AMI Budget Application 2012-15

Substantiation of Base Cost to Provide Regulated Services

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1 Overview

This report describes metering cost forecasts for the subsequent Advanced Metering Infrastructure (AMI) budget period (1 January 2012 to 31 December 2015). The costs described in this report are the costs to Jemena Asset Management (6) Pty Ltd (JAM) of providing these services on behalf of Jemena Electricity Networks (Vic) Ltd (JEN) and United Energy Distribution Ltd (UED). These costs have been forecast based on current commercial arrangements between JAM, UED and JEN in place on the submission date of this document.

This report does not include details of additional expenditure forecasts for the individual distributors—JEN and UED.

1.1 Introduction

For the initial AMI budget period, UED and JEN contracted with JAM to provide Regulated Services. JAM has prepared this report in response to an information request from UED and JEN (the Asset Owners).

In order to support their respective Budget Applications to the Australian Energy Regulator (AER), the Asset Owners have requested that JAM provides:

... a document including the following information to support their respective 2011 Budget Applications as required under the Cost Recovery Order in Council:

1) Budget estimates of JAM's direct costs to be incurred under the joint Advanced Interval Metering Roll-out (AIMRO) Program in undertaking activities required to deliver Regulated Services in relation to AMI

2) Explanation of how the activities relate to the scope of regulated services (as defined in the CROIC[1]: and to the extent relevant, as previously approved by the AER as within CROIC scope) including:

    a) that the activity is reasonably required for the provision of Regulated Services

    b) that the activity is reasonably required to fulfil metering regulatory obligations or requirements (including detailed tables of the relevant regulatory requirements).

3) Budget estimates relating to the activities in 2)

[1] Cost Recovery Order in Council (CROIC) means the Order in Council made 28 August 2007 under sections 15A and 46D of the Electricity Industry Act 2000 and published in the Victoria Government Gazette S200 on that day as amended by the Order in Council made 12 November 2007 and published in the Victoria Government Gazette S286 on that day, the Order in Council made 25 November 2008 and published in the Victoria Government Gazette S314 on that day, the Order in Council made on 31 March 2009 and published in the Victoria Government Gazette G14 on 2 April 2009, and the Order in Council made on 19 October 2010 and published in the Victorian Government Gazette G42 on 21 October 2010.

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4) Material which demonstrates the prudency of the budget estimates (as per the prudency test in the CROIC) including splitting costs into categories by the relevant CROIC prudence test to be applied (either the "competitive tender prudence test" or the "commercial reasonableness prudence test") and for each cost category:

   a) explains the competitive tender processes or the reasonable commercial processes followed or to be followed when incurring the relevant cost

   b) concludes whether or not the relevant prudence test is met.

5) Material which demonstrates the capability and performance of the joint AIMRO program over the current budget period, including the demonstrated prudency of the technology selection.

1.2 Use of this report

This report is provided by JAM to UED and JEN on a confidential basis, as it includes forecast financial information that enables unit price forecasts to be established for meters, installation services and IT systems and infrastructure. That information is commercially sensitive to JAM; its disclosure could prejudice any future competitive tender processes conducted by JAM, or by other Victorian distribution businesses.

JAM understands that UED and JEN may provide this report to the Victorian Department of Primary Industries (DPI) to help inform AMI policy development, and to the AER to support their respective budget applications. JAM also understands that the AER may rely on this report in assessing JEN's and JAM's budget applications. JAM requests that this report be kept confidential between JEN, UED, JAM, DPI and the AER.

1.3 Accuracy and reliability of the report

Having made all the relevant and appropriate enquiries, JAM confirms that the information in this report:

- has been reviewed by JAM
- where the information is historical, has been drawn from the internal business records of JAM, and is true and correct, and
- where the information is forecast or estimated, the forecasts or estimates are genuine and made on a reasonable basis at this point in time.

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1.4 Summary of expenditure to be included in budget application

The total forecast expenditure over the subsequent AMI budget period for metering services is {c-i-c} million. In JAM's view, this expenditure is prudent, and relates to activities that are within scope and reflects the costs incurred by JAM while delivering these services to UED and JEN over the course of the subsequent AMI budget period. JAM has made assumptions based on current arrangements, about transaction volumes and levels of service required by UED and JEN. Costs outlined in this budget do not reflect any changes to these arrangements.

This expenditure delivers:

- Continued deployment of advanced meters to replace existing UED and JEN meters - approximately 480,600 meters will have been installed by the end of the initial AMI budget period, leaving 454,900 to be installed during the subsequent AMI budget period
- Ongoing optimisations and management of a robust communications network for approximately 993,400 end points at the end of the 2012 -2015 budget period
- Continued management of the roll-out and ongoing maintenance of the AMI metering environment
- Integration of new information systems to validate, process and store metering data
- Evolution of processes for IT systems and infrastructure to continue to manage the AMI meter, network and systems environment in the face of new service obligations
- Business processes to ensure that the current manual meter-reading, back-office environment and current IT systems can be efficiently and effectively operated until replaced by AMI by 2013.

Table 1-1 summarises the total forecast expenditure by activity and shows proportions of contracted costs and other costs.

Table 1-1 - Forecast expenditure for subsequent AMI budget period

AUD $	2012	2013	2014	2015	Total
	{c-i-c}				

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AUD $	2012	2013	2014	2015	Total
{c-i-c}					

To assist in understanding of relative expenditure and cost category for the subsequent AMI budget period Table 1-2 summarises the relative percentages of expenditure for each Submission] cost category referred to in this report/

Table 1-2- Percentage share of expenditure for subsequent AMI budget period

Submission category	Share of costs 2012-2015
Metering (mass roll-out)	{c-i-c}
Metering (BAU)	{c-i-c}
AMI technology	{c-i-
Operations	{c-i-c}
IT Systems and Infrastructure	{c-i-c}

This report demonstrates that the activities associated with joint base costs[2] are within scope, i.e. they are reasonably required for the provision of Regulated Services, and for UED and JEN to comply with their metering regulatory obligations and requirements. All continuing activities were accepted by the AER as within

[2] 'Joint base costs' refers to underlying costs incurred by JAM in delivering metering services. It excludes any direct or indirect asset owner costs that UED and JEN incur outside the joint program to provide regulated services.

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scope in its 2009 decision[3]. Any new activities are clearly identified in Chapter 4, and are within scope.

This report also demonstrates that the associated expenditure satisfies the prudence tests. For each cost category, it describes the anticipated expenditure and the relevant competitive tender or commercial decision making processes (see chapters 9 to 15). Expenditure claimed refers only to those costs that are more likely than not to be incurred, and to expenditure consistent with the commercial standard that a reasonable business would exercise in the circumstances.

During the subsequent AMI budget period, JAM will continue to employ the governance, decision making and procurement processes in line with the commercial agreements established with UED and JEN , and with the policies and procedures required by the Jemena group. These are described in Section 3.2 of the 2009 Substantiation Report[4]. Competitive tendering has or will be used to procure some 72% of the forecast expenditure, and the tendering processes have achieved efficient outcomes. The remaining non-tendered costs reflect the sound commercial decision making that underpins all joint expenditure commitments.

1.5 Structure of this report

This report is structured as follows:

Chapter	Title	Details
1	Overview	Introduction and purpose of document, Summary of findings. Structure of document
2	Current status of AMI program	Overview of current status of program including achievements and milestones, change in focus as enter next phase, challenges faced and high level explanation for any changes.
3	CROIC requirements in relation to expenditure	Describes the tests set out in the CROIC that are to be applied by the AER in considering Budget Applications
4	Scope of activities	Describes each joint program activity, explains why it is reasonably required, and how it fits within the defined scope.
5	Meter volumes and plan for roll-out	Details JEN's and UED's plans for meter roll-out and assumptions affecting these plans.

[3] AER, Final determination, Victorian advanced metering infrastructure review, 2009-11 AMI budget and charges applications, October 2009

[4] That is, *Substantiation of Base Costs to Provide Regulated Services - Report prepared by Alinta Asset Management Pty Ltd for Jemena Electricity Networks and United Energy Distribution*, dated 26 February 2009 – REF-016

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Chapter	Title	Details
6	The total expenditure	Sets out the total forecast opex and capex that JAM expects to incur on behalf of UED and JEN for the provision of the Regulated Services during the subsequent AMI budget period
7	Overview of contract and other costs	Provides an overview of the joint program forecast capital and operating expenditure. Demonstrates that expenditure meets prudency test
8	Competitive tendering	Describes the competitive tendering process that applies to all past and future tenders undertaken in relation to the joint program, except where explicitly stated otherwise.
9	The commercial standard (process for non-tendered costs)	Demonstrates that a robust commercial process has been, or will be observed for all decisions affecting AMI expenditure, in particular, for expenditure related to non-tendered contracts and other costs.
10	Metering	Describes the mass roll-out and BAU metering activities, including AMI installation services cost category, AMI technology for meters and local area network (LAN) and program management. It summarises forecast expenditure over the subsequent AMI budget period and demonstrates compliance with the relevant CROIC prudence tests.
11	AMI Technology	Describes the AMI Technology cost category—including some acceptance testing and trials activities—and provides a summary of the forecast expenditure over the subsequent AMI budget period, and demonstrates compliance with the relevant CROIC prudence tests.
12	AMI Operations	Describes the AMI operational cost category, including AMI Business and Industry Transition and AMI technology for Wide Area Networks (WAN). It summarises forecast expenditure over the subsequent AMI budget period and demonstrates compliance with the relevant CROIC prudence tests.
13	AMI IT systems and infrastructure	Describes the AMI IT cost category—including some acceptance testing activities—and provides a summary of the forecast expenditure over the subsequent AMI budget period. It also demonstrates compliance with the relevant CROIC prudence tests.
A1	Glossary of terms	
A2	JEN contract details	Provides the JEN contract details required by the AER as outlined in its Framework Paper[5].
A3	UED contract details	Provides the UED contract details required by the AER as outlined in its Framework Paper.

[5] Australian Energy Regulator, *Final decision, Framework and approach paper, Advanced metering infrastructure review 2009-11,* dated January 2009

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Chapter	Title	Details
A4	Reference documents	Lists all documents referred to within this report and provides the joint program's reference number.

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2 Current status of the AMI program

2.1 Program status

The Victorian AMI roll-out has been a world leading capital works and market integration initiative that has involved many complexities, adaptations and lessons. Despite these challenges, the joint program is achieving each of its key milestones; it is delivering an effective metering solution that complies with current obligations, and a sound platform for continued compliance over the subsequent AMI budget period.

2.2 Achievements to date

Key achievements to date are:

Roll-out targets achieved. By 7 November 2010, 8 weeks ahead of schedule, JAM had successfully installed 10% of AMI meters in the UED and JEN networks. JAM also enabled UED and JEN to meet the regulatory obligation of 5% AMI meters operating as remotely read interval meters on 22 July 2010. At 17 January 2011,145,341 AMI Meters were installed (UED: 98,192; JEN: 47,149) representing 15.3% of UED's meter base and 15.5% of JEN's meter base.

Prudent technology selection demonstrated. UED and JEN were the first distribution businesses in Victoria operating AMI meters in the market as remotely read interval meters with daily delivery of the meter data to market. As at 17 January 2011:

- 125,234 AMI meters in the market were operating as remotely read Type 5 meters (UED: 84,889; JEN: 40,345) representing 13.3% of UED's total meter base and 13.3% of JEN's total meter base

- 25% of UED's distribution network had AMI communications in operation, and 39% of JEN's distribution network had AMI communications in operation.

Effective preparations. Efficient and effective technology investigations and trials informed the selection and procurement processes. Effective programs and project plans were developed and implemented to manage the design and delivery of the AMI solution and the capital works program, and to manage associated AMI delivery risks and issues for UED and JEN. A sound conceptual design guided the development and implementation of the AMI technology and supporting IT systems and infrastructure.

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Prudent procurement. JAM established an Open Expression of Interest followed by Tender and selection and procurement process to contract the provision of:

- AMI Communications technology and associated management systems
- AMI Meters providers
- Installation services
- IT System and Infrastructure Integrators
- IT hardware and high availability infrastructure required to meet AMI performance and service level obligations
- Back office IT systems to support business processes required to meet AMI obligations, and
- Production IT data centre and disaster recovery data centre.

- **Prudent systems**. JAM developed the detailed design of AMI IT Systems and Infrastructure and AMI technology solutions, business processes and mass roll-out plans and processes. JAM built, tested and implemented all IT systems (including applications, infrastructure, integration, conversion and testing), implementing AMI and transitional business processes, and commenced mass roll-out of AMI meters.

2.2.1 Key milestones in overall program

The project milestones for achieving the roll-out obligations set out in Schedule 1 of the CROIC are summarised in Table 2-1. Appendix E provides a schedule of milestones the joint program completed during the initial AMI budget period.

Table 2-1 – JAM high level program milestones

Date	Milestones	Status
Dec 2008	Signing of contracts with AMI technology providers	Achieved
	Signing of contracts with IT and System Integrators	Achieved
Sept 2009	Commence roll-out of AMI meters and Communications equipment	Achieved
April 2010	AEMO accreditation for new AMI solution	Achieved
June 2010	Production Go-live of full AMI solution	Achieved
June 2010	5% AMI meters installed and operating as remotely read interval meters in market	Achieved (22 July 2010)
Dec 2010	10% AMI meters installed and operating as remotely read interval meters in market	Achieved (7 Nov 2010)
June 2011	25% AMI meters installed	On schedule
June 2012	60% AMI meters installed	On schedule
May 2013	AMI meter roll-out complete	On schedule

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The overall joint program work plan spans two major programs:

- Program 1: The AMI enabling capability program, 2008 – 2010

The AMI capability enabling program established the technical, IT, business and commercial environment to support the roll-out of AMI meters to meet the regulatory obligations, timetable and functionality specifications[6] of the CROIC. The bulk of this program ran from 2008 until commissioning of the AMI solution in June 2010.

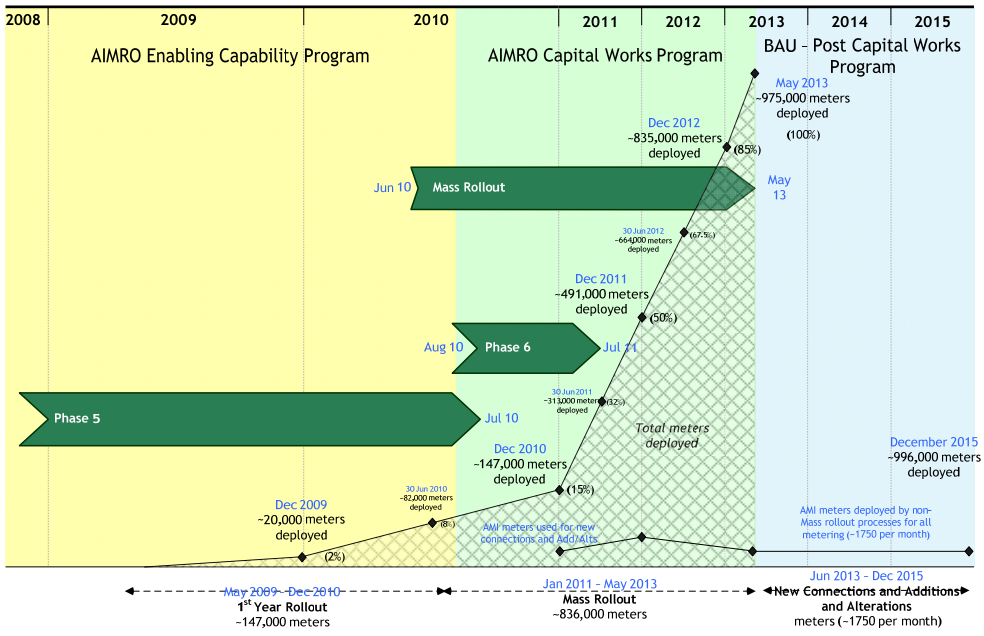
- Program 2: The AMI capital works program, 2010 – 2013.

The AMI capital works program involved deploying AMI meters for all sub-160 customers on the UED and JEN networks. This program manages the logistical aspects of the roll-out including physical installation, customer interaction, and financial reconciliation and vendor payments. This program commenced with the deployment of the first AMI meter in September 2009 and will continue until the last AMI meter is installed in 2013.

Upon completion of these programs, JAM will transition to a business-as-usual environment where metering works will be performed in response to customer requests (via the retailer) for new connections, meter abolishment and additions and alterations; or as the result of regular meter testing programs or detected faults.

Work within the different phases of the AMI program is depicted in Figure 2.1.

Figure 2-1 AMI Program 2008 - 2015



[6] Minimum AMI Functionality Specification (Victoria) Release 1.1 & Minimum AMI Service Levels Specification (Victoria) Release 1.1 – REF-005 & REF-006

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Section 6.2 sets out the assumptions underpinning the meter deployment profiles in Figure 2-1, and chapter 5 sets out the meter roll-out forecasts for UED and JEN.

2.2.2 Performance of overall program to date

JAM has performed the activities approved by the AER in its 2009 determinations as within scope, enabling AMI milestones to be achieved. AMI installation and functionality obligations continue to be met[7], with:

- AMI enabling planning and technology installations forecast for the initial pricing period implemented (IT and Comms systems in place)
- As at 7 November 2010[8], remotely read interval meters installed at 10% of customer sites in accordance with Clause 14 and Schedule 1 of the CROIC, with this figure expected to reach 229,000 for UED and 111,000 for JEN (or 50%) by December 2011
- Improved performance of AMI systems and processes against AEMO reporting criteria, compared to JEN's and UED's former metering systems.

Under the joint AMI capital works program, AMI planning and enabling works have been completed, with lessons and insights now informing delivery of the final elements of capital works. Work will transition to the new AMI business-as-usual metering environment from 2013.

2.2.3 Cost to date

This capital works and market integration initiative has involved many complexities, adaptations and lessons. Despite this challenging environment, costs and budgets have been managed to date within the constraints and allowances in the CROIC, and are forecast to stay within internal budgets approved in 2008 by UED ad JEN governance boards.

By incurring additional expenditures to address unanticipated issues and manage risks, and expending some monies earlier than originally planned, JAM has enabled CROIC compliance, accommodated policy directives, minimised risks and in some instances, delivered operational efficiencies earlier than anticipated. Key areas of divergence from the original planning are:

- The Victorian Government moratorium on reassigning customers to time of use tariffs, and the associated interruptions to the deployment plans due to resulting inability to install AMI meters to customers that currently have multiple meters

[7] That is, a best endeavours obligation to roll-out remotely read interval meters in accordance with the timetable, acknowledging an anticipated variation to one aspect of the specification outlined in the Advanced Metering Infrastructure Industry Steering Committee Out-of-Session – Decision Paper , Planning and Delivery Issue 99, December 2010..

[8] With meters manually read

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- A changed meter deployment plan to accelerate communications coverage across UED and JEN 's network areas

- Unforseen capacity constraints on existing data centre infrastructure that could not accommodate the new IT equipment required for AMI — the floor space, power reliability and climate control proved insufficient resulting in JAM establishing two new data centres

- Identifying that the existing business-to-business (B2B) market application could not scale to meet AMI requirements, resulting in the joint program developing a new B2B market application

- Greater than anticipated uptake of solar generation capability by customers with associated requirements for specialist meters

- Greater than anticipated coordination effort and installation resources for medium density housing, with Victorian Electricity Supply Industry Installation Supply Connection Tests & Procedures now requiring simultaneous change out and testing of all individual property services. This requires all apartment customers to be present to allow apartment access, and two qualified installers to be present for earth testing at each customer's apartment.

Importantly, the changed meter and communications infrastructure deployment plan—commencing in January 2011 and completing in May 2011—will enable communications across 99% of customer sites in each network. This accelerated communications coverage will help address issues where AMI meters cannot be installed unless communications can be established, and will minimise the costs related to specialised metering requirements caused by higher than anticipated requests from customers for solar installations.

Balancing these increasing costs, the joint program has achieved efficiencies in other elements of the program by gaining confidence in achieving 100% mesh radio communications coverage by the end of the roll-out. This will avoid the need to costly 3G WAN solutions where mesh radio had formerly been expected to be ineffective.

2.2.4 Costs for the upcoming budget period

This subsequent AMI budget period will see the joint capital works program completed by the end of 2013, signalling the completion of JAM's transition into a business-as-usual mode in the new AMI environment.

Approximately {c-i-c} of the forecast expenditure for the subsequent AMI budget period is related to the continued procurement and roll-out of AMI meters and will be expended during 2012 and 2013. The remaining {c-i-c} of the total forecast budget will be incurred over the second half of the period (2014 and 2015).

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Over {c-i-c} of the total forecast budget relates to the procurement and installation of AMI meters as part of the capital works program {c-i-c}

.

Expenditure related to IT systems and infrastructure represents approximately {c-i-c} of the total costs incurred during the subsequent AMI budget period. These activities are required to operate and maintain the IT systems required to meet obligations under the CROIC.

The {c-i-c} area of expenditure relates to the metering operation activities. These costs are incurred in the course of delivering the metering services required by the CROIC and other regulatory obligations. These activities will continue beyond the roll-out of AMI meters under the capital works program. This expenditure represents approximately {c-i-c} of the total costs to be incurred during the subsequent AMI budget period.

The remaining expenditure is divided between AMI technology and communications, and the provision of meters and installation outside the capital works program (described in this report as BAU metering).

Expenditure for BAU metering represents approximately {c-i-c} of the total costs incurred during the subsequent AMI budget period. These costs relate to requests from customers (via retailers) for new or altered metering arrangements.

Expenditure for AMI Technology and communications represents approximately {c-i-c} of the total costs incurred during the subsequent AMI budget period. These costs relate to maintaining the AMI communications network as well as a AMI technology trial to inform business decisions on how best to deliver new services to customers.

The roll-out of AMI meters under the capital works program will be completed in 2013, signalling the completion of the transition from a legacy, non-AMI operating environment into a purely AMI environment. This will bring anticipated operating cost savings in the area of manual meter reading, efficiencies from the automation of the AMI solution, and the retirement of legacy applications and processes that are no longer required.

While cost saving have been forecast, AMI introduces a number of cost increases. These costs increases are the result of:

- Operating and maintaining the AMI communications network and IT systems required to meet minimum performance levels prescribed by Victorian Functionality and Service Level specifications. Delivery of reading data to market by 6am is required from 01 Jan 2012.

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- Processing and management of a quantum increase in the volume of reading data retrieved from AMI meters.

- Processing to meet regulatory obligations affected by the more frequent interaction with the AMI meter. Put simply, the interaction with the meter on an annual basis in a non-AMI environment is realised in a single day in the AMI environment.

- Higher purchase costs for AMI meters in comparison to non-AMI accumulation meters

Form 2013 onwards, the move to business-as-usual will see expenditure transition to recurrent levels, with the only 'lumpy' capital investments relating to period IT and AMI infrastructure upgrades required to ensure ongoing compliance.

2.2.5 Cost implications of deferred reassignment to time of use tariffs

The rollout of AMI meters offer the opportunity for DNSP's to reduce the number of metering assets deployed across the network. A number of costs drivers are related to the physical number of meters installed on the network. Costs related to altering metering arrangements, meter testing and replacement programs and meter related faults and emergencies are in some part related to the number of meters installed. Reducing the number of meters will help reduce costs. Consumers also benefit in that the physical area required for the meter installation is reduced.

The Minimum AMI Functionality Specification requires DNSP's to provide at a minimum, a single element meter. In the planning stage of the AMI program UED and JEN identified that approximately 130,000 sites across the UED network and 30,000 sites across the JEN network had separately metered circuits that were serviced by either multiple meters or a single two element meter (this is where a single meter has the ability to measure consumption on two circuits simultaneously). This metering arrangement is typically used to record energy consumption for off peak hot water and slab heating installations.

UED and JEN had determined that these sites are candidates for consolidation to a single element meter thus reducing the number of meters on the network.

By implication, sites with separately metered circuits will be reconfigured to combine all loads on all circuits into one set of half hour readings. Generally, customers with this metering arrangement currently enjoy differential tariffs structures. Due to the consolidation to a single stream of interval data, the existing tariff structure cannot be maintained i.e. the load from a dedicated circuit is not distinguishable for load that occurs on other circuits at the same time. These sites require a change to a new tariff structure. Differential pricing is still offered, however it differs from the non-AMI tariff in that it applies to the entire load for that site consumed over the period the price applies.

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Accordingly, UED and JEN have progressed with procurement and mass roll-out plans that deliver this outcome (i.e. single element meters)

During 2009, media attention to the issue of time-of-use (TOU) tariffs increased culminating in a request in February 2010 from the Victorian Minister for Energy and Resources to defer the introduction of TOU tariffs until a government review on the impact of these tariff structures on customers could be concluded[9].

The Minister formally requested Victorian distribution network service providers (DNSP) to defer reassigning customers to TOU tariffs. This request led to the deferral of AMI meter installations at multi circuit sites.

This targeted deferral of AMI installations means approximately 20% of sites in a geographical area currently are being omitted during AMI deployment. Flow-on effects of this deferral include:

- increased manual meter reading costs, as meter reading of these sites loses the efficiency of volume.
- unanticipated site revisit costs to return to sites to install an AMI meter once the moratorium is lifted.
- unanticipated costs to transition sites from flat tariffs to TOU tariffs once the moratorium is lifted.

UED and JEN responded to the ministers letter agreeing to the request for deferral but also highlighting the addition risks and costs that the DNSP's were facing with this decision.

The Minister's initial TOU tariff deferral request indicated that the moratorium would be in place until 1 January 2011. In September 2010, the AMI policy committee (established by the DPI to address some of the outstanding policy issues related AMI, such as introduction of time-of-use tariffs) endorsed a recommendation by a sub-group to introduce a staged transition into TOU tariffs. This, in effect extended the deferral until 1 January 2012[10].

New issues have become apparent in relation to the existing retailer-administered concession programs for disadvantaged customers. The Department of Human Services is addressing these issues and developing a new concession scheme. Department of Primary Industry representatives have indicated to DNSPs that these issues will not be resolved until late 2011, after which time retailers are likely to be required to change their systems, as existing concessions cannot be supported with single element metering. These factors are highly likely to delay the lifting of the moratorium of TOU tariffs until well into 2012.

[9] Letters from Minister to CEO on Tariff deferral – REF-001

[10] Critical Milestones to Introducing TOU Pricing in January 2012 - REF002

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This further delay in lifting the moratorium will drive additional costs to a point where UED has determined that it is more prudent to maintain the existing tariffs for 130,000 UED customers by installing a two element AMI meter, and thus allow for the continued metering of separate circuits. This approach will not affect customers or retailers, but will allow UED to meet their regulatory obligations and to minimise associated costs.

JEN has determined that it will continue with the meter consolidation approach and will reassign customers to new tariffs upon meter installation.

Costs relating to the enabling of the capability of maintaining two element meters within the AMI solution have been included in this report.

2.3 Activity overview

2.3.1 2009-2011 initial AMI budget period

AMI deployment has involved a complex program of integrated activities and a significant commitment of resources.

JAM's joint program approach to deliver AMI for UED and JEN has covered all matters detailed in Schedule 2 of the CROIC that apply to UED and JEN, including at a high level the following:

- the selection, procurement and installation of:
    - meters
    - communications systems
- design, development, implementation and post implementation support of IT systems and infrastructure
- participation in industry activities related to AMI
- business processes, change design, planning and implementation.

Figure 2-2 shows the key activity streams JAM has undertaken during the initial AMI budget period. JAM:

- has completed its AMI enabling activities
- has commenced its AMI capital works program deploying approximately 150,000 AMI meters to the field
- has maintained business-as-usual metering activities during the initial AMI budget period

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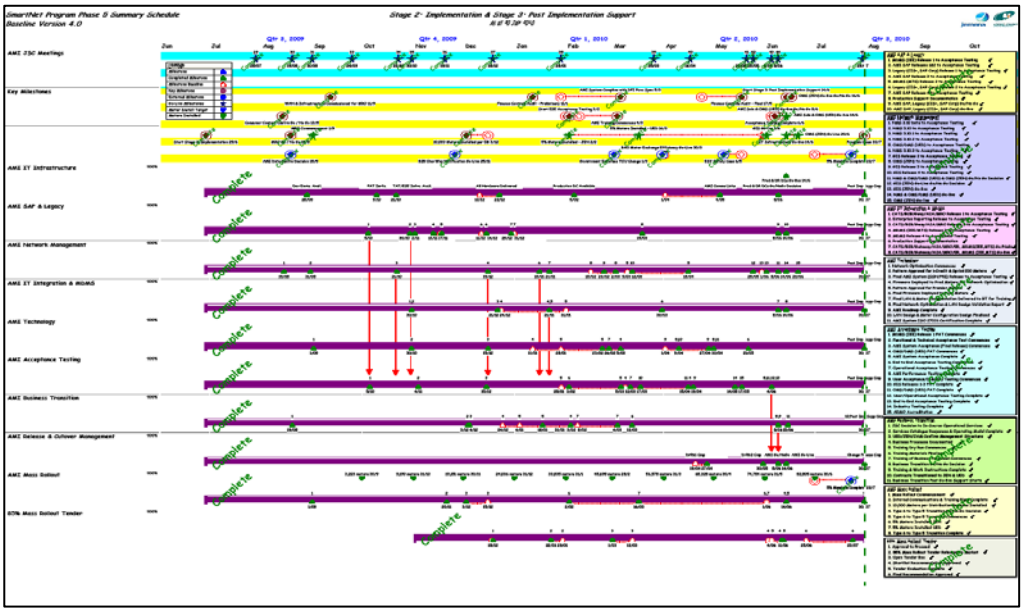
Figure 2-2 – Initial AMI budget period activities (Refer Appendix F):



2.3.2 2012-2015 subsequent AMI budget period

The subsequent AMI budget period will see a shift in focus. Instead of the enabling activities of the initial AMI budget period which delivered the foundations for JAM to establish and operate an AMI solution and to conduct the capital works program, JAM will focus on the completion of the capital works program and the transition from legacy systems and processes to a solely AMI operating environment.

Figure 2-3 shows the key activity streams for the subsequent AMI budget period. These illustrate:

- The continuation to completion of JAM's AMI capital works program commenced during initial AMI budget period
- The ceasing of legacy processes related to non-AMI metering after the final non-AMI meter is exchanged
- The ongoing business-as-usual metering activities that continue outside and beyond the conclusion of the capital works program

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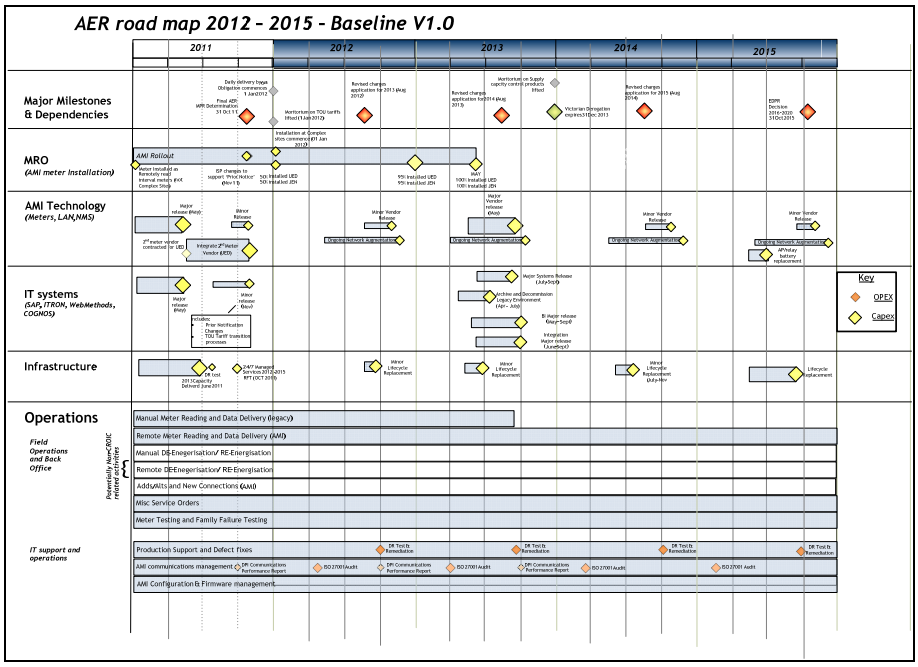
- The ongoing management and maintenance programs required to ensure IT and AMI technology is robust and efficient and meets evolving market obligations.

Figure 2-3 – Subsequent AMI budget period Activities (Refer Appendix F):



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3 Tests for approval

This chapter sets out the CROIC tests that are to be applied by the AER in considering this budget application. It also describes where the detailed information is provided in this report to apply those tests to the joint base costs.

Section 5C.2 of the CROIC provides that the AER must approve a submitted budget unless it establishes that the expenditure (or part thereof) that makes up the total opex and capex for each year:

(a) is for activities outside scope at the time of commitment to that expenditure and at the time of the determination; or

(b) is not prudent.

The scope test is described in section 3.2, and the prudence tests in section 3.3 below.

3.1 Overview – budget assessment tests

In its October 2009 Final Determination[11], the AER described the budget application framework as follows (emphasis added).

> *"It requires a DNSP to provide a submitted budget as part of its budget application to the regulator,* ***which the regulator must approve unless it can establish that the submitted budget expenditure is for activities that are out of scope, as set out in the revised Order, or that the submitted budget expenditure is not prudent.***
>
> *Submitted budget expenditure is taken to be prudent unless:*
>
> - *in the case where expenditure is a contract cost, the regulator establishes the contract was not let in accordance with a competitive tender process*
> - *in the case of other expenditure, the regulator establishes it is more likely than not that the expenditure will not be incurred or that incurring the expenditure involves a substantial departure from the commercial standard that a reasonable business would exercise in the circumstances.*

[11] AER, Final determination, Victorian advanced metering infrastructure review, 2009-11 AMI budget and charges applications, October 2009, at p2

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Accordingly, ***the AER's assessment of the submitted budgets is separated into a series of 'tests' which it must undertake: the scope test and the prudent test. The prudent test is comprised of the competitive tender test, expenditure incurred test and commercial standard test.***

In summary, ***the AER must approve submitted budget expenditures unless it can establish that such expenditure does not pass any one of these tests****. In such a situation, the AER is not required to accept the submitted budget and must state in its reasons what new submitted budget it would determine to approve....*

An important aspect to note ***regarding*** *these tests is that the revised Order did not require the AER to reject* ***expenditures where they were attached to*** *activities that were deemed to be* ***out of scope or imprudent.*** *Accordingly, in such cases, the AER's framework and approach...noted that the* ***AER may still approve*** *a DNSP's proposed expenditure* ***if a net benefit from the activity is demonstrated."***

The process was summarised by the AER in 2009 as depicted in Figure 3 1 below.

Figure 3-1 - Process for assessing the application

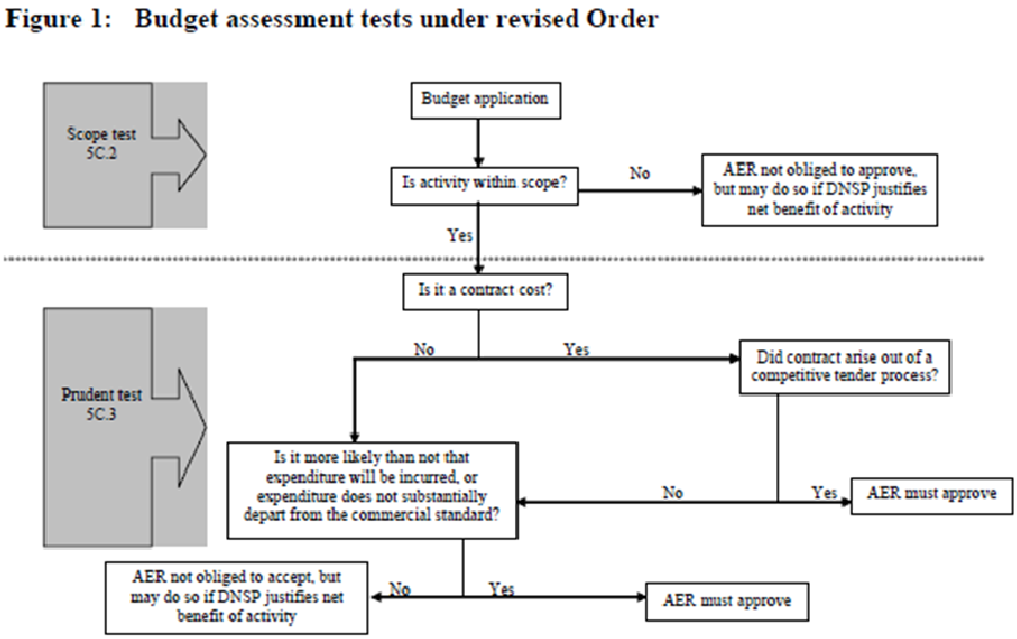

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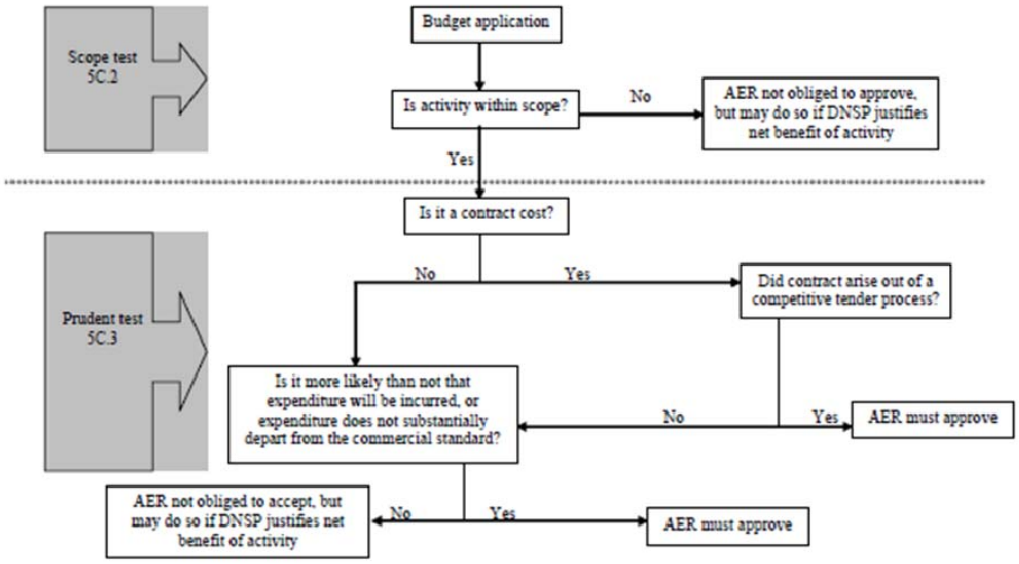
Figure 1: Budget assessment tests under revised Order



Source: AER 2009

3.2 The scope test and its application

For UED and JEN , Schedule 2.1 of the CROIC states that activities within scope are those activities reasonably required:

(a) for the provision of Regulated Services; and

(b) to comply with a metering regulatory obligation or requirement.

In accordance with its Framework Paper[12], the AER applies this test by seeking to understand how the expenditure proposed relates to the activities being undertaken, and how these activities relate to the scope.

The AER has indicated that it will also consider costs associated with activities that are not within scope, if the DNSP justifies the net benefit of the activity[13].

In 2009, the AER accepted that all activities identified as part of the joint program were within scope. This budget application:

- highlights any areas where activities differ from those approved as within scope in 2009 for the initial budget application—primarily trials.

[12] AER, *Final decision, Framework and approach paper, Advanced metering infrastructure review 2009-11*, dated January 2009, at page 28. Note, this 2009 paper includes guidance for this 2011 review.

[13] See pages 23 and 44, and Figure 1 of the AER Final determination, Victorian advanced metering infrastructure review, 2009-11 AMI budget and charges applications, October 2009

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- sets out the forecast costs for activities that will continue in the subsequent AMI budget period which the AER has previously determined to be within scope.

3.2.1 *Regulated Services*

Regulated Services are defined in section 2.1 of the CROIC as:

(a) metering services supplied to or on behalf of:

i. first tier customers; or

ii. second tier customers,

with annual electricity consumption of 160 MWh or less where:

iii. the electricity consumption of that customer is (or is to be) measured using a revenue meter that is either an accumulation meter or a manually read interval meter; and

iv. the distributor is the responsible person in respect of those services; and

(b) metering services supplied to or on behalf of:

i. first tier customers; or

ii. second tier customers,

with annual electricity consumption of 160MWh or less where:

iii. the electricity consumption of that customer is (or is to be) measured using a revenue meter that is a remotely read interval meter; and

iv. the distributor is the responsible person in respect of those services.

3.2.2 *Metering regulatory obligation or requirement*

A metering regulatory obligation or requirement is defined in section 2.1 of the CROIC as:

…an obligation or requirement of a distributor that relates to the provision of Regulated Services under:

(a) an Act or a subordinate instrument;

(b) the National Electricity (Victoria) Law;

(c) the National Electricity Rules;

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(d) any instrument as in force from time to time made or issued under or for the purposes of that Act, subordinate instrument, the National Electricity (Victoria) Law or the National Electricity Rules (as the case may be);

(e) a Commonwealth Act or a Commonwealth legislative instrument; or

(f) any instrument as in force from time to time made or issued under or for the purposes of that Commonwealth Act or Commonwealth legislative instrument (as the case may be).

The key metering regulatory obligations and requirements applicable to UED and JEN arise under the following regulatory instruments:

- CROIC
- OIC Functionality and Service Levels and Specification[14][15]
- National Electricity Rules (NER)
- National Electricity Metrology Procedure
- Customer Administration Transfer Solution (CATS) and Wholesale, Interconnector, Generator and Sample (WIGS) Procedures
- B2B procedures – Customer and Site Details Notifications, Meter Data process, Service Order process, Technical Delivery Specification, Technical Guidelines and Network Billing Procedures
- Service Level Requirements (SLR) – Meter Provisions and Meter Data Providers
- NEMMCO Meter Churn Data Management Rules
- Electricity Distribution Price Determination (EDPD)
- Electricity Distribution Code
- Essential Services Commission Guideline 3, regulatory information requirements
- Information Specification (Service Performance) for Victorian Electricity Distributors

[14] Minimum AMI Functionality Specification (Victoria) Release 1.1 & Minimum AMI Service Levels Specification (Victoria) Release 1.1 – REF-005 & REF-006

[15] Including an anticipated variation to one aspect of the specification, related to an unachievable performance level , as set out in AMI ISC "out-of-session" decision paper – Planning and Delivery risk #99 – REF-007

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- Use of System Agreements (UOSA).

The joint program notes that the Essential Services Commission is currently conducting further consultation on its review of the regulatory instruments in light of the introduction of Smart meters in Victoria. This review has introduced a number of new requirements for retailers and distributors. In particular, those related to customer notification of tariff changes prior to the tariff change coming into effect.

This is likely to result in additional processes for the AMI roll-out. The ESC is also consulting on the potential need for final index reads (for basic meters) to be left on a card at the customers premise at the time of the exchange and start index reads to be placed on customers' bills. Discussion around the implementation of these new obligations is continuing and exact requirements will only be known with the conclusion of this consultation. The ESC currently expects this consultation to conclude with a final decision in May 2011.

Chapter 4 describes the activities and cost categories required to meet these obligations. It also details the specific regulatory provisions relating to each activity.

3.3 The prudence tests

Clause 5C.3 of the CROIC states:

For the purposes of clause 5C.2(b), expenditure is prudent and must be approved:

(a) where that expenditure is a contract cost, unless the Commission establishes that the contract was not let in accordance with a competitive tender process; or

(b) where that expenditure:

i. is not a contract cost; or

ii. is a contract cost and the Commission establishes that the contract was not let in accordance with a competitive tender process,

unless the Commission establishes that:

iii. it is more likely than not that the expenditure will not be incurred; or

iv. the expenditure will be incurred but incurring the expenditure involves a substantial departure from the commercial standard that a reasonable business would exercise in the circumstances.

Therefore, budgeted expenditure for each cost category and associated activity must satisfy the prudence test components, i.e. the competitive tender test, expenditure incurred test, and commercial standards test.

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The AER indicated that it will also consider costs associated with activities that do not meet the modified prudence tests, but where the DNSP justifies the net benefit of the activity.

3.3.1 Contract and non-contract costs

3.3.1.1 CROIC definition

Clause 5C.11 of the CROIC defines a 'contract cost' as follows:

'Contract cost' means expenditure incurred pursuant to a contract entered into:

(a) prior to the day on which a distributor made its initial AMI budget period budget application or subsequent AMI budget period budget application (as the case may be); or

(b) if a revised initial AMI budget period budget application has been made by the distributor pursuant to clause 5B.3, prior to the day on which that application was made,

but does not include expenditure incurred pursuant to a variation of that contract where that variation is entered into or takes effect after that day.

Note: The competitive tender process need not be conducted by the distributor, nor need the contract be one that the distributor has entered into.

3.3.2 The prudence of other costs

The AER has indicated that it will assess each instance of expenditure that is not a contract cost or does not meet the contract cost threshold test as part of a budget application case by case on its merits. Expenditure within this category (other costs) includes costs arising from committed non-tendered contracts, future non-tendered contracts and non-contract costs.

The relevant matters listed in the CROIC[16] are:

[(a) the circumstances of the distributor

(b) if the distributor did not directly incur the expenditure, the circumstances of the person that did incur it, and

(c) if the distributor did not directly manage the expenditure, the circumstances of the person that did manage it,

at the time the commitment was made to incur or manage (as the case may be) the expenditure excess including:

[16] Clause 5I.8 of the CROIC

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- information available to the commercial decision makers
- the nature of the provision, installation, maintenance and operation of advanced metering infrastructure and associated services and systems
- the nature of the roll-out obligation
- state of the technology relevant to the provision, installation, maintenance and operation of advanced metering infrastructure and associated services and systems
- risks inherent in a project of the type involving the provision, installation, maintenance and operation of advanced metering infrastructure and associated services and systems
- market conditions relevant to the provision, installation, maintenance and operation of advanced metering infrastructure and associated services and systems
- the metering regulatory obligations and requirements.

3.4 Demonstrated compliance in this report

Activities and costs set out in this Report satisfy the tests for approval, as set out in:

Chapter 4, which describes at a high level each joint program activity, explains why it is reasonably required, and how it fits within the defined scope

Chapter 5, which details JEN's and UED's plans for meter roll-out volumes and assumptions affecting those plans

Chapter 7 which demonstrates how forecast expenditure meets the prudency test

Chapter 8 which describes the competitive tendering process for tenders undertaken in relation to the joint expenditure

Chapter 9 which demonstrates the robust commercial process applicable for non-tendered costs, and for all joint decisions affecting AMI expenditure

Chapters 10 to 13, which provides additional details in relation to joint activities, and demonstrate compliance with the prudence tests.

4 Scope of activities

This chapter demonstrates that the activities to be carried out by the joint program in the subsequent AMI budget period fall within scope as defined in Schedule 2.1 of the CROIC, in that the activities are reasonably required:

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(a) for the provision of Regulated Services; and

(b) to comply with a metering regulatory obligation or requirement.

To provide the Regulated Services and comply with metering regulatory obligations and requirements entails a complex program of integrated activities that involves:

- deploying new advanced interval meters to collectively replace approximately one million existing accumulation meters
- implementing a large-scale, high-performance, two-way communications network (with some one million end points in total)
- establishing new business processes for the roll-out and ongoing maintenance of the new metering environment
- putting in place processes and information systems to capture data at half hourly intervals (48 reads per meter per day)
- integrating new information systems and infrastructure to validate, process and store metering and communications network performance data
- establishing new processes and systems to manage the new meter, communications network and systems environment and achieve associated service obligations, and
- employing business processes to ensure that the previous manual meter-reading, back-office environment and current IT systems can be efficiently and effectively operated over the remaining period in which they are being replaced by AMI.

In its determination on the 2009-11 AMI budget and charges application, the AER applied the scope test to UED and JEN's proposed expenditure categories and associated activities. The AER considered that the 2009 Substantiation Report clearly demonstrated that each AMI cost category fits within scope and that the activities proposed by UED and JEN as part of the joint program were within scope[17].

Most of the activities to be performed by the joint program over the subsequent AMI budget period are the same as those in the initial AMI budget period; however the relative mix of the value of the activities differs, and some additional activities will be required. In particular, while the same activities and cost categories are applicable, most of the activities within these will shift from:

[17] See page 49 and Table 2.13 of the AER's Draft determination, Victorian advanced metering infrastructure review 2009–11 AMI budget and charges applications, July 2009. This position was not altered in the final determination.

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- *capital works* – the capital asset procurement and installation works undertaken in the initial AMI budget period; to

- *business-as-usual* – ongoing operations and maintenance of the installed assets and systems.

JAM considers that the activities provided through the joint program in the subsequent AMI budget period are within the defined scope, in compliance with section 5B.1(d) of the CROIC.

4.1 Joint activities

This section describes each joint activity, explains why it is reasonably required, and how it fits within the defined scope, including whether it relates to scope previously approved by the AER[18] or is a new activity. The activities are grouped under the following cost categories from the CROIC:

- **AMI technology**, which includes meters and communications—local area network (LAN), network management system (NMS) and wide area network (WAN)

- **AMI IT systems and infrastructure**, which covers information systems, infrastructure and automated data integration

- **AMI acceptance testing**, which confirms the capacity and capability of AMI Technologies, AMI IT System and Infrastructure, AMI Installation Services and AMI business processes

- **AMI installation services**, for meters, data concentrators and repeaters

- **AMI program management**, to manage, monitor and report on the performance of the roll-out

- **AMI business and industry transition**, to design, develop and implement operational and industry processes

- **AMI operations** - comprising AMI costs (to manage metering technology) and non-AMI operational costs (required until the AMI replacement program is completed).

[18] See page 49 and Table 2.13 of the AER's Draft determination, Victorian advanced metering infrastructure review 2009–11 AMI budget and charges applications, July 2009

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4.2 Activities required for AMI Technology

Table 4-1 – AMI technology scope activities

Category of work	Activities during subsequent AMI budget period	CROIC reference	Comment on subsequent AMI budget period activities
Activities in initial budget application period ('existing scope activities')	Meters – procurement and installation	Within scope, as defined per: S2.1(a)(i) procurement…of accumulation and manually read interval metering installations to support the billing of network tariffs, including accumulation meters and manually read meters, measurement transformers and associated equipment S2.1(b)(1)(i) …provision of remotely read interval meters… 'AMI technology'… S2.1(c)(i) …procurement of AMI technology…	Final 50% of meters – see section 10.1
Existing scope activities	Local area network procurement, installation and provision— for communication between the meters and data concentrators. Mesh radio based solution	Within scope, as defined per: S2.1(b)(1)(i) …provision of…communications equipment, communications services…'AMI technology' S2.1(c)(i) …procurement of AMI technology…	By May 2011, UED and JEN will have rolled out communications equipment across the networks. In the subsequent AMI budget period, JAM will perform network maintenance and augmentation in line with organic growth of the distribution network - see section11.2.2
Existing scope activities	Network management system— for back-office communications	Within scope, as defined per: S2.1(b)(1)(i) …provision of…network management systems…'AMI technology' S2.1(c)(i) …procurement of AMI technology…	Back-office operations of the NMS – see section 12.3.4
Existing scope activities	Wide area network—communication systems and infrastructure between the back-office and data concentrators. 3G	Within scope, as defined per: S2.1(b)(1)(i), …provision of…communications equipment, communications services…'AMI technology' S2.1(c)(i) …procurement of AMI technology…	Provided as business-as-usual operational cost for backhaul communications services – see section 12.2.3

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Category of work	Activities during subsequent AMI budget period	CROIC reference	Comment on subsequent AMI budget period activities
	technology to service meters outside of the mesh-radio coverage.		
New activity from 2015	Battery replacement program for Access Points and Relays	S2.1(c) i – Procurement, installations, operation and maintenance….	From 2015 the AMI system batteries will need replacing as they reach their useful life . See section 11.2.4
New activity from 2015	Customer response & Technology trials (UED Only)	S2.1(b)(2)(iv) Piloting, trials and testing of AMI technology including HAN… S2.1(b)(2) (vi) Customer response trials	In 2012 UED will perform technology trial to inform on the technology and process impacts of the introduction of HAN services. See section 11.2.6

For continuing activities that were also undertaken in the initial AMI budget period, detailed descriptions were provided in section 5.3 of the 2009 Substantiation Report[19].

New activities for technology trials are described further in section 11.2.3 and battery replacements in section 10.1.2.

Table 4-2 - AMI technology obligation map shows the provisions of regulatory instruments driving the recommended AMI technology solution.

Table 4-2 - AMI technology obligation map

AMI IT Component	Regulatory Instruments
Meters	OICs – Cost Recovery Cl 2.2, 14 and Functionality and Service level Specifications, Cl 2.2 National Electricity Rules (NER), Schedule 7.2.5, Schedule 7.2.6.1 (f) NER, Schedule 7.4.1 Metrology procedure Section 4, Schedules 1 and 2 Electricity Safety (Installations) Regulations - OIC -13 August 2009 Consumer Administration and Transfer Solution (CATS) Procedures, Cl 2.7 Meter Provider (MP) Service Level Requirements Cl 3.1, 4.5, 4.7, 4.9.1 and 4.9.2, 4.16, 4.20, 4.23 Electricity Distribution Code Cl 9.1.14

[19] That report is included in the reference documents in Appendix D – REF-016.

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AMI IT Component	Regulatory Instruments
	ESC tariff reassignment
LAN	OICs – Cost Recovery Cl 2.2, 14 and Functionality and Service level Specifications, Cl 2.2 OIC Functionality and Service Level Cl 5 and Cl 6 NER Cl 7.2.2 and Cl 7.11.3 NER Cl 7.8.1 and 7.8.2
NMS	OICs – Cost Recovery Cl 2.2, 14 and Functionality and Service level Specifications, Cl 2.2, 3 (a) and 4(a) NER Cl 7.2.1, Cl 7.2A.4 (i) and Cl 7.2.8 (d) NER 7.8.1 and 7.8.2 NER 7.3.7 and 7.12
WAN	OICs – Cost Recovery Cl 2.2, 14 and Functionality and Service level Specifications, Cl 2.2 NER, Cl 7.2.1, Cl 7.2A.4 (i) and Cl 7.2.8 (d) NER 7.8.1 and 7.8.2 NER 7.3.7

The analysis above shows that the meter, communications and NMS activities are required to fulfil UED and JEN 's regulatory obligations. Furthermore, the relevant activities are specifically defined as being within scope, under the following provisions of Schedule 2, Part 1 of the CROIC: S2.1(a)(i) and (vi), S2.1(b)(1)(i), S2.1(b)(2)(i)(A) and (B), S2.1(b)(xiii), S2.1(c)(i)(ii) and (iii), and S2.1(c)(vii).

4.3 Activities required for AMI IT systems and infrastructure

Table 4-3 – AMI IT systems and infrastructure scope activities

Category of work	Activities during subsequent AMI budget period	CROIC reference	Comment on subsequent AMI budget period activities
Existing scope activities	Meter data management—replacement solution required to fulfil obligations	Within scope, as defined per: S2.1(a)(ii)…provision of metering data services S2.1(b)(iii) business processes and information technology systems to manage the remotely read interval meter roll-out obligations…	Performing IT support, operation and maintenance of JEN's and UED's meter data management systems – see section 13.3.4
Existing scope activities	Asset management – a new system is needed to ensure new AMI meters and	Within scope, as defined per: S2.1(b)(2)(vii). Maintenance of IT applications, systems and	Performing IT support, operation and maintenance of JEN's and UED's asset

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Category of work	Activities during subsequent AMI budget period	CROIC reference	Comment on subsequent AMI budget period activities
	communications network assets are appropriately managed (old CISPlus+ system relies on manual work practices, not suitable for AMI-p. 52)	infrastructure…to operate AMI technology.	management systems – see section 13.3
Existing scope activities	Connection point management – System to manage connection point data and market generated service requests to meet obligations	Within scope, as defined per: S2.1(b)(2)(vii)(B) and (C) Provision of applications, systems and infrastructure to operate AMI technology and process data	Performing IT support, operation and maintenance of JEN's and UED's connection point management systems – see section 13.3
Existing scope activities	Network revenue management—new system to accommodate significant increase in interval meters and billing volume	Within scope, as defined per: S2.1(b)(2)(vii)(D) Provision of applications, systems and infrastructure to deliver all required regulated Services and achieve associated service obligations	Performing IT support, operation and maintenance of JEN's and UED Revenue management systems – see section 13.3
Existing scope activities	Outage management system and Geographic information system	S2.4.2(e) Also as required within regulatory instrument: Electricity Distribution Code (ESCV, March 2008), clauses 5.2 and 6.3.	Performing IT support, operation and maintenance of JEN's and UED's Outage management systems – see section 13.3
Existing scope activities	Market interaction—upgraded capability to support existing and new market requirements and the significant increase in market transactions and volume of meter data	Within scope, as defined per: S2.1(c)(ii) provision of metering data services…data provision to NEMMCO and market participants	Performing IT support, operation and maintenance of JEN's and UED's application integration and market interaction system – see section 13.3
Existing scope activities	Enterprise reporting—upgraded capability for the new applications to meet regulatory reporting requirements	Within scope, as defined per: S2.1(b)(2)(xi)(G) program governance and management including legal and regulatory processes.	Performing IT support, operation and maintenance of JEN's and UED's Enterprise reporting systems – – see section 13.3

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Category of work	Activities during subsequent AMI budget period	CROIC reference	Comment on subsequent AMI budget period activities
Existing scope activities	IT applications support & infrastructure provision for all in scope applications, hardware, software in delivery of meter services under the CROIC	Within scope, as defined per: S2.1(b)(2)(vii) provision and maintenance of IT applications and infrastructure	Performing IT support, operation and maintenance of all JEN and UED metering systems – – see section 13.3

For continuing activities that were also undertaken in the initial AMI budget period, detailed descriptions were provided in section 5.4 of the 2009 Substantiation Report.

AMI regulatory obligations drive the need for each IT component within the scope of the joint program. Having established many new systems in the initial AMI budget period, the subsequent AMI budget period will see a greater focus on the ongoing operations and maintenance of these systems.

Failure to implement and maintain the required IT components to meet these obligations would give rise to significant risks, including the risks of breaching licences or laws, losing metering provider accreditation, and reducing cost recovery under the CROIC.

Table 4-4 shows the relevant regulatory instrument and clause or chapter driving each AMI IT Systems and Infrastructure component.

Table 4-4 - AMI IT obligation map

AMI IT component	Regulatory instruments
Meter data management	OIC Functionality and Service levels, Cl 3(a) and Cl 4(a) NER Cl 7.2.8 (d), Cl 7.7), Cl 7.11.1, Cl 7.11.2 and Cl 7.11.3, National Metrology Procedure, Part A, Section 3, Section 4, Schedules 4, 5, 6 National Electricity Metrology Procedure, Part B, Chapters 2-12 NEMMCO Meter Churn Data Management Rules CATS Procedures
Asset management	OIC Cost Recovery Cl 2.2 and 14 OIC Functionality and Service level Specifications, Cl 2.2 Electricity Distribution Code Cl 3.1 NER S7.2.6.1 (f) and (g), Cl 7.6.1, S7.3.1, Cl 7.6.4 and Cl 7.3.7

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AMI IT component	Regulatory instruments
Connection point management	OIC Cost Recovery Cl 2.2, 5E.2 NER 7.2.8 (d), Cl 7.2A.4 (i) B2B procedure – Customer and Site Details Notifications, Meter Data process, Service Order process, One Way Notification and Network Billing Procedure Electricity Distribution Code Cl 5.6.1, Cl 6.1, Cl 7.9 CATS Procedures National Metrology Procedure Part A, Cl 3.3.7, 3.3.10 and Cl 3.3.12 UOSA Cl 7.5 (a) (1) and (2)
Network revenue management	OIC Cost Recovery, Alternative control services UOSA Cl 7.4 (a), 7.4 (d), Cl 7.7, Cl 7.6, Cl 7.9, Cl 7.8 and Cl 7.10 (paul my understanding is that we did not deliver interest calc capability)
Outage management system	Electricity Distribution Code Cl 5.2 and Cl 6.3
Market interaction	OIC Functionality and Service Levels, Cl 3 (a) and Cl 4 (a) NER Cl 7.2.1, Cl 7.2A.4 (i) and Cl 7.2.8 (d)
Enterprise reporting	See regulatory requirements above for all systems

The analysis in section 4.3 of obligations shows that the AMI IT Systems and Infrastructure components are required to fulfil JEN's and UED's regulatory obligations.

Furthermore, the relevant activities are specifically defined as being within scope under the following provisions of Schedule 2 Part 1 of the CROIC: S2.1(a)(1)(ii), (iii), (iv), (v) and (vi); S2.1(b)(1)(i), (ii) and (iii); S2.1(b)(2)(ii) and (iii), (vii)(A)-(D), (xiii); S2.1(c)(ii) to (vii); and S2.4.1/2(a), (b), (c), (d) and (e).

4.4 Activities required for AMI acceptance testing

Table 4-5 – Acceptance testing scope activities

Category of work	Activities during subsequent AMI budget period	CROIC reference	Comment on subsequent AMI budget period activities
Existing scope activities	Testing technology solutions, IT systems and processes against vendor contract obligations	Within scope, as defined per: S2.1(b)(2)(iv) piloting, trialling and testing of AMI Technology…	See section 10913.3.1

For continuing activities that were also undertaken in the initial AMI budget period, detailed descriptions were provided in section 5.5 of the 2009 Substantiation Report.

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The key obligations are identified in the solution summaries for AMI technology (section 4.2), AMI installation services (section 4.5) and AMI IT systems and infrastructure (section 4.3).

The testing strategy and execution is designed to ensure the performance of the AMI solution is consistent with the metering and regulatory obligations and requirements for UED and JEN.

Testing of the AMI IT systems and infrastructure, AMI technology and business processes will be required to obtain NEMMCO accreditation/ re-accreditation for MDP, MDA and MPB (for UED and JEN).

Testing is an essential risk management tool used by JAM, UED and JEN to identify, mitigate and manage risk.

The testing program is required to fulfil UED's and JEN 's regulatory obligations and is specifically defined as being within scope under the following provisions of Schedule 2 Part 1 of the CROIC: S2.1(a)(1)(ii), (iii), (iv), (v) and (vi); S2.1(b)(1)(i), (ii), (iii); S2.1(b)(2)(ii) and (iii), (vii)(A)-(D), (xiii); S2.1(c)(ii) to (vii); and S2.4.1/2(a), (b), (c), (d) and (e).

4.5 Activities required for AMI installation services

Table 4-6 – Installation services scope activities

Category of work	Activities during subsequent AMI budget period	CROIC reference	Comment on subsequent AMI budget period activities
Existing scope activities	Meter installation	Within scope, as defined per: S2.1(b)(2)(i) installation of AMI technology..	Installation Services. Refer section 10.1.2
Existing scope activities	Data concentrator installation	Within scope, as defined per: S2.1(b)(2)(i) installation of AMI technology..	Installation Services. Refer section 10.1.2
Existing scope activities	Contact centre—Installation service vendor (SS) to run its own customer call centre to manage inbound and outbound calls and the interaction between retailers, customers and asset owners.	Within scope, as defined per: S2.1(b)(2)(iii) customer service associated with the AMI technology	Installation Services. Refer section 10.1.2
Existing scope	Field audit/Quality	Within scope, as defined	Installation

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Category of work	Activities during subsequent AMI budget period	CROIC reference	Comment on subsequent AMI budget period activities
activities	assurance—site survey to confirm information	per: S2.1(b)(2)(i)(A) planning, designing and managing the roll-out…including site surveys and the management of difficult sites	Services. Refer section 10.1.2
Existing scope activities	Mass Roll-out Plan—design for the installation of AMI	Within scope, as defined per: S2.1(b)(2)(i) provision and installation of AMI technology. This includes managing the roll-out of AMI Technology.	AMI technology strategy and planning Refer section 12.3.1
Existing scope activities	Communications – field crew	Within scope, as defined per: S2.1(b)(2)(i) installation of AMI technology.	AMI technology strategy and planning Refer section 11.2.2
Existing scope activities	Roll-out compensation and claims	Within scope under S2.1(a) and (b) as the activity is required for the provision of regulated services and to comply with a metering regulatory obligation—Electricity Industry Guideline 11 – Voltage variation compensation guideline	For management of claims and complaints refer section 12.3.5
New/additional activities	Managing level 1 defects in customer connections, identified during the roll-out, that would otherwise be the customer's responsibility	Within scope under S2.1(a)(i), as the activity is reasonably required for installation Also provides a net benefit to customers in the context of the AMI roll-out. If defects were not corrected, customers would be left without supply pending repairs, and would require a further site visit for AMI installation	This safety issue relates to a small number of customers whose connection works require corrective measures at the time of exchange – see section 12.3.5

For continuing activities that were also undertaken in the initial AMI budget period, detailed descriptions were provided in section 5.6 of the 2009 Substantiation Report.

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Roll-out experience has shown a small number of UED and JEN customer premises have level 1 defects that require de-energisation when the meter exchange team visits their site. For these customers, UED and JEN have assessed the costs and benefits of de-energising each site versus making the necessary remedial works to the customer's premises. This analysis[20] found a net benefit of approximately $4m to remediate the site at the point of identification, having regard to the additional customer complaints to the Energy and Water Ombudsman Victoria (EWOV) and associated costs, and the associated customer service staff administration costs to compel customers to remain off-supply until the customer makes the necessary repairs.

Table 4-7 identifies the specific provisions of the Regulatory Instruments that drive the recommended AMI installation services solution.

Table 4-7 - AMI installation services obligation map

Solution element	Obligation instrument
Meter Installation	OICs – Cost Recovery Cl 2.2 and 14 Electricity Safety (Installations) Regulations - OIC -13 August 2009 CATS Procedures, Cl 2.7 MP Service Level Requirements Cl 3.1, 4.5, 4.7, 4.9.1 and 4.9.2, 4.16, 4.20, 4.23
Data Concentrator Install	OICs – Cost Recovery Cl 2.2, 14 and Functionality and Service level Specifications, Cl 2.2 NER Cl 7.8.1 and 7.8.2
Contact Centre	OICs – Cost Recovery Cl 2.2, 14 and Functionality and Service level Specifications, Cl 2.2 Electricity Distribution Code Cl 5.4 and Cl 5.5
Field Audit/ Quality Assurance	Electricity Safety Regulations 1999 (networks) Cl 27 NER S 7.4.3 (c) MP SLR Cl 4.14
Mass Roll-out Plan	OICs – Cost Recovery Cl 2.2, 14 and Functionality and Service level Specifications, Cl 2.2 Electricity Distribution Code Cl 3.1
Communications - field crew Roll-out compensation and claims	Electricity Distribution Code, Cl 12, 10 Electricity Distribution Licence, Cl 25 Electricity Industry Guideline No 11 – Voltage variation Compensation Guideline

The analysis in section 4.2 shows AMI Technology installation is required to fulfil JEN's and UED's regulatory obligations. Furthermore, the relevant activities are specifically defined as being within scope of cost recovery under the following

[20] AMI Customer Management Defect Policy – REF-008

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provisions of Schedule 2 Part 1 of the CROIC: S2.1(a)(i) and (vi); S2.1(b)(2)(i)(A); S2.1(b)(2)(iii); and S2.1(b)(2)(xiii).

4.6 Activities required for AMI program management

Table 4-8 – Program management scope activities

Category of work	Activities during subsequent AMI budget period	CROIC reference	Comment on subsequent AMI budget period activities
Existing scope activities	Costs incurred in managing risk in the overall AMI roll-out program.	Within scope, as defined per: S2.1(b)(2)(xi) program governance and management, including participation in State and national industry activities…planning, program and program management…	Much smaller activity in subsequent AMI budget period as AMI enabling program is complete and focus is now on capital works and BAU metering

Activities include management, monitoring and reporting of the capital works program performance to ensure joint activities occur in an efficient, timely manner and achieve a quality outcome.

The key obligations are identified in the solution summaries for AMI Installation (section 4.5) and AMI Business and Industry Transition (section 4.3).

The project management functions are required for UED and JEN to fulfil their regulatory obligations, and are specifically defined as being within scope under the following provisions of Schedule 2, Part 1 of the CROIC: S2.1(b)(2)(xi)(A), (B), (C), (D), (E), (F), (G) and (H); S2.1(b)(2)(xiii).

4.7 Activities required for AMI business and industry transition

Table 4-9 – AMI business and industry transition scope activities

Category of work	Activities during subsequent budget application period	CROIC reference	Comment on subsequent AMI budget period activities
Existing scope activities	Transitional processes – costs associated with supporting the roll-out and operating both new and current	Within scope, as defined per: S2.1(b)(2)(ii) provision of data required by the NER to enable customer transition to the metering services referred to in paragraph two	Largely relates to management of customer claims and complaints arising from roll-out of the final 50% of meters

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Category of work	Activities during subsequent budget application period	CROIC reference	Comment on subsequent AMI budget period activities
	processes in parallel	of the definition of regulated services	

For continuing activities that were also undertaken in the initial AMI budget period, detailed descriptions were provided in section 5.8 of the 2009 Substantiation Report.

The key obligations are identified in the solution summaries for AMI Technology (section 4.2), AMI Installation (section 4.5) and AMI IT Systems and Infrastructure (section 4.3)

Activities associated with the Business and Industry Transition functions are within scope, and necessary to fulfil JEN's and UED's regulatory obligations. Specifically, these activities are defined as being within scope of the following provisions of Schedule 2 Part 1 of the CROIC: S2.1(a)(ii) and (iv); S2.1(b)(1)(iii); S2.1(b)(2)(i)(B); S2.1(b)(ii), (iii), (viii), (ix), (x) and (xiii); S2.1(c)(iii), (iv), (v) and (vii).

4.8 Activities required for AMI operations

Activities associated with the joint base costs for AMI Operations comprise the following elements:

- non-AMI operations, giving rise to costs associated with the field and back office functions and Prescribed Metering Services (PMS) transition to AMI
- AMI operations including:
    - Backhaul Communications
    - AMI Asset Strategy & Planning
    - AMI Asset Operations
    - Customer Contact & Back Office
    - AMI Network Operations
    - Meter Data Collection
    - AMI Transitional Business Activities
    - Management, Facilities & Employee Costs

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Table 4-10 – AMI operations scope activities

Category of work	Activities during subsequent AMI budget period	CROIC reference	Comment on subsequent AMI budget period activities
Existing scope activities	Non-AMI metering – manual meter reading, maintenance, purchases, installation and IT support	Within scope, as defined per: S2.1(a)(i) procurement, installation, operation and maintenance of accumulation and manually read interval metering installations to support the billing of network tariffs	These will cease once the AMI capital works program is completed
Existing scope activities	AMI operations – field and back-office transitional costs, IT support and maintenance, communications services.	Within scope, as defined per: S2.1(b)(2)(ix) provision and operation of transitional business processes to ensure that the processes and IT systems associated with Regulated services can be operated.	These will become BAU metering once the AMI capital work program is completed

For continuing activities that were also undertaken in the initial AMI budget period, detailed descriptions were provided in section 5.9 of the 2009 Substantiation Report.

4.8.1 Non AMI metering

While completing the roll-out of AMI technology, the businesses must continue performing the current function of meter reading and associated services in order to operate and function. During the AMI roll-out, there are some components of transitional expenditure. For example, simultaneous processes are required for both manually read meters, and remotely read AMI meters, resulting in additional costs during this period of duplication. The scale and costs of non-AMI services will decline during the roll-out period and will ultimately cease when the mandated program is complete. However, until UED and JEN have completed the AMI meter mandate, they must maintain old systems and processes to operate accumulation metering systems. The list of activities required to comply with metering obligations is described below.

Table 4-11 shows the relevant provisions of the regulatory instruments that require the current activities.

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Table 4-11 - Non-AMI metering services obligations map

Component	Regulatory Instruments
Meters	OICs – Cost Recovery Cl 2.2, 14 and Functionality and Service level Specifications, Cl 2.2 NER S 7.2.5, S 7.2.6.1 (f) and S 7.4.1 Metrology procedure Section 4, Schedules 1 and 2 Energy Safe Victoria (ESV) OIC (draft, imminent gazettal) CATS Procedures, Cl 2.7 Meter Provider (MP) Service Level Requirements Cl 3.1, 4.5, 4.7, 4.9.1 and 4.9.2, 4.16, 4.20, 4.23 Electricity Distribution Code Cl 9.1.14
Meter Installation	OICs – Cost Recovery Cl 2.2 and 14 Electricity Safety (Installations) Regulations - OIC -13 August 2009 CATS Procedures, Cl 2.7 MP Service Level Requirements Cl 3.1, 4.5, 4.7, 4.9.1 and 4.9.2, 4.16, 4.20, 4.23
IT - Meter Data Management	OIC Functionality and Service levels Cl 3(a) and Cl 4(a) NER Cl 7.2.8 (d), Cl 7.7, Cl 7.11.1, Cl 11.2, Cl 7.11.3 and Cl 7.14.1A National Metrology Procedure, Part A, Section 3, Section 4, Schedules 4, 5, 6 National Electricity Metrology Procedure, Part B, Chapters 2-12 NEMMCO Meter Churn Data Management Rules CATS Procedures

The CROIC also explicitly defines the activities associated with non-AMI metering as being within scope of cost recovery in Schedule 2.1 as follows:

- meter reading – clauses (a) (i) and (a)(ii)
- meter maintenance – clauses (a) (i), (a)(ii) and (a)(iii)
- meter purchases – clauses (a)(i) and (a)(ii)
- meter installation – clause (a) (i)
- IT – meter data management - clauses (a) (ii), (a)(iii) and (a)(iv).

4.8.2 AMI metering

AMI Operations is an outcome of the management of meter technology and will be affected by the complexity of managing the transition between accumulation meters and AMI meters.

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Operational expenditure is required to fulfil UED's and JEN's regulatory obligations and is specifically defined as being within scope under the following provisions of Schedule 2 Part 1 of the CROIC: S2.1(a)(i), (ii), (iii), (iv), (v) and (vi); S2.1(b)(1)(i), (ii) and (iii); S2.1(b)(2) (ii), (iii), (vii), (viii), (ix) and (xiii); S2.1(c)(i), (ii), (iii), (iv), (v), (vi) and (vii).

4.8.3 Activity mapping

Table 4.12 provides an overview of activities and costs to further aid understanding of how the work streams map to the CROIC obligations discussed in this chapter, and the relative cost incidence for each activity during the subsequent AMI budget period.

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Table 4-12 - Activity mapping

Submission category	Activity heading in CROIC scope	Key activities included in item	Share of 2012-2015 costs	Section reference in this Report
Mass roll-out	Installation services	Meter installation	{C-I-C}	10.1
	AMI Technology (Meters & LAN)	Meters	{C-I-C}	
		LAN	{C-I-C}	
	Program Management	Management of Capital works program	{C-I-C}	
BAU metering	Meter & LAN provision	AMI Meter	{C-I-C}	10.2
		Accumulation Meters & Manually Read Interval Meters	{C-I-C}	
		Current transformers (CT's)	{C-I-C}	
	Installation services	AMI Meter	{C-I-C}	
		Accumulation Meters & Manually Read Interval Meters	{C-I-C}	
AMI Technology	Acceptance testing (technical)	Testing for new releases of NMS and AMI communications	{C-I-C}	11.2.5
	AMI Technology	Access point and repeaters	{C-I-C}	11.2.1
		Installation	{C-I-C}	11.2.2
		Network planning & Augmentation	{C-I-C}	11.2.3
		AMI technology battery replacement	{C-I-C}	11.2.4
		Customer Trials	{C-I-C}	11.2.6
Operations	AMI Technology	AMI Backhaul Communications	{C-I-C}	12.2.3
	Operations	Asset Strategy & Planning	{C-I-C}	12.3.1

Submission category	Activity heading in CROIC scope	Key activities included in item	Share of 2012-2015 costs	Section reference in this Report
		Asset Operations	{c-i-c}	12.3.3
		Customer Contact & Back Office	{c-i-c}	12.2.2
		AMI Network Operations	{c-i-c}	12.3.4
		Meter Data Collection	{c-i-c}	12.2.1
		Management	{c-i-c}	12.3.6
		Finance & HR	{c-i-c}	12.3.7
		Service Delivery & Contract Management	{c-i-c}	12.3.8
		Stakeholder Relations	{c-i-c}	12.3.6
		Premises	{c-i-c}	12.3.6
	AMI Transitional Business Activities	AMI Transitional Business Activities	{	12.3.5
IT systems	IT systems	Meter Data management (Legacy Decommissioning)	{c-i-c}	13.3.2
		Enterprise reporting, market interaction and business application integration	{c-i-c}	13.3.3
		Routine infrastructure lifecycle replacement program	{c-i-c}	13.3.4
		System Software release	{c-i-}	13.3.5
		IT support services	{c-i-c}	13.3.6
		Application support service	{c-i-c}	13.3.7
		IT software application maintenance	{c-i-c}	13.3.8
		Support for two element metering (UED only)	{c-i-c}	13.3.9
		Support for 2nd meter provider (UED only)	{c-i-c}	13.3.10

5 Meter volumes

This chapter details UED's and JEN's plans for their AMI meter roll-out, and assumptions affecting those plans.

Clause 5.5(b) of the CROIC requires a budget application to include a forecast of the number of metering installations that the distributor proposes to install for each year of the period covered by the application. Two distinct work programs will support the roll-out of meters over the subsequent AMI budget period. The first is the AMI mass roll-out program which installs only AMI meters as part of the managed capital works program; the second is the BAU metering program which is responsible for installation of meters in response to requests from customers (via retailers) for new connections, additions and alterations.

5.1 Mass roll-out plan

The installation profiles for AMI meters for each of UED and JEN are shown in Table 5-1 and Table 5-2 respectively.

Table 5-1 - JEN installation profile

The following shows meter numbers over the planned roll-out period. These only include meters installed by MRO. AMI meter installed via BAU processes are not included.

The following volumes are based on two key assumptions:

- Net customer growth from 2011 onwards is serviced by BAU processes
- For AMI meters installed as part of BAU processes, that occur in areas yet to be visited by the MRO program (i.e. Adds/Alts and Solar), the model assumes that these volumes replace exchanges performed by the MRO. The volumes are calculated as a proportion of the network that has been rolled out.

Install - MRO – JEN	2009	2010	2011	2012	2013	Total
Single Phase (1 ph 1 element)	11,167	30,796	102,801	64,000	26,667	235,431
Single Phase off peak	-	-	-	24,887	10,369	35,256
Three Phase Direct connected (3 ph)	549	1,562	8,940	13,217	5,507	29,775
Three Phase CT connected (CT)	0	0	0	2,038	849	2,887
Total	**11,716**	**32,358**	**111,741**	**104,142**	**43,392**	**303,349**
%	4%	11%	38%	34%	14%	100%
Cum. %	4%	15%	52%	86%	100%	-

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Table 5-2 - UED installation profile

Mass Roll-out Volumes						
The following shows meter numbers over the planned roll-out period. These only include meters installed by MRO. AMI meters installed via BAU processes are not included. The following volumes are based on two key assumptions: • Net customer growth from 2011 onwards is serviced by BAU processes • For AMI meters installed as part of BAU processes, that occur in areas yet to be visited by the MRO program (i.e. Adds/Alts and Solar), the model assumes that these volumes replace exchanges performed by the MRO. The volumes are calculated as a proportion of the network that has been rolled out.						
Install - MRO – UED	**2009**	**2010**	**2011**	**2012**	**2013**	**Total**
Single Phase (1 ph 1 element)	11,131	71,453	215,396	104,038	22,128	424,146
Single Phase, two element, off peak	0	0	0	113,218	5,959	119,177
Three Phase Direct connected (3 ph)	1,232	5,794	18,743	41,913	3,796	71,478
Three Phase, two element, Dir.Conn.				12,498	658	13,156
Three Phase CT connected (CT)	0	0	0	2,718	143	2,861
Total	**12,363**	**77,246**	**234,139**	**274,385**	**32,684**	**630,818**
%	2%	12%	36%	44%	5%	100%
Cum. %	2%	14%	50%	95%	100%	-

5.1.1 Compliance with roll-out targets

The joint program approach to the roll-out is to exceed roll-out obligations as specified by the CROIC. This is for both practical and customer acceptance reasons.

5.1.2 Practical drivers

For a number of practical reasons, UED and JEN have adopted a strategy for the IT systems whereby both the old non-AMI system and the new AMI systems co-exist. As meters are exchanged in the field and registered in the market as remotely read interval meters, they are decommissioned in the old systems (where they were registered as a basic meter) and are transitioned to an AMI meter in the new AMI system.

The advantages of this approach are twofold:

1. Only AMI functionality is required to be established in the new AMI systems thereby alleviating the need to build basic metering capacity into the new AMI systems.

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2. It removes the need for an 'en masse' or 'big bang' systems implementation and data conversion thereby reducing the risks associated with transitioning all customers at the same time, and enabling issues to be identified and addressed on an incremental basis as meters are exchanged in the field.

The two-system approach - one non-AMI, and one for AMI- has enabled AMI meters to be installed and read successfully, without disrupting services. With resulting confidence in the roll-out outcomes, JAM can now wind back the second system as soon as practicable. This approach aims to minimise costs and reach a stable business state as early as possible.

5.1.3 Customer acceptance drivers

Increased media and customer interest in smart meters has seen a increase in the number of 'Refused Access' cases to around 2-3% of attempted meter exchanges (a Refused Access is defined as where a customer explicitly advises the program that they do not want an AMI meter installed). Currently, UED and JEN bypass these sites, with the intention of revisiting them towards the end of the roll-out. By that stage, the Victorian Government is scheduled to have completed its smart meter customer awareness program (currently scheduled to commence in 2011), which may improve customer acceptance. Even so, given the complexities related to access to a site, co-ordination of customers for multi metered sites as well as more difficult installations, it is anticipated that it may take up to 12 months to exchange the final 5% of meters through the program. By exceeding initial roll-out milestones, JAM is confident that anticipated delays with these customers will not place the final milestones at risk.

5.1.4 Factors affecting the roll-out plan

JAM developed its roll-out plan to achieve the roll-out obligations whilst also addressing practical roll-out challenges. The roll-out plan reflects:

- The expected rate of 'No Access' and associated revisits which current mass roll-out statistics indicate is above 16% for all meter exchange attempts (No Access is defined as where an installer cannot gain access to install a meter). The mass roll-out program has revised its original forecast to reflect this rate going forward

- The need to revisit sites with two elements meters or multiple meters once the TOU tariff reassignment moratorium is lifted

- Accelerated strategic positioning of LAN metering to achieve 95% mesh radio communications coverage by 31 may 2011.

- Anticipated time taken to effect exchanges for the final 5% of meters

- The expected rate of level 1 defects at 0.05% of meter exchanges.

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5.2 Business-as-usual metering

The Business-as-usual (BAU) metering program is responsible for installing and removing meters in response to requests from customers (via retailers) for new connections, additions and alterations. To date, this program has installed Accumulation and Manually Read Interval Meters where required, however from 2011, AMI meters will be installed progressively in place of these non-AMI meters. BAU metering will continue beyond the end of the AMI mass roll-out and is recognised as a business-as-usual function.

5.2.1 BAU metering volumes

The installation profiles for meters installed under the BAU metering program for each of UED and JEN are shown in Table 5-3 and Table 5-4 respectively.

Table 5-3- JEN BAU metering profile

The following shows BAU meter numbers over the 2012 -2015 period. The following volumes are based on two key assumptions:

For AMI meters install as part of BAU processes, that occur in areas yet to be visited by the MRO program (i.e. Adds/Alts and Solar), it is assumed that these volumes replace exchanges performed by the MRO. The volumes are calculated as a proportion of the network that has been rolled out.

New Connections/ Adds/ Alts - JEN	2011	2012	2013	2014	2015	Total
AMI meters (not part of mass roll-out program)						
Single Phase (1 ph 1 element)	7,476	7,200	6,136	5,376	5,376	31,564
Single Phase off peak	-	-	70	120	120	310
Three Phase Direct connected (3 ph)	1,605	1,680	1,722	1,752	1,752	8,511
Three Phase CT connected (CT)	-	-	56	100	100	256
Non-AMI Meters						
Accumulation meters	252	252	105	-	-	609
Manually Read Interval Meters	1,815	190	78	-	-	2,083
Total	**11,148**	**9,322**	**8,167**	**7,348**	**7,348**	**43,333**

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Table 5-4- UED BAU metering profile

The following shows BAU meter numbers over the 2012 -2015 period. The following volumes are based on two key assumptions:

For AMI meters install as part of BAU processes, that occur in areas yet to be visited by the MRO program (i.e. Adds/Alts and Solar), it is assumed that these volumes replace exchanges performed by the MRO. The volumes are calculated as a proportion of the network that has been rolled out.

New Connections/ Adds /Alts – UED	2011	2012	2013	2014	2015	Total
AMI meters (not part of mass roll-out program)						
Single Phase (1 ph 1 element)	13,500	13,008	11,255	10,000	10,000	57,763
Single Phase off peak	-	-	112	200	200	512
Three Phase Direct connected (3 ph)	3,490	3,300	3,195	3,120	3,120	16,225
Three Phase CT connected (CT)	-	-	119	204	204	527
Non-AMI Meters						
Accumulation meters	590	550	230	-	-	1,370
Manually Read Interval Meters	3,075	300	126	-	-	3,501
Total	**20,655**	**17,158**	**15,037**	**13,524**	**13,524**	**79,898**

5.2.2 Factors affecting the BAU metering volumes

Business experience shows that under normal conditions the volume of BAU meter exchanges is relatively stable. In an average year, UED experiences approximately 12,000 to 14,000 meter exchanges per year. JEN experiences between 7,000 and 8,000 meter exchanges per year.

Drivers of these volumes are:

- Requests for new connections driven be organic growth of network which brings new customers to the network (new estates)
- Request for new metering arrangements for existing sites, generally driven by housing improvements.
- Replacement of faulty assets (generally low volumes).

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5.2.3 *Impact of solar on BAU metering*

While the rate of BAU meter exchanges is relatively stable under normal conditions, UED and JEN have experienced a significant increase in BAU metering works in the past three years.

Over the initial AMI budget period, UED and JEN have experienced a huge increase in the number of requests to provide appropriate metering to support solar installations. This phenomenon reflects both Federal and Victorian Government incentives to promote the use of photo voltaic (PV) local generation, coupled with the falling prices for solar technology, making solar installations more affordable for consumers.

The two graphs below show the increase of PV generation on the UED network since 2006 and JEN network since 2009.

Figure 5-1 - UED solar capacity 2007 - 2010

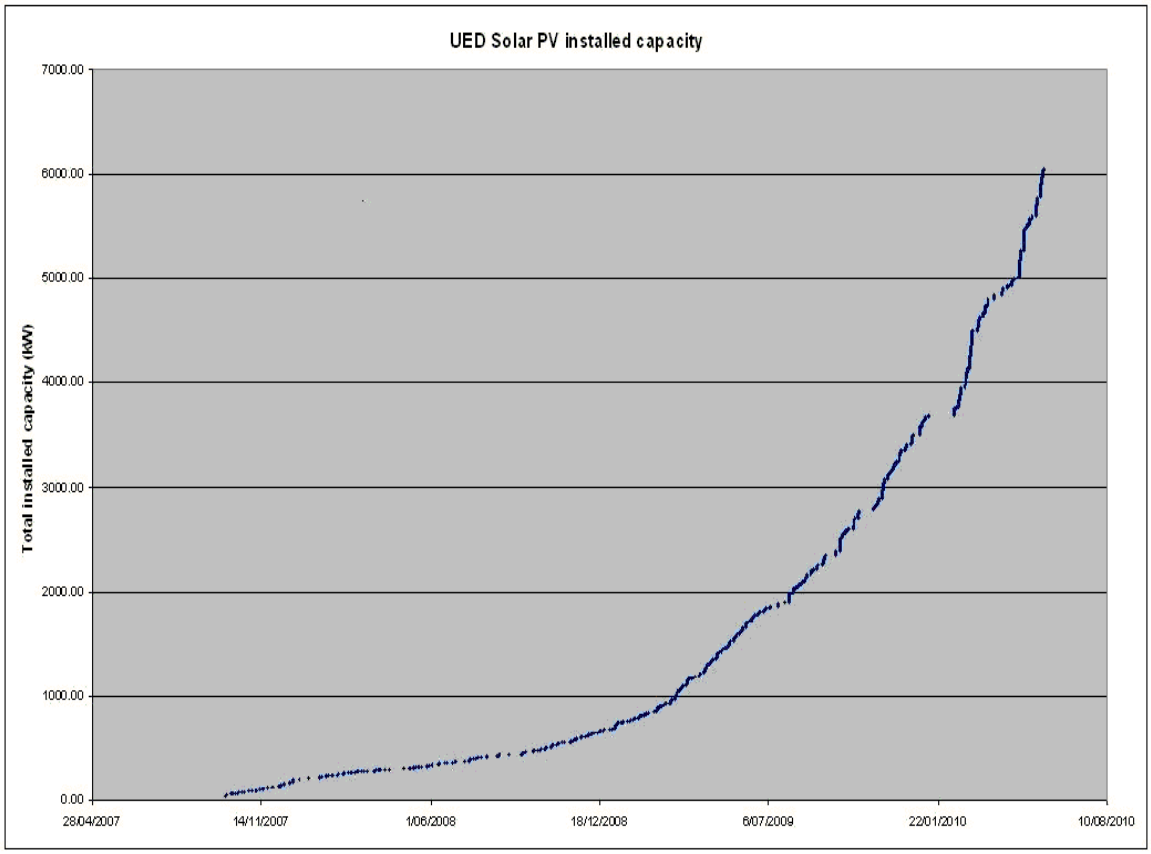

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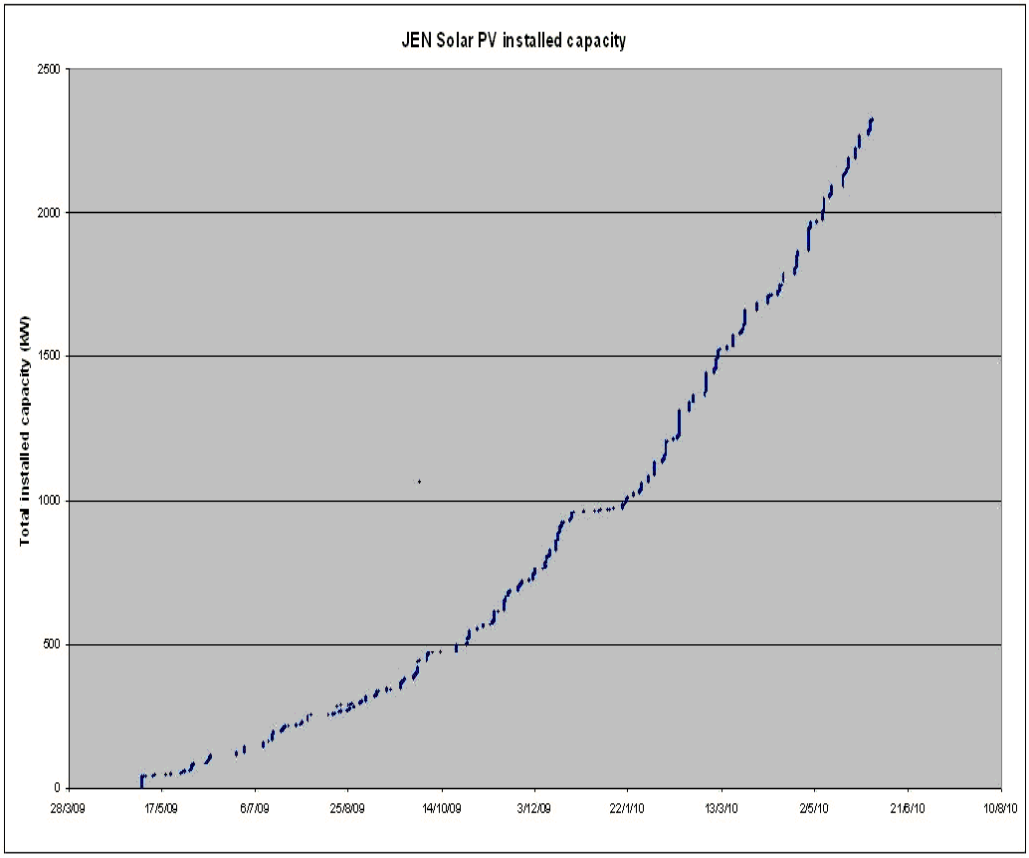
Figure 5-2 - JEN solar capacity 2009 - 2010



In 2006, UED experienced approximately 3 – 10 requests per month for meter exchanges related to solar installations. In 2010, this number rose to between 500 and 650 requests per month. UED has experienced approximately 300% increase in the number of requests for metering changes because of increased solar participation.

Though JEN has not yet experienced solar increases of the same magnitude as UED, table 5.6 shows the JEN trend with capacity doubling every 6 months. In May 2009, JEN installed approximately 50 solar installations, and in November 2010 over 336 meters where installed.

UED and JEN have forecast that the current rate of PV installation will continue. This rate drives the meter exchange volumes that will be performed outside of the AMI mass roll-out.

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AMI impact on solar

Prior to the introduction of AMI, customers would receive a manually read interval meter to support their solar installation. As the Victorian Functionality Specification requires that AMI meters support local generation, once an AMI is installed at a customer premises, it is no longer necessary to replace the meter. On receipt of a B2B request and appropriate paperwork a remote reconfigurations is all that is required to allow the meter to record local generation.

From 31 May 2011, 90% of requests for a solar installation are expected to be satisfied either by installing an AMI meter (rather than a manually read interval meter) or by performing a remote meter reconfiguration to allow local generation where the customer already has an AMI meter installed.

As the roll-out progresses, less meters will be exchanged and more meters will be remotely reconfigured. This is reflected in the UED and JEN BAU meter volumes.

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6 Total joint expenditure

This chapter sets out the total forecast expenditure that JAM expects to incur on behalf of UED and JEN for the provision of the Regulated Services over the subsequent AMI budget period.

Section 6.1 summarises the forecast expenditure and section 6.2 provides the key assumptions underpinning the forecasts.

6.1 Summary of forecast expenditure

The AMI expenditure relates to 4 cost categories (discussed further in chapters 10 to 13), being:

- Metering
- AMI Technology
- AMI IT Systems and Infrastructure
- AMI Operations Costs (comprising both AMI and non-AMI operational costs).

Table 6-1 shows that over the subsequent AMI budget period JAM expenditure for delivering the Regulated Services (AMI and non-AMI) is $355.6m.

Table 6-1 - AMI Program forecast expenditure for Regulated Services

AUD $	2012	2013	2014	2015	Total
{c-i-c}					

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AUD $	2012	2013	2014	2015	Total
{c-i-c}					

6.2 Key assumptions

The expenditure detailed in this report is based on a number of assumptions, described below and where relevant, under the detailed descriptions for each cost category in chapters 10 to 13.

Under the CROIC cost pass through framework, the cost of contingencies is not included in the budget. This report therefore does not include a provision for the costs of a number of significant events that could have a major influence on the delivery and cost of AMI.

Where changes in circumstances affect the scope, timing and cost of the delivery of AMI to the distributor, the CROIC, in some instances, provides for a revised budget to be submitted. If the assumptions described below do not hold, the joint program total expenditure may change and UED and JEN may need to submit revised budget applications.

6.2.1 Operational assumptions

Table 6 2 sets out the key operational assumptions the joint program used when developing the budget forecasts.

Table 6-2 - Key operational assumptions

Area	Key assumption
Service provision	JAM will continue to provide services outlined in this budget for the entire budget period for both UED and JEN.
AMI network operation	24/7 monitored, rostered on call support of the AMI communications networks to support 95% actual meter data delivery to market by 6am daily (as per AMI Minimum Functional Specification).
Manual reading	All field-based scheduled and special meter reading will reduce to 0 by the completion of AMI mass roll-out, due to the daily delivery of meter data using the AMI remote collection capability. This will result in the 100% reduction in Scheduled Meter Reader activities for <160 metering.
Managing NMIs across AMI &	An additional 20% effort will be required to manage data across multiple systems and processes during transition. As a result, this

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Area	Key assumption
legacy systems	model assumes additional resources will be required from 2010, ramping down at the end of mass roll-out.
Solar installations	That the volume of applications received for solar grid connects will remain at 350 per month for JEN and 800 per month for UED. Once AMI meters become pervasive in the network, meter exchanges will be replaced by remote reconfigurations.
Customer enquiries	It is expected 3% of all AMI meter installations will result in overflow calls to the Faults & Emergency Call Centre
Regulated meter family testing	In order to maintain compliance, AMI meters must be family sample tested within 3 years of installation. This will be commencing from January 2012.
IT support	24/7 monitored, rostered on call support of AMI IT systems and Infrastructure is required to ensure 6am delivery of data as per AMI Minimum Service Level specification.
Mass roll-out	See section 5.1.4

6.2.2 Policy and regulatory assumptions

In addition to the operational assumptions outlined in the previous section, JAM has made a number of other assumptions in relation to the future regulatory and policy setting:

- The moratorium on TOU tariff reassignments continues
- The exclusivity derogation continues (potential additional costs associated with the end of the derogation are not included in this Report)
- Developments in the National Smart Metering Program do not affect JEN's and UED's scope, and as a result, the joint program and individual Asset Owner costs for rolling out AMI
- Victorian AMI program developments through DPI led committees—including the AMI policy committee, AMI consumer information working group, and customer consultative working group) do not affect total expenditure
- An effective AMI public education campaign is conducted by government, not industry
- It assumes the continuing exemption for DNSP's from obligations in relation to electricity meters under the National Measurement Act.

6.2.3 Financial modelling assumptions

JAM has also made a number of financial assumptions for the purpose of forecasting:

- Exchange rates are forecast at {c-i-c} .
- CPI[21] is forecast using the forecasts used by the AER in its 29 October 2010 final determination for Victorian DNSPs' EDPR [22]
- All forecasts are in real 2011 dollars using September 2010 CPI data
- Wage escalation is forecast using the AER's forecasts from its 29 October 2010 final determination for the Victorian DNSPs' EDPR[23] [24]
- AMI meters are deployed in accordance with installation profiles set out in Tables 5-2 and 5-3
- Legacy systems will be retired before they require significant additional investment.

[21] Consumer Price Index-All Groups Index for the Eight State Capitals as published by the Australian Bureau of Statistics for the September Quarter of the previous year;

[22] AER, Victorian electricity distribution network service providers distr bution determination 2100-2015, Final Decision, October 2010, Table 11.3 p.515.

23 The inclusion in JAM's assumptions of the AER's wage escalator from its forecast in the 29 October 2010 EDPR final determination does not constitute acceptance or agreement by JAM that the AER's wage escalator is the appropriate escalator for these purposes."

[24] AER, Victorian electricity distribution network service providers distribution determination 2100-2015, Final Decision – appendices, October 2010, Appendix K.

7 Overview of contract and other costs

The purpose of this chapter is to provide an overview of the joint program forecast expenditure detailed in chapters 10 to 13 in the categories relevant to applying the CROIC prudence tests.

In accordance with the information request from the Asset Owners and the CROIC definition of contract costs[25] (and in particular, the note to the definition), this report deals with contract cost concepts at the level of JAM. The contract costs referred to below relate to contracts entered into by JAM to enable the provision of Regulated Services on JEN's and UED's networks.

7.1 Relevant cost categorisations and distinctions

For the purposes of applying the CROIC prudence tests, this report distinguishes between contracts entered at 28 February 2011, contracts yet to be entered, and other non-contract costs.

This report also describes services secured through a competitive tender (in accordance with the tendering process set out in chapter 8), and services that have not been tendered, but have been subject to a rigorous commercial decision making process (as described in chapter 9).

The broad categories are:

- Committed tendered contract costs – the expenditure that meets the CROIC definition of contract costs at the date of this report and that has been competitively tendered

- Future tendered contract costs – the expenditure associated with contracts that will be entered after the date of this report, all of which will be subject to competitive tender

- Other costs:

    (a) Committed non-tendered contract costs – the expenditure that meets the CROIC definition of contract costs at the date of the UED and JEN budget applications; it has not been tendered, but has been subject to a reasonable commercial decision

    (b) Future non-tendered contract costs – the expenditure that will be committed to under contracts that will be entered after the date of the UED and JEN budget applications; it will be subject to a reasonable commercial decision, but will not be tendered.

[25] See section 3.3.1 above.

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(c) Non-contract costs – the expenditure that will be incurred due to JAM in-sourcing.

7.2 Summary of forecast contract and other costs

Figure 7-1 shows the relative scale of the five categories of joint base costs defined above,

Figure 7-1 Tendered and non-tendered costs

{c-i-c}

The joint program's forecast expenditure over the subsequent AMI budget period is summarised in Table 7 1.

Table 7-1 - AMI Program forecast costs over the initial AMI budget period

Category	Committed costs as at 28 February		Costs to be committed post 28 February		
	Tendered contract costs	Non-tendered contract costs	Future tendered contract costs	Non-contract costs[26]	Total
Calendar year 2012					
	{c-i-c}				

[26] Non-contract costs in this table and subsequent tables throughout this document refers to future non-tendered contract costs and non-contract costs.

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Category	Committed costs as at 28 February		Costs to be committed post 28 February		
	Tendered contract costs	Non-tendered contract costs	Future tendered contract costs	Non-contract costs[26]	Total
					{c-i-c}
% of 2012 Exp.	**73%**	**8%**	**9%**	**10%**	
Calendar year 2013					
					{c-i-c}
% of 2013 Exp.	**53%**	**13%**	**12%**	**22%**	
Calendar year 2014					
Metering (Mass	{c-i-c}				
% of 2014 Exp.	**7%**	**13%**	**52%**	**28%**	
Calendar year 2015					

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Category	Committed costs as at 28 February		Costs to be committed post 28 February		
	Tendered contract costs	Non-tendered contract costs	Future tendered contract costs	Non-contract costs[26]	Total
{c-i-c}					
% of 2015 Exp.	6%	13%	53%	28%	
Totals 2012 – 2015					
	{c-i-c}				
% of 2012 - 2015 Expenditure	49.5%	11%	22.4%	17%	

Chapter 8 describes the procurement process followed, or to be followed, for the committed tendered and future tendered contract costs respectively. Chapter 10 demonstrates the process followed to ensure other costs that are to be incurred will be based on a reasonable commercial decision.

7.2.1 *The prudence of committed tendered contract costs*

The activities associated with committed tendered contract costs set out in this report are within scope, and the budgeted costs have been subject to a competitive tendering process. The resulting contract costs are therefore prudent in accordance with sections 5C.2 and 5C.3 of the CROIC.

Supporting information is contained in:

- chapter 4 which relates each cost category and activity to the scope
- chapter 8 which describes the competitive tendering process adopted for committed and future tendered contract costs
- chapters 10 to 13 which summarise tenders, contracts and commercial processes for each cost category.

7.2.2 *The prudence of future tendered contract costs*

The activities associated with future tendered contract costs set out in this report are within scope, and the budgeted cost will be incurred subject to a competitive tendering process. This ensures that the costs incurred are not a substantial departure from the commercial standard that a reasonable business would exercise in the circumstances. The resulting future tendered contract costs are therefore prudent in accordance with sections 5C.2 and 5C.3 of the CROIC.

Supporting information is contained in:

- chapter 4 which relates each cost category and activity to the scope
- chapter 9 which:
    - describes the competitive tendering process adopted for future tendered contract costs, and
    - explains that the cost forecasts for future tendered contract costs are the best estimates of the future outcome of a competitive tender process and therefore are not a substantial departure from the commercial standard that a reasonable business would exercise in the circumstances
- chapters 10 to 13 which summarise tenders, contracts and commercial processes for each cost category.

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7.2.3 Other contract information

In its Framework Paper[27] the AER requested the following additional information in relation to the contracts:

- an overview of each contract entered into, including the third party contractor and the nature of the services provided
- the total estimated value of the contract
- payment schedules
- details of the financial terms of the contract including:
    - fixed payments
    - variable payments
    - performance based penalties or rewards other margins or contingencies.

This information is provided in Appendices B and C.

[27] AER Framework and approach paper – Advanced metering infrastructure review 2009-2011 – REF-004

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8 Competitive tendering

The purpose of this chapter is to describe the competitive tendering process that applies to all past and future tenders undertaken or to be undertaken for joint expenditure, except where explicitly stated otherwise.

A budget application must include documents that set out the process that is proposed (or has been used) for competitive tenders for contracts for Regulated Services[28]. The competitive tender process need not be conducted by the distributor.

8.1 CROIC requirements

This chapter 8 (together with the relevant reference documents to which it refers) complies with 5.5(a) of CROIC, which states that:

Subject to clause 5.3, a budget application and a charges application must also include:

a. the document or documents that set out the process ('competitive tender process') that is proposed (or in the case of contracts already entered into, has been used) for competitive tenders for contracts for Regulated Services

Establishing competitive tendering processes satisfies the prudency tests in clause 5C.3 of the CROIC. Clause 5C.10 of the CROIC provides that, to determine that a contract was not let in accordance with a competitive tender process, the matters to which the AER must have regard, and relevant sections in this chapter, are:

- the tender process for that contract (see sections 8.2, 8.3 and individual contract descriptions in Appendices B and C)
- whether there has been compliance with that process (section 8.5), and
- where the AER establishes that the request for tender unreasonably imposed conditions or requirements that prevented or discouraged the submission of any tender that was consistent with the selection criteria, that fact (see details of individual contracts in Appendices B and C).

8.1.1 CROIC compliance

The competitive tendering process described in this chapter applies to all past and future tenders undertaken in relation to joint expenditure, except where explicitly stated otherwise. 72 per cent of the joint expenditure during the subsequent AMI budget period will be incurred through competitive tenders.

[28] CROIC clause 5.5(a)

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Establishment of contracts related to procurement of AMI technology and the establishment of the AMI solution under the joint program during the initial AMI budget period followed the competitive process that was established by the program and documented in the 2009 – 2011 AMI budget application. Chapter 7 sets out relevant details.

Procurement activities undertaken by JAM during the subsequent AMI budget period will follow a similar Jemena procurement policy for goods and services. This policy dictates a threshold test based on value of services or product required to determine the procurement process to be followed. All procurement over the $250,000 threshold is subject to a competitive tender process. The threshold reflects Jemena group experience, and a resulting 'rule of thumb' for the point where commercial benefits of a competitive tender process outweigh the costs.

Section 8.2 of the Jemena Procurement Policy[29] states:

> "The Jemena procurement policy exists to ensure that the purchase of goods and services meets business requirements, provides Jemena with the best value outcome, and that potential suppliers are given an equal opportunity to tender.
>
> The following situations are those where it may be appropriate to issue a tender:
>
> - The estimated total purchase expenditure is in excess of $250,000;
> - The purchase is below $250,000 but the nature of the requirement, and the characteristics of the market, are such that the tender process would lead to a better result for the business;
> - Repeat purchases where the anticipated aggregated annual value exceeds $250,000 per annum for a family of like products or services;
> - The requirement is capable of several technical or commercial solutions;
> - It is necessary to pre-qualify Suppliers of goods and/or services to meet defined standards;
> - The requirement is generally known but there is still considerable analysis, evaluation and clarification required - both of the objective and of the method of solution; and · Jemena wishes to provide an opportunity for prospective tenderers to provide innovative solutions to meet Jemena's requirements.

[29] Jemena Procurement Policy – REF-012

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In instances where a supplier is to be awarded a contract without tendering, the Requisitioner may seek approval in accordance with Section 8.3 Waiver of Competition.

All tenders will be issued and managed by the Contracts Development Group. The process will be carried out in accordance with the principles and procedures outlined in the Contract Award Manual (AAM PR 0173)."

Competitive tender[30] is the method for JAM to test and establish competitive pricing for all products and services that meet the threshold tests. As described in chapter 9, the procurement of a resource or capability outside the competitive tender process is only considered where JAM has specialist requirements that are not readily available in the market.

For the purposes of applying the CROIC prudence test, this report separates contract costs that have been subjected to tendering into two categories, both of which are examined in this chapter:

- *Committed tendered contract costs* – the expenditure that meets the CROIC definition of contract costs at the date of the UED and JEN budget applications and that has been competitively tendered.

- *Future tendered contract costs* – the expenditure associated with contracts that will be entered after the date of the UED and JEN budget applications, all of which will be subject to competitive tender.

This chapter also describes the activities contracted or to be contracted by JAM and the procurement process followed.

The analysis contained in this chapter demonstrates that JAM's committed tendered contracted costs are prudent. Further, it demonstrates that the forecasts of future tendered contracts costs reflect the expected outcomes of a competitively tendered process.

The forecasts for future tendered contract costs are the best estimates of the future outcome of a competitive tender process and therefore are not a substantial departure from the commercial standard that a reasonable business would exercise in the circumstances.

8.2 Summary of tendered expenditure

Expenditure in the following categories has been or will be subject to competitive tender.

[30] Note that competitive tendering includes a variety of processes, including requests for expressions of interest, tenders, proposals, or quotations.

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Table 8-1 - AMI Program forecast committed and future tendered costs over the subsequent AMI budget period

Submission category	2012	2013	2014	2015	Total
		{c-i-c}			

8.3 Procurement process

Comprehensive procurement processes indentify the most cost effective available products and services to enable UED and JEN to meet their metering regulatory obligations and requirements. Under these processes:

- All JAM requirements for product have been subject to competitive tender.
- All volume resources (two or more) are also subject to competitive tender (see section 8.3.3.2 below).
- Joint tenders have been used to maximise purchasing power, without limiting the future strategies of either JEN or UED.

As anticipated in the 2009 Substantiation Report[31], the vendor contracts have created sustainable arrangements for the future, while balancing risk between the parties according to which party is best placed to manage the specific risk.

8.3.1 Overall procurement strategy

The broad procurement strategy reflects several key principles:

- Use multiple vendors and period contracts[32] for AMI technology to minimise vendor delivery risk and maximise scope of efficient contracting over the life of the roll-out where possible or commercially viable.

[31] That is, *Substantiation of Base Costs to Provide Regulated Services - Report prepared by Alinta Asset Management Pty Ltd for Jemena Electricity Networks and United Energy Distribution*, dated 26 February 2009 – REF-016

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- Use vendors who have demonstrated AMI experience in delivering a particular product/service, to reduce the risks of disruption to business-as-usual network and metering operations, and make vendors responsible for sub-contracting solution vendors and for successful delivery of IT systems and infrastructure.

- Deal only with counterparties who are financially viable and specify contract terms to include damages.

- Where appropriate, follow a targeted procurement strategy for each major scope component tailored to ensure efficient outcomes which balance delivery and operational risk against cost.

8.3.2 Procurement governance

Sound procurement governance arrangements ensure the standards of probity that UED and JEN require. Key elements of the governance approach include:

- Decision making that is auditable, transparent and subject to JAM's procurement standards.

- Risk management achieved by managing a risk register that documents procurement related risks. [33]

- Probity applied for all procurement contract processes (e.g. by establishing objective tender assessment criteria, using tender review committees, the negotiation governance group and engaging independent procurement experts).

- Quality assurance implemented through self audits, external review of the self audits and appointing an external independent probity auditor to audit the tender process. For all major AMI contracts a probity auditor has delivered a due diligence report to the UED and JEN Boards at the end of each key stage of the procurement process.

Probity reviews[34] are required to ensure that all aspects of the procurement process are fair, open and demonstrate the highest level of integrity consistent with the stakeholder interest. JAM works with the probity advisers to monitor and evaluate the application of probity principles through all the stages of the tendering, selection and procurement process.

[32] Period contracts have a defined commencement and completion date or expiry conditions

[33] For example, solution design/product selection is flawed, or vendors do not deliver on time or to the right level of quality.

[34] Probity reports – RSM Bird Cameron –REF-010a, Probity report Pitcher Partners.pdf - REF-010b

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JAM's policy is for tender evaluations to be reviewed by an appropriate tender evaluation committee, and for negotiations to be reviewed by a negotiation governance group. Such groups:

- provide oversight of activities
- serve as first point of escalation for decisions or issues
- review communications on progress from evaluation and negotiation teams
- communicate with other stakeholders e.g. Asset Owners, program steering committees etc, about tender progress
- form recommendations.

8.3.3 Selection process

Under the Jemena procurement policy, JAM seeks to achieve the best value outcome for its procurement activities. In the procurement process, this principle does not necessarily mean JAM will accept the lowest price offered in all cases. Comparative analysis of all associated costs, quality of goods or services, timely delivery and value added services will be considered in the evaluation. Providing there is technical, regulatory, HSEQ and legal compliance, and all qualitative criteria are equal, then the lowest price offer will be accepted.

8.3.3.1 Products

The selection process generally includes the following steps: (i) assess business needs; (ii) develop tenders; (iii) issue tenders and evaluate them; (iv) negotiate with vendors; and (v) finalise contracts. Table 8 2 describes these activities.

Table 8-2 - Selection process for products

Activity	Description
Business Needs	Develop a procurement management plan detailing the method and timeframes for purchase of the required product and services including the development of high level evaluation criteria and weightings.
Tender Development	Develop tender documents that are aligned with the agreed detailed criteria and weightings that directly reflect the business needs.
Issue Tender & Evaluate Responses	Prepare and implement processes and procedures required for: releasing the tender documents, managing clarifications and addenda, registering tender submissions, scoring as per the evaluation criteria, and preparing recommendations to proceed to negotiations. This has also included external audit of the tender evaluation models.
Negotiation	Negotiate with vendors to obtain the best available market pricing and contract terms that meet the specific business needs and prudent risk management requirements, and prepare recommendations for approval.
Finalise Contract	Establish the processes and procedures for concluding the contract documents, notifying unsuccessful vendors, preparing contracts for signing and mobilisation.

8.3.3.2 Resources and services

The procurement of temporary or contract resources during the subsequent AMI budget period will be subject to the Jemena procurement policy. As discussed above, the value of the service will determine the process by which the procurement will take place.

- Procurement of services greater than $250,000 will follow the competitive tender process under the governance of a strategic procurement group.
- For services less than $250,001 but greater that $10,000, a minimum of three written quotes is required.
- For amounts less than $10,001 but greater than $2,500, three verbal quotes are required with the best value quote documented.
- For amounts less than $2,501 but greater than $1000, three verbal quotes are required and for lesser amounts, a single verbal quote is required.

In accordance with the procurement polices outlined in the Jemena Purchasing Manual[35] upon closing of the request for quotation, the responses will be evaluated based on compliance with specifications and/or requirements. If the complying best value outcome offer is deemed reasonable, that quotation should be recommended for acceptance.

[35] Jemena purchasing manual – REF-011

After evaluation, the requisitioner will arrange for the recommendation to be submitted to a delegate approver (as per a Delegation of Financial Authority Manual) or approval by completing a requisition.

All purchase requests must be approved by the appropriate Delegated Financial Authority.

A level of staff resourcing for the subsequent AMI budget period was established under the joint program during the initial AMI budget period. The recruitment of these resources complied with the following recruitment procedure for hiring of more than one resource.

- Recruitment will only commence once the hiring manager has received approval from a program director.
- The hiring manager must engage with the AMI procurement team to initiate a request for proposal process with at least three vendors.
- The appropriate contract approval forms must be prepared by the hiring manager for approval by a program director and the General Manager SmartNet & Customer Service.
- A program director must approve the hiring of each resource.

8.3.4 Tender approach

Most major contracts for products and services that will be in place during the subsequent AMI budget period were established during the initial AMI budget period. These include the contracts for the provision of AMI meters and LAN equipment, installations services and major IT contracts. These contracts were established via competitive tender processes that followed the following approach.

To ensure each tender was open to all the potentially competent product suppliers, a program process was established that identified potential target suppliers, qualified the vendors, and ultimately presented tender opportunities to the qualified vendor group. The specific steps for each of AMI Technology, AMI IT Systems and Infrastructure and AMI Installation Services varied slightly but followed the sequence of activities described below:

- Identification nationally and internationally of vendors of products or services via desk research, specialist advisers (e.g. KEMA for AMI Technology and IT, EDS for IT) and industry reports on vendors (e.g. Chartwell Inc for AMI technologies)
- Issuing requests for expressions of interest or proposals to pre-qualify vendors. For the technology elements, up to 40% of identified vendors did not respond as they did not have available compliant product consistent with the AMI

specification and timeline, or they had decided that they would not offer their products in Australia

- Qualification of vendors for short listing through a structured process of mandatory and subsequently evaluation stages

- Request for tender to qualified vendors with a similar detailed evaluation and selection process.

Further detail on the tender and evaluation process is contained in the procurement strategy[36], the contracting strategy, the evaluation and weightings criteria and supporting documents.

For the subsequent AMI budget period JAM will follow the same process as outlined in the JAM Tender and Contract Award process[37]

8.3.5 Contracts

JAM has implemented structured vendor contracts, based on terms and conditions that specify the detailed requirements, scope, deliverables and acceptance criteria. The vendor contracting strategy governed all contract negotiations. This strategy ensured that the contracts with vendors meet the needs of UED and JEN , for example, giving asset owners direct rights against the vendors for non-performance.

All contracts are subject to legal review. Contracts that support a long term relationship feature:

- clarity of scope

- clearly defined pricing

- service quality measures

- flexibility for change

- key control mechanisms for UED and JEN to manage accountability.

8.3.6 Vendor contracting strategy

The JAM vendor contracting strategy was developed during the initial AMI budget period and is used by JAM as the basis for all key contract negotiations during the subsequent AMI budget period.

[36] Refer documents AIMRO - Procurement Strategy – REF-017.

[37] Jemena Tender/Contract Award process – REF-014

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The Vendor Contracting Strategy guided the negotiation activities and key contract requirements included in the final executed contracts established by JAM for AMI. It also addressed the negotiation procedures and protocols and structure of the negotiation sessions. The strategy included both general contracting principles as well as targeted principles for specific procurement areas.

Table 8 3 details the contracting principles applied by the Vendor Contracting Strategy.

Table 8-3 - Contracting principles

General contract principles	AMI Technology and installation principles	AMI IT systems and infrastructure principles
The contract terms and conditions will address key commercial principles including: • intellectual property rights • escrow of software • confidentiality and privacy • indemnities and liability • liquidated damages • performance undertakings • termination • warranties • safety	Specific principles relevant to AMI technology and installation services include: • promoting safety {c-i-c} In addition, separate contracts may be negotiated for each component of equipment or services. However where the same vendor is engaged for more than one function, two or more contracts may be merged into one.	Specific principles relevant to AMI IT Systems and Infrastructure include: • following the current business model of purchasing packaged solutions that are: – fit for purpose applications; and – applications that support open, integrated standards; and • engaging system integrator(s) who are responsible for successful delivery of operational applications and contracting with solution vendors.

8.3.7 Risk analysis

A standard part of the procurement process is to evaluate and allocate risks effectively with efforts applied that are commensurate with the size and significance

of the procurement activity The risk analysis is presented to the procurement governance committees to inform their decisions.

For example, projects of the scale and complexity of AMI have inherent risks which must be carefully identified and managed. Many of these risks are common to all projects and have familiar and accepted mitigation strategies, whilst others are unique to the AMI solution itself and require mitigation strategies crafted specifically to target these risks.

The risk mitigation techniques JAM employs can be classified into three broad classes:

- *Program mitigations*: Program planning such as independent advice and audits, careful vendor selection and vendor monitoring regimes can reduce the likelihood and/or impact of risk events

- *Architectural, design and planning mitigations*: Guiding principles and architectural decisions which mitigate risks by design. These strategies typically prevent a risk event from occurring (reduce the likelihood) but may also reduce the impact should a risk event occur

- *Contractual mitigations*: Contractual mechanisms such as service level penalties, liquidated damages and insurance requirements are typically used to reduce the impact to the business of risk events.

When combined together, these broad classes of mitigation techniques form a comprehensive risk management strategy capable of protecting the business from a variety of risk scenarios.

JAM undertakes regular risk reviews and holds regular risk management meetings. All risks are assigned to an owner and a detailed risk register is maintained in the program governance toolkit. This process ensures that risks are identified early and reviewed regularly, providing confidence that full coverage of the material risks has been achieved.

8.4 Contracts subject to alternate competitive tendering process

Current non-AMI meter operations pre-date the establishment of the arrangement outlined in section 8.3. However, JAM confirms that:

- all non-AMI meter services have been subject to competitive tender, with the exception of some resourcing costs (see section 8.3.2)

- competitive tendering was completed in accordance with normal, reasonable commercial processes in place at the time.

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One key area subject to alternate arrangements is back office operations, meter procurement and installation services for BAU metering.

{c-i-c}

8.5 Compliance statement

JAM confirms that the competitive tender process described in section 8.3 has been or will be followed for all expenditure related to categories identified in Table 8 1. and contracts detailed in Appendix B and C.

The competitive tender process for non-AMI meter services is as described in section 8.4.

It is noted that none of the contracts resulting from these tenders is with a related party of JAM, JEN or UED.

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9 The commercial standard (process for non-tendered costs)

The purpose of this chapter is to describe and demonstrate the robust commercial process that has and will be observed for joint program decisions affecting expenditure in relation to Regulated Services, in particular, for expenditure related to non-tendered contracts and other costs.

It outlines information to support a conclusion by the AER that:

- it is more likely than not that the proposed expenditure will be incurred, and
- incurring the expenditure does not involve a substantial departure from the commercial standard that a reasonable business would exercise in the circumstances.

The non-tendered expenditure accounts for {c-i- percent of the total joint program costs over the subsequent AMI budget period.

9.1 Description of relevant services

As noted in chapter 8, a competitive tendering process is JAM's default method to test and establish competitive pricing for all products and services greater than $250,000. However, over the course of the subsequent AMI budget period non tendered costs will be incurred by JAM. These relate to procurement of:

- a resource or capability where specialist requirements, not market available, are required and a resource with specific competence has been identified as available
- resources to perform activities of a recurrent or asset specific nature, that are most efficiently performed in-house.

Resources that may not be subject to a competitive tender are:

- individual persons secured from the market to perform specialist functions
- current employees who are required to perform functions associated with Regulated Services, and who have expert knowledge and capability in areas seen as core business operations.

The significant non-tendered JAM costs are associated with:

- expenses incurred in the normal course of business e.g. office accommodation

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- expenses incurred in the conduct of the roll-out consistent with the standards required under the CROIC and by UED and JEN e.g. audits, legal services, industry working groups and regulatory submissions, and industry experts.

- back office resources to manage the mass roll-out, being FTE's engaged {c-i-c} until the mass roll-out concludes in May 2013

- customer claim costs associated with Regulated Services, including the costs payable to EWOV.

As noted above, non tendered expenditure accounts for {c-i-c} percent of total costs over the subsequent AMI budget period.

The expenditure by category for non tendered cost over the subsequent AMI budget period establishes the expenditure profile in Table 9-1.

Table 9-1 - Non tendered expenditure over the subsequent AMI budget period

Submission category	2012	2013	2014	2015	Total
{c-i-c}					

9.2 Rationale for not tendering

JAM does not undertake a competitive tender where it is reasonable, commercial and practical not to do so. Such circumstances arise for example for the following services:

- When the value of services or products, do not required tendering in accordance to the Jemena procurement policy (e.g. greater than $250,000).

- legal and other assistance required to assist with any claims, should they arise

- some audit functions, where the pool of available service providers is restricted due to conflicts of interest

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- Accommodation and air travel
- Finance charges including derivative settlements and related fees, and bank charges
- Government permits, charges, payments, taxes, levies and fees
- Freight handling, wharfage, demurrage and storing etc. Rail, sea and air and customs duty charges
- Utilities accounts
- Inspection services provided by weights and measures department
- Licence fees
- Medical examination, reports and testing (including eye and hearing testing)
- Non-refundable tender deposits
- Postage, private boxes and bags, telegraphic addresses, mail notices etc
- Municipal Rates, water, sanitation, fire services etc
- Workcover premiums
- Customer related regulatory fees and charges (low voltage rebates, high voltage
- Subscriptions and donations
- Rent

Such services are sourced to market conditions.

In addition, there are instances where regulatory obligations compel the use of a single service provider, such as requiring participation in the EWOV dispute resolution scheme, and payment to EWOV of the costs associated with the initiation and handling of any complaint to EWOV.

9.2.1 Non-tendered activities in metering category

The metering category includes the cost of back office resources to manage the mass roll-out. These FTE's are engaged on a limited tenure basis until the mass roll-out concludes in May 2013. These resources have been engaged in accordance with Jemena's Recruitment and Selection Policy[39] and procedures

[39] Jemena recruitment and selection policy – REF-009

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Non-tendered activities in AMI operations category

Most non-tendered activities in this category are undertaken by long term employees. It is prudent for JAM to maintain a core set of skills in-house to support Regulated Services. This is especially important in areas such as asset and network operation, which focus on operating and maintaining the new AMI communications network and metering technology. Due to the specialist nature and relative immaturity of AMI networks, there are few service providers with the knowledge and skills required to perform these tasks. Therefore, JAM has established this knowledge in-house. Jemena's Recruitment and Selection Policy[40] and procedures are followed when engaging resources for these roles.

This category also reflects costs associated with maintaining an appropriate level of intellectual property within the business. This is in the form of long term employees who ensure the business operates efficiently and remains compliant with market rules and processes. This is especially important as AMI continues to introduce changes into the market requiring constant assessment of cost and impact on JAM systems and processes. Jemena's Recruitment and Selection Policy[41] and procedures are followed when engaging resources for these roles.

Activities associated with managing customer claims and complaints as well as the payment of GSL penalties and claims payments cannot be subject to competitive tender. It is prudent and practical to maintain a level of expertise in-house to address efficiently any customer-related issues. Customer relations and liaison with other external stakeholders are also included in this category.

There are a number of miscellaneous costs forecast in the Operations category that are for short, relatively low cost activities; or activities that are specialist in nature. As such, these will not be subject to a tender process. These include:

- Legal and technical consultation to support contracts negotiations between JAM, its suppliers, and its customers
- Regular operational and security audits required to ensure compliance to market rules and regulatory obligations
- Logistics handling by mass roll-out installation providers to allow AMI meters to be deployed by non-mass roll-out service providers for new connections and additions and alterations.
- Various costs related to low-value equipment for field staff to test and maintain the communication network
- Rent and accommodation costs included in the non-tendered contract expenditure.

[40] Jemena recruitment and selection policy – REF- 009

[41] Jemena recruitment and selection policy – REF- 009

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9.2.2 *IT system and infrastructure*

Activities associated with the IT Level 2&3 Application Support are not subject to a competitive tender. JAM considers that it is efficient and prudent to maintain a team of IT professionals to provide support to the business. The AMI service level specification requires delivery of data to the market by 6am, which requires a prompt and efficient response to any IT system and/or infrastructure problems that may occur. This service is best delivered by maintaining the intellectual property in house.

9.3 Commercial decision making process

Decisions are made by the JAM executive, with joint/operational steering committees and Asset Owner oversight and endorsement of any significant commitments, in accordance with:

- good industry practice
- documented procurement policies and controls of the Program Office, consistent with JAM's policies and procedures
- documented contracting principles described in Table 8-3.
- the provisions of the commercial agreements between JAM and UED, and JAM and JEN (e.g AMI Operational Services Requirements agreements including delegations, reporting obligations, principles, and general governance arrangements

For example, the Services Requirements Agreements (SRA) established to support the joint program during the initial AMI budget period include a requirement for a program joint steering committee to endorse

> "the Vendor contracting strategy and other relevant decisions relating to contracts in accordance with paragraphs 10 (Program Director and Program Management Office), 11 (Quality review company) and 12 (Vendor contracts) of these AIMRO Service Requirements.": Schedule 5 clause 1.4
>
> And...(Schedule 5 clause 1.5(b) ...
>
> "Where approval is required for significant expenditure relating to the AMI Program, the Program Director must submit supporting documentation to the Steering Committee. Subject to paragraph 1.5(e) of this Schedule, if the Steering Committee does not approve such expenditure it must agree an appropriate procedure and timetable for resolution of the request."

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{c-i-c}

9.3.1 *Non-tendered engagement of resources*

JAM's current sourcing strategy is to outsource non-core, transactional functions, while maintaining subject matter expertise within the business. This ensures the provision of cost-effective services, while retaining all core intellectual property within the organisation. Information used to determine how a service is sourced is provided in Table 9-3 below:

Table 9.3 Decision matrix for internal/external resourcing

Requirement	Consider outsourcing	Retain internal
Complexity of Service	• Simple tasks • High volume or repetitive tasks • Highly documented procedures	• Complex tasks • High level of skill or exerience of operator required • One off or performed at low volumes
Required Skill level for service	• Entry level skillset • No special qualifications • Low level of expertise required	• Relies on high level of skill or experience of operator • Qualifications or significant experience required
Availability of resources	• Required skillset readily available in marketplace	• Resources not readily available or requires significant training to carry out service
Speciality of service	• Service readily obtained from market place from specialised Service Providers • High cost for setup if internally sourced (based on business case)	• Specialist function not readily available in the market place • Cost of setup justified (based on business case)
Opportunity for growth	• Low opportunity for business growth	• Possibility to provide specialist service to 3rd

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Requirement	Consider outsourcing	Retain internal
		parties

Where engaging resources for JAM activities is not required to follow the tender process (refer section 8.3.3.2), or has been determined as appropriate to retain internally, recruitment will follow the established Jemena recruitment and selection policy[42]

The objectives of this policy are to:

- ensure that the roles and responsibilities for recruitment and selection are clearly outlined
- provide a framework of effective and efficient recruitment and selection procedures within which Jemena staff can work
- ensure that there is a standard, consistent and effective recruitment and selection policy, procedure and process in use across Jemena
- encourage the use of behavioural interviewing
- provide recruitment-related documents and templates that are user-friendly and which help to streamline and standardise the recruitment and selection policy, procedure and process in the company
- ensure that only the best candidates are employed by Jemena.

In the first instance, Jemena's policy is to conduct all recruiting internally and not via a recruitment agency. Recruitment agencies are used only if a unique and specific business need exists or if there is a lack of resources to handle the recruitment activities.

Recruitment will only commence once the hiring manager has followed the Jemena recruitment procedure and received approval from the JAM finance manager and the JAM general manager. Should the engagement be for an unbudgeted role then a Leadership Team Recruitment Panel (LTRP) must approve the recruitment prior to advertising.

Other process requirements are:

- Each vacant position must have a minimum of three candidates interviewed for the role sourced through more than two vendors

[42] Jemena recruitment and selection policy – REF- 009

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- Once a resource has been selected for the role, the hiring manager must demonstrate that they have attempted to negotiate an appropriate rate

- At least two reference checks must be completed for the preferred candidate and the referrals must both be positive

- The appropriate contractor approval forms must be prepared by the hiring manager for approval by the JAM finance manager and the JAM general manager.

- The JAM finance manager and the JAM general manager must approve the hiring of each resource before the individual is appointed.

9.3.2 Consumables

All expenses incurred on consumables during the course of delivering CROIC related service use contracts established by JAM. Such contracts are commercially appropriate and consistent with good business practice, and otherwise comply with JAM's procurement policies.

9.4 Information to support decisions

When making decisions under the commercial standard, management is informed by:

- AMI implications – the nature and implications of AMI

- Market participant obligations – binding roll-out obligations on distributors as set out in the CROIC, and other related metering and regulatory obligations, create time constraints that affect decisions.

- State of technology – new technology means there is a limited pool of resources with the particular skills and experience required.

- Efficiency – where prior knowledge of the transitioning systems are able to assist with the program.

- Risk analysis – application of efficient risk allocation principles.

- Market conditions – for example, a competitive tender may not be feasible if there is only one acknowledged expert capable of providing the service required; or if conflicts of interest limit the available providers.

- Total cost of ownership – considering all direct and indirect costs.

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10 Metering

This chapter describes joint activities that relate to the procurement and installation of meters. This includes those activities related to the AMI mass roll-out as well as those that are related to BAU metering activities that are not included in the mass roll-out. This chapter provides relevant procurement information to establish prudence under the CROIC.

The activities detailed in this section relate to the scope categories of Installation Services and AMI Technology as detailed in sections 4.2 and 4.5, and Non-AMI services detailed in section 4.8. These include meter installation, meter procurement, communication equipment procurement, and LAN.

10.1 AMI mass roll-out

10.1.1 AMI mass roll-out budget

Table 10-1 sets out the 2012-2015 budget expenditure for the AMI mass roll-out.

Table 10-2 - Budget for AMI mass roll-out

Total expenditure AUD $		**Committed costs as at 28 February**		**Costs to be committed post 28 February**		
Activity heading in CROIC scope	**Key activities included in item**	**Tendered contract costs**	**Non-tendered contract costs**	**Future tendered contract costs**	**Non-contract costs**	**Total spend 2012-2015**
{c-i-c}						

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Table 10-3 – Percentage breakdown for AMI mass roll-out budget

Activity heading in CROIC scope	Key activities included in item	Share of 2012-2015 costs
Installation services	Meter installation	{c-i-c}
AMI Technology (meters & LAN)	Meters	{c-i-c}
	LAN	{c-i-c}
Program Management	Management of Capital works program	{c-i-c}
Total		{c-i-c}

The forecast expenditure is considered prudent under the CROIC, as the majority of forecast expenditure for items within the AMI mass roll-out is a contract cost, where the contract was let in accordance with a competitive tender process. Cost for managing the capital works program relate to expenditure incurred by resourcing the back office functions in line with JAM resourcing policies outlines in chapter 9.

10.1.2 Expenditure categories, prudence tests

Installation services

This activity involves services associated with the installation of AMI meters and LAN assets. It accounts for {of the forecast expenditure.

During the initial AMI budget period (2009–11), JAM competitively tendered for provision of installations services for the initial 15% of the meter roll-out. The successful tenderer from this process was {c-i-c}

The tendered services involved:

- installing and commissioning data concentrators, repeaters, simple and complex meters
- capturing asset information
- managing logistic and supply chain for AMI meters and LAN equipment
- delivering communications to customers regarding their meter exchange
- providing call centre capability to support the roll-out and providing IT interfaces integrated back into UED's and JEN's internal systems.

{c-i-c}

All forecast expenditure will be a contract cost, where the contract was let to {c-i-c} in December 2008 in accordance with a competitive tender process conducted in 2008.

Meters and communication equipment

This activity involves procuring AMI meters and communication equipment. It accounts for {c} of the total forecast expenditure.

All forecast expenditure for Meters and LAN equipment will be a contract cost, where JAM contracted {c-i-c} in December 2008 in accordance with a competitive tender process conducted in December 2008.

As with installation services, a competitive tender was conducted in August 2008 for the provision of AMI meters for the initial 15% of the meter roll-out. This tender covered provision of AMI meters and communications equipment and the associated NMS.

{c-i-c}

[43] 85% RFT Final Recommendation Report – REF-018

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{c-i-c}

All forecast expenditure will be a contract cost, where the contract was let to {c-i-c} in December 2008 in accordance with a competitive tender process conducted in August 2008.

LAN

This activity involves procuring the communications network between the AMI meter and the AMI data concentrator and repeaters. AMI LAN includes communications modems that reside in the AMI meters (network interface cards). It accounts for {c-i-c} of total forecast expenditure.

All forecast expenditure will be a contract cost. The joint program let the contract to {c-i-c} in December 2008 for 100% of LAN equipment in accordance with a competitive tender process conducted in August 2008.

Program management

Program management includes activities for the management, monitoring and reporting of the mass roll-out fieldwork program performance to ensure the joint program operates in an efficient, timely manner and achieves a quality outcome.

All forecast expenditure for program management has been committed to in accordance with the competitive tender processes described in chapter 8, or is commercially reasonable but not tendered as described in chapter 9. {c-i-c}

10.2 Business-as-usual metering

10.2.1 BAU metering budget

Table 10-2 sets out the 2012-2015 budget expenditure for the BAU metering activities.

Table 10-4 - Budget for BAU metering

Total expenditure AUD $	Committed costs as at 28 February	Costs to be committed post 28 February	

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Activity heading in CROIC scope	Key activities included in item	Tendered contract costs	Non-tendered contract costs	Future tendered contract costs	Non-contract costs	Total spend 2012-2015
	{c-i-c}					

Table 10-5 – Percentage spend for BAU metering budget

Activity heading in CROIC scope	Key activities included in item	Share of 2012-2015 costs
Meter & LAN provision	AMI Meter	{c-i-c}
	Accumulation Meters & Manually Read Interval Meters	{c-i-c}
	Current transformers (CT's)	{c-i-c}
Installation services	AMI Meter	{c-i-c}
	Accumulation Meters & Manually Read Interval Meters	{c-i-c}
	Total	{c-i-c}

The forecast expenditure for items within the BAU metering budget for the period {is a contract cost, where the contract was, or will be, let in accordance with a competitive tender process. Costs for the period {c-i-c} will be subject to a competitive tender.

10.2.2 Expenditure categories, prudence tests

BAU metering requirements

BAU metering occurs outside the mass roll-out processes. JAM will be required to install AMI meters as well as accumulation and manually read interval meters over the subsequent AMI budget period. By start of 2012, an estimated 95% of BAU installations will be AMI meters. This figure will move towards 100% by the end of the mass roll-out as meter density increases, and communications augmentation activities are performed resulting in full 100% communications coverage across the UED and JEN distribution networks.

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BAU installation services are performed under separate contracts from those for the mass roll-out.

Prudence – contracts awarded pursuant to competitive tenders

{c-i-c}

A small number of metering installations (those more complex in nature) are carried out by {c-i-c} under a contract that was established in 2004 after a competitive tender, and commenced in 2005. These services will be subject to a competitive tender in 2011.

Activities associated with the installation of AMI meters and LAN assets under BAU metering account for {c-i-c} of the total forecast expenditure.

The tendered services involved:

- installing and commissioning simple and complex meters
- capturing asset information
- managing logistic and supply chain for AMI meters.

Procurement of AMI Meters and communication equipment

Until the end of the mass roll-out in 2013, AMI meters for BAU metering activity will be procured under contracts with {c-i-c} , which were awarded following competitive tendering processes conducted in 2008.

A future competitive tender will be conducted in 2013 for AMI meters required for new connections beyond the end of mass roll-out.

Until the end of the mass roll-out in 2013, communications equipment will be procured and installed under the {c-i-c} contract.

A future competitive tender will be conducted in 2013 for communication equipment required beyond the end of the mass roll-out.

{c-i-c}

Manage supply chain

This activity involves managing supply chain activities for AMI metering assets installed outside the mass roll-out program including warehousing and logistics for the meters and communications equipment, issuing AMI meters to the relevant field service providers, and managing meter and communications returns and warranty claims.

{c-i-c}

11 AMI technology

This chapter describes activities related to AMI Technology, and provides relevant procurement information to establish prudence under the CROIC.

The activities detailed in this section relate to the scope categories of procurement and installation of AMI technology, acceptance testing for new releases of NMS and AMI communications, and AMI technology strategy and planning, as detailed in Chapter 4 (see section 4.2).

Most activities relating to AMI technology procurement and selection were completed during the initial AMI budget period 2009-2011.

AMI technology activities over the subsequent AMI budget period largely relate to the management, acceptance and deployment of vendor releases for the chosen AMI technology. In addition, some activity will relate to the continued development of the overall AMI technology strategy and roadmap.

Work will continue over the technology lifecycles to secure the benefits of AMI technology maturing, and avoid obsolete and unsupported assets. To achieve this, the AMI technology will undergo an annual release upgrade with minor releases schedule for 2012, 2014 and 2015, and a major release scheduled for 2013.

Under the terms of the existing LAN contract, new releases are provided {c-i-c} However once each release is received by UED and JEN , it requires thorough testing to ensure it is defect-free, and compliant with the Victorian AMI Functionality Specification and all other relevant regulation prior to its deployment into a production environment. The AMI technology team will manage this task, with additional resources brought on to assist where required. JAM will procure these additional resources following the engaged in accordance with Jemena's Recruitment and Selection Policy[44] and procedures

11.1 AMI technology budget

Table 11-1 sets out the 2012-2015 budget expenditure for AMI Technology. These forecasts exclude those costs for meters and LAN set out in chapter 10 for the mass roll-out.

[44] Jemena recruitment and selection policy – REF-009

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Table 11-1 – Budget for AMI Technology

Total expenditure AUD $		Committed costs as at 28 February		Costs to be committed post 28 February		
Activity heading in CROIC scope	**Key activities included in item**	**Tendered contract costs**	**Non-tender contract costs**	**Future tendered contract costs**	**Non-contract costs**	**Total spend 2012-2015**
{c-i-c}						

Table 11-2 – Percentage of total budget for AMI technology expenditure

Activity heading in CROIC scope	Key activities included in item	Share of 2012-2015 costs
Acceptance testing (technical)	Testing for new releases of NMS and AMI communications	{c-i-c}
AMI Technology	Access point and repeaters	{c-i-c}
	Installation	{c-i-c}
	Network planning & augmentation	{c-i-c}

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	AMI technology battery replacement	{c-i-c}	
	Trials	{c-i-c}	
Total		{c-i-c}	

The forecast expenditure is considered prudent under the CROIC, as all forecast expenditure for AMI Technology has been, or will be, committed to in accordance with the competitive tender processes described in chapter 8.

11.2 Expenditure categories, prudence tests

11.2.1 Access points and repeaters

While the majority of AMI communications equipment will have been commissioned during the initial AMI budget period, a limited number of access points and repeaters will be procured and installed in 2012.

All forecast expenditure will be a contract cost.

The joint program let the contract for provision of the equipment to {c-i-c} in December 2008 {c-i-c} in accordance with a competitive tender process conducted in August 2008. This cost represents {c-i-c} of the total forecast expenditure.

11.2.2 Installation services

This activity involves services associated with the installation of the access points and repeaters. It accounts for {c-i-c} of the total forecast expenditure.

During the initial AMI budget period (2009–11), JAM competitively tendered for provision of installations services for the AMI technology communications equipment. The successful tenderer from this process was {c-i-c} . Refer to 10.1.2 for further details on installation services.

11.2.3 AMI network planning and augmentation

This activity includes performing AMI network optimisation, maintenance and augmentation projects beyond the end of rollout. These are required to match the organic growth of the UED and JEN distribution networks attributed to new housing development on the fringes of the communications networks

All forecast expenditure will be made in accordance with the procedures described in chapter 9.

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11.2.4 AMI battery replacement

The AMI system uses batteries to supply power during electrical outages to allow the AMI system to achieve the outage notification performance levels set out in the Minimum AMI Functionality specification.

The batteries used in the UED and JEN AMI systems have an operational life of 5 years, after which they must be replaced. In 2015, 130 of the AMI system batteries will be greater than 5 years old. JEN and UED will replace these batteries in 2015.

JAM plans to establish a small project to manage this task. It is anticipated that 70% of expenditure for this project will be subject to competitive tender and as such this expenditure is classified as a contracted cost.

11.2.5 Testing for new releases of NMS and AMI communications

AMI introduces a number of new functions into the business. The AMI technology testing lab supports the ongoing production and maintenance of AMI meters and communications networks. Testing activities are required to ensure that updates provided by AMI vendors comply with the Victorian Functionality and Service levels specifications.

All forecast expenditure will be made is considered prudent under the CROIC, it has been, or will be, committed to in accordance with the commercially reasonable but not tendered procurement processes described in chapter 9.

11.2.6 Trials

Customer response trials

While the rolling out of AMI technology by Victorian DNSP's is essentially a infrastructure program, the intent of the Victorian Government's policy in introducing AMI is clear. That is, to promote energy efficiency by making more detailed and more timely information about electricity consumption to the customer, to allow to make more informed choices.

AMI provides the platform to achieve this in a number of ways.

1) Introduction of time of use interval data for customers – AMI meters measure consumption every ½ hour thus providing the ability to understand when energy consumption occurs.

2) More frequent reading of meters – Under the service levels for AMI, meters will be read daily. This data will be validated by the DNSP and provided to the customer's retailer by 6am the next day.

3) Allowing near-real-time information from the meter to be accessed by the customer via the Home Area Network interface.

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Evidence in the public domain shows that enabling customers to better understand their energy consumption will lead to an overall reduction in energy consumption. What is not clear is what the most effective mechanism to direct this sort of information to consumers and what level of detail promotes the most effect response.

UED plan to perform a customer response trial in conjunction with retailers to help inform business decisions related to customer response.

HAN Technology trials

As the population of AMI meters increases and customers become more aware of the potential services that AMI can deliver, particularly in the area of the home area networks (HAN), UED and JEN anticipate increases in requests from customers to enable the connection of an AMI meter to a home area network for the purposes of accessing meter data information directly from the meter.

While this functionality is required to exist in the AMI system (that is, the meters and communications infrastructure), enabling these services is not part of the current Victorian program (there are no service levels defined in the service level specification related to the delivery of these services). As such, internal business processes or industry processes to support these requests have not yet been established. The use of Home Area Networks is very much on the cutting edge of the technology therefore it is prudent to perform a set of trials to help understand the technical issues related to enabling these services.

Under the CROIC, provision has been made for performing technology and customer response trials for these types of services

The information gained from these trials will inform both business decisions and Government policy.

{The trial objectives are to:
c

- Gain an understanding on technical and process requirements to enable HAN services
- Better understand customer response to mechanisms to deliver information to the customer.

Results from these trials will provide insight into potential customer uptake of technology using HAN which will help guide future expenditure.

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This activity will be resource by a mixture and internal and external resources. Engagement of external resources will be market tested in line with Jemena policy as outlined in chapters 8 and 9.

12 AMI operations

This chapter describes the joint program work that relates to AMI operations, and provides relevant procurement information to establish prudence under the CROIC.

The activities detailed in this section relate to the scope categories of technology, operations, business and industry transition and program management as detailed in Chapter 4 (see section 4.8). They involve managing industry development, AMI regulatory submissions, JEN's and UED's metering and communications strategy, meters and meter data, service orders, service desk, faults and emergencies. They also support regulated service field operations, and AMI network operations.

12.1 AMI operations budget

Table 12-1 shows the forecast 2012-2015 AMI operations expenditure.

Table 12-1 - Metering operations expenditure

Total expenditure AUD $		**Committed costs as at 28 February**		**Committed costs as at 28 February**		
Activity heading in CROIC scope	**Key activities included in item**	**Tendered contract costs**	**Non-tender contract costs**	**Future tendered contract costs**	**Non-contract costs**	**Total spend 2012-2015**
	{c-i-c}					

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Total expenditure AUD $		Committed costs as at 28 February		Committed costs as at 28 February		
Activity heading in CROIC scope	**Key activities included in item**	**Tendered contract costs**	**Non-tender contract costs**	**Future tendered contract costs**	**Non-contract costs**	**Total spend 2012-2015**
AMI	{c-i-c}					

Table 12-2 – Percentage of budget for Operations expenditure

Activity heading in CROIC scope	Key activities included in item	Share of 2012-2015 costs
Technology	AMI Backhaul Communications	{c-i-c}
Operations	Asset Strategy & Planning	{c-i-c}
	Asset Operations	{c-i-c}
	Customer Contact & Back Office	{c-i-c}
	AMI Network Operations	{c-i-c}
	Meter Data Collection	{c-i-c}
	Management	{c-i-c}
	Finance & HR	{c-i-c}
	Service Delivery & Contract Management	{c-i-c}
	Stakeholder Relations	{c-i-c}
	Premises	{c-i-c}
AMI Transitional Business Activities	AMI Transitional Business Activities	{c-i-c}
	Total	{c-i-c}

The forecast expenditure is considered prudent under the CROIC, as all forecast expenditure for AMI operations has been, or will be, committed to in accordance

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with the competitive tender processes described in chapter 8, or is commercially reasonable but not tendered as described in chapter 9.

The following sections present AMI operations expenditure categories, grouped by the form of procurement used for each activity.

12.2 Expenditure categories, prudence tests

JAM has outsourced via competitive tender a variety of back office activities to {c-i-c} (see section 8.4). The following describes the activities performed by {c-i-c} that meet the CROIC definition of contract costs at the date of this report.

12.2.1 Meter data collection

Managing meters and meter data

This activity is core to the role of a market meter provider (MP) and a meter data provider (MDP). Primary activities involve:

- Maintaining a registry of connection point data for all sub-160 customers
- Collecting and processing meter data from all sub-160 customers, including both AMI and non-AMI metering
- Generating substitution reads where actual reads are missing or fail validation rules
- Providing meter data to market participants, in the case of AMI on a daily basis, by 6a.m., consistent with the service level specification, and in the case of non-AMI meters, within 2 business days of the meter reading
- Compliance with rules and procedures to ensure MP and MDP accreditation is maintained, and compliance with responsible person metering obligations.

Collection and processing of meter data is managed by a mixture of JAM employees and staff engaged under the {c-i-c} contract, or in the case of manual meter reading, under the terms of the {c-i-c} contract (described in section 8.4 above).

All forecast expenditure through {c-i-c} for back office activities was awarded by competitive tender.

All forecast expenditure for manual meter reading collection by { was awarded by competitive tender.

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12.2.2 Customer contact & back office

Managing service orders

This activity relates to servicing requests from retailers to perform work on AMI and non-AMI meters. It involves back office processing related to metering additions, alteration, supply abolishment, and meter reconfigurations.

Processing of service orders for Regulated Services is managed by a mixture of JAM employees and staff engaged under the {c-i-c} contract.

All forecast expenditure for {c-i-c} back office activities relates to a contract awarded by competitive tender.

Managing service desk

This activity involves servicing customer and retailer enquiries related to work performed in the field, or to the provision of meter data.

The service desk is managed by a mixture of JAM employees and staff engaged under the {c-i-c} contract.

All forecast expenditure through {c-i-c} for back office activities was originally awarded by competitive tender and is now administered under the metering services agreement as described in Section 8.4.

Managing faults and emergencies

This activity involves dealing with faults and emergencies that directly relate to the Regulated Services.

The Metering Faults and Emergencies call centre will be affected by the AMI roll-out, as customers with meter exchange enquiries incorrectly call the Faults and Emergency Call Centre, instead of the Mass Roll-out Call Centre. Experience to date shows that approximately 3% of meter exchanges generate misplaced calls.

All forecast expenditure through {c-i-c} for back office activities was originally awarded by competitive tender and is now administered under the metering services agreement as described in Section 8.4.

12.2.3 Backhaul communications

This expenditure relates to telecommunications charges for the backhaul from the data concentrators to JEN's and UED's respective network management systems. These are also referred to as wide area network or WAN charges.

In 2008, the joint program competitively tendered for these services. The contract was subsequently awarded to {c-i-c} .

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12.3 Expenditure categories, prudence tests – Other costs

The following activities and expenditure do not meet the CROIC definition of contract costs at the date of this report. These activities have been procured in accordance with the commercial standard described in chapter 9.

12.3.1 Managing metering and communications strategy

AMI technology remains a relatively new technology, but is rapidly maturing as AMI experience grows both locally and internationally. This activity helps ensure that experience drives the strategy for managing AMI communications and metering assets. In this way, the activity reduces the risks of technology obsolescence, and ensures that, as technology evolves, a roadmap from the existing to the future remains available.

All forecast expenditure will be made in accordance with the procedures described in chapter 9.

12.3.2 Customer contact & back office, meter data management and network meter connections

These activities are performed by a mixture of contract and non-contract resources. The contracted resources have been outlined in section 12.2. The non-contracted resources involved in activities are senior long term employees fulfilling the roles of subject matter experts with responsibility for overseeing day to day contracted services. JAM must retain this knowledge in order to remain compliant with its regulatory obligations, including accreditation and license requirements.

12.3.3 AMI asset operations

Asset maintenance and testing programs

While the AMI roll-out continues, UED and JEN have obligations to continue regular testing of the meters installed in the field, in accordance with AEMO approved asset management plans. This includes both AMI and non-AMI metering. From 2012, AMI meters will be included in the testing sample programs. The expenditure in this category is for the management and planning to support the field activity. This is performed by in-house JAM staff. Recruitment of these staff has followed the JAM recruitment policies outlined in Chapter 9.

12.3.4 AMI network operations

Managing AMI network operations

This activity involves operating the 24/7 AMI communications network, including monitoring, identifying, correcting and reporting on AMI network operational and performance issues. Also, this service provides AMI network status and compliance reporting.

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All forecast expenditure will be non-contract costs and serviced by in-house JAM staff. Recruitment of these staff has followed JAM's recruitment policies outlined in Chapter 9.

12.3.5 Business and industry transition

Manage claims and complaints

This activity receives and responds to customer claims and complaints regarding the AMI mass roll-out. It includes responding to roll-out-related complaints that have been escalated to EWOV.

Experience to date has shown a complaint or claim lodged for almost 1% of sites that have received an AMI meter. These rates are forecast to rise in line with the progress of the mass roll-out throughout 2011 and 2012 as more complex sites receive AMI meters, and customers focus on tariff implications.

Recruitment of the resources used to perform these activities has followed JAM's recruitment policies outlined in Chapter 9.

12.3.6 Management, facilities and other costs

Facilities and accommodation

This activity involves managing the facilities that support JAM in providing Regulated Services and includes accommodation, travel, fleet management, telecommunications, kitchen and stationary supplies, mail and courier management.

Industry development and stakeholder relations

This activity involves liaising with the UED and JEN regulatory managers and assisting them to develop regulatory submissions regarding Regulated Services, participating in industry working groups such the Victorian AMI working groups and the IEC national reference groups, and engaging with government stakeholders such as the Victorian Department of Primary Industries and the Essential Services Commissions of Victoria.

It remains important for JAM staff, on behalf of UED's and JEN's joint roll-out, to participate in industry forums to share insights gained from the early phases of the meter roll-out, and to promote developments that are technically feasible, prudent and efficient.

Managing regulatory submissions

This activity involves developing regulatory submissions (such as this document) to support UED and JEN AMI budget and charges applications and other regulatory consultation processes related to Regulated Services under the CROIC.

12.3.7 Finance & HR

Manage joint program finance

This function relates to financial activities for regulated services including:

- ensuring consistency and maintenance of financial reference data and asset management data
- managing and paying installation service and meter providers for both the AMI roll-out and as a result of retailer requests
- preparing financial reporting for accounts payable and reconciling acceptance certificates in preparation of payment to installation service vendors
- managing remittances and payments for the mass roll-out program and other vendor contracts
- providing monthly reporting on expenditure to UED and JEN including actual and forecasts for upcoming periods.

12.3.8 Service delivery & contract management

Ensure compliance

This function ensures that JAM, UED and JEN comply with all regulatory requirements and that market accreditation and technical compliance is maintained across regulated service operations.

Contract management and procurement

JAM manages the establishment and ongoing management of vendor contracts and agreements relating to the services that support Regulated Services, including AMI mass roll-out contracts. The key tasks activities are:

- strategic procurement of new contracts
- legal support for the contracts and agreements
- operational performance management of contracts.

Performance and reporting

This function provides a reporting capability to manage performance. It involves a business intelligence dashboard that proactively manages key performance indicators (KPIs) to ensure compliance with CROIC Regulated Service obligations.

13 IT systems and infrastructure

This chapter describes the joint program work that relates to the scope categories of AMI IT systems, infrastructure and acceptance testing as detailed in section 4.3 above. The relevant activities and assets are set out in section 4.3. This chapter also provides relevant procurement information to establish prudence under the CROIC.

As required by the Victorian AMI Service Level specification, during the initial AMI budget period (2009-12), UED and JEN established new AMI systems to:

- support the mass roll-out
- manage the AMI communications network
- process the AMI data retrieved from the AMI meters (4 times per day)
- deliver the data to the relevant industry parties by 6am the next day.

A new network billing system was also required due to the volume of interval data, as was a replacement asset management system.

These systems were commissioned in June 2010, and in February 2011, they support processing for approximately 151,000 AMI meters. By January 2012, the joint program will have exchanged approximately 50% of UED's and JEN's meters and established IT capacity for end of roll-out data volumes.

13.1 Overview of IT infrastructure and systems assets and activities

During the subsequent AMI budget period, these systems and supporting infrastructure will have been established and operational for a number of years. They will be in 'maintenance mode', whereby any additional expenditure will result from activities relating to:

- ongoing regular maintenance to ensure UED and JEN can continue to meet their electricity market obligations
- the introduction of market changes driven by regulatory requirements
- vendor upgrades and maintenance releases required to maintain licence conditions
- routine lifecycle replacement programs for infrastructure reaching end-of-life.

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13.1.1 Regular maintenance

To provide AMI metering in accordance with Victoria's functionality and service level specifications requires UED and JEN to operate an IT solution 24 hours a day, 7 days a week. AMI meters are read 4 times a day, with the final read from each meter occurring within 4 hours of midnight. UED and JEN must validate each half hour read, provide a substitute should validation fail, and then deliver this data to the market by 6am. This requires a high-availability IT solution.

Between January 2012 and the end of the roll-out, UED's and JEN's IT systems will see a doubling in the volume of data processed and stored. To ensure this environment is robust UED and JEN will be required to perform regular maintenance to their IT hardware and infrastructure.

13.1.2 Market driven changes

DNSPs and meter data providers are subject to jurisdictional and national regulatory frameworks. Regulatory changes occur from time to time that affect systems and processes. The national electricity market (NEM) has a structure in place that schedules two industry releases per year (May and November). To maintain accreditation and compliance with all obligations, UED and JEN must implement these changes.

14.2.1.3 Vendor upgrades and maintenance releases

The UED and JEN solution utilises many vendor products, either as core business applications such as SAP or as supporting applications such as infrastructure monitoring tools. To remain supported by the vendor, UED and JEN must ensure latest software fixes are applied.

14.2.1.4 Routine lifecycle replacement programs

IT systems have a normal operating life of between 5 and 7 years. Operating IT infrastructure outside these limits introduces significant risk to the business and increases maintenance costs. Therefore, expenditure is necessary to perform a maintenance program to replace ageing infrastructure elements over the 2012-2015 period. This driver is discussed further in section 13.3.4.

13.2 IT Systems and Infrastructure Budget

Table 13-1 sets out the budget for IT Systems and Infrastructure.

Table 13-1 budget for IT systems and infrastructure

Total expenditure AUD $		Committed costs as at 28 February		Costs to be committed post 28 February		
Activity heading in CROIC scope	**Key activities included in item**	**Tendered contract costs**	**Non-tender contract costs**	**Future tendered contract costs**	**Non-contract costs**	**Total spend 2012-2015**
{c-i-c}						

Table 13-1 – Percentage of total budget for IT systems and infrastructure expenditure

Activity heading in CROIC scope	Key activities included in item	Share of 2012-2015 costs
IT systems	Meter Data management (Legacy Decommissioning)	{c-i-c}
	Market Interaction and business application integration layer	{c-i-c}
	Routine infrastructure lifecycle replacement program	{c-i-c}
	System Software Release	{c-i-c}

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	IT support services	{c-i-c}
	Application support services	{c-i-c}
	IT software maintenance	{c-i-c}
	Two element meters	{c-i-c}
	2nd Meter provider	{c-i-c}
Total		{c-i-c}

The joint program's forecast expenditure is considered prudent under the CROIC, as all forecast expenditure for IT systems and infrastructure has been, or will be, committed to in accordance with the competitive tender processes described in chapter 8, or is commercially reasonable but not tendered as described in chapter 9.

13.3 Expenditure categories, prudence tests

Expenditure in this category is generally related to four areas.

- Hardware and infrastructure – Costs related to establishing and maintaining the platform to enable IT for UED and JEN. Costs incurred in the category are committed in accordance with the commercial tender process described in Chapter 8

- Support services provided to operate and maintain the IT systems and infrastructure. These activities can be provided by external parties (as in the case of the managed services functions) or by internal resources. All costs incurred in the category will be committed in accordance with the processes set out in Chapter 8 where tendered, and otherwise, in accordance with Chapter 9

- Ongoing fees paid to vendors to provide products and services in the course of delivering IT services to UED and JEN. This expenditure will be incurred under contracts established under the competitive tender processes outlined in Chapter 8

- Projects established to perform a defined set of tasks that will occur over a finite period. Costs incurred in this category usually are committed in accordance with the commercial tendering process described in Chapter 8. However, it may include non-tendered costs for JAM resources seconded onto projects to assist in governance activities and to provide business knowledge.

The following sections provide information about the ongoing activities required for IT over the subsequent AMI budget period. Costs incurred for these activities will fall either into one of, or into a combination of, the above expenditure categories.

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13.3.1 Testing for systems and infrastructure

Any change to IT systems or supporting infrastructure requires regression and functional testing to ensure: compliance with the Victorian AMI Functionality Specification, maintenance of business continuity, and compliance with regulatory obligations. . Forecast expenditure for this activity has been included in the costs outline for each project.

13.3.2 Meter Data management (legacy system decommissioning)

When the mass roll-out program has been completed, UED and JEN legacy systems can be retired. UED and JEN have an obligation under the Market Rules to ensure that relevant data is kept for seven years. A program of work is scheduled to ensure that data relating to sub-160 meters is archived from the legacy systems and made available to meet this obligation. Once this has occurred, decommissioning of legacy systems can commence. This activity has been scheduled for 2013.

These activities have been forecast using FTE estimates and will be resourced with a combination of internal and external staff. All external staff will be engaged in accordance with the Jemena procurement guidelines outlined in chapters 8 and 9.

13.3.3 Enterprise reporting and integration applications major release

By 2013, the AMI enterprise reporting application, and the integration and B2B application will have been operating for three years on the same core version. These two critical systems are expected to require migration to the vendors' latest release for UED and JEN, in order to remain supported by the vendors. As such, this work is scheduled to occur in 2013 in concert with other changes to minimise costs related to program management, functional testing and regression testing.

These activities have been forecast using FTE estimates and will be resourced with a combination of internal and external staff. All external staff will be engaged in accordance with the Jemena procurement guidelines outlined in chapters 8 and 9.

13.3.4 Routine infrastructure lifecycle replacement programs

IT systems have a normal operating life of between 5 and 7 years. Operating infrastructure outside these limits will introduce significant risk to the business and additional cost to maintain. Therefore, expenditure has been allocated to replace ageing infrastructure during the subsequent AMI budget period.

JAM adopts the following approach to ensure that infrastructure hardware continues to be supported, in line with the approach to replacement of business and infrastructure applications.

- Replace infrastructure hardware applications (e.g. storage management) at the same time as replacing the hardware itself

- Apply a structured approach to replacing hardware to ensure currency
- Stagger hardware replacement if possible to limit the impact of “big bang” replacements
- Complete all hardware upgrades at least 3 months before support expiry.

The following asset replacement timeframes are used as a guideline for replacing hardware.

Table 13-2 - Asset replacement lifecycles

Area	Asset Type	Min (Year)	Max (Year)
Server	Intel Server – Workgroup/Blades	3	4
	Sparc Server (Workgroup/Blades)	3	4
	Blade Chassis	3	4
	Sparc Enterprise Servers	5	6
	AIX Enterprise Servers	5	6
Storage	SAN	5	6
	Tape Infrastructure	5	6
Network	Routers	5	7
	Switches	5	7
	Firewalls	3	4
	Load Balancers	3	4
Security	Intrusion Detection	3	4
	VPN Appliance	3	4
	Other Security Appliances (RSA, Monitoring)	3	4

In line with these guidelines, UED and JEN have the following program for IT infrastructure replacements over the 2012 -2015 period.

Table 13-3 – IT infrastructure roadmap

Year	Area	Asset Type	Cost
2012	Network	Network backup upgrade	{c-i-c}
2013	Server	Server replacement	{c-i-c}
		Virtualisation environment upgrade	
	Network	Misc. Network upgrade	
2014	Server	DB upgrade/maintenance	{c-i-c}
		Citrix upgrade	
		OS upgrade (Windows Server)	
	Storage	SAN refresh program (33%)	
2015	Server	Server replacement Program	{c-i-c}
	Security	Security Infrastructure replacement	
	Storage	SAN refresh program (33%)	
	Network	Management Applications Upgrade	

The lifecycle replacement activities will be resourced by internal staff or where capacity is exceeded; external staff will be engaged in accordance with the Jemena resourcing guidelines outlined in chapters 8 and 9. These activities have been forecast using FTE estimates.

Infrastructure purchased for the lifecycle replacement programs will be subject to the competitive procurement processes as described in chapter 8. Costs for infrastructure have been estimated on past purchase costs or current market prices.

In addition to the infrastructure upgrades and replacement programs that relate to computer equipment, UED and JEN plan the following computer application or software level upgrades.

13.3.5 System software releases

Major systems release

Over the course of the subsequent AMI budget period, market consultation is expected to drive regulatory changes. Resulting changes to market processes will in turn require changes to internal business processes. UED and JEN must adopt these changes to remain compliant as participants in the NEM.

In addition to changes driven by regulatory change, changes will occur driven by vendor software maintenance schedules. UED and JEN will be required to adopt these changes to maintain the functionality; reliability and performance of solution components.

The AMI system major release schedule acknowledges these drivers of change, with a major release scheduled to occur during the budget period in 2013.

The scope of each major release will include:

- project management and governance
- solution impact analysis and solution design
- solution build, system testing and pre-production deployments (as applicable)
- end to end (meter to market) regression testing
- market, bi-lateral and user acceptance testing
- production deployment planning and preparation
- production deployment of solution components, and
- post implementation support.

These activities will be resourced with a combination of internal and external staff. All external staff will be engaged in accordance with the Jemena procurement guidelines outlined in chapters 8 and 9.

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The forecast expenditure is based on an assessment of the activities involved and the potential process impacted. A level of effort has been assigned and costed based on internal FTE costs and market rates.

Annual software maintenance release

During the establishment of the AMI IT solution, new systems have been established to meet the obligations under the CROIC. As JAM becomes more familiar with operating in an AMI environment it will identify areas where systems and processes can be made more efficient. JAM has forecast expenditure change UED and JEN's IT systems to enable these efficiencies.

Due to the relative immaturity of the new AMI IT systems, expenditure has been forecast to remedy minor defects that UED and JEN will encounter over the course of the subsequent budget period.

These activities have been forecast using FTE estimates and will be resourced with a combination of internal and external staff. All external staff will be engaged in accordance with the Jemena procurement guidelines outlined in chapters 8 and 9.

13.3.6 IT support services

This activity provides an IT service delivery function for UED and JEN. It consists primarily of a service desk, to provide level 1 support and incident management for incidents raised by automated alerting or from calls from customers. The other functions of this activity are set out in Table 13-5.

Table 13-4 - IT support services activities

• Release Management • Change Management • Capacity Management • Configuration Management	• Contract Management • Security Management • Service Desk (Level 1 Support) • Incident Management	• Availability Management • Problem Management • Level 2 and 3 Support • IT Service Continuity Management

These activities are resourced by internal staff engaged in accordance with the Jemena resourcing guidelines outlined in Chapter 9.

13.3.7 Application support services

This activity provides and supports development, testing and production environments for all AMI IT systems and legacy systems within the CROIC scope. It involves the activities set out in Table 13-5.

Table 13-5 - IT application support services activities

AMI systems and environments	Legacy systems and environments
• Connection point, Network Revenue and Asset management- {c-i-c} • Meter data management – {c-i-c} • Applications and market Integration - webMethods Transaction Gateway, CATS & B2B Applications • Enterprise reporting – {c-i-c} • AMI Communications network management systems - {c-i-c} • Control and scheduling systems – Control M • AMI Intranet	• IVR (Interactive Voice Response) for fault centre • Network revenue – {c-i-c} • Connection point management SDR (Standing Data Repository) • Infrastructure support – {c-i-c} • Meter data management - IMS (Interval Meter Store) • Reporting - Legacy {c-i-c} • Market integration - Legacy B2B Gateway • Meter data collection – {c-i-c}

Support activities related to operating the data centres and managing the infrastructure for the AMI solution are provided under a managed services agreement that was established during the initial AMI budget period and will be in place during the subsequent AMI budget period. Expenditure in this period is committed until 2013, after which JAM will retender these activities in accordance with the competitive processes set out in Chapter 8.

Support services for those activities performed outside the managed services agreement is provided by internal FTE's engaged in accordance with the Jemena procurement guidelines outlined in chapters 8 and 9 and form the basis of the forecasts for the subsequent budget period.

13.3.8 IT software maintenance

Expenditure in the category relates to the annual licence costs for products procured during the initial budget period. Forecast expenditure is related to fees determine through the competitive tender processes described in Chapter 8.

13.3.9 Support for two element metering (UED only)

UED have included expenditure to support two element metering in the AMI solution (refer section 2.2.5). IT systems were established during the initial AMI budget period without this requirement. This affects the most IT systems within the AMI solution. These being:

- the asset management system is required to capture additional information;

- the meter data management system is required to accommodate the addition data stream from the meter

- the enterprise reporting system is required to support the additional data structure and additional data streams

- the integration layer and market gateways are required to update market systems with additional information

- the IT infrastructure for UED is required to accommodate approximately 20% higher meter data volumes and requires additional processing capacity to remain compliant to the service level obligations .i.e. 6am data delivery to market.

These activities have been forecast using FTE estimates and will be resourced with a combination of internal and external staff. All external staff will be engaged in accordance with the Jemena procurement guidelines outlined in chapters 8 and 9.

Additional infrastructure will be procured in accordance with the procurement guidelines outlined in chapters 8.

13.3.10 Support for 2nd meter provider (UED only)

In line with the overall procurement strategy (refer section 8.3.1), UED have included expenditure in the subsequent budget period to enable support within the AMI solution to manage meters from two vendors.

Due to relative immaturity of AMI, technology and process standards have yet to evolve. While all meter vendors are required to support the communications protocols used on the UED and JEN AMI communications networks, the method by which each vendor applies changes and settings to their meter is proprietary. The different approaches adopted by vendors results in tailored processes being required for each vendor and different information to be maintained within the AMI systems.

This budget forecasts expenditure required to test a 2nd meter vendor's meters for compliance with the functionality specifications and to provide support for tailored processes and information requirements within the AMI solution.

These activities have been forecast using FTE estimates and will be resourced with a combination of internal and external staff. All external staff will be engaged in accordance with the Jemena procurement guidelines outlined in chapters 8 and 9.

14 Appendix A: Glossary of terms

Term	Definition
3G	Third Generation Wireless Network
JAM	Jemena Asset Management
AER	Australian Energy Regulator
AIMRO	Advanced Interval Meter Roll-out
AMI	Advanced Meter Infrastructure
Application	This budget application
B2B	Business to Business
BPL	Broadband over Power Line
Capex	Capital Expenditure
CATS	Customer Administration Transfer Solution
CMM	Complaint Management Model
COTS	Commercial of the Shelf
CPM	Connection Point Management
CR	Change request
CROIC	Cost Recovery Order in Council means the Order in Council made 28 August 2007 under sections 15A and 46D of the Electricity Industry Act 2000 and published in the Victoria Government Gazette S200 on that day as amended by the Order in Council made 12 November 2007 and published in the Victoria Government Gazette S286 on that day, the Order in Council made 25 November 2008 and published in the Victoria Government Gazette S314 on that day, the Order in Council made on 31 March 2009 and published in the Victoria Government Gazette G14 on 2 April 2009, and the Order in Council made on 19 October 2010 and published in the Victorian Government Gazette G42 on 21 October 2010.
DC	Data Concentrator
DLC	Distribution Line Carrier
DNSP	Distribution Network Service Provider
DPI	Department of Primary Industry
E2E	End to End Acceptance Testing
FAT	Functional Acceptance Testing
FTE	Full time Equivalent Person
GE	General Electric Corp
GIS	Geographic Information System
HAN	Home Area Network

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Term	Definition
HS&E	Health Safety and Environment management
IP	Intellectual Property
ITSAI	IT Systems and Infrastructure
JEN	Jemena Electricity Network
JAM	Jemena Asset Management (6)
JSC	Joint Steering Committee
LAN	Local Area Network
MDA	Meter Data Agent
MDM	Meter Data Management
MDP	Meter Data Provider
MPB	Meter provision Category B
MRO	Mass Roll-out
NEM	National Electricity Market
NEMMCO	National electricity Market Management Company
NER	National Electricity Rules
NGG	Negotiation Governance Group
NMS	Network Management System
NRM	Network Revenue Management
NSRD	Next Scheduled Read Date
OIC	Order in Council
OMS	Outage Management System
Opex	Operational Expenditure
OSA	Operating Services Agreement
P2P	Point to Point
PMO	Program Management Office
PMS	Prescribed Metering Services
PoC	Proof of Concept
Regulated Service	Regulated metering services as define in clause 2.1 of the CROIC
RF	Radio frequency
RFI	Request for Information
RFP	Request for Proposal

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Term	Definition
RFQ	Request for Quotation
RFT	Request for Tender
SDR	Standing Data Repository
SME	Subject matter Expert
SRA	Services Requirement Agreement
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TAT	Technical Acceptance Testing
TOU	Time of Use
TWG	Testing Working group
UAT	User Acceptance Testing
UED	United Energy distribution
WAN	Wide Area Network
WIGS	Wholesale, Interconnector, Generator and Sample

15 Appendix B: JEN contract details

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16 Appendix C: UED contract details

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17 Appendix D: Reference documents

Term	Definition
REF-001	Letters from Minister to CEO on Tariff deferral
REF-002	Critical Milestones to Introducing TOU Pricing in January 2012
REF-003	Letters from CEO to Minister on Tariff deferral
REF-004	AER Framework and approach paper – Advanced metering infrastructure
REF-005	Minimum AMI Functionality Specification (Victoria) release 1.1
REF-006	Minimum AMI Service Levels Specification (Victoria) release 1.1
REF-007	ISC - Planning and Delivery Issue 99 Decision Paper _20101217_ v1-0.pdf
REF-008	AMI Customer Management Defect Policy
REF-009	Jemena recruitment and selection policy
REF-010a	RSM Bird Cameron –REF-010a
REF-010b	Probity report Pitcher Partners August 2009
REF-010c	Probity report Pitcher Partners January 2010
REF-011	Jemena Purchasing Manual
REF-012	Jemena Procurement Policy
REF-013	JAM Vendor Contracting strategy / Jemena Tender/Contract Award process
REF-014a	Jemena Tender Contract Award
REF-014b	Jemena Contractor management Strategy
REF-015	Metering Services Agreement
REF-016	AAM - AMI Budget Application 2009-2011
REF-017	Phase 4 AIMRO - Procurement Strategy
REF-018	85% RFT Final Recommendation Report.

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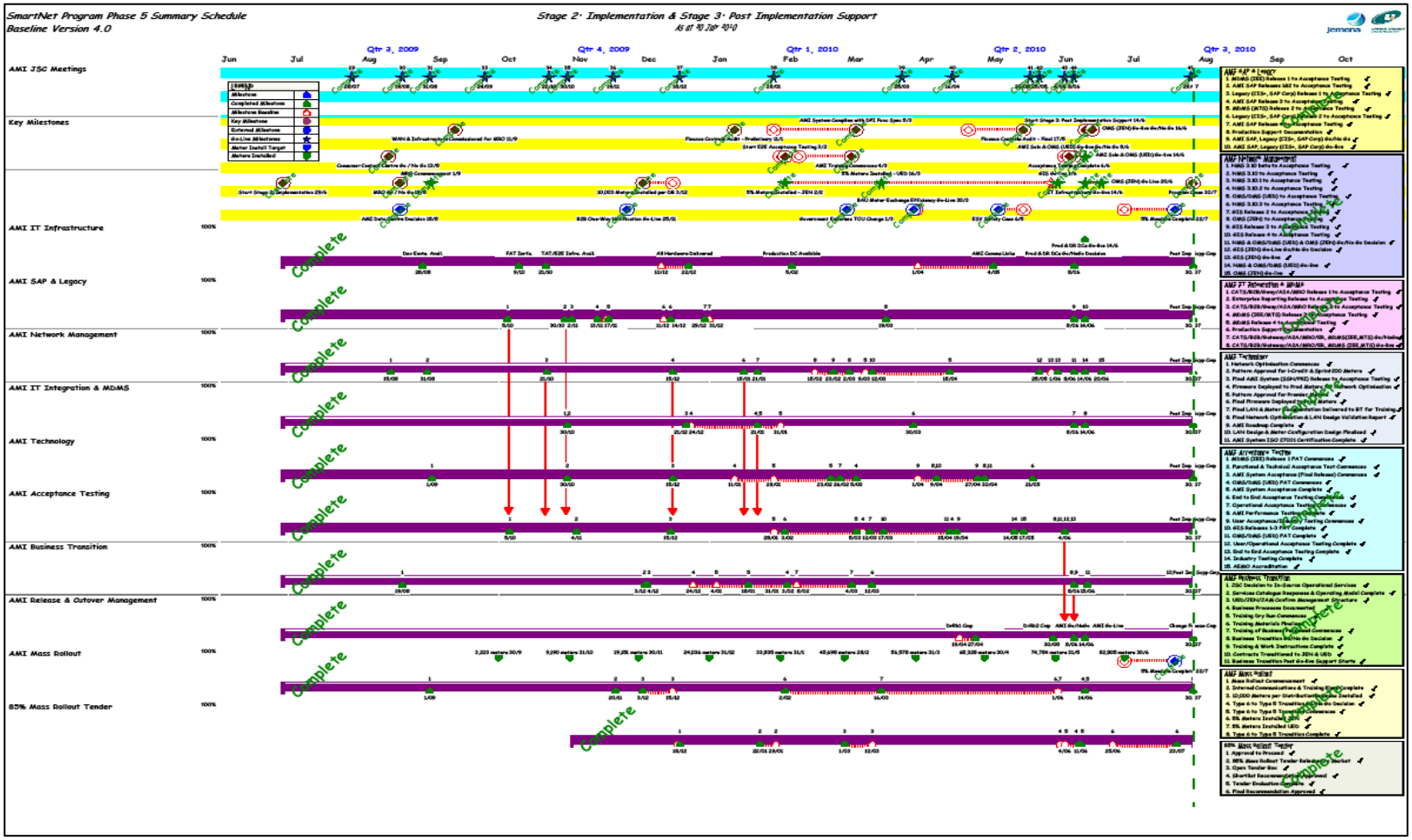
18 Appendix E: Milestones 2009-2010



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19 Appendix F: AER Road Map 2010 – 2015

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