FINAL DECISION
SA Power Networks determination 2015−16 to 2019−20

Attachment 5 − Regulatory depreciation

October 2015

AUSTRALIAN ENERGY REGULATOR

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Note

This attachment forms part of the AER's final decision on SA Power Networks' 2015–20 distribution determination. It should be read with all other parts of the final decision.

The final decision includes the following documents:

Overview

Attachment 1 – Annual revenue requirement

Attachment 2 – Regulatory asset base

Attachment 3 – Rate of return

Attachment 4 – Value of imputation credits

Attachment 5 – Regulatory depreciation

Attachment 6 – Capital expenditure

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Contents

Shortened forms

Shortened form	Extended form
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
Augex	augmentation expenditure
Capex	capital expenditure
CCP	Consumer Challenge Panel
CESS	capital expenditure sharing scheme
CPI	consumer price index
DRP	debt risk premium
DMIA	demand management innovation allowance
DMIS	demand management incentive scheme
Distributor	distribution network service provider
DUoS	distribution use of system
EBSS	efficiency benefit sharing scheme
ERP	equity risk premium
Expenditure Assessment Guideline	Expenditure Forecast Assessment Guideline for electricity distribution
F&A	framework and approach
MRP	market risk premium
NEL	national electricity law
NEM	national electricity market
NEO	national electricity objective
NER	national electricity rules
NSP	network service provider
Opex	operating expenditure
PPI	partial performance indicators
PTRM	post-tax revenue model
RAB	regulatory asset base
RBA	Reserve Bank of Australia
Repex	replacement expenditure
RFM	roll forward model
RIN	regulatory information notice
RPP	revenue and pricing principles
SAIDI	system average interruption duration index

SAIFI	system average interruption frequency index
SLCAPM	Sharpe-Lintner capital asset pricing model
STPIS	service target performance incentive scheme
WACC	weighted average cost of capital
WARL	weighted average remaining life

5 Regulatory depreciation

Depreciation is the allowance provided so capital investors recover their investment over the economic life of the asset (return of capital). In deciding whether to approve the depreciation schedules submitted by SA Power Networks, we make determinations on the indexation of the regulatory asset base (RAB) and depreciation building blocks for SA Power Networks' 2015–20 regulatory control period.[1] The regulatory depreciation allowance is the net total of the straight-line depreciation (negative) and the indexation (positive) of the RAB.

This attachment sets out our final decision on SA Power Networks' regulatory depreciation allowance. It also presents our final decision on the revised proposed depreciation schedules, including the revised proposed standard asset lives for depreciating forecast capex and the revised proposed depreciation approach for existing assets.

5.1 Final decision

We do not accept SA Power Networks' revised proposed regulatory depreciation allowance of $1039.5 million ($ nominal) for the 2015–20 regulatory control period.[2] Instead, we determine a regulatory depreciation allowance of $917.2 million ($ nominal). This amount represents a decrease of $122.2 million (or 11.8 per cent) on SA Power Networks' revised proposed amount. In coming to this decision:

- we accept SA Power Networks' revised proposed asset classes, its straight-line depreciation method, and the standard asset lives used to calculate the regulatory depreciation allowance (section 5.4.1).
- we accept SA Power Networks' revised proposal approach to determining remaining asset lives and depreciation associated with existing assets compared to its initial proposal. However, we have made some changes to the implementation of the approach for clarity and to prevent a distortion in the depreciation profile (section 5.4.2)
- we made a determination on another component of SA Power Networks' revised proposal which affects the forecast regulatory depreciation allowance—that is, forecast capex (attachment 6).[3]

Table 5.1 sets out our final decision on the annual regulatory depreciation allowance for SA Power Networks' 2015–20 regulatory control period.

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1 NER, cls. 6.12.1 and 6.4.3.

2 SA Power Networks, *Revised regulatory proposal*, July 2015, pp. 411–412.

3 NER, cl. 6.5.5(a)(1). Our final decision approves a lower forecast capex allowance compared to SA Power Networks' revised proposal. This means lower regulatory depreciation for the assets forecast to be added to the RAB over the 2015–20 regulatory control period, all things being equal.

Table 5.1 AER's final decision on SA Power Networks' depreciation allowance for the 2015–20 regulatory control period ($ million, nominal)

	2015–16	2016–17	2017–18	2018–19	2019–20	Total
Straight-line depreciation	211.3	290.4	301.0	314.6	332.0	1449.4
Less: inflation indexation on opening RAB	94.5	101.6	107.0	112.1	117.0	532.1
Regulatory depreciation	**116.9**	**188.8**	**194.0**	**202.5**	**215.0**	**917.2**

Source: AER analysis.

5.2 SA Power Networks' revised proposal

SA Power Networks' revised proposal for the 2015–20 regulatory control period forecasts a total regulatory depreciation allowance of $1039.5 million ($ nominal). To calculate the depreciation allowance, SA Power Networks' revised proposal used:[4]

- the straight-line depreciation method employed in our post-tax revenue model (PTRM)
- an alternative approach to determining remaining asset lives and depreciation associated with existing assets compared to its initial proposal. The revised approach, which we label the year-by-year tracking approach, depreciates the capex for each year of a regulatory control period (after 1 July 2010) separately.[5] This is discussed in more detail in section 5.4.2
- its revised proposed forecast capex for the 2015–20 regulatory control period
- the standard asset lives accepted in the preliminary decision for depreciating new assets associated with forecast capex for the 2015–20 regulatory control period. This included adoption of a different standard asset life for the 'Light vehicles' asset class required in the preliminary decision.

Table 5.2 sets out SA Power Networks' revised proposed depreciation allowance for the 2015–20 regulatory control period.

Table 5.2 SA Power Networks' revised proposed depreciation allowance for the 2015–20 regulatory control period ($ million, nominal)

	2015–16	2016–17	2017–18	2018–19	2019–20	Total
Straight-line depreciation	235.2	265.3	297.6	328.3	358.0	1484.5
Less: inflation indexation on opening RAB	77.8	83.6	89.6	94.7	99.3	445.0
Regulatory depreciation	**157.3**	**181.8**	**208.1**	**233.6**	**258.7**	**1039.5**

Source: SA Power Networks, *Revised regulatory proposal*, July 2015, p. 411.

[4] SA Power Networks, *Revised regulatory proposal,* July 2015, p. 411.

[5] The approach has had several other descriptions, including 'individual tracking approach' and 'baseline approach'. The new label, year-by-year tracking, identifies the key distinguishing feature of this approach. It does not involve tracking the depreciation on individual assets.

5.3 AER's assessment approach

Many aspects of our assessment approach for regulatory depreciation from our preliminary decision remain unchanged. Section 5.3 of our preliminary decision details the general approach.[6] However, we have accepted a change to the approach for the depreciation of existing assets for SA Power Networks. Section 5.4.2 discusses this change as it affects remaining asset lives for SA Power Networks.

5.4 Reasons for final decision

We determine a regulatory depreciation allowance of $917.2 million ($ nominal) for SA Power Networks for the 2015–20 regulatory control period. In determining this allowance we accept SA Power Networks' revised proposed standard asset lives and its approach for depreciating existing assets. However, we reduce SA Power Networks' revised proposed regulatory depreciation allowance by $122.2 million (or 11.8 per cent). This amendment reflects our:

- changes to the implementation of the revised proposed approach (year-by-year tracking) to calculate depreciation of existing assets (section 5.4.2)
- determination regarding another component of SA Power Networks' revised proposal—that is, forecast capex (attachment 6)—affecting the forecast regulatory depreciation allowance.[7]

5.4.1 Standard asset lives

Consistent with our preliminary decision, we accept SA Power Networks' proposed standard asset lives for its existing asset classes. This is because they are consistent with our approved standard asset lives for the 2010–15 regulatory control period.[8] We also accept SA Power Networks' revised proposal, which adopts the preliminary decision on the standard asset life for the 'Light vehicles' asset class to be maintained at five years.

In the preliminary decision, we did not accept SA Power Networks' proposal to reduce the standard asset life for the 'Light vehicle' asset class to four years, from five years. We considered:[9]

- the shorter standard asset life means that, in NPV terms it will cost more to replace each vehicle at four years compared to the current rate of five years
- SA Power Networks' justification that these additional costs would be more than offset by gains in technological and safety advances in the motor industry and the improvement in the flexibility in operational changes have not been substantiated

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6 AER, *Preliminary decision, SA Power Networks determination 2015−16 to 2019−20: Attachment 5 − Regulatory depreciation,* April 2015, pp. 8–10.

7 Our final decision approves a lower forecast capex allowance compared to SA Power Networks' revised proposal. This means lower regulatory depreciation for the assets forecast to be added to the RAB over the 2015–20 regulatory control period, all things being equal.

8 AER, *Preliminary decision, SA Power Networks determination 2015−16 to 2019−20: Attachment 5 − Regulatory depreciation,* April 2015, p. 11.

9 AER, *Preliminary decision, SA Power Networks determination 2015−16 to 2019−20: Attachment 5 − Regulatory depreciation,* April 2015, p. 11.

- the comparison of light vehicle replacement criteria between SA Power Networks and other Australian electricity service providers shows that SA Power Networks' existing replacement criteria approved in the 2010–15 regulatory control period remains appropriate.

We therefore require the standard asset life for the 'Light vehicles' asset class be maintained at five years. SA Power Networks' revised proposal adopted our preliminary decision for this asset class.[10]

Table 5.3 sets out our final decision on SA Power Networks' standard asset lives for the 2015–20 regulatory control period. We are satisfied the standard asset lives reflect the nature of the assets over the economic lives of the asset classes.[11]

Table 5.3 AER's final decision on SA Power Networks' standard asset lives at 1 July 2015 (years)

Asset class	Standard asset life
Sub-transmission lines	55.0
Distribution lines	55.0
Substations	45.0
Distribution transformers	45.0
LVS	55.0
Communications	15.0
Contributions	40.2
Land	n/a
Substation land	n/a
Easements	n/a
Buildings	40.0
Vehicles - 15 years	15.0
Vehicles - 10 years	10.0
Light vehicles	5.0
IT assets	5.0
Plant & tools/Office furniture	10.0
Equity raising costs	52.3

Source: AER analysis.
n/a: not applicable.

[10] SA Power Networks, *Revised regulatory proposal,* July 2015, p. 406.
[11] NER, cl. 6.5.5(b)(1).

5.4.2 Remaining asset lives

SA Power Networks has proposed a different approach to determining remaining asset lives and depreciation associated with existing assets than the approach set out in its initial proposal.[12] Under this approach, the capex for each year of a regulatory control period will be depreciated separately. We label the new approach the year-by-year tracking approach.[13] Each asset class will now have an expanding list of sub-classes to reflect every regulatory year in which capital expenditure on those assets was incurred.[14] This extra data helps track remaining asset values and associated depreciation.[15]

In summary, we consider that year-by-year tracking:[16]

- produces depreciation schedules that reflect the nature of the assets and their economic life[17]
- ensures that total depreciation (in real terms) equals the initial value of the assets.[18]

We therefore accept the year-by-year tracking approach proposed by SA Power Networks because it is consistent with the legislative requirements in the NER.[19]

This is a departure from our preliminary decision, where we adopted our standard approach, known as weighted average remaining life (WARL). We consider that WARL is also consistent with the NER.[20] However, under the NER, we must use the depreciation schedules proposed by SA Power Networks to the extent they satisfy the requirements of the NER.[21]

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12 SA Power Networks, *Revised regulatory proposal*, July 2015, p. 408.

13 In the preliminary decision, the AER termed this approach 'individual tracking'. SA Power Networks and its consultant, Houston Kemp, referred to this approach as the 'baseline' approach. The new label, year-by-year tracking, identifies the key distinguishing feature of this approach. It does not involve tracking the depreciation on individual assets.

14 SA Power Networks prepared a model (SA Power NetworksN.2_PUBLIC_Reg Asset Register –SCS) where the separate calculations of depreciation occur. However, it still presented in the PTRM only a single remaining asset life for existing assets as at 1 July 2015. This causes minor implementation issues this period, but potentially more significant issues in the future. These matters are discussed further below.

15 Year-by-year tracking is very similar to the period-by-period tracking approach we adopt in our contemporaneous final decision for Ergon Energy. Both approaches involve tracking disaggregated categories of capex across multiple regulatory control periods. The difference is whether the disaggregated categories are for specific years of capex (year-by-year tracking) or for capex from an entire regulatory control period (generally five years, in period-by-period tracking). See AER, *Final decision, Ergon Energy determination, 2015–16 to 2019–20*, October 2015, Attachment 5: Regulatory depreciation (section 5.4.2), pp. 5-10 to 5-18.

16 Our detailed reasoning is set out later in this section.

17 NER, cl. 6.5.5(b)(1).

18 NER, cl. 6.5.5(b)(2).

19 We discuss below how year-by-year tracking is implemented such that the economic lives of existing assets are consistent with previous decisions, and thereby also meets cl. 6.5.5(b)(3) of the NER.

20 Our detailed reasoning on why we consider that the WARL approach meets clause 6.5.5(b) of the NER is set out later in this section. We also set out below why we consider that the 'average depreciation' approach put forward in SA Power Networks' initial proposal does not meet the NER requirements. AER, *Preliminary decision, SA Power Networks determination 2015−16 to 2019−20: Attachment 5 − Regulatory depreciation,* April 2015, pp. 11–18.

21 NER, cl. 6.5.5(a)(2).

We have made some minor changes to SA Power Networks' implementation of the year-by-year tracking approach for clarity and to prevent a distortion in the depreciation profile. The method and implementation issues are discussed in turn below.

Method

The year-by-year tracking approach is a more complex approach than WARL or the average depreciation approach.[22] In particular, the capex of each asset class will need to be tracked as disaggregated yearly categories over time, preserving these discrete categories across multiple regulatory control periods. These separately tracked expenditures can be thought of as asset sub-classes.[23] The data therefore expands over time and models such as the AER's PTRM and RFM may need to be expanded to accommodate the increasing number of asset sub-classes or separate models developed.[24] The benefit of this approach is the increased granularity and transparency of disaggregated year-by-year tracking of capex. However, it is more complex and costly to administer.[25]

Adopting the year-by-year tracking approach now does not deal with the legacy issue of previous remaining asset life determinations. The approved remaining asset lives for existing assets as at 1 July 2010 were calculated using an average depreciation approach (which was the method proposed in SA Power Networks' initial proposal). For the same reasons as discussed in the preliminary decision, these lives are shorter than if year-by-year tracking had been used in the past. We do not consider that such decisions on remaining asset lives can be revisited.[26] Therefore, we accept SA Power Networks' proposal that the remaining asset lives for existing assets as at 1 July 2010 reflect those as approved at the last determination.[27] Our expectation is that the year-by-year tracking approach will be maintained into the future to prevent any further issues associated with switching depreciation approaches. In this regard we note SA Power Networks' intention to maintain the separate depreciation model it has prepared and apply it to each future regulatory control period.[28]

Depreciating capital expenditures as disaggregated yearly categories is also likely to result in more variable depreciation profiles over time, as depreciation becomes more dependent on the timing of particular capital expenditure programs. In contrast, a single weighted average remaining asset life for an asset class smooths the recovery profile across all assets within that class. The impact on the revenue profile will depend largely on the depreciation allowance's share of total revenues. A report by Houston

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22 Year-by-year tracking is roughly comparable in complexity to the period-by-period approach we adopt in our contemporaneous final decision for Ergon Energy. See AER, *Final decision, Ergon Energy determination, 2015–16 to 2019–20*, October 2015, Attachment 5: Regulatory depreciation (section 5.4.2), pp. 5-10 to 5-18.

23 For example, under the motor vehicle asset class, there would be asset sub-classes for 2015 motor vehicles, 2016 motor vehicles, 2017 motor vehicles, etc.

24 Making amendments to these standardised models risks introducing potential errors, so the depreciation schedules will have to be checked in greater detail in future.

25 Further, the increased complexity makes it more difficult for other stakeholders (including consumer groups) to understand and engage with the proposal. For this reason it is important that any additional models developed to implement year-by-year tracking are made as accessible as possible.

26 NER, cl. 6.5.5(b)(3).

27 Intergenerational equity issue will remain in relation to these existing assets as they are likely to be fully depreciated before their technical life expires.

28 SA Power Networks, *Revised regulatory proposal,* June 2015, p. 409.

Kemp, on behalf of SA Power Networks, stated that our objective of smoothing depreciation schedules was misplaced and noted other factors that can influence smoothing.[29] We recognise that depreciation is only one component of total revenue and we can smooth revenues to some extent through the X-factors. However, smoothing of revenues has been raised in other AER decisions as a significant issue and we have encountered fluctuations even under the averaging approaches. In switching the depreciation approach from that previously adopted, it will take some time for the implications for the variability of depreciation schedules to become apparent.[30] Nonetheless we still consider that year-by-year tracking has the potential to increase the variability in depreciation. This is in contrast to the WARL approach, which has been our standard approach across numerous regulatory decisions and therefore has a demonstrated track record of being accommodating a range of circumstances without causing adverse variability.

In the preliminary decision, we produced the example set out in figure 5.1 to illustrate the impact of the different depreciation approaches for the 'Low voltage services' asset class.[31] Reports by Houston Kemp and Incenta (attached as part of submissions by CitiPower, Powercor and Jemena) supported the outcomes illustrated in this example.[32] They stated that the average depreciation approach (red line) and the weighted average remaining life (WARL – blue line) approach are both subject to error as they do not track the depreciation of disaggregated years of capex over their entire life (stacked columns, with each bar representing a different year of capex that will expire at a different time).[33] Houston Kemp and Incenta recommended the year-by-year tracking approach be used, with the outcome as illustrated by the columns in the figure. SA Power Networks' revised proposal adopts an approach that is very close to year-by-year tracking.[34]

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29 Houston Kemp, *Analysis of different approaches to calculating remaining lives, Report for SA Power Networks*, June 2015, p. 6.

30 In terms of Figure 5.1 there is only a single 'kink' in the total of the year-by-year tracked asset values due to assets previously being grouped together. In the long run, there will be many kinks depending on the timing of capital expenditures.

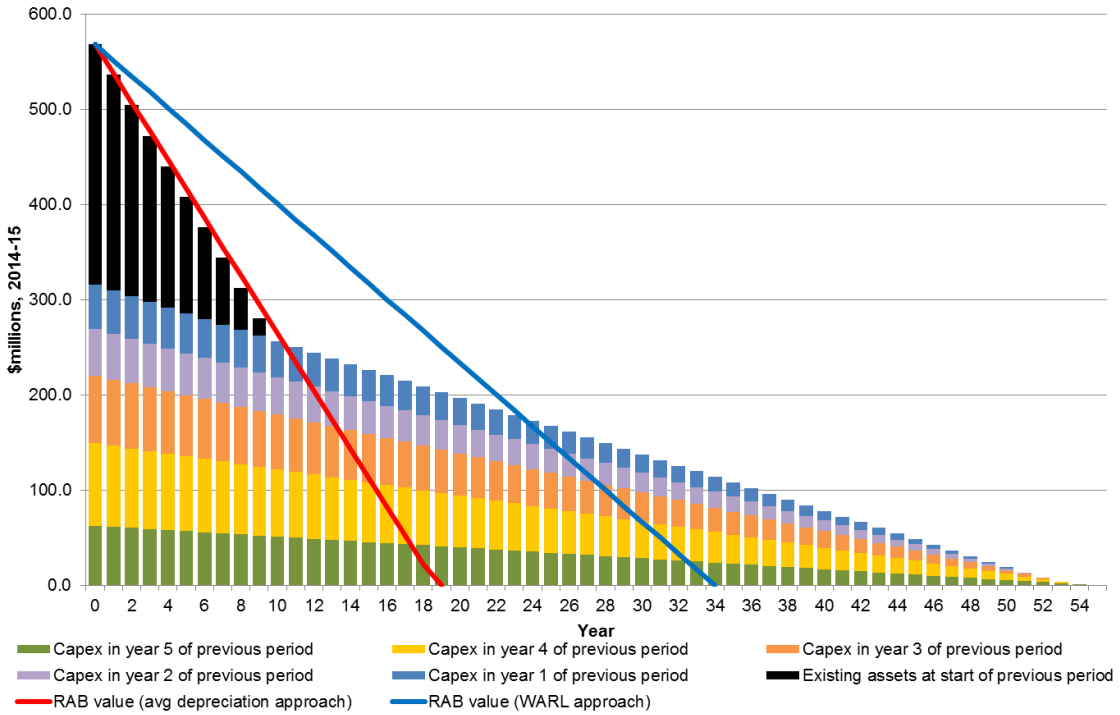
31 The example assumes the asset class incurs no further capex. AER, *Preliminary decision – SA Power Networks determination 2015–16 to 2019–20*, Attachment 5, Figure 5.1.

32 Houston Kemp, *Analysis of different approaches to calculating remaining lives, Report for SA Power Networks*, June 2015; CitiPower and Powercor, *Response on SA Power Networks' revised proposal: depreciation*, July 2015; Jemena Electricity Networks, *Submission on recent proposals made by SAPN, AGN, AAD, Energex and Ergon Energy*, 24 July 2015; and Incenta, *Calculation of depreciation – review of the AER's approximate calculation*, July 2015.

33 Incenta, *Calculation of depreciation – review of the AER's approximate calculation*, July 2015, pp. 11–12, Houston Kemp, *Analysis of different approaches to calculating remaining lives, Report for SA Power Networks*, June 2015, p. 15.

34 SA Power Networks, *Revised regulatory proposal,* June 2015, pp. 406–410..

Figure 5.1 Projection of the value of assets for 'Low voltage services' asset class over time ($million, 2015)



Source: AER, *Preliminary decision, SA Power Networks distribution determination*, *Attachment 5 − Regulatory depreciation*, April 2015, Figure 5.1, p.16.

The adoption of year-by-year tracking will mean that the value of the low voltage services assets in the RAB as at 1 July 2015 will not be fully depreciated until 54 years into the future. Under SA Power Networks' initial proposal these would have been fully depreciated in 19 years,[35] while under the AER's preferred WARL approach they would have been fully depreciated in 34 years. In the preliminary decision, we adopted the 34 years given the administrative simplicity and depreciation smoothing benefits noted above. The WARL is a reasonable approximation approach when using a single remaining asset life for an asset class. As discussed in the preliminary decision (and illustrated in the figure above), the WARL approach leads to under-recovery and over-recovery of depreciation being balanced out through time—over the lives of all the assets in the group.[36] The average depreciation approach does not achieve this balancing, as there is no recognition of when older assets expire.[37] However, with the NER requirements limiting assessment of depreciation to the nature of the assets and their expected economic lives, we accept year-by-year tracking as being superior in this regard.

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35 Based on figures in SA Power Networks' initial proposal.

36 Compared to the year-by-year tracking approach, the WARL approach under returns depreciation in some years and over returns depreciation in others. However, the under and over recovery balances out so there is no net difference in the timing of depreciation between the approaches, over the life of the assets.

37 Compared to year-by-year tracking or WARL, the average deprecation approach over returns depreciation in some (or all) years but never under returns depreciation. Hence, over the life of the assets, there is a net difference in the timing of depreciation between the approaches. The average depreciation approach provides earlier depreciation than either of the other two approaches, as is evident in Figure 5.1.

As is shown in Figure 5.1, all three approaches result in total depreciation equalling (in real terms) the initial value of the assets, and so all three approaches conform with clause 6.5.5(b)(2) of the NER.[38] However, the three approaches differ with regard to the fulfilment of clause 6.5.5(b)(1) of the NER:

- Average depreciation does not meet this requirement, because it brings forward a proportion of the assets' depreciation so that it is received earlier than the underlying economic life of the assets. The resulting depreciation schedules will reflect asset lives that are shorter than the standard asset lives assigned to the assets when capex is incurred.
- Year-by-year tracking meets this requirement, because the depreciation received each year will reflect the underlying economic life of the assets. The resulting depreciation schedules will reflect the standard asset lives assigned to the assets when capex is incurred.
- WARL meets this requirement, because the depreciation received over the life of the assets will reflect the underlying economic life of the assets. Like the average depreciation approach, there will be some years where depreciation is received earlier than the underlying economic life of the assets. However, there will also be some years where depreciation is received later than the underlying economic life of the assets. These two effects will exactly offset each other. In aggregate, across the life of the assets, the resulting depreciation schedules will reflect the standard asset lives assigned to the assets when capex is incurred.

Overall, the outcome of SA Power Networks' revised proposal (that is, the adoption of year-by-year tracking) means it will receive roughly the same amount of depreciation as it originally proposed over the 2015–20 regulatory control period (subject to revised capex forecasts). However, in future regulatory control periods (when existing legacy assets expire) it will face lower depreciation, other things being equal. We received submissions from Consumers SA, the Energy Users Association of Australia and South Australian Wine Industry Association supporting our preliminary decision to apply the WARL approach and to reject the revised proposed regulatory depreciation amount.[39] We understand that customers may not support this outcome given that prices will not fall in the short run by as much as indicated in the AER's preliminary decision. However, year-by-year tracking is consistent with the NER and will lead to lower depreciation (and therefore prices) in the future reflecting the remaining usefulness of the assets. We expect that the depreciation allowance for SA Power Networks will reduce over the 2030–35 regulatory control period as the legacy issues are resolved (ignoring new capex).

Although we accept SA Power Networks' year-by-year tracking approach, we maintain our preference for the WARL approach, which is our standard approach used in other decisions. We hold this preference because the WARL:

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[38] Graphically, this means the blue line, red line and stacked columns all drop to zero (and do not drop below zero).

[39] Consumers SA, *Submission on preliminary decision*, 1 July 2015, p. 1; EUAA, *Submission to AER preliminary decision and SA Power Networks' revised proposal*, 24 July 2015, p. 10 and South Australian Wine Industry Association, *Submission in response to SA Power Networks' revised regulatory proposal 2015–20*, 24 July 2015, p. 4.

- meets the requirements of the NER, in that it produces depreciation schedules that align with the economic life of the assets
- avoids the additional complexity inherent in year-by-year tracking, which brings with it additional administration costs and increased risk of error
- reduces the variability in depreciation schedules that may arise under year-by-year tracking.

SA Power Networks raised concerns about the WARL approach extending asset lives and that this could be a financial risk in the face of technological change.[40] This issue was also raised in the submissions from CitiPower, Powercor and ElectraNet.[41] We disagree with this assessment. The WARL approach actually results in the assets being fully depreciated earlier than under year-by-year tracking (as can be seen in the low voltage services asset example above).[42] In combining assets to a single remaining asset life, the WARL approach does extend the life of old assets and shortens the life of newer assets within the grouping. Extending the life of old assets increases the financial risk of stranding, but shortening the life of newer assets reduces the same risk. As newer assets generally have greater value than older assets (in so far as they have been depreciated for less years than older assets), it follows that the WARL makes a net reduction to the exposure to financial risk of stranding. The dominant effect is the reduction in asset lives for newer assets. The WARL approach is therefore consistent with the proposition that technology change may result in remaining asset lives proving to be shorter than originally expected.[43]

We also note that with the adoption of forecast depreciation, we are proposing to extend the WARL to be calculated based on year-by-year tracking of remaining asset lives.[44] This approach will still provide an average remaining asset life and therefore can still lead to different outcomes than separately depreciating asset sub-classes. However, it will improve the precision of the remaining asset lives over time as more asset sub-classes are added. It also controls for the distortion caused by forecast depreciation, which differs from actual depreciation, as it is based on actual capex. This issue has implications for the implementation of year-by-year tracking as discussed below.

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40 SA Power Networks, *Revised regulatory proposal*, June 2015, p. 409.

41 ElectraNet, *Submission – AER's preliminary determination on SA Power Networks 2015-20 regulatory proposal*, July 2015, pp. 1–2; CitiPower and Powercor, *Response on SA Power Networks' revised proposal: depreciation*, July 2015, p. 4.

42 However, as has been already explained, across the entire life of the assets, there is no net early or late depreciation under WARL. This contrasts with the average depreciation approach, which also results in assets being fully depreciated earlier than under year-by-year tracking. However, it does so by providing depreciation earlier on balance (depreciation is only ever brought forward, never pushed back).

43 Although we do not assume that technological progress will always produce such an outcome and accept the outcome due to the balancing properties of the WARL approach.

44 AER, *Explanatory statement: Proposed amendment Electricity transmission network service providers Roll forward model (version 3),* July 2015, section 4.3.

Implementation

SA Power Networks prepared a separate depreciation model to implement year-by-year tracking.[45] The model separately determines the depreciation of each existing asset sub-class. However, it takes a further step in undertaking an average depreciation calculation to work out a single remaining asset life for all these existing assets. We consider this additional step is unnecessary, and internally inconsistent with the principles underlying the year-by-year tracking approach. It also creates a distortion in the profile of depreciation for some asset classes.

We do not consider the use of average depreciation is necessary as the depreciation values for each year are calculated and therefore available in the model before the final step is done. It is unnecessary because the remaining asset life recorded in the PTRM is not related to the year-by-year tracking approach. To this end, the year-by-year tracking approach does away with the requirement for calculating an average remaining asset life for the asset class. For example, SA Power Networks' revised proposed remaining asset life for the 'Low voltage services' asset class in the PTRM suggests all these existing assets will expire in 17.9 years. However under year-by-year tracking some existing low voltage services assets will not expire for another 54 years.

Further, SA Power Networks' final step involves reintroducing the average depreciation approach. This would create a distortion with the depreciation profile under year-by-year tracking altered by this final step.[46] The impact in the short run is not significant as the year-by-year tracking and average depreciation approach produce roughly the same outcome, as demonstrated above. However, this is not the case in the long run, as also demonstrated above.

Accordingly, we have removed the remaining asset lives calculations from SA Power Networks' revised proposal PTRM and substituted the total annual depreciation of existing assets for each year of the 2015–20 regulatory control period directly into the PTRM.[47]

The preliminary decision provides that forecast depreciation, rather than actual depreciation will be used to roll forward the RAB over the 2015–20 regulatory control period. The adoption of a forecast depreciation approach in the RAB roll forward will create some distortion in the depreciation of disaggregated asset sub-classes, which can reduce the benefit of year-by-year tracking (particularly for short lived assets). For example, a particular year's forecast capex may prove to be much greater than actual capex. In this case, the asset sub-class (for example, 2017 light vehicles) will have its value depreciated by more than the asset sub-class' forecast depreciation would have

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[45] SA Power Networks, *Revised regulatory proposal, SA POWER NETWORKS N.2_PUBLIC_Reg Asset Register – SCS.xls*, July 2015.

[46] The depreciation profile is altered for some assets, which means in net present value terms the service provider may receive more or less than it should.

[47] The depreciation amounts in real dollar terms ($2015) have also been expanded into the future in the separate depreciation model, as the PTRM requires tax depreciation calculations well into the future to model the tax allowance appropriately.

suggested had actual capex been known at the time.[48] The depreciation amount of the asset sub-class in future years will then be relatively lower to offset this over-depreciation early in the asset's life.[49]

Forecast depreciation, coupled with the greater disaggregation of capital expenditures under year-by-year tracking, will also increase the prospect of negative asset sub-classes at the end of the regulatory control period. This would occur where actual capex was much lower than forecast for a particular year so that actual capex was less than the forecast depreciation allowance. When negative asset classes emerge at the end of the regulatory control period,[50] we consider these amounts should be returned to customers over the next regulatory control period.[51] This will be included in our assessment of SA Power Networks' proposed depreciation schedules at the 2020–25 regulatory determination.

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[48] For example, expenditure on light vehicles may have been forecast to be $100 in 2016–17. This would mean with an expected life of 5 years, the forecast depreciation for this asset sub-class would be $20 a year. This sub-class would be expected to have a value at the end of the regulatory control period (2019–20, after 3 years of depreciation) of $40 ($100 – 3x($100/5)). However, if actual expenditure on light vehicles in 2016–17 was only $70 the sub-class would have a value of only $10 ($70 – 3x($100/5)) at the end of the regulatory control period if forecast depreciation is used to roll forward the value. If the expenditure on light vehicles in 2016–17 was only $40, the sub-class value would be –$20 ($40 – 3x($100/5)) at the end of the regulatory control period.

[49] In terms of the example above, where expenditure on light vehicles in 2016–17 was only $70, the end of period value is $10 instead of $40. Over the 2020–25 regulatory control period this value would be depreciated at $5 per annum ($10/(5-3)). This asset sub-class over its 5 years of life will therefore be depreciated as follows: $20, $20, $20, $5, $5. In this case the number of years over which the asset is fully depreciated is unaffected and equal to the standard asset life of 5 years, except for the case where a negative sub-class develops, as discussed below.

[50] In terms of the example above, where expenditure on light vehicles in 2016–17 was only $40, the depreciation profile for this asset sub-class would be as follows: $20, $20, 20, –$20.

[51] Offsetting any negative closing asset sub-class value against another asset sub-class with a positive value within the same asset class would be inconsistent with the core reason year-by-year tracking is proposed. That is, to more accurately reflect the remaining asset lives of disaggregated sub-classes.