APPENDIX 59

MAB methodology

Metering Asset Base Methodology

1.1 Executive Summary

Energex's metering services are subject to regulatory requirements outlined in the National Electricity Law (NEL), the National Electricity Rules (the Rules), the AER's Framework and Approach paper (F&A paper), the AER's Expenditure Forecast Assessment Guideline and AEMO's Metrology Procedures, along with Queensland specific legislative requirements.

The AER published its F&A paper on 30 April 2014 which supported reclassifying type 5 and 6 metering services from standard control services to alternative control service[1], noting that type 5 metering services are prohibited in Queensland. The unbundling of type 6 costs from standard control services costs involves the separation of type 6 metering assets from the standard control services Regulated Asset Base (RAB). In proposing a limited building block as the basis of the control mechanism for type 6 metering services, Energex must establish the opening Metering Asset Base (MAB) value in accordance with the Rules.

The establishment of the MAB reflects the value of direct metering assets and a proportion of non-system assets. Direct metering assets are type 6 meters (directly connected and instrument transformer connected) and excludes any network metering assets. The AER has determined that load control remains a standard control service and therefore these assets are retained in the RAB. A portion of non-system assets have been included in the MAB based on Energex's cost allocation methodology.

The establishment of the MAB was complicated by a metering assets reporting change in 2003-04 that resulted in the majority of metering assets being classified and reported as low voltage overhead service line (OHSL) assets. At the time, this change was considered reflective of the work performed to connect new customers; that is typically installing a new service line and a meter. Adjustments were made for the 2013-14 Annual Performance Regulatory Information Notice (which is also reflected in the Reset Regulatory Information Notice) reporting to reflect the disaggregation of these assets.

During 2013-14 Energex developed three methods to provide a robust estimate for the opening MAB value. The first two methods involved constructing a profile of metering capitalisations for the period 1982-83 to 2014-15 while the third method involved estimating the value of metering capitalisations based on the meter register as at May 2014. Table 1 below shows that these methods valued Energex's opening MAB in the range of $226 million to $436 million.

[1] AER (2014), Framework and Approach Paper – Energex and Ergon Energy

Table 1 - Methods for Calculating Energex's Opening MAB

Method	Description of Method	Forecast Opening MAB ($m, nominal)
1	Option 1	$436
2	Option 2	$326
3	Option 3	$226

Option 1 ($436 million) was selected as the most relevant and reliable methodology as it reconciled back to the regulatory asset register and applies a representative profile of metering capitalisations over the period based on a validated ratio of metering to OHSL assets capitalisations.

1.2 Energex's approach to establishing the Metering Asset Base

The Rules provide the regulatory framework for classifying distribution services and the control mechanisms to apply to these services. The AER's F&A paper reclassified type 6 metering services from standard control services to alternative control services[2] and determined that a price cap would apply for alternative control services. Energex has proposed a limited building block approach as the basis of control in developing price caps for type 6 metering services.

In applying the limited building block approach Energex must establish an opening MAB by removing type 6 metering assets from the standard control services RAB. The RAB is the value of assets used by Energex to provide standard control services and must be calculated in accordance with Clause 6.5.1 of the Rules. The following steps were applied in establishing the MAB:

1) The 2010 RAB was rolled forward for the 2010-15 regulatory control period using the AER's Roll Forward Model (RFM) to provide the opening asset base as at 1 July 2015. This asset base includes standard control service assets and metering assets combined.

2) Directly related assets to the provision of type 6 metering services were identified; namely type 6 meters.

3) Load control equipment assets were identified to remain in the standard control services RAB in accordance with the F&A paper.

4) A portion of non-system assets were allocated to the type 6 Metering RAB

5) The directly related metering assets and the portion of non-system assets were consolidated to establish the MAB (which was used as input to Energex's type 6 Post Tax Revenue Model to generate required revenue and ultimately prices).

[2] AER (2014), Framework and Approach Paper – Energex and Ergon Energy

1.3 Key Policies and Assumptions

1.3.1 Asset Allocation

Energex's MAB contains the following asset categories:

- Direct Assets:
  - Metering - electro-mechanical
  - Metering - electronic

- Non-system Assets:
  - Office Equipment & Furniture
  - Motor Vehicles
  - Plant & Equipment
  - Buildings
  - Land
  - IT Systems

Direct metering assets are all type 6 electronic and electro-mechanical metering. These direct metering assets will be removed from the RAB and transferred to the MAB as at 1 July 2015 in accordance with option 1 (section 1.3.5). These direct metering assets represent approx. 87.4% of the 2014/15 forecast closing balance of "Metering assets" from the roll forward model. The remaining 12.6% remain in the RAB under a new renamed category "Load Control & Network Metering Devices" and represents load control devices and network metering.

A portion of non-system assets have been allocated to the MAB based on Energex's CAM. This reflects the usage of non-system assets such as motor vehicles and buildings in delivering metering services.

1.3.2 Asset Disposals

Energex's policy has been to re-use meters such that meters replaced before the end of their economic life were not disposed of and therefore not removed from the RAB. Energex is changing its meter refurbishment policy during the current regulatory control period due to improvements in meter technology and changing business requirements, which will result in the disposal of those meters replaced before the end of their economic life. However, as the regulatory treatment of these assets could not change during the 2010-15 regulatory period, these assets continued to remain in the RAB and therefore will transfer to the MAB.

Energex's policy for the 2015-20 regulatory control period is to dispose of meters and remove them from the MAB when replaced (i.e. for solar) in accordance with Energex's revised meter refurbishment policy. The forecast disposals are consistent with the forecast volume of meter replacements and upgrades set out in table 25.6 of the regulatory proposal.

1.3.3 Depreciation

Energex has adopted a ‘’straight-line” approach to depreciation when estimating the average remaining life for each meter type. For the 2010-15 regulatory control period, Energex has assumed a 25 year standard life. Note that for the forthcoming regulatory control period, Energex will apply standard asset lifetimes of 25 and 15 years for electro-mechanical and electronic meters respectively in accordance with manufacturers’ expectations.

1.3.4 Valuation Issues

The construction of the MAB was impacted by issues relating to historical reporting, depreciation and the meter disposal policy.

In determining the MAB, reporting changes introduced from 2003-04 resulted in the majority of metering assets being reported as OHSL assets. This change was considered reflective of the work performed to connect a new customer; that is, typically installing a new service line and a meter. As a result the previously estimated written down value (WDV) of metering assets in the RAB to be transferred to the MAB of approximately $90 million was significantly understated.

A related impact of the metering assets being categorised as OHSL was the application of a lower depreciation rate (standard life of 35 years) than if the assets had be categorised as metering assets (standard life of 25 years). This resulted in a higher book value than would otherwise be the case.

Energex’s MAB also includes recovered meters from upgrades, for example associated with solar PV installations, which have not been disposed of. This issue was likely to be particularly significant in recent years when a large volume of meters were replaced for solar capable meters. As detailed in section 1.3.2, Energex proposes to remove meter disposals from the MAB as Energex does not intend to refurbish meters in the 2015-20 regulatory control period.

1.3.5 Options Considered

Energex considered the following options, to address the valuation issues identified above, in calculating the opening value of the MAB:

1. Profile of metering capitalisations for the period 1982-2015, using observed average relativities between metering and OHSL asset capitalisations for the period 1982-2004
2. Profile of metering capitalisations for the period 1982-2015, using observed average metering asset capitalisations for the period 1982-2004
3. Construction of the metering capitalisation value using the Meter Asset Register and Service System (MARS) as at May 2014.

The methodology applied in each option is detailed below.

Option 1 – Estimated metering capitalisations using relativities between metering and OHSL asset capitalisations

Option 1 estimated the profile of metering capitalisations based on actual capitalisations (pre-2003-04) and estimated capitalisations based on the observed relativities between metering and OHSL asset capitalisations and total metering and OHSL capital costs (post 2003-04). Energex analysed the historical relationship between metering and OHSL assets in the regulatory fixed asset register for the period 1982-2004, to appropriately allocate assets between the OHSL category and the metering category for the period 2004-2014. This analysis determined that the ratio of capital costs of metering to OHSL assets was 80 per cent to 20 per cent. This was supported by an activity based costing exercise based on information for 2012-13. This proportion was then applied to total metering and OHSL capital costs for the period from 2004-05 to 2013-14 to estimate metering expenditure over the period (as shown in Table 2).

Table 1 – Historical capital costs and relative proportion of Metering and OHSL assets

Asset Category	1982-2004 % Actual	1982-2004 Ave $m pa, Actual	2004-2014 % Estimated	2004-2014 Ave $m pa, Estimated
Metering	80.3%	$16.3	80.3%	$34.7
OHSL	19.7%	$4.0	19.7%	$8.5
Total	**100%**	**$20.3**	**100%**	**$43.2**

The MAB value was then adjusted downwards to reflect the different depreciation rates applied historically to metering (25 year standard asset lifetime) and OHSL (35 year standard asset lifetime) assets. This generated an opening MAB value of $436m, based on $417.5m in direct metering assets and $18.5m in shared assets as shown in Table 3 below.

Table 2 - Opening MAB Value using Option 1

Category in Regulatory Fixed Asset Register	WDV ($m, nominal)
Metering – Electro-mechanical	$257.4
Metering – Electronic	$160.1
Non-system Assets	$18.5
Total Opening MAB	**$435.9**

Option 2 – Estimated metering capitalisations using historical average

Option 2 estimated the profile of metering capitalisations based on actual capitalisations (pre-2003-04) and estimated capitalisations based on the historical average metering asset capitalisations (post 2003-04). Option 2 involved applying the following methodology:

1. Calculating the average value of metering investment from 1982-83 (when the current asset register commenced) to 2003-04 ($16.3m per annum)

2. Applying this pre-2003-04 average annual metering spend to the period from 2004-05 to 2014-15 (depreciated assuming a standard life of 35 years), and
3. Adjusting for the impact of increased solar PV installations over the period from 2012-13 to 2014-15 which is of the order of $85 million.

Energex considers that this approach will likely underestimate the true value of the metering asset base, given increases over time in average annual metering spend driven by technological and business environment changes. Option 2 estimated an opening MAB value of $326 million, based on $307 million in direct metering assets and $18.5 million in non-system assets.

Table 4 – Opening MAB Value using Option 2

Metering Asset Category	Costs $m p.a.	WDV ($m)
Metering installed prior to 2003/04	$16.3	$69.0
Metering installed 2004/05 to 2014/15	$16.3	$152.9
Solar PV Metering installed 2012/13 to 2014/15	$37.0	$85.5
Non-system assets	N/A	$18.5
Total Opening MAB		**$325.9**

Option 3 – Construction of the metering capitalisation value using MARS

Option 3 analysed metering asset population data from Energex's MARS system as at May 2014 (includes type, age, phase information) and applied metering unit cost assumptions to develop a high level calculation of the opening MAB.

Metering cost assumptions were based on 2012-13 materials, materials oncosts, labour rates and labour oncosts for different meter types. This generated total unit costs by meter type, as detailed in Table 5 below.

Table 5 – Metering Total Unit Cost for Option 3

Meter Type	Labour Cost	Materials	Oncosts & Overheads	Total Unit Cost
1 Phase Single Element	$77.68	$50.00	$107.02	**$234.70**
1 Phase Dual Element	$77.68	$125.00	$150.65	**$353.33**
2 / 3 Phase Meter	$126.32	$173.00	$227.36	**$526.68**

For simplicity and in accordance with advice from internal subject matter experts, the costs were not de-escalated. Rather Energex assumed that material costs were relatively stable on the basis that material price increases were offset by cost reductions in technological advances.

Volumes were taken from the MARS system, as shown in Table 6 below.

Table 6 – Volume of Energex Meters by Type from MARS as at May 2014

Meter Type	Number of Meters
1 Phase Single Element	1,945,796
1 Phase Dual Element	97,182
2 / 3 Phase Meter	161,837
Total	**2,204,815**

Please note that MARS does not clearly distinguish between type 1-4 metering and type 6 metering and is thus a rough approximation only. Based on these meter unit costs and volumes and the application of a 25 year useful life, the capital cost, depreciation and WDVs were calculated, as shown in Table 7 below. This shows that the Opening MAB under Option 3 is $225.9m.

Table 7 – Opening MAB Value using Option 3

Metering Asset Category	Capital ($m)	Depreciation ($m)	WDV ($m)
Electrical Meters	$192.2	$36.2	$156.0
Electro-mechanical Meters	$326.3	$274.9	$51.4
Non-system Assets	N/A	N/A	$18.5
Total Opening MAB			**$225.9**

Energex considered the option 3 estimated opening MAB value to be a minimum value, as MARS only reflects meters currently in service. There are a significant number of type 6 meters that have been removed from service, prior to the end of the meter's economic life driven primarily by the takeup of solar PV installations. If such an approach were applied Energex would not be provided with a reasonable opportunity to recover at least efficient costs of those meters.

1.4 Selected Option

As a result of the above analysis, Energex determined that the most appropriate method to value its opening MAB was option 1 because it uses and reconciles with the Regulatory Fixed Asset Register. Option 1 uses the ratio of metering to OHSL asset capitalisation (to total metering and OHSL capital costs) which was shown to be stable over a long period of time.

Option 1 therefore complies with Clause 6.5.1(a) of the Rules which requires the RAB to be based on the value of assets to provide those services. This option also complies with Clause 6.5.1(e) of the Rules in that it is based on the roll forward of the value of assets using the AER's RFM, with a lump sum adjustment in 2013-14 to reflect the transfer of metering assets from the OHSL asset category as shown in table 25.4 of the regulatory proposal.

The value of shared assets allocated to type 6 metering for all three options was calculated in accordance with Energex's AER approved CAM and therefore complies with the principles outlined in Clause 6.15.2 of the Rules.

1.5 Opening MAB

Using the preferred Option 1 the opening value of Energex's MAB as at 1 July 2015 is $436 million shown in table 8.

Table 8 – Assets Categories and Values in Opening MAB

Asset Category	Asset Value ($m)	Remaining Lives (Years)
Direct Assets		
Metering – Electro-mechanical	$257.4	16.1
Metering – Electronic	$160.1	12.2
Total Direct Assets	**$417.5**	
Non-system Assets		
Office Equipment & Furniture	-$0.4	2.8
Motor Vehicles	$3.3	6.3
Plant & Equipment	$1.0	5.0
Buildings	$8.4	33.8
Land	$5.1	n/a
IT Systems	$1.0	3.3
Total Non-system Assets	**$18.5**	
Total Opening MAB	**$435.9**	