Final decision

Advanced metering infrastructure review

SPI Electricity Pty Ltd

2012–15 budget and charges applications

Amendments pursuant to the Australian Competition Tribunal's Orders

February 2013

AUSTRALIAN ENERGY REGULATOR

Contents

Shortened forms

Shortened form	Description
AER	Australian Energy Regulator
AMI	Advanced Metering Infrastructure
AMI Order	The Order in Council made on 27 August 2007 by the Governor in Council under sections 15A and 46D of the Electricity Industry Act 2000 (VIC) as amended on 25 November 2008, 22 January 2009 and 31 March 2009
Approved Budget	Has the same meaning as in the AMI Order.
Capex	Capital expenditure
CPI	Consumer Price Index
DNSP	Distribution Network Service Provider
Energeia	Energeia Pty Ltd
JEN	Jemena Electricity Networks
Final determination	AER, *Final Determination: Victorian Advanced Metering Infrastructure Review 2012-15 budget and charges applications*, October 2011.
MDMS	Meter Data Management System
NIC	Network Interface Card
NMS	Network Management System
NPV	Net Present Value
Opex	Operating expenditure
Powercor	Powercor Australia Limited
Reconsideration Submission	SP AusNet, *Appeal by SPI Electricity Pty Ltd [2012] ACompT 11 - Reconsideration Submission*, 5 June 2012
Response Submission	SP AusNet, *SP AusNet's Submission in response to AER's Preliminary View on Amendments pursuant to the Australian Competition Tribunal's Orders*, 14 September 2012
Preliminary View	AER, *Preliminary View – Advanced metering infrastructure review – SPI Electricity Pty Ltd 2012-15 budget and charges applications – Amendments pursuant to the Australian Competition Tribunal's Orders*, August 2012
SP AusNet	SPI Electricity Pty Ltd (trading as SP AusNet)
Submitted Budget	Has the same meaning as in the AMI Order.
Tribunal	Australian Competition Tribunal
Tribunal Reasons	Australian Competition Tribunal, *Appeal by SPI Electricity Pty Ltd [2012] ACompT 11*, 26 April 2012
UED	United Energy Distribution
WiMAX	Worldwide Interoperability for Microwave Access

Summary

The AER made its Final Determination on SP AusNet's 2012-15 advanced metering infrastructure (**AMI**) Budget and Charges in October 2011.[1] SP AusNet sought review, submitting that the AER's determination on certain expenditure categories was based wholly or partly on errors of fact in a material respect.[2]

On 26 April 2012, the Australian Competition Tribunal (**Tribunal**) set aside part of the AER's October 2011 Final Determination. The Tribunal ordered the AER to allow an amount for foreign exchange contracts and project management labour costs in SP AusNet's 2012-15 Approved Budget. The Tribunal further ordered that the AER amend its Final Determination with respect to $72.2 million of "WiMAX Communications" expenditure.[3]

The overarching legislative framework for the AER's further review of WiMAX communications expenditure is the AMI Order.[4] However, the scope of this review is reduced by the scope of the review SP AusNet sought and the Tribunal's reasons for its decision.

Legislative requirements

The AMI Order requires the AER to assess prudency of expenditure using an objective standard. In particular, the key test for this remittal is whether incurring expenditure involves a substantial departure from the commercial standard that a reasonable business would exercise in the circumstances.[5] In doing this, the AER must have regard to certain factors, including the circumstances of the distributor.[6]

Tribunal direction

The Tribunal concluded that the AER, in its October 2011 Final Determination, had not made a material error of fact in determining that SP AusNet had partially departed from the commercial standard. Specifically, the Tribunal found that a reasonable business in SP AusNet's circumstances would have undertaken a serious and thorough reconsideration of the use of WiMAX technology and the possibility of using an alternative technology.[7] The Tribunal also accepted that the benchmarks determined by the AER – based on the costs of other Victorian distribution network service providers (**DNSPs**) – were reflective of the costs of an AMI rollout using mesh radio if SP AusNet had chosen that technology from the outset.[8]

However, the Tribunal stated that because SP AusNet had already embarked on its AMI rollout using WiMAX as its communications technology, its circumstances were different to the other Victorian

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1 AER, *Final Determination: Victorian Advanced Metering Infrastructure Review 2012-15 budget and charges applications*, October 2011 (*Final Determination*).
2 SP AusNet, *Applicant's Written Outline of Submissions*, 30 January 2012.
3 Meter supply capital expenditure), maintenance operating expenditure and IT operating expenditure.
4 The Order in Council made on 27 August 2007 by the Governor in Council under sections 15A and 46D of the Electricity Industry Act 2000 (VIC) as amended on 25 November 2008, 22 January 2009 and 31 March 2009.
5 *AMI Order*, clause 5C.3(b)(iv).
6 *AMI Order*, clauses 5C.4, 5I.8.
7 Australian Competition Tribunal, *Appeal by SPI Electricity Pty Ltd [2012] ACompT 11*, 26 April 2012 (*Tribunal Reasons*), paragraph 131.
8 *Tribunal Reasons*, paragraph 129.

DNSPs.[9] The AER therefore made an error of fact in determining that a reasonable business in SP AusNet's circumstances would incur no more than the benchmark expenditure.[10]

AER approach

In light of the legislative requirements and the Tribunal's direction, the approach the AER has taken to conduct this limited review is:

(1) compare the expenditure that would be affected by a change from SP AusNet's WiMAX solution to a mesh radio solution,[11] including the costs to switch

(2) if the mesh radio solution is more cost effective than WiMAX, determine if any additional expenditure for meter supply capex, maintenance opex and IT opex (insofar as they relate to the communications solution) would be incurred in the 2012-15 budget period

(3) consider whether any qualitative factors would influence a decision to switch from WiMAX to mesh radio

(4) if applicable, make any necessary additions to the October 2011 Final Determination Approved Budget for SP AusNet.

If a reasonable business in SP AusNet's circumstances would have switched from WiMAX to mesh radio, the AER must add the prudent switching costs to SP AusNet's 2012-15 Approved Budget as determined by the AER in October 2011. If a reasonable business in SP AusNet's circumstances would have retained SP AusNet's WiMAX solution rather than switch to mesh radio, the AER must add back the $72.2 million it removed in its October 2011 Final Determination.

The AER has assessed the costs over 15 years of WiMAX and mesh radio solutions as at 28 February 2011. This is the date that SP AusNet submitted its 2012-15 Budget and Charges application to the AER. It is also the date the Tribunal has directed the AER to use as the point in time that SP AusNet should have reconsidered its commitment to WiMAX technology.[12] Therefore, the AER has had to put itself in the shoes of a reasonable business making a decision about whether or not to switch from WiMAX to mesh radio in the past.

In undertaking this review, the AER has had regard to SP AusNet's circumstances. However, the nature of the review means that the AER must also hypothesise about what decision a reasonable business in SP AusNet's circumstances would have made, based on information available or obtainable in February 2011. It is difficult for the AER to make definitive statements about what such a decision might have been. Accordingly, the analysis in this Final Decision presents the AER's opinion of the decision that a reasonable business in SP AusNet's circumstances would have made, rather than the decisions SP AusNet actually made.

Outcome of the AER's analysis

The AER's view is that a reasonable business in SP AusNet's circumstances would have switched to mesh radio. The AER estimates that the cost to retain SP AusNet's WiMAX solution as at 28 February

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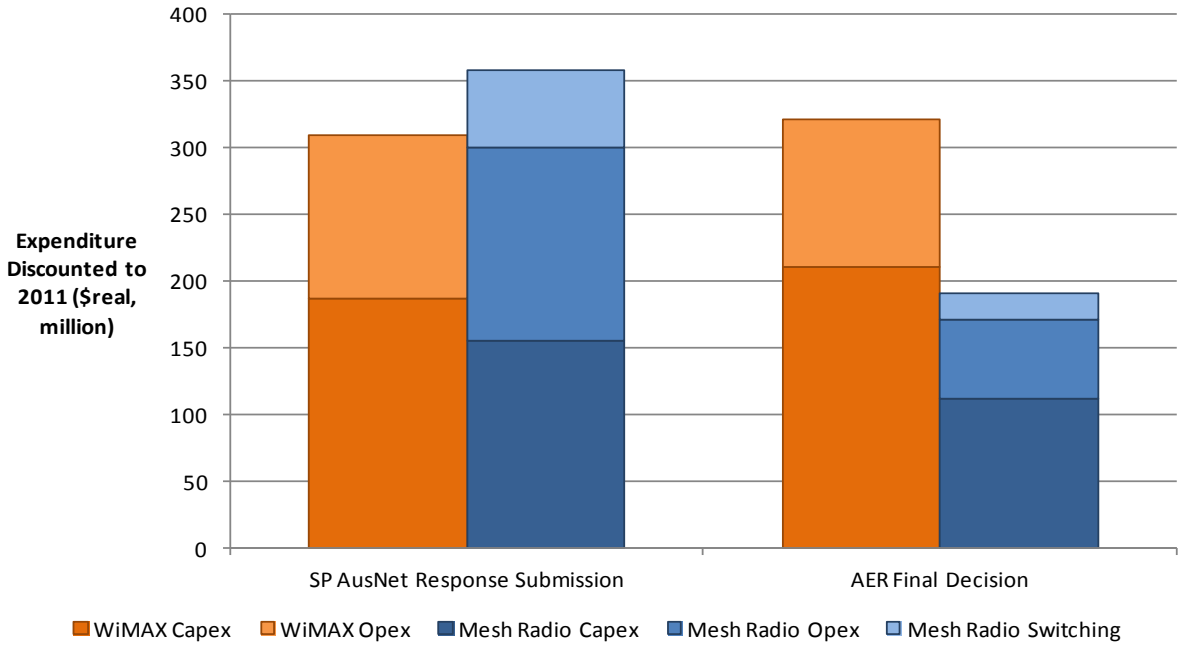
9 *Tribunal Reasons*, paragraph 129.
10 *Tribunal Reasons*, paragraph 130.
11 A switch to mesh radio does not affect all AMI rollout costs. For example, it would seem not to affect costs for meters, meter installation, AMI and IT program management, meter reading, maintenance and data management etc.
12 *Tribunal Reasons*, paragraph 138.

2011 would be $320.8 million in present value terms.[13] This is $129.9 million (59 per cent) more over 15 years than the amount the AER estimates it would cost a reasonable business in SP AusNet's circumstances to switch to mesh radio ($190.9 million).[14]

The AER's view is in contrast to SP AusNet's view. SP AusNet considered that, without accounting for the costs to switch to mesh radio, the present value cost of retaining WiMAX would be $8.2 million higher over 15 years than mesh radio.[15] However, accounting for switching costs, SP AusNet considered that switching to mesh radio would be $48.6 million higher than retaining WiMAX.[16]

The AER has formed the view that the costs proposed by SP AusNet are not prudent because incurring them would be a substantial departure from the commercial standard that a reasonable business would exercise in SP AusNet's circumstances.[17] Figure 1 compares the total mesh radio and WiMAX estimates of the AER and SP AusNet, including mesh radio switching costs, which account for $19.1 million of the AER's mesh radio estimate. These switching costs represent the AER's estimate of the prudent costs for the purposes of the AMI Order.[18]

Figure 1 Comparison of WiMAX and mesh radio solution estimates for 2011-25, discounted to 2011 ($real, million)



Source: SP AusNet, *Response Submission*, 14 September 2012, pp. 54-55; KEMA, *Cost Benefit Assessment for Replacement of WiMAX Solution with RF Mesh*, 14 September 2012, TRKS tab; AER analysis.

The AER has also had regard to SP AusNet's qualitative submissions. However, the AER considers the difference in its cost estimates of mesh radio and WiMAX are substantial enough that qualitative factors would not be an impediment to switch. Further, information obtained from SP AusNet suggests SP AusNet knew its WiMAX rollout was facing significant problems in February 2011.

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13 All numbers in this section are discounted values unless stated otherwise.
14 Energeia, *Review of Responses to the AER's Preliminary View on Amendments to its Final Determination*, January 2013 (*January 2013 Report*), pp. 2-4.
15 KEMA, *SP AusNet Assessment of AMI Communication Options – Version 1.1*, 14 September 2012 (*Assessment of AMI Communication Options*), p. 4.
16 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, p. 4.
17 *AMI Order*, clause 5C.3(b)(iv).
18 *AMI Order*, clause 5C.3(b)(iv).

Mesh radio switching costs

The AER's Final Decision estimate of total mesh radio switching costs is $19.1 million. This is slightly higher than its Preliminary View estimate of $15.2 million (in present value terms). This is primarily due to the AER's inclusion of WiMAX inventory costs for the two months before the reconsideration date of 28 February 2011. However, the AER's view on the timing for some of the switching costs has changed as a result of information received from SP AusNet.[19] In the AER's view, a reasonable business in SP AusNet's circumstances would have incurred most of the switching costs in 2011.

The AER considers a reasonable business in SP AusNet's circumstances should have completed its mesh radio network interface card (NIC) retrofits by the end of 2011. This means it would have incured NIC, antenna and associated retrofit switching costs in 2011 rather than in 2012. The AER considers a reasonable business should do this to meet the mandatory minimum AMI service levels specification requirement.[20] This requires all installed meters to deliver interval data to market from 1 January 2012.[21] It would also reduce the total cost of switching by minimising manual meter reading costs and minimising the number of meters that require NIC retrofits.

The AER has considered whether it is necessary to amend SP AusNet's 2012-15 Approved Budget for mesh radio switching costs. Also relevant in this regard is whether SP AusNet's 2011 Approved Budget would have been sufficient to allow a reasonable business in SP AusNet's circumstances to switch to mesh radio.

The AER estimates that if a reasonable business in SP AusNet's circumstances had decided to switch to mesh radio on 28 February 2011, it would have saved $12.4 million ($2011 real) in 2011 relative to retaining SP AusNet's WiMAX solution. That is, the lower mesh radio deployment costs would more than offset any switching costs the AER considers a reasonable business would incur in 2011.[22]

As a result, the AER considers it is not necessary to amend SP AusNet's 2012-15 Approved Budget for 2012-15 to include 2011 switching costs. This is because SP AusNet's 2011 Approved Budget (for WiMAX) would have been sufficient to allow a reasonable business in SP AusNet's circumstances to switch to mesh radio in 2011 without it incurring additional costs in that year. In turn, the AER considers that including the 2011 switching costs in the 2012-15 Approved Budget would overcompensate a reasonable business in SP AusNet's circumstances.

Further, if the 2011 Approved Budget did not entirely cover the cost of switching to mesh radio, the AMI Order would have allowed a reasonable business in SP AusNet's circumstances to submit a revised budget application to recover any additional costs. However, SP AusNet did not do this. In fact, SP AusNet submitted a revised budget application on 28 February 2011 for higher costs associated with WiMAX.[23] The AER's opinion remains that a reasonable business in the circumstances would not have acted as SP AusNet did.

The AER also considers the AMI Order does not allow costs incurred in 2011 to be recovered in the 2012-15 budget period. If 2011 expenditure was moved into the 2012 Approved Budget, the budget would not be comparable with 2012 actual expenditure. This means the AER could not practically conduct an ex post reconciliation of 2012 budget and actual expenditure. The charges revision

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19 Energeia, *January 2013 Report*, pp. 19-22.
20 Energeia, *January 2013 Report*, pp. 19-22.
21 Department of Primary Industries, *Advanced Metering Infrastructure Minimum AMI Service Levels Specification Release 1.1*, September 2008 (*minimum AMI service levels specfication*), clause 4.3.
22 Energeia, *January 2013 Report*, pp. 19-22.
23 SP AusNet, *Advanced Metering Infrastructure Revised Budget Application*, 28 February 2011.

process under the AMI Order requires this to operate correctly.[24] It could also potentially undermine the AER's ability to conduct an "expenditure excess" review of prudence, which is an important aspect of the charges revision process.[25]

The AER reiterates that the Tribunal's Reasons direct the AER to use a reconsideration date of 28 February 2011.[26] SP AusNet does not disagree with this date.[27] The AER has shown that a reasonable business in SP AusNet's circumstances would have substantively completed the changeover to mesh radio by the end of 2011. Further, the AMI Order mechanisms available would have allowed recovery of any additional expenditure in that year.

The AER acknowledges it erred in its October 2011 Final Determination by substituting benchmark expenditure without appropriately having regard to SP AusNet's circumstances. However, the AER has now had regard to SP AusNet's circumstances and considers a reasonable business in those circumstances would not have required additional compensation in the 2012-15 budget period (for the relevant categories under review) because it would have substantively switched to mesh radio by the end of 2011.

Regarding 2012-15 switching costs, the AER now considers that a reasonable business in SP AusNet's circumstances would delay the $0.3 million of WiMAX tower demolition switching costs until 2012. However, they are communications capex costs.[28] SP AusNet did not seek review of this category of expenditure so it is not within the scope of this remittal. The AER considers it is unable to amend the communications capex category of SP AusNet's 2012-15 Approved Budget.

Decision on amendments to Final Determination budget and charges

In its October 2011 Final Determination, the AER determined an Approved Budget for SP AusNet of $304.1 million ($2011 real). Pursuant to the Tribunal's Orders, this remittal decision results in an amendment to its Final Determination Approved Budget in favour of SP AusNet by $17.5 million, comprising:

(1) foreign exchange contracts ($15.8 million)

(2) project management labour costs ($1.7 million).

The AER's amendment results in a revised Approved Budget of $321.7 million. Figure 2 compares SP AusNet's amended Submitted Budget of $410.7 million with the AER's decision on the amendments to SP AusNet's 2012–15 Approved Budget.

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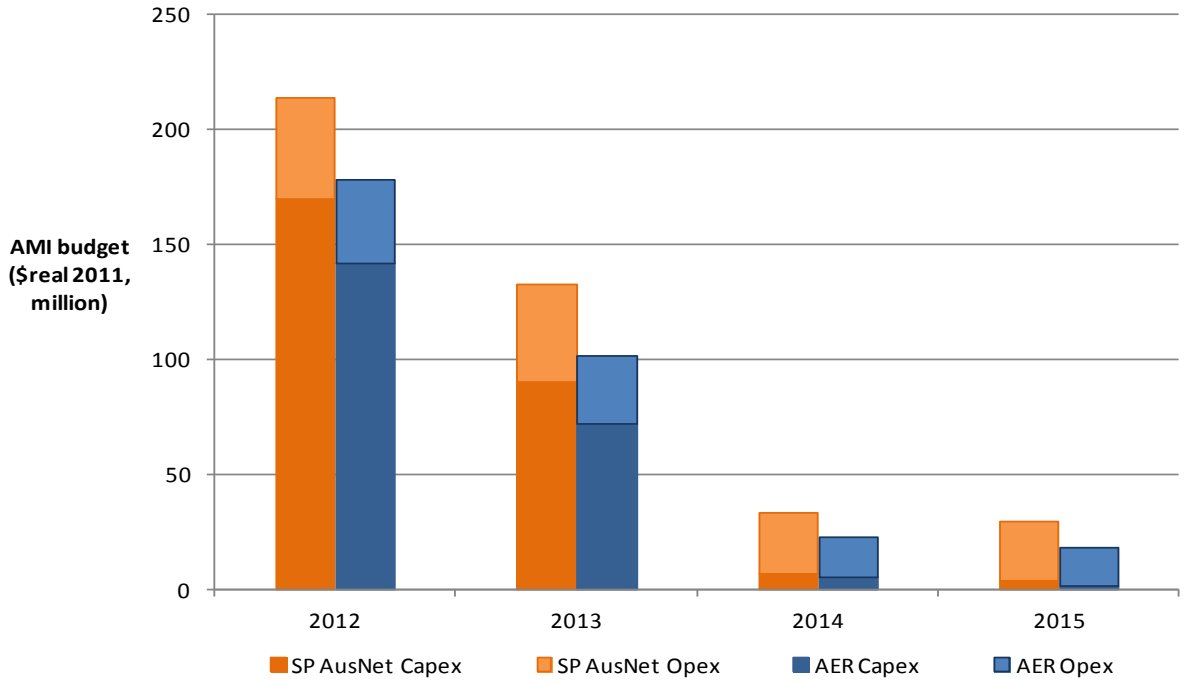
24 *AMI Order*, clauses 5H, 5I.
25 *AMI Order*, clause 5I.5.
26 *Tribunal Reasons*, paragraph 138.
27 SP AusNet, *Response Submission*, 14 September 2012, p. 22.
28 SP AusNet, *Comparative costs of Mesh alternative solution -050612.xls*, 5 June 2012, Comms costs of switching tab.

Figure 2 **Comparison of SP AusNet's amended Submitted Budget and the AER's decision on the revised Approved Budget ($real 2011, million)**



Source: SP AusNet, *2012-15 Amended Submitted Budget*, 26 August 2011; AER analysis.

Table 1 displays the revised meter charges resulting from the AER's Final Decision on the amendments to SP AusNet's Approved Budget. Accounting for the AER's Final Decision, meter charges are expected to nominally increase by approximately 9.9 per cent each year in 2014 and 2015. This remittal affects prices for 2014 and 2015 only because the AER recently set 2013 charges in the charges revision process. The revised 2013 charges reflect SP AusNet's actual 2011 expenditure and updated forecasts.

Table 1 **Amended Final Determination charges by meter ($nominal)**

	2012	2013	2014	2015
Single phase single element	107.25	130.45	143.38	157.60
Single phase two element with contactor	123.24	149.90	164.76	181.10
Multi phase	148.89	181.10	199.06	218.79
Multi phase with contactor	165.16	200.89	220.81	242.70
Multi phase CT connected	212.67	258.68	284.33	312.52

Source: AER analysis.

Background

The AER made its Final Determination on the 2012-15 budget and charges applications for each of the Victorian DNSPs in October 2011 (**Final Determination**).[29] In accordance with clause 5C.7 of the AMI Order[30], the AER rejected SP AusNet's amended Submitted Budget and determined an Approved Budget of $304.1 million ($2011).[31] The AER determined that incurring $106.6 million did not meet the scope and prudent tests set out in the AMI Order.[32]

Of the amount not approved by the AER, $72.2 million of this expenditure related to SP AusNet's choice of WiMAX as its communications solution. The AER determined that proposing to incur this expenditure involved a substantial departure from the commercial standard that a reasonable business would exercise in SP AusNet's circumstances.[33] The AER considered the commercial standard required a full reconsideration of WiMAX as a communications solution and the alternatives to WiMAX.[34] The AER also removed $15.8 million relating to foreign exchange contracts and $6.0 million in project management expenditure.[35]

SP AusNet sought merits review in the Australian Competition Tribunal (**Tribunal**) of several aspects of the AER's Final Determination pursuant to s 29(2) of the *National Electricity (Victoria) Act* 2005 (Vic).[36] In the merits review, SP AusNet submitted that the AER's determination was based wholly or partly on errors of fact in a material respect.[37]

The Tribunal's decision, delivered on 26 April 2012, set aside part of the AER's Final Determination and ordered the AER to allow an amount in respect of foreign exchange contracts and project management labour costs. The Tribunal further ordered that the AER amend its Final Determination with respect to "WiMAX Communications" expenditure. The AER must reconsider the financial consequences, had SP AusNet reviewed its WiMAX technology and possible alternatives once it became aware of the cost blow out associated with its deployment.[38]

This document constitutes the AER's Final Decision on the amendments to its October 2011 Final Determination, as directed by the Tribunal in its Orders of 26 April 2012 (**Final Decision**). It explains the revisions to SP AusNet's Approved Budget for 2012-15 for the expenditure categories under review, and the resulting impact on metering charges. The AER has not reconsidered any other expenditure from its October 2011 Final Determination.

Foreign exchange contract costs

The Tribunal ordered the AER to incorporate an additional $15.8 million in SP AusNet's Approved Budget for the 2012-15 period on the basis of prior agreement between the AER and SP AusNet.[39] The Tribunal found the AER made a material error of fact when determining foreign exchange

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29 AER, *Final Determination: Victorian Advanced Metering Infrastructure Review 2012-15 budget and charges applications*, October 2011 (*Final Determination*).
30 The Order in Council made on 27 August 2007 by the Governor in Council under sections 15A and 46D of the Electricity Industry Act 2000 (VIC) as amended on 25 November 2008, 22 January 2009 and 31 March 2009.
31 AER, *Final Determination*, October 2011, p. 36.
32 AER, *Final Determination,* October 2011, p. 36.
33 AER, *Final Determination*, October 2011, pp. 75, 103, 115.
34 AER, *Final Determination*, October 2011, pp. 87, 108, 119.
35 AER, *Final Determination,* October 2011, pp. 90, 109.
36 SP AusNet also sought judicial review under the *Administrative Decisions Judicial Review Act* 1977 (Cth) in the Federal Court. This matter is yet to be determined.
37 SP AusNet, *Applicant's Written Outline of Submissions*, 30 January 2012.
38 Australian Competition Tribunal, *Appeal by SPI Electricity Pty Ltd [2012] ACompT 11*, 26 April 2012 (*Tribunal Reasons*), paragraphs 257-261; *Tribunal Orders*, pp. 1-2.
39 *Tribunal Reasons*, paragraph 42; *Tribunal Orders*, p. 1.

expenditure for the 2012-15 period. The Tribunal accepted the quantum agreed between SP AusNet and the AER.[40] Therefore, the AER's decision is to vary its determination of SP AusNet's Approved Budget in favour of SP AusNet by the agreed amount of $15.8 million.

SP AusNet accepted the AER's approach so this decision does not discuss foreign exchange contract costs further.[41]

Project management labour costs

The Tribunal ordered the AER to adjust its Final Determination to incorporate an additional $1.7 million in SP AusNet's Approved Budget for the 2012-15 period.[42] The Tribunal found the AER made a material error of fact when determining project management labour costs for 2012 and 2013.[43] Accordingly, the AER's decision is to amend its determination of SP AusNet's Approved Budget in favour of SP AusNet by $1.7 million.

SP AusNet accepted the AER's approach so this decision does not discuss project management labour costs further.[44]

WiMAX communications

The Tribunal considered the AER did not err in determining meter supply capital expenditure (**capex**), maintenance operating expenditure (**opex**)[45] and IT opex – "WiMAX communications" expenditure[46] that:[47]

- the commercial standard a reasonable business would exercise in the circumstances of SP AusNet included reconsidering the use of WiMAX technology and the possibility of using an alternative
- SP AusNet had not undertaken such a reconsideration.

However, the Tribunal found:[48]

> It is but part of the process to conclude (correctly, as the Tribunal has accepted) that the proposed expenditure with the ongoing commitment to WiMAX communications should have been carefully reconsidered by SP AusNet. The necessary next step is to determine whether, upon such a reconsideration, prudency required that the proposed expenditure not be incurred when measured against the commercial standard that a reasonable business would exercise in the circumstances. Unless that second step were taken, the AER could not establish that *incurring* that expenditure would involve a substantial departure from the commercial standard prescribed...
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> ...In the circumstances, the Tribunal considers that the matter should be remitted to the AER to further consider the Submitted Budget of SP AusNet on this aspect.

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40 *Tribunal Reasons*, paragraphs 40-44.
41 SP AusNet accepted the AER's approach in its submission. SP AusNet, *Appeal by SPI Electricity Pty Ltd [2012] ACompT 11 - Reconsideration Submission* (*Reconsideration Submission)*, 5 June 2012, p. 10.
42 *Tribunal Reasons*, paragraph 228; Tribunal Orders, p. 2.
43 *Tribunal Reasons*, paragraph 227.
44 SP AusNet, *Reconsideration Submission*, 5 June 2012, p. 10.
45 Maintenance opex includes communication infrastructure maintenance and communications backhaul opex. SP AusNet, *Applicant's Written Outline of Submissions: Attachment 1*, 30 January 2012, paragraph 11.
46 *Tribunal Reasons*, paragraphs 35-36.
47 *Tribunal Reasons*, paragraph 131.
48 *Tribunal Reasons*, paragraphs 137, 139.

The scope of the remittal to the AER is set out in Order 1(2) of the Tribunal's Orders. This requires the AER to amend the Final Determination with respect to $72.2 million. Chapter 2 discusses matters of scope and approach in further detail.

This Final Decision is to be read together with the AER's Preliminary View, which the AER published on 9 October 2012 (**Preliminary View**).[49] The AER developed its Preliminary View following its review of SP AusNet's Reconsideration Submission of 5 June 2012 (**Reconsideration Submission**).[50] In its Reconsideration Submission, SP AusNet submitted that it would be more cost effective to retain its WiMAX solution than to switch to mesh radio.[51]

SP AusNet's Reconsideration Submission also included qualitative concerns that it submitted supported the quantitative analysis and confirmed Option 1 (continuing its rollout with WiMAX) as the preferred option.[52] SP AusNet submitted that the AER should increase its Approved Budget by the full $72.2 million under review.[53] In contrast, the AER's Preliminary View was:[54]

(1) the commercial standard a reasonable business in SP AusNet's circumstances would have exercised would have involved fully reconsidering its Submitted Budget. In doing so, a reasonable business in SP AusNet's circumstances would have decided to switch from WiMAX to mesh radio

(2) SP AusNet's qualitative concerns, while relevant, were not an impediment to switching due to the significantly lower cost of mesh radio compared to WiMAX

(3) the prudent costs to switch from WiMAX to mesh radio in the 2012-15 period amounted to $11.7 million.

On 14 September 2012, SP AusNet provided a submission in response to the AER's Preliminary View (**Response Submission**), which is essentially a new proposal. SP AusNet maintains that retaining WiMAX would be more cost effective than switching to mesh radio and qualitative measures further support WiMAX as the preferred solution.[55]

SP AusNet's Response Submission concedes some matters of approach such as a reconsideration date of 28 February 2011 and a modelling approach that compared the present value of WiMAX and mesh radio communications expenditure over 15 years.[56] However, SP AusNet's Response Submission is essentially a reformulation of its position. It is much more detailed than SP AusNet's Reconsideration Submission and relies on a comprehensive technical report and a detailed bottom up financial model developed by SP AusNet's consultant, DNV KEMA (**KEMA**).

SP AusNet has also changed its position on some matters and introduces new information in its Response Submission. In most instances, SP AusNet has not provided an explanation for why its position has changed or why it did not initially consider the new information was relevant. While the AER and SP AusNet have come closer to agreement on some matters, the respective views on others are now further apart. This has required the AER to conduct more detailed analysis than in the Preliminary View. The AER has almost had to conduct its analysis anew, which has resulted in the

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49 AER, *Preliminary View: Advanced metering infrastructure review - SPI Electricity Pty Ltd 2012–15 budget and charges applications - Amendments pursuant to the Australian Competition Tribunal's Orders*, August 2012 (*Preliminary View*).
50 SP AusNet, *Reconsideration Submission*, 5 June 2012.
51 SP AusNet, *Reconsideration Submission, 5 June 2012,* p. 26.
52 SP AusNet, *Reconsideration Submission, 5 June 2012,* pp. 27-39.
53 SP AusNet, *Reconsideration Submission, 5 June 2012,* p. 8.
54 AER, *Preliminary View*, August 2012, pp. 1, 31.
55 SP AusNet, *SP AusNet's Submission in response to AER's Preliminary View on Amendments pursuant to the Australian Competition Tribunal's Orders*, 14 September 2012 (*Response Submission*), pp. 43-60.
56 SP AusNet, *Response Submission*, 14 September 2012, pp. 21-22, 24-25.

AER's positions on certain issues also changing from the Preliminary View. It has also required the AER to delay the process substantially. Chapters 1 and 2 include further discussion on differences between SP AusNet's Reconsideration Submission and Response Submission.

The AER called for public submissions on 9 October 2012. The AER did not receive any submissions. However, the AER received correspondence from an interested party stating that the extent of confidentiality claims made by SP AusNet and KEMA over KEMA's report rendered it unable to make an informed submission on SP AusNet's Response Submission.[57] This is concerning. Recent reviews into energy regulation laws have highlighted the need for them to enable the full range of stakeholders to engage.

[57] Letter from interested party to AER, received 26 October 2012 (confidential).

1 Overview of submissions and Preliminary View

SP AusNet has provided two primary submissions to the AER for this remittal: a Reconsideration Submission and a Response Submission. SP AusNet's Response Submission responds to the AER's Preliminary View. However, it is significantly different to SP AusNet's Reconsideration Submission. It is essentially a reformulation of SP AusNet's position. This section provides a brief overview of the AER's Preliminary View, SP AusNet's submissions and the key differences between them.

1.1 SP AusNet's Reconsideration Submission

On 9 May 2012, the AER sought a submission from SP AusNet on the Tribunal's Orders. Specifically, the AER requested SP AusNet to provide its methodology for, and analysis of, its reconsideration of its commitment to WiMAX communications compared with adopting an alternative solution.[58]

On 5 June 2012, SP AusNet provided the AER with its Reconsideration Submission. SP AusNet conducted a high level comparison of three technology options:[59]

- Option 1: complete its AMI rollout using predominately WiMAX technology
- Option 2: leave the existing WiMAX infrastructure in place and build a second mesh network to complete the rollout
- Option 3: discontinue WiMAX technology and adopt a mesh solution for the entire rollout.

This submission assumed a reconsideration date of 19 May 2011 and compared the complete rollout cost of each option over the 2012-15 period. SP AusNet relied on high level spreadsheets to support its quantitative analysis and submitted the least cost option would be to retain WiMAX.[60]

As Table 1.1 shows, SP AusNet's Reconsideration Submission position was that it would cost $107.2 million in switching costs and $387.8 million in new rollout costs to switch from WiMAX to mesh radio. This is $114 million (29.9 per cent) higher than SP AusNet's proposed total cost to retain WiMAX as the communications solution.[61]

Table 1.1 SP AusNet Reconsideration Submission costs for the 2012-15 period ($million, real 2011)

	Rollout costs	Switching costs	Total costs
Option 1 (WiMAX)	381.1	-	**381.1**
Option 2 (WiMAX/mesh radio)	358.4	47.4	**405.8**
Option 3 (Mesh radio)	387.8	107.2	**495.1**

Source: SP AusNet, *Reconsideration Submission*, pp. 21, 22, 24.

SP AusNet's Reconsideration Submission also included qualitative considerations that it submitted supported its quantitative analysis and confirmed Option 1 (retaining WiMAX) as the preferred

58 Australian Government Solicitor, *Letter to Johnson Winter Slattery re SP AusNet Reconsideration*, sent 9 May 2012.
59 SP AusNet, *Reconsideration Submission, 5 June 2012,* p. 5.
60 SP AusNet, *Reconsideration Submission, 5 June 2012,* p. 26.
61 SP AusNet, *Reconsideration Submission, 5 June 2012,* p. 26.

option.[62] SP AusNet submitted that the AER should therefore re-include the $72.2 million of WiMAX-related expenditure removed from SP AusNet's Approved Budget in the Final Determination.[63]

1.2 AER Preliminary View

On 13 August 2012, the AER formed its Preliminary View on SP AusNet's Reconsideration Submission. In its Preliminary View, the AER considered the two viable technology options were WiMAX or mesh radio. The AER considered the Tribunal's Reasons directed it to conduct its analysis on the basis that the date of reconsideration would have been 28 February 2011.[64]

The AER estimated the cost of WiMAX and mesh radio over 15 years, discounted to February 2011. The AER focussed its assessment on the key cost elements it considered would be affected by a change in communications solution.[65]

Based on advice from Energeia, the AER considered that a reasonable business in SP AusNet's circumstances could implement a mesh radio solution in 10 months, commencing on 1 March 2011.[66] On this basis, as Table 1.2 shows, the AER estimated that SP AusNet's WiMAX solution would cost $117.5 million more over 15 years than the cost to switch to mesh radio.

Table 1.2 AER Preliminary View present value costs over 15 years as at February 2011 ($million)

	Rollout costs	Switching costs	Total costs
WiMAX	318.6	-	**318.6**
Mesh radio	185.9	15.2	**201.1**
Difference	**132.7**	**-15.2**	**117.5**

Source: AER, *Preliminary View*, August 2012, pp. 24-25.

The AER's Preliminary View estimate of the prudent costs over the 2012-15 period amounted to $11.7 million in mesh radio switching costs.[67] This was because the AER's view was that a reasonable business in SP AusNet's circumstances would incur some of the switching costs in 2011 and some in the 2012-15 period.

The AER also turned its mind to SP AusNet's qualitative submissions. The AER considered that the qualitiative analysis supported the results of its quantitative analysis, and a reasonable business in the circumstances would have switched to mesh radio. The AER also considered that some of SP AusNet's qualitative concerns may be relevant to making the decision to switch. However, they were ultimately outweighed by the significantly lower cost of switching to mesh radio compared to retaining WiMAX.[68]

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62 SP AusNet, *Reconsideration Submission, 5 June 2012,* pp. 27-39.
63 SP AusNet, *Reconsideration Submission, 5 June 2012,* p. 8.
64 AER, *Preliminary View*, August 2012, p. 1.
65 For example, the AER considered changing technology would not affect costs for meters, meter installation, AMI and IT program management, meter reading, maintenance and data management etc.
66 AER, *Preliminary View*, August 2012, pp. 13-15.
67 AER, *Preliminary View*, August 2012, p. 24.
68 AER, *Preliminary View*, August 2012, p. 31.

1.3 SP AusNet's Response Submission

On 14 September 2012, SP AusNet provided a submission in response to the AER's Preliminary View. SP AusNet maintains that retaining WiMAX would be more cost effective than switching to mesh radio and that qualitative measures further support WiMAX as the preferred solution.[69]

SP AusNet's Response Submission accepts some elements of the AER's Preliminary View, including:[70]

- a reconsideration date of 28 February 2011
- a modelling approach that examines the present value of communications costs of each solution over 15 years
- comparison of WiMAX and mesh radio only (no hybrid WiMAX/mesh radio solution).

SP AusNet submits that in present value terms, the cost of switching to mesh radio over 15 years would be $48.6 million (15.9 per cent) higher than the cost of completing its rollout with WiMAX.[71] Table 1.3 summarises SP AusNet's quantitative analysis.

Table 1.3 SP AusNet Response Submission present value costs over 15 years as at February 2011 ($million)

	Rollout costs	Switching costs	Total costs
WiMAX	306.4	-	**306.4**
Mesh radio	298.2	56.8	**355.0**
Difference	**8.2**	**-56.8**	**-48.6**

Source: SP AusNet, *Response Submission,* 14 September 2012, p. 55.

However, SP AusNet's Response Submission is essentially a reformulation of its position. For the first time, it relies on a comprehensive technical report and a detailed bottom up financial model developed by SP AusNet's consultant, KEMA. Also, in its Response Submission, SP AusNet changes its position on some matters and introduces new information. The key differences between SP AusNet's Reconsideration Submission and Response Submission are:

- revised estimate of the coverage for WiMAX (increased from 85 per cent to 89.4 per cent) and mesh radio (increased from 85 per cent to 93.5 per cent)[72]
- an increase in the percentage of mesh radio meters that require an antenna (from 50 per cent to 70 per cent)[73]
- an increase in the time (and hence, cost) to install mesh radio network interface cards (NICs)[74]

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69 SP AusNet, *Response Submission*, 14 September 2012, pp. 43-60.
70 SP AusNet, *Response Submission*, 14 September 2012, pp. 21-22, 24-25.
71 SP AusNet, *Response Submission*, 14 September 2012, pp. 53-60.
72 SP AusNet, *Response Submission*, 14 September 2012, pp. 31-33, KEMA, *Assessment of AMI Communication Options*, 14 September 2012, p. 34; SP AusNet, *Reconsideration Submission*, 5 June 2012, p. 16.
73 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, p. 35; SP AusNet, *Comparative cost of Mesh alternative solution -050612.xls*, 5 June 2012, Meter costs of switching tab.

- a shorter total implementation timeline for mesh radio, but with a longer procurement timeframe for engaging a mesh radio supplier[75]
- a revised estimate of the costs that would be incurred in other business streams as a result of changing technology[76]
- a new risk premium applied to mesh radio capex to account for vendor specific risk[77]
- the introduction of sensitivity analysis[78]
- revised WiMAX budget templates.[79]

Section 2.6.8 contains the AER's consideration of the merits of these matters, with the exception of the mesh radio implementation timeline, which the AER discusses in section 2.6.4.

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74 SP AusNet, *Response Submission*, 14 September 2012, pp. 35-37; SP AusNet, *Comparative cost of Mesh alternative solution -050612.xls*, 5 June 2012, Meter costs of switching tab.

75 SP AusNet, *Response Submission*, 14 September 2012, pp. 28-31; SP AusNet, *Reconsideration Submission*, 5 June 2012, p. 18.

76 SP AusNet, *Response Submission*, 14 September 2012, p. 37; SP AusNet, *Reconsideration Submission*, 5 June 2012, pp. 22-25.

77 SP AusNet, *Response Submission*, 14 September 2012, p. 47; KEMA, *Assessment of AMI Communication Options*, 14 September 2012, pp. 47-49.

78 SP AusNet, *Response Submission*, 14 September 2012, pp. 52, 56-57; KEMA, Assessment of AMI Communication *Options*, 14 September 2012, pp. 17-18, 54-55.

79 SP AusNet, *Response Submission*, 14 September 2012, pp. 38-41.

2 Scope and AER approach

The AER's further review of WiMAX communications expenditure originated from the Orders of the Tribunal. Although the AMI Order is the overarching legislative framework, the scope of this review is narrower than for a full budget and charges determination. This is because SP AusNet sought review of the AER's October 2011 Final Determination for specific expenditure categories. This chapter explains the AER's view of the scope of this remittal and the appropriate approach, given the requirements of the AMI Order and direction from the Tribunal.

The AER has done this because SP AusNet's Response Submission raises issues with the manner in which the AER has undertaken this task.[80] Accordingly, in this chapter, the AER deals with issues of difference on the correct approach to making its decision. In doing so, the AER makes findings on some underlying elements that are relevant to the manner in which it conducts its analysis of the technology options. In this chapter:

- Section 2.1 sets out the broad requirements of the AMI Order
- Section 2.2 contains the AER's interpretation of the Tribunal's direction
- Section 2.3 explains the nature and scope of the AER's review
- Section 2.4 discusses the relevant commercial standard
- Section 2.5 discusses matters on which the AER and SP AusNet now agree
- Section 2.6 discusses matters on which the AER and SP AusNet do not agree.

In chapter 3, the AER applies what it considers is the correct approach to determining the prudent costs that a reasonable business in SP AusNet's circumstances would incur. Chapter 4 considers qualitative matters. In chapter 5, the AER explains its amendments to its Final Determination Approved Budget for SP AusNet.

2.1 Requirements of the AMI Order

The AMI Order[81] prescribes (among other things) how the AER must make determinations, how costs are recovered and certain rollout requirements. Each of these matters is relevant to this remittal.

2.1.1 Determinations

When making a determination, the AMI Order requires the AER to approve a DNSP's Submitted Budget unless it establishes that the expenditure (or part thereof) that makes up the total opex and capex for each year is:[82]

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

(b) not prudent.

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80 SP AusNet, *Response Submission*, 14 September 2012, pp. 14-27.

81 The Order in Council made on 27 August 2007 by the Governor in Council under sections 15A and 46D of the Electricity Industry Act 2000 (VIC) as amended on 25 November 2008, 22 January 2009 and 31 March 2009. Although the AMI Order was revised further in December 2011, these revisions were made after the AER's October 2011 final determination and are not applicable to this remittal.

82 *AMI Order*, clause 5C.2.

The scope of SP AusNet's expenditure was not an issue before the Tribunal, so the focus of this remittal is on whether or not expenditure is prudent. Clause 5C.3 of the AMI Order considers expenditure prudent if it is a contract cost, unless the AER establishes that it was not let in accordance with a competitive tender process.[83] If the expenditure is not a contract cost, or it is a contract cost but the AER establishes the contract was not let in accordance with a competitive tender process, the expenditure is prudent and must be approved unless the AER establishes that:[84]

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

This remittal focuses on the commercial standard limb of the test. When applying the commercial standard test, clause 5C.4 requires the AER to take into account and give fundamental weight to the matters in clause 5I.8. Section 2.4 contains further discussion on the relevant commercial standard.

Clause 5C.8 of the AMI order states that in determining an Approved Budget, the AER must not remove more than the expenditure it has established in clause 5C.2 as being outside scope or not prudent.[85] Section 2.6.6 explains the AER's approach to amending its Final Determination Approved Budget.

2.1.2 Cost recovery

The AMI Order separates budget and charges applications and determinations into "initial" and "subsequent" periods. The initial period is from 1 January 2009 to 31 December 2011 (**2009-11 period**) and the subsequent period spans 1 January 2012 to 31 December 2015 (**2012-15 period**).[86]

For each of the two budget periods, a DNSP provides a Submitted Budget to the AER. Clause 5B of the AMI Order distinguishes between the two separate periods for this process.[87] The AER assesses the DNSP's Submitted Budget and accepts some or all of it to determine the Approved Budget.[88] The AER's Approved Budget contains a forecast expenditure amount for each year of the relevant budget period.[89] A charges determination then implements the Approved Budget. For each year of the budget period, this forecast amount is later reconciled with actual expenditure to determine charges.

There are two cost recovery mechanisms available under the AMI Order that provide a DNSP with opportunities to recover its actual expenditure, even if it is more than the DNSP initially envisaged or the AER approved. The first is the revised budget process and the second is the charges revision process. The AER considers the AMI Order requires the timing of expenditure in the DNSP's Approved Budget to reflect the year in which it is actually incurred. Otherwise the charges revision process does not operate correctly.[90]

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83 *AMI Order*, clause 5C.3(a).
84 *AMI Order*, clause 5C.3(b)
85 *AMI Order*, clause 5C.8.
86 See, for example, *AMI Order*, clauses 2, 5A, 5B, 5C.
87 *AMI Order*, clause 5B.1.
88 *AMI Order*, clause 5C.
89 *AMI Order*, clause 5C.2.
90 *AMI Order*, clauses 5G, 5H.

Revised budget applications

After the AER has determined an Approved Budget, a DNSP may submit a revised budget to the AER for an actual or anticipated variance from its Approved Budget.[91] The AER must assess the revised budget application. If the AER approves it, the DNSP can recover more expenditure from customers. The AMI Order allows a DNSP to submit a revised budget application "at any time".[92] However, the AER considers that practically, the charges revision process restricts revised budget applications to within the defined budget period (2009-11 or 2012-15).[93] This is because once the charges have been set for a particular year it is not longer possible to revise the budget for that year.

The charges revision process

While the AER determines an Approved Budget, this isn't entirely determinative of the actual expenditure that a DNSP can recover. The AMI Order provides mechanisms for a DNSP to recover more than its Approved Budget, once it is set. Specifically, the charges revision process allows the DNSP to spend more than its Approved Budget up to a threshold, or it can spend in excess of the threshold and seek AER approval to recover it.

The threshold depends on the budget period. For each year in the 2009-11 period, a DNSP could automatically recover up to 120 per cent of its Approved Budget. In the subsequent (2012-15) period the threshold is the Approved Budget itself.[94]

When a DNSP's actual total opex and capex exceeds the relevant threshold, it has an "expenditure excess". The DNSP can still recover this expenditure excess. But, this is subject to the AER assessing the expenditure excess and determining that it is prudent.[95]

The charges revision process works in a specific way. The AER must conduct an annual ex post review of audited actual expenditure in the previous year with the expenditure provided in the Approved Budget for the corresponding year. [96] This has important implications for when expenditure is recovered and whether an expenditure excess exists.

When costs must be recovered

In the AER's opinion, the AMI Order requires the timing of expenditure in the DNSP's Approved Budget to reflect when it is actually incurred.[97] That is, actual expenditure from one budget year cannot be moved into the following year's Approved Budget. This is necessary for the charges revision process to operate because the AER must compare the DNSP's actual expenditure for a particular year with its corresponding Approved Budget amount.[98]

If the Approved Budget did not reflect the timing of expenditure, the AER could not practically undertake an annual ex post expenditure review because the actual expenditure would not align with

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91 *AMI Order*, clause 5F.1.
92 *AMI Order*, clause 5F.1.
93 In theory, a DNSP could submit a revised budget application for the 2009-11 period as late as (approximately) 1 July 2012. This would still allow the AER to assess it in 40 business days and make a determination in time for the DNSP to lodge its charges revision application in accordance with clause 5G.2 of the *AMI Order* on 31 August 2012.
94 It was previously set at 110 per cent of the Approved Budget. AMI Order, clause 5I.2(a). The most recent revisions to the *AMI Order* (December 2011) removed the 110% automatic recovery threshold for expenditure incurred in the 2012-15 budget period.
95 *AMI Order*, clause 5I.5.
96 *AMI Order*, clauses 5G, 5H. The charges revision process for 2012 charges is part of the 2012-15 budget and charges determination. *AMI Order*, clause 5E.
97 *AMI Order*, clauses 5G, 5H.
98 *AMI Order*, clause 5I.

the corresponding budget. Further, it could potentially undermine the AER's ability to conduct a review of expenditure excess. Clause 5I.5 requires the AER to:

> ...include in the building blocks the amount of that excess in expenditure ('the **expenditure excess**') to the extent that it is prudent.

If expenditure from one year is artificially included in the following year's Approved Budget, the AER may be unable to identify an expenditure excess. This means the AER could not assess the extent of the prudence of the expenditure excess as required by the AMI Order.[99] Ultimately, this means a DNSP could recover and pass on additional expenditure to consumers without AER review. In the AER's opinion, this is not consistent with the intention the AMI Order displays by expressly inserting a prudence assessment. Further, the mechanisms for a DNSP to recover its actual expenditure mentioned above suggest there are other, more appropriate options for dealing with these situations.

For example, consider the scenario where a DNSP's Approved Budget for 2012 is $100 million, and an additional $20 million of 2011 actual expenditure is added to it. When it comes time for the AER to conduct the 2014 charges revision process, the 2012 Approved Budget will artificially appear to be $120 million. If actual expenditure for 2012 is over $100 million but less than $120 million, the additional AER review for expenditure excess is not triggered. This is because actual expenditure remains below the artificial Approved Budget. In this case, the DNSP could automatically recover and pass on to consumers the additional expenditure up to $20 million.

However, any expenditure over $100 million should trigger the additional AER review because $100 million is the correct threshold. The AMI Order requires the AER to determine the extent to which the excess is prudent before it can approve it.[100]

Accordingly, the AER considers that the AMI Order does not permit recovery of expenditure in 2012 if it was incurred in the 2011. This is important when considering the additional costs that a reasonable business would incur if it switched to mesh radio. Section 2.6.7 discusses the AER's treatment of switching costs incurred in 2011.

2.1.3 AMI rollout requirements and service levels specification

Rollout schedule

Clause 14 of the AMI Order specifies meter rollout requirements, including the rollout schedule. It states that a DNSP must use its "best endeavours" to install remotely read interval meters to all customers with an annual consumption of 160MWh or less for which it is the responsible person by 31 December 2013.[101] Further, a DNSP must use its "best endeavours" to install meters in accordance with the following schedule:[102]

- 5 per cent of meters by 30 June 2010
- 10 per cent of meters by 31 December 2010
- 25 per cent of meters by 30 June 2011
- 60 per cent of meters by 30 June 2012

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99 *AMI Order*, clause 5I.5.
100 *AMI Order*, clause 5I.5.
101 *AMI Order*, clause 14.1.
102 *AMI Order*, clause 14.2, Schedule 1.

- 95 per cent of meters by 30 June 2013
- 100 per cent of meters by 31 December 2013.

In the event a DNSP does not meet one of the rollout milestones, the AER has broad discretion to determine whether the DNSP has used its "best endeavours" to meet the milestone. In effect, this means that if the AER was of a mind to penalise a DNSP for failing to meet a rollout milestone, it must review the DNSP's actions and decisions before it can do so.[103] For this reason, the AER's opinion is that the rollout milestones, while important, are not mandatory.

Clause 14 of the AMI Order also requires that all meters be operational as remotely read interval meters in accordance with the AMI Functionality Specifications.[104] In the AER's opinion, the AMI Order is not entirely clear on whether or not the meters must be operating as remotely read interval meters at each rollout milestone.

If so, AMI and IT infrastructure, the network management system (NMS) and the meter data management system (MDMS) would need to be online by 30 June 2010 so the first 5 per cent of meters could operate in accordance with the Functionality Specifications. If not, if 5 per cent of meters were rolled out by 30 June 2010, the DNSP would be acting in accordance with the rollout schedule as long as these meters commenced operating as remotely read interval meters once the necessary infrastructure came online.[105]

Minimum AMI service levels specification

The minimum AMI service levels specification requires the DNSP to deliver interval data to market from 1 January 2012 for all meters installed.[106] The minimum service levels are:

- no less than 95 per cent being actual data from meters (with the remainder substituted) to be available by 6am the following day
- no less than 99 per cent of actual data within 24 hours of the time in previous point
- no less than 99.9 per cent of actual data within ten business days from the day the consumption occurred.

In its Preliminary View, the AER took the view that this 1 January 2012 target is an important milestone that a reasonable business in SP AusNet's circumstances would make every effort to meet.[107] This is because unlike the rollout schedule and other service requirements such as re-energisation and de-energisation, the meter data to market requirement does not contain a "best endeavours" clause.[108] In the AER's opinion, this implies the 1 January 2012 AMI services target is mandatory, and the consequences of non-compliance would be more severe. Conversely, if a DNSP fails to meet a rollout target, the AER has discretion in determining whether the DNSP used its "best endeavours" and hence if it should be penalised.[109]

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103 *AMI Order*, clauses 14.1(b), 14.2(c).
104 *AMI Order*, clause 14.
105 The AER's *Preliminary View* adopted the latter interpretation.
106 DPI, *Minimum AMI service levels specification*, clause 4.3.
107 AER, *Preliminary View*, August 2012, p. 13.
108 DPI, *Minimum AMI service levels specification*, clauses 4.2, 4.3; AMI Order, clauses 14.1(a), 14.2(b).
109 *AMI Order*, clause 14.

The meter data to market requirement is relevant to the AER's implementation timeframe for switching to mesh radio, which the AER discusses in section 2.6.4. The "best endeavours" nature of the rollout milestones is relevant to section 4.1.1, which discusses compliance with the AMI Order.

2.2 Tribunal direction

While the AER must conduct its review in accordance with the AMI Order, the Tribunal has provided the direction for this remittal. For this reason, the AER's review is not typical of a budget and charges review under the AMI Order. Order 1(2) of the Tribunal's Orders is the starting point for the AER's task. It requires the AER to revise its Final Determination by:[110]

> amending [it] in such manner as it considers appropriate after considering the claim of SPI Electricity Pty Ltd in relation to meter supply expenditure (addressed in submissions to the Tribunal and in the reasons for decision of the Tribunal under the heading "WiMAX communications") in accordance with the reasons for decision of the Tribunal.

The Tribunal's Reasons provide further context to Order 1(2). In particular, at paragraphs 137 and 138 the Tribunal states:

> It is but part of the process to conclude (correctly, as the Tribunal has accepted) that the proposed expenditure with the ongoing commitment to WiMAX communications should have been carefully reconsidered by SP AusNet. The necessary next step is to determine whether, upon such a reconsideration, prudency required that the proposed expenditure not be incurred when measured against the commercial standard that a reasonable business would exercise in the circumstances. Unless that second step were taken, the AER could not establish that *incurring* that expenditure would involve a substantial departure from the commercial standard prescribed.
>
> The reconsideration may have led to a commercial decision to incur that expenditure. It may have led to a commercial decision to go down some other route. That is not a matter for the Tribunal to determine. In addition, unless that second step were taken, the AER could not - for the same reason - establish how much of the proposed expenditure could or should be removed in fixing the Approved Budget, and (as clause 5C.8 requires) no more than that amount. **The reconsideration would have had to consider the various options, as the AER says, including the costs already incurred to the date of the new Submitted Budget being reconsidered if an alternative technology was to be adopted, the costs of switching to the new selected technology, as well as the delays involved in retreating from the WiMAX communications technology which the AER had first mandated,** before the AER could have been satisfied in terms of clause 5C.3(b) of the AMI Order, and could have made the determination required by clause 5C.8. To proceed as the AER did, in our view, involved it proceeding under the AMI Order on the basis of a mistake or mistakes of fact of a material character (**emphasis** added).

In the AER's opinion, Order 1(2) read together with paragraphs 137 and 138 requires the AER to compare the cost of SP AusNet's proposed WiMAX communications solution with the costs that a reasonable business, having reconsidered its commitment to WiMAX, would incur in the circumstances.

The emphasised section of paragraph 138 contains some key phrases that provide further insight into matters that may be relevant to this comparison:

- the costs already incurred (see section 2.6.3)
- the date of the new Submitted Budget being reconsidered (see section 2.5.1)
- alternative technology (see section 2.5.2)
- the costs of switching to the new selected technology (see section 3.2.3)

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110 *Tribunal Orders*, Order 1(2), 26 March 2012.

- the delays involved in retreating from the WiMAX communications technology which the AER had first mandated (see section 2.6.4 and section 2.6.5).

However, the Tribunal has left open how the AER should consider these matters, so the manner in which the AER conducts its review may to a certain extent be open to interpretation.[111] For example, the following matters were left to the AER to decide:

- the timeframe to compare the costs of WiMAX with an alternative solution (see section 2.5.3)
- the information relevant to the reconsideration (see sections 2.6.1 and 2.6.2)
- the relevant commercial standard (see section 2.4).

On some of these matters, SP AusNet and the AER are in agreement. However, because SP AusNet and the AER do not agree on the remainder, there is also not complete agreement on the nature and scope of the AER's review. As section 2.3 explains, the AER is of the opinion that the Tribunal's direction is clear that the review should be limited in scope and partially hypothetical in nature.

The AER's Preliminary View contains some discussion on the matters listed above.[112] However, due to their relevance to the AER's approach and the lack of agreement between the AER and SP AusNet, the AER discusses them further in this chapter.

2.3 Nature and scope of the AER's review

As explained in section 2.2, it is the AER's opinion that although the Tribunal has to some extent left to the AER to decide how it conducts its review, the Tribunal's direction is clear that the review should be limited in scope and partially hypothetical in nature.

2.3.1 Limited review

Tribunal Order 1(2) limits the AER to making amendments only to the categories of expenditure addressed in submissions and the Tribunal's Reasons under the heading "WiMAX communications". According to SP AusNet's submissions to the Tribunal, these categories are:[113]

- meter supply capex
- communications maintenance operating expenditure and communications backhaul operating expenditure (maintenance opex)
- IT opex.

In its Response Submission, SP AusNet agrees that only these three categories can be amended.[114] SP AusNet's submissions to the Tribunal further limited the scope of its concerns about the AER's approach to these three categories of expenditure "insofar as they relate to the AER's treatment of WiMAX."[115]

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111 Order 1(2) requires the AER to amend its Final Determination "in such manner as it considers appropriate".
112 See AER, *Preliminary View*, August 2012, pp. 7-16.
113 SP AusNet, *Applicant's Written Outline of Submissions: Attachment 1 – WiMAX Communications*, 30 January 2012, paragraph 11.
114 SP AusNet, *Response Submission*, 14 September 2012, pp. 16-17.
115 SP AusNet, *Applicant's Written Outline of Submissions: Attachment 1 – WiMAX Communications*, 30 January 2012, paragraph 12.

Accordingly, the AER is of the opinion that SP AusNet's submissions to the Tribunal limit the scope of the amendments the AER can make to its Approved Budget for SP AusNet to only the WiMAX communications related expenditure for these three categories. Consequently, it is the AER's view that its Final Determination for all other expenditure stands and the quantum of such expenditure cannot be amended. The AER considers this approach to amending its Final Determination is appropriate because it is consistent with the matters addressed:[116]

(a) by SP AusNet in its submissions to the Tribunal under the heading "WiMAX communications"

(b) in the Tribunal's Reasons under the same heading.

However, the AER considers the review upon which any amendments are premised (while limited) must necessarily be broader than the WiMAX-related expenditure of these three categories because the Tribunal has directed the AER:[117]

> to determine whether, upon such a reconsideration, prudency required that the proposed [WiMAX communications] expenditure not be incurred when measured against the commercial standard that a reasonable business would exercise in the circumstances.

In the AER's opinion, this involves comparing the costs likely to be incurred from the reconsideration date of:

- SP AusNet's WiMAX communications solution
- switching to an alternative solution (mesh radio).

To do this, the AER must compare the expenditure categories that would be affected by a change in communications solution. In its Preliminary View, the AER explained that expenditure it considers would be so affected includes:[118]

- meter capex insofar as it relates to communications (e.g. communications modules and antennas)
- communications network and backhaul capex and opex
- IT capex and opex
- retrofitting costs
- switching costs.

Based on a comparison of this expenditure, the AER can determine whether or not the proposed WiMAX communications expenditure (for the three relevant categories) should have been incurred and make any necessary additions to its Final Determination Approved Budget for SP AusNet.

Therefore, the AER's opinion is that the limited review involves the following stages:

(1) compare the expenditure that would be affected by a change in communications solution for SP AusNet's WiMAX solution and mesh radio, including the costs to switch

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116 *Tribunal Orders*, Order 1(2).
117 *Tribunal Reasons*, paragraph 137.
118 AER, *Preliminary view*, August 2012, pp. 19, 21-23.

(2) if mesh radio is more cost effective than WiMAX, determine if any additional expenditure for meter supply capex, maintenance opex and IT opex (insofar as they relate to the communications solution) would be incurred in the 2012-15 budget period

(3) consider whether any qualitative factors would influence a decision to switch to mesh radio

(4) if applicable, make any necessary additions to the October 2011 Final Determination Approved Budget for SP AusNet.

2.3.2 Nature of the review

In its Preliminary View, the AER stated that – in light of the Tribunal's Reasons and the AMI Order – its review must necessarily be hypothetical in nature. This is because the Tribunal has directed the AER to consider what decision a reasonable business in SP AusNet's circumstances would have made, had it reconsidered its commitment to WiMAX communications.[119] This means the AER's consideration cannot be based solely on the information actually available to SP AusNet at the time. The AER must have regard to information that a reasonable business could have obtained in the circumstances, making reasonable enquiries.

However, it seems that SP AusNet does not share the AER's view. For example, SP AusNet submits in its Response Submission that certain information cannot be used in the AER's assessment because it was not known to SP AusNet at the date of reconsideration.[120]

The AER does not agree and reiterates its Preliminary View. It is the AER's opinion that the language the Tribunal uses in its Reasons clearly supports the AER's interpretation – a point SP AusNet appears to have accepted previously.[121] For example, the Tribunal concluded that SP AusNet should have reconsidered its commitment to WiMAX communications, and by not doing so, had substantially departed from the commercial standard a reasonable business would exercise in the circumstances.[122] Because SP AusNet had not actually reconsidered its WiMAX solution, the Tribunal uses phrases in paragraph 138 such as what a reconsideration "may have led to" and "would have had to consider". The AER considers this language clearly requires it to create a past event as the basis for its assessment.

In undertaking this review, the AER has had regard to SP AusNet's circumstances. However, the nature of the review means that the AER must also hypothesise about what decision a reasonable business in SP AusNet's circumstances would have made, based on information available or obtainable in February 2011. It is difficult for the AER to make definitive statements about what such a decision might have been. Section 2.6.1 elaborates on the AER's Preliminary View discussion of the information that the AER considers is relevant to its assessment.

2.4 The commercial standard

The AER's Preliminary View was that the commercial standard a reasonable business in SP AusNet's circumstances would have exercised would have been to fully reconsider its Submitted Budget, and, in so doing, would have decided to switch to mesh radio.[123] The AER considered that by deciding not to switch to mesh radio, SP AusNet substantially departed from the commercial standard because the

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119 AER, *Preliminary view*, August 2012, p. 4.
120 For example, SP AusNet, *Response Submission*, 14 September 2012, pp. 20, 22, 23, 30, 46-47.
121 For example, SP AusNet, *Revised response to information requests 2 - 6 and AER follow up correspondence of 9 July 2012*, received 17 July 2012, pp. 4, 9.
122 *Tribunal Reasons*, paragraphs 131, 137.
123 AER, *Preliminary view*, August 2012, p. 1.

costs of retaining WiMAX were substantially higher than those associated with switching to mesh radio. Accordingly, the AER's view was that the difference between the costs under review and mesh radio switching costs were not prudent.[124]

SP AusNet's Response Submission raises some concerns with the AER's Preliminary View, which in essence are:[125]

- the AER's Preliminary View repeats the error made in its Final Determination
- the AER does not state whether it agrees with SP AusNet's commercial standard, or address the question of what constitutes a "substantial departure" from the commercial standard
- it is evident that the AER has not followed the Tribunal's conclusions.

2.4.1 Error from the Final Determination

The AER considers SP AusNet has mischaracterised its Preliminary View, and the AER has not erred as SP AusNet submits. The AER's reasons are below.

SP AusNet's first point is that it is necessary to determine whether prudency required that the proposed expenditure not be incurred. It would not be sufficient for the AER to conclude that SP AusNet had not reconsidered the technology options. SP AusNet further states that if the AER found mesh radio best satisfied the commercial standard, it is not enough to simply assert that any expenditure incurred by SP AusNet above the costs of a mesh solution is imprudent.[126]

First, the AER's view was not that SP AusNet had failed to reconsider the technology options. The AER's view was that upon reconsidering the technology options, SP AusNet did not choose the option that would provide the prudent outcome for itself or its customers, despite compelling reasons to do so.[127]

The AER included the first limb – that a reasonable business would fully reconsider its Submitted Budget – in its Preliminary View commercial standard. This was because the AER considered SP AusNet's Reconsideration Submission did not adequately demonstrate a full reconsideration. For example, SP AusNet's quantitative assessment covered only the subsequent budget period (2012-15) and did not look at ongoing costs.[128] The first limb is not necessary in this Final Decision because the modelling approach in SP AusNet's Response Submission is more in line with the AER's Preliminary View approach.

Second, the AER agrees in principle that it would not be sufficient to simply deem any expenditure above the cost of mesh radio imprudent. However, the AER does not agree that this is an accurate representation of the AER's Preliminary View.

The AER considers that if the quantitative analysis revealed the cost of retaining WiMAX was marginally higher than that of switching to mesh radio, the impact of qualitative factors could be the difference between deciding whether or not to switch technology. In such circumstances, it is unlikely to be sufficient for the purposes of the AMI Order to consider the cost of retaining WiMAX imprudent.

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124 AER, *Preliminary View*, August 2012, p. 3.
125 SP AusNet, *Response Submission*, 14 September 2012, pp. 14-15.
126 SP AusNet, *Response Submission*, 14 September 2012, pp. 14-15.
127 AER, *Preliminary View*, August 2012, p. 1.
128 SP AusNet, *Reconsideration Submission*, 5 June 2012, p. 19.

However, the AER's preliminary view was that this was not a marginal decision. The 15 year present value of switching to mesh radio was $117.5 million (58 per cent) lower than that of retaining WiMAX over the same period. Despite this substantial quantitative difference, the AER still considered SP AusNet's qualitative concerns in section 1.3.3 of its Preliminary View. In doing so, the AER considered that the qualitative analysis supported the results of its quantitative analysis, and a reasonable business in the circumstances would have switched to mesh radio.[129]

The AER did consider that some of SP AusNet's concerns relating to qualitative matters may be relevant to making the decision to switch. However, they were ultimately outweighed by the substantially lower cost of switching.[130] Accordingly, the AER considers it was (and remains) reasonable in the circumstances to form the view based on its analysis that:

(1) it is a substantial departure from the commercial standard of a reasonable business in the circumstances to incur the costs of retaining WiMAX rather than those of switching to mesh radio, and therefore

(2) the costs of retaining WiMAX would not be prudent, but the costs associated with switching to mesh radio would be.

Accordingly, in its Preliminary View, the AER found that to switch to mesh radio a reasonable business would have incurred an additional $11.7 million in 2012-15 above the Approved Budget determined by the AER in 2011. Conversely, SP AusNet proposed to incur $72.2 million above the AER's Approved Budget to retain its WiMAX solution.[131]

Therefore, by not deciding to switch to mesh radio, SP AusNet substantially departed from the commercial standard. Primarily, this is because it was the more costly of the two alternative outcomes of the reconsideration, and substantially so (58 per cent). Consequently, the AER considered that incurring $60.5 million would not be prudent.[132] This amount is the difference between the $72.2 million under review and the AER's preliminary view on the prudent costs associated with switching to mesh radio – $11.7 million. The AER considers this demonstrates it has not erred as SP AusNet suggests.

2.4.2 Definitions relevant to the commercial standard

SP AusNet's second point relates to definitions. SP AusNet submits it is unclear whether the AER agrees with its commercial standard, or what the AER's definition of "substantial departure" is.[133]

The AER did not consider it necessary to explicitly define "substantial departure" in its Preliminary View. The AER considered its analysis clearly demonstrated that a decision to incur $117.5 million more than necessary over 15 years would be a substantial departure from the decision a reasonable business would have made in the circumstances.

In any case, the AER does not consider it can or should explicitly define "substantial departure", or indeed "commercial standard". The AMI Order does not define or elaborate on references to "substantial departure" or "commercial standard" other than requiring the AER to take into account and give fundamental weight to the matters referred to in clause 5I.8 when applying the commercial

129 AER, *Preliminary View*, August 2012, p. 31.
130 AER, *Preliminary View*, August 2012, p. 31.
131 AER, *Preliminary View*, August 2012, p. 31.
132 AER, *Preliminary View*, August 2012, p. 31.
133 SP AusNet, *Response Submission*, 14 September 2012, pp. 14-15.

standard test.[134] Further, the AMI Order does not require the AER to set a certain amount or percentage as the threshold amount for what is "substantial" and what is not.

Due to the lack of guidance in the AMI Order, the AER's view is that the "commercial standard" and what amounts to a "substantial departure" from it are matters for the AER's judgment, having regard to the relevant circumstances and ordinary meaning.

Turning to consideration of the relevant circumstances, they have changed substantially between the Preliminary View and this Final Decision. This is because SP AusNet's Response Submission is substantially different to its Reconsideration Submission. This required the AER to undertake its analysis anew, impacting the quantitative comparison.

However, it remains that what constitutes a substantial departure from the commercial standard is a matter for the AER's judgment. Indeed, the inherently hypothetical nature of this remittal (because SP AusNet did not actually reconsider its Submitted Budget in February 2011) means the AER has had to exercise more judgment than it might otherwise. For example, the AER has had to consider what SP AusNet actually knew at the time and what a reasonable business making reasonable enquiries could have known in the circumstances, had SP AusNet actually reconsidered WiMAX communications.[135]

Turning to SP AusNet's commercial standard, the AER considers that in the circumstances, it places too much emphasis on qualitative matters. As noted above, the AER's opinion is that qualitative matters may be more relevant where the quantitative results are less clear. However, if a reasonable business found that switching to an alternative technology would save it a very substantial amount (such as $117.5 million over 15 years in present value terms) it would most likely afford qualitative concerns significantly less weight.

The AER acknowledges that its Preliminary View statements about the commercial standard may be better characterised as the outcome of applying the commercial standard test rather than a definition of the test itself. While the AER considers its Preliminary View was clear as to how this outcome would have been reached, it has taken this opportunity to clarify its understanding of the commercial standard for this Final Decision.

The commercial standard is the decision a reasonable business would have made in the circumstances. To determine this, the AER has considered quantitative and qualitative factors. However, where quantitative analysis yields a substantial difference in the costs of the technology options, the AER has the afforded the qualitative factors less weight. The AER has applied this test in chapter 3.

2.4.3 Following the Tribunal's conclusions

SP AusNet's third point is really about its circumstances. SP AusNet submits that the Tribunal made clear that the AER must have regard to SP AusNet's particular circumstances. To do this, SP AusNet points to statements made by the Tribunal that the AER would need to consider the costs of a complete rollout of mesh radio, the costs already spent in the partial rollout of WiMAX and the costs associated with switching to a different technology.[136]

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134 *AMI Order*, clause 5C.4.
135 Section 2.6.1 discusses this matter further.
136 SP AusNet, *Response Submission*, 14 September 2012, pp. 14-15.

SP AusNet considers it is evident from the AER's Preliminary View that the AER has not considered these costs.[137] However, in its Preliminary View, the AER did turn its mind to each of these costs.[138] While the outcome of the AER's assessment was different to SP AusNet's, that does not mean the AER did not follow the Tribunal's directions to consider these costs.

Indeed, the AER's considers that the Tribunal's Reasons focus on the need for the AER to consider the additional costs (above the Final Determination benchmark mesh radio rollout costs) a reasonable business in SP AusNet's circumstances would incur if it decided to switch technology.[139] The AER considers its analysis in the Preliminary View and in this Final Decision demonstrates that it has done so. Section 2.6.3 contains further discussion on costs already incurred.

2.5 Matters on which the AER and SP AusNet now agree

In its Preliminary View, the AER disagreed with SP AusNet's Reconsideration Submission on a number of matters relating to review scope and approach. On some of these matters, SP AusNet has changed its Reconsideration Submission position and now agrees with the AER.

2.5.1 Date of reconsideration

SP AusNet now agrees with the AER on the date of reconsideration.[140] In its Preliminary View, the AER considered 28 February 2011 was the appropriate date on account of the Tribunal referring to "the date of the new Submitted Budget being reconsidered." The AER considered a reasonable business would have assessed its forecast expenditure for 2012-15 and reconsidered its commitment to proceed with WiMAX in the months preceding this date.[141] The AER maintains this view.

However, the AER reiterates an important point made in its Preliminary View. That is, February 2011 would be the *latest* date a reconsideration should have occurred. SP AusNet had several opportunities between July 2008 and February 2011 when it should have reviewed its options.[142] Section 4.1.1 contains further detail on the state of SP AusNet's WiMAX rollout as at February 2011.

2.5.2 Feasible technology options

The AER and SP AusNet are now in agreement that the only two viable technology options for a primary communications solution are mesh radio and WiMAX.[143]

In its Reconsideration Submission, SP AusNet put forth a hybrid mesh radio-WiMAX solution as an additional technology option.[144] The AER's preliminary view was that this hybrid solution would not be feasible. The AER was (and still is) of the opinion that it would be relatively high risk and more costly to operate a hybrid of two primary communications solutions in the longer term.[145] Therefore, this Final Decision compares WiMAX and mesh radio only.

2.5.3 Expenditure timeframe and modelling approach

SP AusNet and the AER now agree on the timeframe to assess expenditure and the general modelling approach. In its Reconsideration Submission, SP AusNet examined the cost of a full rollout

137 SP AusNet, *Response Submission*, 14 September 2012, pp. 14-15.
138 AER, *Preliminary View*, August 2012, pp. 17-23.
139 *Tribunal Reasons*, paragraph 128.
140 SP AusNet, *Response Submission*, 14 September 2012, p. 22.
141 *Tribunal Reasons*, paragraph 138.
142 AER, *Preliminary View*, August 2012, p. 9.
143 SP AusNet, *Response Submission*, 14 September 2012, p. 21.
144 SP AusNet, *Reconsideration Submission*, 5 June 2012, p. 16.
145 AER, *Preliminary View*, August 2012, pp. 15-16.

for each technology, but only over the 2012-15 subsequent budget period. SP AusNet assumed that the material differences in the costs of alternative technologies would occur over 2012-15, and that costs beyond 2015 would be the same regardless of the technology.[146]

In its Preliminary View, the AER did not agree and conducted its quantitative analysis using a 15 year timeframe from the reconsideration date on the basis that a reasonable business would consider the relevant costs, benefits and risks over time.[147] The AER considered 15 years was reasonable as it is the length of the assumed meter asset depreciation schedule in the AMI Order, and thus could be considered to represent a full rollout cycle.[148] The AER also focussed its assessment on the key cost elements that would differ depending on the communications solution.[149]

SP AusNet's Response Submission is based on a similar modelling approach to the AER's Preliminary View. In essence, it examines the costs that would be affected by a change in communications solution over 15 years from 28 February 2011.[150] The AER has maintained its Preliminary View approach in this Final Decision.

2.6 Matters on which the AER and SP AusNet do not agree

SP AusNet and the AER do not agree on several matters. These are relevant to the approach the AER has taken to making its decision on the prudent costs likely to be incurred by a reasonable business in SP AusNet's circumstances. This section sets out the AER's views on what it considers is the correct approach for these matters.

2.6.1 Information relevant to the reconsideration

Given the partially hypothetical nature of this exercise, the AER considers that information relevant to the reconsideration includes information that could have been obtainable by a reasonable business in the circumstances.[151] This is an objective test about the knowledge that a reasonable business could have had, if it made reasonable enquiries. It is not about SP AusNet's subjective actual knowledge. In other words, whether or not SP AusNet actually knew something at the time of the reconsideration is not determinative. What is determinative is whether a reasonable business could have known it.

SP AusNet's position on relevant information is not entirely clear. Some of the statements in its Response Submission seem inconsistent on this issue. At one point SP AusNet states that only information "reasonably available" leading up to 14 February 2011 could be employed in a reconsideration undertaken on 28 February.[152] SP AusNet's use of "reasonably" suggests an objective view, consistent with the AER's understanding. However, in other parts of its Response Submission, SP AusNet submits the AER has erred because it used information that "was not available to SP AusNet as at 28 February 2011."[153] Similarly, the terms of reference SP AusNet provided to KEMA require it to provide expert analysis "given the information available to SP AusNet at 14 February 2011."[154] This seems to indicate that SP AusNet is applying a subjective standard.

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146 SP AusNet, *Reconsideration Submission*, 5 June 2012, p. 19.
147 AER, *Preliminary View*, August 2012, pp. 12-13.
148 AER, *Preliminary View*, August 2012, pp. 12-13.
149 AER, *Preliminary View*, August 2012, p. 7.
150 SP AusNet, *Reconsideration Submission*, 5 June 2012, pp. 24-25.
151 AER, *Preliminary View*, August 2012, pp. 10-12.
152 SP AusNet, *Response Submission*, 14 September 2012, p. 23.
153 For example, SP AusNet, *Response Submission*, 14 September 2012, pp. 20, 22, 23, 30, 46-47.
154 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, p. 15.

The standard for relevant information

SP AusNet's primary point appears to be that the AMI Order requires the AER, when applying the commercial standard test, to take into account and give fundamental weight to (among other things) the circumstances of SP AusNet and the information available to it at the time.[155]

The AER agrees that SP AusNet's circumstances are relevant and has taken them into account. However, the AER does not agree that it is only the information available to SP AusNet at the time that is relevant.[156] The AER does not agree with SP AusNet's interpretation of the AMI Order in this respect, or its interpretation of the Tribunal's Reasons and the nature of this task. The AER considers the standard for relevant information is objective and its assessment can also take into account information that could have been obtained by a reasonable business making reasonable enquiries.

The AMI Order

Clause 5I.8(d) of the AMI Order requires the AER to take into account and give fundamental weight to "the information available at that time." It does not state it must take into account and give fundamental weight to the information available *to the distributor* at that time. This is in contrast to clauses 5I.8(a), (b) and (c) which explicitly refer to "the distributor". In the AER's opinion, this interpretation is consistent with an objective standard.

The Tribunal's Reasons

The Tribunal made clear that the AER's Final Determination did not appropriately have regard to SP AusNet's circumstances. The Tribunal found that the AER did not take into account the fact that SP AusNet had commenced its AMI rollout using WiMAX as its communications solution.[157] This was a relevant and fundamental circumstance that applied to SP AusNet and not to the other Victorian DNSPs.

This meant that the Tribunal considered the benchmark mesh radio expenditure determined by the AER was inappropriate to the extent that SP AusNet could not reasonably be expected to switch to mesh radio without incurring some additional costs.[158] For this reason, the Tribunal remitted the matter back to the AER.[159] However, the AER considers that the Tribunal's emphasis on SP AusNet's circumstances relates primarily to the fact that it had commenced its AMI rollout using WiMAX. The Tribunal's Reasons do not state that the reconsideration must also be based solely on information that SP AusNet knew at the time of the reconsideration.

As explained above (and in the Preliminary View[160]), SP AusNet did not actually reconsider its commitment to WiMAX on 28 February 2011. This means the AER's assessment of whether or not a reasonable business in the circumstances would have switched to mesh radio is inherently hypothetical. This includes determining the costs of a mesh radio rollout and the costs of switching.

Because this remittal is partially hypothetical, the test for relevant information must be objective. The AER must necessarily have regard to information that could have been known to SP AusNet, had it sought it. Taking SP AusNet's view appears to imply that if SP AusNet had not turned its mind to or

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155 SP AusNet, *Response Submission*, 14 September 2012, p. 22.
156 *AMI Order*, clauses 5C.4, 5I.8.
157 For example, *Tribunal Reasons*, paragraphs 126, 129, 130, 13.
158 *Tribunal Reasons*, paragraphs 128-130.
159 *Tribunal Reasons*, paragraphs 138-139.
160 AER, *Preliminary View*, August 2012, pp. 4-5.

enquired about something by 28 February 2011 (or 14 February as SP AusNet submits[161]) the AER could not consider it.

The AER considers that a reasonable business in the circumstances would have made relevant enquiries to determine whether it should have switched, including obtaining a quote from a mesh radio supplier. Because SP AusNet did not actually do this, the AER must construct an equivalent of such a mesh radio "quote" so it can assess SP AusNet's estimates against that of a reasonable business.

As stated in the Preliminary View, the AER has done this by relying on information:[162]

- known to be available to SP AusNet as at the reconsideration date for both WiMAX and mesh radio
- that would have been obtainable by a reasonable business in the circumstances (the circumstances being that a WiMAX-based rollout was already in progress at the time)
- from the AER's October 2011 Final Determination that is relevant to the reconsideration.

SP AusNet appears to take particular issue with the third category. The AER reiterates that it considers it is reasonable to use mesh radio costs from its Final Determination for Powercor and Jemena Electricity Networks (JEN) as a proxy for certain costs of a mesh radio rollout. The Final Determination costs represent the AER's opinion of the prudent and in scope costs of the February 2011 Submitted Budgets of these businesses.[163] To be clear, the AER does not consider that SP AusNet could have obtained these exact numbers. Rather, they represent a reasonable estimate (a "quote") of mesh radio costs that could have been obtained by a reasonable business in the circumstances making enquiries.

Therefore, the AER has not relied on this information because SP AusNet could have known the outcome of the AER's assessment of Powercor and JEN's budget applications at the time of the reconsideration. It has used the information because it is information available to the AER to create a reasonable estimate of the cost of a mesh radio rollout that a reasonable business should have been able to obtain in the circumstances.

Also, some of KEMA's information that SP AusNet relies on was not available to SP AusNet in February 2011. For example, KEMA developed a 93.5 per cent coverage estimate for mesh radio specifically for SP AusNet's Response Submission in September 2012.[164] SP AusNet also submits that "current internal purchase orders" (as at October 2012) are the basis for the "agreed 2011" actual contracted cost to retrofit a communications module that SP AusNet used in its Reconsideration Submission.[165] Therefore it appears that SP AusNet's position is somewhat inconsistent as to when it is appropriate to rely on information actually available at 28 February 2011.

SP AusNet has not provided evidence to suggest that a reasonable business in the circumstances would not have been able to obtain an estimate of the costs of a mesh radio rollout. Accordingly, the

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161 SP AusNet submits for a reconsideration date of 28 February 2011, it would be inconceivable that new information that becomes available less than two weeks prior to that date could be included in the proposed budget due to the need to engage with its Board and government. SP AusNet, *Response Submission*, 14 September 2012, p. 23.

162 AER, *Preliminary View*, August 2012, p. 10.

163 AER, *Preliminary View*, August 2012, pp. 10-11.

164 SP AusNet, *Response Submission*, 14 September 2012, p. 32.

165 SP AusNet, *Response to information request 7 follow up of 25 October 2012*, received 1 November 2012, pp. 6-7; SP AusNet, *Comparative cost of Mesh alternative solution -050612.xls*, 5 June 2012, Meter costs of switching tab.

AER considers its approach is reasonable and consistent with the Tribunal's Reasons and the AMI Order.

Consultant advice

SP AusNet and the AER have both relied on the advice of consultants for this review. The AER has not accepted KEMA's views in particular places where the AER considers they are insufficiently substantiated. Much of KEMA's findings are based on its own experience.[166] However, KEMA did not provide the AER with the ability to review the material on which these findings were based. This means that many of KEMA's estimates are essentially a "black box", that is difficult for the AER to rely on.

In most cases, KEMA's responses to AER requests for additional information did not provide the AER or its consultant, Energeia, with further confidence that KEMA's findings could be relied upon.[167] KEMA also declined to provide the AER and Energeia with access to substantive information on the benchmarking data it used to develop its cost estimates.[168]

Further, KEMA did not provide its mesh radio coverage model to the AER for review since it "is a proprietary model and is commercially confidential."[169] The AER and its consultant, Energeia, have access only to Appendix B to KEMA's report, which contains some analysis of the methodology behind its model. But, it does not provide significant detail.[170] This lack of transparency creates a hindrance to an open and fair assessment of KEMA's estimates upon which SP AusNet has relied.

Further, Energeia considers certain KEMA assumptions to be incomplete and unsubstantiated. Energeia also considers some of KEMA's findings vary significantly from comparable real world experience in Victoria. Accordingly, Energeia considers it is not appropriate to rely on KEMA's estimates.[171]

The AER understands KEMA is a reputable organisation with expertise in this area. However, it would be inappropriate for the AER to accept KEMA's estimates "on trust". The AER cannot appropriately assess KEMA's findings, its coverage model and the assumptions that underlie it, or reconcile KEMA's findings to comparable data. Accordingly, the AER considers it is not appropriate to rely on KEMA's findings.

In contrast, the AER considers it is appropriate to rely on Energeia's findings for its quantitative analysis. Energeia's views are transparent and its benchmarks are identifiable and relevant. For example, most of Energeia's benchmarks are based on costs or rates of other Victorian DNSPs. Some are derived from North American utilities (such as Pacific Gas and Electric) when Energeia has found them to be valid.[172]

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166 For example, KEMA, *Assessment of AMI Communication Options*, 14 September 2012, pp. 20, 31, 40.

167 SP AusNet, *Response to information request 7 of 8 October 2012*, received 22 October 2012; SP AusNet, *Response to follow up to information request 7 of 25 October 2012*, received 1 November 2012; SP AusNet, *Response to information request 7 follow up of 25 October 2012*, received 7 November 2012.

168 For example, SP AusNet, *Response to information request 7 of 8 October 2012*, received 22 October 2012, pp. 2, 10.

169 SP AusNet, *Response to information request 7 of 8 October 2012*, received 22 October 2012, p. 10.

170 The AER also requested the geographic information systems data that KEMA's report states its mesh radio coverage model is based on. KEMA, *Assessment of AMI Communication Options*, 14 September 2012, p. 28. SP AusNet did not provide this data, stating it was highly sensitive. SP AusNet, *Response to information request 7 of 8 October 2012*, received 22 October 2012, p. 13. The AER later withdrew this request upon being orally advised by SP AusNet that it could provide only the raw data rather than the output from this data. AER, *Email to SP AusNet re Information request 7*, sent 25 October 2012.

171 For example, Energeia, *January 2013 Report*, pp. 39-41.

172 Energeia, *January 2013 Report*, pp. 11-13.

2.6.2 Benchmarking

SP AusNet's Response Submission raises concerns over the AER's use of benchmarking to determine mesh radio coverage and certain expenditure. As stated in its Preliminary View,[173] The Tribunal agreed that Powercor is a "comparable distributor" following the AER's consideration of the "nature and size of SP AusNet's business" and the "limited information provided by SP AusNet."[174]

However, SP AusNet submits in its Response Submission that the Tribunal's Reasons do not accept the AER's Final Determination benchmarks as "accurately reflecting SP AusNet's costs of adopting a mesh radio solution", or support the use of Powercor data in relation to mesh radio coverage.[175] SP AusNet further submits that it is inappropriate to use Powercor and JEN benchmarks because they are different in terms of network characteristics and are better able to rely on economies of scale to achieve lower costs.[176]

In addition, on 9 January 2013 and 16 January 2013, SP AusNet lodged late submissions on the comparability of AMI project costs.[177]

For the reasons below, the AER maintains that it is appropriate to benchmark other DNSPs for cost and coverage estimates. Further, in response to a change in position by SP AusNet in its Response Submission, the AER is now relying on Powercor volumes and unit costs for the appropriate percentage and cost of antennas for a mesh radio rollout. Section 2.6.8 discusses this matter further.

Late submissions

Material in these submissions suggests that SP AusNet could have provided this information to the AER earlier in the remittal process. For example, KEMA's report provides an opinion on SP AusNet's comparability with Powercor but provides little reasoning in support of its view.[178] Instead, SP AusNet has submitted the material after:

- the AER made its Preliminary View on 13 August 2012
- lodging its Response Submission and KEMA's report on 14 September 2012
- the AER requested further justification on SP AusNet's Response Submission on 8 October 2012, and asked follow up questions on 25 October 2012
- the AER provided SP AusNet with an opportunity to comment on matters relevant to the AER's decision on 30 November 2012
- 1 January 2013, at which point this remittal had been ongoing for approximately 8 months
- the directions hearing for SP AusNet's *Administrative Decisions (Judicial Review) Act* application (a matter related to this remittal) has been rescheduled several times.

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173 AER, *Preliminary View*, August 2012, p. 16.
174 *Tribunal Reasons*, paragraphs 180-181.
175 SP AusNet, *Response Submission*, 14 September 2012, pp. 17, 32.
176 SP AusNet, *Response Submission*, 14 September 2012, pp. 17, 33.
177 SP AusNet, *Supplementary submission on comparability of AMI costs*, 9 January 2013; we-do-IT, *PowerCor Region Terrain comparison*, 16 January 2013.
178 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, pp. 26-28.

At the time SP AusNet lodged these submissions, the AER had substantively completed its analysis. Nevertheless, the AER has given them consideration. The AER has sought to address SP AusNet's concerns to the extent possible considering the lateness of these submissions.

SP AusNet's 9 January 2013 submission states that the AER has misunderstood the different operating structures and organisational arrangements adopted across the industry to implement the AMI project. SP AusNet submits that this misunderstanding may be leading the AER to draw invalid cost comparisons of various AMI project activities across the Victorian DNSPs.[179] Specifically, SP AusNet raises the following concerns:

(1) unlike the other Victorian DNSPs, SP AusNet has implemented the AMI project on a standalone basis so it did not have the opportunity to share project costs with any other businesses (particularly for IT)[180]

(2) in making cost comparisons, the AER needs to take into account the following factors:[181]

- IT sharing arrangements that benefit distributors that have joint programs
- purchasing power for meters due to economies of scale in meter volumes
- differences in exchange rates, and SP AusNet's decision to hedge its exchange rate
- other cost sharing arrangements such as project management office (PMO), meter data management and reading, customer service and control room operations
- differences in the treatment of debt and equity raising costs.

SP AusNet submitted the adjustments it considers must be made for an appropriate comparison of the total costs of the SP AusNet and Powercor AMI programs, given the above factors.[182]

SP AusNet's 16 January 2013 submission (prepared by technology consultants we-do-IT) compares the "serviceability" of SP AusNet's territory compared to Powercor's on the basis of undefined characteristcs – terrain roughness ("ruggedness") and property density.[183] It draws the conclusion that SP AusNet has a higher proportion of properties with a "difficult serviceability" than Powercor. However, it does not explain how this affects communications network cost drivers or the AER's mesh radio estimates.[184]

The AER is surprised to receive these submissions given that SP AusNet itself used Powercor and JEN benchmarks in its Reconsideration Submission for some categories of expenditure.[185] SP AusNet also confirmed its use of Powercor costs as a proxy for mesh radio backhaul costs in a response to a

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179 SP AusNet, *Supplementary submission on comparability of AMI costs*, 9 January 2013, p. 2.
180 SP AusNet, *Supplementary submission on comparability of AMI costs*, 9 January 2013, pp. 4-5.
181 SP AusNet, *Supplementary submission on comparability of AMI costs*, 9 January 2013, pp. 4-5.
182 SP AusNet, *Supplementary submission on comparability of AMI costs*, 9 January 2013, pp. 6-9.
183 we-do-IT, *PowerCor Region Terrain comparison*, 16 January 2013.
184 we-do-IT, *PowerCor Region Terrain comparison*, 16 January 2013.
185 SP AusNet, *Comparative costs of Mesh alternative solution -050612.xls*, 5 June 2012, Comms costs of switching tab and IT costs of switching tab. SP AusNet also acknowledged this in its Response Submission: SP AusNet, *Response Submission*, 14 September 2012, p. 23.

request for information from the AER.[186] Further, the AER considers the Tribunal accepted benchmarking in the merits review process.[187]

For the reasons below, the AER considers SP AusNet's late submissions do not provide sufficient justification to cause the AER to change its approach.

Opportunity to share costs

The AER does not agree with SP AusNet's submission that the AER is not appropriately accounting for SP AusNet's circumstances by using JEN as a benchmark for IT costs.[188] The AER maintains its Preliminary View that it is reasonable to use its Final Determination IT expenditure for JEN as a benchmark for IT costs.[189]

The AER's Preliminary View referred to the fact that SP AusNet's Reconsideration Submission used JEN's IT costs for its mesh radio estimate for its NMS and MMS capex.[190] The AER accepted SP AusNet's approach as consistent with the estimate of a reasonable business in SP AusNet's circumstances, albeit with adjustments to ensure it aligned with the AER's Final Determination. The AER noted JEN and SP AusNet share a common back office service provider. The AER considered NMS and MMS costs would not largely vary as a function of customer numbers or network topology but adjusted the JEN licensing amounts to reflect SP AusNet's higher meter volumes because such costs would likely be dependent on network size.[191] The AER also applied the same logic to MDMS capex and opex.[192]

SP AusNet and KEMA submit it is inappropriate to use JEN as a benchmark for IT costs because JEN has the advantage of being able to share its IT system costs with UED. Accordingly, JEN would be able to achieve lower costs than SP AusNet could on its own.[193] As noted above, SP AusNet itself used JEN benchmarks as the basis for some of its IT costs in its Reconsideration Submission, but has changed its approach in its Response Submission.

SP AusNet's late submission reiterates the point made in its Response Submission, but uses CitiPower and Powercor as an example rather than JEN and UED.[194] SP AusNet does not explain why it has done this, and the AER questions the relevance of this given that the AER does not rely on CitiPower and Powercor benchmarks for its estimate of mesh radio IT costs. For the following reasons the AER considers it is appropriate to use a pro-rata of JEN's IT costs as a benchmark for mesh radio IT costs.

First, the AER is not convinced that SP AusNet and KEMA have provided a reasonable basis to suggest that a benchmark based on JEN costs is inappropriate.

SP AusNet submits it does not have access to economies of scale and cannot share costs as JEN and UED can.[195] However, SP AusNet has not explained why any difference in economies of scale

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186 SP AusNet, *Revised response to information requests 2 - 6 and AER follow up correspondence of 9 July 2012*, received 17 July 2012, pp. 13-14.
187 *Tribunal Reasons*, paragraph 129.
188 SP AusNet, *Supplementary submission on comparability of AMI costs*, 9 January 2013, p. 4.
189 AER, *Preliminary View*, August 2012, pp. 10-11, 20-21.
190 SP AusNet, *Comparative cost of Mesh alternative solution -050612.xls*, 5 June 2012, IT costs of switching tab.
191 AER, Preliminary View, August 2012, pp. 10-11, 20-21; *Energeia, Review of SP AusNet's WiMax Related Expenditure*, August 2012 (*August 2012 Report*), p. 30.
192 AER, *Preliminary View*, August 2012, pp. 20-21.
193 SP AusNet, *Response Submission*, 14 September 2012, p. 33; KEMA, *Assessment of AMI Communication Options*, 14 September 2012, p. 37.
194 SP AusNet, *Supplementary submission on comparability of AMI costs*, 9 January 2013, pp. 6-9.
195 SP AusNet, *Supplementary submission on comparability of AMI costs*, 9 January 2013, pp. 4-5.

available to a combined JEN/UED entity or the inability to share costs would be substantial enough to adopt KEMA's estimates or warrant an adjustment to the AER's benchmark.

In 2011, SP AusNet had approximately 700,000 meters compared to about 1 million for JEN/UED and CitiPower/Powercor.[196] This indicates that SP AusNet is not a small DNSP in terms of meter volumes. The size difference of SP AusNet compared to JEN/UED and CitiPower/Powercor is much less significant than, for example, the size difference between JEN (who had just over 300,000 meters in 2011) and a combined CitiPower/Powercor entity.

Table 2.1 Comparison of meter volumes (2011)

	SP AusNet	JEN/UED	CP/PC	JEN	UED	CitiPower	Powercor
Meters	679,129	955,079	1,024,321	308,823	646,256	306,673	717,649

Source: AER, *Final Determination 2012-15 AMI charges models*, October 2011, Data 2009-15 (real $2008) tab.

SP AusNet has not quantified the impact on economies of scale or its size difference compared to a combined JEN/UED entity. SP AusNet's submission suggests the AER would need to include costs for JEN and UED in its benchmark to account for this.[197] However, without sufficient substantiation as to why SP AusNet's costs should be so different, it is unclear to the AER how its estimate is unreasonable when SP AusNet is not significantly smaller in terms of meter volumes.

Energeia acknowledges that design and build costs that JEN may have been able to share with UED may need to be repeated for SP AusNet if it switched to mesh radio. However, Energeia considers it is likely such costs would be more than offset by the benefits of:[198]

- previous learning and experience from rolling out the solution for JEN and UED
- an existing proven IT and integration architecture
- existing project outputs including work plans, technical specifications and testing scripts.

Accordingly, an adjustment may not be necessary to account for cost sharing or economies of scale differences.

However, even if an adjustment is required to account for difference in size or cost sharing inability, the AER is not convinced that this explains the difference between its benchmark and KEMA's estimates. For example, KEMA's estimated MDMS replacement cost is not obviously linked to SP AusNet's circumstances and is approximately 48 per cent higher than the AER's benchmark based on JEN's costs.[199] KEMA's NMS opex costs are over six times higher than the AER's estimate. Conversely, the AER's benchmarks account for SP AusNet's higher meter volumes (compared to JEN) for IT licensing costs, which are likely to be dependent on network size, such as the number of meters.[200]

Second, the AER is not necessarily convinced that SP AusNet is or would have been unable to share IT costs with JEN. JEN and SP AusNet share a common IT service provider (EBS). EBS is a wholly owned subsidiary of Singapore Power International (SP AusNet's majority shareholder and Jemena

196 See AER, *2012-15 AMI Final Determination charges models*, October 2011 (publicly available).
197 SP AusNet, *Supplementary submission on comparability of AMI costs*, 9 January 2013, pp. 4-5.
198 Energeia, *January 2013 Report*, p. 46.
199 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, p. 37.
200 Energeia, *January 2013 Report*, pp. 44-49.

Group's ultimate owner[201]). EBS was set up through the consolidation of the Jemena and SP AusNet IT divisions and provides IT services to JEN and SP AusNet.[202] This suggests SP AusNet may have had the capacity to share costs with JEN and may have been able to access similar IT services and pricing as JEN.

Therefore, the AER considers that it is possible that no adjustment should be made to account for size or inability to share costs because the ability to potentially achieve lower costs would be part of SP AusNet's circumstances.

The AER also considers JEN's estimates are likely to be robust due to the rigorous estimation process involved in the lead up to the AMI budget submissions and the significant resources expended to develop accurate estimates.[203] Energeia also notes that JEN seems to have the highest NMS capex in Victoria, so benchmarks based on JEN's capex may be somewhat conservative.[204]

Therefore, on the evidence available to it, the AER maintains it is reasonable to use pro-rated Final Determination IT systems expenditure for JEN as a benchmark for SP AusNet's mesh radio IT costs.[205] This is a proxy for information about the mesh radio solution NMS and MDMS costs that a reasonable business in the circumstances could have sought when making enquiries about whether to switch to a mesh radio solution.

Cost comparison

SP AusNet's 9 January 2013 submission appears to state that the AER cannot compare expenditure at the category level with Powercor; it can compare only total AMI rollout costs, and only after making certain adjustments.[206] SP AusNet submits the adjustments the AER must make are:[207]

(a) adding CitiPower's IT costs to Powercor's IT costs because SP AusNet cannot share IT costs

(b) reducing SP AusNet's total expenditure to negate the impact on meter capex of it hedging a $0.80 USD/AUD exchange rate because Powercor assumed a $1.00 rate for the life of the AMI program

(c) reducing SP AusNet's total expenditure to negate the impact of it including debt and equity raising costs because Powercor excludes this cost category

(d) reducing Powercor's meter capex to take into account SP AusNet's lower meter volumes

(e) other unexplained (and unquantified) adjustments to account for the impact of other cost sharing arrangements between CitPower and Powercor (PMO, meter reading, meter data management, customer service and control room operations).

The AER does not agree with SP AusNet's submission for several reasons. First, the AER considers comparisons at the total cost level are not of assistance in this remittal. The AER is considering the appropriate estimate of expenditure for the categories of expenditure that would be affected by a

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201 See http://www.singaporepower.com.sg/irj/portal?NavigationTarget=navurl://3807c42be0900d06c156ec8ec24250c5&windowId=undefined and http://www.singaporepower.com.sg/irj/portal/anonymous?NavigationTarget=navurl://836989fdaf9d04b2203353ef6e50a086&windowId=undefined, accessed 23 January 2013.
202 http://eb-services.com.au, accessed 23 January 2013.
203 Energeia, *January 2013 Report*, pp. 11-13.
204 Energeia, *January 2013 Report*, pp. 44-46.
205 Energeia, *January 2013 Report*, pp. 44-46.
206 SP AusNet, *Supplementary submission on comparability of AMI costs*, 9 January 2013.
207 SP AusNet, *Supplementary submission on comparability of AMI costs*, 9 January 2013, pp. 6-9.

change in communications solution (see section 2.3.1). SP AusNet provided the AER with alternative views on the appropriate estimates of costs by category in its Response Submission, albeit using different methods to arrive at its category estimates.[208]

The AER's cost comparisons exclude meter costs, debt and equity raising costs, meter data management and customer service costs because they are not affected by a change in communications solution. PMO, meter reading and control room operations costs may be relevant if they arise as mesh radio switching costs. This is consistent with KEMA's approach.[209]

Second, SP AusNet does not really explain why it has changed its view and now considers that the AER cannot compare expenditure on a category basis, or why the above adjustments must be made. SP AusNet submits that different expenditure profiles may conflate cost differences in a particular year. SP AusNet also notes KEMA's observation that businesses may have different cost allocation methodologies, which could make direct comparison of individual line items difficult.[210] However this does not explain why it is inappropriate to compare expenditure at a category level to administer an objective standard.

The logical extension of SP AusNet's submission seems to be that the AER would almost never be able to rely on benchmarking when administering an objective standard because no two businesses are sufficiently the same. However, benchmarks provide the AER with robust estimates when differences are accounted for. If the AER could not have regard to benchmarks it would remove a key tool available to review cost forecasts. The AER does not believe this is consistent with what the legislature envisaged when tasking the AER with an objective standard ("a substantial departure from the commercial standard that a reasonable business would exercise in the circumstances").[211]

As outlined in section 2.6.1, part of the AER's task in this remittal is to determine estimates of reasonable expenditure. In the absence of observed SP AusNet mesh radio costs, the AER must develop an alternative. This is particularly pertinent where SP AusNet has developed a bottom up build based substantially on a "black box" as is the case in this remittal.

Some of the AER's benchmarks are derived from forecasts of other DNSPs because these are the only disaggregated data the AER has of costs other DNSPs are expected to incur in rolling out a mesh radio solution. The AER has considered and accounted for differences where appropriate in deciding how much weight to place on them in this remittal.

Benchmarks are observable and transparent. The AER is not operating on the basis that benchmarks are perfect. The AER is using benchmarking data to form a view about the reasonableness of SP AusNet's estimates. Further, the AER has assessed the relevance and robustness of benchmarks to determine their validity.[212] For example, as explained above, the AER considers JEN is a reasonable benchmark for IT because of the shared service provider with SP AusNet and the likely robustness of JEN's estimate.

In terms of Powercor benchmarks, the only expenditure category that the AER has relied on at a category level is network and backhaul capex. However, this is based on the AER's assessment that key cost drivers such as customer density and radio frequency clutter such as mountains are

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208 SP AusNet, *Response Submission*, 14 September 2012, pp. 24-25.
209 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, p. 16.
210 SP AusNet, *Supplementary submission on comparability of AMI costs*, 9 January 2013, pp. 4, 6.
211 *AMI Order*, clause 5C.3(b)(iv).
212 Energeia, *January 2013 Report*, pp. 11-13.

similar.[213] The AER has also adjusted Powercor's expenditure to account for SP AusNet's lower customer numbers.[214] As explained below, the AER is not persuaded that SP AusNet's late submission on "serviceability" demonstrates that this approach is unreasonable.

The AER has also used Powercor data for a number of other estimates but these are based on unit cost or volumes, not total expenditure. Again, the AER has determined the cost drivers to be similar before doing so.[215]

Third, in relation to SP AusNet's submitted specific adjustments listed above, the AER considers:

(a) CitiPower and Powercor IT costs are not relevant because the AER is not relying on their IT costs for its mesh radio estimate. Further, a reasonable business in SP AusNet's circumstances may have been able to take advantage of IT cost sharing arrangements with JEN if it switched to mesh radio. The AER considers any effect that this sharing arrangement has on JEN's IT costs are reflective of SP AusNet's circumstances and are a relevant benchmark. The AER has also pro-rated JEN's IT licensing costs to account for SP AusNet's larger meter volumes.

(b) SP AusNet states that its hedged exchange rate affects meter equipment capex. The AER has not relied on Powercor costs for meter equipment capex, either at the total category level or in part. The only part of meter capex relevant to this remittal is the unit cost of NICs. WiMAX, mesh radio and 3G NICs are expressed in USD. The AER has converted these values to AUD using SP AusNet's $0.80 exchange rate and multiplied these costs by SP AusNet's meter volumes. SP AusNet's submission that Powercor assumed a $1.00 AUD/USD exchange rate is therefore not relevant to the AER's assessment. It is also inaccurate. Powercor's 2009-11 and 2012-15 budget applications state that Powercor proposed assumed exchange rates of (on average) approximately $0.65 and $0.92, respectively.[216]

(c) It is unclear how the treatment of debt and equity raising costs is relevant to this remittal when such costs are not related to the communications solution. These costs do not form part of the AER's quantitative analysis. SP AusNet's submission is also inaccurate because Powercor's 2012-15 budget application did propose debt raising costs.[217]

(d) Again, the AER is not relying on Powercor's meter capex for its mesh radio estimate, so this adjustment is not relevant. However, in terms of economies of scale generally, in 2011, CitiPower/Powercor and JEN/UED both had approximately 1 million meters each as combined entities. SP AusNet had approximately 700,000.[218] SP AusNet has not explained how this difference in meter volumes would be material enough such that SP AusNet could not enjoy purchasing power for meters relative to the other DNSPs.

(e) SP AusNet does not make an adjustment for, or explain why an adjustment is necessary for, PMO, meter reading, meter data management, customer service and control room operations categories. As noted above, the AER considers these categories are not affected by a change in communications technology. PMO, meter reading and control room operations costs are only relevant if they arise as mesh radio switching costs.

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213 Energeia, *January 2013 Report*, pp. 11-13.
214 Energeia, *January 2013 Report*, pp. 11-13.
215 Energeia, *January 2013 Report*, pp. 11-13.
216 Powercor, *AMI Budget Application 2009-11*, 27 February 2009, p. 28; Powercor, *AMI Budget and Charges Application 2012-15, 28 February 2011*, p. 48.
217 Powercor, *AMI Budget and Charges Application 2012-15*, 28 February 2011, p. 89.
218 AER, *2012-15 AMI Final Determination charges models*, October 2011.

For the reasons above, the AER is not persuaded by SP AusNet's late submission. In the AER's view, it is also inconsistent with the views of the Tribunal (discussed below).

Serviceability

In relation to claims around differences in terrain and property density, we-do-IT's analysis on serviceability may, on face value, be plausible. Certain parts of Victoria are more rugged than others and there are different property densities in different parts of the state. However, on further investigation, the AER is not convinced that it should change its mesh radio estimates that rely on comparability with Powercor. First, there are several definitional issues with the analysis. These include:[219]

- we-do-IT does not define "serviceability" – without this, the analysis has little meaning
- we-do-IT does not explain how property density and terrain/ruggedness are linked to "serviceability"
- there is little explanation about how ruggedness and property density are calculated.

Second, we-do-IT has not substantiated its assumptions. For example, the "serviceability" index matrix allocates an "easy", "moderate" or "difficult" rating to properties in a manner that seems quite arbitrary – more cells in the matrix are assigned a "difficult" rating than an "easy" rating. However, we-do-IT does not provide any reasoning for why it has allocated these ratings (see Figure 2.1).

The "serviceability" index matrix also originates from SP AusNet (not we-do-IT) so its independence is questionable.

Figure 2.1 SP AusNet property serviceability index matrix

	Property Density (sq Km^2)					
Terrain	1 - 5	6 - 10	11 - 50	51 - 100	100 - 500	> 500
Flat						
Slightly rugged						
Rugged						
Highly Rugged						

Easy
Moderate
Difficult

Table 2.3 Serviceability Index matrix (Source: SP AusNet).

Source: SP AusNet, Report from we-do-IT on PowerCor Region Terrain comparison, 16 January 2013, p. 7.

We-do-IT does not afford the same weight to customer density as it does to ruggedness, despite customer density being a critical network cost driver that affects Powercor more.[220] Further, other key clutter factors such as buildings are excluded from we-do-IT's analysis, despite playing a key role in KEMA's mesh design costing model for urban networks.[221]

Third, we-do-IT's analysis does not link any of the findings to communications network cost drivers. We-do-IT concludes that SP AusNet has a greater proportion of properties in a "rugged" or "highly

219 we-do-IT, *PowerCor Region Terrain comparison*, 16 January 2013.
220 Energeia, *January 2013 Report*, pp. 11-13.
221 Energeia, *January 2013 Report*, pp. 11-13.

rugged" environment, and with a "difficult serviceability" rating.[222] However, it does not explain how difficulty of "serviceability" impacts on mesh radio coverage or expenditure.[223]

As explained above, the AER considers key cost drivers that are similar between SP AusNet and Powercor are customer density and frequency clutter (i.e. things that will block radio signal, such as mountains and buildings).[224] However, the AER considers we-do-IT does not adequately account for either cost driver.[225]

Overall, the AER considers we-do-IT's analysis is incomplete and its assumptions are unsubstantiated. Further, it does not actually demonstrate how the AER's mesh radio estimates that are based on similarities with Powercor are unreasonable. Therefore, the AER is not persuaded that its estimates based on Powercor – particularly in the absence of well reasoned and supported analysis – are weakened by this submission.

The Tribunal's acceptance of benchmarking

The AER maintains it is open for it to interpret from the Tribunal's Reasons that it is reasonable for the AER to use benchmarking as a proxy to determine mesh radio expenditure and coverage for a reasonable business in SP AusNet's circumstances.

The AER agrees that paragraph 129 of the Tribunal's Reasons does not explicitly state that the AER's Final Determination benchmarks "accurately" reflect SP AusNet's costs of adopting a mesh radio solution. However, the AER has not assumed they do. As stated in the Preliminary View and above, the AER considers the Powercor and JEN benchmarks are reasonable proxies for the costs associated with a mesh radio rollout.[226] The AER considers this is consistent with the Tribunal's language – "*reflective* of the costs of an AMI roll out using mesh radio, if that technology were chosen from the outset" (*emphasis* added).[227]

The AER also considers the Tribunal did not need to explicitly determine whether the AER's benchmarks were reflective of the costs of a mesh radio rollout because this was not its main concern. The main issue was whether "a reasonable business...would have incurred no more than the benchmark expenditure"[228] given SP AusNet had commenced its rollout with WiMAX. Therefore, in the AER's opinion, the Tribunal was prepared to assume the AER's use of benchmarking was appropriate to focus on the question of whether the AER had accounted for SP AusNet's circumstances.

Indeed, paragraph 135 of the Tribunal's Reasons explains the AER's error of fact in the context of benchmark expenditure. The Tribunal does not state that the AER made an error of fact by *using* benchmarks. Rather, it states that the expenditure the AER determined to be imprudent would not have been calculated *solely* by reference to benchmarks because switching costs were not applicable to the other Victorian DNSPs.[229]

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222 Energeia, *January 2013 Report*, pp. 11-13.
223 we-do-IT, *PowerCor Region Terrain comparison*, 16 January 2013.
224 Energeia, *January 2013 Report*, pp. 11-13.
225 Energeia, *January 2013 Report*, pp. 11-13.
226 AER, *Preliminary View*, pp. 10-11, 16.
227 *Tribunal Reasons*, paragraph 129.
228 *Tribunal Reasons*, paragraphs 128-129.
229 *Tribunal Reasons*, paragraph 135.

Further, as stated in its Preliminary View,[230] the Tribunal accepted the AER's use of Powercor as a benchmark later in its Reasons to determine the prudent costs for communications infrastructure maintenance opex, backhaul opex and IT opex.[231] The Tribunal agreed that Powercor is a "comparable distributor" following the AER's consideration of the "nature and size of SP AusNet's business" and the "limited information provided by SP AusNet."[232]

In any event, as stated in the Preliminary View, SP AusNet itself used AER Final Determination Powercor and JEN data as the basis for some of its costs in its Reconsideration Submission.[233] However, SP AusNet has changed its position on this matter. Its Response Submission states:[234]

> The AER Preliminary View also says that SP AusNet has used the AER's final determinations for Powercor and JEN to estimate some of the Mesh costs in its Reconsideration Submission. That is true, however, in reconsidering its position based on the AER's Preliminary View and the Energeia Report, SP AusNet's analysis of the Mesh radio costs is now based on the information identified in the KEMA report and only on information available at 28 February 2011.

For the reasons above, the AER does not agree this change in approach is justified. Accordingly, the AER maintains its position from the Preliminary View that it is acceptable to rely on benchmarks when necessary. However, SP AusNet's Response Submission with its bottom up financial model is in effect a different proposal from its Reconsideration Submission. This has required the AER to conduct more detailed analysis than in the Preliminary View – it has almost had to conduct its analysis anew. In turn, for some categories of expenditure, the AER has generated a bottom up build. This means that in responding to SP AusNet's new approach, the AER has expanded its assessment approach and also placed somewhat less reliance on benchmark expenditure than in the Preliminary View.

Mesh radio coverage

The AER maintains its Preliminary View position that Powercor's coverage is the best estimate for the mesh radio coverage potentially able to be achieved by SP AusNet. This is due to (as accepted by the Tribunal) Powercor being a suitable comparator in terms of the nature and size of SP AusNet's business.[235]

SP AusNet relies on advice from KEMA that suggests Powercor is not suitable for several reasons, including customer density, geography, topography and foliage. KEMA submits this means that SP AusNet could only achieve mesh radio coverage of 93.5 per cent rather than 97 per cent. It states that it has produced an estimate using actual SP AusNet customer distribution data.[236]

It is not clear whether SP AusNet's late submission on "serviceability" is intended to demonstrate that coverage of mesh radio for Powercor is less difficult to achieve than for SP AusNet.[237] As discussed above, the AER is not persuaded by the late submission that its coverage estimate based on Powercor is unreasonable.

KEMA did not provide its mesh radio coverage model to the AER for review since it "is a proprietary model and is commercially confidential."[238] The AER and its consultant, Energeia, have access only to Appendix B to KEMA's report, which contains some analysis of the methodology behind its model.

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230 AER, *Preliminary View*, August 2012, p. 16.
231 *Tribunal Reasons*, paragraphs 179-182.
232 *Tribunal Reasons*, paragraphs 180-181.
233 AER, *Preliminary View*, August 2012, pp. 10-11.
234 SP AusNet, *Response Submission*, 14 September 2012, p. 23.
235 *Tribunal Reasons*, paragraphs 180-181.
236 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, pp. 26-28.
237 we-do-IT, *PowerCor Region Terrain comparison*, 16 January 2013.
238 SP AusNet, *Response to information request 7 of 8 October 2012*, received 22 October 2012, p. 10.

But, it does not provide significant detail.[239] This lack of transparency creates a hindrance to an open and fair assessment of KEMA's coverage estimate upon which SP AusNet has relied.

Energeia considers some of KEMA's assumptions to be incomplete and unsubstantiated. Further, Energeia considers the results of KEMA's model vary significantly from comparable real world experience in Victoria. Accordingly, Energeia considers it is not appropriate to rely on KEMA's model for a coverage estimate.[240]

Therefore, in the absence of information on which the AER is reasonably able to rely, the AER maintains that Powercor's assumed coverage is a reasonable estimate for coverage SP AusNet could achieve if it switched to mesh radio. This is a proxy for information about coverage that a reasonable business in the circumstances could have sought when making enquiries about whether to switch to a mesh radio solution. Accordingly, the AER's analysis maintains its Preliminary View mesh radio coverage of 97 per cent and 3G infill of 3 per cent.[241]

As an aside, SP AusNet submits that Powercor's assumed coverage of 97 per cent was not available to it as at 28 February 2011.[242] The AER considers SP AusNet could actually have known that Powercor's mesh radio coverage was expected to be 97 per cent much earlier than the reconsideration date. This is because Powercor's 2009-11 (public) budget application also contains this estimate.[243] Powercor's 2009-11 budget application was first uploaded to the AER website in March 2009.

2.6.3 Costs already incurred

SP AusNet's Response Submission states that the AER's Preliminary View repeats the error from its October 2011 Final Determination because the AER fails to have regard at all to the costs incurred by SP AusNet in implementing its WiMAX solution.[244]

The AER does not agree with SP AusNet's submission and considers it did turn its mind to the costs already incurred. In its Preliminary View, the AER considered the relevance of "the costs already spent in the partial rollout of WiMAX"[245] in making a decision to switch communications technology. The AER distinguished between the two types of costs related to SP AusNet's investment in the partial rollout of WiMAX:[246]

- those that would be incurred in the future as a result of the past investment in WiMAX (switching costs)
- those incurred up to the point of making the decision to switch that are not incurred in the future (sunk costs).

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239 The AER also requested the geographic information systems data that KEMA's report states its mesh radio coverage model is based on. KEMA, *Assessment of AMI Communication Options*, 14 September 2012, p. 28. SP AusNet did not provide this data, stating it was highly sensitive. SP AusNet, *Response to information request 7 of 8 October 2012*, received 22 October 2012, p. 13. The AER later withdrew this request upon being orally advised by SP AusNet that it could provide only the raw data rather than the output from this data. AER, *Email to SP AusNet re Information request 7*, sent 25 October 2012.

240 Energeia, *January 2013 Report*, pp. 39-41.

241 AER, *Preliminary View*, August 2012, p. 16.

242 SP AusNet, *Response Submission*, 14 September 2012,

243 Powercor, *AMI Budget Application 2009-11*, 27 February 2009, pp. 33-37.

244 SP AusNet, *Response Submission*, 14 September 2012, p. 18.

245 *Tribunal Reasons*, paragraph 130.

246 AER, *Preliminary View*, August 2012, p. 17.

Further, the AER explained that in any event, the AMI Order already provided SP AusNet with the ability to recover the costs it has incurred.[247]

Switching costs

In its Preliminary View, the AER explained that costs arising from the previous investment decision (WiMAX) that would be incurred as a consequence of changing technology are relevant to the decision to switch.[248] A reasonable business would include these costs in its cost benefit analysis because they represent part of the future investment (mesh radio). In other words, because SP AusNet had partially rolled out WiMAX it would consequently incur some additional costs to "undo" that partial rollout so it could implement mesh radio. These costs would be incurred only if SP AusNet made the decision to switch. Such costs include:

- exit costs for the Motorola contract
- WiMAX tower demolition costs
- costs to retrofit mesh radio modules into the meters that contain WiMAX modules.

The AER has calculated an allowance for these switching costs.[249] In this Final Decision, the AER has also expanded switching costs to include some WiMAX inventory costs for the first two months of 2011. KEMA assumed that if switching to mesh radio, SP AusNet would continue to roll out WiMAX enabled meters for two months to meet the June 2011 rollout target. KEMA included this two months' worth of inventory in its financial analysis.[250]

The AER does not agree with the logic of continuing to roll out WiMAX when a decision is made to switch technology. However, it is conceivable that SP AusNet could have some WiMAX modules and antennas in inventory. This inventory represents a switching cost because it could be used in the future if SP AusNet decided to retain WiMAX, but would amount to a future loss if SP AusNet switched to mesh radio. Accordingly, the value of the inventory is relevant to the future investment decision to switch.[251]

Sunk costs

In its Preliminary View, the AER explained that the costs already invested up to the point of making the decision to switch are not relevant to the decision to switch.[252] In economics, it is irrational to make future investment decisions based on a past investment that can no longer be recovered.[253] Costs invested up to the point of making a decision on a future investment are sunk and unrecoverable regardless of the outcome of the decision.[254]

The AER's view does not seem to be at odds with that of KEMA. KEMA does not discuss costs already incurred in its report or include them in its mesh radio business case.[255] Consequently, SP AusNet's mesh radio business case does not include an allowance for sunk costs either, despite it

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247 AER, *Preliminary View*, August 2012, p. 17.
248 AER, *Preliminary View*, August 2012, p. 17.
249 AER, *Preliminary View*, August 2012, pp. 21-22.
250 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, pp. 19, 34.
251 Energeia, *January 2013 Report*, pp. 19-22.
252 AER, *Preliminary View*, August 2012, p. 17.
253 For example, see Gans, King and Kankiw, *Principles of Microeconomics (3rd Edition)*, Thomson, 2005, pp. 276-279.
254 SP AusNet still earns a return on its capital investment from the 2009-11 budget period because it has been rolled into the regulatory asset base. However, this is not relevant to the decision-making process.
255 KEMA, *Assessment of AMI Communication Options*, 14 September 2012.

quantifying them. However, SP AusNet submits that if the AER maintained its preliminary view, the Final Determination cost and revenue model must be adjusted to allow for the recovery of WiMAX costs already incurred but not recovered.[256]

Recovery of costs already incurred under the AMI Order

The AMI Order allows SP AusNet to recover from customers all in scope and prudent expenditure as determined by the AER for the 2009-11 period.[257] The AER has not made any modifications to SP AusNet's 2009-11 Approved Budget. A reasonable business in SP AusNet's circumstances as at 28 February 2011 would have known that it would recover these costs because the AMI Order allows it. This emphasises the AER's point that costs already incurred are not relevant to the decision to switch technology.

Additionally, the AMI Order (prior to changes made in December 2011) provided for automatic recovery of up to 120 per cent of SP AusNet's 2009-11 Approved Budget through the charges revision processes in 2010 and 2012.[258] Accordingly, the AER's opinion is these costs:

- are not relevant to the decision to switch
- will be recovered.

SP AusNet's Response Submission provides an estimate of costs that it submits have been incurred but are not recoverable, totalling $69.4 million.[259] It is unclear whether these costs are in addition to, or included in, SP AusNet's Approved Budget expenditure for the 2009-11 period. SP AusNet has not provided reasoning to support the quantum or origin of these costs so the AER is unable to assess them on their merits. However, if they are included in SP AusNet's 2009-11 Approved Budget, SP AusNet will recover them, as noted above.

Conversely, if not part of the 2009-11 Approved Budget then even if SP AusNet could justify these costs, by definition, they are not recoverable. As stated above, the AMI Order allows for recovery of costs that are in scope and prudent. Any costs that SP AusNet has incurred that are not recoverable through the 2009-11 budget process are – for the purposes of the AMI Order – not in scope, not prudent, or both. In each case, they are beyond the scope of the AMI Order.

2.6.4 Delays involved in retreating from WiMAX

The Tribunal's Reasons highlight the potential delays involved in retreating from WiMAX as a relevant factor in considering whether a reasonable business in SP AusNet's circumstances would switch to an alternative technology.[260]

In its Reconsideration Submission, SP AusNet's position was that retaining WiMAX as the communications solution would not result in any delays in the delivery of the AMI program, but switching to mesh radio would. SP AusNet considered that if it switched, it would take 38 months to implement a mesh radio solution and would incur additional costs as a result. SP AusNet's proposed completion date was June 2014.[261]

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256 SP AusNet, *Response Submission*, 14 September 2012, p. 59.
257 *AMI Order*, clause 5C.2.
258 *AMI Order*, clause 5I.2.
259 SP AusNet, *Response Submission*, 14 September 2012, Annexure 8.
260 *Tribunal Reasons*, paragraph 138.
261 SP AusNet, *Reconsideration Submission*, 5 June 2012, pp. 18-19.

In contrast, in its Preliminary View, the AER considered that switching to mesh radio would not delay SP AusNet's AMI rollout. The AER's view was that a reasonable business in the circumstances could have implemented a mesh radio solution in 10 months to meet the AMI services target in 1 January 2012.[262] Accordingly, the AER considered there would be no delay to the AMI program.

The AER's opinion was that a reasonable business would incur mesh radio NIC retrofit costs in the 2012-15 period but would not otherwise incur additional costs as a result of delay. This is because the AER considered the resources otherwise used to roll out WiMAX could instead be used for the mesh radio rollout. Therefore, the AER's Preliminary View was that a reasonable business in the circumstances would not incur SP AusNet's proposed increase in meter reading, meter data management, project management, industry program, audit and regulatory costs and overheads.[263]

This view was based on advice from Energeia. Energeia relied on its experience, the mesh radio rollout timeframes of other Victorian DNSPs and Pacific Gas & Electric in California, and SP AusNet's 19 May 2011 *Re-planning Analysis & Recommendations* document. This document contained a similar proposed timeframe to implement required functionality and performance levels for WiMAX, which Energeia considered to be more complicated than switching to a proven mesh radio solution.[264]

For the Preliminary View, the AER relied on this information because SP AusNet did not provide information the AER had requested.[265] The AER's Preliminary View 10 month implementation timeline, and the information relied upon by the AER and Energeia in reaching this estimate, is a major focus in SP AusNet's Response Submission.[266]

Since releasing its Preliminary View, the AER has used formal information gathering powers to obtain information from SP AusNet.[267] In the AER's opinion, this information confirms its preliminary view that a 10 month timeframe is reasonable in the circumstances.[268] Further, this new information suggests that a reasonable business could complete its retrofit of mesh radio NICs earlier than the AER's initial estimate.[269] The AER discusses the mesh radio implementation timeline in detail below.

Mesh radio implementation timeline

SP AusNet's position in its Response Submission differs to its Reconsideration Submission. Based on advice from KEMA, SP AusNet submits that a transition to mesh radio would be completed by the end of 2013, consistent with the Victorian Government's ultimate rollout milestone. As part of this, mesh radio meters would deliver interval data to market from 1 July 2012.[270] However, SP AusNet considers that it is unlikely a mesh radio rollout would meet the intermediate rollout milestones in December

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262 AER, *Preliminary View*, August 2012, pp. 13-15.
263 AER, *Preliminary View*, August 2012, pp. 20-21.
264 AER, *Preliminary View*, August 2012, pp. 13-15.
265 Despite several requests from the AER (AER, *Information request 2 of 12 June 2012, email of 25 June 2012, email of 26 June 2012, email of 9 July 2012, email of 19 July 2012*, AGS, *letter of 25 July 2012*, AER, *email of 14 September 2012*, *email of 2 October 2012*) SP AusNet did not provide this information. SP AusNet, *Response to information request 2, received 29 June 2012, 6 July 2012 and 17 July 2012*, JWS, *letter of 23 July 2012*, received 23 July 2012, SP AusNet, *Email response to AER email of 2 October 2012*, received 3 October 2012.
266 SP AusNet, *Response Submission*, 14 September 2012, pp. 28-31.
267 AER, *Notice issued under section 37 of the Essential Services Commission Act 2001 (Vic)*, sent by email to Julie Buckland, 5 October 2012.
268 Energeia, *January 2013 Report*, pp. 32-37.
269 Energeia, *January 2013 Report*, pp. 32-37.
270 SP AusNet, *Response Submission*, 14 September 2012, pp. 28-31; KEMA, *Assessment of AMI Communication Options*, 14 September 2012, pp. 21-24.

2012 or June 2013. SP AusNet submits that to achieve these milestones, it would incur additional cost and would need to operate mesh radio and WiMAX solutions in parallel.[271]

SP AusNet submits that switching to mesh radio is therefore reliant on Government and regulatory approval to relax the intermediate rollout milestone requirements.[272] SP AusNet also considers it would incur switching costs for additional meter reading, industry costs and training due to the delays involved in switching.[273]

KEMA's proposed timeline is 28 months. This contrasts with SP AusNet's Reconsideration Submission estimate of 38 months. Since its Reconsideration Submission, SP AusNet's view has changed to extend procurement by two months, bring the IT solution forward by 12 months and accelerate the overall transition to mesh radio by 12 months.[274]

KEMA provides little justification other than its experience for its implementation timeline and the proposed activities and milestones within it.[275] When requested by the AER, KEMA was unable to provide sufficient further justification to support its timeline.[276]

The AER's 10 month timeline is 18 months shorter than KEMA's. Primarily, the differences in the timelines are due to KEMA's:[277]

- 5 month full procurement exercise plus an additional month for contract award (4 months extra)
- IT design, build, integrate, testing and commissioning time (2 months extra)
- unexplained NIC retrofit receipt and staging period (2 months extra)
- unsubstantiated number of NICs retrofitted per month (10 months extra).

KEMA and SP AusNet also maintain that WiMAX-enabled meters should continue to be rolled out after the decision is made to switch to mesh radio. [278]

The AER's timeline includes all steps required to implement the switch-over to mesh for all meters planned to be installed by the end of 2011. This includes changes to IT systems, deployment of a mesh backbone and retrofitting of already deployed meters. It does not include the rollout of mesh enabled smart meters to all remaining sites. This would occur under a business-as-usual approach from January 2012.[279] Figure 2.2 compares the AER's timeline with KEMA's. The AER discusses the differences in detail below.

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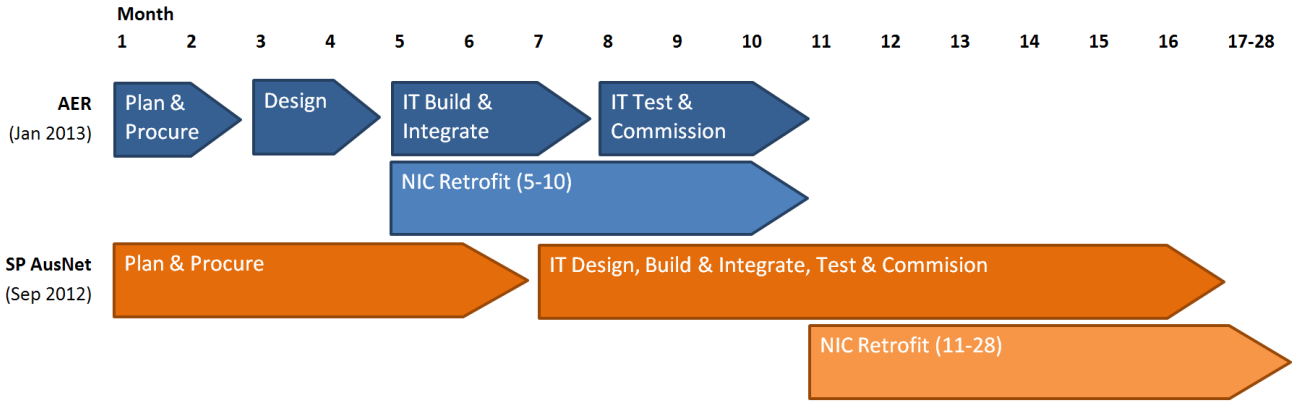
271 SP AusNet, *Response Submission*, 14 September 2012, pp. 25-27.
272 SP AusNet, *Response Submission*, 14 September 2012, pp. 44-45.
273 SP AusNet, *Response Submission*, 14 September 2012, pp. 34-35; KEMA, *Assessment of AMI Communication Options*, 14 September 2012, pp. 44-46.
274 Energeia, *January 2013 Report*, pp, 32-37; SP AusNet, *Response Submission*, 14 September 2012, pp. 28-31; KEMA, *Assessment of AMI Communication Options*, 14 September 2012, pp. 21-24.
275 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, p. 20.
276 SP AusNet, *Response to information request 7 of 8 October 2012*, received 22 October 2012, pp. 1-2, 18-19, 25-27.
277 Energeia, *January 2013 Report*, pp. 32-37.
278 SP AusNet, *Response Submission*, 14 September 2012, pp. 28-31; KEMA, *Assessment of AMI Communication Options*, 14 September 2012, pp. 21-24.
279 Energeia, *January 2013 Report*, pp, 32-37.

Figure 2.2 Comparison of SP AusNet Response Submission and AER Final Decision mesh radio switching timelines



Source: AER analysis; KEMA, *Assessment of AMI Communication Options*, 14 September 2012, pp. 21-23.

For the reasons below, the AER maintains its preliminary view that a 10 month implementation timeframe is reasonable in the circumstances. The AER also maintains the view that switching to mesh radio would not cause delays that result in additional expenditure being incurred in the 2012-15 period.[280]

Procurement process

SP AusNet's deployment timeline adopts a five month procurement process to ensure competitive pricing using a tender process (based on KEMA's advice[281]) and to act in accordance with the incentives provided in the AMI Order.[282] The incentive SP AusNet refers to is that the AMI Order deems prudent any expenditure the AER considers is let in accordance with a competitive tender process.[283] However, SP AusNet's approach in its Response Submission appears inconsistent with that taken in its Reconsideration Submission, which stated:[284]

> SP AusNet would select Silver Springs [sic] Networks as the RF mesh communications vendor in Options 2 and 3, as this provider is the best placed to deliver services that accord with SP AusNet's needs.

The AER's view is that a reasonable business in the circumstances would not adopt a five month procurement process for the following four reasons.[285]

1. SP AusNet's 2009 mesh radio switching contingency

SP AusNet's [redacted] shows [redacted] a mesh radio switching contingency timeline. This contingency plan states SP AusNet would use Silver Spring Networks' (SSN) mesh solution and could contract with SSN in one month.[286] This was part of the information the AER obtained in response to its compulsory notice to SP AusNet.

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280 Energeia, *January 2013 Report*, pp. 32-37.
281 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, pp. 21-24.
282 SP AusNet, *Response Submission*, 14 September 2012, pp. 28-31.
283 *AMI Order*, clause 5C.3(a).
284 SP AusNet, *Reconsideration Submission*, 5 June 2012, p. 19.
285 Energeia, *January 2013 Report*, pp. 32-37, Appendix 5.
286 SP AusNet, *Contingency planning paper* [redacted] *SP AusNet* [redacted], 24 September 2009, pp. 1-3 (confidential).

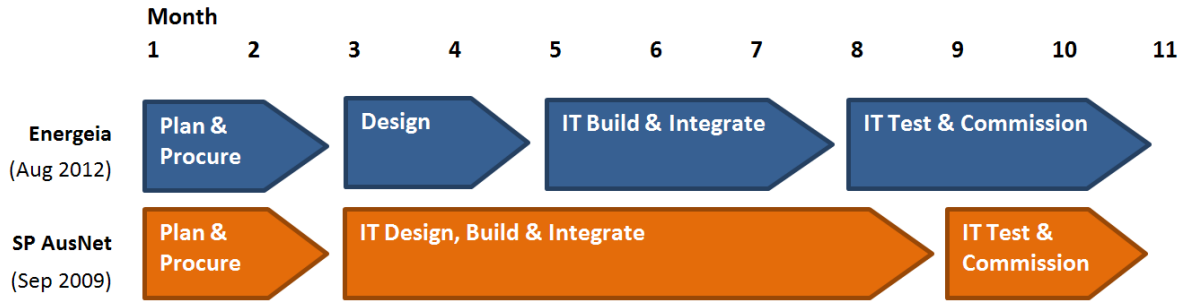
The AER requested SP AusNet comment on this matter.[287] SP AusNet's response did not provide any additional information beyond that already submitted to the AER.[288]

Switching to mesh radio was one of four contingency options [redacted] should SP AusNet's AMI delivery plan (using the preferred WiMAX solution) prove unable to meet its requirements.[289]

This timeline and the [redacted] outline a 10 month step-by-step process for implementing a mesh radio solution in the event SP AusNet decided to switch.[290] It includes a one month procurement window to establish a contract with SSN.[291]

As Figure 2.3 shows, this timeline is almost identical to the timeline the AER initially estimated in its Preliminary View, and which the AER maintains in this Final Decision. Therefore, the AER considers that in addition to supporting a one month procurement window, SP AusNet's contingency timeline supports the AER's proposed 10 month timeframe as a whole.[292]

Figure 2.3 Comparison of Energeia and SP AusNet [redacted] mesh radio switching timelines



Source: AER analysis; SP AusNet, *Contingency planning paper [redacted] SP AusNet [redacted]* 24 September 2009; SP AusNet, *AMI [redacted] 24 September 2009*, paragraphs 5.2 and 5.3.

The contingency scenario [redacted] was to achieve a deadline under the AMI Order: the 5 per cent rollout milestone on 30 June 2010. The AER considers the circumstances it has adopted in this remittal are similar, if not more critical. That is, a reasonable business in SP AusNet's circumstances at the reconsideration date is facing a key deadline. Specifically, it needs to have in place an AMI solution that enables all installed meters to deliver meter data to market by 1 January 2012.

As the AER explains in section 2.1.3, the AER considers this deadline to be more critical than the rollout schedule targets. Unlike the rollout targets, it does not contain a "best endeavours" clause. The lack of AER discretion implies it is mandatory, and the consequences of non-compliance would be more severe.

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287 AER, *Email to SP AusNet requesting comment on changes in position*, sent 30 November 2012.

288 SP AusNet, *Response to AER email of 30 November 2012*, received 14 December 2012, p. 1.

289 SP AusNet, *Contingency planning paper [redacted] SP AusNet [redacted]*, 24 September 2009, pp. 1-4 (confidential). The ultimate recommendation [redacted] was to replan the WiMAX solution to mitigate delivery risk and continue discussion with Jemena and SSN regarding a mesh enabled solution.

290 The timeline presented in the contingency plan is from September 2009 to July 2010 (11 months). However, [redacted] note that the timeline contained an error. The [redacted] confirm that 40,000 meters would be rolled out by April 2010 to meet the 5 per cent delivery milestone under the AMI Order, not July 2010. The total timeline is therefore 10 months. See SP AusNet, [redacted] *24 September 2009*, paragraphs 5.2 and 5.3.

291 SP AusNet, *Contingency planning paper [redacted] SP AusNet [redacted]* 24 September 2009, p. 2 (confidential).

292 Energeia, *January 2013 Report*, pp. 32-37, Appendix 5.

SP AusNet's contingency timeline suggests that it considered it could contract with SSN in one month in order to meet the 5 per cent milestone. It follows that, in this instance, SP AusNet appears not to have considered it necessary to undertake a competitive tender process. From this, the AER considers that a reasonable business facing a similar – and in the AER's view, stricter – statutory deadline would also minimise the time for procurement to meet that deadline.

Further, what has not been acknowledged by SP AusNet is that in order to complete a budget re-evaluation, a significant portion of the negotiation process would have already been undertaken prior to entering into formal negotiations.[293]

SP AusNet would have had the negotiating benefit of already having an incumbent smart metering technology (WiMAX). The vendor would have understood that its value proposition would need to be compelling enough to convince both the SP AusNet Board and the AER that it was prudent to walk away from a significant existing sunk investment. In the event that SP AusNet did not believe SSN was offering a competitive price, it would have the credible threat of going to tender.[294]

Therefore, the AER considers its estimate that one month is sufficient to formalise the negotiated SSN pricing and terms into a formal contract is reasonable.[295]

2. SP AusNet's [redacted] procurement process

The AER considers that direct negotiation with a supplier can be good industry procurement practice under certain circumstances. These might include where there is limited competition or substantial time pressure.[296] SP AusNet's practices appear to be consistent with this view. In response to a request for further information, SP AusNet provided its procurement policy[297] and an [redacted] for a contract with [redacted] to retrofit WiMAX NICs. For the reasons below, these documents appear to support the AER's view.[298]

SP AusNet's procurement policy implies that, in certain circumstances, SP AusNet procedure does not require a tender process. For example, for large value transactions where a single quote is obtained, SP AusNet may not use a tender process. It is sufficient if a [redacted] form is completed and approved by the [redacted] [299]

The [redacted] form included in the [redacted] contains a number of potential reasons why a competitive tender process may be waived. One such reason includes when an open or closed tender will not deliver the required products or services in time. Another is when the products or services can be supplied only by a particular supplier and no reasonable alternative or substitute exists.[300]

The AER's opinion is that both of these reasons could apply here.[301] As explained in the Preliminary View, the AER considers a reasonable business in the circumstances would aim to switch to mesh radio by 1 January 2012 to meet the AMI services target.[302] Consequently there are time pressures

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293 Energeia, *January 2013 Report*, pp. 32-37, Appendix 5.
294 Energeia, *January 2013 Report*, pp. 32-37, Appendix 5.
295 Energeia, *January 2013 Report*, pp. 32-37, Appendix 5.
296 Energeia, *January 2013 Report*, pp. 32-37, Appendix 5.
297 SP AusNet, *Response to information request 7 of 8 October 2012*, received, 22 October 2012, Attachment D.
298 SP AusNet, *Response to Information request 7 follow up of 25 October 2012*, received 1 November 2012, Attachment C.
299 SP AusNet, *Response to information request 7 of 8 October 2012*, received, 22 October 2012, Attachment D, p. 8.
300 SP AusNet, *Response to Information request 7 follow up of 25 October 2012*, received 1 November 2012, Attachment C.
301 Energeia, *January 2013 Report*, pp. 32-37, Appendix 5.
302 AER, *Preliminary View*, August 2012, pp. 13-15.

associated with switching to mesh radio. Further, as explained below, the AER also considers no reasonable alternative to SSN exists.

3. No reasonable alternatives to Silver Spring Networks

The AER considers there are no reasonable alternatives to SSN for the supply of mesh radio technology in Australia.[303] The AER also has no reason to believe that this would have been any different in February 2011. Energeia's investigation into the mesh network market found that SSN has a significant cost advantage over its competitors. Specifically, its solution requires significantly fewer access points per meter. The fewer the access points required, the less expensive the solution. Energeia considers this may be one reason for the other Victorian DNSPs selecting SSN as their mesh vendor.[304]

Further, other providers would face additional cost and delays to obtain Australian compliance and integrate their technology with SP AusNet's metering solution.[305] In the AER's opinion, these findings are consistent with SP AusNet's view in its Reconsideration Submission – that SSN's dominant position in the market makes it the best placed provider to deliver services that accord with SP AusNet's needs.[306]

The AER considers Energeia's findings further support the view that a reasonable business in SP AusNet's circumstances would contract with SSN without undergoing a tender process.

4. Incentives under the AMI Order

SP AusNet is correct that the AMI Order creates an incentive to competitively tender for contracts. At the time of the reconsideration, a reasonable business in SP AusNet's circumstances will have been aware of the incentives that exist under the AMI Order. However, businesses face numerous incentives simultaneously. Therefore, the presence of one incentive to competitively tender does not, of itself, make it prudent to competitively tender for a mesh radio solution. Other factors are also relevant – for example, meeting legislated deadlines.

The AER considers that, on 28 February 2011, a reasonable business would have been aware that in October 2009 the AER had approved the four other DNSPs' mesh radio based budgets for the 2009-11 period. By 28 February 2011, each of these DNSPs had contracted with SSN for their mesh radio solutions. Therefore, it seems that a reasonable business would have considered unlikely the possibility that the AER would reject another SSN mesh radio solution. In addition, as noted above, the AER also considers a reasonable business would have been aware that no reasonable alternatives to SSN existed at the time.

Therefore, the AER's opinion is that a reasonable business in the circumstances would have been able to take comfort that its SSN expenditure would likely be approved by the AER even if it was not competitively tendered.

IT design, build, test and commissioning

KEMA's timeline appears to assume 10 months to develop, test and commission IT systems ready for the "commercial launch" (when the mesh radio solution would be able to deliver interval data to

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303 Energeia, *January 2013 Report*, pp. 32-37, Appendix 5.
304 Energeia, *January 2013 Report*, pp. 32-37, Appendix 5.
305 Energeia, *January 2013 Report*, pp. 32-37, Appendix 5.
306 SP AusNet, *Reconsideration Submission*, 5 June 2012, p. 19.

market[307]) on 1 July 2012.[308] This launch date is six months later than the AER's estimate, but only two months longer.[309] In contrast, SP AusNet's view in its Reconsideration Submission was that meters would not deliver interval data to market until 1 July 2013 – 18 months later than the AER's estimate.[310]

KEMA provides little detail regarding its time budgeting for IT development and it is unclear when KEMA's IT development commences. Energeia has adopted the view that development commences in September 2011, following contract award in August 2011.[311]

The AER's 8 month timeline has adopted the mesh radio IT development timeframes estimated from PG&E's mesh radio switching process, which is supported by reported mesh IT development timeframes by JEN and UED.[312] The AER discussed this in the Preliminary View.[313] As noted above, this timeframe is almost identical to SP AusNet's own mesh radio switching contingency.[314]

As discussed in the Preliminary View, the AER's 8 month IT design, build, test and commission timeframe would enable a reasonable business in SP AusNet's circumstances to meet the mandatory AMI services target on 1 January 2012.[315]

The AER considers the AMI services target is more critical than the rollout targets (see section 2.1.3). This is because the rollout targets contain a "best endeavours" clause. However, the AMI services target does not.[316] In the AER's opinion, this implies that the consequences of non-compliance with the AMI services target would be more severe. Conversely, if a DNSP fails to meet a rollout target, the AER has discretion in determining whether the DNSP used its "best endeavours" and hence if it should be penalised.[317]

Accordingly, the AER considers a reasonable business in SP AusNet's circumstances would prioritise this target over the interim milestones in the rollout schedule. KEMA does not comment on the impact its proposed timeline has on SP AusNet's requirement to meet the AMI services target.

Receipt and staging delay

KEMA's timeline includes a month of receipt and staging for deployment of mesh radio meters (with NIC included) and an additional month before deployment of NICs into empty meters or meters with a WiMAX NIC. KEMA does not explain these two one month delays, which increase switching costs due to:[318]

- deployment of 14,300 additional meters without a mesh radio NIC
- an additional month of metering and project management opex due to the delay in retrofitting.

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307 SP AusNet, *Response to information request 7 of 8 October 2012*, received 22 October 2012, p. 18.
308 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, pp. 22-23.
309 Energeia, *January 2013 Report*, pp. 32-37, Appendix 5.
310 SP AusNet, *Reconsideration Submission*, 5 June 2012, p. 18.
311 Energeia, *January 2013 Report*, pp. 32-37, Appendix 5.
312 Energeia, *January 2013 Report*, pp. 32-37, Appendix 5.
313 AER, *Preliminary View*, August 2012, pp. 13-15.
314 SP AusNet, *Contingency planning paper* [redacted] *SP AusNet* [redacted], 24 September 2009; SP AusNet, [redacted] *24 September 2009*, paragraphs 5.2 and 5.3.
315 AER, *Preliminary View*, August 2012, pp. 13-15.
316 *AMI Order*, clause 14; DPI, *Minimum AMI service levels specification*, clause 4.3.
317 *AMI Order*, clause 14.
318 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, p. 23.

The AER's timeline reflects typical industry practice of obtaining sample meters in advance of the main order to use in the staging process. This allows the project to make the necessary arrangements to be install meters on arrival, without a one or two month delay (and resulting additional costs). SP AusNet's own mesh radio contingency timeline also assumes sample meters are received one month prior to the main order.[319]

Mesh NIC retrofit timeline

The mesh radio implementation timeline adopted in KEMA's report includes 18 months to retrofit mesh radio NICs into empty meters and meters already containing a WiMAX NIC. This window of time commences on 1 January 2012 and is based on 12,200 retrofits per month. KEMA's basis for the 1 January 2012 start date is its estimated time to complete procurement and a lead time of three months for shipment of NICs. KEMA does not explain the basis for its estimate of the number of retrofits per month.[320]

The AER agrees that KEMA's lead time of three months for NIC stock to arrive is reasonable.[321] However, on the basis of information obtained from SP AusNet, the AER does not agree that KEMA's estimate is reflective of the number of retrofits a reasonable business in the circumstances would be able to achieve. The AER's opinion is that KEMA's retrofit timeline should be condensed considerably because a reasonable business in the circumstances would:[322]

- commence retrofits in July 2011, which would significantly reduce the number of retrofits required
- use non-electrically qualified installers (such as meter readers) to do so, which means retrofits are completed concurrently with meter installations due to different labour pools
- ramp up to 30,000 retrofits per month to achieve the mandatory 1 January 2012 AMI services target for all installed meters.

The AER's estimate that all mesh radio retrofits should be completed by 1 January 2012 is a departure from its Preliminary View. In its Preliminary View, the AER (based on the information available to it at the time) considered that a reasonable business in SP AusNet's circumstances would dismantle its WiMAX network in 2011 and commence retrofitting meters with mesh radio NICs from 1 January 2012.[323]

However, since its Preliminary View, the AER has obtained information from SP AusNet that changes the AER's position. SP AusNet provided its [redacted]. The AER first requested [redacted] on 12 June 2012.[324] However, SP AusNet did not provide them until the AER notified SP AusNet of its intention to formally obtain the information.[325]

[redacted] provide evidence that SP AusNet completed a WiMAX NIC mass retrofit program from approximately mid May 2010 to 30 June 2010. The aim of this mass retrofit was to install 40,000 meters with WiMAX NICs by 30 June 2010 to meet the 5 per cent rollout milestone

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319 Energeia, *January 2013 Report*, pp. 32-37, Appendix 5.
320 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, pp. 21-24.
321 Energeia, *January 2013 Report*, pp. 32-37, Appendix 5.
322 Energeia, *January 2013 Report*, pp. 32-37, Appendix 5.
323 AER, *Preliminary View*, August 2012, pp. 13-15.
324 AER, *Information request 2 of 12 June 2012*, pp. 1-2.
325 SP AusNet, *Response to AER email of 2 October 2012*, received 3 October 2012, Attachment 4.

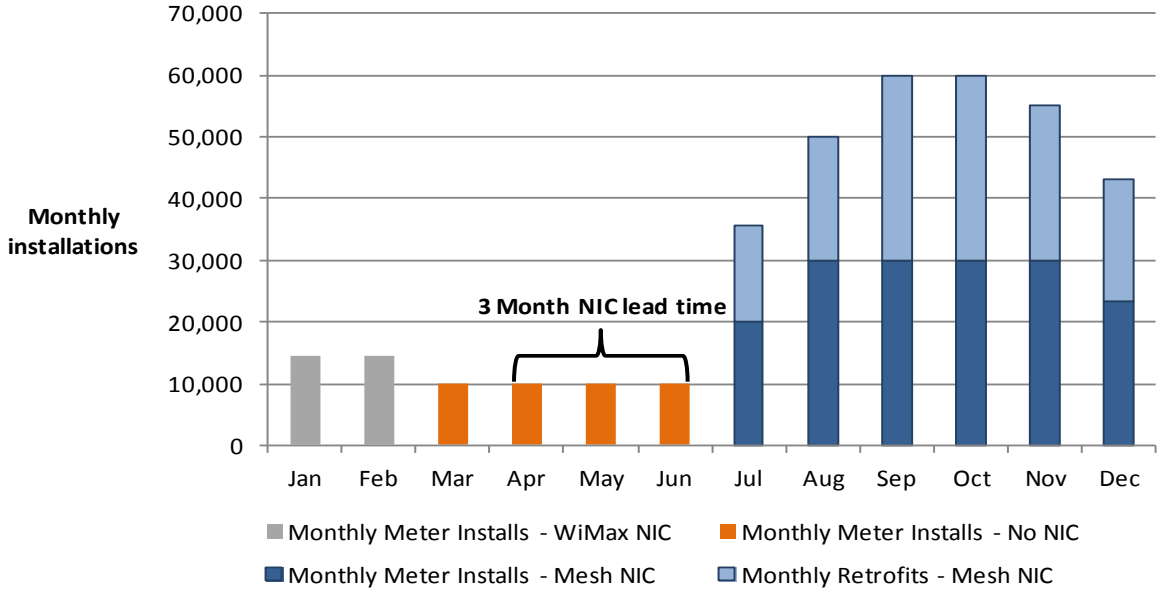
under the AMI Order.[326] According to [redacted], SP AusNet had installed approximately 24,000 meters by 30 April 2010, but only 500 WiMAX NICs.[327]

The [redacted] indicate that SP AusNet used a different labour pool to its meter installers. The [redacted] state that WiMAX NICs were installed at a rate of between 1,400 and 1,500 per day while meters were simultaneously installed at a rate of approximately 500 per day.[328] SP AusNet later confirmed the utilisation of different labour pools for NIC retrofits and meter installations. It stated that [redacted] (an unskilled workforce) was contracted to perform the WiMAX NIC retrofits in 2010.[329]

As section 2.6.8 explains, the AER considers a mesh radio NIC retrofit should not take any longer than a WiMAX NIC retrofit.

On this basis, the AER considers a reasonable business in SP AusNet's circumstances should streamline its switch to mesh radio using the estimated retrofit timeline in Figure 2.4, which shows mesh radio retrofits and meter installations commencing simultaneously from July 2011. The AER's timeline allows for one month of procurement in March (discussed above), and a three month lead time for mesh radio NIC and meter stock to arrive.[330]

Figure 2.4 AER revised mesh radio meter installation and NIC retrofit timeline by month, commencing January 2011



Source: AER analysis.

The AER considers that a reasonable business in SP AusNet's circumstances would minimise empty meter (no NIC) installations for the four months until mesh radio NIC and meter stock arrives. It should

326 SP AusNet, *Response to AER email of 2 October 2012*, received 3 October 2012, Attachment 4, pp. 208, 220, 238, 254.
327 SP AusNet, *Response to AER email of 2 October 2012*, received 3 October 2012, Attachment 4, p. 208.
328 SP AusNet, *Response to AER email of 2 October 2012*, received 3 October 2012, Attachment 4, pp. 208, 220, 238, 254.
329 SP AusNet, *Response to information request 7 follow up of 25 October 2012*, received 1 November 2012, pp. 6-7, Attachment C.
330 Energeia, *January 2013 Report*, pp. 32-37, Appendix 5.

then ramp up to approximately 30,000 meter installations per month.[331] This approach is consistent with KEMA's estimate.[332]

Further, on the basis of the information received from SP AusNet, the AER considers a reasonable business in SP AusNet's circumstances should also ramp up to approximately 30,000 mesh radio NIC retrofits per month.[333] Given that SP AusNet has previously achieved between 1,400 and 1,500 retrofits per day, the AER considers this estimate is reasonable.

The AER sought comment from SP AusNet on its past daily NIC retrofit achievements.[334] SP AusNet's response has not caused the AER to change its view. SP AusNet submits that the daily retrofits were targets, not actual installations.[335] The AER does not agree that this view is supported by the [redacted], since they are reporting on achieved metrics.[336] For example, they use language such as "We are installing an average of 1,400 Comms Modules per day..."[337] and "The Communication Card Retrofit Program continues...Installation productivity of approximately 1,500 cards per day..."[338]

The AER's estimated retrofit timeline enables all required retrofits (approximately 153,000) to be completed by the end of 2011. This means that all installed meters would be operating as remotely read meters on 1 January 2012.[339] As the AER notes above and in section 2.1.3, the Minimum AMI service levels specification mandate that all installed meters must be sending interval data to market by 1 January 2012.[340] This is therefore a critical milestone. It would also reduce the cost of switching by minimising manual meter reading requirements. In section 3.2.3, the AER discusses the switching costs associated with its revised NIC retrofit timeline. Section 2.6.8 contains further discussion on the qualifications required to retrofit a mesh radio NIC.

WiMAX enabled meters

The mesh radio implementation timeline adopted in KEMA's report assumes that SP AusNet would continue to roll out meters with WiMAX NICs for an additional two months. SP AusNet and KEMA submit this is to meet the AMI Order rollout target for June 2011 (25 per cent of meters capable of being remotely read). SP AusNet and KEMA state that for these two months, SP AusNet would hold discussions with the AER and Government about the decision to switch.[341]

As explained in the Preliminary View, the AER disagrees. The AER does not accept that a reasonable business would continue to incur further costs associated with a WiMAX-based rollout when that business has decided it will switch to mesh radio technology.[342] The AER's Preliminary View also considered that a reasonable business in SP AusNet's circumstances would have held any discussions with the AER and Government prior to the reconsideration date. This is due to the significance of the decision to switch and the opportunities prior to 2011 that SP AusNet had to reconsider the appropriateness of WiMAX.[343]

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331 Energeia, *January 2013 Report*, pp. 32-37, Appendix 5.
332 KEMA, *Assessment of AMI Communications Options*, 14 September 2012, pp. 22-23.
333 Energeia, *January 2013 Report*, pp. 32-37, Appendix 5.
334 AER, *Email to SP AusNet requesting comment on changes in position*, sent 30 November 2012.
335 SP AusNet, *Response to AER email of 30 November 2012*, received 14 December 2012, pp. 5-6.
336 SP AusNet, *Response to AER email of 2 October 2012*, received 3 October 2012, Attachment 4, pp. 220, 238, 254.
337 SP AusNet, *Response to AER email of 2 October 2012*, received 3 October 2012, Attachment 4, p. 254.
338 SP AusNet, *Response to AER email of 2 October 2012*, received 3 October 2012, Attachment 4, p. 220.
339 Energeia, *January 2013 Report*, pp. 32-37, Appendix 5.
340 DPI, *Minimum AMI service leves specification*, clause 4.3.
341 SP AusNet, *Response Submission*, 14 September 2012, pp. 28-29; KEMA, *Assessment of AMI Communication Options*, 14 September 2012, p. 19.
342 AER, *Preliminary View*, August 2012, p. 14.
343 AER, *Preliminary View*, August 2012, p. 14.

Further, as discussed in chapter 4, information obtained from SP AusNet suggests that as at 28 February 2011, SP AusNet knew it would not meet the 30 June 2011 target. It seems unusual that in March and April a reasonable business would continue to roll out WiMAX NICs for a target it knew it would miss by February. This is especially the case when it has decided to switch to another technology. Therefore, the AER considers a reasonable business would not continue to roll out WiMAX enabled meters.

For the above reasons, the AER maintains its Preliminary View approach. That is, following the decision to switch, a reasonable business in the circumstances would stop rolling out WiMAX enabled meters. Rather, such a business would most likely roll out meters without a NIC until it could roll out mesh radio meters.[344] This reduces the AER's estimate of the number of retrofits required and consequently, the timeline for implementation.

2.6.5 WiMAX technology mandate

In its Reasons, the Tribunal notes that SP AusNet's circumstances are different to those of the other Victorian DNSPs because it had commenced its AMI rollout using WiMAX. The Tribunal also stated that the AER had mandated the use of WiMAX technology.[345] The AER respectfully disagrees that it mandated WiMAX as a technology. Further, the AER does not agree with SP AusNet's submission that the AER must determine whether or not SP AusNet (as opposed to a reasonable business in SP AusNet's circumstances) would have switched to mesh radio.[346]

As explained in submissions to the Tribunal, the AER is not a technical regulator. The AER's role is to make a decision on prudent costs, not technology choice.[347] While the choice of technology will have a bearing on costs, the AMI Order does not give the AER the power to mandate that a DNSP can or cannot use that technology unless the AER can demonstrate that it is completely outside the scope of the AMI Order.

Indeed, one of the AER's concerns in its 2009-11 budget and charges review was that SP AusNet's WiMAX technology may have been outside the scope of the AMI Order. However, the AER considered its discretion under the scope test required it to determine, on a case by case basis, whether the proposed expenditure would provide a net benefit to DNSPs, customers or retailers in the context of the AMI rollout. It could not simply reject associated expenditure. The AER ultimately decided:[348]

> While the AER considered that SPA's proposed WiMAX communications solution was potentially above minimum functionality specifications...in presenting its communications solution to the AER, SPA demonstrated that it had optimised its communications to meet the AMI minimum service levels specifications, including the provision of data to market and execution of load control within specified time frames. SPA demonstrated that it had made a reasonable commercial decision to employ WiMAX based on the overall costs, risks and suitability of available technologies. The AER was satisfied that SPA's selection of a WiMAX communications solution would provide a net benefit to consumers, retailers and to SPA, and accordingly **decided to approve costs for the solution** despite it being outside scope, as defined by the revised Order (**emphasis** added).

The AER considers this supports its view that it was unable to demonstrate that WiMAX was completely outside the scope of the AMI Order. As a result, the AER used its discretion to approve the

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344 AER, *Preliminary View*, August 2012, p. 14.
345 *Tribunal Reasons*, paragraphs 129, 138.
346 SP AusNet, *Response Submission*, 14 September 2012, p. 59.
347 AGS, *AER's Outline of Submissions, Attachment 1: WiMAX Communications*, paragraphs 7.3-7.4.
348 AER, *Final determination – Victorian advanced metering infrastructure review – 2009-11 AMI budget and charges applications*, October 2009, pp. 24-25.

costs associated with WiMAX. However, this does not demonstrate that the AER mandated SP AusNet's choice of technology.

For this same reason, in this Final Decision, the AER cannot mandate that SP AusNet change communications technology. The AER's view relates to a reasonable business in SP AusNet's circumstances, not to SP AusNet itself.

However, even if the AER had mandated WiMAX as a technology, the AER considers that this should not be materially relevant to SP AusNet's circumstances. As the AER explained in submissions to the Tribunal, there was evidence available to SP AusNet as early as September 2009 that its decision to use WiMAX may not have been prudent.[349] The AER can make decisions only on the basis of the information before it and SP AusNet did not provide this information to the AER until 28 February 2011.[350] Therefore, in the AER's opinion, a reasonable business in SP AusNet's circumstances would have acted on the evidence before it rather than wait for the AER to determine at a later date that the costs associated with WiMAX were not prudent.

2.6.6 Amending the Approved Budget

In its Response Submission, SP AusNet appears to take the view that the AER must determine an entirely new Approved Budget for mesh radio. For example SP AusNet refers to "setting" and "determining" a mesh radio solution budget and costs that "must be included in the 2012-15 budget."[351] SP AusNet further submits that the AER's Preliminary View amendment to the Approved Budget is inconsistent with the AER's analysis. SP AusNet submits that:[352]

> The AER's analysis adopts SP AusNet's circumstances of rolling out modular meters but in proposing amendments to the Approved Budget adopts an average of the Mesh radio costs of the other distributors, which costs are heavily dependent on the lower cost of integrated meters. This is a fundamental inconsistency.

SP AusNet submits that accordingly, the AER must adjust its Final Determination Approved Budget to account for modular meter costs.[353]

The AER does not agree with SP AusNet's view. The AER considers SP AusNet's interpretation of the manner in which the AER must amend the Approved Budget is beyond the scope of this remittal. Further, the AER disagrees with SP AusNet's submission on modular and integrated meters.

SP AusNet's interpretation is outside the scope of this remittal

SP AusNet seems to be treating this remittal as a new budget determination process under the AMI Order. SP AusNet submits the AER could remove expenditure from SP AusNet's 2012-15 budget only in accordance with clause 5C.3 of the AMI Order if it found switching to mesh radio was the prudent option. It further submits the AER is restricted from removing expenditure only in relation to the three categories under review (meter supply capex, communications maintenance opex and IT opex).[354]

While the AER agrees that its Final Determination Approved Budget expenditure may be modified for only these three categories under review, the AER does not otherwise agree with SP AusNet's interpretation.

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349 AGS, *AER's Outline of Submissions, Attachment 1: WiMAX Communications*, paragraphs 7.5-8.2.
350 AGS, *AER's Outline of Submissions, Attachment 1: WiMAX Communications*, paragraphs 7.5-8.2.
351 SP AusNet, *Response Submission*, 14 September 2012, pp. 25, 59.
352 SP AusNet, *Response Submission*, 14 September 2012, p. 17.
353 SP AusNet, *Response Submission*, 14 September 2012, pp. 16-17, 59.
354 SP AusNet, *Response Submission*, 14 September 2012, p. 16.

SP AusNet's interpretation may be valid if this was not a remittal in accordance with the Tribunal's direction, but a new budget determination under the AMI Order. However, this is not a new budget determination. The AER's opinion is that the starting point is not what may be removed from SP AusNet's Submitted Budget, but what should be added back to the October 2011 Final Determination Approved Budget. This is consistent with the Tribunal's use of the term "amending."[355]

The difference between the amount that the AER finds should be added back and the $72.2 million under review is the revised amount to be removed from the Submitted Budget in accordance with clause 5C.8 of the AMI Order. This then determines the revised Approved Budget. In other words, the AER is making an adjustment to its Final Determination Approved Budget, not determining a new Approved Budget.

As explained in section 2.3.1, the AER's opinion is that the scope of this remittal is limited. The AER's opinion is that the Tribunal has not directed the AER to re-determine the entire Approved Budget, but to reconsider whether a reasonable business in SP AusNet's circumstances would have made a decision to switch to mesh radio in February 2011. One reason for this is SP AusNet's decision to appeal a discrete element of the AER's Final Determination rather than the determination as a whole.

The Tribunal found the AER erred by not having regard to potential switching costs in determining that SP AusNet would incur no more than the Final Determination benchmark expenditure.[356] The Tribunal required the AER to reconsider what additional costs might be incurred by a reasonable business in SP AusNet's circumstances if it decided to switch to mesh radio.[357]

In doing this, the remittal has two possible outcomes. Either a reasonable business in SP AusNet's circumstances would have continued its rollout with WiMAX or it would have switched to mesh radio. In either case, the AER must add back an amount of expenditure to its Final Determination Approved Budget for SP AusNet.

In the first scenario, the AER would need to increase its Approved Budget for SP AusNet by the entire $72.2 million attributed to "WiMAX communications" because it would be prudent to incur that expenditure rather than switch to mesh radio. In the second scenario, the AER would need to increase the Approved Budget by the prudent amount of the switching costs that it considers a reasonable business would incur in 2012-15. In this case, the difference forms the amount removed from SP AusNet's Submitted Budget in accordance with clause 5C.8 of the AMI Order.

The Tribunal's Orders require the AER to amend its Final Determination "in such manner as it considers appropriate after considering the claim of [SP AusNet]...in accordance with the reasons for decision of the Tribunal."[358] For the reasons above, the AER considers its approach of starting from the Final Determination Approved Budget point to determine the revised amount to be removed in accordance with clause 5C.8 of the AMI Order is appropriate given the Tribunal's direction. The AER also considers this approach is in accordance with the Tribunal's Reasons. This is also the approach the AER took in its Preliminary View.[359]

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355 *Tribunal Orders*, Order 1(2).
356 *Tribunal Reasons*, paragraphs 128-130.
357 *Tribunal Reasons*, paragraphs 137-138.
358 *Tribunal Orders*, Order 1(2).
359 AER, *Preliminary View*, August 2012, pp. 3-4.

Modular and integrated meters

The AER does not agree with SP AusNet's submission that the AER would need to adjust its Final Determination Approved Budget to account for modular meter costs (which are higher than for integrated meters).[360]

The AER has conducted its analysis in this remittal on the basis that SP AusNet has modular meters because this is consistent with SP AusNet's circumstances at the time of the reconsideration. This means that at the time of the reconsideration, SP AusNet was in a position that meant it could potentially switch communications technology by changing the communications module but not the meter itself. This is a point that SP AusNet acknowledged in its Reconsideration Submission, and it is not in dispute.[361] Therefore, the meters themselves are not relevant to the remittal but the communications modules are. The AER raised this point in its Preliminary View, and SP AusNet acknowledges it in its Response Submission.[362]

Whether or not SP AusNet would choose to roll out modular or integrated meters following a hypothetical transition to mesh radio does not form part of the AER's analysis. Once SP AusNet exhausted its supply of modular meters, it could either choose to continue purchasing modular meters or it could transition to an integrated meter solution if it considered it would be more cost effective to do so.

Accordingly, the AER considers the decision it made in its Final Determination on SP AusNet's meters is relevant to this remittal only to the extent that it relates to the communications solution (NICs and antennas). This is consistent with SP AusNet's submissions to the Tribunal, which state that its concerns with the AER's approach to meter supply capex are limited "insofar as they relate to the AER's treatment of WiMAX."[363] It is also consistent with the Tribunal's Reasons, which focus on WiMAX as a communications solution.

However, even if the AER's Final Determination on SP AusNet's meters (as a total solution) is relevant, the AER's view does not change. The AER's Final Determination never intended to create a specific distinction between modular meters and integrated meters. It also made no decision on whether SP should roll out integrated or modular meters in the future.

The AER assessed SP AusNet's total meter solution cost (meter, communications module, antenna and zigbee) against the industry average benchmark comprising the costs of the other four Victorian DNSPs.[364] It did this because it considered SP AusNet's total meter solution was too expensive. The assessment was not to distinguish between the costs of modular meters and integrated meters. This industry benchmark also included other factors such as relative bargaining power and the ability to secure a volume discount. It is therefore not just the inclusion of integrated meters that resulted in a lower benchmark cost.

For the reasons above, the AER is of the opinion that it is not appropriate to amend its Final Determination Approved Budget in the manner SP AusNet submits.

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360 SP AusNet, *Response Submission*, 14 September 2012, pp. 16-17, 59.
361 SP AusNet, *Reconsideration Submission*, 5 June 2012, p. 19.
362 AER, *Preliminary View*, August 2012, pp. 7, 19; SP AusNet, *Response Submission*, 14 September 2012, p. 25.
363 SP AusNet, *Applicant's Written Outline of Submissions: Attachment 1 – WiMAX Communications*, 30 January 2012, paragraph 12.
364 AER, *Final determination*, October 2011, pp. 84-89.

2.6.7 Switching costs incurred in 2011

Section 2.1.2 explains why the AER considers the AMI Order does not allow costs incurred in the 2009-11 budget period to be recovered in the 2012-15 budget period. It follows that the AER considers it is unable amend its Final Determination Approved Budget for 2012-15 to include any switching costs it estimates a reasonable business would have incurred in 2011. This was the AER's preliminary view and it remains the AER's view in this Final Decision.[365]

SP AusNet's Response Submission submits the AER's Preliminary View is in error and has no practical application because SP AusNet cannot now seek to amend its 2009-11 budget. Specifically, SP AusNet submits the AER's Preliminary View is in error because it: [366]

- assumes that switching costs have already been incurred and recovered, when that is not the case
- assumes that switching costs can be recovered through an adjustment to the 2009-11 budget when they cannot be
- excludes switching costs from the budget for 2012-15 when it is directed by the Tribunal to include them.

The AER does not agree with SP AusNet's submission. The AER reiterates its task in this remittal is to come to a view as to what a reasonable business in SP AusNet's circumstances would have done, had it reconsidered its communications solution. The AER also considers it is acting in accordance with the Tribunal's direction. The AER did not assume in its Preliminary View that SP AusNet actually incurred or recovered any switching costs in 2011. Nor did the AER assume that SP AusNet can now recover switching costs via an adjustment to its 2009-11 budget.

The AER's view is that expenditure incurred in 2011 would not have been recoverable in the 2012-2015 budget process but rather through other mechanisms. The AER considers that it would over compensate a reasonable business in SP AusNet's circumstances for the cost of switching to mesh radio by including 2011 expenditure in the 2012-15 budget. The AER also considers it is inconsistent with the operation of the AMI Order.

The AER estimates that if a reasonable business in SP AusNet's circumstances had decided to switch to mesh radio on 28 February 2011, it would save $12.4 million ($2011 real) in 2011 relative to retaining SP AusNet's WiMAX solution. That is, the lower mesh radio deployment costs would more than offset any switching costs the AER considers a reasonable business would incur in 2011.[367]

As a result, the AER considers it is not necessary to amend SP AusNet's 2012-15 Approved Budget for 2012-15 to include 2011 switching costs. This is because SP AusNet's 2011 Approved Budget (for WiMAX) would have been sufficient to allow a reasonable business in SP AusNet's circumstances to switch to mesh radio in 2011 without it incurring additional costs in that year. In turn, the AER considers that including the 2011 switching costs in the 2012-15 Approved Budget would overcompensate a reasonable business in SP AusNet's circumstances.

Further, if the 2011 Approved Budget did not entirely cover the cost of switching to mesh radio, the AMI Order would have allowed a reasonable business in SP AusNet's circumstances to submit a

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365 AER, *Preliminary View*, August 2012, pp. 32-33.
366 SP AusNet, *Response Submission*, 14 September 2012, p. 19.
367 Energeia, *January 2013 Report*, pp. 19-22.

revised budget application to recover any additional costs. However, SP AusNet did not do this. In fact, SP AusNet submitted a revised budget application on 28 February 2011 for higher costs associated with WiMAX.[368] The AER's opinion remains that a reasonable business in the circumstances would not have acted as SP AusNet did.

The AER also considers the AMI Order does not allow costs incurred in 2011 to be recovered in the 2012-15 budget period. If 2011 expenditure was moved into the 2012 Approved Budget, the budget would not be comparable with 2012 actual expenditure. This means the AER could not practically conduct an ex post reconciliation of 2012 budget and actual expenditure. As section 2.1.2 explains, the charges revision process under the AMI Order requires this to operate correctly.[369] It could also potentially undermine the AER's ability to conduct an "expenditure excess" review of prudence, which is an important aspect of the charges revision process.[370]

The AER reiterates that the Tribunal's Reasons direct the AER to use a reconsideration date of 28 February 2011.[371] SP AusNet does not disagree with this date.[372] The AER has shown that a reasonable business in SP AusNet's circumstances would have substantively completed the changeover to mesh radio by the end of 2011. Further, the AMI Order mechanisms available would have allowed recovery of any additional expenditure in that year.

The AER acknowledges it erred in its October 2011 Final Determination by substituting benchmark expenditure without appropriately having regard to SP AusNet's circumstances. However, the AER has now had regard to SP AusNet's circumstances and considers a reasonable business in those circumstances would not have required additional compensation in the 2012-15 budget period (for the relevant categories under review) because it would have substantively switched to mesh radio by the end of 2011. Section 3.2.3 contains further detail on the amount of switching costs the AER considers a reasonable business would incur in 2011 and in 2012-15.

2.6.8 Change of position and new information

As the AER explains in chapter 1, SP AusNet's Response Submission contains some changes in approach and new information since its Reconsideration Submission. While the AER and SP AusNet have come closer to agreement on some matters, the respective views on others are now further apart. This has required the AER to conduct more detailed analysis than in the Preliminary View. The AER has almost had to conduct its analysis anew, which has resulted in the AER's positions on certain issues also changing from its Preliminary View.

Coverage of primary communications solutions

In its Response Submission, SP AusNet changes its estimate of the coverage for WiMAX and mesh radio. In its Reconsideration Submission, SP AusNet's coverage estimate for both solutions was 85 per cent of its territory.[373] In contrast, its Response Submission increases the coverage of WiMAX and mesh radio to 89.4 per cent and 93.5 per cent, respectively.[374] SP AusNet's revised estimates are based on advice from KEMA.[375]

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368 SP AusNet, *Advanced Metering Infrastructure Revised Budget Application*, 28 February 2011.
369 *AMI Order*, clauses 5H, 5I.
370 *AMI Order*, clause 5I.5.
371 *Tribunal Reasons*, paragraph 138.
372 SP AusNet, *Response Submission*, 14 September 2012, p. 22.
373 SP AusNet, *Reconsideration Submission*, p. 16.
374 SP AusNet, *Response Submission*, 14 September 2012, pp. 32, 42
375 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, pp. 34, 54.

The coverage estimate is material to the lifetime costs of each communications solution because it determines the extent of reliance on the more costly 3G secondary communications solution.

The AER does not agree with SP AusNet's revised submissions on coverage. As section 2.6.2 discusses, the AER maintains its Preliminary View approach for mesh radio coverage – 97 per cent. However, the AER has revised its estimate of WiMAX coverage to be consistent with SP AusNet's Reconsideration Submission (85 per cent).[376]

SP AusNet/KEMA revised WiMAX coverage estimate

KEMA's advice for SP AusNet's revised estimate of 89.4 per cent is that it reflects an estimate in SP AusNet's 2012-15 budget application submitted to the AER on 28 February 2011.[377] While this estimate existed as at 28 February 2011, the AER considers it is not appropriate to rely on it.[378]

SP AusNet's 2012-15 budget application suggests this estimate was preliminary and could not have been achieved without additional cost. It is also at odds with SP AusNet's coverage target for July 2013 of 85 per cent and assumed 3G coverage of 15 per cent contained in the same submission.[379] SP AusNet's basis for this estimate at the time was:[380]

> Validation of radio network design parameters and experience gained from the deployment to date indicates that the coverage of WiMAX may be extended to a greater proportion of the customer base (in excess of 88%) with secondary communication solution technology used to interface with the balance of customers.

However, this statement appears at odds with the following statement, also in SP AusNet's budget application:[381]

> SP AusNet is currently investigating the overall coverage associated with the primary WiMAX network. Preliminary findings suggest the overall coverage of 84.69% will be increased with the use of micro infrastructure and infill strategies.

SP AusNet also sent a request for information to the market for a 3G solution in February 2011 seeking a solution for approximately 10 to 15 per cent of its meter population.[382] In the AER's opinion, this suggests SP AusNet was not confident that it could actually achieve 89.4 per cent at the time.

Further, in response to a request for information from the AER in April 2011, SP AusNet clarified that there would be an additional meter installation cost of $[redacted] per installation to improve WiMAX coverage from 85 per cent to 88.77 per cent. This is because SP AusNet would need to install an antenna on the customer's roof rather than the meter box. As a result, SP AusNet's 2012-15 Submitted Budget included an additional $7.0 million for meter installation services.[383] It is not clear whether this amount included the additional cost of the micro infrastructure and infill strategies noted above.

For the reasons above, the AER considers the information relied on by SP AusNet is not sufficiently robust to justify a change in estimate from 85 per cent to 89.4 per cent. Further, SP AusNet has not

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376 Energeia, *January 2013 Report*, pp 24-25.
377 SP AusNet, *Response Submission*, 14 September 2012, p. 42; KEMA, *Assessment of AMI Communication Options*, 14 September 2012, p. 54.
378 Energeia, *January 2013 Report*, pp 24-25.
379 SP AusNet, *2012-15 AMI Budget Application*, 28 February 2011, pp. 27, 56.
380 SP AusNet, *2012-15 AMI Budget Application*, 28 February 2011, p. 41.
381 SP AusNet, *2012-15 AMI Budget Application*, 28 February 2011, p. 56.
382 SP AusNet, *Request for Information ITT 2011/T0002 – Secondary Network Based AMI Metering Solution*, 14 February 2011, p. 10.
383 SP AusNet, *Response to information requested on 11 April 2011*, received 28 April 2011, p. 5.

justified the additional cost against that of using a secondary 3G solution. Accordingly, the AER's opinion is that it is not appropriate to rely on SP AusNet's revised estimate.[384]

AER WiMAX coverage estimate

In its Preliminary View, the AER estimated 79 per cent WiMAX coverage and 21 per cent 3G coverage.[385] This was based on the AER's analysis of actual meter numbers in its Final Determination. However, this coverage was also based on a different meter deployment profile and technology mix due to changes in SP AusNet's own plans since 28 February 2011. The AER has revised its meter rollout profile to be consistent with that submitted by SP AusNet in its 28 February 2011 budget application (and proposed by KEMA[386]). However, the AER has adjusted this profile post 2013 to reflect the customer growth and meter-to-customer estimates per its Final Determination.[387]

This results in an estimate that places less reliance on 3G than the AER initially estimated. Given the reasons above, the AER considers an estimate of 85 per cent for WiMAX coverage reflects that which a reasonable business in SP AusNet's circumstances would have estimated as at 28 February 2011.[388] Accordingly, the AER's quantitative analysis in section 3.1 uses this estimate in determining the lifetime costs of retaining WiMAX.

Mesh radio antennas

In its Response Submission, SP AusNet submits (on advice from KEMA[389]) that to achieve its revised 93.5 per cent coverage with mesh radio, 70 per cent of the meters would require a standard antenna.[390] SP AusNet's Reconsideration Submission estimate was that 50 per cent of mesh radio meters would require a standard antenna.[391] The AER did not raise concerns about the percentage of mesh radio antennas in its Preliminary View.[392]

SP AusNet does not explain its change in approach, or why its initial estimate was inaccurate. However, KEMA's estimate and mesh radio coverage model is based on an assumption that every meter enclosed in a metal box would require an antenna. KEMA further submits that 25 per cent of meters deployed in a rural area would likely require a more costly high gain antenna.[393] However, this additional requirement does not appear to be reflected in KEMA's modelling.[394] KEMA's basis for its assumption that all metal meter boxes will require an antenna is its mesh radio coverage model. It does not explain why all meters enclosed in a metal box require an antenna.[395]

In response to a request for further information from the AER, KEMA was unable to provide additional information to explain the relationship between metal meter boxes and the need for an antenna

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384 Energeia, *January 2013 Report*, pp 24-25.
385 AER, *AER Financial Model 130812.xslx*, attachment to AER, *Preliminary View*, August 2012.
386 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, Appendix A, p. 15.
387 Energeia, *January 2013 Report*, pp 24-25.
388 Energeia, *January 2013 Report*, pp 24-25.
389 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, p. 35.
390 SP AusNet, *Response Submission*, 14 September 2012, p. 36.
391 SP AusNet, *Comparative cost of Mesh alternative solution -050612.xls*, 5 June 2012, Meter costs of switching tab.
392 KEMA has assumed that Energeia's modelling indicates an assumption that 100% of mesh meters would require an antenna. KEMA, *Assessment of AMI Communication Options*, 14 September 2012, p. 35. Energeia's financial model contained a calculation error for mesh radio antennas that produced an inconsistent result. The WiMax NIC Equipment Replacement calculation correctly assumed 50 per cent antennas (consistent with SP AusNet's reconsideration submission) but the Mesh + 3G Meter Comms Equipment calculation inadvertently did not.
393 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, pp. 62-63; Appendix A, p. 7.
394 KEMA, *Cost Benefit Assessment for Replacement of WiMAX Solution with RF Mesh*, KB2.B tab.
395 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, pp. 62-63.

beyond that already contained in its report. However, KEMA stated that the 70 per cent metal box estimate was based on a sample of meters provided by SP AusNet.[396]

As a result of SP AusNet's change in approach, the AER has conducted further review on the antenna requirement for a mesh radio solution. In its October 2011 Final Determination, the AER found that the Victorian DNSPs adopting a mesh radio solution considered an antenna was required for 5 to 10 per cent of meter installations.[397] The AER's Final Determination noted JEN and UED's submission on the correlation between metal meter boxes and the need for an external antenna, but did not state an opinion on it.[398] CitiPower and Powercor appear not to have commented on this matter.

The AER's view is that a reasonable business in SP AusNet's circumstances would require external antennas on 5 to 10 per cent of meter installations. On the basis of the information currently before it, the AER is not convinced that all metal meter boxes require an antenna. The AER is also unable to verify SP AusNet's submission that 70 per cent of its meter population is enclosed in metal boxes.[399]

As the AER explains in section 2.6.2, KEMA did not provide its mesh radio coverage model to the AER for review since it "is a proprietary model and is commercially confidential."[400] This lack of transparency creates a hindrance to an open and fair assessment of KEMA's findings, upon which SP AusNet has relied. The AER acknowledges KEMA's expertise. However, it is not appropriate to accept KEMA's findings "on trust".

The AER notes that the other four DNSPs with varying customer densities, geography and topography are able to roll out a mesh radio solution with an antenna requirement for 5 to 10 per cent or meters. Therefore, the AER considers a reasonable business in SP AusNet's circumstances should be able to do the same. In particular, as the AER explains in section 2.6.2, Powercor is particularly relevant as a benchmark for SP AusNet in this respect due to it being similar in nature and size to SP AusNet.[401]

Also, Powercor's estimate of antenna requirements is actually at the lower end of the 5 to 10 per cent scale and a small percentage of its antenna requirement is for high gain antennas. However, in the circumstances, the AER has adopted a conservative estimate of approximately 10 per cent (comprising a combination of standard and high gain antennas) due to the significance of the decision to switch communications technology.[402]

Further, Powercor's contracted unit costs for its antennas are different to SP AusNet's – Powercor's standard antenna unit cost is higher than SP AusNet's and its high gain antenna unit cost is lower than the WiMAX extended antenna cost. The descriptions of Powercor's costs imply that they include the cost of installation. The AER considers it is appropriate in the circumstances to use these unit costs because they are for a mesh radio rollout.[403] Section 3.2.1 contains the AER's discussion on the capex associated with mesh radio antennas.

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396 SP AusNet, *Response to information request 7 of 8 October 2012*, received 22 October 2012, pp. 9-10.
397 AER, *Final Determination*, October 2011, pp. 84-86.
398 AER, *Final Determination*, October 2011, pp. 156-158.
399 Energeia, *January 2013 Report*, p. 38.
400 SP AusNet, *Response to information request 7 of 8 October 2012*, received 22 October 2012, p. 10.
401 *Tribunal Reasons*, paragraphs 180-181.
402 Energeia, *January 2013 Report*, p. 38.
403 Energeia, *January 2013 Report*, p. 38.

Time to install mesh radio network interface cards

SP AusNet's Reconsideration Submission considered the cost (and by implication, the time[404]) to retrofit a NIC into an empty meter would be the same for mesh radio and WiMAX NICs.[405] In its Response Submission, SP AusNet submits that to retrofit a mesh radio NIC into an empty meter it will take 15 minutes (50 per cent) longer than a WiMAX NIC and will cost approximately 53 per cent more per installation.[406] This is because KEMA had advised that "additional steps" are required compared to installing a WiMAX NIC.[407]

Further, in its Response Submission, SP AusNet submits the cost to retrofit a mesh radio NIC into a meter with an existing WiMAX NIC is approximately 55 per cent more than its Reconsideration Submission estimate.[408] SP AusNet submits this is on the basis it will take 1 hour and 15 minutes per installation because it would need to reverse the steps taken to install the WiMAX NIC and then install the mesh radio NIC.[409] This is 150 per cent more than KEMA's estimate of the time to install a WiMAX NIC (30 minutes).[410] It also contrasts significantly with the total average time required for an entire meter installation of 10 minutes.[411]

In addition, SP AusNet's response to a request for information from the AER raises a new matter. It submits that NIC installations must be performed by suitably skilled installers with the requisite technical competency level per Energy Safe Victoria (ESV) requirements.[412] SP AusNet's response does not specify the ESV requirements or required technical competency. Neither the AER nor SP AusNet has previously contemplated NIC installer qualifications as an issue in this process.

SP AusNet does not explain why it has changed its position on NIC installation estimates, or why its initial estimates were inaccurate. The time taken to retrofit mesh NICs and the labour pool required to do so are material to the amount of additional costs a reasonable business in SP AusNet's circumstances would incur if it switched to mesh radio.

Installing a mesh radio NIC into an empty meter

Using the information made available to it, the AER remains unconvinced that the time to install a mesh NIC into an empty meter should be any longer than for a WiMAX NIC.[413] Accordingly, the AER maintains its Preliminary View position.[414]

KEMA identifies the following "additional steps" it considers necessary to install a mesh radio NIC:[415]

1. network integration
2. testing

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404 SP AusNet's Reconsideration Submission did not comment on the time it would take to retrofit a mesh radio NIC or WiMAX NIC into an empty meter. Since SP AusNet assumed the cost would be the same for either, the AER considers the time would be as well.
405 SP AusNet, *Comparative cost of Mesh alternative solution -050612.xls*, 5 June 2012, Meter costs of switching tab.
406 SP AusNet, *Response Submission*, 14 September 2012, pp. 36-37, Annexure 5.
407 SP AusNet, *Response Submission*, 14 September 2012, pp. 36-37, Annexure 5.
408 SP AusNet, *Response Submission*, 14 September 2012, pp. 36-37; SP AusNet, *Comparative cost of Mesh alternative solution -050612.xls*, 5 June 2012, Meter costs of switching tab.
409 SP AusNet, *Response Submission*, 14 September 2012, pp. 36-37, Annexure 5.
410 SP AusNet, *Response Submission*, 14 September 2012, pp. 36-37, Annexure 5.
411 Energeia, *January 2013 Report*, pp. 41-44.
412 SP AusNet, *Response to information request 7 of 8 October 2012*, received 22 October, p. 8.
413 Energeia, *January 2013 Report*, pp. 41-44.
414 AER, *Preliminary View*, August 2012, pp. 20-23.
415 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, pp. 41-43.

3. confirmation

4. firmware upgrade.

KEMA's report indicates these steps are required to check the NIC is communicating correctly. KEMA does not explain why its extra steps should take 15 minutes for a mesh radio NIC or why they are not applicable to installing a WiMAX NIC.[416]

In response to requests for further information, KEMA explained its estimate was justified by its experience. However, KEMA was unable to demonstrate specific examples where it had experienced this process taking 15 minutes in the field.[417] SP AusNet's response to the AER's request for further information included its work procedure to manage meter communications failures in the field.[418]

This document indicates it would be necessary to check that the NIC is communicating correctly regardless of what type of NIC is inserted into the meter. It also states that once a NIC is inserted into the meter, it should take up to 60 seconds for it to indicate that it is trying to communicate with the base station.[419] Therefore, the AER considers KEMA and SP AusNet have been unable to demonstrate that the process and time for installing a mesh radio NIC should be different to that of a WiMAX NIC.[420] As noted above, this view also appears consistent with SP AusNet's Reconsideration Submission.[421]

Replacing a WiMAX NIC with a mesh radio NIC

The AER remains of the opinion that replacing a WiMAX NIC with a mesh radio NIC should not take materially longer or cost any more than to install a WiMAX NIC into an empty meter. As the AER explains below, this process could potentially involve a couple of extra steps. However, the AER's opinion is that the time taken to complete these steps would be minimal and should therefore not result in additional cost.[422]

KEMA advises that a complete reversal of the steps to install a WiMAX NIC is required in order to retrofit a mesh radio NIC, which increases the installation time by 30 minutes. This includes an assumption that a new hole and antenna cable would be required for the 70 per cent of meters that KEMA estimates need an antenna. In KEMA's view, the installer must remove the old antenna cable, plug the existing hole, drill a new hole, insert the new cable and connect the new antenna.[423]

SP AusNet also submits that when a communications module is changed, a meter firmware update is required, which can only be done onsite using the meter's optical port.[424] SP AusNet provided its communications installations work practice in support of this requirement.[425] This document is consistent with SP AusNet's AMI antenna installation standard provided as Annexure 6 to its Response Submission, but also contains some additional information.

In the AER's opinion, the information made available to it does not support the views of SP AusNet KEMA.

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416 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, pp. 41-43.
417 SP AusNet, *Response to information request 7 of 8 October 2012*, received 22 October 2012, p. 7; SP AusNet, *Response to information request 7 follow up of 25 October* 2012, received 7 November 2012, p. 6.
418 SP AusNet, *Response to information request 7 of 8 October 2012*, received 22 October 2012, Attachment C.
419 SP AusNet, *Manage Meter Communications Failures in Field: Work Instruction Report V0.7*, 15 July 2010, p. 22.
420 Energeia, *January 2013 Report*, pp. 41-44.
421 SP AusNet, *Comparative cost of Mesh alternative solution -050612.xls*, 5 June 2012, Meter costs of switching tab.
422 Energeia, *January 2013 Report*, pp. 41-44.
423 SP AusNet, *Response Submission*, 14 September 2012, Annexure 5.
424 SP AusNet, *Response to information request 7 of 8 October 2012*, received 22 October 2012, pp. 7, 9.
425 SP AusNet, *Response to information request 7 of 8 October 2012*, received 22 October 2012, p. 7, Attachment B.

SP AusNet's procedure to manage communications failures in the field suggests the steps to check and resolve meter firmware issues are equally applicable to installing a WiMAX module.[426] Therefore, the AER's opinion is that this is not an additional step required to retrofit a mesh radio NIC.[427]

Turning to the additional steps that would be required to replace a WiMAX NIC with a mesh radio NIC, the AER considers the additional tasks required are:

1. remove the existing WiMAX NIC from the meter, and
2. for a small percentage of meters (10 per cent), replace the WiMAX antenna with a mesh radio antenna.

Removing the existing WiMAX NIC

SP AusNet's communications installation work practice contains an example of the procedure required to change a WiMAX module that is already installed. This contains two additional steps to insert a new module into an empty meter. These are to lift the existing NIC "straight up" and disconnect the antenna co-axial cable SMA connector ends from the old NIC using a torque wrench.[428]

Modular meters such as the L&G meters SP AusNet uses are hot swappable. This means that the installer does not need to power off the meter to insert the communications module.[429] In the AER's opinion, the information provided by SP AusNet suggests that this should take a matter of seconds – the card is simply lifted straight up out of the meter. Likewise, the AER has no reason to believe that unscrewing an antenna cable should take more than a few seconds for an installer who has been trained[430] in the retrofitting process.[431] SP AusNet documentation indicates that its retrofitters received training.[432]

Replacing the WiMAX antenna with a mesh radio antenna

Energeia advises that retrofitting a mesh radio antenna in place of a WiMAX antenna should not take additional time on average. Although Energeia agrees some additional tasks identified by KEMA are required, not all of them are necessary, and they should be offset by the time saved by the need to install mesh radio antennas in 10 per cent of sites (60 per cent less sites than KEMA suggests).[433]

KEMA's estimate assumes that a new cable and hole would be required for the mesh radio antenna at 70 per cent of sites, which would require drilling a new hole, removing the old cable and plugging the old hole. Energeia advises that the existing cable fasteners and mounting hole could be used for mesh radio antennas as WiMAX and mesh radio solutions both use standard cabling, cable fasteners and 16-19mm mounting holes.[434]

SP AusNet's metering communications work procedure indicates that WiMAX NIC retrofits include installation of the antenna, which would have occurred 100 per cent of the time. This means that for

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426 SP AusNet, *Manage Meter Communications Failures in Field: Work Instruction Report V0.7*, 15 July 2010, p. 21.
427 Energeia, *January 2013 Report*, pp. 41-44.
428 SP AusNet, *Distribution Field Work Practice: Energy Metering:-Communications Installations*, 13 August 2010, pp. 4-8.
429 *Metering Solution Development and Support Agreement: Supply and Services Agreement between SPI Electricity Pty Ltd and Landis & Gyr Pty Ltd*, signed 23 September 2009, Schedule 5, requirement 1.3.2.2.6, p. 23 (confidential).
430 Energeia, *January 2013 Report*, pp. 41-44.
431 By "trained" the AER does not mean qualified as an electrician.
432 For example, SP AusNet, *Response to AER email of 2 October 2012*, received 3 October 2012, Attachment 4, p. 210.
433 Energeia, *January 2013 Report*, pp. 41-44.
434 Energeia, *January 2013 Report*, pp. 41-44.

all meters containing a WiMAX NIC, the antenna is already fully installed, so the hole has been drilled and the cable connected and affixed to the meter box. This was substantiated by SP AusNet in response to questions from the AER.[435]

Energeia estimates that a new antenna installation should take about 5 minutes on average. However, the steps for antenna installation are included in SP AusNet's procedure (and hence the time estimated by SP AusNet and KEMA) to install a WiMAX NIC.[436] This implies that mesh NIC retrofits should save up to 4 minutes relative to WiMAX NIC retrofits, due to 90 per cent fewer installations. Energeia considers this should offset the time needed to remove the existing NIC and antenna/cabling, and plug the hole in the 90 per cent of sites that would not require a mesh radio antenna.[437]

Therefore, on the information available, the AER considers that on balance, it is unlikely that replacing a WiMAX NIC with a mesh radio NIC should take (on average) any additional time. The AER's opinion is therefore that there should be no material impact on the cost of retrofitting a mesh radio NIC.[438] Section 3.2.3 discusses the cost of installing mesh radio NICs.

Qualifications required to retrofit NICs

The AER requested further information from SP AusNet on 8 October 2012 because it could not substantiate the "contracted" rate for WiMAX NIC retrofits submitted by SP AusNet in its Reconsideration Submission and confirmed in its Response Submission.[439] SP AusNet's 2012-15 budget application specifies that [redacted] is the responsible contractor for communications card retrofits[440] but the [redacted] contract in the AER's possession does not support the contracted rate.[441]

In its 22 October 2012 response, SP AusNet submitted that [redacted] – an unskilled workforce – was contracted to provide meter reading services only. Therefore, SP AusNet submitted that its "accredited" meter installers – UXC (now Skilltech) and Electrix – "would be required to perform [NIC retrofits]".[442] However, the UXC and Electrix contracts also do not support the contracted rate as SP AusNet submits, or that these contractors have even been engaged to perform NIC retrofits.[443]

On 1 November 2012, in response to a further request for information, SP AusNet changed its position. SP AusNet explained that [redacted] was initially engaged in 2010 through an arrangement with Select DMS to retrofit WiMAX NICs.[444] SP AusNet provided a [redacted] from May 2010 to support this.[445] This new response is in contrast to SP AusNet's

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435 SP AusNet, *Response to follow-up to information request 7 of 25 October 2012*, received 1 November 2012, pp. 3-4.
436 SP AusNet, *Distribution Field Work Practice: Energy Metering:-Communications Installations*, 13 August 2010, pp. 4-8.
437 Energeia, *January 2013 Report*, pp. 41-44.
438 Energeia, *January 2013 Report*, pp. 41-44.
439 SP AusNet, *Response Submission*, 14 September 2012, pp. 36-37; SP AusNet, *Comparative cost of Mesh alternative solution -050612.xls*, 5 June 2012, Meter costs of switching tab.
440 SP AusNet, *2012-15 AMI Budget and charges application*, 28 February 2011, p. 22.
441 *Field Services Agreement between SPI Electricity Pty Ltd and* [redacted], dated 7 June 2010 (confidential).
442 SP AusNet, *Response to information request 7 of 8 October 2012*, received 22 October 2012, p. 8.
443 *Meter installation services agreement between SPI Electricity Pty Ltd and Electrix Pty Ltd* (signed but not dated), Appendix B (not signed, dated 20 January 2011); *Meter installation services agreement between SPI Electricity Pty Ltd and UXC Limited* (signed, dated 24 September 2009), Appendix B (not signed, dated 17 August 2009).
444 SP AusNet, *Response to information request 7 follow up of 25 Oct 2012*, received 1 Nov 2012, p. 6.
445 SP AusNet, *Response to information request 7 follow up of 25 Oct 2012*, received 1 Nov 2012, Attachment C.

previous 22 October 2012 response that [redacted] was not engaged to retrofit communications cards.[446]

SP AusNet's 1 November 2012 response also submits that:[447]

> After a couple of months it was evident that this unskilled workforce did not possess the necessary skills and experience to meet the quality standards required by the Service Installation Rules. The type of work that [redacted] workers could do was limited and they did not possess the right skills and equipment to undertake the work.

SP AusNet further submits that it subsequently requested Skilltech and Electrix to quote for the provision of NIC retrofit services. SP AusNet provided internal purchase orders from October 2012 to support this, but no quotes.[448]

SP AusNet's 1 November 2012 response also changes its view on the required qualifications for retrofitting NICs. SP AusNet's response explains that an "accredited installer" is an A grade qualified electrician that has competed the accredited meter training modules. However it submits that replacing a NIC in the field would not require "A grade qualified electricians". But, the skills of a qualified electrician would be required for:[449]

- initial installation and removal of an antenna and NIC
- retrofitting an antenna and NIC.

This appears inconsistent with SP AusNet's 22 October 2012 response that accredited installers would be required for NIC retrofits. It is also unclear to the AER what the distinction between replacing a NIC in the field and retrofitting an antenna and NIC is.

The AER has considered SP AusNet's responses and the other information before it, including SP AusNet's [redacted] SP AusNet provided [redacted] on 3 October 2012 when the AER notified SP AusNet of its intention to formally obtain this information.[450] The AER first requested [redacted] on 12 June 2012.[451] On the evidence available before it, the AER is of the opinion that:

- [redacted] arrangement with SP AusNet was for a specific task and did not end because of a lack of skill or qualifications
- UXC (Skilltech) and Electrix were unlikely to have been contracted to provide communications card retrofit services as at 28 February 2011.

Therefore, as explained below, the AER considers that qualified electricians were not required for NIC and antenna retrofits as at 28 February 2011.

The [redacted]

SP AusNet has provided inconsistent information about WiMAX NIC retrofits. However, the AER considers the preferred view is that [redacted] was the contracted party (through Select DMS) to provide WiMAX NIC retrofits (per SP AusNet's 1 November 2012 response). This is consistent with

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446 SP AusNet, *Response to information request 7 of 8 October 2012*, received 22 October, p. 8.
447 SP AusNet, *Response to information request 7 follow up of 25 Oct 2012*, received 1 Nov 2012, p. 6.
448 SP AusNet, *Response to information request 7 follow up of 25 Oct 2012*, received 1 Nov 2012, p. 6, Attachment B.
449 SP AusNet, *Response to information request 7 follow up of 25 Oct 2012*, received 1 Nov 2012, p. 8.
450 SP AusNet, *Response to AER email of 2 October 2012*, received 3 October 2012, Attachment 4.
451 AER, *Information request 2 of 12 June 2012*, pp. 1-2.

the [redacted] the [redacted] and SP AusNet's 2012-15 budget application.

However, the AER does not agree that there is evidence to support SP AusNet's submission that [redacted] was subsequently dismissed for not possessing the suitable qualifications for the retrofit task.[452]

The [redacted] states that SP AusNet required [redacted] to retrofit communications modules because the AMI project had been installing meters without NICs prior to May 2010. SP AusNet required the [redacted] resources to install approximately 35,000 WIMAX NICs in empty meters by 30 June 2010 to meet the five per cent milestone under the AMI Order.[453]

Further, the [redacted] indicate that a mass NIC retrofit program occurred between mid-May and 30 June 2010, where WIMAX communications modules were successfully installed at a rate of between 1,400 and 1,500 per day.[454] This timing is consistent with the [redacted].[455]

The [redacted] also states that a total of 37,454 modules were installed as at 30 June 2010 and that the activities were transitioning to the BAU (business as usual) team.[456] The [redacted] do not mention lack of necessary qualifications or dissatisfaction with installers.

In the AER's opinion, the [redacted] provide evidence of a successful retrofit program, not evidence that [redacted] lacked the necessary skills and experience required by the Service Installation Rules.[457] The information available to the AER suggests that [redacted] services were contracted for a limited time to complete a specific mass-retrofit exercise.[458] If [redacted] services were no longer required after 30 June 2010, it appears this was because they had completed the task, not due to lack of skills or qualifications.

UXC and Electrix

UXC and Electrix are referred to in the [redacted] but never in relation to NIC installation. The [redacted] mentions UXC and Electrix in relation to the complexity and cost of antenna installations being greater than initially thought. [redacted] also states that SP AusNet had requested DMS to consider submitting a quote for antenna installation work.[459]

Subsequently, in the [redacted] status report, there is a statement that communications modules are to be installed by DMS "to reduce the cost of antennae installations and ensure compliance with SPAN standards."[460] The [redacted] also states that the AMI program is working with Select Solutions for the installation of communications modules for the 25 per

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452 SP AusNet, *Response to information request 7 follow up of 25 Oct 2012*, received 1 Nov 2012, pp. 6-7.
453 SP AusNet, [redacted] 3 May 2010, p. 2.
454 SP AusNet, *Response to AER email of 2 October 2012*, received 3 October 2012, Attachment 4, pp. 208, 220, 238, 254, 271.
455 SP AusNet, [redacted] 3 May 2010, pp. 1-2.
456 SP AusNet, *Response to AER email of 2 October 2012*, received 3 October 2012, Attachment 4, p. 278.
457 SP AusNet did not elaborate on what issue arose with [redacted] and the SIR, or explain which standards were not met. The AER's review of the SIR (which notably has not been updated since 2005) found no specific requirements relating to retrofitting a communications card or requirements relating to smart meters in general.
458 SP AusNet, *Response to AER email of 2 October 2012*, received 3 October 2012, Attachment 4, p. 208.
459 SP AusNet, *Response to AER email of 2 October 2012*, received 3 October 2012, Attachment 4, p. 390.
460 SP AusNet, *Response to AER email of 2 October 2012*, received 3 October 2012, Attachment 4, p. 480.

cent rollout target under the AMI Order.[461] DMS is a business stream of Select Solutions and the [redacted] appear to refer to both parties interchangeably.

Contrary to SP AusNet's 22 October 2012 and 1 November 2012 responses, this suggests that SP AusNet was making arrangements with its in house provider to install NICs and antennas to save money on installation costs going forward. In further support of this opinion, the [redacted] contains a statement that the ESV (Energy Safe Victoria) had verified that communications module and antenna installations may be performed by non-electrically qualified persons.[462]

This suggests that SP AusNet may have been enquiring about alternatives to using UXC and Electrix electricians for communications module and antenna installation. In addition, it supports the AER's view that non-electricians could be used for this task. The AER considers this further supports its view that [redacted] was not underqualified to perform NIC retrofits.

For the reasons below, the AER is also of the opinion that SP AusNet's responses of 22 October 2012 and 1 November 2012 do not provide any additional persuasive evidence that UXC and Electrix were or would have been contracted to install communications modules in February 2011 (other than those already shipped in a complete meter unit[463]).

SP AusNet's 22 October 2012 response states that the original UXC and Electrix contracts (dated 24 September 2009 and not dated, respectively) support its view.[464] However, the pricing schedules to these contracts do not contain any unit rates for communications module retrofit or installation.[465] SP AusNet also did not provide any amended contracts when requested by the AER.[466]

SP AusNet's 1 November 2012 response states that quotations had been received from UXC and Electrix.[467] SP AusNet did not provide quotes, but it included purchase orders with its response. These purchase orders commence on 1 October 2012, do not have purchase order numbers and are not signed by either of the parties.[468] The pricing schedules attached to the purchase orders contain rates for "Antenna Installation" and "Antenna Retrofit" but there is no rate for communications module installation.[469]

Based on the information before it, the AER considers there is not sufficient evidence to conclude that in February 2011, SP AusNet had engaged or was intending to engage the services of UXC or Electrix to install communications modules. Indeed, according to the [redacted] if anything, SP AusNet was investigating cheaper alternatives for antenna installation services that UXC and Electrix were contracted to provide.[470]

As a result, the AER's view is that a reasonable business in SP AusNet's circumstances would have conducted its cost benefit analysis on the basis that NIC retrofits could be performed by an unskilled

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461 SP AusNet, *Response to AER email of 2 October 2012*, received 3 October 2012, Attachment 4, p. 523.
462 SP AusNet, *Response to AER email of 2 October 2012*, received 3 October 2012, Attachment 4, p. 486.
463 The AER considers that meters that were shipped with communications modules already fitted would have been installed by UXC and Electrix, since they are contracted to install meters. However, because the communications module is part of the meter in these circumstances, no additional communications module installation service would have been required.
464 SP AusNet, *Response to information request 7 of 8 October 2012*, received 22 October 2012, p. 8.
465 *Meter installation services agreement between SPI Electricity Pty Ltd and Electrix Pty Ltd* (signed but not dated), Appendix B (not signed, dated 20 January 2011); *Meter installation services agreement between SPI Electricity Pty Ltd and UXC Limited* (signed, dated 24 September 2009), Appendix B (not signed, dated 17 August 2009).
466 SP AusNet, *Response to information request 7 follow up of 25 Oct 2012*, received 1 Nov 2012, pp. 6-7.
467 SP AusNet, *Response to information request 7 follow up of 25 Oct 2012*, received 1 Nov 2012, pp. 6-7.
468 SP AusNet, *Response to information request 7 follow up of 25 Oct 2012*, received 1 Nov 2012, Attachment B, p. 1.
469 SP AusNet, *Response to information request 7 follow up of 25 Oct 2012*, received 1 Nov 2012, Attachment B, p. 6.
470 SP AusNet, *Response to AER email of 2 October 2012*, received 3 October 2012, Attachment 4, pp. 390, 480.

labour pool rather than electricians. This is relevant to the amount of NICs that can be retrofitted, which the AER discusses in sections 2.6.4 and 3.2.3.

Other business costs

In its Reconsideration Submission, SP AusNet identified costs that it considered would be incurred in other business streams as a result of the AMI rollout.[471] SP AusNet submitted that implementing a mesh radio solution would result in $9.5 million of such additional costs because changing technology would result in additional IT integration costs in relation to its regulated electricity and gas networks.[472]

In its Response Submission, SP AusNet submits other business costs would be incurred if it switched to mesh radio because senior management resources would be diverted to extensive discussions with the AER, Government and lawyers about compliance and cost recovery. SP AusNet estimates these costs "are likely to be more than $1 million" but does not appear to have included them in its quantitative analysis.[473] SP AusNet does not explain its change in approach.

Consistent with its Preliminary View, the AER has not included additional business costs in its quantitative analysis because it considers SP AusNet has not adequately substantiated why they would be incurred as a result of switching to mesh radio.[474]

Mesh radio risk premium

On the basis of advice from KEMA, SP AusNet's Response Submission applies a 17 per cent risk premium to certain mesh radio capex due to vendor specific risk. KEMA values a hypothetical hedge against company-specific risk using a standard Black-Scholes model to estimate that a prudent company would add a 17 to 24 per cent risk premium to mesh radio capex.[475] SP AusNet's Reconsideration Submission did not apply a risk premium. By doing this, KEMA is adding an additional cost to the mesh radio scenario of its financial analysis.

The AER does not agree with SP AusNet's change in approach for several reasons.

First, KEMA's approach may bias the financial analysis. It accounts for unanticipated costs associated with vendor viability risk, but not unanticipated benefits. The AER considers that once project specific risks such as vendor viability are taken into account, other dimensions of the product must also be considered or the project selection may be biased.

For example, hypothetically, the mesh radio option might inherently contain a vendor viability risk. However, it could have some other offsetting positive benefit when compared to WiMAX such as the possibility of the vendor reaching higher economies of scale and supplying at a reduced price in the future. While the AER does not know whether any such benefits exist, by not considering them, KEMA's analysis is incomplete.

Further, KEMA's advice does not take project specific risks or benefits into account for WiMAX. This may also result in bias against mesh radio. If project specific risks and benefits are included, the AER

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471 SP AusNet, *Reconsideration Submission*, 5 June 2012, pp. 21-22, 24.
472 SP AusNet, *Reconsideration Submission*, 5 June 2012, pp. 13, 21, 24; *Comparative costs of Mesh alternative solution - 050612.xls*, IT costs of switching tab.
473 SP AusNet, *Response Submission*, 14 September 2012, p. 37.
474 AER, *Preliminary View*, August 2012, p. 18.
475 SP AusNet, *Response Submission*, 14 September 2012, pp. 47, 57; KEMA, *Assessment of AMI Communication Options*, 14 September 2012, pp. 47-49.

considers all risks and benefits must be included for both technology options to avoid a biased outcome.

Second, KEMA has not made a linkage between its Black-Scholes estimate and vendor specific risk. The put option scenario KEMA uses protects an investor in the provider of mesh radio technology against the market risk it may face with the variability of the mesh radio provider's returns compared to that of the market portfolio. This solution appears inconsistent with the problem KEMA assumes, which is that a purchaser of mesh radio technology would need to protect itself against the decline in value of the replacement cost of the technology due to vendor viability risk.

Third, when requested by the AER, KEMA was unable to identify an example where its specific approach has been applied by a utility business in a similar fashion.[476]

Fourth, KEMA's approach appears to be different to the approach to risk management taken by the Victorian DNSPs (including SP AusNet). The Victorian DNSPs generally implemented some (but not necessarily all) of the following risk mitigation strategies:[477]

- using modular meters to enable low cost NIC replacement
- holding proprietary software code in escrow to ensure it could be brought in-house, if necessary
- using standards based integration architecture such as Service Oriented Architecture to facilitate IT system replacement
- liquidated damages clauses in contracts in case of non-performance
- financial guarantees from reputable companies in case of liquidity.

Finally, the AER has reason to believe that as at February 2011, SP AusNet's WiMAX [redacted] solution vendor [redacted] may have exposed SP AusNet to more risk than SSN would have.[478] For example, as early as September 2009 [redacted] ability to deliver in time to meet the AMI program timeline was raised [redacted] as a concern.[479]

SP AusNet [redacted] and [redacted] also indicate that [redacted] were consistently flagged as causing problems for the AMI rollout up to 18 February 2011 (the last [redacted] SP AusNet provided to the AER).[480]

Further, in January 2011, SP AusNet engaged [redacted] to review its AMI program's IT capabilities and architecture due to SP AusNet identifying issues and risks with its AMI program.[481] [redacted] identified (among other things) that [redacted] was experiencing

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476 SP AusNet, *Response to information request 7 follow up of 25 Oct 2012*, received 7 November 2012, p. 14; Energeia, *January 2013 Report*, pp. 30-32.

477 Energeia, *January 2013 Report*, pp. 30-32.

478 Energeia, *January 2013 Report*, pp. 30-32.

479 SP AusNet, [redacted], 24 September 2009, paragraph 5.9.

480 SP AusNet, [redacted] 24 September 2009, paragraphs 4.8-4.11, 5.9-5.14; For example, SP AusNet, *Response to AER email of 2 October 2012*, received 3 October 2012, Attachment 4, pp. 7-8, 20-21, 26, 32, 37, 47, 91, 121, etc.

481 [redacted] 28 March 2011, p. 4.

performance, stability and functionality issues and there was no certainty around its future and capability.[482]

On the other hand, by 28 February 2011, SSN had been successfully delivering its mesh radio solution to JEN and UED, and had already delivered similar hardware and software to literally millions of end points in California.[483]

For the reasons above, the AER's opinion is that it is not appropriate to apply a risk premium in assessing the cost of the mesh radio technology option. The AER considers there is evidence to suggest that [redacted] may have been a risky vendor as at 28 February 2011. However, the AER has not applied a risk premium to its WiMAX estimate due to the potential to import bias into its analysis, as noted above. Section 4.1.1 contains further discussion on the problems SP AusNet was experiencing with its WiMAX solution as at February 2011.

Sensitivity analysis

SP AusNet's Response Submission contains sensitivity analysis that its Reconsideration Submission did not. On the advice of KEMA, SP AusNet submits that the net present value of retaining WiMAX is sensitive to several parameters including:[484]

- the unit cost of NICs and retrofitting
- the percentage of 3G meters required to support WiMAX or mesh radio as the primary solution
- NMS initial resource costs
- the amount of the risk premium to apply to mesh radio.

However, SP AusNet submits that no single parameter or combination of two parameters could change the NPV of retaining WiMAX from positive to negative.[485]

SP AusNet also submits that a prudent business would only proceed with mesh radio if it were highly likely to deliver "materially lower" costs because it is inherently uncertain technology. SP AusNet defines "materially lower" as a requirement for the expected savings from switching to mesh radio to be at least 20 per cent of the forecast WiMAX costs. SP AusNet submits this is in line with the AMI Order's automatic cost recovery arrangements of up to 120 per cent of the Approved Budget.[486]

The AER does not agree that it is necessary to conduct sensitivity analysis, and has not done so. The AMI Order does not require the AER to determine a range of prudent expenditure; it requires the AER to determine the prudent expenditure.[487] Further, the AER does not consider it is appropriate to apply a bias to either of the technology options, as noted above.

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482 [redacted] 28 March 2011, pp. 38-39.
483 Energeia, *January 2013 Report*, pp. 30-32.
484 SP AusNet, *Response Submission*, 14 September 2012, pp. 56-57; KEMA, *Assessment of AMI Communication Options*, 14 September 2012, pp. 54-55.
485 SP AusNet, *Response Submission*, 14 September 2012, p. 57.
486 SP AusNet, *Response Submission*, 14 September 2012, p. 52.
487 *AMI Order*, clause 5C.3.

Revised WiMAX budget templates

SP AusNet's Reconsideration Submission relied on the WiMAX budget templates that it submitted to the AER on 28 February 2011 as part of its 2012-15 budget application.[488] SP AusNet's Response Submission is based on a new version of these WiMAX budget templates, developed in September 2012. SP AusNet's submits that the reason for this revised information is to provide a greater level of detail. SP AusNet also submits it has adjusted the opex sub-categories but has not changed the total forecast.[489]

KEMA has conducted its analysis on the basis that the revised opex sub-category values in the September 2012 templates are "SP AusNet forecast[s] as per Budget and Charges Application submitted 28 February 2011."[490]

The AER does not agree with SP AusNet's submission that the purpose of the revised templates is to provide greater detail. Rather, as discussed below, SP AusNet has changed the allocation of opex categories in what appears to be an attempt to widen the gap between its proposed estimates for the lifetime costs of WiMAX and mesh radio.

Overall, the quantum of the revised templates is not materially different to SP AusNet's original budget templates submitted to the AER on 28 February 2011.[491] However, SP AusNet has made some significant changes within its opex categories. The most material change is the removal of $33 million of IT opex associated with SP AusNet's WiMAX NMS over the five years from 2011 to 2015. SP AusNet seems to have distributed this for the most part to non-IT opex categories such as backhaul and communications infrastructure maintenance.[492] This appears consistent with the statements SP AusNet makes in its Response Submission.[493]

However, SP AusNet has also reallocated opex for meters, project management, customer service and IT support.[494] SP AusNet's Response Submission does not mention these changes.

In the AER's opinion, SP AusNet has modified its WiMAX NMS opex forecast so that its estimate of the NMS opex associated with mesh radio appears more costly compared to WiMAX than it otherwise would have using SP AusNet's original budget templates.

In principle, the AER does not accept SP AusNet's revised budget templates. The AER considers it is not appropriate for SP AusNet to retrospectively change information relevant to its WiMAX forecast that was actually available to both SP AusNet and the AER as at 28 February 2011.

However, practically, the effect of SP AusNet's revised WiMAX budget templates is cosmetic. The reallocation of opex does not change SP AusNet's estimate of the total cost of WiMAX. For the purposes of comparing the 15 year cost of WiMAX with the 15 year cost of switching to mesh radio, SP AusNet's reallocation is immaterial. Accordingly, the AER has used SP AusNet's revised budget templates as the starting point for its WiMAX solution estimates in this Final Decision. This affects the AER's estimates of WiMAX backhaul communications, communications operations and NMS opex.

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488 SP AusNet, *Reconsideration Submission*, 5 June 2012, p. 21.
489 SP AusNet, *Response Submission*, 14 September 2012, pp. 38-40.
490 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, Appendix A - Data Sources for Model Inputs.
491 AER analysis suggests the revised templates are higher by $24,869 over the 2012-15 period. Over the 2011-15 period, they are lower by $948,554.
492 AER, *SP AusNet 2012-15 Budget template reconciliation*.
493 SP AusNet, *Response Submission*, 14 September 2012, pp. 38-40.
494 AER, *SP AusNet 2012-15 Budget template reconciliation*.

3 Quantitative analysis

As explained in Chapter 2, the Tribunal has directed the AER to determine whether a reasonable business in SP AusNet's circumstances would have switched to mesh radio, and if so, the amount of switching costs. If a reasonable business in SP AusNet's circumstances would have switched to mesh radio, the AER must add the switching costs to SP AusNet's October 2011 Approved Budget. If a reasonable business in SP AusNet's circumstances would have retained SP AusNet's WiMAX solution rather than switch to mesh radio, the AER must add back the $72.2 million it removed in its Final Determination.

For the reasons that follow in this chapter, the AER remains of the view that, applying the commercial standard in section 2.4, a reasonable business in SP AusNet's circumstances would have switched to mesh radio. The AER's quantitative analysis demonstrates that the 15 year costs of switching to mesh radio would be substantially lower than to retain SP AusNet's WiMAX solution.[495] Further, the AER maintains its Preliminary View position that there should be no qualitative barriers to switching, despite SP AusNet's submission.

Accordingly, the AER considers that it would not be prudent to incur the costs associated with WiMAX as SP AusNet proposes. Instead, the prudent costs are those mesh radio switching costs that the AER considers a reasonable business in SP AusNet's circumstances would have incurred.[496]

The AER estimates that the cost to retain SP AusNet's WiMAX solution as at 28 February 2011 would be $320.8 million in discounted present value terms.[497] This is $129.9 million more over 15 years than the amount the AER estimates it would cost a reasonable business in SP AusNet's circumstances to switch to mesh radio ($190.9 million).[498]

The AER's view is in contrast to SP AusNet's Response Submission, which relies heavily on the report and bottom up model of its consultant, KEMA.[499] KEMA considers that, without accounting for the costs to switch to mesh radio, the present value cost of retaining WiMAX would be $8.2 million higher over 15 years than mesh radio.[500] However, KEMA concludes that switching to mesh radio would result in an additional $56.8 million in transitional costs, which increases its overall mesh radio business case compared to WiMAX by $48.6 million.[501]

KEMA's present value estimate of switching to mesh radio (including switching costs) is $354.9 million.[502] However, the AER has not accepted KEMA's views in particular places where the AER considers they are insufficiently substantiated. Much of KEMA's findings are based on its own experience.[503] However, KEMA did not provide the AER with the ability to review the material on which these findings were based. This means that many of KEMA's estimates are essentially a "black box" that is difficult for the AER to rely on.

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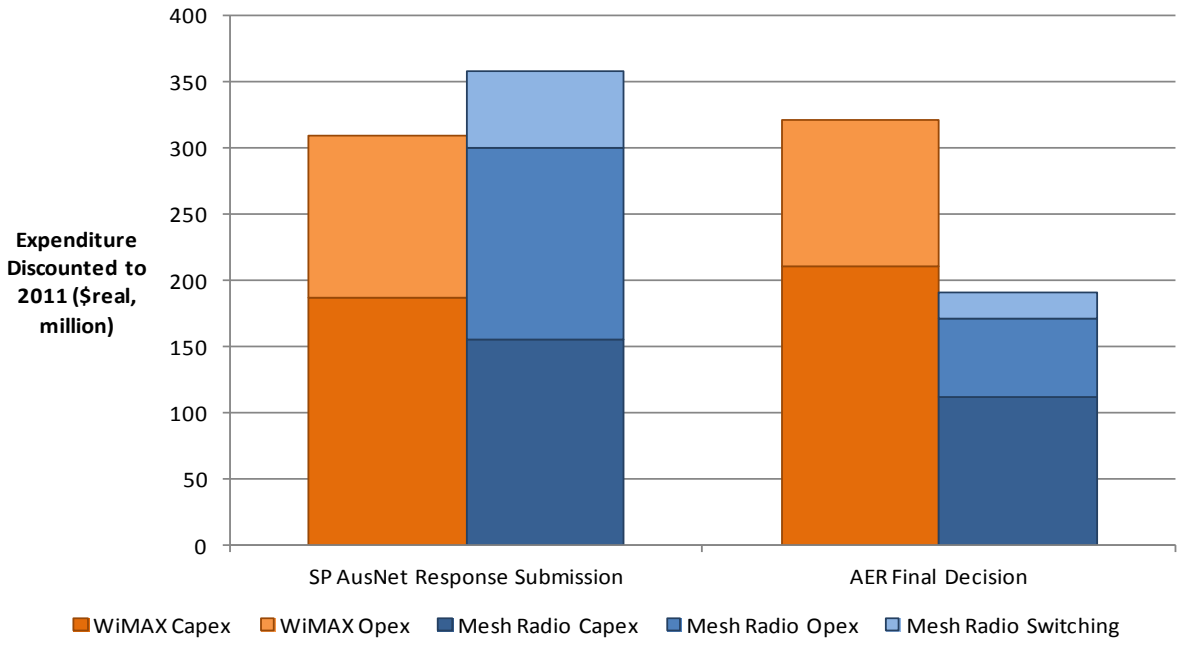
495 Energeia, *January 2013 Report*, pp. 2-4.
496 Energeia, *January 2013 Report*, pp. 2-4.
497 All numbers in this section are discounted values unless stated otherwise.
498 Energeia, *January 2013 Report*, pp. 2-4.
499 KEMA, *Assessment of AMI Communication Options*, 14 September 2012. See, for example, SP AusNet, *Response Submission*, 14 September 2012, pp. 5-9.
500 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, p. 4.
501 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, p. 4.
502 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, p. 4.
503 For example, KEMA, *Assessment of AMI Communication Options*, 14 September 2012, pp. 20, 31, 40.

In most cases, KEMA's responses to AER requests for additional information did not provide the AER or its consultant, Energeia, with further confidence that KEMA's findings could be relied upon.[504] KEMA also declined to provide the AER and Energeia with access to its mesh radio coverage model or substantive information on the benchmarking data it used to develop its cost estimates.[505]

This lack of transparency has meant the AER and Energeia have been unable to assess and rely on much of KEMA's findings on their merits.[506] It has also hindered open and fair assessment of its findings, upon which SP AusNet has relied.

The AER has considered SP AusNet's Response Submission and KEMA's findings. The AER has formed the view that the costs proposed by SP AusNet are not prudent because they represent a substantial departure from the commercial standard that a reasonable business would exercise in SP AusNet's circumstances.[507] Figure 3.1 compares the total mesh radio and WiMAX estimates of the AER and SP AusNet, including mesh radio switching costs.

Figure 3.1 Comparison of WiMAX and mesh radio solution estimates for 2011-25, discounted to 2011 ($real, million)



Notes: KEMA/SP AusNet estimates for WiMAX NICs and antennas include a negative adjustment for WiMAX inventory on hand. The AER has treated these inventory adjustments as mesh radio switching costs.

Source: SP AusNet, *Response Submission*, 14 September 2012, pp. 54-55; KEMA, *Cost Benefit Assessment for Replacement of WiMAX Solution with RF Mesh*, 14 September 2012, TRKS tab; AER analysis.

504 SP AusNet, Response to information request 7 of 8 October 2012, received 22 October 2012; SP AusNet, Response to follow up to information request 7 of 25 October 2012, received 1 November 2012; SP AusNet, Response to follow up to information request 7 of 25 October 2012, received 7 November 2012.

505 For example, SP AusNet, Response to information request 7 of 8 October 2012, received 22 October 2012, pp. 2, 10.

506 Energeia, January 2013 Report, pp. 11-13.

507 AMI Order, clause 5C.3(b)(iv).

In this chapter:

- section 3.1 compares the AER's revised 15 year WiMAX solution estimate with that of SP AusNet
- section 3.2 compares the AER's revised 15 year estimate of the cost to switch to a mesh radio solution with SP AusNet's estimate.

Although the AER's view remains that there are no qualitative barriers to switching to mesh radio, chapter 4 responds to the pertinent qualitative matters raised by SP AusNet in its Response Submission.

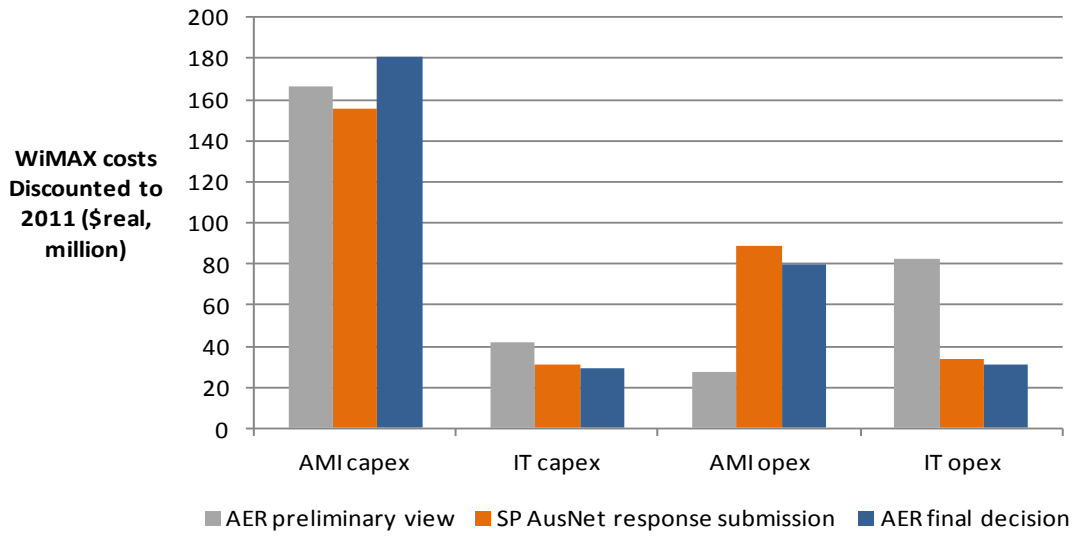
3.1 WiMAX solution costs

The AER's total net present value estimate of the cost SP AusNet's WiMAX solution over 15 years and the assumptions underlying it have not changed materially since the Preliminary View ($2.2 million higher). However, the AER's has made the following minor changes to its WiMAX estimate following SP AusNet's Response Submission:

- an increased estimate of WiMAX coverage from 79 per cent to 85 per cent and a revised meter installation profile based on SP AusNet's 28 February 2011 forecast (see section 2.6.8).
- some reliance on SP AusNet's revised WiMAX budget templates, which reallocate some IT opex to AMI opex (see section 2.6.8).
- increased antenna capex to include installation costs.

Figure 3.2 compares the AER's two estimates with SP AusNet's Response Submission estimate.

Figure 3.2 Comparison of WiMAX solution estimates for 2011-25, discounted to 2011 ($real, million)



Source: SP AusNet, *Response Submission*, 14 September 2012, pp. 54-55; AER analysis.

There are some differences between the AER's Final Decision WiMAX estimate and SP AusNet's Response Submission estimate. In total, the AER's estimate of $320.8 million is $11.4 million higher

than KEMA's estimate ($309.5 million).[508] The difference in WiMAX estimates is not as significant as the difference in the mesh radio estimates of the AER and KEMA.

The AER discusses the differences in WiMAX estimates in the sections that follow. Table 3.1 summarises the two estimates.

Table 3.1 Difference between AER Final Decision and SP AusNet Response Submission WiMAX solution estimates for 2011-25, discounted to 2011 ($real, million)

	AER Final Decision	KEMA/SP AusNet	Difference
Capex	210.4	186.7[a]	23.8
Opex	110.4	122.8	-12.4
Total WiMAX	**320.8**	**309.5**	**11.4**

Note: (a) KEMA/SP AusNet estimates for NICs and antennas include an adjustment for WiMAX inventory on hand. The AER has treated these inventory adjustments as mesh radio switching costs.
Source: SP AusNet, *Response Submission*, 14 September 2012, pp. 54-55; KEMA, *Cost Benefit Assessment for Replacement of WiMAX Solution with RF Mesh*, 14 September 2012, TRKS tab; AER analysis.

3.1.1 WiMAX capex

The AER's estimate of WiMAX capex is $23.8 million higher in present value terms than KEMA's estimate.[509] The primary areas of difference are network interface card (NIC) and network and backhaul capex. Table 3.2 shows a summary of the differences between the two estimates.

Table 3.2 Difference between AER Final Decision and SP AusNet Response Submission WiMAX capex estimates for 2011-25, discounted to 2011 ($real, million)

	AER Final Decision	KEMA/SP AusNet	Difference
AMI capex			
NICs	98.1	78.9[a]	19.2
Antennas	18.2	20.1[a]	-1.9
Network and backhaul	64.9	56.8	8.1
Sub total AMI capex	***181.2***	***155.7***	***25.5***
IT capex			
NMS	13.4	13.3	0.1
MDMS	15.9	17.7	-1.8
Sub total IT capex	***29.3***	***31.0***	***-1.7***
Total capex	**210.4**	**186.7**	**23.8**

Note: (a) KEMA/SP AusNet estimates for NICs and antennas include an adjustment for WiMAX inventory on hand. The AER has treated these inventory adjustments as mesh radio switching costs.
Source: SP AusNet, *Response Submission*, 14 September 2012, pp. 54-55; KEMA, *Cost Benefit Assessment for Replacement of WiMAX Solution with RF Mesh*, 14 September 2012, TRKS tab; AER analysis.

[508] Energeia, January 2013 Report, p. 23.
[509] Energeia, January 2013 Report, p. 23.

Network interface card capex

The AER's estimate of WiMAX NIC capex is higher than KEMA's estimate by $19.2 million for two main reasons. First, KEMA estimates a higher WiMAX coverage of 89.4 per cent compared to the AER's estimate of 85 per cent. Second, KEMA applies a volume discount to WiMAX NICs for the entire duration of its business case, whereas the AER considers a volume discount should not apply post 2015.[510]

The AER discusses the reasons for its estimate of 85 per cent coverage for WiMAX in section 2.6.8. The impact of the AER's lower coverage estimate is that there is a greater reliance on the secondary 3G network to supply the remaining 15 per cent of SP AusNet's territory. 3G NICs are significantly more costly than WiMAX NICs so the AER's additional 5 per cent reliance on 3G represents the bulk of the difference in cost.[511]

The AER accepts KEMA's WiMAX NIC cost based on the volume discounted contract price offered by GE, which includes the cost of the Zigbee chip.[512] However, the AER does not agree that a volume discount would be applicable after 2015 because business as usual volumes should not be sufficient to attract the bulk discount. Consistent with its approach to estimating mesh radio NIC costs, the AER's WiMAX NIC estimate includes the cost of the Zigbee chip and after 2015, removes the volume discount and adjusts for inflation.[513]

The AER has also revised its meter deployment profile to be consistent with that submitted by SP AusNet in its 28 February 2011 budget application. This is consistent with KEMA's approach.[514] The deployment profile the AER used in the Preliminary View (based on its October 2011 Final Determination) was quite different to that submitted by SP AusNet in its 28 February 2011 budget application. This is because SP AusNet's deployment profile and technology mix changed later in 2011 following a change in its WiMAX deployment plans.[515]

The AER accepts that a reasonable business in SP AusNet's circumstances would have used the deployment profile it knew as at February 2011. However, the AER has adjusted this profile post 2013 to reflect the customer growth and meter-to-customer estimates per its October 2011 Final Determination because by this stage meter rollouts are business as usual. The AER has also used this meter deployment profile for its mesh radio estimate.[516]

The AER has also excluded KEMA's negative adjustment to NIC capex for inventory on hand from its estimate and from KEMA's. The AER has treated this as a mesh radio switching cost (see section 2.6.3).

Antenna capex

The AER's estimate for WiMAX antennas is $1.9 million lower than KEMA's because it includes a lower cost for antenna installation. SP AusNet did not raise antenna installation as an issue in its Reconsideration Submission or include it as a separate line item in its model. The AER developed its Preliminary View estimate on the basis that the cost for antenna installation formed part of the meter

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510 Energeia, *January 2013 Report*, pp. 23-25.
511 Energeia, *January 2013 Report*, pp. 23-25.
512 The Zigbee chip is required to support Home Area Network functionality.
513 Energeia, *January 2013 Report*, pp. 23-25.
514 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, Appendix A, p. 15.
515 Energeia, *January 2013 Report*, pp. 23-25.
516 Energeia, *January 2013 Report*, pp. 23-25.

installation or NIC retrofit cost.[517] However, KEMA submits that it would expect a charge for antenna installation despite this activity being completed concurrently with a meter installation or NIC retrofit and included a new cost.[518] The AER does not agree with KEMA's estimate on the basis that the meter installation contracts provided by SP AusNet do not support KEMA's proposed antenna installation cost.[519]

In response to a request for information from the AER, SP AusNet confirmed that UXC (now Skilltech) and Electrix are the contractors responsible for antenna installation, and this is part of the meter installation process. However, SP AusNet submits it made amendments to the contracts because installation was more complex than the initial tender process envisaged.[520] This statement is partially supported by a revised pricing schedule for the Electrix contract, dated 20 January 2011.[521]

However, SP AusNet did not provide quotes or any amended contracts for UXC despite the AER's request to do so.[522] The UXC contract pricing schedule does not include an additional cost for antenna installation.[523] SP AusNet provided the UXC contract pricing schedule on 12 October 2012 after the AER issued a formal notice to obtain it.[524]

SP AusNet instead provided internal purchase orders for both Skilltech and Electrix.[525] These purchase orders are not signed by either of the parties, have not been assigned purchase order numbers and commence on 1 October 2012. The schedule of attached rates are higher than the Electrix contract schedule and also do not reconcile with KEMA's estimate of the cost of antenna installation.[526] On the basis of this information, the AER is not satisfied that KEMA's installation cost or SP AusNet's revised estimates are substantiated.

Therefore, in the AER's opinion, the higher antenna installation costs estimated by KEMA and SP AusNet are not reasonable. In the absence of a revised UXC/Skilltech contract schedule, the AER has applied the Electrix rate to all WiMAX antenna installations.[527]

The AER has also excluded KEMA's negative adjustment to antenna capex for inventory on hand from its estimate and from KEMA's. The AER has treated this as a mesh radio switching cost (see section 2.6.3).[528]

Network and backhaul capex

The AER's estimate of WiMAX network and backhaul capex is $8.1 million higher than KEMA's estimate mainly due to differing opinions regarding ongoing WiMAX network investment.[529]

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517 Energeia, *January 2013 Report*, p. 24.
518 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, p. 35.
519 *Meter installation services agreement between SPI Electricity Pty Ltd and Electrix Pty Ltd* (signed but not dated), Appendix B (not signed, dated 20 January 2011); *Meter installation services agreement between SPI Electricity Pty Ltd and UXC Limited* (signed, dated 24 September 2009), Appendix B (not signed, dated 17 August 2009).
520 SP AusNet, *Response to information request 7 follow up of 25 Oct 2012*, received 1 November 2012, p. 3.
521 *Meter installation services agreement between SPI Electricity Pty Ltd and Electrix Pty Ltd* (signed but not dated), Appendix B (not signed, dated 20 January 2011).
522 SP AusNet, *Response to information request 7 follow up of 25 Oct 2012*, received 1 November 2012, p. 3.
523 *Meter installation services agreement between SPI Electricity Pty Ltd and UXC Limited* (signed, dated 24 September 2009), Appendix B (not signed, dated 17 August 2009).
524 SP AusNet *Response to section 37 Notice issued 5 October 2012*, received 12 October 2012, Attachment A.
525 SP AusNet, *Response to information request 7 follow up of 25 Oct 2012*, received 1 November 2012, Attachment B.
526 SP AusNet, *Response to information request 7 follow up of 25 Oct 2012*, received 1 November 2012, Attachment B, p. 1.
527 Energeia, *January 2013 Report*, p. 24.
528 Energeia, *January 2013 Report*, p. 23.
529 Energeia, *January 2013 Report*, p. 25-27.

In its Preliminary View, the AER estimated the cost of ongoing investment in SP AusNet's WiMAX network based on the ratio of Powercor's initial to ongoing network investment. SP AusNet did not develop its own estimate, so the AER's view was that network growth for either WiMAX or mesh radio would be primarily driven by greenfield land development at the fringes of existing population centres.[530]

KEMA estimates that limited WiMAX network infrastructure should be required after 2014 because SP AusNet's 89 planned WiMAX towers as at 28 February 2011[531] should absorb some of the customer growth.[532] KEMA submits that deployment of one additional WiMAX tower every two years will be sufficient to manage customer growth.[533] KEMA's tower deployment rate represents annual average customer growth of approximately 0.5 per cent.[534]

The AER does not agree with KEMA's estimate for two reasons. First, annual customer growth of 0.5 per cent is lower than the 1.4 per cent forecast SP AusNet customer growth rate for 2015 that the AER applied in its October 2011 Final Determination.[535] Second, Energeia considers some of SP AusNet's planned WiMAX tower sites do not appear to support existing residential developments. It is therefore unclear how additional customer growth could be supported without additional WiMAX tower infrastructure.[536]

The AER's revised estimate is based on WiMAX tower deployment to support ongoing customer growth of approximately 1.4 per cent per annum rather than a Powercor benchmark. The AER considers this better reflects SP AusNet's circumstances because it is based on SP AusNet forecast customer growth.[537]

MDMS capex

The AER's Final Decision estimate WiMAX MDMS capex is $1.8 million lower than KEMA's estimate and $9.6 million lower than the AER's Preliminary View estimate. KEMA has developed its own estimate of the cost of SP AusNet's MDMS, which is approximately 50 per cent lower than SP AusNet's WiMAX budget templates (when expressed in present value terms).[538]

In its Preliminary View, the AER considered that for both communications solutions (mesh radio and WiMAX) the MDMS would be replaced over two years from 2019. The AER estimated the replacement cost of SP AusNet's WiMAX MDMS over two years from 2019 from SP AusNet's budget templates. The AER noted the significant difference in replacement cost compared to JEN's mesh radio MDMS (approximately $17 million).[539]

KEMA agrees that the MDMS would be replaced at this time.[540] However, KEMA submits that MDMS costs should be the same regardless of the communications solution used, but that adopting JEN's MDMS would result in additional opex to maintain parallel systems. KEMA also submits that SP AusNet may incur greater MDMS costs than the other Victorian DNSPs because unlike

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530 Energeia, *January 2013 Report*, p. 25-27.
531 SP AusNet, *2012-15 Budget and charges application*, 28 February 2011, p. 56.
532 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, p. 36.
533 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, p. 36.
534 Energeia, *January 2013 Report*, p. 25-27.
535 AER, *Final Determination*, October 2011, p. 56.
536 Energeia, *January 2013 Report*, p. 25-27.
537 Energeia, *January 2013 Report*, p. 25-27.
538 KEMA, *Cost Benefit Assessment for Replacement of WiMAX Solution with RF Mesh*, TRKS tab; SP AusNet, *2012-15 budget templates*, AMI IT Capex Detail tab; Energeia, *January 2013 Report*, pp. 26-27; AER analysis.
539 Energeia, *August 2012 Report*, p. 30; Energeia, January 2013 Model, Reconciliation tab.
540 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, p. 37.

CitiPower/Powercor and JEN/UED, SP AusNet cannot share the cost of one system between two organisations.[541]

The AER agrees with KEMA that the MDMS should be the same regardless of whether WiMAX or mesh radio is chosen as the communications technology.[542] However, KEMA has not been able to substantiate its own estimate beyond stating that it is based on experience in international markets.[543] The AER acknowledges KEMA's expertise, but it is not appropriate to accept KEMA's findings when they are essentially a "black box".

For the following reasons (and as section 2.6.2 discusses) the AER considers it is appropriate to use a pro-rata of JEN's MDMS capex as a benchmark for WiMAX and mesh radio MDMS capex. First, the AER is not convinced that SP AusNet and KEMA have provided a reasonable basis to suggest that a benchmark based on JEN costs is inappropriate.

SP AusNet submits it does not have access to economies of scale and cannot share costs as JEN and UED can.[544] However, SP AusNet has not explained why any difference in economies of scale available to a combined JEN/UED entity or the inability to share costs would be substantial enough to adopt KEMA's estimate or warrant an adjustment to the AER's benchmark.

In 2011, SP AusNet had approximately 700,000 meters compared to about 1 million for JEN/UED and CitiPower/Powercor.[545] This indicates that SP AusNet is not a small DNSP in terms of meter volumes. The size difference of SP AusNet compared to JEN/UED and CitiPower/Powercor is much less significant than, for example, the size difference between JEN (who had just over 300,000 meters in 2011) and a combined CitiPower/Powercor entity (see Table 3.3).

Table 3.3 Comparison of meter volumes (2011)

	SP AusNet	JEN/UED	CP/PC	JEN	UED	CitiPower	Powercor
Meters	679,129	955,079	1,024,321	308,823	646,256	306,673	717,649

Source: AER, *Final Determination 2012-15 AMI charges models*, October 2011, Data 2009-15 (real $2008) tab.

SP AusNet has not quantified the impact on economies of scale of its size difference compared to a combined JEN/UED entity. SP AusNet's submission suggests the AER would need to include costs for JEN and UED in its benchmark to account for this.[546] However, without sufficient substantiation as to why SP AusNet's costs should be so different, it is unclear to the AER how its estimate is unreasonable when SP AusNet is not significantly smaller in terms of meter volumes.

Energeia acknowledges that design and build costs that JEN may have been able to share with UED may need to be repeated for SP AusNet if it switched to mesh radio. However, Energeia considers it is likely such costs would be more than offset by the benefits of:[547]

- previous learning and experience from rolling out the solution for JEN and UED
- an existing proven IT and integration architecture

541 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, p. 37.
542 Energeia, *January 2013 Report*, pp. 26-27.
543 SP AusNet, *Response to information request 7 of 6 October 2012*, received 22 October 2012, pp. 3-4.
544 SP AusNet, *Supplementary submission on comparability of AMI costs*, 9 January 2013, pp. 4-5.
545 See AER, *Final Determination 2012-15 AMI charges models*, October 2011 (publicly available).
546 SP AusNet, *Supplementary submission on comparability of AMI costs*, 9 January 2013, pp. 4-5.
547 Energeia, *January 2013 Report*, p. 46.

- existing project outputs including work plans, technical specifications and testing scripts.

Accordingly, an adjustment may not be necessary to account for cost sharing or economies of scale differences.

However, even if an adjustment is required to account for difference in size or cost sharing inability, the AER is not convinced that this explains the difference between its benchmark and KEMA's estimate. KEMA's estimated MDMS replacement cost is not obviously linked to SP AusNet's circumstances and is approximately 48 per cent higher than the AER's benchmark based on JEN's costs.[548] Conversely, the AER's benchmark accounts for SP AusNet's higher meter volumes (compared to JEN) for IT licensing costs, which are likely to be dependent on network size, such as the number of meters.[549]

Second, the AER is not necessarily convinced that SP AusNet is or would have been unable to share IT costs with JEN. JEN and SP AusNet share a common IT service provider (EBS). EBS is a wholly owned subsidiary of Singapore Power International (SP AusNet's majority shareholder and Jemena Group's ultimate owner[550]). EBS was set up through the consolidation of the Jemena and SP AusNet IT divisions and provides IT services to JEN and SP AusNet.[551] This suggests SP AusNet may have had the capacity to share costs with JEN and may have been able to access similar IT services and pricing as JEN.

Therefore, the AER considers that it is possible that no adjustment should be made to account for size or inability to share costs because the ability to potentially achieve lower costs would be part of SP AusNet's circumstances.

SP AusNet's Reconsideration Submission also relied on JEN benchmarks for some of its IT capex estimates.[552] SP AusNet's recent submissions and KEMA's report contradict this earlier approach.

The AER maintains its Preliminary View position that JEN is a suitable benchmark for MDMS capex. Accepting KEMA's submission that the replacement MDMS should be the same for WiMAX as for mesh radio, the AER has revised its WiMAX estimate to be consistent with its approach for mesh radio. It now uses the replacement cost of JEN's MDMS, adjusted to reflect SP AusNet's meter volumes (for licensing costs) and any changes made in the AER's Final Determination.[553]

3.1.2 WiMAX opex

The AER's estimate of WiMAX opex is $12.4 million lower than KEMA's estimate. The primary areas of difference are communications backhaul, operations and NMS opex. These three categories are also different to the AER's Preliminary View, primarily due to SP AusNet's revised WiMAX templates, which reallocate NMS opex to backhaul and communications opex.[554] Section 2.6.8 discusses this further. Table 3.4 shows a summary of the differences between the two estimates.

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548 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, p. 37.
549 Energeia, *January 2013* Report, pp. 26-27, 44-46.
550 See http://www.singaporepower.com.sg/irj/portal?NavigationTarget=navurl://3807c42be0900d06c156ec8ec24250c5&windowId=undefined and http://www.singaporepower.com.sg/irj/portal/anonymous?NavigationTarget=navurl://836989fdaf9d04b2203353ef6e50a086&windowId=undefined, accessed 23 January 2013.
551 http://eb-services.com.au, accessed 23 January 2013.
552 SP AusNet, *Comparative costs of Mesh alternative solution -050612.xls*, 5 June 2012, IT costs of switching tab. SP AusNet also acknowledged this in its Response Submission: SP AusNet, *Response Submission*, 14 September 2012, p. 23.
553 Energeia, *January 2013 Report*, pp. 26-27, 44-46.
554 SP AusNet, *Response Submission*, 14 September 2012, pp. 38-40.

Table 3.4 Difference between AER Final Decision and SP AusNet Response Submission WiMAX opex estimates for 2011-25, discounted to 2011 ($real, million)

	AER Final Decision	KEMA/SP AusNet	Difference
AMI opex			
Backhaul communications	29.4	28.4	0.9
Communications operations	50.0	60.4	-10.4
Sub total AMI opex	***79.4***	***88.8***	***-9.4***
IT opex			
NMS	16.6	19.0	-2.4
MDMS	14.4	15.0	-0.6
Sub total IT opex	***31.0***	***33.9***	***-3.0***
Total opex	**110.4**	**122.8**	**-12.4**

Source: SP AusNet, *Response Submission*, 14 September 2012, pp. 54-55; KEMA, *Cost Benefit Assessment for Replacement of WiMAX Solution with RF Mesh*, 14 September 2012, TRKS tab; AER analysis.

Communications backhaul opex

The AER's estimate of WiMAX backhaul communications opex is $0.9 million higher than KEMA's estimate. The AER's lower estimated WiMAX coverage of 85 per cent compared to KEMA's estimate of 89.4 per cent results in greater reliance on the more costly 3G backhaul for the secondary network. However, this is offset by a slightly lower per annum cost per meter.[555] The AER could not reconcile KEMA's estimate of ongoing 3G service opex with the November 2010 Telstra pricing that KEMA's estimate appears to be based on.[556]

Communications operations opex

The AER's estimate of WiMAX communications operations opex is $10.4 million lower than KEMA's estimate. KEMA's estimate includes costs for WiMAX spectrum, vehicles, site leases, sundries, vendor maintenance, training and labour costs. The AER's communications operations estimate is based on a bottom up resourcing model developed by Energeia. Energeia largely accepts KEMA's estimate except for labour and training costs.[557]

Using KEMA's average field resource labour cost, KEMA's estimate is equivalent to 15 field resource FTEs. Energeia considers this labour estimate is excessive and unsubstantiated.[558] Energeia developed an estimate of field operations opex based on average fault and repair times utilising Powercor data. Based on this information, Energeia considers that field operations faults and repairs could be addressed with on average approximately 10 FTEs. This represents the bulk of the difference between the two estimates.

555 Energeia, *January 2013 Report*, p. 28.
556 SP AusNet, Response to information request 7 of 8 October 2012, received 22 October 2012, p. 14; *Email from Telstra to SP AusNet*, 29 November 2010.
557 Energeia, *January 2013 Report*, p. 28-29.
558 Energeia, *January 2013 Report*, p. 28-29.

Although not particularly material, Energeia considers KEMA's training budget estimate is unreasonable. At approximately $6,000 per quarter per FTE, Energeia's view is it appears higher than reasonably necessary. KEMA did not explain its estimate or provide any evidence to support it. Energeia was also unable to find evidence that KEMA's proposed level of training expense is reasonable. Therefore, Energeia considers a more reasonable estimate is $3,000 per person per quarter. Energeia estimates this would cover one training course, travel and accommodation per person, per quarter.[559]

NMS and MDMS opex

The AER's revised estimates for NMS and MDMS opex are $2.4 million lower and $0.6 million higher than KEMA's estimates, respectively. This view is based on a bottom up resourcing model developed by Energeia, similar to the communications operations opex model. As with communications operations opex, Energeia considers KEMA's labour and training estimates are unsubstantiated.[560]

Energeia considers that KEMA's inclusion of 24/7 support (rather than business hours support) results in higher than necessary labour costs. Energeia considers this approach is inconsistent with other DNSPs and is not required to meet mandated performance standards.[561] Further, this appears inconsistent with [redacted] which suggests SP AusNet was using business hours support as at 28 February 2011.[562]

As explained above, Energeia considers KEMA's training budget estimate per person is unreasonable. KEMA does not explain its estimate or provide any evidence to support it. Energeia was also unable to find evidence that KEMA's proposed level of training expense is reasonable. Energeia considers a more reasonable estimate is an allowance for one training course, travel and accommodation per person, per quarter.[563]

3.2 Mesh radio solution costs

Overall, the AER's net present value estimate of the total mesh radio costs that a reasonable business in SP AusNet's circumstances would incur over 15 years is $7.1 million lower than in its Preliminary View.[564] As the AER discusses earlier in this document, the key underlying assumptions are:

- a fifteen year cost benefit analysis commencing 1 March 2011, following a reconsideration date of 28 February 2011
- 97 per cent mesh radio coverage and 3 per cent 3G coverage
- a ten month timeframe to implement mesh radio – i.e. to implement the systems to enable meter data to be delivered to market and retrofit existing meters with mesh radio cards by 1 January 2012.

The AER has made some changes to its approach to developing its mesh radio estimate since the Preliminary View. First, the AER has accepted that SP AusNet's meter installation profile from 28 February 2011 is more reflective of SP AusNet's circumstances in February 2011 than the October

559 Energeia, *January 2013 Report*, pp. 28-29.
560 Energeia, *January 2013 Report*, pp. 28-29.
561 Energeia, *January 2013 Report*, pp. 28-29.
562 SP AusNet, [redacted] 28 Mar 2011, p. 6 (confidential).
563 Energeia, *January 2013 Report*, pp. 28-29.
564 Energeia, *January 2013 Report*, p. 29.

2011 Final Determination profile.[565] This is consistent with KEMA's approach.[566] However, the AER has adjusted it post 2013 to reflect the customer growth and meter-to-customer estimates per its October 2011 Final Determination because by this stage meter rollouts are business as usual.[567] This affects NIC costs.

Second, SP AusNet's change in approach in its Response Submission, which relies on KEMA's detailed bottom up model, has caused the AER to in some cases develop a bottom up estimate of costs.[568] For some opex categories, the AER is now basing its estimates on a bottom up build rather than benchmarks.[569]

The AER's mesh radio estimate is $167.2 million lower than KEMA's estimate, which is $358.1 million, as Table 3.5 shows.

Table 3.5 Difference between AER Final Decision and SP AusNet Response Submission mesh radio solution estimates for 2011-25, discounted to 2011 ($real, million)

	AER Final Decision	KEMA/SP AusNet	Difference
Capex	111.7	154.9	-43.2
Opex	60.1	145.5	-85.4
Switching costs	19.1	57.7[a]	-38.6
Total mesh radio	**190.9**	**358.1**	**-167.2**

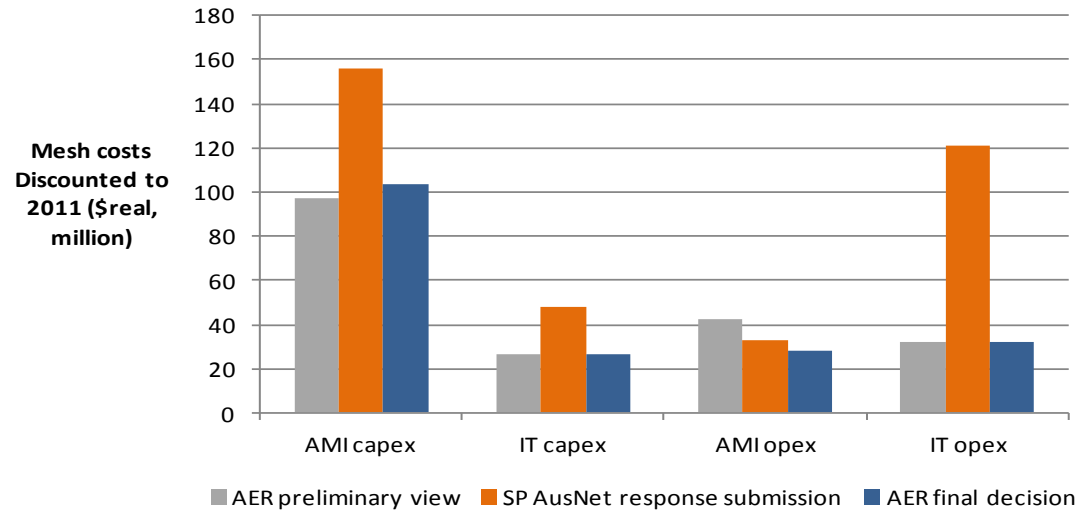
Note: (a) KEMA/SP AusNet estimates for NICs and antennas include an adjustment for WiMAX inventory on hand. The AER has treated these inventory adjustments as mesh radio switching costs.
Source: SP AusNet, *Response Submission*, 14 September 2012, pp. 54-55; KEMA, *Cost Benefit Assessment for Replacement of WiMAX Solution with RF Mesh*, 14 September 2012, TRKS tab; AER analysis.

The AER's Final Decision estimates the total present value cost of a mesh radio solution over 15 years is $190.9 million. This figure includes the costs to switch to mesh radio, which the AER estimates at $19.1 million.[570] The AER discusses switching costs further in section 3.2.3.

The AER has formed the view that the costs proposed by SP AusNet are not prudent because they represent a substantial departure from the commercial standard that a reasonable business would exercise in SP AusNet's circumstances.[571] The difference in mesh radio estimates of SP AusNet and the AER ($167.2 million) is over 14 times higher than the difference in WiMAX estimates ($11.4 million). Figure 3.3 compares the AER's Preliminary View and Final Decision estimates to SP AusNet's Response Submission (KEMA's estimate) by major category.

565 Energeia, *January 2013 Report*, p. 25.
566 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, Appendix A, p. 15.
567 Energeia, *January 2013 Report*, pp. 24-25.
568 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, p. 3.
569 For example, Energeia, *January 2013 Report*, pp. 48-50.
570 Energeia, *January 2013 Report*, p. 30.
571 *AMI Order*, clause 5C.3(b)(iv).

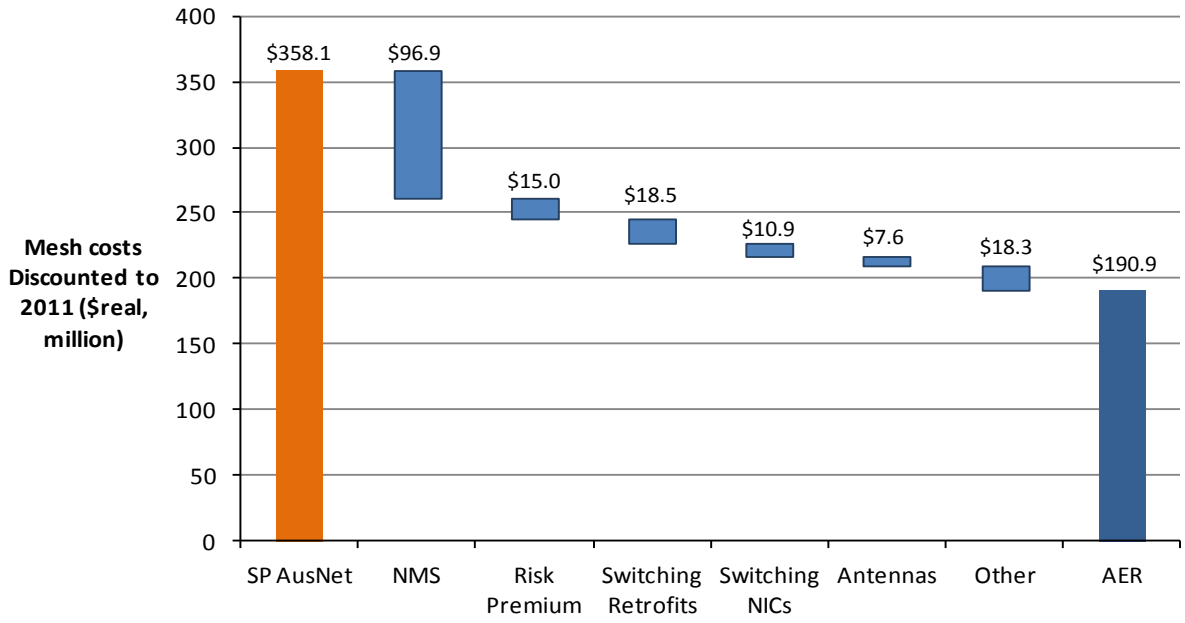
Figure 3.3 Comparison of mesh radio solution estimates for 2011-25, discounted to 2011 ($real, million)



Source: SP AusNet, *Response Submission*, 14 September 2012, pp. 54-55; AER analysis.

As Figure 3.3 shows, there are differences between the AER's Final Decision estimate and SP AusNet's Response Submission in all major categories. However, the most substantial differences are in IT opex and AMI capex. Figure 3.4 shows a breakdown of the key areas of difference.

Figure 3.4 Key variations between SP AusNet Response Submission and AER Final Decision mesh radio solution estimates for 2011-25, discounted to 2011 ($real, million)



Note: KEMA/SP AusNet estimates for NICs and antennas include an adjustment for WiMAX inventory on hand. The AER has treated these inventory adjustments as mesh radio switching costs. The AER has separately identified KEMA's risk premium.

Source: SP AusNet, *Response Submission*, 14 September 2012, pp. 54-55; AER analysis.

As Figure 3.4 shows, the majority of the difference between the estimates of KEMA and the AER are due to a few key assumptions. The AER's reasons for disagreeing with KEMA are summarised below:[572]

- NMS – KEMA's NMS capex and opex estimates are not adequately substantiated and based on per meter costs, which result in substantially higher amounts than comparable Victorian DNSP benchmarks
- risk premium – KEMA applies a risk premium to certain mesh radio capex on the basis of vendor viability risk, but none of the other Victorian DNSPs applied such a premium. Further, in the AER's view, one of SP AusNet's WiMAX vendors appears to pose a greater risk
- NICs – KEMA's NIC estimate is higher because it assumes less mesh radio coverage, more meters requiring a mesh radio NIC retrofit and higher retrofitting costs
- antennas – KEMA's antenna estimate is higher because it assumes 50 per cent of meters would require an antenna and includes higher installation costs.

The AER discusses its detailed reasons for these differences in the sections that follow.

3.2.1 Mesh radio capex

As Table 3.6 shows, in total, the AER's estimate of mesh radio capex is $43.2 million lower than KEMA's estimate. With the exception of NIC capex, all other categories are lower than KEMA's estimate.

Table 3.6 Difference between AER Final Decision and SP AusNet Response Submission mesh radio solution capex for 2011-25, discounted to 2011 ($real, million)

	AER Final Decision	KEMA/SP AusNet	Difference
AMI capex			
NICs	43.9	42.6[a]	1.2
Antennas	2.5	10.1	-7.6
Network and backhaul	38.5	42.0[a]	-3.5
Sub total AMI capex	***84.9***	***94.8***	***-9.9***
IT capex			
NMS	13.0	27.4[a]	-14.4
MDMS	13.8	17.7	-3.8
Sub total IT capex	***26.8***	***45.1***	***-18.3***
Risk premium	-	15.0[a]	-15.0
Total capex	**111.7**	**154.9**	**-43.2**

Note: (a) The AER has separately identified KEMA's risk premium, which reduces KEMA's estimates for NIC, network and backhaul and NMS capex.
Source: SP AusNet, *Response Submission*, 14 September 2012, pp. 54-55; KEMA, *Cost Benefit Assessment for Replacement of WiMAX Solution with RF Mesh*, 14 September 2012, TRKS tab; AER analysis.

572 Energeia, January 2013 Report, pp. 16-17.

As the AER explains above, KEMA has also applied a 17 per cent risk premium to its mesh radio capex estimate because it submits there is an associated vendor viability risk.[573] Table 3.6 separately quantifies KEMA's risk premium, which is approximately $15.0 million. This reduces KEMA's estimate for NICs (including associated switching costs), network and backhaul and NMS capex compared to KEMA's report.

As section 2.6.8 explains, the AER does not agree with KEMA's risk premium and has excluded this $15.0 million amount from its mesh radio estimate.

Network interface card capex

The AER's estimate of mesh radio NIC capex is $1.2 million higher than KEMA's estimate. The AER's estimate is based on a 97 per cent mesh radio coverage compared to KEMA's estimate of 93.5 per cent, which means less reliance on the more costly 3G technology. The AER's estimate also uses the same NIC unit cost from its Preliminary View, based on Victorian DNSP benchmarks. This is lower than KEMA's NIC unit cost, although the impact of this difference on the cost benefit analysis is minimal.[574]

However, the AER's estimate of NIC rollout costs (as opposed to switching costs) is higher than KEMA's estimate due to a significantly different NIC retrofit and meter installation profile. As section 3.2.3 explains, the AER considers a reasonable business in SP AusNet's circumstances would aim to commence its retrofits earlier and deploy meters in a manner that minimises the number of meters that require NIC retrofits. The impact is that KEMA includes a higher proportion of NIC capex in its switching costs than mesh radio rollout costs compared to the AER.[575]

The AER has separately quantified KEMA's risk premium, so it is excluded from KEMA's NIC capex amount in Table 3.6. If the AER includes the risk premium amount and the switching cost NIC amount, the AER's estimate is lower than KEMA's estimate by $16.8 million. In addition, as explained above, the AER has revised its meter rollout profile to be consistent with that submitted by SP AusNet in its 28 February 2011 budget application. This results in an increase in the AER's estimate of NIC capex from its Preliminary View by $2.7 million.[576]

On 9 November 2012, SP AusNet lodged a late submission with the AER on NIC unit costs.[577] In this late submission, SP AusNet departs from its 5 June 2012 Reconsideration Submission estimate and KEMA's 14 September 2012 estimate of the unit cost for mesh radio NICs. SP AusNet submits that the mesh radio NIC unit cost used in both of these substantive submissions is incorrect because it is for single phase meters only (rather than a mix of single phase and multi phase). SP AusNet submits the AER should instead rely on a 2008 mesh radio quotation from SSN.[578]

The AER is deeply concerned that SP AusNet has provided such different new information at a late stage of the review. In particular, SP AusNet's statement that its Reconsideration Submission estimate did not include the cost of multi phase NICs is a new matter that is inconsistent with its Reconsideration Submission. SP AusNet's Reconsideration Submission sources its 2012-15 budget application for the estimate of the number of mesh radio NICs for its mesh radio business case.[579]

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573 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, pp. 47-49.
574 Energeia, *January 2013 Report*, pp. 37-38.
575 Energeia, *January 2013 Report*, pp. 37-38.
576 Energeia, *January 2013 Report*, pp. 37-38.
577 SP AusNet, *Supplementary Submission on mesh NIC costs*, 9 November 2012.
578 SP AusNet, *Supplementary Submission on mesh NIC costs*, 9 November 2012.
579 SP AusNet, *Comparative costs of Mesh alternative solution -050612.xls*, 5 June 2012, Meter costs of switching tab.

The tables identified by SP AusNet in its budget application clearly identify the mix of single phase and multi phase meters.[580] Energeia commented on this in its August 2012 report:[581]

> SPA assumed in its reconsidered proposal that an average mesh NIC card cost of $[redacted] but based on the mix of single and three-phase meters installed by 2015, and the NIC pricing available at the time, Energeia finds that the average price of the NIC should be $[redacted].

The AER considers that if SP AusNet's Reconsideration Submission estimate was incorrect, at the latest, SP AusNet should have raised this matter in its Response Submission when it had the opportunity to comment on the AER's Preliminary View and Energeia's August 2012 report. Consequently, the AER is reluctant to afford much weight to SP AusNet's late submission.

However, even on the merits of SP AusNet's late submission, the AER considers it is not appropriate to rely on it. The AER's reasons for this view are as follows.

First, it is inconsistent with the actual SSN contract information from other Victorian DNSPs that the AER is using for its estimate. SP AusNet's new estimate is based on a quote from 2008 when it was considering a trial of mesh radio, whereas the AER's estimate is based on a signed contract. The AER considers a signed contract is more reliable because it is known that this was the price offered by SSN. On the other hand, a quote provides only an indication of expected pricing at the time it was given.

Second, the new information is inconsistent with recent prices offered to SP AusNet by SSN. As part of a process to compulsorily acquire information, SP AusNet provided to the AER vendor responses for a secondary communications solution tender.[582] SP AusNet received a tender response from SSN, which included a quote for a full mesh radio rollout, including the cost of NICs.

Although SP AusNet received the SSN tender response in late 2011, the AER considers it is relevant as a point of comparison. It is marginally lower than the 2008 contract pricing used by the AER, which confirms the AER's view that the contract provides a reasonable estimate, had SP AusNet requested a quote in February 2011.[583]

Third, SP AusNet has not provided the source document for the quote its late submission relies on. Instead, SP AusNet has extracted two pages from an excel spreadsheet and included them in a PDF file. Therefore, the AER is unable to verify its accuracy.

Antenna capex

The AER's estimate of mesh radio antenna capex is lower than KEMA's estimate by $7.6 million. Primarily, this is because the AER does not agree with KEMA's estimate that 70 per cent of mesh radio meters would require an antenna. As the AER discusses in section 2.6.8, the AER has re-examined this matter and considers that a conservative estimate is that 10 per cent of meters would require an antenna.[584]

In addition, as section 3.1.1 explains, the AER considers that SP AusNet and KEMA have not sufficiently substantiated their antenna installation estimates. However, as the AER explains in

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580 SP AusNet, *2012-15 AMI budget application*, 28 February 2011, pp. 37-38, 54.
581 Energeia, *August 2012 Report*, p. 29.
582 Silver Spring Networks, *Response to ITT 2011 T0012, 5.2 Schedule 18 - Pricing Schedule_2011-09-14_FINAL_USD_SSN.xlsx*, Meter & Communications Module tab, September 2011.
583 Energeia, *January 2013 Report*, pp. 37-38.
584 Energeia, *January 2013 Report*, p. 38.

section 2.6.8, its revised antenna capex estimate is based on a combination of Powercor's contracted standard and high gain antenna unit costs. Powercor's standard antenna unit cost is higher than SP AusNet's and its high gain antenna unit cost is lower than the WiMAX extended antenna cost. In addition, the descriptions of Powercor's antenna costs indicate that they include the cost of installation so the AER has not included an extra installation cost.[585]

The AER's higher capital cost is offset by the lower volume of antennas, and results in a marginal increase in antenna capex from the Preliminary View estimate.

Network and backhaul capex

The AER's estimate of mesh radio network and backhaul capex is lower than SP AusNet's estimate by $3.5 million. SP AusNet's Reconsideration Submission estimate was based on a Powercor benchmark. However, its Response Submission estimate is based on KEMA's high level mesh network design model.[586]

The AER maintains its Preliminary View estimate of $38.5 million, which is based on the AER's Final Determination on Powercor's network and backhaul capex and adjusted for SP AusNet's smaller customer base.[587] For the reasons below, the AER considers that it is not appropriate to rely on KEMA's estimate.

Energeia considers KEMA's assumptions are incomplete and unsubstantiated. For example, KEMA's bandwidth assumption is significantly higher than publicly available sources, including L&G (one of SP AusNet's meter suppliers). KEMA appears to assume the transfer of an entire day's meter readings over four hours, but industry practice is to send readings on a rolling four hour basis. Correcting for this error would reduce the bandwidth requirement and materially lower network design cost due to fewer required access points.[588]

KEMA's responses to requests for further information did not help to clarify its assumptions or whether they were consistent with industry standard meter reading practice and the typical data payload for the assumed meter reading interval. [589]

Further, KEMA's estimate of the number of access points required per meter in urban, suburban and rural areas is significantly different to comparable Victorian benchmarks. KEMA's estimate results in a higher average number of access points per meter than these benchmarks suggest are necessary.[590] The AER considers KEMA's responses to requests for further information do not substantiate this difference.[591]

The AER and Energeia do not have access to KEMA's mesh radio model so it is not possible to independently verify it. The AER considers it would be inappropriate for the AER to accept KEMA's estimates when it is essentially a "black box". The AER cannot appropriately assess the model and

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585 Energeia, *January 2013 Report*, p. 38.
586 Energeia, *January 2013 Report*, pp. 39-41.
587 Energeia, *January 2013 Report*, pp. 39-41.
588 Energeia, *January 2013 Report*, pp. 39-41.
589 Energeia, *January 2013 Report*, pp. 39-41.
590 Energeia, *January 2013 Report*, pp. 39-41.
591 For example, SP AusNet, *Response to information request 7 of 8 October 2012*, received 22 October 2012, pp. 12-13; SP AusNet, *Response to information request 7 follow up of 25 October 2012*, received 1 November 2012, pp. 8-11.

the assumptions that underlie it, or reconcile it to comparable data. Accordingly, the AER considers it is not appropriate to rely on KEMA's model for this estimate.[592]

NMS and MDMS capex

The AER's estimates of NMS and MDMS capex are $14.4 million and $3.8 million lower than SP AusNet's estimates, respectively. In its Reconsideration Submission, SP AusNet used JEN's 2012-15 forecast as the basis for its IT capex estimate.[593] However, its Response Submission relies on KEMA's estimates. For the reasons below, the AER maintains its preliminary view that JEN's NMS and MDMS capex (as adjusted in the AER's Final Determination) are appropriate estimates for mesh radio IT capex for a reasonable business in SP AusNet's circumstances.[594]

First, as section 3.1.1 explains, the AER agrees with KEMA that the MDMS should be the same regardless of the communications solution. However, because the AER cannot verify KEMA's MDMS capex estimate it has used JEN's MDMS capex as the basis for its estimate for both WiMAX and mesh radio.[595]

Second, the AER is unable to substantiate KEMA's NMS capex estimate, which KEMA states is based on "numerous" but unspecified projects "of a similar nature in North America, South America and Australia."[596]

In response to AER requests for further information, KEMA provided a list of predominantly North American implementations it had derived its "typical" cost estimates from.[597] However, KEMA stated that non-disclosure agreements prevented it from being able to list and provide detailed descriptions of each of these utilities or individually list them against the cost information obtained.[598] Despite this, KEMA submits the high level detail it provided illustrates the applicability of its NMS capex estimate to SP AusNet.[599]

Third, the AER's analysis of KEMA's unspecified benchmark shows that it is substantially higher than the NMS implementation cost estimates to 2015 of the Victorian DNSPs, pro-rated for meter numbers. KEMA's estimate is largely based on a variable cost per meter. However, AER analysis of NMS capex on a per meter basis for each of the Victorian DNSPs shows an almost 50 per cent higher cost for smaller DNSPs than for larger DNSPs. If NMS capex was truly variable, the AER would expect capex per meter estimates to be comparable, regardless of the number of meters.[600]

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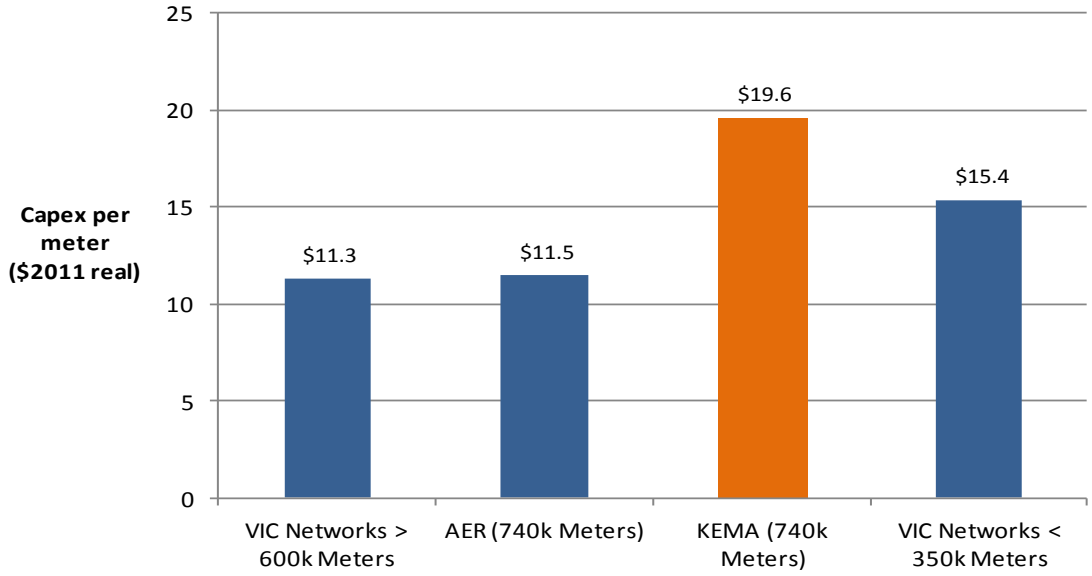
592 Energeia, *January 2013 Report*, pp. 39-41.
593 SP AusNet, *Comparative costs of Mesh alternative solution -050612.xls*, 5 June 2012, IT Costs of switching tab.
594 Energeia, *January 2013 Report*, pp. 26-27, 44-46.
595 Energeia, *January 2013 Report*, pp. 26-27, 44-46.
596 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, p. 31.
597 SP AusNet, *Response to information request 7 of 8 October 2012*, received 22 October 2012, Attachment A; SP AusNet, *Response to information request 7 follow up of 26 October 2012*, received 7 November 2012, Attachment F.
598 SP AusNet, *Response to information request 7 of 8 October 2012*, received 22 October 2012, pp. 4-6, Attachment A; SP AusNet, *Response to information request 7 follow up of 26 October 2012*, received 7 November 2012, Attachment F.
599 SP AusNet, *Response to information request 7 of 8 October 2012*, received 22 October 2012, pp. 4-6.
600 Energeia, *January 2013 Report*, pp. 26-27, 44-46.

Figure 3.5 Mesh radio NMS capex estimates per meter for 2009-15 ($2011 real)



Source: KEMA, *Assessment of AMI Communication Options*, 14 September 2012, p. 31; AER analysis; *2012-15 AMI budget models*, 28 February 2011; AER, *2012-15 Final Determination AMI charges models*, October 2011.

As Figure 3.5 shows, the average per meter NMS capex for large Victorian DNSPs is equivalent to Energeia's estimate based on JEN's capex, with licensing costs pro-rated for SP AusNet's larger meter volumes. Figure 3.5 also shows that KEMA's variable cost estimate is almost double that of large Victorian DNSPs, which would include SP AusNet.[601] Energeia also notes that its benchmark for NMS capex may be conservative given that JEN has the highest NMS capex in Victoria on a per meter basis.[602]

Fourth, the licensing and setup prices in KEMA's estimate are almost 30 per cent higher than actual NMS licensing and setup prices offered to SP AusNet.[603] As part of a process to compulsorily acquire information, SP AusNet provided to the AER vendor responses for a secondary communications solution tender. SP AusNet received a response from SSN, which included a quote for its mesh radio NMS.[604]

Although SP AusNet received this response in late 2011, the AER considers it is nonetheless relevant as a point of comparison. The AER considers that it represents prices that would have been obtainable by a reasonable business in SP AusNet's circumstances, had it requested a quote in February 2011.[605]

Finally, as sections 2.6.2 and 3.1.1 explain, the AER disagrees with KEMA and SP AusNet that JEN is not a comparable benchmark for IT costs. In summary, the reasons for the AER's view that its benchmarks for NMS and MDMS capex are reasonable are:

601 Energeia, *January 2013 Report*, pp. 43-46.
602 Energeia, *January 2013 Report*, p. 46.
603 Energeia, *January 2013 Report*, pp. 43-46.
604 Silver Spring Networks, *Response to ITT 2011 T0012, 5.2 Schedule 18 - Pricing Schedule.xlsx*, MMS costing tab, September 2011.
605 Energeia, *January 2013 Report*, pp. 43-46.

- SP AusNet has not explained why any difference in economies of scale available to a combined JEN/UED entity or the ability to share costs would be substantial enough to warrant an adjustment to the AER's benchmark.
- Energeia acknowledges some design and build costs that JEN may have been able to share with UED may need to be repeated for SP AusNet. However, Energeia considers it is likely such costs would be more than offset by previous learning and experience, proven IT and integration architecture and existing project outputs.[606] This suggests an adjustment to the AER's estimate to account for economies of scale or cost sharing ability is not required.
- However, even if such an adjustment is required, the AER is not convinced that this explains the difference between its benchmarks and KEMA's estimates. For example, KEMA's unsubstantiated present value NMS capex estimate is more than twice the AER's benchmark.
- the AER is not necessarily convinced that SP AusNet is or was unable to share IT costs with JEN due to their common IT service provider (EBS), who is a wholly owned subsidiary of Singapore Power International. This suggests SP AusNet may have had the capacity to share costs with JEN and may have been able to access similar IT services and pricing as JEN. Therefore, it is possible that no adjustment should be made to account for size or inability to share costs because the ability to potentially achieve lower costs would be part of SP AusNet's circumstances.
- SP AusNet's Reconsideration Submission relied on JEN benchmarks for some of its IT capex estimates.[607] SP AusNet's recent submissions and KEMA's report contradict this earlier approach.

KEMA has not provided the AER and Energeia with sufficient information to independently verify its NMS or MDMS capex estimates. The AER cannot assess KEMA's estimates and the assumptions that underlie them, or reconcile them to comparable data. The AER considers it is inappropriate to rely on KEMA's estimates when they are essentially a "black box". Therefore, the AER maintains its Preliminary View NMS and MDMS estimates based on JEN costs are reasonable.[608]

3.2.2 Mesh radio opex

In total, the AER's estimate of mesh radio opex is $85.4 million lower than KEMA's estimate. Primarily, this substantial difference is driven by NMS opex, as Table 3.7 shows.[609]

606 Energeia, *January 2013 Report*, p. 46.
607 SP AusNet, *Comparative costs of Mesh alternative solution -050612.xls*, 5 June 2012, IT costs of switching tab. SP AusNet also acknowledged this in its Response Submission: SP AusNet, *Response Submission*, 14 September 2012, p. 23.
608 Energeia, *January 2013 Report*, pp. 26-27, 44-46.
609 Energeia, *January 2013 Report*, p. 47.

Table 3.7 Difference between AER Final Decision and SP AusNet Response Submission mesh radio solution opex for 2011-25, discounted to 2011 ($real, million)

	AER Final Decision	KEMA/SP AusNet	Difference
AMI opex			
Backhaul communications	14.5	17.4	-3.0
Communications operations	13.4	15.1	-1.7
Sub total AMI opex	***27.9***	***32.6***	***-4.7***
IT opex			
NMS	15.5	98.0	-82.4
MDMS	16.6	15.0	1.7
Sub total IT opex	***32.2***	***113.0***	***-80.8***
Total opex	**60.1**	**145.5**	**-85.4**

Source: SP AusNet, *Response Submission*, 14 September 2012, pp. 54-55; KEMA, *Cost Benefit Assessment for Replacement of WiMAX Solution with RF Mesh*, 14 September 2012, TRKS tab; AER analysis.

NMS opex

SP AusNet's Response Submission estimate of NMS opex is $98.0 million. This is $82.4 million higher than the AER's Preliminary View estimate of $15.5 million, which was based on JEN's full NMS costs, with licensing costs pro-rated for SP AusNet's larger meter volumes. For the following reasons, the AER considers its Preliminary View estimate remains an appropriate estimate of the NMS opex that a reasonable business in SP AusNet's circumstances would incur.[610]

First, KEMA has not substantiated its NMS estimate. It is based on a variable cost per meter per year approach built up from costs for utility personnel, software support and software maintenance. KEMA's report states its NMS opex estimate is based on "numerous" but unspecified projects "of a similar nature in North America, South America and Australia."[611]

In response to AER requests for further information, KEMA provided a list of predominantly North American implementations it had derived its "typical" cost estimates from.[612] However, KEMA stated that non-disclosure agreements prevented it from being able to list and provide detailed descriptions of each of these utilities or individually list them against the cost information obtained.[613] Despite this, KEMA submits the high level detail it provided illustrates the applicability of its NMS opex estimate to SP AusNet.[614]

Energeia's view is that costs associated with IT application support other than software maintenance fees are typically fixed in nature, and therefore scalable. This is because the number of staff needed to maintain software such as an NMS should not change with the level of information in the system.[615]

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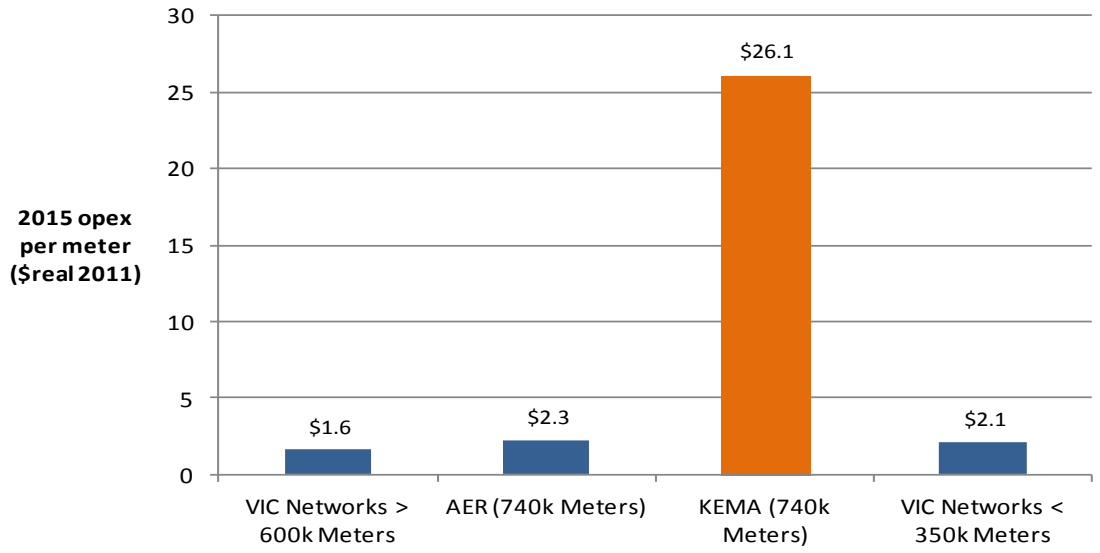
610 Energeia, *January 2013 Report*, pp. 47-48.
611 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, p. 31.
612 SP AusNet, *Response to information request 7 of 8 October 2012*, received 22 October 2012, Attachment A; SP AusNet, *Response to information request 7 follow up of 26 October 2012*, received 7 November 2012, Attachment F.
613 SP AusNet, *Response to information request 7 of 8 October 2012*, received 22 October 2012, pp. 4-6, Attachment A; SP AusNet, *Response to information request 7 follow up of 26 October 2012*, received 7 November 2012, Attachment F.
614 AusNet, *Response to information request 7 of 8 October 2012*, received 22 October 2012, pp. 4-6.
615 Energeia, *January 2013 Report*, pp. 47-48.

Energeia considers KEMA's variable cost estimate is inappropriate because its NMS support labour opex, for example, implies approximately 100 support personnel would be required. This is significantly higher than the approximately 5 personnel for CitiPower and Powercor.[616]

Second, the AER's analysis of KEMA's unspecified benchmark shows that it is substantially higher than the pro-rated NMS opex cost estimates to 2015 of the Victorian DNSPs. Figure 3.6 shows the substantial difference between KEMA's estimate and Victorian DNSP benchmarks on an expenditure per meter basis.

Figure 3.6 Mesh radio NMS opex estimates per meter for 2015 ($2011 real)



Source: KEMA, *Assessment of AMI Communication Options*, 14 September 2012, p. 31; AER analysis; *2012-15 AMI budget models*, 28 February 2011; AER, *2012-15 Final Determination AMI charges models*, October 2011.

Finally, as sections 2.6.2 and 3.1.1 explain, the AER disagrees with KEMA and SP AusNet that JEN is not a comparable benchmark for IT costs. In summary, the reasons for the AER's view that its benchmark for NMS opex is reasonable are:

- SP AusNet has not explained why any difference in economies of scale available to a combined JEN/UED entity or the ability to share costs would be substantial enough to warrant an adjustment to the AER's benchmark.
- Energeia acknowledges some design and build costs that JEN may have been able to share with UED may need to be repeated for SP AusNet. However, Energeia considers it is likely such costs would be more than offset by previous learning and experience, proven IT and integration architecture and existing project outputs.[617] This suggests an adjustment to the AER's estimate to account for economies of scale or cost sharing ability is not required.
- However, even if such an adjustment is required, the AER is not convinced that this explains the difference between its benchmark and KEMA's estimate. KEMA's unsubstantiated present value NMS opex estimate is more than six times higher than the AER's benchmark.

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616 As estimated by Energeia based on labour rate and comms control personnel analysis. Energeia, *January 2013 Report*, pp. 47-48.

617 Energeia, *January 2013 Report*, p. 46.

- the AER is not necessarily convinced that SP AusNet is or was unable to share IT costs with JEN due to their common IT service provider (EBS), who is a wholly owned subsidiary of Singapore Power International. This suggests SP AusNet may have had the capacity to share costs with JEN and may have been able to access similar IT services and pricing as JEN. Therefore, it is possible that no adjustment should be made to account for size or inability to share costs because the ability to potentially achieve lower costs would be part of SP AusNet's circumstances.

- SP AusNet's Reconsideration Submission relied on JEN benchmarks for some of its IT capex estimates.[618] SP AusNet's recent submissions and KEMA's report contradict this earlier approach.

KEMA has not provided the AER and Energeia with sufficient information to independently verify its NMS opex estimate. The AER cannot assess KEMA's estimate and the assumptions that underlie it, or reconcile it to comparable data. The AER considers it is inappropriate to rely on KEMA's estimate when it is essentially a "black box". Therefore, the AER maintains its Preliminary View NMS estimate based on JEN costs is reasonable.[619]

Backhaul communications opex

The AER's estimate of mesh radio backhaul opex is $3.0 million lower than SP AusNet's estimate. SP AusNet's Reconsideration Submission estimate was based on a Powercor benchmark, pro-rated for SP AusNet's view that it would require more access points per meter.[620] SP AusNet's Response Submission estimate is developed by KEMA, and is based on Telstra pricing for 3G meters and access points.[621] SP AusNet submits that its Response Submission monthly access point backhaul estimate is based on discussions with JEN.[622]

The AER's revised estimate is from Energeia's bottom up modelling of annual backhaul costs, which is also based on SP AusNet's submitted Telstra pricing. This is a departure from the AER's Preliminary View Powercor benchmark approach, which was similar to that adopted by SP AusNet in its Reconsideration Submission. The AER has modified its approach in response to SP AusNet's change in approach since its Reconsideration Submission. The AER's revised estimate is lower than SP AusNet's Response Submission for three reasons.

First, as section 2.6.2 discusses, the AER maintains its Preliminary View that the estimated coverage of mesh radio should be 97 per cent. SP AusNet's Response Submission estimate of mesh radio coverage is 93.5 per cent, which means a greater reliance on the more costly 3G secondary solution. This in turn increases SP AusNet's estimate of backhaul opex in relation to the AER's estimate.[623]

Second, as section 3.2.1 explains, the AER considers KEMA's modelling overstates the number of access points required per meter. The AER's estimated lower access point requirement reduces ongoing backhaul opex.[624]

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618 SP AusNet, *Comparative costs of Mesh alternative solution -050612.xls*, 5 June 2012, IT costs of switching tab. SP AusNet also acknowledged this in its Response Submission: SP AusNet, *Response Submission*, 14 September 2012, p. 23.
619 Energeia, *January 2013 Report*, pp. 47-48.
620 SP AusNet, *Comparative costs of Mesh alternative solution -050612.xls*, 5 June 2012, Comms opex costs of switching tab.
621 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, pp. 38-39.
622 SP AusNet, *Response to information request 7 of 8 October 2012*, received 22 October 2012, p. 14.
623 Energeia, *January 2013 Report*, pp. 48-49.
624 Energeia, *January 2013 Report*, pp. 48-49.

Third, as section 3.1.2 explains, the AER's estimated per annum cost per meter is slightly lower.[625] The AER cannot reconcile KEMA's estimate of ongoing 3G service opex with the November 2010 Telstra pricing that KEMA's estimated appears to be based on.[626]

Communications operations opex

The AER's estimate of mesh radio communications operations opex is $1.7 million lower than SP AusNet's estimate, which is developed by KEMA. Although the two estimates are not far apart in quantum, the AER does not agree with KEMA's estimate.

KEMA was unable to substantiate its estimate when requested by the AER.[627] Therefore, Energeia developed a bottom up field resourcing model based on Victorian DNSP benchmarks where available to test the reasonableness of KEMA's estimate.[628] Energeia's view is that KEMA's estimate is unsubstantiated and incomplete for two reasons.[629]

First, KEMA's estimate is based on the number of hours per year estimated to maintain access points and relays. Energeia considers this is overstated both in terms of the number of required access points and the number of field staff hours required for maintenance. Energeia's view is that field resources should not be required to operate and maintain the network because this is done remotely. Energeia notes that an exception applies during the network's initial rollout when it is being stabilised as part of the deployment. Energeia's model takes this exception into account.[630]

Second, KEMA's estimate does not appear to include costs associated with managing network faults or operating the network, which Energeia considers is a critical element of any communications network opex model. Energeia has included costs for these functions based on Powercor's fault rates and numbers of NMS operators, engineers and managers. Energeia notes this approach reflects SSN's own recommendations.[631]

Energeia based its estimate of average fault response times for field resources based on antenna installations and NIC replacements (which largely reflect travel times). SP AusNet did provide any estimates of average fault response times.[632]

3.2.3 Mesh radio switching costs

SP AusNet's Response Submission estimate of mesh radio switching costs is substantially lower than its Reconsideration Submission estimate, although SP AusNet does not explain the reason for this. In its Reconsideration Submission, SP AusNet estimated it would incur $107.2 million ($real 2011) of switching costs in 2012-15. According to KEMA's model, SP AusNet's Response Submission estimate of switching costs for 2012-15 is $58.0 million (when converted to $real 2011 terms).[633]

The AER's Final Decision total mesh radio switching cost estimate of $19.1 million is slightly higher than its Preliminary View estimate of $15.2 million. This is primarily due to the AER's inclusion of

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625 Energeia, *January 2013 Report*, pp. 48-49.
626 SP AusNet, *Response to information request 7 of 8 October 2012*, received 22 October 2012, p. 14; *Email from Telstra to SP AusNet*, 29 November 2010.
627 SP AusNet, *Response to information request 7 of 8 October 2012*, received 22 October 2012, pp. 14-15.
628 Energeia, *January 2013 Report*, pp. 49-50.
629 Energeia, *January 2013 Report*, pp. 49-50.
630 Energeia, *January 2013 Report*, pp. 49-50.
631 Energeia, *January 2013 Report*, pp. 49-50.
632 Energeia, *January 2013 Report*, pp. 49-50.
633 SP AusNet did not provide an estimate of 2012-15 switching costs in its response submission. The AER derived this estimate from KEMA's model.

2011 WiMAX inventory costs (see section 2.6.3). The timing for some of the switching costs has also changed as a result of information received from SP AusNet.[634] This affects the quantum of the hypothetical switching costs that can be included in SP AusNet's Approved Budget. Table 3.8 shows the difference between the AER's estimate and SP AusNet's estimate of lifetime mesh radio switching costs.

Table 3.8 Difference between AER Final Decision and SP AusNet Response Submission mesh radio switching costs for 2011-25, discounted to 2011 ($real, million)

	AER Final Decision	KEMA/SP AusNet	Difference
NICs	9.5	20.4[a]	-10.9
Antennas	0.5	2.4	-2.0
NIC retrofit	1.3	19.8	-18.5
WiMAX remediation	3.7	3.7	-
WiMAX inventory	4.1	3.2[b]	1.0
IT	-	2.2	-2.2
Meter reading/project mgmt/industry	-	6.0	-6.0
Total switching costs	**19.1**	**57.7**	**-38.6**

Note: (a) The AER has separately accounted for KEMA's risk premium, so the KEMA value for NIC switching costs appears slightly lower.
(b) The AER has treated KEMA's negative WiMAX adjustment for NIC and antenna inventory on hand as at February 2011 as a mesh radio switching cost.
Source: SP AusNet, *Response Submission*, 14 September 2012, pp. 54-55; KEMA, *Cost Benefit Assessment for Replacement of WiMAX Solution with RF Mesh*, 14 September 2012, TRKS tab; AER analysis.

NIC switching costs

As the AER explains in section 3.2.1, its estimate of mesh radio NIC rollout costs is based on 97 per cent mesh radio coverage, slightly lower unit costs and a revised retrofit timeline (discussed below). The same applies to the AER's estimate of mesh radio NIC switching costs, which results in a $10.9 million lower estimate than KEMA.[635]

As the AER explains in section 2.6.4 and the NIC retrofits section below, the AER considers a reasonable business in SP AusNet's circumstances could complete all required retrofits in time to meet the 1 January 2012 minimum AMI service levels specification interval data to market deadline.[636] Therefore, the AER considers that a reasonable business in SP AusNet's circumstances would have incurred these switching costs in 2011.[637]

Antennas

As the AER explains in section 3.2.1, its estimate for mesh radio antenna rollout costs is lower than KEMA's estimate due to KEMA's assumption that 70% of meters would require an antenna. The AER

634 Energeia, *January 2013 Report*, pp. 19-22.
635 Energeia, *January 2013 Report*, pp. 19-22, 37-38.
636 DPI, *Minimum AMI service levels specification*, clause 4.3.
637 Energeia, *January 2013 Report*, pp. 19-22, 36-37.

considers that 10 per cent of meters would require an antenna. This applies equally to antenna switching costs, which results in a $2.0 million lower estimate than KEMA.[638]

Since SP AusNet confirmed antennas are installed at the same time as NICs,[639] the AER's view is that a reasonable business in SP AusNet's circumstances would have incurred these switching costs in 2011.

NIC retrofits

The AER's Final Decision estimate of NIC retrofit switching costs is $18.5 million lower than KEMA's estimate due to a revised retrofit timeline and lower NIC installation costs. In its Preliminary View, the AER (based on the information available to it at the time) considered that a reasonable business in SP AusNet's circumstances would dismantle its WiMAX network in 2011 and commence retrofitting meters with mesh radio NICs from 1 January 2012.[640] The AER also adopted SP AusNet's retrofit installation unit cost because SP AusNet stated it was a contract cost.[641]

However, since its Preliminary View, the AER has received information from SP AusNet that has caused it to change its position. For the reasons below, the AER's Final Decision is that a reasonable business in SP AusNet's circumstances should complete retrofitting of meters with no NIC or a WiMAX NIC by the end of 2011. Further it would do so for a lower cost than the AER initially thought.[642]

First, as the AER explains in section 2.6.4, SP AusNet's [redacted] provide evidence that SP AusNet achieved between 1,400 and 1,500 WiMAX NIC retrofits per day in May and June 2010 to meet a rollout milestone. Further, as section 2.6.8 explains, the AER considers the time to retrofit a mesh radio NIC should, on average, not be any different to installing a WiMAX NIC. On this basis, the AER considers a reasonable business in SP AusNet's circumstances should ramp up to approximately 30,000 mesh radio NIC retrofits per month.[643] This would enable it to meet the mandatory minimum AMI service levels specification requirement that all installed meters to be sending interval data to market by 1 January 2012.

By using the installation timeline in Figure 3.7, the AER estimates the number of required mesh radio NIC retrofits is approximately 153,000 lower than KEMA's estimate, which results in lower switching costs. It also means manual meter reading costs are minimised.[644]

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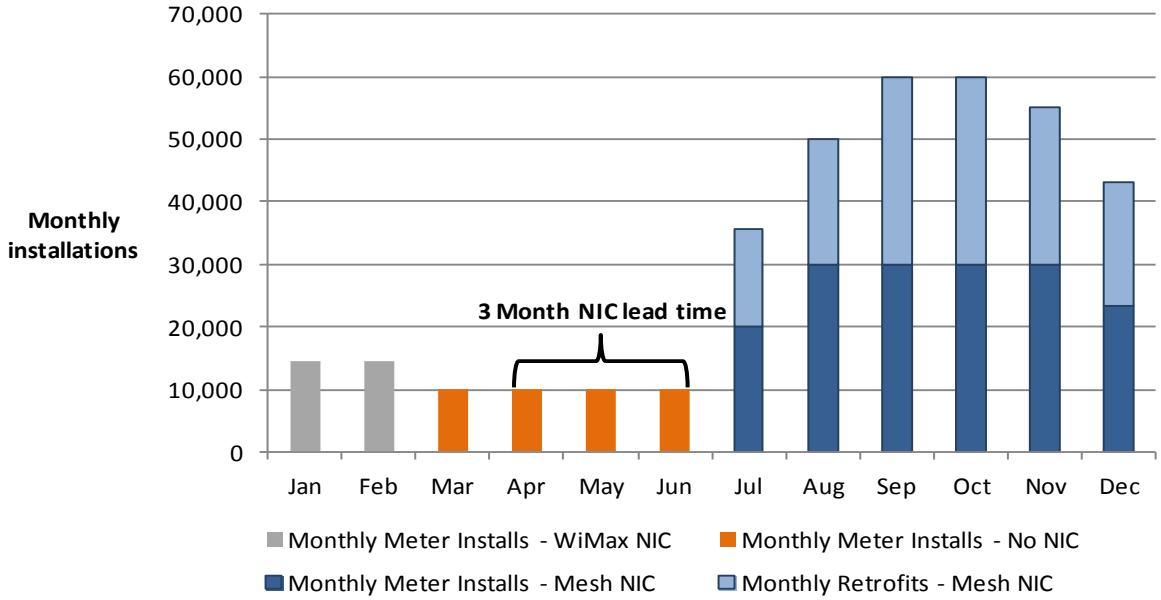
638 Energeia, *January 2013 Report*, pp. 19-22, 38.
639 SP AusNet, *Response to information request 7 follow up of 25 October 2012*, received 1 November 2012, pp. 3-4.
640 AER, *Preliminary View*, August 2012, pp. 13-15.
641 SP AusNet, *Comparative costs of Mesh alternative solution -050612.xls*, 5 June 2012, Meter costs of switching tab.
642 Energeia, *January 2013 Report*, pp. 19-22, 36-37, 41-44.
643 Energeia, *January 2013 Report*, pp. 19-22, 36-37.
644 Energeia, *January 2013 Report*, pp. 19-22, 36-37.

Figure 3.7 AER revised mesh radio meter installation and NIC retrofit timeline by month, commencing January 2011



Source: AER analysis.

Second, the AER has further investigated the unit rate for WiMAX NIC retrofits that SP AusNet stated is a contract cost in its Reconsideration Submission and again in its Response Submission.[645] On the information available to it, the AER has been unable to substantiate this rate. Rather, the AER considers the [redacted] contains the best estimate of the cost to retrofit a WiMAX NIC.[646]

The AER put forth its revised position to SP AusNet.[647] SP AusNet's response did not provide much additional information beyond that already submitted to the AER and has not caused the AER to change its view. However, two points are relevant.

First, SP AusNet submitted that [redacted] was never engaged for either communications card installations or retrofits.[648] This contradicts SP AusNet's information request response of 1 November 2012 that states [redacted] was contracted to perform the retrofitting of communication modules, and included the [redacted] in support.[649] As section 2.6.8 explains, the AER considers the information available to it supports the view that [redacted] did retrofit WiMAX NICs in May and June 2010.

Second, SP AusNet provided a link to an Energy Safe Victoria (ESV) document that SP AusNet submits supports its view that ESV requires antennas and NICs to be retrofitted by trained

645 SP AusNet, *Response Submission*, 14 September 2012, pp 36-37; SP AusNet, *Comparative costs of Mesh alternative solution -050612.xls*, 5 June 2012, Meter costs of switching tab.
646 Energeia, *January 2013 Report*, pp. 41-44.
647 AER, *Email to SP AusNet requesting comment on changes in position*, sent 30 November 2012.
648 SP AusNet, *Response to AER email of 30 November 2012*, received 14 December 2012, pp. 3-4.
649 SP AusNet, *Response to information request 7 follow up of 25 October 2012*, received 1 November 2012, pp. 6-7, Attachment C.

electricians.[650] The AER reviewed the ESV document and found no references to NIC and antenna retrofits. Rather, the AER's view is that it applies only to meter installations.[651]

As the AER explains in section 2.6.8, the contracts and purchase orders for UXC/Skilltech and Electrix (SP AusNet's meter installers) provided by SP AusNet to the AER do not contain a unit cost for the installation of NICs.[652] The AER is also not convinced that UXC/Skilltech or Electrix either were or would have been contracted to provide these services as at February 2011.

As noted above, SP AusNet confirmed on 1 November 2012 that [redacted] conducted WiMAX NIC retrofits in 2010.[653] However, the [redacted] contract in the AER's possession is dated 7 June 2010 and contains a unit rate for meter reading, so it does not to appear to relate to retrofits.[654] SP AusNet did not provide any other [redacted] contract despite a request from the AER to do so.[655]

Therefore, the AER's opinion is that the only document it is able to rely on is the [redacted] from May 2010, which SP AusNet provided to the AER on 1 November 2012.[656] While it is not a signed contract, it appears to be an official internal SP AusNet document that provides specific details about a WIMAX NIC mass retrofit, including costing information.[657] As the AER discusses in section 2.6.8, it also aligns with [redacted] in relation to the timing and nature of the retrofit task.[658]

However, the [redacted] does not contain the unit cost submitted by SP AusNet. Rather, it specifies a total contract value of approximately $[redacted] (including a 10 per cent contingency) to complete approximately 35,000 retrofits.[659] Accordingly, it is the AER's opinion that the average unit cost to complete a WiMAX NIC retrofit available to SP AusNet prior to February 2011 was approximately $[redacted] This estimate may be slightly conservative given that the [redacted] indicate that SP AusNet completed 36,954 retrofits by 30 June 2010 as part of the WiMAX NIC mass retrofit.[660]

As section 2.6.8 explains, the AER maintains that the cost to retrofit a mesh radio NIC should not be any more than the cost to retrofit a WiMAX NIC. Therefore, the AER considers that a reasonable business in SP AusNet's circumstances would use a forecast of $[redacted] for mesh radio NIC retrofit costs. This is approximately 71 per cent lower than the AER's Preliminary View estimate.[661] It is also 81 per cent below SP AusNet's estimate to retrofit a mesh radio NIC into an empty meter and 89 per cent below SP AusNet's estimate to retrofit a mesh radio NIC into a meter with a WiMAX NIC.

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650 SP AusNet, *Response to AER email of 30 November 2012*, received 14 December 2012, pp. 3-4.
651 Energy Safe Victoria, *Final Report on Safety Aspects of the Victorian Advanced Metering Infrastructure (AMI) Program Meter Deployment Activities*, 29 April 2011.
652 *Meter installation services agreement between SPI Electricity Pty Ltd and Electrix Pty Ltd* (signed but not dated), Appendix B (not signed, dated 20 January 2011); M*eter installation services agreement between SPI Electricity Pty Ltd and UXC Limited* (signed, dated 24 September 2009), Appendix B (not signed, dated 17 August 2009).
653 SP AusNet, *Response to information request 7 follow up of 25 October 2012*, received 1 November 2012, pp. 6-7, Attachment C.
654 *Field Services Agreement between SPI Electricity Pty Ltd and* [redacted], dated 7 June 2010 (confidential).
655 SP AusNet, *Response to information request 7 follow up of 25 October 2012*, received 1 November 2012, pp. 6-7.
656 SP AusNet, *Response to information request 7 follow up of 25 October 2012*, received 1 November 2012, Attachment C.
657 SP AusNet, [redacted] 3 May 2010, pp. 2, 4.
658 SP AusNet, *Response to AER email of 2 October 2012, received 3 October 2012*, Attachment 4, pp. 208, 220, 238, 254, 271.
659 SP AusNet, [redacted] 3 May 2010, p. 2.
660 SP AusNet, *Response to AER email of 2 October 2012*, received 3 October 2012, Attachment 4, p. 271.
661 Energeia, *January 2013 Report*, pp. 41-44.

WiMAX remediation

The AER's revised estimate of WiMAX remediation (contract break and tower removal) switching costs is slightly lower than its Preliminary View estimate of $4.2 million because the AER accepts KEMA's lower estimate of the cost to remove WiMAX towers.[662] KEMA's estimate of $0.3 million is approximately 95 per cent lower than SP AusNet's Reconsideration Submission estimate.[663] The AER's estimate is now $3.7 million.

In addition, the AER accepts SP AusNet's submission that WiMAX tower removal could occur from 2012 rather than 2011. SP AusNet has confirmed that WiMAX towers are either located on existing SP AusNet infrastructure or fenced off and away from roads. The AER was previously concerned that WiMAX towers located near roads could potentially be a traffic hazard, so it would be a priority to remove them if they were not in use.[664]

KEMA seems to have accepted the AER's preliminary view that contract break costs would be incurred in 2011.[665] The AER considers tower removal switching costs would be 2012-15 switching costs, but contract break costs remain 2011 costs.

WiMAX inventory on hand

As the AER explains in section 2.6.3, its estimate for mesh radio switching costs now includes $4.1 million for WiMAX NIC and antenna inventory likely to be on hand as at February 2011. The AER accepts KEMA's two month estimate of these costs,[666] but its amount is higher than KEMA's estimate by $1.0 million because KEMA appears not to have converted its inventory costs to Australian dollars.[667]

Consistent with KEMA, the AER's view is that inventory costs fall in 2011.[668]

IT switching costs

SP AusNet's Response Submission includes an additional $2.2 million in present value terms ($2.3 million in $2011 real terms) of IT opex and integration capex costs.[669] This is significantly lower than SP AusNet's Reconsideration Submission, which proposed IT switching costs of $18.9 million (in $2011 real terms).[670] In its Preliminary View, the AER considered that SP AusNet had not adequately substantiated IT switching costs.[671]

In the AER's view, KEMA's report does not adequately substantiate why IT switching costs are necessary.[672] KEMA assumes that the IT systems already deployed could be readily adapted to the new AMI systems. For example, the MDMS remains largely unchanged, but the existing NMS cannot

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662 Energeia, *January 2013 Report*, pp. 19-22.
663 SP AusNet, *Comparative costs of Mesh alternative solution -050612.xls*, 5 June 2012, Comms costs of switching tab.
664 SP AusNet, *Response to information request 7 follow up of 25 October 2012*, received 1 November 2012, pp. 12-13.
665 KEMA, *Cost Benefit Assessment for Replacement of WiMAX Solution with RF Mesh*, 14 September 2012, TRKS tab.
666 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, p. 34.
667 Instead of treating this inventory amount as a mesh radio switching cost, KEMA applied a negative adjustment to its WiMAX estimate. However, the impact is the same, so for comparative purposes, the AER has treated KEMA's inventory adjustment as a switching cost.
668 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, p. 34; KEMA, *Cost Benefit Assessment for Replacement of WiMAX Solution with RF Mesh*, 14 September 2012, TRKS tab.
669 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, pp. 44, 46.
670 SP AusNet, *Reconsideration Submission*, 5 June 2012, p. 24.
671 AER, *Preliminary View*, August 2012, pp. 20-23.
672 Energeia, *January 2013 Report*, pp. 19-22.

be used.[673] KEMA suggests SP AusNet would incur support and integration costs associated with the NMS, the 3G network and the complexity of integrating the MDMS but provides little reasoning to support its view.[674]

Energeia considers that changing out the WiMAX integrated NMS should be reasonably straight forward and could be achieved without major reconfiguration of the interdependent systems.[675] In particular, Energeia's view is that most upstream systems communicate with the MDMS and NMS through a service oriented architecture standard, which includes an Enterprise Service Bus (ESB). This acts as the information broker for all other systems so information is automatically re-routed to upstream systems.[676] Energeia considers that the new NMS could be integrated with the ESB only, rather than needing to develop point-to-point integration points with all impacted systems.[677]

Therefore, Energeia considers there should be no material differences in the expected cost of integrating a mesh radio-3G solution compared to a WiMAX-3G solution and does not expect additional integration costs to arise.[678]

As the AER explains in sections 3.2.1 and 3.2.2, the AER's NMS and MDMS estimates are based on a benchmark of JEN's MDMS and NMS costs, pro-rated for SP AusNet's larger meter volumes (for licensing costs). JEN's budget templates indicate that its NMS and MDMS implementation costs also include an allowance for integration. Energeia's view is that since integration switching costs should be minimal, any costs that may arise should be covered by the benchmark estimates.[679]

Further, Energeia considers that any design and build costs that JEN may have been able to share with UED that may need to be repeated for SP AusNet are likely to be more than offset by the benefits of:[680]

- previous experience and learning from implementing the JEN and UED solution
- an existing proven IT and integration architecture
- existing project outputs including work plans, technical specifications and testing scripts.

Accordingly, the AER maintains its preliminary view that no additional switching costs should arise for IT.

Meter reading, project management and industry costs

SP AusNet submits it would incur an additional $6.0 million of switching costs for meter reading, project management and industry costs.[681] The meter reading costs are due to the delay in switching to mesh radio and the project management expenditure is largely due to KEMA's view that mesh radio is more complicated to implement than WiMAX and that an estimated five month procurement process is required. Additional industry costs are for legal and regulatory costs that SP AusNet

673 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, p. 20.
674 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, pp. 44, 46.
675 Energeia, *January 2013 Report*, pp. 21-22, 44-46; Energeia, *August 2012 Report*, pp. 24, 30.
676 Energeia, *January 2013 Report*, pp. 21-22, 44-46; Energeia, *August 2012 Report*, pp. 24, 30.
677 Energeia, *January 2013 Report*, pp. 21-22, 44-46.
678 Energeia, *January 2013 Report*, pp. 21-22, 44-46; Energeia, *August 2012 Report*, pp. 24, 30.
679 Energeia, *January 2013 Report*, pp. 19-22.
680 Energeia, *January 2013 Report*, p. 46.
681 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, pp. 44-46.

considers it would incur in moving to a new solution and agreeing with the AER on revised milestones.[682]

In response to a request for further information from the AER, KEMA stated its project management estimate was based on project experience. However, KEMA declined to provide the AER with access to the data it relied on to develop its cost estimate.[683]

The AER maintains its preliminary view that SP AusNet has not adequately substantiated why a reasonable business in SP AusNet's circumstances would incur additional costs for meter reading, project management or industry negotiations if it switched to mesh radio.[684]

As section 2.6.4 explains, the AER's estimated timeline to implement a mesh radio solution should not result in additional meter reading, project management or industry costs in 2012-15 because mesh radio would be implemented by 1 January 2012. The AER considers that from 1 January 2012, a reasonable business in SP AusNet's circumstances would utilise the meter reading, project management and industry resources for its mesh radio rollout that SP AusNet would otherwise have used for its WiMAX rollout.[685]

Further, as section 2.6.4 also explains, the AER considers that a reasonable business in SP AusNet's circumstances would contract directly with SSN rather than completely a full five month procurement process as KEMA suggests.[686] Also, the AER disagrees with KEMA's unsubstantiated submission that mesh radio access point and backhaul installation requirements would necessitate more project management resources than for a WiMAX rollout.[687]

Without adequate justification, the AER does not agree that a reasonable business in SP AusNet's circumstances would incur additional expenditure for these costs.

Mesh radio switching costs that can be included in SP AusNet's Approved Budget

The AER's view is that a reasonable business in SP AusNet's circumstances would have incurred an additional $19.1 million in switching costs if it decided to switch to mesh radio on 28 February 2011. For the purposes of the AMI Order, these represent the hypothetical prudent costs that a reasonable business in SP AusNet's circumstances would incur, had it made the decision to switch to mesh radio.[688]

However, as explained above, the AER considers that a reasonable business in SP AusNet's circumstances would incur all of these switching costs except for those associated with WiMAX tower demolition in 2011 rather than 2012-15. The AER's opinion is that expenditure incurred in 2011 would not have been recoverable in the 2012-2015 budget process but rather through other mechanisms. Section 2.6.7 discusses the AER's treatment of switching costs incurred in 2011.

As explained below, the AER estimates that if a reasonable business in SP AusNet's circumstances had decided to switch to mesh radio on 28 February 2011, it would save $12.4 million ($2011 real) in 2011 relative to retaining SP AusNet's WiMAX solution. That is, the lower mesh radio deployment

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682 KEMA, *Assessment of AMI Communication Options*, 14 September 2012, pp. 44, 46.
683 SP AusNet, *Response to information request 7 of 8 October 2012*, received 22 October 2012, p. 6.
684 AER, *Preliminary View*, August 2012, pp. 21-23.
685 Energeia, *January 2013 Report*, pp. 19-22.
686 Energeia, *January 2013 Report*, pp. 32-37, Appendix 5.
687 Energeia, *January 2013 Report*, pp. 39-41.
688 *AMI Order*, clause 5C.3.

costs would more than offset any switching costs the AER considers a reasonable business would incur in 2011.[689]

As a result, the AER considers it is not necessary to amend SP AusNet's 2012-15 Approved Budget for 2012-15 to include 2011 switching costs. This is because SP AusNet's 2011 Approved Budget (for WiMAX) would have been sufficient to allow a reasonable business in SP AusNet's circumstances to switch to mesh radio in 2011 without it incurring additional costs in that year. In turn, the AER considers that including the 2011 switching costs in the 2012-15 Approved Budget would overcompensate a reasonable business in SP AusNet's circumstances.

Further, if the 2011 Approved Budget did not entirely cover the cost of switching to mesh radio, the AMI Order would have allowed a reasonable business in SP AusNet's circumstances to submit a revised budget application to recover any additional costs. However, SP AusNet did not do this. In fact, SP AusNet submitted a revised budget application on 28 February 2011 for higher costs associated with WiMAX.[690] The AER's opinion remains that a reasonable business in the circumstances would not have acted as SP AusNet did.

The AER also considers the AMI Order does not allow costs incurred in 2011 to be recovered in the 2012-15 budget period. If 2011 expenditure was moved into the 2012 Approved Budget, the budget would not be comparable with 2012 actual expenditure. This means the AER could not practically conduct an ex post reconciliation of 2012 budget and actual expenditure. The charges revision process under the AMI Order requires this to operate correctly.[691] It could also potentially undermine the AER's ability to conduct an "expenditure excess" review of prudence, which is an important aspect of the charges revision process.[692]

In terms of the $0.3 million of WiMAX tower demolition costs, as explained above, the AER now accepts that a reasonable business in SP AusNet's circumstances would incur them from 2012 rather than 2011. However, the AER's view is that the scope of this remittal does not allow it to include these costs in SP AusNet's 2012-15 Approved Budget.

SP AusNet's Reconsideration Submission classified WiMAX tower demolition costs as communications capex.[693] As the AER explains in section 2.3.1, the scope of this remittal is limited to the following three categories of expenditure:

- meter supply capex
- communications maintenance opex and communications backhaul opex (maintenance opex)
- IT opex.

SP AusNet agrees that only these three categories can be amended.[694] The AER approved SP AusNet's proposed WiMAX-related communications capex in its 2012-15 budget because it was let in accordance with a competitive tender process. The AMI Order did not provide the AER with the ability to assess this expenditure using the commercial standard test.

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689 Energeia, *January 2013 Report*, pp. 19-22.
690 SP AusNet, *Advanced Metering Infrastructure Revised Budget Application*, 28 February 2011.
691 *AMI Order*, clauses 5H, 5I.
692 *AMI Order*, clause 5I.5.
693 SP AusNet, *Comparative costs of Mesh alternative solution -050612.xls*, 5 June 2012, Comms costs of switching tab.
694 SP AusNet, *Response Submission*, 14 September 2012, p. 16.

Accordingly, SP AusNet did not seek review of this category, so communications capex is not part of this limited review. The AER considers it is unable to amend the communications capex category of SP AusNet's 2012-15 Approved Budget.

Impact of switching on 2011 costs

The AER has calculated the likely budget impact of its mesh radio switching timeline to determine whether there would be any negative financial consequences in the 2009-11 budget period. Because the AER estimates that a reasonable business in SP AusNet's circumstances would incur the majority of mesh radio switching costs in 2011, it is useful to compare the likely impact of switching with SP AusNet's approved 2011 WiMAX budget for the relevant categories.[695]

Table 3.9 Mesh radio 2011 switching impact assessment compared to retaining WiMAX ($2011 real, million)

	Mesh radio	WiMAX	Difference
Capex			
NICs	[redacted]	[redacted]	-14.9
Antennas	[redacted]	[redacted]	-4.7
Network and Backhaul	[redacted]	[redacted]	-4.6
NMS	[redacted]	[redacted]	-0.8
MDMS	[redacted]	[redacted]	-3.9
Switching - NICs	[redacted]	-	9.5
Switching - Antennas	[redacted]	-	0.5
Switching - Retrofit	[redacted]	[redacted]	1.2
Switching - WiMAX remediation	[redacted]	-	3.4
Switching - Inventory	[redacted]	-	4.1
Sub total Capex	***44.2***	***54.3***	***-10.1***
Opex			
Backhaul communications	[redacted]	[redacted]	0.3
Communications operations	[redacted]	[redacted]	0.6
NMS opex	[redacted]	[redacted]	-3.2
MDMS opex	[redacted]	[redacted]	0.0
Sub total Opex	***4.1***	***6.4***	***-2.3***
Total Expenditure	**48.2**	**60.6**	**-12.4**

Notes: WiMAX NIC and antenna components are estimates based on SP AusNet's meter volumes and costs.
Source: SP AusNet, *2012-15 AMI Budget template as submitted on 28 Feburary 2011*; AER analysis.

[695] Energeia, *January 2013 Report*, p. 22.

As Table 3.9 shows, by switching to mesh radio, a reasonable business in SP AusNet's circumstances would have saved $12.4 million in 2011 relative to retaining WiMAX. That is, the substantially lower cost to deploy mesh radio more than offsets the 2011 switching costs.[696]

In the AER's opinion, this further supports the AER's view that there is no financial basis to delay switching to 2012 to avoid over-expenditure in 2011 relative to SP AusNet's Approved Budget for that year. However, as the AER notes above and explains in section 2.6.7, even in the case of budget overspend in 2011, the AMI Order would have permitted SP AusNet to recover those additional costs.[697]

[696] Energeia, January 2013 Report, p. 22.
[697] Energeia, *January 2013 Report*, p. 22.

4 Qualitative matters

The qualitative matters SP AusNet raises in its Response Submission are not materially different to those raised in its Reconsideration Submission.[698] However, SP AusNet raises some additional concerns in the context of its submission on qualitative matters on:[699]

- the AER's use of information not known to SP AusNet in February 2011
- the AER's ten month mesh radio implementation timeline
- vendor risk.

SP AusNet also submits that a prudent business would only proceed with mesh radio if it were highly likely to deliver "materially lower" costs because it is inherently uncertain technology. SP AusNet defines "materially lower" as a requirement for the expected savings from switching to mesh radio to be at least 20 per cent of the forecast WiMAX costs. SP AusNet submits this is in line with the AMI Order's automatic cost recovery arrangements of up to 120 per cent of the Approved Budget.[700]

The AER's views on relevant information, mesh radio implementation timeframe, vendor risk and sensitivity analysis are addressed in sections 2.6.1, 2.6.4 and 2.6.8. They are not repeated here.

The AER has not changed its position on qualitative matters since its Preliminary View. The AER maintains its opinion that the difference in its cost estimates of mesh radio and WiMAX is substantial enough that qualitative factors would not be an impediment to the decision to switch to mesh radio.[701] As section 2.4.1 explains, the AER's view is that qualitative matters could affect the decision to switch to mesh radio if the quantitative analysis produced a marginal result.

However, this is not the case here. Indeed, the AER's Final Decision estimates of WiMAX and mesh radio are further apart than in the Preliminary View. As chapter 3 explains, the AER's view is that switching to mesh radio would be $129.9 million (59 per cent) less over 15 years than retaining SP AusNet's WiMAX solution (compared to 58 per cent in the Preliminary View).

Accordingly, the AER has not repeated the qualitative analysis from its Preliminary View, which can be found in that document in section 1.3.4.[702] This chapter responds only to specific points raised by SP AusNet that the AER considers necessitate further elaboration. Primarily, this relates to matters of compliance with the AMI rollout schedule and the minimum AMI functionality specficiations.

4.1.1 Compliance with obligations

In its Response Submission, SP AusNet continues to raise compliance with the AMI Order as an impediment to switching from WiMAX to mesh radio. In essence, the two points SP AusNet raises are:[703]

(1) mesh radio is not fully compliant with the minimum AMI functionality specifications

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698 For example, SP AusNet, *Reconsideration Submission*, p. 38; SP AusNet, *Response Submission*, p. 52.
699 SP AusNet, *Response Submission*, 14 September 2012, pp. 43-52.
700 SP AusNet, *Response Submission*, 14 September 2012, p. 52.
701 AER, *Preliminary View*, August 2012, p. 31.
702 AER, *Preliminary View*, August 2012, pp. 26-31.
703 SP AusNet, *Response Submission*, 14 September 2012, pp. 25-27, 44-45.

(2) switching to mesh radio would delay its AMI rollout so it would not meet the rollout requirements in clause 14.2 and Schedule 1 of the AMI Order.

Minimum AMI functionality specifications

As part of the merits review and this remittal process, SP AusNet has submitted[704] that mesh radio is incapable of complying with the functionality requirement that load control commands be performed at 99 per cent of meters within one minute.[705]

For the following reasons, the AER considers mesh radio's apparent inability to comply with this single functionality specification (out of many) should be afforded little weight in assessing the decision that a reasonable business in SP AusNet's circumstances would have made. First, the AER considers that paragraph 125 of the Tribunal's Reasons illustrates that the AER acted appropriately in taking this approach. It states:

> The AER did not make an material error of fact in determining that there were other technologies, in particular mesh radio, that were viable alternatives to WiMAX. While it appears to be true that mesh radio is incapable of meeting the performance and functionality standards mandated by the Victorian Government, it also appears to be the case that SP AusNet's mix of technologies will fail to fully comply. Further, it is clear that the AER never laboured under the misapprehension that mesh radio, or other technologies, did meet the performance and functionality standards. The AER's determination was based on the view that no technology or mix of technologies could fully comply with the standards. The Tribunal is not persuaded that this is in error.

This paragraph suggests that the Tribunal does not require the AER to examine the merits of mesh radio's compliance with the functionality specifications because it has already accepted mesh radio as a viable technology option.

Second, the AER considers that a reasonable business in SP AusNet's circumstances would have been aware that the other four Victorian DNSPs were rolling out mesh radio without penalty as at 28 February 2011. In the AER's opinion, this indicates the non-compliance matter would not have been as significant a factor in the consideration of viable technology choice as SP AusNet submits it is.

Third, the AER does not agree with SP AusNet's submission that:[706]

> Importantly, in February 2011 SP AusNet also held the view that WiMAX could satisfy the specified compliance obligations.

[redacted] and [redacted] indicate that as at February 2011, SP AusNet was aware its WiMAX solution was not compliant with Department of Primary Industries (DPI) mandated requirements. The AER received these documents on 3 October 2012 and 12 October 2012 as part of a formal information gathering process.[707] The AER first requested the information on 12 June 2012.[708]

SP AusNet had provided a selection of the [redacted] requested by the AER on 14 September 2012, but it removed all financial information, stating that it was not relevant to the

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704 SP AusNet, *Applicant's Written Outline of Submissions: Attachment 1*, 30 January 2012, paragraph 55; SP AusNet, *Reconsideration Submission*, 5 June 2012, pp. 27-30; SP AusNet, *Response Submission*, 14 September 2012, pp. 25-27, 44-45.

705 DPI, *Minimum AMI Functionality Specification*, September 2008, clause 4.4(a).

706 SP AusNet, *Response submission*, 14 September 2012, p. 44.

707 SP AusNet, *Response to AER email of 2 October 2012*, received 3 October 2012, Attachments 3 and4; SP AusNet *Response to section 37 Notice issued 5 October 2012*, received 12 October 2012, Attachments D, E and F.

708 AER, *Information request 2 of 12 June 2012*, pp. 1-2.

remittal.[709] Accordingly, the AER felt it was necessary to compulsorily obtain the information it initially requested. Among other things, the [redacted] and [redacted] indicate that:

- [redacted][710]
- [redacted][711]
- [redacted][12]
- [redacted][713]
- [redacted][714]

Further, on 31 January 2011, SP AusNet engaged [redacted] to perform a high level technical review of its AMI IT capabilities and architecture in the context of meeting business and regulatory objectives. According to the [redacted] review, SP AusNet did so due to issues and risks identified with the AMI program.[715] The AER received the [redacted] review on 12 October 2012 as part of the formal information gathering process noted above.

Among other things, [redacted] found that SP AusNet's ability to comply with regulatory requirements was an "extreme" risk and that SP AusNet was not meeting 86 DPI requirements.[716] Overall, as at 2 February 2011, SP AusNet was not meeting 3,806 of the AMI program's defined 4,856 functional and non-functional requirements.[717] [redacted] also found that SP AusNet's WiMAX network and [redacted] were in a non-production state.[718]

SP AusNet did not receive the final [redacted] report until 28 March 2011 (although it received a draft on 22 March 2011). However, the AER considers the information in it remains relevant because:

(a) while SP AusNet may not have been aware of the extent of the problems identified by [redacted] it was aware by 31 January 2011 (a month before it submitted its 2012-15 budget

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709 SP AusNet, *Response to AER email of 9 August 2012*, received 14 September 2012, PDF Response, pp. 4-5, Attachments 1 to 7.

710 SP AusNet, [redacted] 24 September 2009, paragraphs 4.8-4.11, 5.14; SP AusNet, *Response to AER email of 2 October 2012*, received 3 October 2012, Attachment 4, pp. 7-8, 20-21, 26, 32, 37, 47, 91, 121, etc.

711 SP AusNet, *Response to AER email of 2 October 2012*, received 3 October 2012, Attachment 4, p. 394.

712 SP AusNet, *Response to AER email of 2 October 2012*, received 3 October 2012, Attachment 4, pp. 509, 528.

713 SP AusNet, *Response to AER email of 2 October 2012*, received 3 October 2012, Attachment 4, pp. 508, 527.

714 SP AusNet, [redacted], 28 March 2011, paragraph 2.15.

715 SP AusNet, *Response to section 37 Notice issued 5 October 2012*, received 12 October 2012, Attachment F, pp. 17, 76.

716 SP AusNet, *Response to section 37 Notice issued 5 October 2012*, received 12 October 2012, Attachment F, pp. 61, 63, 65.

717 SP AusNet, *Response to section 37 Notice issued 5 October 2012*, received 12 October 2012, Attachment F, p. 61; SP AusNet, [redacted] 28 March 2011, paragraph 2.15.

718 SP AusNet, *Response to section 37 Notice issued 5 October 2012*, received 12 October 2012, Attachment F, p. 21.

application and 2009-11 revised budget application to the AER) that there were significant issues with its AMI rollout such that it felt the need to instigate an independent review

(b) a reasonable business in SP AusNet's circumstances would have sought this advice sooner given the consistent problems with [redacted] since September 2009 noted above.

For the reasons above, the AER considers it is reasonable to afford little weight to SP AusNet's concern relating to mesh radio's ability to comply with the functionality specifications. Indeed, on the information before it, the AER's view is that in February 2011, SP AusNet's WiMAX solution was facing more non-compliance issues than a mesh radio solution would have.

Rollout obligations

SP AusNet also continues to raise the rollout obligations set out in Schedule 1 of the AMI Order as an impediment to switching to mesh radio.[719] In its Reconsideration Submission, SP AusNet considered it would not meet the 31 December 2013 ultimate deadline if it switched to mesh radio.[720] In its Response Submission, SP AusNet now submits it would meet this deadline, but would not meet interim deadlines without incurring additional cost.[721]

In section 2.1.3 the AER explains (as it did in the Preliminary View[722]) that the AMI Order requires a DNSP to use its "best endeavours" to comply with the rollout schedule. It is ultimately the AER's discretion whether a DNSP ought to be penalised should it not meet a milestone. For this reason, the AER considers that, although a relevant factor, potential non-compliance with some rollout milestones would not have been a strong impediment to switching to mesh radio.

In its Reconsideration Submission, SP AusNet stated that continuing with it WiMAX rollout would not result in any delays to the delivery of the AMI program.[723] In its Response Submission, SP AusNet states that continuing with WiMAX is consistent with using best endeavours to meet the AMI rollout milestones.[724]

The AER disagrees that as at February 2011, SP AusNet's WiMAX solution was compliant with the rollout schedule. The AER is now able to form this view based on the [redacted] and [redacted] referred to above.

As the AER notes above, the [redacted] and [redacted] indicate that SP AusNet knew it was not compliant with DPI requirements. The [redacted] and [redacted] also indicate that:

- [redacted][725]
- [redacted][726]

719 SP AusNet, *Reconsideration Submission*, 5 June 2012, pp. 27-30; SP AusNet, *Response Submission*, 14 September 2012, pp. 25-27, 44-45.
720 SP AusNet, *Reconsideration Submission*, 5 June 2012, pp. 18-19.
721 SP AusNet, *Response Submission*, 14 September 2012, pp. 25-27.
722 AER, *Preliminary View*, August 2012, pp. 27, 29.
723 SP AusNet, *Reconsideration Submission*, 5 June 2012, p. 19.
724 SP AusNet, *Response Submission*, 14 September 2012, p. 45.
725 SP AusNet, *Response to AER email of 2 October 2012*, received 3 October 2012, Attachment 4, p. 480.
726 SP AusNet, [redacted], 27 January 2011, paragraph 4.28.

- [redacted][727]
- [redacted][728] – the Minimum AMI service levels specification requires installed meters to do this from 1 January 2012[729]
- [redacted][730]
- [redacted][731]

Further, the [redacted] report referred to above confirmed that SP AusNet had misunderstood the rollout requirements, and questioned the validity of its claimed achievements of the 5 and 10 per cent milestones.[732] Indeed, none of the approximately 70,000 meters installed by SP AusNet were functioning as remotely read interval meters in accordance with DPI requirements as at 2 February 2011.[733]

In addition to rollout problems, the [redacted] also indicate that SP AusNet forecast it would be approximately 29 per cent over its regulatory budget (6 per cent for opex, 43 per cent for capex) for the year April 2010 to March 2011.[734]

The above information suggests that as at 28 February 2011, SP AusNet was facing significant difficulties with its WiMAX rollout. Therefore, for the reasons above, the AER considers it is reasonable to afford little weight to SP AusNet's concern about meeting the rollout obligations if it was hypothetically considering switching to mesh radio at that time.

As an aside, the AER has recently received information from SP AusNet that confirms less than 5 per cent of its meters were sending interval data to market as at 12 December 2012.[735]

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727 SP AusNet, [redacted], 27 January 2011, paragraph 4.4; SP AusNet, [redacted], 27 January 2011, p. 2.
728 SP AusNet, [redacted], 27 January 2011, paragraph 4.15.
729 DPI, *Minimum AMI service levels specification*, clause 4.3.
730 SP AusNet, *Response to AER email of 2 October 2012*, received 3 October 2012, Attachment 4, pp. 303, 341, 411, 431, 471, 490, 508, 527.
731 SP AusNet, *Response to AER email of 2 October 2012*, received 3 October 2012, Attachment 4, p. 508.
732 SP AusNet, *Response to section 37 Notice issued 5 October 2012*, received 12 October 2012, Attachment F, p. 60.
733 SP AusNet, *Response to section 37 Notice issued 5 October 2012*, received 12 October 2012, Attachment F, p. 21; SP AusNet, [redacted] 28 March 2011, paragraph 2.9.
734 SP AusNet, *Response to AER email of 2 October 2012*, received 3 October 2012, Attachment 4, p. 535.
735 SP AusNet, *Response to letter from Mr J Rosewarne, Department of Primary Industries*, of 23 October 2012, sent 2 January 2013.

5 Amendments to the Approved Budget

In its October 2011 Final Determination, the AER determined an Approved Budget for SP AusNet of $304.1 million ($real 2011[736]). Pursuant to the Tribunal's Orders, the AER's decision results in an amendment to its Final Determination Approved Budget in favour of SP AusNet by $17.5 million, comprising:

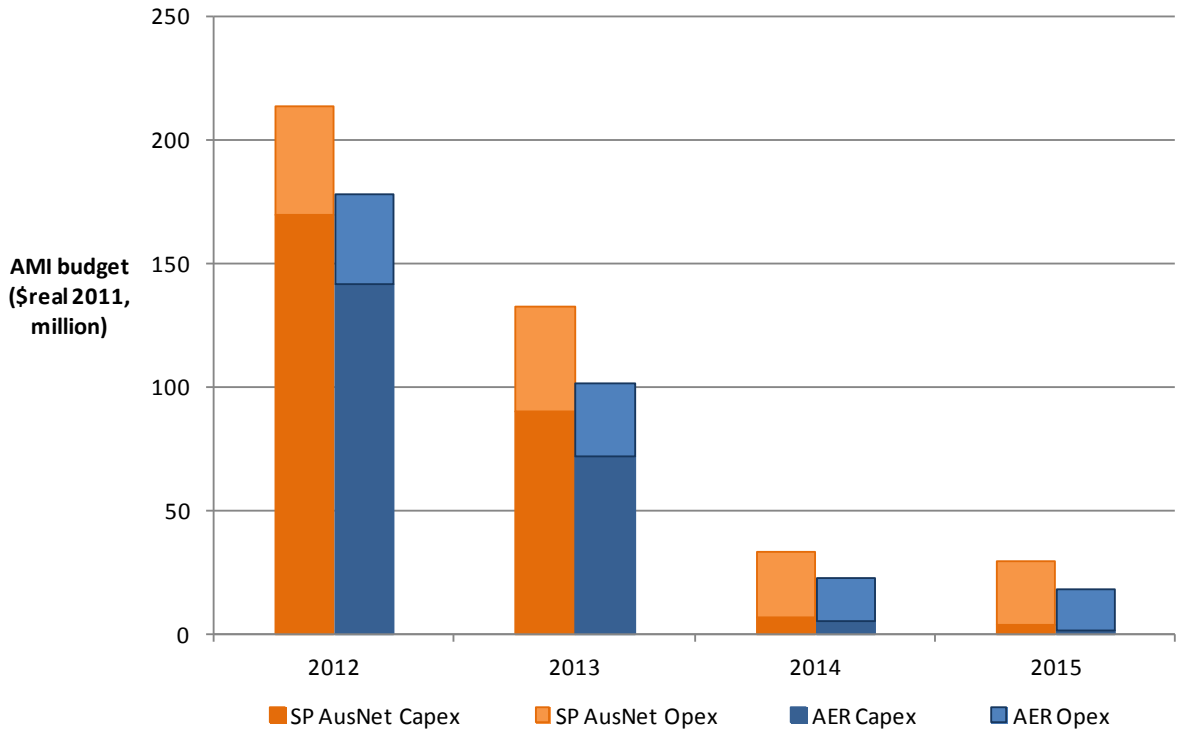
(1) foreign exchange contracts ($15.8 million)

(2) project management labour costs ($1.7 million).

As section 3.2.3 explains, the AER is unable to include any of the prudent costs to switch mesh radio in SP AusNet's Approved Budget. The AER considers that a reasonable business in SP AusNet's circumstances would have incurred the majority of these switching costs in 2011. Further, while the AER considers that WiMAX tower demolition costs fall into the 2012-15 budget period, they are communications capex costs.[737] The AER is unable to amend communications capex because it is not within the scope of this remittal.

The AER's amendment results in a revised Approved Budget of $321.7 million. Figure 5.1 compares SP AusNet's amended Submitted Budget of $410.7 million with the AER's Final Decision on the amendments to SP AusNet's 2012–15 Approved Budget.

Figure 5.1 Comparison of SP AusNet's amended Submitted Budget and the AER's decision on the revised Approved Budget ($real 2011, million)



Source: SP AusNet, *2012-15 Amended Submitted Budget*, 26 August 2011; AER analysis.

[736] All figures in this section are in $real 2011 unless otherwise specified.
[737] SP AusNet, *Comparative costs of Mesh alternative solution -050612.xls*, 5 June 2012, Comms costs of switching tab.

Table 5.1 displays the revised meter charges resulting from the AER's Final Decision on the amendments to SP AusNet's Approved Budget. Accounting for the AER's Final Decision, meter charges are expected to nominally increase by approximately 9.9 per cent each year in 2014 and 2015. This remittal affects prices for 2014 and 2015 only because the AER recently set 2013 charges in the charges revision process. The revised 2013 charges reflect SP AusNet's actual 2011 expenditure and updated forecasts.

Table 5.1 Amended Final Determination charges by meter ($nominal)

	2012	2013	2014	2015
Single phase single element	107.25	130.45	143.38	157.60
Single phase two element with contactor	123.24	149.90	164.76	181.10
Multi phase	148.89	181.10	199.06	218.79
Multi phase with contactor	165.16	200.89	220.81	242.70
Multi phase CT connected	212.67	258.68	284.33	312.52

Source: AER analysis.