up flexible tariffs, however, their ability to track the full benefits arising from this uptake and the resulting change in energy use is doubtful. In particular, it is not clear that retailers or distributors are systematically measuring:

- **energy conservation as a result of the uptake of flexible pricing and/or in-home displays**—by comparing the average daily usage of customers on flexible pricing and/or with access to in-home displays or portals, to the average daily usage of customers on flat tariffs and/or without access to in-home displays or portals
- **peak demand reductions as a result of flexible pricing**—by comparing the electricity usage of consumers on flexible products to those on flat tariffs, at peak times.

The 2012 and 2013 Benefits Realisation Assessments recommended that a comprehensive and rigorous industry-wide study needed to be undertaken to track these benefits. However, DEDJTR advised it has not yet made a decision on the value of more detailed monitoring of changes in energy consumption and peak demand.

DEDJTR advised that it can be difficult to quantify and isolate reductions or changes in demand and attribute them to a single factor such as a tariff. A fall in demand and an associated reduction in network investments may be the result of a range of factors, such as the weather, broader economic factors or alternative government policy—for example, the Victorian Energy Efficiency Target scheme, under which accredited businesses can offer discounts and special offers on selected energy saving products and appliances. However, if these changes are not monitored, benefits arising from the uptake of flexible tariffs will not be able to be fully tracked and passed on to consumers.

4.3.2 Network tariff reform

A network tariff is a charge that an electricity distributor levies on a retailer to access the distribution network in order to supply consumers with electricity. It reflects the costs that distributors incur in investing in capacity, and operating and maintaining the distribution network—poles, wires and other necessary equipment. The network tariff comprises two components—a variable component that is generally based on energy consumption and a fixed component that is generally referred to as a supply charge.

The introduction of smart meters is intended to provide information to consumers to assist them in reducing their consumption, particularly in times of peak demand. Network tariffs have an important role to play in changing consumers' behaviour by better reflecting the costs of supplying electricity in different parts of the network and at different times of the day. Network tariffs in Victoria provide scope for electricity retailers to set prices for small business and residential customers to reduce their electricity consumption. On 27 November 2014, the Australian Energy Market Commission made a new rule to require electricity network businesses to set prices that reflect the actual cost of providing network services to individual consumers from 2017 onwards. The new rules are intended to encourage more efficient use of, and investment in, network infrastructure, which will reduce overall costs to households and businesses over the long term. More cost-reflective network tariffs will also increase efficiency by reducing the cross-subsidies in current tariff structures. This will lead to the fairer allocation of network costs among consumers.

The Victorian Government is currently considering what role it might play to facilitate and coordinate network tariff reform. Although some modelling and analysis has been undertaken, the full impact that network tariff reforms will have on different community groups is not yet well understood.

It is critical that government gains a clear understanding of how proposed tariff structures will affect key vulnerable and disadvantaged groups in order to ensure that they are well protected. DEDJTR has advised that it will undertake further analysis in 2015-16 to identify the impact of cost-reflective network tariffs on vulnerable customers following the submission of actual tariff structure statements by network businesses to the AER in September 2015.

Government must accompany network tariff reforms with a clear and well-targeted communications campaign about the reason for changes to electricity tariffs, impacts on customers and how customers can use their smart meters and retail tariffs to better manage their consumption and their bills. It should also consider any potentially adverse impacts on disadvantaged and vulnerable groups and how these can be effectively addressed or managed.

4.4 Maximising network benefits to consumers

The 2011 CBA estimates a total of $970.78 million of benefits derived from efficiencies in network operation over 2008–2028. These benefits first accrue to distributors and retailers and are then expected to be passed on to customers.

Consumers' ability to realise some of these benefits relies on the ability to effectively measure them and then pass them on through regulatory processes. DEDJTR's role is to facilitate the accurate measurement of these benefits and to effectively engage with regulators so that they can be passed on.

4.4.1 Ability to measure and track network benefits

As with benefits derived from the uptake of flexible tariffs—described in 4.3.1—many retailers and distributors lack the measures and the supporting systems to track the network efficiency benefits realised from the AMI program. The 2012 and 2013 benefits realisation surveys noted this and recommended that it be addressed.

However, despite this, the 2014 Benefits Realisation Assessment found that stakeholders—including distributors and retailers—had still not been requested to capture and report key data related to the realisation of a large number of program benefits. This is a significant oversight and these systems should have been set up and agreed at the outset of the AMI program.

In particular, the 2014 report noted that only a small number of benefits are routinely tracked, and many stakeholders were unable to provide reliable data on benefits that they had not been forewarned they would need data on. This is despite DEDJTR allowing more time for stakeholders to respond to survey questions.

Accurately measuring benefits is an important step in attributing these to the smart meter program. This may also assist the AER to identify future operational efficiencies as part of the 2016–2020 revenue determination process, which should ultimately be transferred to customers.

4.4.2 Engagement with the regulators

Many benefits of the AMI program are first realised by distributors and are then intended to be passed on to consumers through the AER regulatory process, over a five-year time frame. The effectiveness of the AER process is therefore important for the realisation of network benefits.

As noted in Part 2, DEDJTR has engaged with the AER regarding the realisation of AMI benefits for customers through formal AER consultation processes, as well as direct meetings between it and the AER and such forums such as the AMI Ministerial Advisory Council. DEDJTR also intends to make comprehensive representations to the AER throughout the Electricity Distribution Price Review process that has commenced for the 2016–20 period—which is the key mechanism by which network benefits realised by distributors are passed on to consumers.

As part of the Electricity Distribution Price Review process, the AER will assess the efficiency of distributors' planned capital, operational and maintenance expenditure on their distribution networks. DEDJTR will engage with the AER, including through written submissions, to ensure that it considers the network efficiency benefits enabled by smart meters for this period. However, the time line for this engagement is as follows:

- distributors submitted regulatory proposals to the AER in April 2015, with public submissions on those proposals due in July 2015
- the AER will make a draft determination on those proposals in October 2015, with public submissions on that draft determination due in March 2016.

DEDJTR advised that it is aware of the risk that distributors will understate the operating expenditure benefits of the AMI program and that it is working to ensure that these benefits are realised by consumers, by undertaking a thorough examination of the distribution businesses' revenue proposals. It is procuring expert economic and regulatory advice to assist with the examination of these proposals and to inform its submissions to the AER. This may include advocating to the AER to use benchmarking and rely on the efficiency benefits sharing scheme, which can influence the realisation of efficiency gains across different distributors.

DEDJTR also advised it has a continued focus on the operation of Victoria's electricity retail market.

4.5 National move to competitive metering

DEDJTR has acknowledged that the removal of distributor exclusivity in Victoria is a risk to the realisation of the benefits of the AMI program. It developed a *Transition to Metering Competition – Approach Paper*, which identifies the following issues that need to be considered in order to safeguard the AMI benefits under metering competition:

- deciding what benefits must be preserved and whether the amount of benefits identified by the 2011 CBA should be protected
- deciding what smart meter functions distributors must still have access to, to deliver network benefits
- deciding what functionality the new smart meters must have to enable distributors to continue to deliver network benefits, and whether the current AMI functionality and service level specifications should be maintained
- determining the likely impact on AMI program benefits and potential cost impacts on other customers, if a customer decides to take up a competitively provided meter
- ensuring that customer protections are not compromised or reduced in the move to competitive metering.

In its response to these issues, DEDJTR should have two priorities:

- **Protecting consumers**—by ensuring that appropriate consumer protections are in place so that they understand the implications of accepting a new smart meter and are not worse off by doing so. Increasing understanding among consumers will reduce the risk of exploitation.
- **Preserving AMI benefits**—by monitoring the Australian Energy Market Commission's proposal, and engaging with the AER to introduce metering competition in a way that the benefits of competition can be realised with minimal impact on the ability of distributors, and ultimately consumers, to realise network efficiency benefits.

4.6 Strengthening the cost-recovery framework

In addition to actions discussed in Section 2.4, DEDJTR is seeking to amend the AMI cost recovery framework before the next charges determination in 2015. It is proposing to:

- bring forward the date for submission of AMI charges applications to 31 July, to allow more time for consideration of applications
- require the AER to issue a draft determination and seek public submissions on the determination
- require the AER to consult with consumer groups.

Legislation is also proposed to allow the Minister for Energy and Resources and consumer groups a right to intervene in AMI charges appeal proceedings.

Recommendations

That the Department of Economic Development, Jobs, Transport & Resources:

2. improves its consumer education to focus on the opportunities to use smart meters to reduce energy consumption, and to take up flexible retail pricing offers, and use other tools, to reduce bills
3. works with distributors and retailers to identify and implement clear systems and processes for monitoring the changes in energy consumption and peak demand
4. works with distributors and retailers to develop and implement systems and processes to more effectively measure and track network benefits to enable these to be passed on to consumers
5. effectively influences the Australian Energy Regulator's:
    - decisions related to the passing on of network efficiency benefits to consumers in the 2016–2020 distribution price review
    - annual process for assessing whether excess costs are efficient and prudent and should be passed on to consumers
6. works with relevant stakeholders to analyse the impact of network tariff reform on consumer groups, particularly vulnerable consumers
7. develops a strong and persistent customer engagement program in relation to network tariff reform that:
    - enables consumers to make informed decisions to realise the potential benefits of more cost-reflective network tariffs and to assist in reducing the load on electricity infrastructure during peak periods
    - educates vulnerable sectors of society so that they can minimise any unfair disadvantage
8. identifies and implements actions to protect Victorian consumers from additional costs associated with the pending roll out of new competitive metering processes, and ensures that essential Advanced Metering Infrastructure program benefits are preserved
9. in conjunction with industry and the Essential Services Commission, considers options to improve the information available to consumers on electricity bills.

Appendix A.
Glossary

Definition of financial terms

Discounted cash flow

Discounted cash flow (DCF) analysis uses future free cash flow projections and discounts them (most often using the weighted average cost of capital) to arrive at a present value, which is used to evaluate the potential for investment. If the value arrived at through DCF analysis is higher than the current cost of the investment, the opportunity may be a good one.

Discount rate

The discount rate refers to the interest rate used in discounted cash flow analysis to determine the present value of future cash flows.

Net present value

The difference between the present value of the future cash inflows (or benefits) and the present value of the future cash outflows (or costs) relating to a particular project or object.

Nominal

An unadjusted rate, value or change in value. This type of measure often reflects the current situation, such as the current price of a car, and does not make adjustments to reflect factors such as seasonality or inflation.

Present value

The value of an item, sum of money or stream of cash flows, to be received or paid for in the future, expressed in terms of its value today.

Reference year

A year that serves as a benchmark for future periods.

Undiscounted

The nominal value of a cash flow.

Appendix B.

Audit Act 1994 section 16—submissions and comments

Introduction

In accordance with section 16(3) of the *Audit Act 1994*, a copy of this report, or part of this report, was provided to the Department of Economic Development, Jobs, Transport & Resources, the Department of Treasury & Finance and the Department of Premier & Cabinet.

The submissions and comments provided are not subject to audit nor the evidentiary standards required to reach an audit conclusion. Responsibility for the accuracy, fairness and balance of those comments rests solely with the agency head.

Responses were received as follows:

RESPONSE provided by the Secretary, Department of Economic Development, Jobs, Transport & Resources

Department of Economic Development,
Jobs, Transport & Resources

1 Spring Street
Melbourne, Victoria 3000

RECEIVED
07 SEP 2015
VICTORIAN AUDITOR-GENERAL'S OFFICE

Mr John Doyle
Auditor-General
Victorian Auditor-General's Office
Level 24, 35 Collins Street
MELBOURNE 3000

Dear Mr Doyle

PROPOSED PERFORMANCE AUDIT REPORT *REALISING THE BENEFITS OF SMART METERS*

Thank you for providing the Department of Economic Development, Jobs, Transport and Resources with the opportunity to comment, under section 16(3) of the *Audit Act 1994*, on the proposed audit report *Realising the Benefits of Smart Meters* (the report).

Addressing the recommendations of the 2009 audit

I welcome the observation within the report that the Department has substantially addressed the recommendations from the previous audit, *Towards a Smart Grid – the rollout of the Advanced Metering Infrastructure*, completed in 2009.

I also welcome the recognition that the Department has taken a stronger leadership position in relation to the Advanced Metering Infrastructure (AMI) program (the Program), strengthened the Program's governance structures and the oversight and management of risks, improved communications with consumers and regulators, and increased scrutiny of costs to inform regulatory decisions.

However, the report concludes that the Department has only "partly" met the 2009 recommendation to have a high level of active engagement with the relevant regulator on the transfer of expected benefits from smart meters to consumers. The Department is continuing to engage actively with the Australian Energy Regulator (AER) on its Electricity Distribution Pricing Review for 2016-20. This includes making initial submissions on the AER's "Framework and Approach" consultation, and on the businesses' regulatory proposals and AER's Issues Paper. I do not believe that more can be done to convey our views on this matter.

Realisation of benefits to customers

With the rollout effectively completed on 30 June 2014, and given that the advanced benefits were only projected to emerge once the rollout was complete and over an extended period (until 2028), the Department is of the view that insufficient time has

RESPONSE provided by the Secretary, Department of Economic Development, Jobs, Transport & Resources – continued

elapsed since the completion of the roll-out to determine whether the post rollout benefits are on an appropriate path.

At this early stage the Program has provided significant benefits to customers. For instance, an independent report on the benefits realised by the Program to the end of 2014 stated that:

- $86 million of benefits had resulted from customers avoiding the cost of import/export metering for solar PV systems;
- $25 million of benefits had resulted from the identification of electrical safety hazards in households and small businesses; and
- $128 million of benefits had resulted from various network operational efficiencies, such as remote meter reading and the ability to remotely de-energise and re-energise sites.

It is also noted that in their submissions in relation to the 2016 - 2020 Electricity Distribution Pricing Review the Victorian electricity distributors are proposing substantial price reductions in metering services charges.

Analysis presented in report

The Department remains concerned about the views asserted in the report about the Program's future costs and benefits.

For example, the report:

- asserts that "nowhere in the final [2014 Benefits Realisation] report does it state that the overall benefits potential may be higher than originally expected, or is likely to be higher than the 80 per cent". This is incorrect. The 2014 Benefits Realisation Report includes a low case (72 per cent) and a high case (91 per cent), identifies additional benefits not included in the baseline, and for each benefits category, states that the benefits estimated could be exceeded or significantly exceeded;
- incorrectly asserts that the passing through of benefits to consumers is reliant upon the accurate measurement of those benefits;
- states that "it is concerning that the fundamental assumptions underpinning the 2011 CBA, which were used to justify the continued rollout of smart meters, have become so uncertain as to require, yet again, a review of future targets for benefits realisation". The Department regards the review as prudent and proper to inform any corrective or value-enhancing actions that could be taken;
- states that the 2011 estimate of the net cost of $319 million to consumers may worsen as costs are projected to increase as benefits are uncertain. The increase in costs referred to in the report is for the expected replacement of meters from 2024. As these costs are already included in the $319 million net cost estimate, the replacement of meters, if it occurs, will not increase the net cost;
- in references to the increase in costs from 2024 with the replacement of meters, does not clarify that this increase would occur in the future rather than imminently, and follows significant decreases in metering costs;

RESPONSE provided by the Secretary, Department of Economic Development, Jobs, Transport & Resources – continued

- states that "other factors indicate that costs will rise even further than expected" with no information provided about these factors;
- expresses concern about dependency on the regulator for identifying and ensuring that network efficiencies are passed through to customers, without any evidence that the regulatory framework or its administration is deficient; and
- implies that all vulnerable customers will be adversely affected by network tariff reform although initial modelling commissioned by the Department indicates that whilst some vulnerable customers may experience bill stress following the introduction of cost reflective network tariffs, a larger number were likely to move out of bill stress.

The report does not recognise the opportunities that the Program provides in terms of network and retail sector innovation.

Overall, the report exhibits a systematic pessimism that is not justified by the evidence. One consequence of this approach is to make it unreasonably difficult and costly to implement the recommendation for industry and Government to positively communicate the benefits of the Program (and network tariff reform) to consumers.

I am pleased to note that the recommendations include actions that the Department is already actioning, or has proposed to implement.

Attached to this letter is the Department's response to the nine recommendations made in the Audit Report (Attachment 1).

Thank you for providing the opportunity to respond.

Yours sincerely

Richard Bolt
Secretary

Date: 7 September 2015

Enc.

Further Audit comment in response to the submission from the Secretary, Department of Economic Development, Jobs, Transport & Resources

This audit has been marked by a continual re-litigation of issues which my office has responded to multiple times throughout the audit. It has also been marked by the late provision of key pieces of evidence which are directly relevant to the audit. Given the department has raised several significant issues and concerns in its response, I consider it prudent to respond to the issues raised, including highlighting where the department has failed to provide evidence in a timely manner.

	Department comment	Auditor-General's comment
1.	However, the report concludes that the Department has only 'partly' met the 2009 recommendation to have a high level of active engagement with the relevant regulator on the transfer of expected benefits from smart meters to consumers. The department is continuing to engage actively with the Australian Energy Regulator (AER) on its Electricity Distribution Pricing Review for 2016–20. This includes making initial submissions on the AER's 'Framework and Approach' consultation, and on the businesses' regulatory proposals and AER's Issues Paper. I do not believe that more can be done to convey our views on this matter.	My office has previously responded to DEDJTR on the issue raised. The report clearly acknowledges that engagement with the regulator in relation to the realisation of Advanced Metering Infrastructure (AMI) benefits for customers has occurred through formal consultation processes, and through forums such as the AMI Ministerial Advisory Council. It also acknowledges that the department is planning and preparing for the Electricity Distribution Pricing Review (EDPR) process, for the 2016–20 period, which is the key opportunity to pass on the efficiencies that distributors have captured during the 2011–15 regulatory period on to customers from 2016 onwards. I note that the department appears to have made a submission to the Australian Energy Regulator as part of the EDPR process in the later part of this audit, but did not provide my office with a copy of the submission or discuss its content, despite its relevance to the audit. My report is also clear that we have assessed this 2009 recommendation as having been only partly met because the outcome of this process is unclear and still largely prospective, not because the department has not taken action.
2.	With the rollout effectively completed on 30 June 2014, and given that the advanced benefits were only projected to emerge once the rollout was complete and over an extended period (until 2028), the department is of the view that insufficient time has elapsed since the completion of the roll-out to determine whether the post rollout benefits are on an appropriate path.	My office has previously responded to DEDJTR on the issue raised. We do not accept that insufficient time has elapsed since the completion of the rollout to determine whether the post rollout benefits are on an appropriate path. We report on benefits realisation against the 2011 cost-benefit analysis (CBA), which is the 'baseline' against which the department also measures benefits realisation. The analysis shown in the report is factually correct and reflects the current status of the program and forecasts of future benefits realisation. By the end of 2014, it was expected that $834.05 million benefits (NPV 2014, 2011$) would be achieved, however, benefits realisation has fallen behind as only $746.59 million benefits were recorded by the 2014 Benefits Realisation Assessment.

	Department comment	Auditor-General's comment
3.	At this early stage the Program has provided significant benefits to customers. For instance, an independent report on the benefits realised by the Program to the end of 2014 stated that: • $86 million of benefits had resulted from customers avoiding the cost of import/export metering for solar PV systems; • $25 million of benefits had resulted from the identification of electrical safety hazards in households and small businesses; and • $128 million of benefits had resulted from various network operational efficiencies, such as remote meter reading and the ability to remotely de-energise and re-energise sites.	My office has previously responded to DEDJTR on the issue raised. The benefits listed here are included in our report. Part 3 shows that total benefits expected and achieved to date ($746.59 million out of an expected $834.05 million) and highlights the 'major anticipated benefits that the 2011 CBA expected to have accrued up until the end of December 2014'. These are the avoided costs, network efficiency benefits and the benefits associated with innovative tariffs and demand management. These are highlighted in Figure 3A, with data taken from the 2014 Benefits Realisation Assessment: • The $86.62 million of benefits 'from customers avoiding the cost of import/export metering for solar PV systems' are included in the Avoided costs category of Figure 3A. It is also made clear in the dot points on page 32 that this benefit is included in the overall benefits category of avoided costs. • The $25.78 million from the 'identification of electrical safety hazards' which form part of the 'Miscellaneous benefits' category that have not been reported on separately in Figure 3A, but form part of the overall achievement of $746.59 million. • Benefits from network operational efficiencies are also reported on in Figure 3A, and have achieved $107.98 million.
4.	It is also noted that in their submissions in relation to the 2016–2020 Electricity Distribution Pricing Review the Victorian electricity distributors are proposing substantial price reductions in metering services charges.	My office has previously responded to DEDJTR with regard to its suggestion that the Victorian electricity distributors are proposing substantial price reductions in metering services charges as part of the 2016–2020 EDPR process. At the time, we noted that 'Even if the distributors are proposing price reductions in metering service charges, there is still a risk of the distributors understating the operational benefits of AMI metering' as advised by the department during the audit'. This audit has not reviewed or assessed submissions made by Victorian electricity distributors as part of the 2016–2020 EDPR process. However, it is evident from the AER's website that the Department has made a submission to the AER as part of the EDPR process in the later part of this audit, but did not provide my office with a copy of the submission or discuss its content, despite its relevance to the audit. The submission, available on the AER website, states: • The distributors are forecasting a substantial reduction in metering service charges from 2015 to 2016, as the rollout of smart meters is now substantially complete. • The distributors have recognised the network operational efficiencies that will be realised with the rollout of smart meters benefits.

Department comment	Auditor-General's comment
	• However, none of them have forecast a reduction in operating expenditure to reflect these network operational efficiencies, and only [one distributor] has explicitly forecast a productivity improvement in its operating expenditure over the 2016–2020 regulatory control period. • DEDJTR considers that the AER should expect the Victorian distributors to realise efficiency gains from the rollout of smart meters. These efficiency gains should be passed through to customers as the benefits are realised given that it is their customers, rather than the distributors, that have funded the investment in smart meters through a cost recovery regulatory regime. During the audit the department advised that network efficiency gains associated with AMI program should also be incorporated in the 2016–2020 revenue determination for electricity distributors. However, as acknowledged by the department's submission to the EDPR process, it appears that none of the distributors have forecast reductions in operating expenditure to reflect the network efficiency gains. This is consistent with my finding noted on page 48 of my report, that there is a risk of the distributors understating the operational benefits of AMI metering. This also underscores the importance of Recommendation 4 for the department to work with distributors and retailers to develop and implement systems and processes to more effectively measure and track network benefits to enable these to be passed on to consumers.
The Department remains concerned about the views asserted in the report about the Program's future costs and benefits. For example, the report: **5.** • asserts that 'nowhere in the final [2014 Benefits Realisation] report does it state that the overall benefits potential may be higher than originally expected, or is likely to be higher than the 80 per cent'. This is incorrect. The 2014 Benefits Realisation Report includes a low case (72 per cent) and a high case (91 per cent), identifies additional benefits not included in the baseline, and for each benefits category, states that the benefits estimated could be exceeded or significantly exceeded	My office has previously responded to DEDJTR on issues relating to the achievement of benefits above original forecasts. It is correct to assert that current projections suggest that consumers can realise only 80 per cent of the total expected benefits. While the 2014 Benefits Realisation Assessment includes some sensitivity analysis that found a low case of 72 per cent of benefits and a high case of 91 per cent, the department's 2014 Benefits Realisation Assessment estimates that the 'realisation potential to 2028 has been assessed to be $1 641m, approximately 80% of the amount anticipated in the 2011 baseline study'. The 2014 Benefits Assessment report also states that some benefits categories may be higher than expected over the life of the program, this may only add an approximate $101 million in benefits. Nowhere in the report does it state that overall benefits potential may be higher than originally expected and it clearly states that even the 80 per cent relies on the vast majority of all known and unknown risks being mitigated.

	Department comment	Auditor-General's comment
6.	• incorrectly asserts that the passing through of benefits to consumers is reliant upon the accurate measurement of those benefits	My office has previously responded to DEDJTR on the issue raised. If the quantum of benefits is not known for some categories of benefits, how can the department be confident that these benefits will be transferred to consumers in full? As per comment 4 above, in response to a briefing during this audit the department noted that there is a risk of the distributors understating the operational benefits of AMI metering and a thorough examination of the distribution businesses' revenue proposals is necessary for these to be transferred to consumers in full and to mitigate the risk that distributors understate the operational benefits of AMI metering during the EDPR process. As cited above, the department's recent submission to the EDPR process states that none of the distributors have forecast a reduction in operating expenditure to reflect the network operational efficiencies that can be realised with the rollout of smart meters. Recommendation 4 is focused on more effectively measuring and tracking network benefits to enable these to be passed on to consumers. Recommendation 3 also assists benefits monitoring and requires the department to track and monitor consumption pattern changes as a result of the AMI program. The department's suggestion that there is no need to accurately measure benefits contradicts its responses to Recommendations 3 and 4 (see page 65), which it accepts in principle. Specifically, the department notes that 'the monitoring of benefits realised as a consequence of the AMI Program will require an understanding of network operation and changes in efficiency of networks due to the AMI Program independently of other changes in efficiency attributable to the incentive based regulatory framework and good business practice (amongst other matters)'.
7.	• states that 'it is concerning that the fundamental assumptions underpinning the 2011 CBA, which were used to justify the continued rollout of smart meters, have become so uncertain as to require, yet again, a review of future targets for benefits realisation'. The Department regards the review as prudent and proper to inform any corrective or value-enhancing actions that could be taken	My office has previously responded to DEDJTR on the issue raised. The report—on page 37—clearly acknowledges that 'benefits may change and additional benefits may be added, especially as the technology is rolled out and market participants, policy makers and customers experience and better understand the potential of AMI over time.' In this respect, the report notes that 'it is encouraging that the department will actively review the expected benefits'. However, it is our view that it is concerning that the fundamental assumptions underpinning the 2011 CBA, which was used to justify the continued rollout of smart meters, have become increasingly uncertain so as to require a full review of future targets for benefits realisation. This review is again likely to change the value of anticipated benefits through to the end of the program. The report on page X of the Audit summary notes that

	Department comment	Auditor-General's comment
		'The 2011 CBA is the fourth time that the costs and benefits of the AMI program have been analysed in just 10 years. In each analysis since our 2009 audit the estimated costs have increased and the benefits have diminished. This continual change highlights the serious flaws in the program's original business case which we identified in our 2009 audit, as well as the unrealistic assumptions around the achievability of the costs and benefits which were beyond the control of the state. DEDJTR has advised that it is now reassessing the expected benefits of the program for a fifth time, as many of the 2011 assumptions have materially changed'. In response to a briefing during the audit, the department acknowledged that with each new assessment, not only have changes in the economic and operating environment impacted on the outcomes of the revised costs and benefits, but there has also been a greater appreciation of the complexities in fully delivering the future benefits.
8.	• states that the 2011 estimate of the net cost of $319 million to consumers may worsen as costs are projected to increase as benefits are uncertain. The increase in costs referred to in the report is for the expected replacement of meters from 2024. As these costs are already included in the $319 million net cost estimate, the replacement of meters, if it occurs, will not increase the net cost	The report on page 30 notes several reasons why costs are projected to increase, in addition to forecast costs related to the expected replacement of meters from 2014. The department has not disputed these costs, including that: • In the 2011 CBA, it was assumed that the up-front capital costs would largely occur over the period 2008–2013. However, with the delay in the rollout of meters, the costs incurred in 2014 and 2015 are forecast to be higher than budgeted. • Other factors that mean that distributors' actual program cost profiles have changed significantly since forecasts were completed in the 2011 CBA include changes in key primary assumptions around the economic/depreciable life of the meters, the economic/depreciable life of the IT and communications systems and subsequent replacement costs at the end of the economic lives of the assets. • The move to national competitive retail metering from 2017 may further increase the risk of a higher net cost to consumers, as it could further diminish the benefits of the AMI program and expose those consumers to additional costs who choose to have the smart meters installed under the AMI program replaced by other, competitively provided meters. Further, the statement that 'benefits remain decidedly uncertain' is factually correct. There is uncertainty around the benefits which may not be fully achieved and the report is clear that current forecasts project only approximately 80 per cent of the total program benefits to be achieved—provided that all issues and risks will be effectively mitigated, which are beyond the direct control of the state.

	Department comment	Auditor-General's comment
9.	• in references to the increase in costs from 2024 with the replacement of meters, does not clarify that this increase would occur in the future rather than imminently, and follows significant decreases in metering costs	This point has not been raised previously by the department despite it providing extensive comments on several drafts of the report. The report is clear that 'According to the 2011 CBA, annual costs are forecast to reduce from 2013 to 2023 and increase again from 2024 through to the end of 2028, if meters need to be replaced as anticipated'. Hence, there can be no misunderstanding by the reader that this increase will not 'occur in the future rather than imminently'—as it will occur in 2024, eight years from now.
10.	• states that 'other factors indicate that costs will rise even further than expected' with no information provided about these factors	The factors are listed in the dot points following this sentence, on page 30.
11.	• expresses concern about dependency on the regulator for identifying and ensuring that network efficiencies are passed through to customers, without any evidence that the regulatory framework or its administration is deficient	My office has previously responded to DEDJTR on the issue raised. We neither assess, make any comment, nor pass any judgement on the efficacy of the regulatory system. Our point is that the regulator must identify and pass on network efficiencies and the extent to which benefits will be transferred to consumers is uncertain, as these processes cannot be fully determined in advance. This is in line with written advice provided by the department during the audit, which states that 'The attribution of anticipated AMI benefits to consumers, industry, government or society is clear, in that the means by which benefits can be attributed are well known and accepted. However, the Department notes that the actual transfer of benefits to consumers depends on a range of matters, including regulatory decisions and competitive action. As such, to the extent that attribution is unclear, it is unclear because regulatory and competitive actions cannot be fully determined in advance'.
12.	• implies that all vulnerable customers will be adversely affected by network tariff reform although initial modelling commissioned by the Department indicates that whilst some vulnerable customers may experience bill stress following the introduction of cost reflective network tariffs, a larger number were likely to move out of bill stress.	My office has previously responded to DEDJTR on the issue raised. We do not agree that the text implies network tariff will negatively affect all vulnerable customers. We also note that VAGO was first made aware of, and provided, a report commissioned by DEDJTR, dated March 31 2015, which included content directly related to impacts of tariff reform on vulnerable consumers on 31 August 2015. As this report was supplied after my audit was complete, my office was only able to perform a limited review. We note that the report states that while it 'provides useful insights into the issue' (of vulnerable customers), the process of estimating disposable household income and subtracting estimated electricity bills is 'an imprecise mechanism and consider the results to be indicative, rather than definitive' and that 'further work may deliver further insights'.

	Department comment	Auditor-General's comment
		The department advised us on 31 August 2015 that it plans to undertake further analysis in 2015–16 to identify a larger sample of vulnerable Victorian electricity customers following the submission of actual tariff structure statements by network businesses to the AER in September 2015. The abovementioned report reflects accurately this advice, noting that 'the full impact that network tariff reforms will have on different community groups is not yet well understood' and 'It is critical that government gains a clear understanding of how proposed tariff structures will affect key vulnerable and disadvantaged groups in order to ensure that they are well protected'.
13.	The report does not recognise the opportunities that the Program provides in terms of network and retail sector innovation.	An entire section of the report (Part 4) is dedicated to discussing opportunities for maximising benefits for consumers. These opportunities include encouraging the take up of flexible tariffs, which is an innovation in the retail sector, and Section 4.3.2 discusses network tariff reform, which the report notes has 'an important role to play in changing consumers behaviour by better reflecting the costs of supplying electricity in different parts of the network and at different times of the day' and provides 'scope for electricity retailers to set prices for small business and residential customers to reduce their electricity consumption'.

RESPONSE provided by the Secretary, Department of Economic Development, Jobs, Transport & Resources – continued

ATTACHMENT 1: Departmental response to audit recommendations and associated actions and timeframes:

#	Recommendation	Response	Actions to respond to recommendations
1	That the Department: *develops budget paper measures that report performance against the objectives of the Advanced Metering Infrastructure program, and publicly report annually on costs incurred and benefits achieved.*	**Accept, in part**. In accordance with this recommendation, the Department has commenced a process to review its departmental budget measures and public reporting. Subject to Ministerial support, the Department expects to implement revised reporting against budget measures from 2016, noting that the current round of funding lapses on 30 June 2016 and Government is not required to continue to report against the current AMI Program. The Department does not accept that it should report publicly on costs incurred. A metering cost monitoring function is already the responsibility of the Australian Energy Regulator, and the Department has no specific powers to obtain detailed cost information from the distribution businesses. The Department questions why (and how) it should duplicate this function, particularly given that the rollout is now complete and costs have already been incurred.	The Department will: • develop and agree measures that better report performance against the objectives of the Advanced Metering Infrastructure program in time for the 2016-17 budget papers (May 2016); • include relevant details in the 2015-16 Departmental Business Plan (September 2015); and • publicly report on benefits achieved, while noting the limitations in attributing benefits to the Advanced Metering Infrastructure program (August 2015).
2	That the Department: *improves its consumer education to focus on the opportunities to use smart meters to reduce energy consumption, and to take up flexible retail pricing offers, and use other tools, to reduce bills.*	**Accept, subject to Government approval and funding.** The Department notes that this recommendation broadly complements and supports actions that are already in progress, or proposed subject to funding. However, the Department's view is that awareness and educational programs undertaken by government should focus on customer outcomes rather than on the linkage to a particular technology. Therefore, the Department is continuing to focus on ensuring that its communications help customers identify the best electricity tariff offers available to them. For example, the Department has recently run a six-week advertising campaign promoting Government's energy price comparator tool (My Power Planner), and is considering a further major promotional campaign, subject to funding.	• Complements and supports actions that are already in progress

RESPONSE provided by the Secretary, Department of Economic Development, Jobs, Transport & Resources – continued

#	Recommendation	Response	Actions to respond to recommendations
3	That the Department: *works with distributors and retailers to identify and implement clear systems and processes for monitoring the changes in energy consumption and peak demand.*	**Accept in principle, subject to consideration of appropriate approaches and consultation with distributors and retailers.** The Department notes that monitoring the smart meter benefits realised requires the ability to accurately attribute electricity consumption patterns to the AMI Program. This attribution is complicated by the different influences and factors that impact on network investment, including level of demand, as well other factors such as technology. It also relies on the ability to distinguish between demand reductions by customers with smart meters (whose energy consumption is less than 160 MWh per annum) and demand reductions by other consumers (larger commercial and industrial customers). Therefore, any approach that the Department can implement is likely to differ markedly from the approach advocated in this recommendation (which suggests highly granular monitoring).	• Complements and supports actions that are already in progress
4	That the Department: *works with distributors and retailers to develop and implement systems and processes to more effectively measure and track network benefits to enable these to be passed on to consumers.*	**Accept in principle, subject to consideration of appropriate approaches and consultation with distributors.** The Department notes that the monitoring of benefits realised as a consequence of the AMI Program will require an understanding of network operation and changes in efficiency of networks due to the AMI Program, independently of other changes in efficiency attributable to the incentive based regulatory framework and good business practice (amongst other matters). The revenue determination process undertaken by the Australian Energy Regulator (AER) allows efficiencies in aggregate to be identified through the distributors' audited costs which are a part of their submissions to the AER. Whilst the Department is able to work with distribution businesses on tracking network benefits, the Department does not accept that it should separately establish its own function for monitoring changes in network efficiency given the role of the AER and the existing well established regulatory framework governing networks.	• Complements and supports actions that are already in progress
5	That the Department: *effectively influences the Australian Energy Regulator's:* • *decisions related to the passing on of network efficiency benefits to consumers in the 2016-2020*	**Accept, noting that progress has been made to achieve this outcome.** The Department has already made commitments to these actions, which largely reflect a recommendation made in the 2009 audit. The Department has made submissions to the Australian Energy Regulator in relation to its consideration of distribution network business expenditure for 2016-20, on 30 August 2014 and 13 July 2015.	• In progress

RESPONSE provided by the Secretary, Department of Economic Development, Jobs, Transport & Resources – continued

#	Recommendation	Response	Actions to respond to recommendations
	distribution price review. • *annual process for assessing whether excess costs are efficient and prudent and should be passed on to consumers.*	It is also noted that the Government has recently made changes to the AMI Order in Council to further strengthen the economic prudency tests applied by the AER in assessing distribution expenditure on smart meters and to improve the process under which the AER reaches determinations on these costs. In addition, a legislative amendment is proposed to allow the Minister and consumer groups the right to intervene in AMI charges appeal proceedings.	
6	That the Department: *works with relevant stakeholders to analyse the impact of network tariff reform on consumer groups, particularly vulnerable consumers.*	**Accept recommendation, noting that progress has been made to achieve this outcome.** The Department has already commissioned and completed independent analysis that assesses potential consumer impacts of new cost-reflective network prices using actual half-hourly household metering data and household survey data. This analysis indicates that no particular consumer segment, such as vulnerable consumers or households with solar PV and/or air conditioning, would be inappropriately better or worse off as a result of the reform. The Department is undertaking further work to help identify vulnerable customer impacts in regard to tariff reform. This analysis also suggests that effective introduction of demand based cost reflective tariffs should help to reduce peak usage and avoid the need for expensive peak network investment, consistent with the objective of the AMI Program.	• In progress
7	That the Department: *develops a strong and persistent customer engagement program in relation to network tariff reform that:* • *Enables consumers to make informed decisions to realise the potential benefits of more cost-reflective network tariffs and to assist in reducing the load on electricity infrastructure during peak periods.* • *Educates vulnerable sectors of society so that they can minimise*	**Accept recommendation subject to Government approval and funding.** The Department considers that an effective and persistent customer engagement program first requires a clear understanding of the roles and responsibilities of all key participants in the reform process including distribution businesses, energy retailers, the Victorian Government and consumer groups. The Department will consult with key stakeholders to develop a communications and customer engagement strategy that outlines the role and responsibility of each stakeholder taking into account actual transition pathways and timelines. The development of this strategy will allow the Victorian Government to focus on the types of information and customer engagement tools that government could use to support Victorian consumers realise potential benefits, including specific support and education for vulnerable Victorians. The Department notes different types of consumer engagement measures might be	• In progress and subject to Government approval and funding

RESPONSE provided by the Secretary, Department of Economic Development, Jobs, Transport & Resources – continued

#	Recommendation	Response	Actions to respond to recommendations
	any unfair disadvantage.	required beyond the introduction of cost reflective network tariffs in the initial regulatory period of 2016 – 2020 as messages are likely to change in response to the long term market evolution of cost reflective tariffs and introduction of other customer demand response mechanisms and technologies. These measures are subject to the Government's decision to implement network tariff reform and to obtain funding to undertake a customer engagement response.	
8	That the Department: *identifies and implements actions to protect Victorian consumers from additional costs associated with the pending rollout of new competitive metering processes and ensures that essential Advanced Metering Infrastructure benefits are preserved.*	**Accept recommendation, noting that progress has been made to achieve this outcome.** The Department is actioning or has actioned a range of activities in relation to metering competition and notes that VAGO's recommendation restates a recommendation from the 2014 Gateway Review. The range of related activities that have been or are being undertaken by the Department includes: • An independent analysis by Oakley Greenwood of the risks of metering competition on the realisation of benefits to customers; and • Consideration of measures to ensure that current and potential benefits, including those that arise from network operational efficiencies, remain available to Victorian consumers.	• In progress
9	That the Department: *in conjunction with industry and the Essential Services Commission, considers options to improve information available to consumers on electricity bills.*	**Recommendation noted.** The Department notes that this recommendation is related to customer engagement and could be considered an option to consider within the broader recommendation no. 3 regarding customer engagement.	• Refer to Recommendation no. 7

RESPONSE provided by the Secretary, Department of Treasury & Finance

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John

Dear Mr Doyle

PROPOSED DRAFT PERFORMANCE AUDIT REPORT: *REALISING THE BENEFITS OF SMART METERS*

Thank you for your letter of 24 August 2015 inviting submissions or comments for inclusion in the proposed performance audit report: *Realising the Benefits of Smart Meters*.

I note that DTF provided your office with a response on 29 May 2015 on the Background chapter of the provisional draft performance audit report. Matters arising from our response have been incorporated in the Background chapter of the proposed report.

DTF has no further comments.

Thank you for the opportunity to comment on the report.

Yours sincerely

David Martine
Secretary

State Government Victoria

RESPONSE provided by the Secretary, Department of Premier & Cabinet

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VICTORIAN AUDITOR-GENERAL'S OFFICE

Mr John Doyle
Auditor-General
Victorian Auditor-General's Office
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Melbourne VIC 3000

Dear Mr Doyle

Thank you for your letter of 24 August 2015 seeking the Department of Premier and Cabinet's (DPC) views on an excerpt of your proposed performance audit report on *Realising the Benefits of Smart Meters*.

I note your advice that this section has not changed since DPC was initially consulted in May 2015. As such, I would like to reaffirm that DPC does not have any concerns with the factual evidence, issues raised and context provided in this excerpt. It is a fair representation of the events and positions of the time.

Thank you for providing the opportunity to comment. Should you require any further information, please contact the Acting Director of the Energy, Resources and Environment Branch, Mr Matthew Minchin on 03 9651 5759 or at matthew.minchin@dpc.vic.gov.au.

Yours sincerely

Chris Eccles
Secretary
Department of Premier & Cabinet

Your details will be dealt with in accordance with the *Public Records Act 1973* and the *Privacy and Data Protection Act 2014*. Should you have any queries or wish to gain access to your personal information held by this department please contact our Privacy Officer at the above address.

State Government Victoria

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Applying the High Value High Risk Process to Unsolicited Proposals (2015–16:5)	August 2015
Biosecurity: Livestock (2015–16:4)	August 2015
Follow up of Management of Staff Occupational Health and Safety in Public Schools (2015–16:3)	August 2015
Follow up of Managing Major Project (2015–16:2)	August 2015
Follow up of Collections Management in Cultural Agencies (2015–16:1)	August 2015

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