ADVANCED METERING INFRASTRUCTURE

BUDGET AND CHARGES APPLICATION 2012-15

Public Version

28 February 2011

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Abbreviations

Term	Description
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
AMI	Advanced Metering Infrastructure
AMI Budget Period	means the period commencing 1 January 2012 and ending 31 December 2015
AMI Cost Recovery Order	Order in Council S200 made on 28 August 2007 pursuant to Sections 15A and 46D of the Electricity Industry Act 2000 (Vic) as amended by the Revised OIC
AMI OIC	The AMI Cost Recovery Order as amended by the Revised OIC
AMI Specifications Order	Order in Council S286 made on 12 November 2007 under Sections 15A and 46D of the Electricity Industry Act 2000 (Vic)
Approved Budget	takes its defined meaning as set out in Clause 2.1 of the AMI Cost Recovery Order.
ATO	Australian Taxation Office
B2B	Business to Business
BAU	Business As Usual
BBS	Bilfinger Berger Services (Australia) Pty Ltd
Budget Application	This document, its appendices and attachments, which comprise CitiPower's Budget Application for regulatory period 2012 to 2015.
CAM	CitiPower's Cost Allocation Methodology which the AER approved in May 2010
CATS	Consumer Administration and Transfer Solution
CHED Services	CHED Services Pty Ltd (ABN 14 112 304 622)
CIS	Customer Information System
CitiPower	CitiPower Pty (ABN 76 064 651 056)
Conneq	Conneq Infrastructure Services (Australia) Pty Limited
Corporate Services Agreement	CitiPower 2008-2010 Services Agreement
CPI	Consumer Price Index
CSC	Computer Science Corporation
CT	current transformer
Deloitte	Deloitte Touche Tohamtsu
Distributor	Local Network Service Provider as defined in the NER
DNSP	Distribution Network Service Provider
DPI	Victorian Government Department of Primary Industries
DR	Disaster Recovery
EDPR	Electricity Distribution Price Review
ESCV	Essential Services Commission of Victoria
ETSA	ETSA Utilities (ABN 13 332 330 749)
Final Determination	AER, Final Determination for Victorian Advanced Metering Infrastructure

Term	Description
	Review, 2009–11 AMI Budget and Charges Applications, October 2009.
FRC	Full Retail Contestability
FTE	Full Time Employees
HAN	Home Area Network
IEE	Itron Enterprise Edition
IHD	in home displays
IMRO	Interval Meter Rollout
Initial Budget Application	CitiPower's Budget Application for regulatory period 2009 to 2011
Initial Charges Application	Charges Application for the AMI Budget Period to be submitted on 28 February 2011 pursuant to the Revised OIC
ISM	Industrial, Scientific and Medical Radio Band
JEM	Jemena Electricity Networks (Vic) Ltd
KEMA	KEMA Registered Quality Inc
L&G	Landis + Gyr Pty Ltd
LAN	Local Area Network
MAMP	Metering Asset Management Plan
Metering Agreement	CitiPower 2008-2013 Metering & Field Services Agreement
Metrology Procedure	National Electricity Market Metrology Procedure
MMS	Meter Management System
MRIM	manually read interval meter
MTS	Market Transaction System
NEMMCO	National Electricity Market Management Company
NER	National Electricity Rules
NIEIR	National Institute of Economics and Industry Research
NMI	National Meter Identifiers
NMS	Network Management System
NSMP	National Smart Metering Program
Oakley Greenwood Study	Oakley, Greenwood, Benefits and Costs of the Victorian AMI Program, August 2010
OIC	Order in Council
PFIT	Premium Feed in Tariff
PMO	Project Management Office
PNS	Powercor Network Services Pty Ltd (ABN 94 123 230 24)
Powercor Australia	Powercor Australia Limited (ABN 94 123 230 24)
PRI	PRI Australasia Pty Ltd
PSTN	Public Switched Telephone Network
RAB	Regulated Asset Base
Regulated Services	takes its defined meaning as set out in Clause 2.1 of the AMI Cost Recovery

Term	Description
	Order.
Revised OIC	Order in Council S314 made on 25 November 2008 pursuant to Sections 15A and 46D of the Electricity Industry Act 2000 (Vic)
RFI	Request for Information
RFP	Request for Proposal
Scope Document	Notice issued pursuant to clause 14B.1 of the AMI Cost Recovery Order Victorian Government Gazette issued dated 22 January 2009
Secure Australasia	Secure Australasia Pty Ltd
SORI	Statement of Regulatory Intent
SSI	Service Stream Infrastructure
SSN	Silver Spring Networks Inc
Tribunal	Australian Competition Tribunal
TWG	Industry Trials Working Group
UED	United Energy Distribution Pty Ltd
USB	utility service bus
UXC	UXC Limited
Victorian EDPR	Victorian Electricity Distribution Determination 2011-2015
Victorian EDPR 2016-2020	Victorian Electricity Distribution Determination 2016-2020
WACC	Weighted Average Cost of Capital
WAN	Wide Area Network

1. Executive summary

The Victorian Government mandated that Advanced Metering Infrastructure (**AMI**) be rolled out to all customers consuming less than 160MWh of electricity per annum between 2009 and 2013. The legislative basis for this rollout was established in August 2006 through amendments to the Electricity Industry Act 2000. These amendments also provided powers for the Victorian Government to create a number of Orders in Council (**OIC**) relating to areas including cost recovery, functional requirements and service standard specifications.

The AMI Program has emerged from a related metering initiative, the Interval Meter Rollout (**IMRO**) Program. The IMRO program commenced following a July 2004 determination by the Essential Services Commission of Victoria (**ESCV**) that a rollout of interval meters was required to achieve cost effective pricing and develop the technological platform necessary for the realisation of a range of potential economic and social benefits. The IMRO initiative anticipated an industry wide rollout of 1.6 million type 5 interval meters across Victoria. In 2006, the Department of Infrastructure (**DOI**) undertook a review into interval metering which resulted in the decision that IMRO requirements should be expanded to include two way communications to all customers consuming less than 160MWh per annum in Victoria. Significantly, the DOI review concluded that there was a positive business case for the additional expenditure on two way communications infrastructure based on a minimum functionality which would enable remote meter reading and remote connection and disconnection of customers. On this basis the IMRO program transitioned to the AMI regime.

This Budget Application provides CitiPower's expenditure for regulated services for each year of the second AMI budget period (2012-15) including total maintenance and operating expenditure and total capital expenditure. It has been prepared in accordance with clause 5A.1(a) of the AMI OIC that requires a distributor to lodge a Budget Application by no later than 28 February 2011.

The expenditure proposed in this Budget Application will be incurred in response to the Victorian Government's decision to mandate the rollout of AMI to all customers consuming less than 160MWh per annum.

Under the AMI program, some 2.9 million new *'smart'* meters will be installed over a four year period in Victoria (approximately 300,000 by CitiPower). These AMI meters will allow Victorian consumers to better manage their energy use by providing more detailed information about their consumption and the opportunities available to save money and reduce greenhouse gas emissions.

The philosophy the Business has employed in preparing this Budget Application is to use wherever possible market generated information. To this end, the majority of the forecasts presented in this Budget Application are based on costs derived from competitive tenders.

The table below summarises the expenditure required over the period 2012-15.

	2012	2013	2014	2015
Capital expenditure	50,350	36,391	8,055	7,591
Operating expenditure	13,726	13,167	14,090	13,551
Total expenditure	**64,077**	**49,559**	**22,145**	**21,142**

Table 1: Total expenditure ($'000 2011)

2. Introduction

2.1 Background

The Victorian Government mandated that Advanced Metering Infrastructure (**AMI**) be rolled out to all customers consuming less than 160MWh of electricity per annum between 2009 and 2013 and that each Victorian electricity distributor is responsible for the rollout to customers connected to its network. This means that CitiPower, as a holder of the electricity distribution licence for Melbourne's central business district, Dockland's and Melbourne's inner suburbs, will be required to install more than 300,000 new AMI meters over a four year period.

AMI meters will replace existing type 5 meters (manually read interval meters) and type 6 meters (manually read accumulation meters).

In basic terms, an AMI meter is able to electronically record and store electricity usage data (at intervals of 30 minutes), can remotely report usage and can be remotely turned on or off (de-energisation and re-energisation) and can provide an interface to a customer's Home Area Network (**HAN**) device (if the customer has one).

2.1.1 Overall framework

The legislative basis for the AMI rollout was established in August 2006 through amendments to the *Electricity Industry Act 2000*. These amendments also provided powers for the Victorian Government to create a number of Orders in Councils (**OIC**). The regulatory arrangements relating to the rollout are set out in the Order in Council made on 28 August 2007[1] under Sections 15A and 46D of the *Electricity Industry Act 2000* (**AMI OIC**). The AMI OIC sets out the AER's role and is the primary regulatory instrument which will guide the AER's assessment of this Application.

2.1.2 Project objectives

The overall objective of the AMI rollout is to allow Victorian consumers to better manage their energy usage by providing improved price signalling and more detailed time of use consumption information and thereby potentially lower their costs and reduce greenhouse gas emissions. The AMI rollout will also avoid the need for costly manual activities such as meter reading, de-energisation and re-energisation.

The Victorian Government has published a number of extensive cost-benefit studies. The latest study produced by Oakley Greenwood entitled *'Benefits and Costs of the Victorian AMI Program'* (**Oakley Greenwood Study**) concluded that the AMI program is cost-effective.[2] Benefits identified by the Study include reductions in unserved energy, greater use of demand management, avoided costs of meter replacement[3] and avoided cost of manual disconnections and reconnections.[4]

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[1] Note that the consolidated version of the Order in Council S200 dated 28 August 2007 must be read in conjunction with: 1) Order in Council G14 25 November 2008 and 2) Notice pursuant to clause 14B.1 of the AMI Cost Recovery Order G4 dated 22 January 2009.

[2] Oakley Greenwood, Benefits and Costs of the Victorian AMI Program, August 2010.

[3] New premises require meters to be installed. Existing premises that change their electricity supply needs in certain ways also require new meters to be installed.

2.1.3 Exclusivity

Clause 9.9B of the National Electricity Rules (**NER**) provides the local network service provider (**distributor**) exclusivity for the provision of smart meter infrastructure and smart meter infrastructure services. Distributor exclusivity was granted to reduce complexity and hence costs of the AMI rollout program and to mitigate risk created through delineated responsibility. Importantly exclusivity serves to ensure that consumers are afforded the protections necessary in an increasingly competitive retail market.

This Application has been prepared on the basis distributors maintain exclusivity for the provision of smart meter infrastructure and smart meter infrastructure services for the AMI Budget Period of 2012 to 2015(**AMI Budget Period**). It is noted this exclusivity is to be reviewed prior to 31 December 2013. Should circumstances change, CitiPower will need to revise its Application as the forecasts on which this Application are based can not facilitate competition.

2.1.4 Load control

CitiPower notes that the Essential Services Commission of Victoria (**ESCV**) is currently considering imposing further obligations with respect to load and supply capacity control. At this stage, the ESCV has only released an Issues Paper and has yet to issue a draft determination. Consequently, CitiPower has not provided estimates of costs involved in accommodating any ESCV proposals. While the issues of load and supply capacity control are currently being considered in the National Smart Meter Program, the ESCV appear to be seeking to pre-empt decisions from the NSMP to impose additional obligations on distribution companies. CitiPower notes that the ESCV's actions may potentially increase costs with respect to communications operations which may ultimately result in deviations from proposed budget expenditure in the future. CitiPower reserves its rights to make further submissions should the ESCV's final decision impose additional costs on the Business.

2.2 Overview of 2009-10 AMI activities and performance

2.2.1 Customer satisfaction

Excellence in customer service is an integral component of CitiPower's approach to the deployment of smart meters. CitiPower is committed to providing outstanding service to its customers at all times. CitiPower has a strong education focus which aims to foster an understanding of the respective roles of government, retailers and distributors in the smart metering program and for customers to appreciate the rationale behind it.

[4] Smart meters have a built-in supply contractor. AMI allows this to be remotely switched meaning that attendance at a premise to perform a disconnection or reconnection is generally no longer required.

After each smart meter installation, CitiPower leaves customers with a practical information pack explaining the benefits of smart meters, how they operate and how the data can be understood. These efforts in 2009 resulted in positive customer satisfaction ratings for smart meter installations, with results of 91 per cent for CitiPower.

2.2.2 AMI rollout

CitiPower's AMI rollout deployment approach has been designed to remain ahead of the Victorian Government targets. CitiPower considers tracking ahead of the Victorian Government's rollout targets to be prudent in managing any contingencies that may arise during the program. The deployment profile is characterised by slow initial ramp-up followed by a rapid ramp-up and then a stabilised installation rate per month until conclusion of the program.

Throughout 2009 and 2010 there has been a focus on non-complex sites, which predominately involves the rollout of single phase meters. In 2009, only single phase meters were installed. Further in 2010, only a small number of three phase meters were installed due to the limited availability of suitable three phase smart meters.

CitiPower has adopted a *'walk before you can run'* approach to enable further testing of end to end systems. In CitiPower's view, this is an appropriate and prudent approach to take to ensure complete integration of its systems. As a consequence, AMI meters installed prior to November 2010 have been read as basic (type 6) meters.

The following table illustrates a much greater focus on simple non-complex sites in 2009 and 2010 (actual volumes), with the rollout of three phase meters increasing from 2011 to 2013 (forecast volumes). As a result, the costs of meter provision and installation for 2012-15 will be higher compared to the period 2009-2011.

	2009	2010	2011	2012	2013
Single phase	3,792	57,358	40,983	99,612	70,765
Three phase	-	6,560	19,365	27,458	19,061

Table 2: Number of AMI meters installed

For 2009, the actual number of installed accumulation was slightly lower than anticipated and manually read interval meters slightly higher than anticipated in the original forecast. The number of AMI meters installed was higher than anticipated. None of the variations were significant.

The differences in meter volume forecasts in the CitiPower's Budget Application for 2009 (**Initial Budget Application**) and actual meter volume forecasts for 2009 are outlined below.

	Actual 2009	Forecast 2009	Difference
Accumulation meters	7,488	8,112	(624)
Manually read interval meters	1,158	1,037	121
AMI meters	3,792	2,888	904

Table 3: CitiPower 2009 actual and forecast meter volumes

For 2010, CitiPower installed more accumulation and manually read interval meters than anticipated and proportionally less AMI meters. The higher use of accumulation and manually read interval meters was driven by stronger than expected growth in new connections and the availability of AMI meters.

The differences in meter volume forecast in the Initial Budget Application and actual meter volume forecasts for 2010 are outlined below.

	Actual 2010	Forecast 2010	Difference
Accumulation meters	4,361	1,317	(3,044)
Manually read interval meters	1,242	157	(1,085)
AMI meters	63,918	68,098	(4,180)

Table 4: CitiPower 2010 actual and forecast meter volumes

2.2.3 Capital investment

CitiPower's capital investment program focuses on delivering smart metering technology that empowers customers, enabling more informed electricity consumption choices. CitiPower's actual spend for the period 2009-10 has been within the 120 per cent of the 2009-11 Approved Budget.[5]

In 2009 CitiPower's actual spend was lower than anticipated for a number of reasons.

The lower than anticipated spend was predominantly driven by the deferment in the implementation of a number of IT projects. The 2009 AMI IT projects are part of a four year integrated program of work. The realities of the rollout program and the associated timings have changed as understanding of the requirements and experience in AMI technology has increased. This has deferred budgets and projects from 2009 to 2010 (and in some cases 2011). In turn, this *'knock on'* effect has resulted in higher than anticipated spend for 2010.

The differences between the budget in the AER's *Final Determination for Victorian Advanced Metering Infrastructure Review, 2009–11 AMI Budget and Charges Applications*, October 2009 (**Final Determination**) and actual spend for 2009 are outlined below.

[5] In determining the building blocks the AER must include actual capital and operating expenditure in the case of the initial AMI budget period, is up to 120% per cent of the Approved Budget for that year or in the case of the subsequent AMI budget period, is up to 110% per cent of the Approved Budget for that year.

	Actual 2009	Budget 2009	Difference
Accumulation meters	1,469	2,000	(532)
Manually read interval meters	619	647	(28)
AMI meters and transformers	1,194	1,292	(98)
IT	13.010	19,062	(6,052)
Communications	497	1,039	(542)
Other	-	111	(111)
Total expenditure	**16,789**	**24,151**	**(7,362)**

Table 5: Total expenditure 2009 ($'000 nominal)

In 2010 CitiPower's actual spend was marginally higher than anticipated for a number of reasons.

Firstly, the actual volume of accumulation meters and manually read interval meters was higher than anticipated in the original forecast for 2010. This was driven by stronger growth in new connections and difficulties in obtaining sufficient quantities of AMI meters.

Secondly, as noted previously, a number of IT work streams were deferred from 2009 to 2010, resulting in higher than anticipated spend for 2010.

It should also be noted that, as in 2009, the focus on non-complex sites resulted in the actual spend for AMI meters and transformers coming under the anticipated budget for 2010.

The differences in forecast in the Final Determination and actual spend for 2010 are outlined below. It should be noted that the actual expenditure reported for 2010 remains subject to audit.

	Actual 2010	Budget 2010	Difference
Accumulation meters	1,305	337	967
Manually read interval meters	1,132	92	1,039
AMI meters and transformers	24,419	26,463	(2,044)
IT	11,889	10,911	978
Communications	1,582	945	637
Other	-	109	(109)
Total expenditure	**40,326**	**38,858**	**1,468**

Table 6: Total expenditure 2010 ($'000 nominal)

2.2.4 Operating and maintenance expenditure

CitiPower must invest in the operation and maintenance of the AMI infrastructure to ensure AMI performance meets customer expectations. CitiPower's actual spend to date has been within the 120 per cent of the 2009-11 Approved Budget.[6].

In 2009 operating expenditure was marginally lower than budget. This was driven by:

- actual spend on communications operation being lower than the budget due to deferment in the implementation of the end to end systems;
- lower IT operating and maintenance expenditure due to deferment in some systems coming into production;
- lower customer service expenditure due to the avoidance of complex sites;
- a number of meter test programs are no longer required as the meters will be replaced over the next few years; and
- finally, there have been a number of small variances across program management and executive and corporate office services.

The differences in budget in the Final Determination and actual spend for 2009 is outlined below.

Year ending	Actual 2009	Budget 2009	Difference
Meter data services	2,583	1,545	1,038
Meter maintenance	959	2,478	(1,520)
Customer service	913	672	241
Backhaul communications	-	294	(294)
Communication operations	-	848	(848)
Project management	5,133	5,783	(650)
Executive & corporate office services	221	177	44
IT	2,377	1,452	926
Total	**12,186**	**13,249**	**(1,063)**

Table 7: Operating expenditure 2009 ($'000, nominal))

In 2010, actual and budget operating expenditure were virtually identical. The marginal differences were driven by a number of factors, including:

- actual spend on communications operations being lower than budget due to deferment of end to end system integration. This also had consequential implications for meter data services; and

[6] In determining the building blocks the AER must include actual capital and operating expenditure in the case of the initial AMI budget period, is up to 120 per cent of the Approved Budget for that year or in the case of the subsequent AMI budget period, is up to 110 per cent of the Approved Budget for that year.

- a number of meter test programs being no longer required as the meters will be replaced over the next few years.

The differences between the forecast spend in the Final Determination and actual spend for 2010 is outlined below. Note that actual 2010 expenditure remains subject to audit.

Year ending	Actual 2010	Budget 2010	Difference
Meter data services	2,945	2,237	708
Meter maintenance	925	2,657	(1,732)
Customer service	1,493	1,644	(150)
Backhaul communications	83	12	72
Communication operations	213	930	(717)
Project management	138	-	138
Executive & corporate office services	347	184	163
IT	3,915	2,477	1,437
Total	**10,059**	**10,141**	**(81)**

Table 8: Operating expenditure 2010 ($'000 nominal)

2.3 Purpose of this Application

This Application comprises a Budget Application and a Charges Application. The purposes of each of these applications are outlined below.

2.3.1 Purpose of Application

The purpose of this subsequent Application is to:

- seek the AER's approval of an expenditure budget for each year of the AMI budget period for Regulated Services; and

- give effect to and be consistent with clauses 4, 5A.2(b), 5B and 5C of the AMI OIC.

Importantly, the expenditure forecast set out in this Application relate to the total maintenance and operating expenditure and total capital expenditure for regulated services only.

This Application has been prepared in accordance with, and gives effect to all relevant legislative and regulatory instruments as discussed in Section 4 of this Application.

2.3.2 Purpose of Charges Application

The purpose of the 2012-15 Charges Application (**Charges Application**) is to:

- seek the AER's approval for the setting of initial charges for each of the years commencing 1 January 2012, 2013, 2014 and 2015. AMI charges are designed to recover actual expenditure that is incurred in response to the Victorian

Government's decision to mandate the rollout of AMI to all customers consuming less than 160MWh per annum; and

- give effect to and be consistent with clauses 4, 5A.2(b) and 5E of the Revised OIC.

CitiPower confirms that it has complied with the relevant requirements of the AMI OIC in preparing this Charges Application.

2.4 Outline of this Application

The remainder of this Application is structured as follows:

- Section 3 sets out the relevant regulatory and legislative instruments, that CitiPower is reasonably required to undertake to satisfy the requirements of the AMI rollout and to comply with metering regulatory obligation;
- Section 4 provides an overview CitiPower's competitive tendering process and how it has been applied to select providers of the Regulated Services as required under the AMI OIC;
- Section 5 presents CitiPower's forecast of the number of metering installations that it is proposing to install for each year of the AMI budget period (2012-15);
- Section 6 sets out CitiPower's capital expenditure for the AMI program for each year of the initial AMI budget period;
- Section 7 sets out CitiPower's operating expenditure for the AMI program for each year of the initial AMI budget period;
- Section 8 sets out the calculation of CitiPower's annual revenue requirement. Required revenue has been calculated in accordance with the building blocks approach as prescribed by clause 4.1(b) of the Revised OIC. The building block components include a return on capital, depreciation, operating and maintenance expenditure and taxation; and
- Section 9 provides an overview of CitiPower's metering service charges for the AMI Budget Period.

3. Compliance framework for AMI rollout

This section sets out in detail the compliance framework both in terms of the technical and economic requirements for the AMI rollout.

CitiPower, as a distribution licence holder, must comply with:

- the Order in Council S286 made on 12 November 2007 under Sections 15A and 46D of the *Electricity Industry Act 2000* (Vic) (**the AMI Specifications Order**);
- the Notice issued pursuant to clause 14B.1 of the AMI Cost Recovery Order Victorian Government Gazette issued dated 22 January 2009 (**the Scope Document**);
- the Order in Council G14 made on 25 November 2008 under Sections 15A and 46D of the Electricity Industry Act 2000 (**Revised OIC**);
- the Order in Council Section 200 made on 28 August 2007 under Sections 15A and 46D of the *Electricity Industry Act 2000* (Vic) as amended by the revised OIC (**AMI Cost Recover Order**);
- the Order in Council made on 12 November 2007 under Sections 15A and 46D of the Electricity Industry Act 2000 (**AMI Specifications Order**);
- minimum AMI State-wide Functionality Specification (Victoria) Release 1.1 (**Functionality Specification**) as marked as Attachment 6; and
- minimum AMI Service Levels Specification (Victoria) Release 1.1 (**Service Levels Specification**).

CitiPower confirms that it has complied with the relevant requirements of the above instruments in preparing this Application.

3.1 Technical requirements

3.1.1 AMI program requirements

The Application is based on the program and scope set out in the Revised OIC, including the scope of activities for CitiPower and Powercor Australia set out in the Scope Document, the AMI Specifications Order, the Functionality Specification and the Service Levels Specification.

CitiPower's understanding of the mandated AMI program is as follows:

Date	Industry milestone	Interpretation
1 January 2009	Program commencement	• 2009 metering charges take effect (and associated cost recovery commences).
30 November 2009	NEM meter exchange process improvement (change request) operational	• Date on which National Electricity Market Management Company (NEMMCO) systems are available for ongoing use (ie: testing has completed and changes are in production). Market testing will be completed in advance. • Date is dependent on NEM Working Groups reviewing and approving changes. As a member of the relevant Groups, CitiPower will be assisting in the progress of this change.
30 April 2010	Core AMI services enabled	• Date on which all market requirements for ongoing operation of core AMI services have been met ie: successful test and go-live authorisation (as required). • Business as usual approach to testing of NEM market change is assumed though this is co-ordinated at in Industry level.
30 November 2010	Core AMI Services & Service Levels commenced	• Remaining type 5 current service level expectations apply.
30 June 2010	5% of AMI meters deployed	• % volume refers to minimum AMI meters deployed. • Additional meter volumes may be deployed that are either Type 5 or Type 6.
31 December 2010	10% of AMI meters deployed	• % volume refers to minimum AMI meters deployed. • Majority of AMI meters installed as type 6 are converted to type 5.
30 June 2011	25% of AMI meters deployed	• % volume refers to minimum AMI meters deployed.
1 January 2012	AMI service levels apply	• *'Core service'* levels apply for daily data provision (type 5 AMI).
30 June 2012	60% of AMI meters deployed	• % volume refers to minimum AMI meters operated to type 5 metrology (with *'core service'* levels).
30 June 2013	95% of AMI meters deployed	• % volume refers to minimum AMI meters operated to type 5 metrology (with *'core service'* levels).
31 December 2013	100% of AMI meters deployed	• % volume refers to AMI meters operated to type 5 metrology (with *'core service'* levels).

Table 9: AMI program

Other relevant assumptions with respect to the AMI program include:

- distributors may initially deploy AMI meters into the field as type 6 meters (as registered in the market) on a transitional basis where applicable; and
- testing for market readiness will occur as a synchronised industry activity.

3.1.2 Functionality and service level requirements

The Application is based on the AMI OIC, AMI Specifications Order, Functionality Specification and Service Levels Specification.

CitiPower's interpretation of these documents is summarised in the tables below.

Functionality	Comment
Metrology	
• Daily collection of interval data & total accumulated energy consumption • Import/export energy • Reactive energy (3 phase meters only) • Compliant to NER requirements for type 4 & 6 meters • Compliant to NER requirements for type 5 meters • Minimum 35 days interval data storage	99% of daily interval data to be collected by 4am next day
Control	
• Remote de-energisation/re-energisation • Controlled load switching • Interface for control of other loads • Remote load switching override • Supply capacity control (normal & emergency)	90% of remote de-energisation/re-energisation to be performed within 30 minutes Group commands for load control – action to be performed to 99% of meters in 1 minute[7] Load control commands to individual meters – 90% within 30 minutes
HAN	

• ZigBee® interface in meter
• Support for ZigBee® Smart Energy Profile including:
  ○ Load control
  ○ Pricing
  ○ Usage
  ○ Messaging
	AMI system now required to support up to 6 messages for ZigBee® HAN instructions per meter per day
	ZigBee® network to operate in *'Utility Private HAN'* configuration
	Connection of ZigBee® devices to AMI meter managed by utility

Quality of supply	
• Supply failure detection • Under/over voltage	
Other	
• Tamper detection • Remote settings change • Event recording • Remote firmware upgrade	

Table 10: Functionality requirements

[7] CitiPower has based the Budget Application on the AMI ISC recommendation to change the minimum AMI functional Specification (Victorian) Release performance level in section 4.4(a)(1) of *'Action performed at 99% meters within 1 minute'* to *'Action performed at 90% of meters within 5 minutes'*.

In terms of service obligations, CitiPower understands the following will apply:

Service obligation	Required by
Install AMI meters capable of recording half hourly interval data	Based on a forecast of the installed meter population as at 31 December 2013, minimum AMI meter installation/penetration requirements are: • 5% - 30 June 2010 (Completed) • 10% - 31 December 2010 (Completed) • 25% - 30 June 2011 • 60% - 30 June 2012 • 95% - 30 June 2013 • 100% - 31 December 2013
Remote reading of AMI meters	By 1 January 2012 There is no obligation for AMI meters to be remotely read or even manually read as an interval meter prior to this date.
Remote energisation and remote de-energisation	Best endeavours once the capability exists. • Best endeavours means actively planning, resourcing and delivering; it is not optional or a *'nice to have'*. • The *'capability'* includes the supporting back-office systems and processes.

Table 11: Service obligations

3.2 Order in Council Budget Assessment Test

Under clause 5C.2 of the AMI OIC, the AER is required to approve submitted budget expenditure unless it establishes that the expenditure is:

- for activities outside the scope at the time of commitment to that expenditure and at the time of the determination; or

- is not prudent.

If the AER does not approve the submitted budget, it must demonstrate that the expenditure is either out of scope or not prudent.

3.2.1 Whether expenditure is within scope

Whether activities are within scope must be determined against the scope of activities for CitiPower and CitiPower as set out in the Victorian Government Gazette no. G4 of 22 January 2009. Specifically, clause S2.10 provides that activities within scope are those activities reasonably required for the provision of regulated services and to comply with a metering regulatory obligation or requirement.

3.2.2 Whether expenditure is prudent

In determining whether expenditure is prudent, clause 5C.3 of the AMI OIC places the onus on the AER to justify why expenditure is not prudent.

Contract cost

Where the relevant expenditure is a contract cost, under clause 5C.3(a) of the AMI OIC, the expenditure is prudent and must be approved unless the AER establishes that the contract was not let in accordance with a competitive tender process. A *'contract cost'* is defined under clause 5C.11 as any expenditure incurred pursuant to a contract entered into prior to the day on which the distributor made its budget application, or the date on which it made a revised budget application under clause 5B.3.

Therefore, expenditure will be assumed to be prudent unless otherwise justified by the AER that the contract was not let in accordance with a competitive tender process. The notes in clauses 5.5 and 5C.11 provide that, the competitive tender process need not be conducted by CitiPower, nor need the contract be one that CitiPower has entered into.

In determining whether a contract was not let in accordance with a competitive tender process, clause 5C.10 of the AMI OIC provides that the AER must have regard to:

- the tender process for that contract;
- whether there has been compliance with that process; and
- whether 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.

Where the AER establishes that the contract was not let in accordance with a competitive tender process relevant under clause 5C.3(b), it must also establish that in order to justify that an expenditure is not prudent:

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

The first limb of this test can only exclude expenditure where it is more likely than not that the expenditure will not be incurred. This limb only relates to whether the expenditure will be incurred and it does not allow the AER to second guess the reasonableness of the expenditure.

The reasonableness of expenditure can only be examined under the second limb of this test. Under this second limb, expenditure can only be treated as not prudent if the AER establishes that the expenditure involves a substantial departure from the commercial standard that a reasonable business would exercise in the circumstances.

Not a contract cost

Where expenditure is not a contract cost, under clause 5C.3(b) of the AMI OIC, the expenditure is prudent and must be approved unless the AER establishes that:

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

This is the same test which applies to contracts not let in accordance with a competitive tender process. Again, the onus is on the AER to establish either of these clauses to demonstrate that the expenditure is not prudent.

3.2.3 Tribunal Decision

In the AER's Final Determination, the AER determined that CitiPower's Initial Budget Application was within scope, with the exception of proposed costs for margins and management fees arising from contracts with related parties.

The AER excluded related party margins from CitiPower's Approved Budget on the basis that the margins were out of scope because:

- the margins did not arise from activities associated with the provision of regulated services;
- the margins were already incorporated into the *'cost build up'* of the relevant contract. For example, the provision of management offices, corporate services and other overheads, were already included in the contract value, separately from the margin; and
- the margins were not permitted in the Regulatory Accounts under Electricity Industry Guideline No. 3 Regulatory Information Requirements, and therefore were not permitted under clause 5D.6 of the AMI OIC. Clause 5D.6 requires a distributor to include details of its actual expenditure as derived from the distributor's Regulatory Accounts.

The AER excluded related party margins from budgets of United Energy Distribution Pty Ltd (**UED**) and Jemena Electricity Networks (Vic) Ltd (**JEM**) on the same grounds. UED and JEM appealed to the Australian Competition Tribunal (**the Tribunal**).

The substantive question for the Tribunal was whether the related party margins incurred by UED and Jemena in the AMI rollout are for activities *'within scope'* for the purposes of the AMI OIC. Schedule 2 to the AMI Order sets out the activities that are *'within scope'* for both UED and Jemena. The terms are substantively similar to the Scope Document applicable to CitiPower.

The Tribunal rejected the AER's reasoning and decision on the following grounds:

- the AER was incorrect to dismiss the margin as out of scope on the basis that it was simply a profit margin for the related party. The Tribunal held that as long as the related party is performing activities within scope, then the margin payable to the related party is a cost for those activities within scope;

- the AER was incorrect to assume that management costs and margins are included in the contract costs, separate to the disputed management fee. The Tribunal gave examples of non-wage costs associated with management, such as management time, and staff who might be involved in, or who are required to undertake certain functions or activities as part of the AMI program; and

- the AER was incorrect in its interpretation of clause 5D.6 of the AMI OIC. The Tribunal held that on no view does clause 5D.6 purport to restrict what expenses are recoverable.

The Tribunal varied the AER Final Determination to include the related party margins.

3.3 Order in Council Charges Assessment Test

Under clause 5E.1 of the Revised OIC, the AER must determine the 2012-15 Initial Charges Application in accordance with clauses 4 and 5E of the AMI OIC.

Under clause 4.1(n) of the AMI OIC, charges determined by the AER are for the following service categories:

- single phase single element meter;

- single phase single element meter with contractor;

- single phase two-element meter with contractor;

- three phase direct connected meter;

- three phase direct connected meter with contractor;

- three phase current transformer connected meter; and

- any other customer or metering class proposed by the Distribution Network Service Provider (**DNSP**) and approved by the AER.

The charges are designed so that the net present value of building block costs incurred to date must always equal the net present value of revenues incurred to date unless a distributor decides (and the AER agrees) for a particular year that it will not recover its full building block costs in which case un-recovered expenditure will be recovered in later years.

In setting charges, actual expenditure is to be used (to the extent such is allowed under the Order) along with actual revenue or if actual figures are not available then a distributor's most recent forecasts are used.

Under clause 4 of the AMI OIC, there shall be a pass through of the costs of a distributor for Regulated Services. Further, the building block approach must be used in calculating costs that are to be reflected in charges, including a return on capital, depreciation, maintenance and operating expenditure and a benchmark allowance for corporate income tax.

Charges are to be adjusted annually to reflect actual expenditure incurred. Clause 5I.2(a) of the AMI OIC provides for actual expenditure to reflect in charges where it is within scope, certified in an audit report, and no more than 110 per cent of the second budget period of the approved budget. Where actual expenditure is outside these ranges the regulator may further scrutinise that expenditure before approving charges. Whether excess expenditure is prudent involves applying the same tests as discussed above for the Budget Application, with the exception of the expenditure incurred test.[8]

[8] Revised Order, clause 5I.6, 5I.7.

4. Overview of competitive tendering process

CitiPower has outsourced all activities in the AMI program to CHED Services Pty Ltd (**CHED Services**). CHED Services has subsequently further outsourced many other activities to external service providers. Activities CHED Services has further outsourced, which have been subject to CitiPower's competitive tender process, are as follows:

- communications technology supply;
- backhaul services;
- meter supply; and
- field installation services.

This section sets out the arrangements for the engagement of external vendors for the above activities and summarises the process for competitive tendering of contracts for Regulated Services. All documents that set out the competitive tender process, as required by clause 5.5(a) of the AMI OIC, are provided in Attachments 1 to 45.

4.1 CitiPower procedure for retention of service providers

4.1.1 CitiPower approach to procurement

CitiPower's approach to procurement has been:

- ensuring it acquires the most efficient and effective solution that delivers the mandated specifications;
- ensuring the compatibility of the solution with the network; and
- demonstrating the efficiency of the solution to the AER and the Victorian Government.

The procurement process has followed stringent corporate governance and probity checks and is in accordance with CitiPower's Corporate Procurement Policies and Procedures and marked as Attachments 1-3. Further controls have been included for the AMI program including:

- review through the AMI Management Team;
- review through relevant General Managers;
- AMI Steering Committee approval for each key milestone;

- Capital Investment Committee approval; and
- Procurement Steering Committee approval.

Where possible, the costs forecast to be incurred by CitiPower in relation to communications technologies, meters, and field services have been established by reference to a competitive tender process conducted either by CHED Services or Powercor Network Services (**PNS**) as a subcontractor for CHED Services.

CitiPower submits that the tender processes conducted for each activity have been highly competitive and fair to all vendors. Figure 1 shows the tender evaluation process undertaken by CitiPower. To confirm that a competitive tender process has been used, and to demonstrate that the expenditure forecasts are consistent with the commercial standard that a reasonable business would exercise in the circumstances, the tendering processes have been designed, facilitated and reviewed by a number of parties independent of CitiPower and CHED Services.

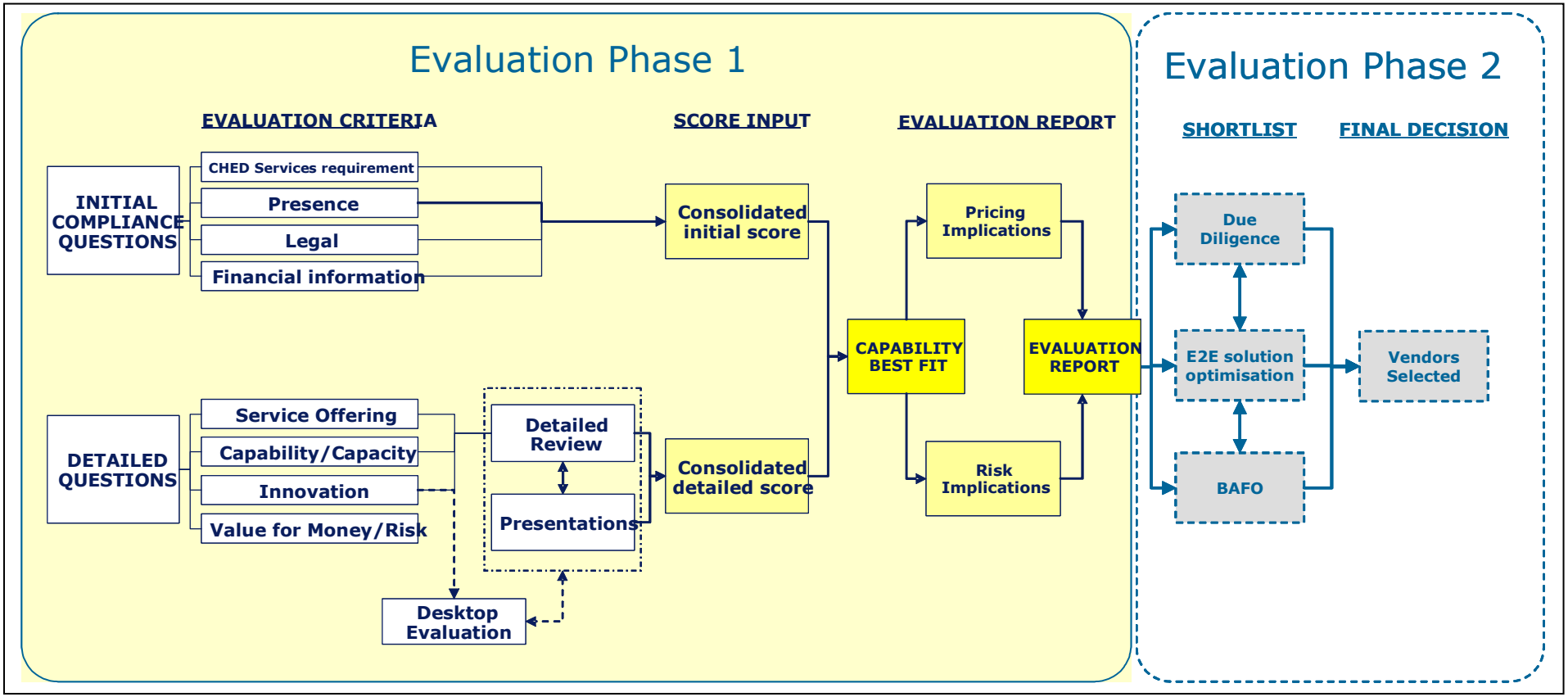

Figure 1: Tender evaluation process

4.1.2 Contracts

CitiPower engaged DLA Phillips Fox to assist in the preparation of its initial term sheet as the basis for negotiating specific contract terms and conditions with vendors. The purpose of seeking external advice was to ensure the adoption of the most reasonable and prudent contract terms and conditions. The main features of the contract terms and conditions the Business has sought include:

- contract terms and duration to allow for contract extension and termination;
- reasonable termination costs;
- tiered governance structure to manage compliance with contract terms and conditions;
- requirement for a performance security linked to the estimated overall value of the contract;
- start, stop, pause, ramp up and ramp down clauses;
- performance management service levels for support and maintenance and service credits where the relevant service levels are not met;
- warranties in relation to the standard of performance, design, delivery, compliance with laws, policies, and safety standards;
- indemnities;
- penalties for late delivery of materials;
- insurance coverage on a per occurrence and in aggregate per annum basis; and
- escrow agreements for software, firmware and hardware.

CitiPower believes these terms and conditions reflect an appropriate sharing of risks with vendors and will afford customers a level of protection against technological change and further shifts in the timing, functionality or services required by the AMI program.

4.1.3 Other risk management processes

In addition to a formal tender the Request for Proposal (**RFP**)/Request for Proposal (**RFI**) process, CitiPower has also undertaken/ensured:

- industry trials of various technologies in conjunction with the Victorian Government Department of Primary Industries (**DPI**) and the other Victorian distribution businesses;

- establishment of detailed evaluation framework, process and methodology;
- rigorous vendor and technical due diligence including commercial and risk assessments and reference site visits;
- independent technical review undertaken by KEMA Registered Quality Inc (**KEMA**) of each short listed technology vendor's compliance with the Functionality Specification (see Attachment **Error! Reference source not found.**);
- security review undertaken by Computer Science Corporation (**CSC**);
- an independent quality assurance review undertaken by KEMA (see Attachment **Error! Reference source not found.**);
- CitiPower risk management strategy (see Attachment **Error! Reference source not found.**);
- use of expert consultants in Australia and the United States to stay informed of emerging technologies and deployments; and
- engagement of external legal advisors DLA Phillips Fox to prepare contracts.

4.2 CitiPower retention of service providers

4.2.1 CHED Services

Contractual arrangements

CitiPower acquires all activities associated with the provision of regulated services from CHED Services except for IT hardware and one licence which will be acquired directly by CitiPower. CHED Services is owned jointly by Cheung Kong Infrastructure, HongKong Electric Holdings and Spark Infrastructure.

Two agreements cover the breadth of services being provided by CHED Services to CitiPower. The CitiPower 2008-2013 Metering & Field Services Agreement (**Metering Agreement**) (Attachment 7) and the CitiPower 2008-2011 Services Agreement (**Corporate Services Agreement**) (Attachment 8).

The Metering Agreement commenced on 1 January 2008 and is due to expire on 31 December 2013. Upon expiration of the agreement, CitiPower expects to negotiate a further term. The Metering Agreement covers activities associated with:

- new connection metering and servicing – labour and materials;
- fault replacements metering and servicing – labour and materials;
- customer initiated replacements metering and servicing – labour and materials;

- non-compliance meter replacements – labour and materials;
- AMI meter accelerated rollout – labour and materials;
- AMI meter complex installations – labour and materials;
- AMI communications equipment installation and supply;
- meter maintenance;
- meter abolishments;
- provision of backhaul communications;
- project management, logistics and quality control;
- AMI project management including technology selection, forecasting, program management office, business transformation and asset management plan;
- ongoing consultancy work; and
- service maintenance.

The Metering Agreement allows for a 1 per cent margin to be applied to any outsourced metering, field or backhaul services. It also requires that AMI project management costs be inclusive of an 11.5 per cent margin. The Metering Agreement is attached and marked Attachment **Error! Reference source not found.** .

The Corporate Services Agreement commenced on 1 January 2008 and is due to expire on 31 December 2011. Upon expiration of the agreement, CitiPower expects to negotiate a further term. The Corporate Services Agreement covers activities associated with:

- corporate services, such as the chief executive officer, finance, human resources and regulatory management;
- customer services, such as data management, customer response management, and revenue management; and
- IT support services.

CitiPower notes not all costs incurred under the Corporate Services Agreement are for activities within scope of the AMI OIC. Therefore, only those costs which can be attributed to activities within scope have been recorded as costs for the purposes of the cost templates. Cost allocation has been conducted in accordance with CitiPower's *Cost Allocation Methodology* which the AER approved in May 2010 (**CAM**).

Reasons for arrangement

CitiPower did not procure the services provided by CHED Services under the Corporate Services Agreement and the Metering Agreement through a tendering process. Rather, CitiPower negotiated directly with CHED Services for the provision of the respective services on a cost plus benchmark margin basis because it considered that this would deliver the most efficient price-service outcome for CitiPower and therefore its customers.

CitiPower chose to acquire all activities through CHED Services as it offered a full *'turnkey'* solution and enabled CitiPower to take advantage of the economies of scale CHED Services could provide that CitiPower, on its own, would not have otherwise been able to realise. The arrangement enables CitiPower to better focus on its long term asset ownership and performance.

These benefits were discussed at the Board level and can be found in Board minutes of meetings attached and marked Attachments **Error! Reference source not found.** to **Error! Reference source not found.**. CitiPower submits that each of these benefits have been realised under the arrangement. In particular, CitiPower refers to the examples below which illustrate that the benefits in adopting the current service model:

- CHED Services currently provides services to ETSA Utilities. Current service provision amounts to approximately 12 per cent of CHED Services' revenue in 2009. A report prepared for ETSA by SMS Consulting identifies the potential efficiencies associated with this arrangement and is attached and marked Attachment **Error! Reference source not found.**. In this report, SMS Consulting considered whether CHED Services could provide the Full Retail Contestability (**FRC**) systems required by ETSA Utilities at a lower cost than it could achieve if it were to provide the services in-house or outsource the services to another party. SMS Consulting concluded that retaining CHED Services was the best option and in doing so referred to the benefit that ETSA Utilities would obtain because it would be able to obtain synergies with CitiPower and CitiPower with shared support resources, infrastructure and software licences support fees.

- CitiPower retained KPMG in 2009 to quantify the efficiencies arising from the current service provision model, and to determine the costs that would have been incurred by CitiPower if the services provided by CHED Services were provided on an in-house, stand alone basis. KPMG reported that CHED Services was in a better position to lower costs and improve service performance than CitiPower could deliver on a stand alone basis because CHED Services could access economies of scale and scope in the delivery of services.

  While the KPMG report looks at the cumulative efficiencies of the Corporate Services Agreement and other agreements in the context of the Victorian Electricity Distribution Price Review (**EDPR**), the findings remain relevant to the proportion of costs associated with the AMI program.

In conclusion, KPMG provides clear evidence that the price payable under the Corporate Services Agreement is lower than the cost that would be incurred if the services were provided in-house by CitiPower. A copy of the KPMG report entitled *Efficiencies of the Powercor Service Model*, October 2009 is attached and marked Attachment **Error! Reference source not found.**.

Process in establishing arrangement

The CitiPower Board has a strict set of principles governing any engagement of a related party for the provision of services. These principles require that:

- related party transactions are supported by contracts;
- contracts are commercial and arm's length, which involves ensuring prices are based on market prices or comparable prices to unrelated parties or costs plus a commercial margin, and that a mechanism for passing through efficiencies is in place;
- a clear description of the services is provided, including specification of service levels and/or *'Key Performance Indicators'*, and inclusion of a mechanism for reduction in fees for excessive or poor performance;
- arm's length nature of contracts is independently verified;
- transactions comply with relevant laws; and
- transactions comply with undertakings to bond holders, banks, insurers and rating agencies.

KPMG was engaged to undertake a compliance review to ensure that the Metering Agreement and the Corporate Services Agreement were arm's length. KPMG confirmed the contracts between CitiPower and CHED Services are arm's length. Copies of these reports are attached and marked as Attachments **Error! Reference source not found.** to **Error! Reference source not found.**.

KPMG verified that CitiPower and CHED Services have agreed to terms and conditions, including price, that are in line with those that would be expected to have been agreed through an arm's length negotiation process. Assessment of the Corporate Services Agreement and the Metering Agreement show an appropriate allocation of risks and responsibilities and ensure that CitiPower retains sufficient control over its assets. The provisions contained in the Metering Agreement and the Corporate Services Agreement are broadly consistent with third party contracts previously entered into by CitiPower.

Pricing structure

The pricing structure adopted in the Corporate Services Agreement consists of a fixed fee based on forecast efficient costs plus a commercial margin. The margins payable by CitiPower to CHED Services under the agreement were based on the recommendations contained in a series of reports that were prepared by Ernst & Young for CitiPower in 2006 and marked as Attachments 21-24.

In 2006, CitiPower engaged Ernst & Young to establish the appropriate arm's length prices for corporate services provided by CHED Services by applying the process and methodologies that are accepted by the Australian Taxation Office (**ATO**) with respect to transfer pricing of both domestic and international related party services. Ernst & Young selected a number of comparable companies that provided a similar level of service and/or expertise to CHED Services and recommended margins to be applied in transactions of this nature. CHED Services and CitiPower adopted the margins as recommended.

The price payable by CitiPower for services provided under the agreement is fixed for a three year period. The fixed price nature of this agreement means that over the term of the agreement, CHED Services will be able to retain the benefit of any cost savings and will therefore have an incentive to pursue both productive and dynamic efficiencies. Power Australia expects to share in these efficiencies when the next contract is negotiated. There are no incentive payments or overheads payable by CitiPower under this agreement.

CitiPower can confirm that the portion of the contract price under the Corporate Services Agreement that it has used in the derivation of forecast expenditure relates wholly to the provision of Regulated Services and does not give rise to any double counting across other elements of the proposal or the Victorian EDPR. Costs have been allocated in accordance with CitiPower's Cost Allocation Methodology which the AER approved in May 2010.

CitiPower submissions regarding contractual arrangements

Clause 5C.2 of the AMI OIC requires the AER to approve submitted budget expenditure unless it establishes that the expenditure is for activities outside the scope at the time of commitment to that expenditure and at the time of the determination, or is not prudent. CitiPower reiterates that this places the onus on the AER to demonstrate that the expenditure is either out of scope or is not prudent in not allowing the budget as submitted.

Clause S2.10 of the Scope Document provides that activities within scope are those activities reasonably required for the provision of regulated services and those activities reasonably required to comply with a metering regulatory obligation or requirement. Clause 5C.3(b) of the AMI OIC provides that expenditure is deemed to be prudent and must be approved by the AER unless the AER can establish that:

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

- 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.

CitiPower submits that the related party service charges allocated to AMI are for activities within scope of the AMI OIC. These related party contracts for these services are the same contracts which were reviewed by the AER for CitiPower's Initial Budget Application. In that review, the AER determined that, with the exception of related party margins, the activities relating to CitiPower's related party contracts were within scope as per the Scope Document.

While related party margins were excluded from CitiPower's Initial Budget Application, CitiPower notes the decision of *Re United Energy Distribution Pty Ltd* [2009] in which related party margins for UED and JEM were reinstated in the UED and JEM budget applications by the Tribunal. Similar to arrangements established by UED and JEM, related party contracts were established between CitiPower and CHED Services.

The Tribunal's decision in *Re United Energy Distribution Pty Ltd* [2009] also provides support for the inclusion of the margin for outsourcing services provided under the Metering Agreement. This margin is payable to the outsourced company and remains for activities within scope.

Given the similarities between the arrangements established by UED and JEM, CitiPower concludes that all contracts established by CitiPower, including any related party margins under these contracts, are within scope for the purposes of clause 5C.2 of the AMI OIC and must be approved unless the AER can establish that the expenditure has not been prudent.

CitiPower submits that margins are prudent for the purposes of accepting the proposed expenditure under clause 5C.3(b) of the AMI OIC. This is because:

- it is more likely than not that the expenditure will be incurred. The margins have been included in the Metering Agreement. Whether expenditure is more likely than not to be incurred does not involve an assessment as to the reasonableness of the expenditure.

- the expenditure did not involve a substantial departure from the commercial standard that a reasonable business would exercise in the circumstances. The AER's approval of the related party margins incurred by UED and JEM demonstrates that such margins do not involve a substantial departure from what a reasonable business would incur.

Deloitte Touche Tohamtsu (**Deloitte**) was engaged to audit CitiPower's AMI costs for 2009 under a tripartite agreement between CitiPower, and the AER. Deloitte considered all relevant materials, including the AMI OIC and the Tribunal's decision in *Re United Energy Distribution Pty Ltd* [2009].

Deloitte concluded in its report entitled *Independent Auditor's Report to the Directors of CitiPower Ltd* 2009 that:

> *The consistency of the nature of the expenditure incurred is within scope of the AMI activities set out in S2.10 ACTIVITIES WITHIN SCOPE of the Electricity Industry Act 2000 Notice Pursuant to Clause 14B.1 of the AMI Cost Recovery Order (the* 'Act' *and* 'order'*) at the time of commitment to or incurring of that expenditure.*

CitiPower submits that on the basis of this report the margin expenditure contained within the expenditure incurred by CitiPower is within scope. Copies of this report are attached and marked Attachment 3.

4.2.2 Third party vendor contracts

Field force services

Sub contractors were required to assist in the installation of AMI meters. Service provider support and reserve vendors were sought via an RFP designed and facilitated by Protiviti and independently audited by Portland Group.

The RFP process was based on a shortlist of nominees generated from an RFI process conducted and established by Deloitte and CHED Services. Copies of the RFP and RFI processes, and the corresponding audit reports are attached and marked as Attachments **Error! Reference source not found.** to **Error! Reference source not found.**. From this process, UXC Limited (**UXC**) and Bilfinger Berger Services (Australia) Pty Ltd (**BBS**) were appointed as service support providers.

Contracts were drafted by DLA Phillips Fox and signed between Network Services and UXC, and Network Services and BBS. These contracts are due to expire on 31 December 2015, and Network Services has an option to extend the term under each contract. CitiPower advises that BBS has since changed its business name to Conneq Infrastructure Services (Australia) Pty Limited (**Conneq**). Copies of the contracts are attached and marked as Attachments **Error! Reference source not found.** and **Error! Reference source not found.**.

Reserve vendors were also appointed through the RFP process which appointed UXC and Conneq. Service Stream Infrastructure (**SSI**) and Electrix were appointed reserve vendors for field force services. SSI signed a contract which is due to expire on 31 December 2015 with an option to extend for further terms under the contract. Negotiation and execution of the contract with Electrix is pending. A copy of the contract with SSI is attached and marked Attachment **Error! Reference source not found.**.

The proportion of service support provision was initially allocated equally across UXC and Conneq. However, in March 2010 issues regarding performance by Conneq arose and SSI, one of the reserve vendors, was subsequently appointed as an additional service support provider. On 24 March 2010, SSI, UXC and Conneq were allocated service support provision on the basis of approximately 8 per cent, 56 per cent and

36 per cent of support services respectively. Allocations across service support providers were based on volume.

Scope changes have since been made to job types. Scope changes are made on the basis of unit rates charged by the companies and regular performance assessments. Performance assessments are made on an informal basis and involve an assessment of a range of matters including safety, volume, customer satisfaction, delivery, quality and timeliness. Unit rates for the forthcoming year have been revised by each of the companies.

The revised unit rates and performance assessment of each of the companies have resulted in proposed changes to allocation of service support provision to 10 per cent, 60 per cent and 30 per cent across SSI, UXC and Conneq respectively. Due to the ongoing nature of performance assessments, allocations are updated as the meter rollout progresses and are subject to variation at any given time.

Communications technology

A communications technology provider was appointed through an RFP process. This process was jointly designed and facilitated by Deloitte and CHED Services. The process was also independently audited from a probity perspective by Portland Group. Copies of the tender process and the audit report are attached and marked as Attachments 34-36 and 39-39(a).

From the RFP process, Silver Spring Networks Inc (**SSN**) was appointed as technology provider. SSN entered into a contract with CHED Services, drafted by DLA Phillips Fox and due to expire on 31 December 2015. CHED Services has an option to extend under the contract.

The contractual arrangements were independently reviewed and audited for quality assurance purposes by KEMA. A copy of this report is attached and marked Attachment **Error! Reference source not found.**.

Meter provision

Meter providers were also appointed via an RFP process. This process was jointly designed and facilitated by Deloitte and CHED Services. The process was also independently audited from a probity perspective by Portland Group. A copy of the tender process is attached and marked Attachment **Error! Reference source not found.**.

From the tender process, PRI Australasia Pty Ltd (**PRI**) and Landis + Gyr Pty Ltd (**L&G**) were appointed as meter providers. PRI has since changed its business name to Secure Australasia Pty Ltd (**Secure Australasia**). The contracts are due to expire on 31 December 2015 with an option to extend for further terms under each contract. Copies of the contracts are attached and marked as Attachments **Error! Reference source not found.** and **Error! Reference source not found.**.

Meter provision has been allocated in proportions of 10 per cent to Secure Australasia and 80 per cent to L&G, with the remaining 10 per cent to be allocated on the basis of

performance and delivery. Both contracts are due to expire on 31 December 2015 with an option to extend for a further term.

The contractual arrangements for L&G and Secure Australasia were independently reviewed and audited for quality assurance purposes by KEMA. Copies of these reports are attached and marked as Attachments **Error! Reference source not found.** and **Error! Reference source not found.**.

CitiPower submissions regarding third party contracts

Clause 5C.2 of the AMI OIC requires the AER to approve submitted budget expenditure unless it establishes that the expenditure is for activities outside the scope at the time of commitment to that expenditure and at the time of the determination, or is not prudent. CitiPower reiterates that this places the onus on the AER to demonstrate that the expenditure is either out of scope or is not prudent in not allowing the budget as submitted.

Where the relevant expenditure is a contract cost, under clause 5C.3(a) of the AMI OIC, the expenditure is prudent and must be approved by the AER, unless the AER establishes that the contract was not let in accordance with a competitive tender process. In determining whether a contract was not let in accordance with a competitive tender process, clause 5C.10 provides that the AER must have regard to:

- the tender process for that contract;
- whether there has been compliance with that process; and
- whether 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.

All third party vendor contracts detailed in this Application were the result of a competitive tender process. The tender process for communications technology and meter provision was jointly designed and facilitated by CHED Services and Deloitte. The tender process for field force services was designed by Protiviti. The tender processes were designed to provide a framework for objective assessment of vendor capability and pricing, and to effectively evaluate vendor proposals against the functional and technical requirements of CitiPower. The tender processes are conducted in addition to the internal processes conducted by CitiPower outlined in Section 4.1.1.

In addition, the tender process was independently audited by Portland Group to ensure probity and best procurement practices were followed. Portland Group reviewed the documentation and processes undertaken in the tendering, evaluation and short-listing of potential vendors for communications technology, meter provision and field force services. The audit involved a review of the key outputs of the tender process and interviews of key personnel in the project team. Portland Group concluded in each of its reports that the processes established were in accordance with best practice.

CitiPower submits that expenditure under each of these contracts relate to activities within scope as per the AMI OIC and the Victorian Government Gazette no. G4 of 22 January 2009. In addition, CitiPower submits that the expenditure is prudent for the following reasons:

- the expenditure is incurred under the contracts within the meaning of clause 5C.11 of the AMI OIC. The contracts have previously been approved following the AER's consideration of CitiPower's Initial Budget Application.

- The contracts were let in accordance with a competitive tender process contrary to clause 5C.3(b)(ii) of the AMI OIC. For the AER's review under clause 5C.10 of the AMI OIC, CitiPower submits that:

    1. the tender processes were impartial and fair, and complied with CitiPower's Corporate Procurement Policies and Risk Management Framework. Copies of CitiPower's relevant policies are attached and marked Attachments 1-2.

    2. The tender process as set out in the relevant tender documents was compiled with. CitiPower refers to the audit reports conducted by Portland Group which verify compliance to the tender process; and

    3. the tender process did not impose unreasonable terms and conditions on tender submissions.

- It was more likely than not that the expenditure would be incurred contrary to clause 5C.3(b)(iii) of the AMI OIC. To date, partial performance and payment have already been delivered under each of the contracts. Therefore, the expenditure has been incurred and will more likely than not be incurred until the expiration of each of the contracts.

- The expenditure did not involve a substantial departure from the commercial standard that a reasonable business would exercise in the circumstances contrary to clause 5C.3(b)(iv) of the AMI OIC. Responses to each tender process were subject to rigorous and thorough evaluation procedures with the aim of engaging the most efficient and effective solution that delivers mandated specifications and is compatible with CitiPower's network.

    For communications technology, meter procurement, and field force support services engagement, tender responses were generally evaluated in three stages. An initial evaluation was conducted at a high level to assess:

    1. whether the proposal adequately addressed health and safety, quality, environment and customer service demands required by the Business;

    2. whether the company had support services in Australia, a deployment history, and a litigation history;

    3. the company structure, size and financial strength; and

4. the company's financial strength, insurance details, credit rating, balance sheet and cashflow positions

A subsequent evaluation was then conducted to assess solutions against general technological requirements and capabilities.

Finally, more detailed evaluations were conducted across four key areas:

1. technology – which involved assessments of functional specification and availability of technology support, maintenance, interoperability, security and equipment construction;

2. vendor – which involved assessments of financial strength, corporate structure, litigation and deployment history;

3. risk – which involved identification of key risk events and assessments of proposed solutions and risk management strategies; and

4. price – which involved assessment of pricing based on the lifecycle costs of the technology solution.

Evaluation reports from each tender have been attached and marked as Attachments 39 and **Error! Reference source not found.**.

For the above reasons, CitiPower concludes that under clause 5C.2 of the AMI OIC, the AER are required to approve the submitted budget expenditure.

5. Volumes assumptions

In accordance with clause 5.5(b) of the AMI OIC, this section presents a forecast of the number of metering and communication installations CitiPower is forecasting to install for each year of the AMI Budget Period.

5.1.1 Meter equipment volumes

Deployment of AMI started 1 October 2009, and is expected to be largely completed (99 per cent of AMI meters deployed) by September 2013. The remainder of the AMI meters will be deployed by the end of December 2013.

To ensure the orderly and efficient rollout of AMI technology, the Business has invested considerable time and energy in planning the deployment of AMI technology across its franchise territory. This has involved the establishment of *'regions'* across the franchise territory.

A key challenge for CitiPower remains the effective management of Business As Usual (**BAU**) activities while undertaking the mass rollout. Consequently, the introduction of the AMI rollout has created three distinct metering activities within CitiPower, listed below.

- AMI rollout activities - relate to the installation of AMI meters and related communications equipment for the purposes of complying with the AMI OIC;

- AMI BAU activities - relate to the installation of AMI meters when performing traditional BAU activities, such as new connections; and

- non-AMI BAU activities - relates to the management of old technology meters for events such as meter faults. These activities are reducing and being superseded by either the AMI rollout or by AMI BAU activities.

The forecasted volumes required to set charges under the OIC include AMI rollout activity and BAU activity - including AMI, accumulation and interval meters.

The AMI rollout installation volumes forecast tracks the Victorian government targets. As a result, CitiPower's volume forecast model is essentially a meter inventory model. Meter volumes are accounted for in the following manner:

- *Opening balance*: total volume of meter installations as at 2008 (as reported in the Business' Customer Information System);

- *Adjustments*: actual meter movements[9] for the year that includes:

    - new connections[10]

[9] Net movements: new connections, less abolishments plus net replacements.
[10] New meter growth is based on NEIR forecast rates

- abolishments

- replacements
  - faults
  - customer initiated replacements, including new meter installations required to serve customers on Premium Feed-in Tariffs (**PFIT**);
  - AMI mass rollout; and

- *Closing balance*: opening balance plus adjustments.

- *Closing balance*: opening balance plus adjustments.

In accordance with the AMI OIC, all existing third party remotely read interval meters (types 1-4) have been excluded from the AMI rollout projections as have all customers consuming more than 160MWh per annum.

The proposed annual schedule of meters to be installed is provided in the table below in compliance with clause 5.5(b) of the AMI OIC.

	2011	2012	2013	2014	2015
Accumulation meters	23	20	8	-	-
Manually read interval meters	35	27	11	-	-
AMI Meters	60,348	127,069	89,826	9,369	12,408
Total	**60,405**	**127,117**	**89,845**	**9,369**	**12,408**

Table 12: Volumes of meters installed

As can be seen in Table 12 above, the number of new installations of accumulation and interval meters is forecast to decline substantially, with no new installations forecast after the end of 2013. From 2011 onwards the volume of accumulation meters and manually read interval meters is forecast to reduce due to the continuing progression of the AMI rollout program.

The numbers left for accumulation and interval meters in 2012 and 2013 relate to non-AMI fault replacement only.

Other key assumptions underpinning the Business volume forecasts include;

- The replacement of accumulation meters with AMI meters is not performed on a 1-for-1 basis. This is because AMI meters are able to perform functions that were previously delivered by two or more accumulation meters. CitiPower currently has an average of 1.27 installed meters per customer – expressed as a meters/NMI ratio. It is expected that this ratio will reduce to 1.1 by the time the rollout finalises.

- This ratio does not reduce to 1 as in some instances multiple AMI meters will still be required to support some customers' tariff structures or unique supply arrangements. For example, some customers have 3-phase supply for their slab heating but single-phase supply for the general power and light, thereby requiring multiple meters.

- Expected organic growth is based on forecasts provided by the National Institute of Economics and Industry Research (NIEIR), consistent with the assumptions outlined in CitiPower's Revised Regulatory Proposal submitted to the AER on 21 July 2010.

- The main increase in relation to customer initiated replacements relates to customer demand for PFITs. The expectation is that all customers with solar tariffs will request a meter replacement, as it is often the least cost technical solution necessary to access the benefits of the PFIT scheme.

5.1.2 Communications equipment volumes

The planning of communication equipment volumes for the rollout has been performed in conjunction with the selected vendor, SSN. SSN has provided an initial high level design of the communications equipment required on a region-by-region basis. Additionally, as the physical rollout occurs, SSN provide a detailed design, which includes site surveys, which involves physically inspecting the area to determine optimal coverage.

Communications equipment volumes are highly dependent on meter volumes. However, other important considerations[11] relate to:

- population density - the lower the density, the more devices needed per meter; and

- geographical considerations, such as the presence of mountainous areas.

SSN's preliminary designs for the CitiPower network have assumed a 100 per cent coverage of the area using mesh technology. The final split between mesh and other options however will be dependent on site surveys as the roll progresses to more rural/remote locations.

[11] These assumptions have not changed since the previous budget application.

6. Capital expenditure 2012-15

The AMI program is a complex undertaking involving multiple technologies and interfaces that are both internal and external to CitiPower. It also involves the application of a leading edge set of technologies that have not been applied elsewhere in the world in the volumes required for Victoria.

The leading edge nature and pace of technological advancement in the AMI field have made the Business particularly conscious of securing the most efficient and effective long term solution for the benefit of its customers and the community in general. To that end, as outlined in Section 5, many aspects of the AMI program have been subject to competitive tendering. CitiPower has also sought advice from a wide range of well respected advisors including Deloitte, Portland Group, Gibson Quai AAS and United States based Michael Wiebe Consulting in arriving at the most efficient and appropriate choices.

The major capital expenditure items for the AMI program are meter supply and installation, communications supply and installation and IT. In accordance with its internal accounting policies, CitiPower has also capitalised project management overheads into the AMI program, specifically, AMI meters, transformers and communications.

The majority of the AMI communications technology and meter costs are purchased in United States (US) dollars. The Business has existing exchange rate hedging contracts until 2011 and has estimated exchange rate hedging costs for 2012-15. Expenditure on exchange rate hedging is covered by clause S2.1(b)(2)(xii) of the Scope Document. CitiPower will update the exchange rate assumption once the foreign exchange hedging contracts have been executed. The proposed exchange rate assumptions are based on Bloomberg and are provided in the table below.

	2012	2013	2014	2015
US$ per AU$	0.9565	0.9192	0.9028	0.9028

Table 13: Hedged exchange rate until 2011, forecasted exchange rate from 2012 onwards

The capital expenditure for each year of the AMI budget period as required by clause 5B.1 of the AMI OIC is set out below. The expenditure presented includes all capital items included under clause S2.1(a), (b) and (c) of the Scope Document.

	2012	2013	2014	2015
Meter supply and installation	40,339	29,511	3,958	4,605
Communications supply and installation	1,136	1,047	423	52
IT	8,875	5,834	3,674	2,934
Other	-	-	-	-
Total	**50,350**	**36,391**	**8,055**	**7,591**

Table 14: Total capital expenditure ($'000 2011)

6.1 Meter supply

Meter supply refers to the total expenditure on meters for both the AMI rollout and BAU requirements. Over the period 2012-15, the Business will be required to meet both the requirements of the AMI project and the BAU requirements such as new connections and faults.

The total meter supply expenditure is a product of the contracted meter unit price and the forecasted meter volumes.

As discussed under Section 4, meter supply, both for the AMI rollout and BAU requirements, has been subject to a competitive tender process. As such, the unit prices presented below are based on actual contracted unit prices that have been incurred pursuant to the contracts of the appointed meter providers, Secure Australasia and L&G.

CitiPower has signed contracts for 90 per cent of meter supply volumes over the period 2012-15. The remaining 10 per cent has been left uncontracted as an incentive to both the vendors. For the purposes of this Application, CitiPower has assumed that of the remaining 10 per cent, 80 per cent will be purchased from L&G and 20 per cent will be purchased from Secure Australasia at the current contracted unit rates.

Two service providers were chosen to mitigate the risk of a vendor not being able to fulfil its quota. The contracts are due to expire on 31 December 2015 and there is an option to extend for further terms under each contract.

CitiPower submits the meter supply expenditure should be considered prudent as the contract on which the forecasts are based was let in accordance with a competitive tender.

6.1.1 AMI meter supply unit prices

Figure 2 below illustrates the build-up of the meter supply unit prices for the AMI rollout.

Figure 2: Build up of the meter supply unit price for AMI installation

The contracted unit prices are documented in each of the respective contracts, Secure Australasia and L&G. Refer to Attachments **Error! Reference source not found.** and **Error! Reference source not found.** for the Secure Australasia and L&G contracts.

In deriving a unit price for the AMI rollout, a blended unit price is calculated using the contracted unit prices from Secure Australasia and L&G which is then weighted to reflect their respective shares of total meter volumes (20:80).

The contract unit prices are denominated in United States dollars. As a consequence, the unit prices have been converted to Australian dollars (for details on hedging assumption see Table 13).

For a discussion of CHED Services overheads please refer to Section 6.6.

6.1.2 Business as usual supply unit prices

Figure 3 below illustrates the build-up of the meter supply unit prices for BAU requirements.

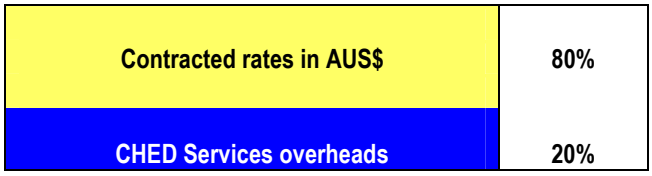

Figure 3: Build up of the meter supply unit price for BAU

The methodology for determining the AMI rollout and BAU unit prices are identical.

For a discussion of CHED Services overheads please refer to Section 6.6.

The following table summarises the meter supply contract unit prices for both the AMI rollout and BAU. There are a number of meter types due to the fact there is no single metering solution. The size and purpose for which the customer uses its connection determines the most appropriate metering solution for their situation. For the purposes of the Application, meters (AMI, accumulation and manually read interval meter (**MRIM**)) have been differentiated by the phases the customer is receiving (ie: single or three phase), whether the customer requires load management (ie: is a load contactor required) and lastly whether a current transformer (**CT**) is required.

	2012	2013	2014	2015
AMI single phase non-off peak	140	142	141	138
AMI single phase 1 element with contractor	154	156	155	151
AMI single phase 2 element with contractor	166	168	167	163
AMI 3 phase meter	263	267	265	259
AMI 3 phase with external contactor	278	282	280	274
AMI 3 phase CT connected	334	339	337	330

Table 15: Meter supply unit prices including AMI rollout and BAU (Real 2011 $)

Note that the unit prices outlined in the table above multiplied by meter volumes will equate to the meters supply contract column for each respective year in the AER CitiPower Budget Template (*AMI Capex Detail* worksheet).

6.1.3 Total expenditure

Over the period 2012-15, meter supply expenditure will increase due to the acceleration of the AMI rollout program. In 2012, meter supply expenditure will peak and then reduce from 2013-15. The expenditure trend reflects the conclusion of AMI rollout program by end December 2013.

Over the period 2009-10, CitiPower has focused on non-complex sites, which predominately involved the rollout of lower cost single phase meters. Over the period 2011-13 the Business will be required to address more complex sites including multi phase sites. Consequently the average meter supply costs will increase over 2012-15 reflecting the greater proportion of multi phase meters.

The cost of meters for the AMI project and BAU fall across clauses S2.1(a)(i) and S2.1(b)(1)(i) of the Scope Document.

The table below sets out the meter supply capital expenditure.

	2012	2013	2014	2015
New connections – meters	2,093	1,595	1,390	2,055
Normal replacements – meters	1,672	1,410	747	739
AMI meter rollout – meters	20,245	14,301	-	-
Total expenditure	**24,010**	**17,307**	**2,137**	**2,794**

Table 16: Meter supply capital expenditure for AMI rollout and BAU ($'000 2011)

Note that the table above will equate to the totals for meters purchased in the AER CitiPower Budget Template (*AMI Capex Detail* worksheet).

6.2 Meter installation

Meter installation refers to the total cost of installing the required meter volumes, both for the AMI rollout and BAU requirements. Over the period 2012-15 the Business will be required to meet both the requirements of the AMI project and the BAU requirements such as new connections and faults.

Meter installation costs are a product of volumes and installation unit prices for both AMI rollout and BAU requirements. The key determinant of meter installation costs is the level of difficulty of the installation activities which will determine how long will be required to complete an installation activity.

As discussed under Section 4, AMI rollout meter installation field services was subject to a competitive tender process. As such the unit prices presented below are based on actual contracted unit costs that have been incurred pursuant to the contracts of the appointed field service providers SSI, Conneq and UXC.

The Business submits the meter installation expenditure in relation to the AMI rollout should be deemed prudent because the contracts were let in accordance with a competitive tender process.

BAU meter installation field services are provided in-house. Prior to the Victorian Government mandate to rollout AMI meters, all meters were installed in-house. When considering the AMI program, CHED Services concluded it was not sufficiently resourced to continue to satisfy its BAU meter installation requirements and the AMI program. As a consequence, the decision was made to outsource the AMI rollout meter installation field services (except for complex sites).

As would be expected, AMI rollout installation unit prices are lower than the BAU unit prices due to the substantial economies of scale and scope available under the AMI program.

6.2.1 AMI rollout installation unit price

Figure 4 below illustrates the build-up of the unit prices in relation to AMI rollout meter installation.

Figure 4: Build up of the AMI rollout meter installation unit price

Contract unit price

The unit prices specified for the purposes of the Application are not the actual contract unit prices as specified in the each of the respective contracts (refer to Attachments **Error! Reference source not found.**-**Error! Reference source not found.** for the SSI, Conneq and UXC contracts). The unit prices are subject to negotiation and are expected to be finalised prior to the AER's Draft Decision. As a consequence, the unit prices specified for the purposes of the AMI budget forecasts are a estimate of the likely final negotiated unit price. At the time the contract unit prices were initially agreed, the service providers had limited knowledge and experience in installing AMI meters. Based on acquired experience, it is now acknowledged there are prudent reasons for a contract variation.

Refer to Attachment 51 which contains an explanation of the unit price variations and Attachment 50 which is a letter from the service providers Conneq requesting a unit price variation.

For the purposes of the Application forecast, a blended unit price is calculated using the expected contracted unit prices from SSI, Conneq and UXC which is then weighted to reflect the supplier mix.

CitiPower is contracted for 100 per cent of its field services activities for the AMI rollout. Sixty per cent was sourced from UXC, 30 per cent from Conneq and 10 per cent from SSI. The Business chose more than one service provider to mitigate the risk of a vendor not being able to fulfil its quota or failing to meet the necessary quality

standards. UXC has been given the highest amount of work due to the lower cost unit prices and its ability to meet the quality standards. Conneq's share has decreased since the Initial Budget Application due to its failure to meet some quality service standard requirements.

Normal time vs overtime

Separate overtime unit prices have been provided by the selected suppliers, which include a premium over the standard unit price. The Business has estimated that approximately 2 per cent of installations will need to be performed out of business hours. This assumption is consistent with that used in the Initial Budget Application.

As noted earlier, CHED Services considered it was more appropriate to manager difficult or complex installations in-house. The unit rates for difficult or complex sites based on its experience in performing similar installations in the past.

For a discussion of CHED Services overheads please refer to Section 6.6.

The unit prices in the table below are for AMI rollout meter installation only.

Year ending	2012	2013
Single phase non-off peak meter	41	41
Single phase 'A' and 'C'	52	51
Single phase 2 meters and a time switch	85	84
Single phase ½ element and a contactor	49	49
Slab heating	85	84
3 phase DC	47	46
3 phase 'A' and 'C'	69	68
3 phase CT connected meter	153	151
Remove time switch	11	10

Table 17: AMI rollout meter installation unit prices (Real $2011)

The unit prices in the table below are for the hazards and fixes for the purposes of the AMI rollout. Hazards and fixes represent a small number of special activities concerned with ensuring safety in relation to metering activities.

Year ending	2012	2013
Exposed single insulation metering cables (install permanent insulated sleeve)	6	6
CBD metal links (with and without neutral)	57	56
Meter isolation above 2m	20	20
Nilcrom fusing (install supply insulation isolation fuse on meter board)	70	69
Large meter panels requiring lowering	73	72
Northcote area metal meter board fuses	75	74
Asbestos meter board (upgrade meter board)	146	144
Meter board replacement	96	95
Issue of defect notice to customer	24	23
Fuse added (per fuse)	39	38
Fuse removed (per fuse)	30	30
Fuse upgrade (per fuse)	30	30
Revisit fee	16	15
AMI install pol heat	52	52

Table 18: AMI hazards and fixes installation unit prices (Real $2011))

Note that the AMI meter installation unit prices outlined in the two tables above, *'AMI rollout meter installation unit prices'* and *'AMI hazards and fixes and antenna installation unit prices'* multiplied by the forecast meter volumes will equate to the meters installed contract column for each respective year in the AER CitiPower Budget Template (*AMI Capex Detail* worksheet).

6.2.2 BAU activities installation

In addition to the AMI program, the Business will continue to be required to install meters on a BAU basis for new connection and fault situations. In such circumstances, the efficiencies available under the AMI program in terms of travel to and from the site and time between jobs will not be available. The costs associated with BAU installations include new connections and faults and PFITs (these activities are within the scope of regulated services) and are covered under clause S2.1(a)(i) of the Scope Document.

Figure 5 below illustrates the build-up of the unit prices in relation to BAU installations.

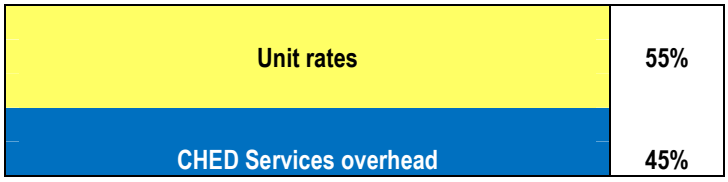

Figure 5: Build up of the BAU installation unit price (Real 2011$)

Non-AMI meter unit prices

The non-AMI meter unit prices are calculated based on historical unit prices.

AMI meter unit prices

The AMI meter unit prices are broken into:

- new connections;
- meter replacements; and
- communications devices.

Each activity has a different unit price. The number of BAU unit prices is extensive.

For a discussion of CHED Services overheads please refer to Section 6.6.

6.2.3 Total expenditure

The AMI meter installation expenditure is a product of an acceleration of the AMI meter rollout program and a greater prevalence of complex sites (compared to 2009-10).

The BAU installation costs are driven by an increase in new connections and an increase in PFIT customers in 2012 and 2013. The Business is obliged in both cases to use AMI meters. This comes at a high cost because these replacements do not benefit from the efficiencies available under the AMI program in terms of travel to and from the site and time between jobs.

The costs involved in the AMI and BAU installation unit price are included under clause S2.1(b)(1)(i) of the Scope Document.

The table below sets out the total meter installation for AMI rollout and BAU capital expenditure.

	2012	2013	2014	2015
BAU - installation	3,839	3,086	1,822	1,811
AMI meter rollout – meter installation	12,490	9,118	-	-
Total expenditure	**16,329**	**12,204**	**1,822**	**1,811**

Table 19 Meter installation capital expenditure ($'000 2011)

Note that the table above will equate to the totals for meters installed in the AER CitiPower Budget Template (*AMI Capex Detail* worksheet).

6.3 Communications technology selection

The AMI program involves expanding, empowering and enhancing the services presently received by customers. There is no single solution to delivering these enhanced services to customers but rather several solutions that involve multiple technologies and interfaces.

At its simplest level, an AMI solution will comprise a meter, a Local Area Network (**LAN**) connecting the meter to an access point or relay, a Wide Area Network (**WAN**) providing connection between the access point and the Network Management System (**NMS**).

To establish and operate the WAN, the Business will be required to engage a telecommunications provider. The connectivity between the NMS and the IT systems is the responsibility of the Business.

CitiPower's evaluation of potential AMI solutions has been extensive involving assessments through industry forums, internal bench and field trials and international study tours. The industry evaluation included active participation with the Industry Trials Working Group (**TWG**). The TWG was formed in May 2006 with a charter to test available AMI communications technologies.

The choice of an appropriate solution is dependent upon a number of factors. These include:

- **value**: delivery of a solution that delivers the most cost effective outcome;
- **compliance**: the ability of a solution to deliver all the functional and service level requirements as set out in the AMI Specification Order, the Functionality Specification and Service Levels Specification;
- **network impact**: the compatibility of the solution with the distribution network;
- **reliability**: ability of the solution to consistently deliver the required functionality and services when required;
- **future proofing**: the ability of the solution to meet future changes in the Functionality Specification and Service Levels Specification; and
- **solution maturity**: the solution can be demonstrated in the field with a significant number of end points meeting the required functional and performance requirements; and
- **security**: the solution must demonstrate effective security controls to safe guard system and personal information.

Based on an assessment of each technology against these criteria, CitiPower has adopted a mesh radio based solution.

Mesh radio is a private radio network technology, operating in one of the unlicensed Industrial, Scientific and Medical Radio Band (**ISM**) bands for communicating with meters. The access point receives and transmits signals to meters which in turn pass these signals through to other meters, as illustrated in the diagram below.

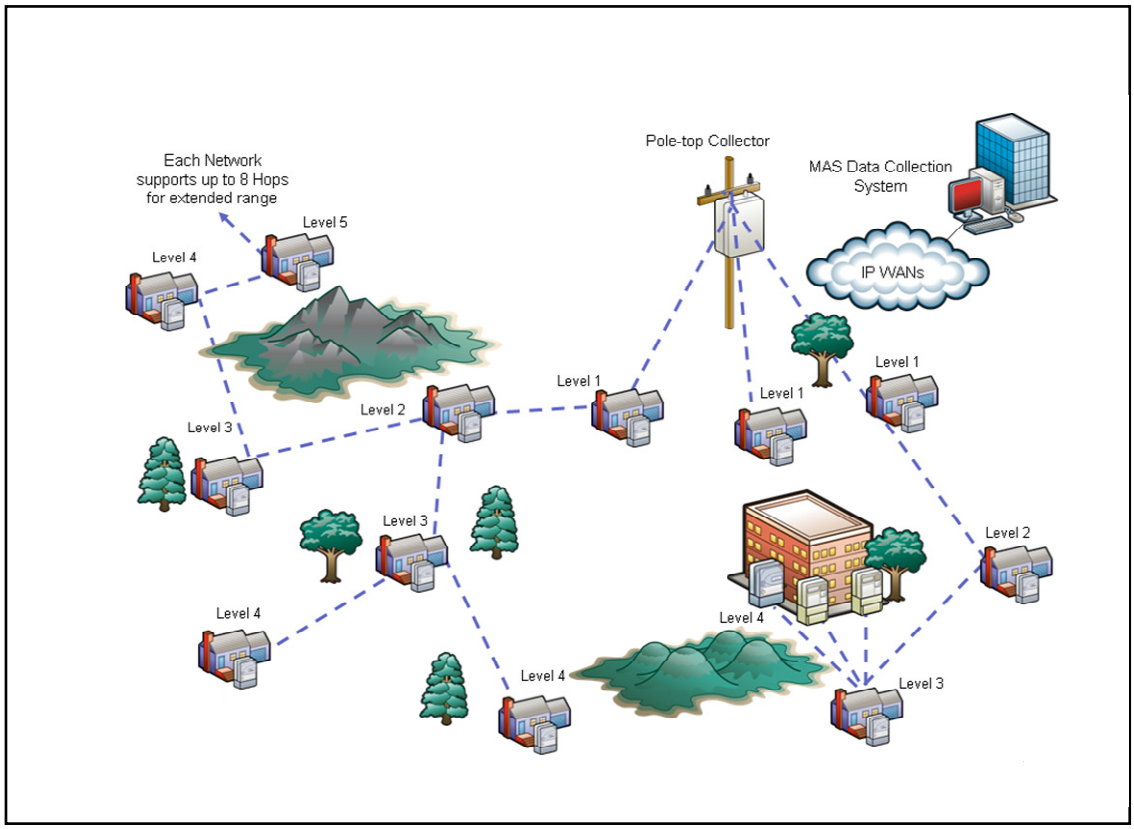

Figure 6: Mesh radio layout

CitiPower's evaluation of mesh radio as an AMI solution is as follows:

- competitive with other technologies in terms of value;
- demonstrated capacity to comply with the minimum functionality and service level requirements;
- no observed adverse impact on the distribution network;
- *'self healing'* capabilities allow meters to communicate with multiple access points and re-route communications in the event of one signal path being blocked;
- sufficient capacity to meet the current minimum functionality and service level requirement and the capacity to allow for future changes to the minimum AMI functionality/service levels;
- operationally flexible, ie: independent of the distribution network; and
- outage detection capability.

6.4 Communications technology supply

Communications technology supply relates to communication equipment such as access points, relays, battery packs and mounting kits.

As discussed under Section 4, supply of communications equipment for the AMI rollout was subject to a competitive tender process that culminated in the selection of a single provider, SSN.

As such, the unit prices presented below are based on actual contracted unit costs that have been incurred pursuant to the contract with the appointed communications technology supply provider SSN.

6.4.1 Communications equipment supply unit rates

The communications equipment supply unit rates are made up of a number of components including the contracted unit price.

Figure 7 below illustrates the build-up of the unit rates.

Figure 7: Build up of the communications supply

Contract unit price

The contract unit prices are specified in the contract with SSN. Refer to Attachment **Error! Reference source not found.** for the SSN contract.

Hedging considerations to convert into Australian dollars

The contract unit prices with SSN are denominated in United States dollars. As a consequence, the contract unit prices have been converted to Australian dollars. The proposed exchange rate assumptions were discussed earlier.

The table below outlines the communications technology supply unit prices.

Material item	2012	2013	2014	2015
Access point (concentrator)	5,580	5,665	5,630	5,500
Mesh relay	1,286	1,306	1,298	1,268

Table 20: Communications equipment supply unit prices ($2011 per installation)

Note that the meter communications supply costs outlined in the table above multiplied by the forecast meter volumes will equate to the communications purchased contract column for each respective year in the AER CitiPower Budget Template (*AMI Capex Detail* worksheet).

For a discussion of CHED Services overheads please refer to Section 6.6.

6.4.2 Total expenditure

Over the period 2012-15 communications supply expenditure will increase due to the acceleration of the AMI rollout program. In 2012 communications supply expenditure peaks and then decrease substantially from 2013 to 2015. The expenditure trend reflects the AMI rollout program which is planned to conclude by December 2013.

Over the period 2009-10, CitiPower has focused on non-complex jobs. As a consequence the Business will experience a step up in spend to the period 2012-15 due to the increased focus on more complex jobs and the more expensive communication equipment required (PSTN, mobile wireless).

The communications technology supply expenditure should be considered prudent because the contract was let in accordance with a competitive tender. The costs associated with the communications technology supply are included under clause S2.1(b)(1)(i) of the Scope Document.

Refer to the total capital expenditure table which provides the expenditure profile for communications supply and installation for the period 2012-15.

6.5 Communications installation

When considering the AMI program, CHED Services concluded that the installation of communications equipment would be best conducted in-house to mitigate risk. CHED Services advised it was not confident that outsourcing communications installation would result in service delivery of sufficient quality to meet CitiPower's requirements.

6.5.1 Communications installation unit rates

Figure 8 below illustrates the build-up of the unit prices in relation to communications equipment installation.

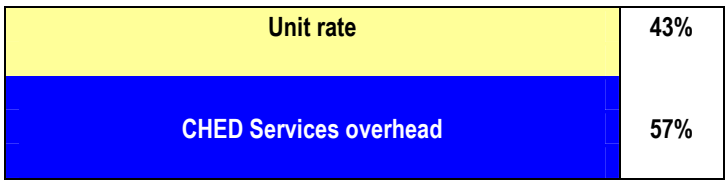

Figure 8: Build up of the communications installation unit price

6.5.2 Total expenditure

Over the AMI Budget Period communications installation expenditure will increase due to the acceleration of the AMI rollout program. In 2012 communications installation costs peak and then decrease substantially from 2013 to 2015. The expenditure trend reflects the AMI rollout program which is planned to end by December 2013.

The costs associated with the communications installation expenditure supply are included under clause S2.1(b)(1)(i) of the Scope Document.

Refer to the total capital expenditure table which provides the expenditure profile for communications supply and installation for the period 2012-15.

6.6 CHED Services overhead

The CHED Services overhead recovers the costs associated with a number of services provided to CitiPower. These services include the following:

- **Program management –** refer to Section 6.8, project management governance, which provides an overview of the program management activities.

- **Field management –** these activities include contract management for field services, planning, resource scheduling, compliance auditing, technical and hazard advice, preparation and the issuing of site information to field staff and reporting. These costs are covered by clause S2.1(b)(2)(xi)(B) and (C) of the Scope Document.

- **Technology and Deployment management** – these activities include managing the communications and meters deployment program. These costs are covered by clause S2.1(b)(2)(xi)(B) and (C) of the Scope Document.

- **Corporate services** – these activities include back office functions to CitiPower, including finance, human resources, regulation, legal and chief executive officer under the Corporate Services Agreement. The majority of these costs relate to Standard Control and Alternate Control Services and have been allocated in accordance with CitiPower's CAM. These costs are covered by S2.1(a)(vi), S2.1(b)(2)(xiii), S2.1(c)(vii) and S2.1(b)(xi)(G) of the Scope Document.

- **Auxiliary services** – these activities include logistics which involves warehousing, distribution and transport between the storage facility and the installation site or vendor pick up point. Logistic support is covered under clauses S2.1(a)(i) and S2.1(b)(2)(xi)(C) of the Scope Document. In addition auxiliary activities include the installation of difficult communications equipment such as satellite roof installations and point to point communications installations. These costs are covered under S2.1(a)(i), S2.1(a)(ii) and S2.1(a)(iii).

6.7 Information Technology

6.7.1 Background

The AMI program has presented significant challenges for IT systems in terms of delivery of the Functionality Specification and Service Levels Specification. This was particularly evident in the area of meter data processing requirements.

CitiPower conducted extensive research of the energy sector throughout Europe and North America and to date, has been unable to identify any organisation or jurisdiction implementing AMI that is currently processing the anticipated AMI meter data volumes within the specified timeframes in a contestable market. CitiPower's research has been verified through independent research conducted by Gartner Consulting[12]. As a consequence, Victoria was and remains a '*trail blazer*' with respect to the IT component of the AMI program requiring the adoption of relatively immature technologies with attendant risk.

CitiPower sought to proactively manage this risk through:

- leveraging its existing world class systems where ever possible (such as SAP (logistics, works management) and Customer Information System (**CIS**));
- selecting off the shelf solutions from IT companies who are technology leaders in AMI for new systems, such as meter data management;
- using experienced technology partners such as CSC to design the underlying technical infrastructure required to meet the '*non-stop*' processing and systems availability requirements of AMI;
- adopting technologies that allow for a flexible, scalable, reusable services and environments like, blade servers, virtualisation, and service based integration via a utility service bus (**USB**) to ensure that the inevitable future changes to AMI functions and service levels are managed cost effectively;
- where possible, benchmarking its proposed AMI architecture against other companies, particularly in North America to ensure lessons learnt can be incorporated. For example, this has led to the inclusion of an extensive field mobile computing program to support the rollout and ongoing meter faults and maintenance programs; and
- applying the lessons learnt from the introduction of full retail contestability to extensively automate business processes and rules early, particularly where there are significant increases in transaction volumes to avoid large scale increases in back office staff.

[12] Gartner is one of the world's leading information technology research and advisory companies. For more information refer to their website http://www.gartner.com/.

CitiPower's IT project estimation process for AMI related IT costs for the period 2012-15 involved six key steps. The level of detail for each step may vary, depending on the complexity of the project, the amount of information that is available and the period of time that it is being assessed in advance of implementation. The six steps broadly involve:

- **identifying the need for the project** - the first step is to identify the need for the project, which will be typically identified from either an initiative, issue or business strategy from either the IT unit or other business units. Initially this may just be a concept or a required outcome and may contain limited detail;

- **validate and clarify** - this step involves working with the initiative owner to further clarify details of the requirement, helping identify high level customer and business benefits to a level of detail appropriate for the scope of the estimate;

- **identify options** - this step involves identifying the most suitable system and application area for the initiative. The IT application owner will then review the requirement and assess the best approach. This could include an update or change request to an existing system, purchase of new complementary software, in-house development or replacement of existing software and/or hardware. This approach will be based on previous project experience and will align to the IT strategy and policies;

- **preliminary costing** - this step involves generating IT estimates using an individual project approach. A high level cost will then be established that includes:

    - hardware costs - all new hardware and upgrades to existing hardware, maintenance of performance and security of systems;

    - software - packaged and in-house developed, it will include new, upgrades and increases in licensing, costs for this will be based on known materials, and known user numbers;

    - external labour[13];

    - IT internal labour[14]; and

    - ongoing IT operational costs will also be considered and costed.

    The estimate will be created using current day dollars and will be based on previous IT projects and the experience of the application manager. Closer to the implementation of the project, indicative quotes may be requested from vendors for validation against internal estimates.

[13] External contractor rates are based on current industry rates and are system/application and contracting company specific. The Hays salary survey and guide http://www.hays.com.au/salary/default.aspx can be used as a source of information along with current rates paid to existing and previous contracts and agency personnel.

[14] IT hourly labour rates are established using an average of IT salary charges, for 2010/2011 this is $80 per hour.

The volume is determined on a project specific basis. For example, if the project involves an upgrade of the infrastructure system which allows for an increase in transactional loads, the volume is based on the number of customers and the frequency of meter reads. If the project involves an upgrade of a computer system, the volume is based on the number of computers, users and licences.

- **socialise -** this step involves circulating the cost estimate to the IT management team, the General Manager IT and the business unit, as appropriate, for review and initial approval of:
    - the high level business requirement;
    - the cost estimate; and
    - the proposed year for implementation and the estimated time to complete.

  If the estimate does not meet requirements it will be returned to the application manager for further clarification and development or alternatively the estimation will not proceed.

- **detailed estimations, quotation and approval** - this involves undertaking detailed estimations and obtaining quotations. This may take weeks or months depending on business requirements and the urgency of those requirements. Processes for gaining approval for the final estimation and ultimately for the project will be done in accordance with financial guidelines, IT project management methodology and Capital Investment Committee processes. Refer to the Attachment 52 which provides a description of the investment evaluation process[15].

Key factors that have influenced the IT capital expenditure forecast for CitiPower for the next AMI Budget Period include:

- expanding infrastructure to manage data growth;
- technical upgrades of a number of key systems including Itron Enterprise Edition (IEE), NMS, Market Transaction System (MTS) and Oracle Fusion,
- integrating AMI back into BAU activities; and
- lessons learned from the implementation to date.

6.7.2 Lessons learned so far

The design and development of the AMI systems to date has given the Business greater insight into and understanding of the following:

[15] The Governance Framework describes the business' current and future investment evaluation process.

- vendor software systems are still maturing, particularly for Australian market rules, requiring more technical upgrades than originally planned;

- global uptake of AMI has been strong, ensuring Victorians ultimately benefit from enhancements by global software companies. However, this has also resulted in some scheduling and priority problems for the Business;

- the global financial crisis resulted in some consolidation of chosen technology vendors (eg: Oracle purchased Sun Microsystems) as well as staffing caps imposed by one United States based technology provider resulted in some delivery date slippage;

- AMI specification delivery schedule has been extended such that key functionality of remote energisation and de-energisation will be delivered in 2011; and

- systems integration effort has been significantly higher than originally planned stretching the availability of certain IT skills.

6.7.3 System agility

CitiPower's IT infrastructure has been built with agility by design. It was recognised very early in the AMI program that systems will need to be available and change as greater understanding was gained through the number of new and evolving AMI technologies being released.

The technologies used to build in agility so far are:

- are the use of the CitiPower's *'open systems'* which have been in place since 1999;

- the use of Oracle Fusion for service related integration;

- the use of VMWare for server virtualisation;

- the use of blade technologies to reduce the footprint and aid in rapid deployment;

- using commercial *'off the shelf'* software rather than customised software; and

- centralised identity management to enable management of many users across multiple systems.

It is also important to note CitiPower has faced a number of challenges while working with product vendors while trying to achieve an agile environment. This is because in the early stages of technology evolution, not all vendors within the AMI industry fully support agile environments. As an example, SSN would not certify the install of their products onto virtual environments.

To provide independent assurance as to the agility of the CitiPower's IT systems, Deloitte were engaged to conduct a similar agility review to that it conducted for SP

AusNet for the purpose of the Electricity Distribution Price Review. Deloitte concluded CitiPower's IT systems are indeed amongst the most agile in its industry and further, have embraced virtualisation across its IT environment. A full copy of the Deloitte report is provided in Attachment 46.

6.7.4 Program 2012-15

CitiPower and Powercor Australia operate from a single IT platform, thus delivering significant operating efficiencies. The approach agreed between the Businesses for allocating costs is based on the rule if a system is considered volume related, then costs are split based on customer numbers of each Business (70 per cent Powercor Australia, 30 per cent CitiPower). If the systems are non-volume based costs are split 50:50.

A number of AMI systems and associated infrastructure are shared with Standard Control Services. For clarity the table below identifies those systems that are shared.

System name	Used for Standard Control Services	Used by AMI	New system, funded by AMI
OMS/GIS Smallworld	Yes	Minimal	No
SAP ERP	Yes	Yes	Increment
Globalbscape FTP	Yes	No	No
SAP Portal Internal	Yes	Yes	No
SAP Portal External (AMI System)	No	Yes	Yes
SAP Portal External	Yes	No	No
Citrix	Yes	Yes	Increment
Control Room Systems	Yes	No	No
SCADA	Yes	No	No
Call Centre Systems	Yes	Yes	Minimal increment
Service Suite (Mobility)	No	Yes	Yes
Infra Service Desk System	Yes	No	No
Quantum	Yes	No	No
Asset Inspection - FMC	Yes	No	No
Utility IQ	No	Yes	Yes
Itron IEE/MTS	No	Yes	Yes
USB	No	Yes	Yes
CISOV	Yes	Yes	Increment
Sharepoint	Yes	Minimal	No
Exchange	Yes	Minimal	No
PABX	Yes	Yes	No
SAP BI	Yes	Yes	Increment

Table 21: Split of IT applications between Standard Control and AMI services

As can be seen, the AMI applications for which funding was sought through the previous Budget Application are generally stand alone systems in that they are not shared with Standard Control Services eg: ITRON IEE/MTS, USB. Where funding was sought through AMI on a shared application, it was based on the incremental costs associated with adding a new module to an existing system eg: SAP, CISOV. The IT application expenditure for the next Budget Application period is considerably less and, in most cases, is limited to IT applications used exclusively for AMI.

The infrastructure on which Standard Control Services and AMI applications operate are complimentary and are based on existing standards, that is Sun Sparc - Sun Solaris, HP AMD Blade - Windows and HP AMD Blade - Redhat Linux. The storage platform is also the same, SUN (HDS) USP 9990V however different storage configurations are used for AMI (UIQ system for high throughput requirements). CitiPower has been mindful of the potential duplication in infrastructure expenditure between Standard Control Services and AMI services. As a consequence, in determining the infrastructure requirements for the next Budget Application period the Business has determined its infrastructure needs based on an application by application basis.

The key IT components of the AMI program are presented below:

	2012	2013	2014	2015
Asset management	60	-	-	-
Workforce scheduling and mobility	1,992	1,275	60	110
Connection point management	2,302	-	140	-
Outage management	126	36	-	-
Network management	710	1,960	409	410
Meter data management	1,947	922	527	527
Performance and regulatory reporting	285	285	285	285
Revenue management	260	120	-	-
IT program management	300	300	300	300
Infrastructure	893	936	1,952	1,301
Total	**8,875**	**5,834**	**3,674**	**2,934**

Table 22: IT capital expenditure ($'000 2011)

The costs associated with IT expenditure are included under clauses S2.1(b)(1)(ii) and S2.1(c)(vi) of the Scope Document.

The following figures identify both an overview and an alternate functional representation of CitiPower's AMI architecture.

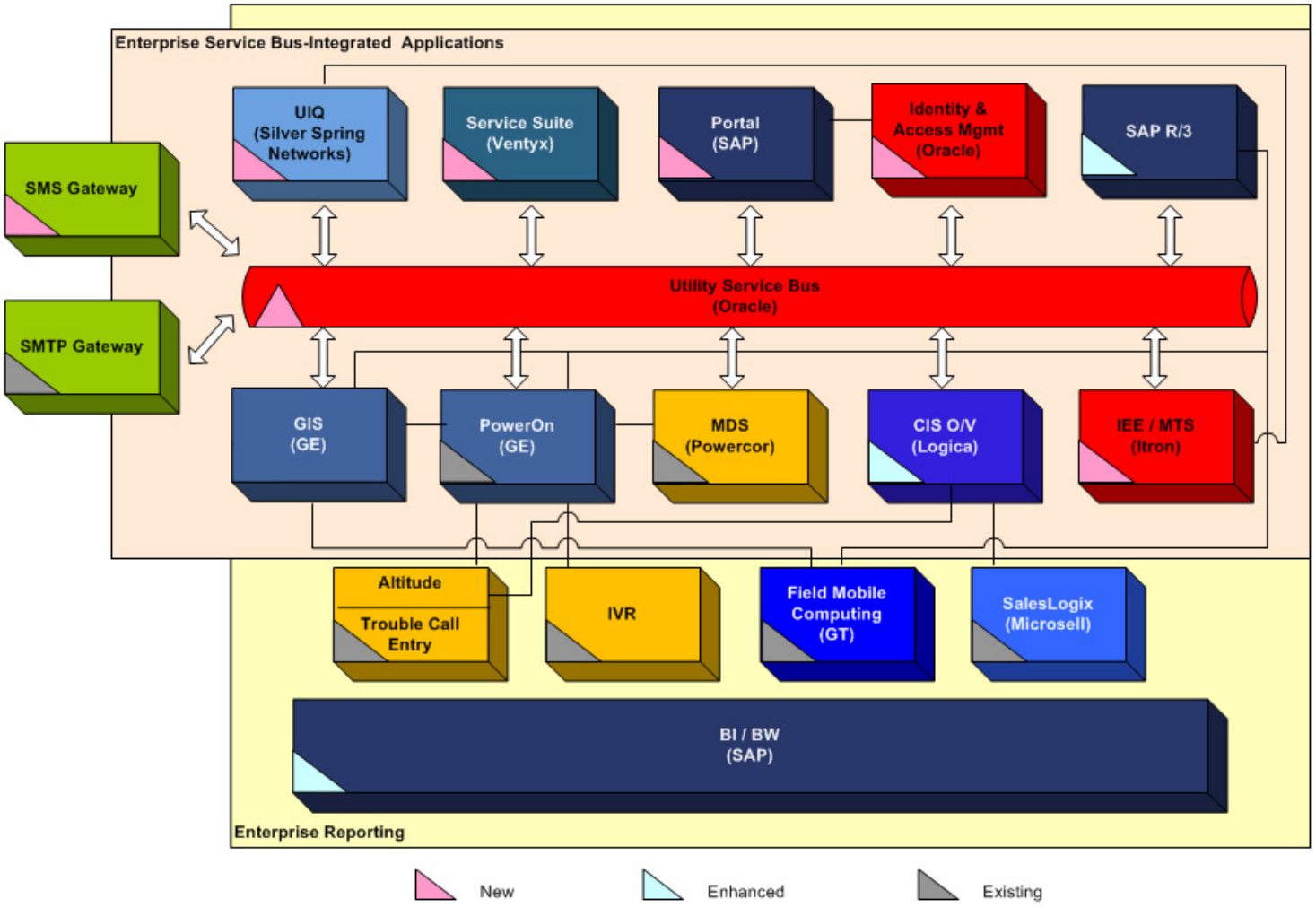

Figure 9: AMI architectural overview

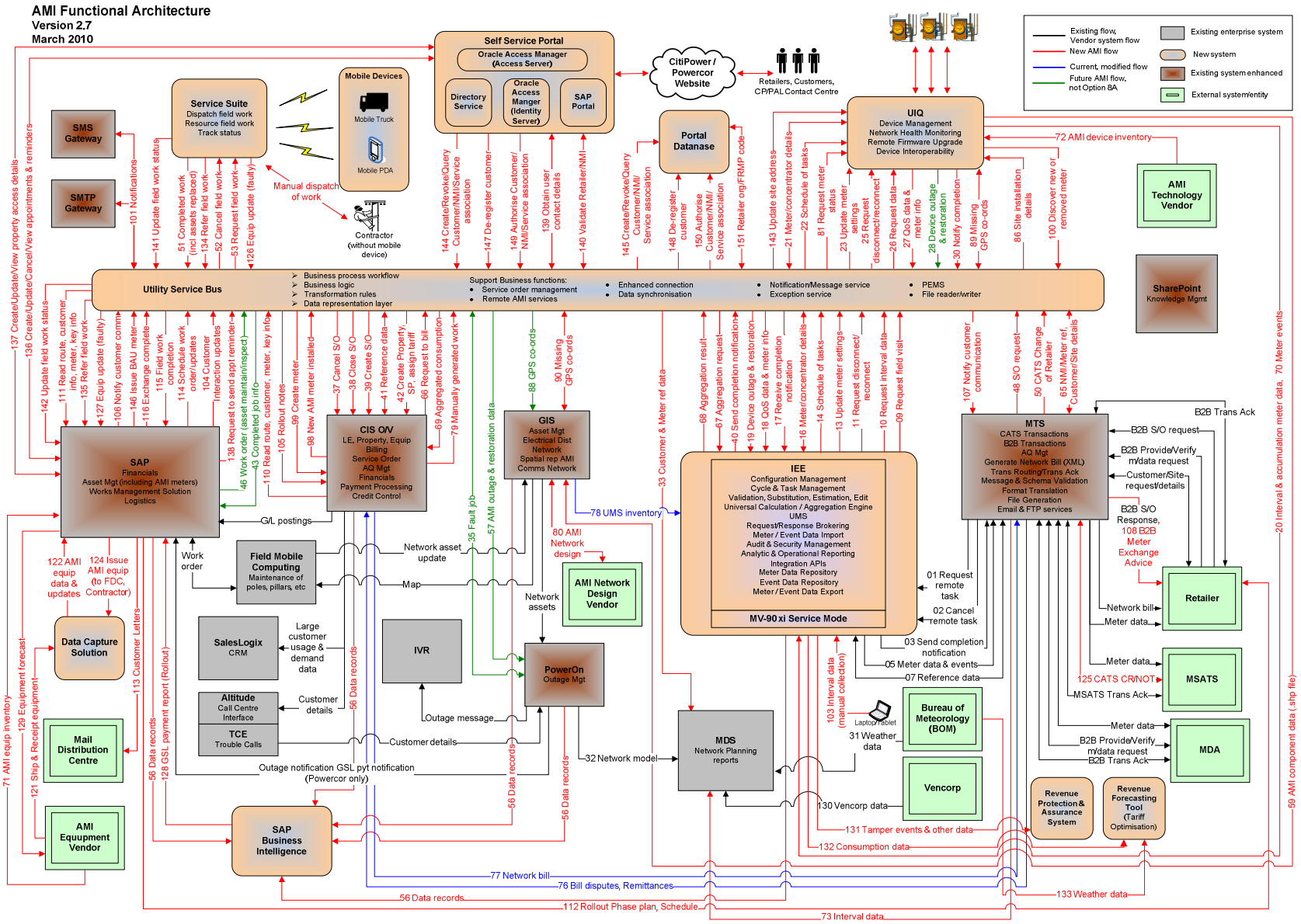

Figure 10: AMI functional architecture

The following sections provide a brief scope of the IT program under each major project. Please note all quantitative references in the remaining sections of 6.7 refer to the joint program i.e. CitiPower and Powercor Australia.

6.7.5 IT program management

The IT AMI program has probably been the most complex project ever undertaken by the CitiPower. For CitiPower the management complexity included at its peak over 40 separate projects and a peak resource requirement of over 170 people.

Due to the management complexity, a specific program management resource was established and allowed for in previous AMI Budget Period. The activities, and hence the costs, of the IT program management office diminish considerably over the next Budget Application period. Some program management costs will continue to be incurred to manage a total IT program of over $30M across CitiPower and Powercor Australia involving replacement and refreshes of systems established over the period 2008-11. It will also involve architecture and solution design work in support of the IT program in addition to end to end test management and release management support. As a consequence CitiPower has allowed for a scaled down program management function based the equivalent of 2.5 full time equivalents.

6.7.6 IT infrastructure

The increased functionality and services under AMI required a complete transformation of CitiPower's IT architecture with a specific focus in moving towards a near '*real-time*' '*non-stop*' environment in the following areas:

- increasing server capacity to cater for new and upgraded applications with high transaction throughput requirements;
- upgrading storage and backup infrastructure to accommodate increased data volumes with varied data retention and archiving requirements;
- upgrading networks in support of systems availability to match the near '*real-time*' requirement;
- up scaling of the current Disaster Recovery (**DR**) facilities to cater for new near '*non-stop*' and increased processing requirement; and
- introducing new technologies and efficiencies in the areas of:
  - virtualisation;
  - blade servers;
  - security and portal infrastructure;
  - Oracle database management; and
  - enhanced monitoring capabilities across the architecture landscape.

Although much of this transformation has taken place during the period 2009-11, the requirement for greater storage and backup capacity continues over the period 2012-15 as more AMI infrastructure is rolled out across the network in line with meter and data volume growth.

To identify the growth in processing and storage required each year, a detailed analysis of the proposed transaction volumes has been undertaken based on the minimum service levels. Other key factors considered within the architecture were the flow on effect increased transaction volumes would have on sub infrastructure. These included:

- during times of systems outages transactions will continue to arrive and will need to be processed in parallel once systems are restored;
- disaster recovery facilities designed to cater for extended outages, planned or unplanned;
- the increased data storage volume will require a significant increase in backup and restore capability; and
- the increase in infrastructure (servers, storage) has resulted in the need to expand data centre facilities including power, water supply and air conditioning, smoke detection and fire suppression equipment.

Figure 11 below provides an example of the growth in data storage volumes over the AMI rollout period.

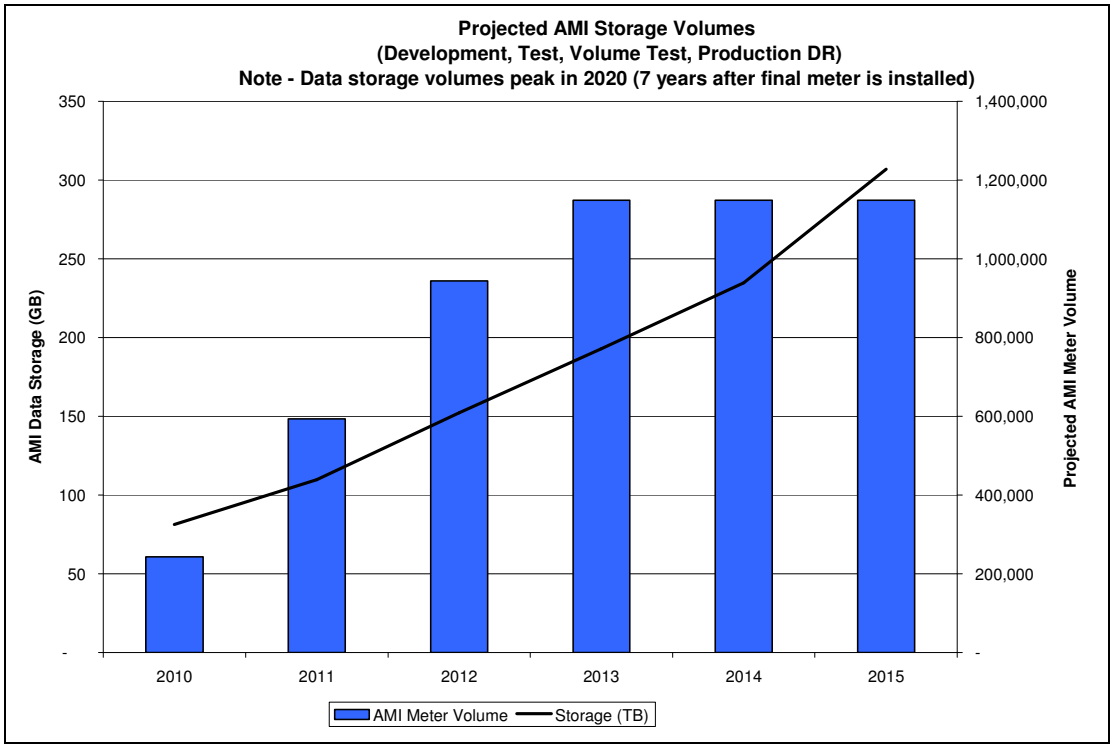

Figure 11: Projected AMI storage volumes (CitiPower and Powercor Australia)

It should be noted that the infrastructure retirement and replacement program will commences in 2014. This will see the original AMI assets, purchased in 2008, replaced in line with warranty and asset life cycle polices.

6.7.7 Workforce scheduling & mobility

CitiPower's Initial Budget Application included a field mobile computing program that has, and is continuing to, enable a more efficient and effective delivery of the AMI meter exchange and customer response process through:

- automating the dispatch of service orders and tracking the progress of field crews associated with exchanging and commissioning of meters and access points;

- delivering savings in reduced travel times due to:
  - more efficient route planning;
  - increases in home starts;
  - more efficient allocation of re-scheduled installation work;
  - reduced fleet costs; and

- providing a scheduling and dispatching solution to automate the metering and communication fault response processes to efficiently manage the increased faults expected to arise from the implementation of new technology and multiple failure points.

Minor enhancements and selected field device replacements will be necessary over the AMI Budget Period to ensure the field mobile computing systems remain current and functional.

6.7.8 Meter data management

The AMI program required a new Meter Management System (**MMS**) to manage the AMI meter data processing requirements and provide the platform for integrating multiple meter data collection technologies with back office applications. In preparing for the AMI program, CitiPower undertook extensive software market assessments and reference checks in considering an appropriate market data system. The preferred solution identified by CitiPower was the **IEE** system.

IEE manages and processes the increased interval meter data volumes, file formats and market standards for AMI data collection. It:

- automatically polls, collects and validates meter data;

- holds reference data such as premise and market participant information;

- manages missing data;

- performs scheduling and tracking of remote tasks;

- generates substituted data (at interval and day level) for delivery to the market where actual data from the AMI meters is not received. The substituted data is versioned out once actual data is subsequently received by the NMS;

- performs estimations - forward usage estimates for accumulation meter data;

- processes settlement data – including actuals, substitutes and forward estimates for accumulation meter data;
- performs aggregation on interval data for billing purposes;
- generates metering data for un-metered supplies;
- integrates with the new NMS systems;
- assists with Energy Profile modelling;
- processes market data for responsible participants; and
- provides a repository for meter data usage.

The IEE system will require ongoing investment in the 2012-2015 period to ensure both functional & technical elements remain current.

6.7.9 Market transaction system

With the onset of the AMI, the Business's Market Transaction System (**MTS**) has had to be totally rebuilt by the product vendor to service higher market demands associated with the significant increase in meter exchange volumes, and the onset of daily delivery of interval meter data to the market.

MTS manages and processes the increased Consumer Administration and Transfer Solution (**CATS**) and Business to Business (**B2B**) data volumes, file formats and market transactions. It:

- manages all transactions to and from the market; and
- validation and tracking of market transactions;

This system will need continued investment into the future Budget Period to ensure CitiPower remains market compliant, particularly as the market rules evolve to support AMI demands to match meter volume and functionality needs.

There will also be some small additional licensing costs incurred as the volume of meters grows.

6.7.10 Network management

One of the key systems within the AMI solution is the NMS, this is provided by the UIQ software from SNN. NMS is the system ultimately responsible for managing the communications infrastructure and ensuring timely ongoing access, through the chosen communications technology, to all meters.

The NMS:

- manages and administers meters and access points remotely;
- provides event management and maintains ancillary data;
- facilitates metering asset maintenance;
- ongoing collection of meter reading data;
- transmittal of event information to and from the meter;
- alarm and alert functions for communication failures; and
- delivery of meter and communications access point firmware upgrades.

Currently there are no standards for NMS software, as the solutions are proprietary and tightly linked to the technology selected. Further, NMSs (as are all AMI systems) are still very early in their evolutionary lifecycle. Due to the immaturity of the NMS, and related technology, it can be reasonably expected there will be a number of new releases and bug fixes required as the vendor come to terms with the planned functionality and scale and volume of operation proposed. CitiPower anticipates the NMS will continue to be a high risk area presenting significant challenges during installation, integration and ongoing operation. As such, an allowance has been included each year for technical and functional upgrades.

Additionally the NMS systems offer enhanced capability for *connection point management* – trialling of connectivity with retailer in home displays (**IHD**) and home area networks (HANS), development of portal to allow customers to access their interval meter data and providing call centre agents the ability to check dynamically whether a customer's premise is on supply in responding to a trouble call inquiry;

6.7.11 Data analytics and reporting

The 2012-15 period will see the further exploitation of Data Analytics to meet the continued change from reporting using quarterly meter data to half hourly data. CitiPower and Powercor will require a significant change in the analysis of this large quantity of interval data, this has borne the need for the introduction of Data Analytics tools in support of ongoing regulatory, financial, and business reporting needs.

6.7.12 Other

Minor costs (less than $1m over the period 2012-15) will be incurred across a number of the other IT capital expenditure categories including connection point management, performance and regulatory reporting, revenue management and logistics management. Projects under these categories include:

- **revenue management** – minor enhancements of reporting intelligence to tighten loss detection process and minor system costs associated with managing network tariffs;

- **logistics management** – minor costs associated with decommissioning the AMI rollout project; and

- **AMI Security –** continued enhancements to AMI Security functionality to meet increasing demand on securing smart metering technologies.

6.8 Program governance and management

Clauses S2.1(b)(x) and (xii) of the Scope Document allow for the recovery of costs associated with program governance and management and provision and implementation of change management, training and business continuity plans. In order to deliver the project in the most efficient manner, CHED Services is providing these services to both CitiPower and Powercor Australia.

As expected in any major project, the program governance and management requires highly skilled individuals, capable of delivering the AMI projects on time and on budget. Upon completion of the AMI rollout, the program governance and management/change management group will close out the program; and only the areas that will become part of the new AMI metering business unit will remain.

The key aspects of the AMI program governance/change management costs relate to:

Project management office (PMO) - The PMO is responsible for managing the AMI program governance, both from an internal and an external perspective. From an external perspective, the PMO has responsibility for representing CitiPower at the government and industry level. From an internal perspective, the PMO has both a planning and a supervisory role and is responsible for ensuring that the AMI program is managed efficiently. The key PMO functions essential to effectively implement and oversee the AMI program are listed below:

- ensuring a complete, co-ordinated program plan is in place across CitiPower, along with associated monitoring, controls and reporting measures. This includes implementing audits and quality assurance (this expenditure is covered by clause S2.1(b)(2)(xi)(D) of the Scope Document;

- ensure that outstanding project issues are identified, assigned to the relevant areas and resolved in the required timeframe and manage a matrix/register of program risks across CitiPower that relate to the AMI program of works. This includes the development of AMI program budgets and forecasts (this expenditure is covered by clause S2.1(b)(2)(xi)(G) of the Scope Document).

- developing an appropriate business structure to support the works program and the ongoing change and reporting requirements. This includes preparing regulatory reports and collating meter installation metrics so as to meet the

informational requirement of the AER (this expenditure is covered by clause S2.1(b)(2)(xi)(G) of the Scope Document); and

- participation in State and national industry activities related to industry co-ordination, industry governance and developing related cross industry material (this expenditure is covered by clause S2.1(b)(2)(xi)(A) of the Scope Document).

Business transformation - The AMI program has required a major reorganisation within the Business including development of new business capabilities and support for existing operations to ensure continuity of current performance levels. Most will be finalised by the end of 2011, except for the following:

- *resource management* - oversees the allocation and accommodation (i.e. available desk space) of resources to each of the groups within the AMI program. This is important in order to schedule and facilitate the short term increases in Full Time Employee (FTE) numbers and the peaks associated with providing project support.

- *transition planning and implementation* - required to successfully transition AMI from a program focus to the BAU mode. As projects are consistently delivered there will be a focus more aligned to an operational approach. This will mean the reassignment of process and responsibilities.

CHED Service's costs in relation to program governance and management have been allocated between CitiPower and Powercor Australia based on customer numbers (70 per cent Powercor Australia, 30 per cent CitiPower). These costs are allocated to direct capital for the rollout period and expensed afterwards, in accordance with CitiPower's current statutory accounting policies.

Table 23 below summarises the key components of program governance and management for the regulatory period 2012-2015.

	2012	2013	2014	2015
Project management office	1,910	1,498	1,429	1,287
Business transformation	209	78	-	-
Total	**2,119**	**1,576**	**1,429**	**1,287**

Table 23: Program governance and management ($'000 2011)

The following table shows the forecast treatment of program governance and management/change management costs.

	2012	2013	2014	2015
Project management costs capitalised	2,119	1,576	-	-
Project management costs remaining expensed	--	-	1,429	1,287
Total	**2,119**	**1,576**	**1,429**	**1,287**

Table 24: Allocation of program governance and management ($'000 2011)

After the rollout finalises, the PMO will become part of the management of the new AMI business unit, ensuring that the AMI business unit runs smoothly and is able to deliver to the regulatory standards.

The key projects expected under program management once the rollout reaches its final stages relate to the following:

- **operational review**: once the rollout finalises the Business is going to be left with a sophisticated AMI business unit that is far more complex than the pre-existing metering business. In order to manage the transition from rollout to BAU, a comprehensive operational review is envisaged in order to help the business transition in a cost effective manner. The operational review is expected to highlight key risk areas and areas with potential for process improvement.

- **review of the meter supply contracts**: relates to the end of the third party purchasing contracts that were negotiated for the purposes of the AMI rollout. The Business is forecasting for legal and consulting services in relation to the closing of the current contract and agreements and the scoping of the new agreements that will be required for metering BAU activities.

7. Operating costs

Operating activities to support current metering services currently fall into the following categories: meter data services, operation and maintenance of IT, communications operations, backhaul services, customer services, meter maintenance, and executive and corporate office services.

Year ending	2012	2013	2014	2015
Meter data services	1,909	1,701	1,321	982
Meter maintenance	1,420	1,451	2,795	2,662
Customer service	2,722	2,221	507	523
Backhaul communications	45	71	73	74
Communication operations	1,323	1,323	1,323	1,322
Project management	-	-	1,429	1,287
Executive and corporate office services	300	309	403	392
IT	6,007	6,092	6,240	6,308
Total	**13,726**	**13,167**	**14,090**	**13,551**

Table 25: Total operating and maintenance expenditure ($'000 2011)

This section discusses changes in operating costs associated with metering, in particular the AMI program. The majority of these activities are performed by CHED Services under contract to CitiPower. All activities reported in this section fall within the scope of activities outlined in the Scope Document.

7.1 Meter data services

Meter data services must be provided under the AMI program in addition to meter data services provided for meters which have yet to be converted to smart meters. The costs incurred for the provision of these services fall under clauses S2.1(a)(ii) and (iii), S2.1(b)(1)(iii) and S2.1(c)(ii) and (iv) of the Scope Document.

Meter data services are services associated with the collection, validation and provision of data to the market.

Meter data service costs are driven by the number of FTEs necessary to ensure the delivery of the AMI program.

Meter data management involves the collection and verification of data, processing of data from meters, including validation, estimation and substitution of data, management of National Meter Identifiers (**NMIs**), handling of market participant requests for data and the provision of data to the Australian Energy Market Operator (**AEMO**). The meter data management team must satisfy all industry service compliance levels, including AMI specific regulations. The *Service Levels Specification* requires that from 1 January 2012:

- 95 per cent of actual data must be available to the market by 6am the following day;

- 99 per cent of actual data must be available to the market within 24 hours; and
- 99.9 per cent of actual data must be available to the market within ten business days.

The main cost component of meter data management is labour. The Business requires additional FTEs to manage the increased volume of meter data collected and processed and the new regulatory obligations in relation to the data provided to the market. FTEs are directly impacted by changes in data exception rates and meter data volumes.

Meter data volumes are expected to increase as the AMI rollout progresses. This is because AMI meters will be producing data at half hourly intervals, in contrast to current meters which are manually read every quarter. This will in turn lead to an increase in meter data requests from retailers which must be processed. Hence, CitiPower expects a modest increase in the number of FTEs in the initial years of the regulatory period. As the rollout progresses, efficiency gains are expected as more data per FTE is able to be processed. This will result in less Business need for resources over time and as a consequence, CitiPower anticipates a decrease in FTEs by 2014.

As discussed, FTEs are directly impacted by changes in data exception rates. Identifying and addressing data exceptions are a core part of meter data management. Data exceptions refer to data which cannot be processed mechanically, but must be processed manually. This is because the data has been identified by systems as failing validation. Data can fail validation for a number of reasons, including where remote or manually read metering data collection systems have failed, where the metering data has been irretrievably lost, or where the metering data is found to be erroneous or incomplete.

Data exceptions must then be processed manually and may be addressed by substituting or estimating data based on the particular customer's load profile and previous consumption. The processing of data exceptions is labour intensive and an increased volume of re-reads is expected as a result of the smart meter infrastructure creating multiple points of potential failure in the AMI system. For example, meters, communications or back office systems may generate larger and additional error queues. Exception rates have been steadily increasing over the previous budget application period, and it is expected that data exception rates will increase over the period 2012 to 2015.

Over the year 2010 meter data services costs were higher per year compared to the 2012-15 period. The higher costs during this period relate to CitiPower managing the manually read meters data in addition to preparing for remotely read meters.

Over the period 2012-15 expenditure on meter data services will steadily decline. This is because while there are complexities associated with the AMI program requiring additional data management, manual meter readings costs will decline as meters are progressively rolled out and data processing business efficiencies are achieved from 2013 onwards. CitiPower, however, submits that complexities associated with the AMI program will remain a significant part of expenditure on meter data services.

These include costs arising from data management, which will have a greater impact at the beginning of the regulatory period than at the end.

7.2 Operation and maintenance of IT

AMI related IT systems require support for them to remain operational to the required service levels on a 24 hour 7 days a week basis. IT maintenance will be provided by both in-house and external resources. Costs associated with IT maintenance are covered under clauses S2.1(a)(v), S2.1(b)(iii) and S2.1(c)(vi) of the Scope Document.

Maintenance on an in-house basis will be provided for BAU arrangements, during the AMI program and post the AMI rollout. Maintenance costs incurred externally include costs with respect to external software support and maintenance, external hardware support and maintenance, infrastructure support provided by CSC and internal labour to support AMI systems. The split between in-house and external provided costs is approximately 50:50.

In-house costs associated with IT maintenance across CitiPower and Powercor Australia include four FTEs to manage the Service Suite maintenance contract and provide production support to the Business, two FTEs to support Data Analytics, five FTEs to support IEE maintenance and support, four FTEs to support UIQ, five FTEs to support the USB and five FTEs to support infrastructure.

The support and maintenance costs payable by CitiPower to third parties for operation and maintenance of IT include:

- software maintenance fees that provide for access to the latest versions of the software including bug fixes;
- hardware maintenance fees that provide for the necessary monitoring and repairs and maintenance of the assets;
- data centre charges to house and operate the additional equipment;
- disaster recovery testing charges continuing the program of two tests per year;
- additional telecommunication charges resulting from increased capacity links with the national market and the introduction of field mobile computing; and
- consumable items such as disks, tapes, etc.

IT operating and maintenance costs will grow over the period 2012-15 compared to 2009-10. This is to be expected as the initial phase of the AMI program concentrated on the development of the necessary IT infrastructure to support the AMI rollout. As the various systems move into production from 2011, support is required to ensure the various systems remain operational and manage any minor changes to ensure they remain compliant with any externally imposed obligations.

7.3 Communications operations

Communications operations refers to functions which presently fall outside CitiPower's core areas of expertise and are required in order for CitiPower to meet strict performance levels for AMI. The costs associated with communications operations fall within clause S2.1(b)(1)(i) of the Scope Document.

Communications operations involve four work streams:

- AMI Technology, which provides management expertise with respect to the AMI project and is also responsible for fault detection, fault investigation, fault resolution and reporting;

- AMI Communications Control, which is responsible for operational aspects of the AMI network, including meter data delivery and prescribed market transactions;

- Technology Acceptance, which is responsible for quality testing, regression testing and functionality testing of new firmware and software released by SSN and other meter providers; and

- Home Area Network Support, which is responsible for assessing and testing HAN technology and its compatibility with the AMI meters and CitiPower network.

Over the 2009-10 period, due to the delay in the end to end integration of the systems, the communications operations functions were deferred, resulting in lower actual costs than anticipated in the original forecast. From 2010 to 2012 the communications operations expenditure will ramp up with the end to end integration of the system completed.

From 2012-15, expenditure on communications operations will remain constant. The communications operations functions, which involve the day to day operation of the communications systems of the Business, will continue even after the AMI rollout is completed.

7.4 Telecommunication systems WAN/backhaul

The AMI program requires communication between access points/meters and CitiPower. CitiPower uses a mesh radio network which allows backhaul communications to cover links between access points and data and disaster recovery centres. Expenditure with respect to telecommunication systems falls within clause S2.1(b)(1)(i) of the Scope Document.

In determining a telecommunications service provider, CitiPower relied on the expertise of Gibson Quai AAS, Australia's leading telecommunication advisors. Gibson Quai AAS were asked to evaluate 25 possible communications technology options and to assist the Business in evaluating the results of its backhaul communications RFP.

Telstra is CitiPower's backhaul communications service provider. Telstra were selected on the basis, through trials with other service providers, that only Telstra could adequately service CitiPower's network territory. Telstra outperformed other candidates in terms of network configuration, geographic coverage, service reliability, service support and cost. A copy of the Business evaluation for each service provider is attached and marked Attachment 48. Telstra was the only carrier who could provide a managed service from the modem to the data and disaster recovery centres, and effective coverage across all access points to allow data to be continuously transferred with minimal risk of interruption.

The backhaul costs are based on contractual unit rates with Telstra and CitiPower's forecasted meter volumes. Unit rates are based on a fixed annual service charge and an annual variable charge, with total cost dependent on the number of access points and point to point connections. Unit rates will be constant over the regulatory period.

Overall, backhaul communication costs will increase until the completion of the AMI program in 2013 and thereafter remain relatively constant.

Backhaul communications are an ongoing requirement after the rollout.

7.5 Customer service associated with AMI technology

Customer service includes costs associated with managing the customer interface. These costs can be broadly classified as call centre, customer interaction and treatment and revenue management and fall under clauses S2.1(b)(2)(iii) and S2.1(c)(v) of the Scope document for CitiPower.

All customer service costs reported in this Application are for costs associated with metering. Costs are generally incurred for particular projects which are discrete and mutually exclusive from customer service projects related to non-metering issues.

Customer service costs are driven by the number of FTEs necessary to ensure the delivery of the AMI program.

7.5.1 Call centre

With respect to the call centre, costs are primarily driven by the number of FTEs which is determined by forecast call rates and average time taken to resolve a customer call. These calls relate specifically to metering issues and, based experience to date, CitiPower anticipates that approximately 32 per cent of meter exchanges will result in an incoming customer call, with each call expected to take an average of 500 seconds to handle. This is because the greater complexity of the AMI meter has generated enquiries with respect to meter functionality, meter readings, installation costs and load management.

7.5.2 Customer interaction and treatment

Customer interaction and treatment covers activities such as access resolution, defect resolution, information pack production, claims and complaints. Customer interaction and treatment also includes costs associated with operational training, developing communication plans, ensuring AMI customer management processes are developed and adhered to for customer compliance and complaints.

The main cost drivers are labour costs, contracts and services. The contract and services costs are driven by post and courier charges and stationary and printing. Post and courier charges are calculated from volumes of meters which drives the volumes of meter mail outs multiplied by the cost of the mail. There are also contract and service costs associated with external parties providing training and the running of customer focus groups and surveys.

The labour costs are forecast based on the product of exception volumes and the estimated time taken to resolve exceptions. Exceptions refer to refusal of an AMI meter, property defects and access issues. The exception rate forecast is 5 per cent.

7.5.3 Revenue management

Revenue management consists of two activities - billing and revenue protection. Billing involves verifying final meter reads. Final meter reads are collected and entered into the system and verified against previous meter readings to identify errors or issues. If final meter reads cannot be obtained, or meter readings are identified as unusual, the revenue management area will resolve the reading by using data from previous load consumption.

Based on past experience, CitiPower expects that approximately 12 per cent of final readings will give rise to error. Each reading is estimated to take 9.5 minutes to process for single phase meter replacements and 11.5 minutes for complex metering installation replacements. Type 5 meters will generate additional retailer enquiries regarding market data production.

Revenue protection involves identifying whether meters have been corrupted. CitiPower anticipates approximately 1.5 per cent of metering installations will require investigation, with each investigation necessitating a site visit expected to take an average of 85 minutes. Each visit will also require a report to be prepared which is expected to take 35 minutes on average to prepare.

Overall, CitiPower expects higher costs in relation to customer service in 2012 and 2013, relative to the period 2009-10, due to the progression of the AMI rollout. Upon completion of the AMI rollout in 2013, it is expected that these costs will decrease as public understanding of AMI improves and rollout concludes.

7.6 Meter maintenance

Meter maintenance must be provided under the AMI program in addition to meter maintenance provided for meters which have yet to be converted to AMI meters. The costs incurred for the provision of these services fall under clauses S2.1(a)(i), S2.1(b)(2)(v), and S2.1(c)(i) of the Scope Document.

Meter maintenance expenditure is largely driven by meter maintenance volumes and testing requirements. Maintenance requirements are detailed in CitiPower's Metering Asset Management Plan (**MAMP**), a copy of which is attached and marked Attachment 8. The MAMP has been approved by AEMO.

7.6.1 Meter testing

CitiPower is required under the *Electricity Customer Metering Code* and the NER to perform compliance testing on all AMI meters within two years of their first installation and further testing after ten years in services. These tests must be in accordance with the *National Electricity Market Metrology Procedure* (**Metrology Procedure**) and various Australian Standards. Thereafter, testing is required every five years. The budget for meter testing is based on these requirements.

In addition to mandated testing requirements, CitiPower requires testing in accordance with its own policies and procedures, including CitiPower's *Network Asset Management Policy*. CitiPower considers it prudent to regularly perform condition monitoring testing to monitor the physical condition and electronic metrology performance of meters. Regular condition monitoring testing enables the Business to detect early signs of degradation caused by factors such as load, extreme weather conditions and corrosive coastal environments. Early signs of degradation are then assessed and addressed on an ad hoc basis, allowing the flexibility to mitigate potentially substantive long term maintenance costs.

7.6.2 Validation of metering installations

Validation of metering installations involves the collection of data from a representative sample of meters and comparison of this data against meter data information currently stored. Validation of metering databases is required under the Metrology Procedure Part A and must be conducted in accordance with Australian Standards. Sample size is based on samples used in meter testing and validation must be conducted every twelve months.

Over the period 2009-10 the actual meter maintenance expenditure was lower than anticipated due to a number of meter test programs no longer required. From 2010-11, an increase in meter maintenance costs is expected due to the rollout of a number of new families of meters.

Over the period 2012-15, meter maintenance is expected to increase before decreasing in 2015. The meter maintenance costs are driven by the required frequency of testing and meter volumes, which varies from year to year.

7.7 Executive and corporate office services

Clauses S2.1(a)(vi), S2.1(b)(2)(xiii) and S2.1(c)(vii) of the Scope Document allow for the recovery of costs associated with executive and corporate office services. Clause S2.1(b)(xi)(G)of the Scope Document allows for the recovery of legal and regulatory costs including budget, charges and fee application processes.

Executive and corporate office services are mainly regulatory costs associated with the preparation of budget and charge applications and financial accounting costs. Also included are costs associated with the preparations for the 2016-20 Victorian Electricity Distribution Price Review (**Victorian EDPR 2016-2020**) which will incorporate metering (only the incremental costs associated with metering at the Victorian EDPR 2016-2020 have been included in this Application). As is to be expected, costs increase in 2014-15 as preparations commence for the Victorian EDPR 2016-2020.

8. Metering revenue requirement 2012-15

This section sets out CitiPower's revenue requirement for the AMI Budget Period. Required revenue has been calculated in accordance with the building blocks approach as prescribed by Section 5E of the AMI OIC.

Clause 4.1(b) of the AMI OIC requires the methodology to be used by the AER to be a *'building block'* approach including:

- a return on capital;
- depreciation;
- maintenance and operating expenditure;
- a benchmark allowance for corporate income tax; and
- any other building blocks required by clauses 5E of the AMI OIC.

In addition, clause 5E.3 of the AMI OIC requires that in using the '*building block'* methodology, the AER:

- provide for the maintenance and operating expenditure in the Approved Budget for the subsequent AMI budget period (the balance of the Approved Budget being the capital expenditure for that year;
- provide a return on capital for 2012 and 2013 using a Weighted Average Cost of Capital (**WACC**) calculated in accordance with clauses 4.1(h) and (i);
- provide a return on capital for 2014 and 2015 using a WACC calculated in accordance with clause 4.(j);
- for the purposes of calculating depreciation apply 4.1(g); and
    - for the purposes of a benchmark allowance for corporate income tax, apply clauses 4.1(e) and (f).

On 15 February 2011 the AER issued an AMI 2012-15 Charges Model. CitiPower has populated the cells indicated to be distributor data input fields.

The 2010 inputs are taken from tables of costs and quantities that have been derived from the draft Regulatory Accounts. They remain subject to audit and confirmation that they are within the meaning of the Scope Document. The report arising from the 2010 audit will be provided to the AER on 30 April 2011, in accordance with clause 5H.2 of the AMI OIC.

In accordance with clause 5H.1(b) of the AMI OIC, the differences between the forecast expenditure in the Final Determination and actual spend for 2010 is outlined below. Note that actual 2010 expenditure remains subject to audit.

	Actual 2010	Budget 2010
Capital expenditure	40,326	38,858
Operating expenditure	10,059	10,141
Total Opex and Capex	**50,385**	**48,999**
Revenue	**33,036**	**33,484**

Table 26: 2010 Actual and Budget expenditure ($'000 nominal)

The 2012-15 AMI data inputs are taken from CitiPower's Application.

The remainder of this section steps through each of the building blocks identified above.

8.1 WACC for the subsequent AMI WACC period

8.1.1 CitiPower's WACC parameters from 1 January 2012 to 31 December 2013

In accordance with the definition of *'initial AMI WACC period'* in the AMI OIC, the WACC parameters from 1 January 2012 to 31 December 2013 have been determined by the AER in the Final Determination for the 2009-11 AMI period.

8.1.2 CitiPower's WACC parameters from 1 January 2014 to 31 December 2015

Market observables for subsequent AMI WACC period

Clause 4.1(j) of the AMI OIC requires the market observable WACC parameters be measured in a period in 2013 proposed by the distributor and agreed by the AER. The market observables must be determined in accordance with the Statement of Regulatory Intent (**SORI**) issued by the AER pursuant to clause 6.5.4 of the NER.

The table below outlines CitiPower's proposed placeholders for the market observable WACC parameters.

WACC parameters	Proposed values
10 year risk free rate (nominal)	4.63
Debt risk premium	4.00

Table 27: Market observables for AMI period 1 January 2014 to 31 December 2015, per cent

Prior to 2013, CitiPower will submit a proposed measurement period for the market observables. Consequently, the approved market observables will replace the market observable placeholders as proposed above.

Non-market observables for subsequent AMI WACC period

Clause 4.1(j)(ii) of the AMI OIC requires the non-market observables to be determined in accordance with the SORI issued by the AER pursuant to clause 6.5.4 of the NER.

The table below outlines CitiPower's proposed non-market observable WACC parameters.

WACC parameters	Proposed values
Gearing (debt to equity ratio)	60.00%
Market risk premium	6.50%
Equity beta	0.8

Table 28: Non-market observables for AMI period 1 January 2014 to 31 December 2015

8.1.3 Debt raising costs

In accordance with clause 4.1(h) of the AMI OIC, debt raising costs for the period 1 January 2009 to 31 December 2013 is 12.5 basis points. CitiPower proposes a debt raising cost of 12.5 basis point for the period 1 January 2014 to 31 December 2015.

8.1.4 CitiPower's WACC parameters from 1 January 2012 to 31 December 2015

The table below sets out the WACC parameters from 1 January 2012 to 31 December 2015.

Parameter	2012	2013	2014	2015
Nominal risk free rate	4.63%	4.63%	4.63%	4.63%
Debt risk premium	4.00%	4.00%	4.00%	4.00%
Debt raising costs	0.125%	0.125%	0.125%	0.125%
Cost of debt	**8.76%**	**8.76%**	**8.76%**	**8.76%**
Nominal risk free rate	4.63%	4.63%	4.63%	4.63%
Equity beta	1.00	1.00	0.80	0.80
Market risk premium	6.00%	6.00%	6.50%	6.50%
Cost of equity	**10.63%**	**10.63%**	**9.83%**	**9.83%**
Value of debt as a proportion of the value of equity and debt	60.00%	60.00%	60.00%	60.00%
Value of equity as a proportion of the value of equity and debt	40.00%	40.00%	40.00%	40.00%
Inflation	2.56%	2.56%	2.56%	2.56%
Nominal WACC	**9.51%**	**9.51%**	**9.19%**	**9.19%**

Table 29: WACC parameters for AMI period 1 January 2012 to 31 December 2015

8.2 Inflation

Forecast inflation is not a WACC parameter as defined in the AMI Revised OIC. It is proposed that:

- actual inflation be based on the same method applied in the Final Determination for the 2009-11 AMI period and in the AMI OIC, that is inflation is calculated as CPI_{t-1}/CPI_{t-2} where CPI is the Consumer Price Index-All Groups Index for the Eight State Capitals as published by the Australian Bureau of Statistics for the September Quarter; and

- forecast inflation be assumed 2.56 per cent consistent with the Final Determination for the 2009-11 AMI period.

8.3 Metering asset base

Clause 5E.2 sets out how the opening value for the metering asset base must be calculated. That is:

$$Opening\ Metering\ Asset\ Base_{2012} = Opening\ Metering\ Asset\ Base_{SD} + Capital\ Expenditure_{IABP} - Depreciation_{IABP} - Disposals_{IABP}$$

Capital Expenditure$_{IABP}$ is actual capital expenditure in 2009 and 2010 (determined in accordance with clauses 5I.2 and 5I.10) and capital expenditure for 2011. Depreciation$_{IABP}$ is to be calculated on the Opening Metering Asset Base$_{SD}$ and actual capital expenditure in 2009 and 2010 (determined in accordance with clauses 5I.2 and 5I.10) and capital expenditure for 2011 using asset lives in accordance with clause 4.1(g) and Disposals$_{IABP}$ is actual disposals in 2009 and 2010 and forecast disposals in 2011.

The table below presents the calculation of the opening metering base. Capital expenditure is net of customer contributions.

	2009	2010	2011
Opening asset base	18,930	31,718	65,013
Capital expenditure	17,474	41,450	40,482
Depreciation	4,685	8,156	12,105
Disposals	-	-	-
Closing asset base	31,718	65,013	93,390

Table 30: Roll forward of the metering asset base 2009-11 ($'000 2011)

Capital expenditure for the period 2012-15 is described in CitiPower's Budget Application. Based on the Budget Application, the roll forward of the asset base from 2012 has been calculated as follows:

	2012	2013	2014	2015
Opening asset base	93,390	127,802	144,753	134,660
Capital expenditure	50,350	36,391	8,055	7,591
Depreciation	15,938	19,441	18,148	18,152
Disposals	-	-	-	-
Closing asset base	127,802	144,753	134,660	124,098

Table 31: Roll forward of the metering asset base 2012-15 ($'000 2011)

8.4 Return on capital 2012-15

Return on capital has been calculated each year by applying the WACC for the initial AMI WACC period to the average of the opening and closing asset base for that year.

8.5 Depreciation 2012-15

Clause 4.1(g) of the AMI OIC requires for the purposes of calculating depreciation, asset lives must be taken to be:

- 15 years in respect of remotely read interval meters;
- 15 years in respect of measurement transformers;
- 7 years in respect of telecommunications systems;
- 7 years in respect of information technology systems; and
- in respect of accumulation meters and manually read interval meters, a life ending no later than 31 December 2013.

In accordance with these requirements, CitiPower has adopted the asset lives specified under clause 4.1(g) of the AMI OIC. It has been assumed that assets are commissioned in the middle of the year in which the capital expenditure was incurred. Since a nominal WACC is applied to calculate the return on assets building block, depreciation is offset by inflation of the asset base.

8.6 Operating costs 2012-15

CitiPower has used the operating costs for the period 2012-15 consistent with its Application.

8.7 Taxation 2012-15

Clause 4.1(b)(iv) of the Revised OIC specifies an allowance for benchmark corporate income tax. Annual tax losses are forecast for 2012-15 and therefore the allowance for corporate income tax has been set to zero for 2012-15.

8.8 Total costs and total revenue

The main requirements governing revenue to be recovered, in a particular year, are set out in the following clauses of the Revised OIC:

- 4.1(o) - this requires that when determining charges for any year from 2010-2015 the regulator shall satisfy itself that the net present value of total costs (calculated in accordance with clauses 4.1(b) to (j)) from 2009 to that year is equal to the net present value of total revenue earned from 2009 to that year. This means that there is an effective true up of costs and revenues from 2009 to the price setting year; and
- 4.1(p) – this enables distributors to propose to recover revenue which is less than building block costs, and recover any under-recovered amount in later years.

Table 32 shows the total costs calculated in accordance with Revised OIC clauses 4.1(b) to (j), the true up of prior years' costs and revenues, and the amount of deferred cost proposed by CitiPower.

	2012	2013	2014	2015
Return on assets	10,512	13,285	13,497	12,820
Depreciation	13,514	16,871	15,816	16,511
Operating costs	14,078	13,850	15,200	14,992
Tax liability	-	-	-	-
Total costs	**38,104**	**44,006**	**44,514**	**44,323**
True-up of prior years' costs and revenues	4,349	8,347	12,754	10,858
Deferred cost recovery	7,622	11,681	9,944	-
Total revenues	**34,830**	**40,671**	**47,324**	**55,180**

Table 32: Metering service costs and revenues ($'000 nominal)

9. Price control mechanism

Clause 4.1(n) further provides that charges may differ is respect of the following service categories:

- single phase single element meter;
- single phase single element meter with contactor;
- single phase two element meter with contactor;
- three phase direct connected meter;
- three phase direct connected meter with contactor;
- three phase current transformer connected meter; and
- any other customer or metering class proposed by the distributor and approved by the regulator.

In accordance with these requirements, CitiPower applies the following three tariff categories:

- single phase;
- three phase direct connected; and
- three phase current transformer (CT) connected.

The table below summarises the proposed metering service charges for 2012 to 2015.

	2012	2013	2014	2015
Single phase	105.09	120.65	138.51	159.01
Three phase direct connected	137.36	157.69	181.03	207.83
Three phase CT connected	173.48	199.16	228.64	262.49

Table 33: Metering service charges ($ nominal per NMI)

As is currently the practice, CitiPower will continue to levy the meter service charges on a per NMI basis.

10. Conclusion

As noted, the AER must have regard for the AMI OIC process and matters when making a determination in respect of CitiPower's 2012-15 regulated AMI service charges. In particular, the AMI OIC requires that the AER have regard for the clause 4 and clause 5E in making its charges determination.

CitiPower confirms that in preparing this Budget and Charges Application, it has given effect to Clauses 4, 5A.2(b) and 5E of the AMI OIC.