PRELIMINARY DECISION
Jemena distribution determination 2016 to 2020

Attachment 5 – Regulatory depreciation

October 2015

AUSTRALIAN ENERGY REGULATOR

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Note

This attachment forms part of the AER's preliminary decision on Jemena's revenue proposal 2016–20. It should be read with all other parts of the preliminary decision.

The preliminary 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

Attachment 7 - Operating expenditure

Attachment 8 - Corporate income tax

Attachment 9 - Efficiency benefit sharing scheme

Attachment 10 - Capital expenditure sharing scheme

Attachment 11 - Service target performance incentive scheme

Attachment 12 - Demand management incentive scheme

Attachment 13 - Classification of services

Attachment 14 - Control mechanism

Attachment 15 - Pass through events

Attachment 16 - Alternative control services

Attachment 17 - Negotiated services framework and criteria

Attachment 18 - f-factor scheme

Contents

Note **5-2**

Contents **5-3**

Shortened forms **5-4**

5 Regulatory depreciation **5-6**

5.1 Preliminary decision **5-6**

5.2 Jemena's proposal **5-7**

5.3 AER's assessment approach **5-8**

5.3.1 Interrelationships 5-9

5.4 Reasons for preliminary decision **5-10**

5.4.1 Standard asset lives 5-10

5.4.2 Remaining asset lives 5-12

Shortened forms

Shortened form	Extended form
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
AMI	Advanced metering infrastructure
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

Shortened form	Extended form
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

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 Jemena, we make determinations on the indexation of the regulatory asset base (RAB) and depreciation building blocks for Jemena's 2016–20 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 preliminary decision on Jemena's regulatory depreciation allowance. It also presents our preliminary decision on the proposed depreciation schedules, including an assessment of the proposed standard asset lives and remaining asset lives to be used for forecasting the depreciation allowance.

5.1 Preliminary decision

We do not accept Jemena's proposed regulatory depreciation allowance of $243.2 million ($ nominal) for the 2016–20 regulatory control period.[2] Instead, we determine a regulatory depreciation allowance of $237.7 million ($ nominal) for Jemena. This amount represents a decrease of $5.5 million (or 2.3 per cent) on the proposed amount. In coming to this decision:

- We accept Jemena's proposed asset classes and its straight-line depreciation method used to calculate the regulatory depreciation allowance. We consider Jemena's proposed asset classes are consistent with those approved at the 2011–15 distribution determination. However, we have included a new 'Land' asset class that will consist of land related forecast capex (section 5.4.1).
- We accept Jemena's proposed approach to determining the standard asset lives used to depreciate forecast capex. We consider this approach will generally result in standard asset lives that reflect the nature and economic lives of the assets.[3] However, we do not accept the calculated standard asset life for the 'SCADA/Network control' asset class. We do not consider the approach adequately accounts for the specialised nature of SCADA related IT (section 5.4.1).
- We do not accept Jemena's proposed average depreciation method to calculate remaining asset lives at 1 January 2016. We have instead applied a year-by-year tracking approach to determine the depreciation for existing assets.[4] These

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1 NER, cll. 6.12.1, 6.4.3.

2 Jemena, *Regulatory proposal*, April 2015, pp. 55–56.

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

4 Year-by-year tracking was the preferred option of Jemena's consultant, Incenta. Incenta referred to it as the 'baseline' approach. In earlier decisions the AER termed this approach 'individual tracking'. 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. Jemena, *Response to AER information request #017,* 5 August 2015.

calculations are made in a separate model, then the depreciation amounts are substituted directly into the post-tax revenue model (PTRM) (section 5.4.2).

- We made determinations on other components of Jemena's proposal that also affect the forecast regulatory depreciation allowance—for example, the forecast capex (attachment 6), the forecast inflation rate (attachment 3) and the opening RAB value (attachment 2).[5]

Table 5.1 sets out our preliminary decision on the annual regulatory depreciation allowance for Jemena's 2016–20 regulatory control period.

Table 5.1 AER's preliminary decision on Jemena's depreciation allowance for the 2016–20 regulatory control period ($ million, nominal)

	2016	2017	2018	2019	2020	Total
Straight-line depreciation	82.7	73.1	77.5	84.5	92.7	410.5
Less: inflation indexation on opening RAB	29.7	31.8	34.5	37.1	39.8	172.8
Regulatory depreciation	**53.0**	**41.3**	**43.0**	**47.5**	**52.9**	**237.7**

Source: AER analysis.

5.2 Jemena's proposal

For the 2016–20 regulatory control period, Jemena proposed a total forecast regulatory depreciation allowance of $243.2 million ($ nominal). To calculate the depreciation allowance, Jemena proposed to use:[6]

- the straight-line depreciation method employed in our PTRM
- the closing RAB value at 31 December 2015 derived from our roll forward model (RFM)
- proposed forecast capex for the 2016–20 regulatory control period
- an average depreciation approach to determine remaining asset lives of existing assets at 31 December 2015[7]
- updated standard asset lives reflecting the mix of capex proposed for the 2016–20 regulatory control period and revised economic lives for component assets.[8]

Table 5.2 sets out Jemena's proposed depreciation allowance for the 2016–20 regulatory control period.

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5 NER, cl. 6.5.5(a)(1).

6 Jemena, *Regulatory proposal*, April 2015, pp. 55–56.

7 Jemena's average depreciation approach involved dividing the closing RAB as at 31 December 2015 by 2015 straight-line depreciation and adjusting for 50 per cent of 2015 capex assigned to the standard asset life.

8 Jemena, *Regulatory proposal*, April 2015, Attachment 7-4.

Table 5.2 Jemena's proposed depreciation allowance for the 2016–20 regulatory control period ($ million, nominal)

	2016	2017	2018	2019	2020	Total
Straight-line depreciation	74.2	84.7	87.6	81.7	92.6	420.8
Less: inflation indexation on opening RAB	30.1	32.5	35.5	38.3	41.3	177.6
Regulatory depreciation	**44.2**	**52.2**	**52.2**	**43.4**	**51.4**	**243.2**

Source: Jemena, *Regulatory Proposal*, April 2015, Attachment 06.01.

5.3 AER's assessment approach

We determine the regulatory depreciation allowance using the PTRM as a part of a service provider's annual revenue requirement.[9] The calculation of depreciation in each year is governed by the value of assets included in the RAB at the beginning of the regulatory year, and by the depreciation schedules.[10]

Our standard approach to calculating depreciation is to employ the straight-line method set out in the PTRM. We consider the straight-line method satisfies the NER requirements in clause 6.5.5(b) as it provides an expenditure profile that reflects the nature of assets over their economic life.[11] Regulatory practice has been to assign a standard asset life to each category of assets that represents the economic or technical life of the asset or asset class. We must consider whether the proposed depreciation schedules conform to the following key requirements:

- the schedules depreciate using a profile that reflects the nature of the assets of category of assets over the economic life of that asset or category of assets[12]
- the sum of the real value of the depreciation that is attributable to any asset or category of assets must be equivalent to the value at which that asset of category of assets was first included in the RAB for the relevant distribution system.[13]

If a service provider's building block proposal does not comply with the above requirements, then we must determine the depreciation schedules for the purpose of calculating the depreciation for each regulatory year.[14]

The regulatory depreciation allowance is an output of the PTRM. We therefore assessed the service provider's proposed regulatory depreciation allowance by analysing the proposed inputs to the PTRM for calculating that allowance. The key inputs include:

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9 NER, cll. 6.4.3(a)(3), 6.4.3 (b)(3).
10 NER, cl. 6.5.5(a).
11 NER, cl. 6.5.5(b)(1).
12 NER, cl. 6.5.5(b)(1).
13 NER, cl. 6.5.5(b)(2).
14 NER, cl. 6.5.5(a)(ii).

- the opening RAB at 1 January 2016
- the forecast net capex in the 2016–20 regulatory control period
- the forecast inflation rate for that period
- the standard asset life for each asset class—used for calculating the depreciation of new assets associated with forecast net capex in the regulatory control period
- the remaining asset life for each asset class—used for calculating the depreciation of existing assets included in the opening RAB at 1 January 2016.

We usually depreciate a service provider's existing assets in the PTRM by using remaining asset lives at the start of a regulatory control period. Our preferred method to establish a remaining asset life for each asset class is the weighted average remaining life approach.[15] However, Jemena's consultant has submitted an alternative approach, as discussed in section 5.4.1.

Our preliminary decision on a service provider's regulatory depreciation allowance reflects our determinations on the forecast capex, forecast inflation and opening RAB at 1 January 2016 (the first three building block components in the above list). Our determinations on these components of the service provider's proposal are discussed in attachments 6, 3 and 2 respectively.

In this attachment, we assess Jemena's proposed standard asset lives against:

- the approved standard asset lives in the distribution determination for the 2011–15 regulatory control period
- the standard asset lives of comparable asset classes approved in our recent distribution determinations for other service providers.

5.3.1 Interrelationships

The regulatory depreciation allowance is a building block component of the annual revenue requirement.[16] Higher (or quicker) depreciation leads to higher revenues over the regulatory control period. It also causes the RAB to reduce more quickly (assuming no further capex). This outcome reduces the return on capital allowance, although this impact is usually secondary to the increased depreciation allowance.

Ultimately, however, a service provider can only recover the capex that it incurred on assets once. The depreciation allowance reflects how quickly the RAB is being recovered, and it is based on the remaining and standard asset lives used in the depreciation calculation. It also depends on the level of the opening RAB and the

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[15] This method rolls forward the remaining asset life for an asset class from the beginning of the 2011–15 regulatory control period. We consider this method better reflects the mix of assets within an asset class, when they were acquired over that period (or if they were existing assets), and the remaining value of those assets (used as a weight) at the end of the period.

[16] The PTRM distinguishes between straight-line depreciation and regulatory depreciation, the difference being that regulatory depreciation is the straight-line depreciation minus the indexation adjustment.

forecast capex. Any increase in these factors also increases the depreciation allowance.

To prevent double counting of inflation through the WACC and the RAB, the regulatory depreciation allowance also has an offsetting reduction for indexation of the RAB.[17] Factors that affect forecast inflation and/or the size of the RAB will affect the size of this indexation adjustment.

Figure 2.1 (in attachment 2) shows the relative size of the inflation and straight-line depreciation and their impact on the RAB. A 10 per cent increase in the straight-line depreciation causes revenues to increase by about 3.5 per cent.

5.4 Reasons for preliminary decision

We accept Jemena's proposed straight-line depreciation method for calculating the regulatory depreciation allowance as set out in the PTRM. We also accept the proposed standard asset lives, with the exception of the 'SCADA/Network control ' asset class. However, we do not accept the proposed average depreciation method used to calculate the remaining asset lives at 1 January 2016, and have instead applied a year-by-year tracking approach.

Overall, we reduced Jemena's proposed forecast regulatory depreciation allowance by $5.5 million (or 2.3 per cent) to $237.7 million ($ nominal). This amendment also reflects our determinations regarding other components of Jemena's regulatory proposal—for example, the forecast capex (attachment 6), the forecast inflation rate (attachment 3) and the opening RAB as at 1 January 2016 (attachment 2)—that affect the forecast regulatory depreciation allowance.

5.4.1 Standard asset lives

We accept Jemena's proposed approach to determining standard asset lives for its existing asset classes, except for the 'SCADA/Network control' asset class. We do not consider the calculated standard asset life from this approach adequately accounts for the specialised nature of SCADA related IT assets.

Jemena proposed an approach to determining standard asset lives for its existing asset classes that reflect the mix of capex forecast for the 2016–20 regulatory control period.[18] This approach breaks the value of forecast capex down by the required component assets. Each group of component assets is assigned a standard asset life. For example the 'Wooden pole' component assets are assigned a 54 year standard asset life. The standard asset life applying to the more aggregated RAB asset classes is a weighted average of these component assets lives.

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[17] If the asset lives are extremely long, such that the straight-line depreciation rate is lower than the inflation rate, then negative regulatory depreciation can emerge. In this case the indexation adjustment is greater than the straight-line depreciation.

[18] Jemena, *Regulatory proposal*, April 2015, Attachment 7-4.

We consider this approach will generally result in standard asset lives that reflect the nature and economic lives of the assets.[19] However, we do not accept the calculated standard asset life of 8 years for the 'SCADA/Network control' asset class. Jemena's proposed IT Asset Management Plan notes a standard asset life of 12 years for SCADA software applications.[20] Jemena's proposed approach does not have a separate component class for such specialised IT, therefore it has assigned SCADA related IT expenditure to the components of 'Hardware' and 'Software'. These component assets are assigned a standard asset life of 5 years. While this standard asset life may be appropriate for most general IT expenditure, we do not consider it appropriate for more specialised SCADA related IT assets. Jemena's proposal allocated over 85 per cent of its SCADA related capital expenditure to these two component assets (hardware and software).[21] We consider that this allocation under the proposed approach underestimates the expected economic life of the SCADA related capex. We have instead determined a standard asset life of 10 years for the 'SCADA/Network control' asset class. This is consistent with the standard asset life approved at the 2010 determination and we consider it better reflects the nature of these assets.[22]

Our preliminary decision also includes an additional 'Land' asset class. Using Jemena's proposed existing asset classes, any expenditure related to land is being allocated to one of the existing asset classes and the value has been allowed to depreciate along with the other non-land related assets. Jemena's forecast capex proposal included three projects for expenditure related to land. The value of this capex was allocated to the 'Subtransmission' asset class.[23] We do not consider this appropriate, as land is generally considered a non-depreciable asset.[24] We therefore consider that a new 'Land' asset class should be added and not assigned with a standard asset life (assigned a term of 'n/a' for modelling purposes), which will include any forecast capex related to land from 1 January 2016.

We received submissions from the CCP and the Victorian Energy Consumer and User Alliance raising concerns that the standard asset lives used to model replacement capital expenditure (repex) for Jemena differed from the actual lives, and those used by other distributors.[25] Each submitted that the variations identified with those standard asset lives have major implications on depreciation and allowed distributors to choose

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

20 Jemena, *Regulatory proposal*, April 2015, Attachment 7-7, p. 37.

21 Jemena, *Regulatory proposal*, April 2015, Attachment 7-4.

22 AER, *Final decision, Victorian electricity distribution network service providers, Distribution determination 2011–2015*, October 2010, p. 467; and NER, cl. 6.5.5(b)(1).

23 Jemena, *RE: Vic. EDPR - Jemena - IR#003 - 19 June 2015,* 25 June 2015.

24 According to the Australian accounting standards, land is generally not depreciable because land values tend to increase over time due to the limited supply of, and the increasing demand for, land (Australian Accounting Standard Board, *Accounting standard AASB1021: Depreciation*, August 1997, pp. 10–11). The Income Tax Assessment Act (ITAA) 1997 excludes land from the definition of a 'depreciating asset' (ITAA 1997, s. 40-30).

25 CCP3, *Response to proposals from Victorian electricity distribution network service providers for a revenue reset for the 2016-2020 regulatory period*, 5 August 2015, pp. 49–51; Victorian Energy Consumer and User Alliance. *Submission to the AER Victorian distribution networks' 2016-20 revenue proposals*, 13 July 2015, pp. 30–31.

asset lives that optimise their returns for each revenue reset. We do not consider the concerns raised in the submissions with the standard asset lives used for repex modelling impact on regulatory depreciation as the lives used for each purpose are different.[26] In determining the standard asset lives for regulatory depreciation purposes we have regard to the standard asset lives approved at the previous determination, and those approved for other service providers' comparable asset classes.

Table 5.3 sets out our preliminary decision on Jemena's standard asset lives for the 2016–20 regulatory control period. We are satisfied the standard asset lives reflect the nature of the assets over the economic lives of the asset classes.[27]

Table 5.3 AER's preliminary decision on Jemena's standard asset lives at 1 January 2016 (years)

Asset class	Standard asset life (years)[a]
Subtransmission	45.8
Distribution system assets	48.0
Metering	n/a
Public lighting	n/a
SCADA/Network control	10.0
Non network - IT	5.3
Non network - other	24.2
Land	n/a

Source: AER analysis.

n/a: not applicable.

(a) Our preliminary decision standard asset lives reflect our preliminary decision on 2016–20 capex. The standard asset lives will be updated in the final decision for any changes to forecast capex.

5.4.2 Remaining asset lives

We do not accept Jemena's proposed average depreciation method to calculate remaining asset lives at 1 January 2016. We have applied a new approach to determine the depreciation of existing assets. Under this approach, the capex for each year of a regulatory control period will be depreciated separately. We label the new

[26] The standard asset lives used for repex modelling are at a much more granular level (based on individual asset components). The standard asset lives used for revenue modelling (regulatory depreciation) are at a much higher asset class level. See table 5.3.

[27] NER, cl. 6.5.5(b)(1).

approach the year-by-year tracking approach.[28] 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. This extra data helps track remaining asset values and associated depreciation.

In summary, we consider that year-by-year tracking:[29]

- produces depreciation schedules that reflect the nature of the assets and their economic life[30]
- ensures that total depreciation (in real terms) equals the initial value of the assets.[31]

We have therefore applied the year-by-year tracking approach put forward by Jemena's consultant, Incenta, because it is consistent with the legislative requirements in the NER.[32]

This is a departure from previous decisions where we adopted our standard approach, known as weighted average remaining life (WARL). We consider that WARL is also consistent with the requirements in the NER.[33] It is also a departure from the average depreciation approach included in Jemena's proposal, which we consider is not consistent with the NER.[34] Since the depreciation schedules proposed by Jemena (based on average depreciation) do not conform with the NER, we have applied an alternative approach that we consider does meet the legislative requirements.[35] In adopting the year-by-year tracking approach, we have had regard to the preference for year-by-year tracking over WARL in the Incenta consultant report submitted by Jemena.[36]

The method and implementation issues are discussed in turn below.

Method

In its regulatory proposal, Jemena adopted an average depreciation approach to determine remaining asset lives to be used for depreciating existing assets at

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28 In earlier decisions the AER termed this approach 'individual tracking'. Jemena's consultant, Incenta, referred to it 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.

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

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

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

32 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.

33 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.

34 Our detailed reasoning on why we consider that the 'average depreciation' approach does not meet clause 6.5.5(b) of the NER is set out later in this section.

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

36 Jemena, *Response to AER information request #017,* 5 August 2015, and Incenta, *Calculation of depreciation – review of the AER's approximate calculation: CitiPower, Powercor and Jemena Electricity Networks*, July 2015, pp. 13–14.

1 January 2016. However, Jemena subsequently submitted a report by its consultant, Incenta.[37] The report was prepared in response to the AER's June 2015 issues paper, which set out our initial assessment of Jemena's proposal.[38] The report endorsed a year-by-year tracking approach to depreciation.[39] It also showed the errors in the average depreciation approach that Jemena has proposed for calculating remaining asset lives.[40] Also, shortly before we published the June 2015 issues paper, we released preliminary decisions for South Australia Power Networks and Ergon Energy. In these preliminary decisions, we rejected their proposed average depreciation approaches and instead applied the standard WARL approach.[41]

Figure 5.1 shows the impact of the average depreciation approach (red line) compared to the WARL approach (blue line) and the year-by-year tracking approach (stacked columns, with each bar representing a different year of capex that will expire at a different time) in relation to Jemena's 'Distribution system assets' asset class.[42] This example assumes the asset class incurs no further capex.

Under year-by-year tracking the value of distribution system assets in the RAB as at 1 January 2016 are not fully depreciated until 50 years into the future. Under Jemena's proposed average depreciation approach these would be fully depreciated in 24 years, while under the AER's preferred WARL approach they would be fully depreciated in 31 years. As 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 assets in the group.[43] The average depreciation approach does not achieve this balancing, as there is no recognition of when older assets expire.[44] It leads to a shorter depreciation schedule that does not reflect the economic life of the assets. Therefore, we do not consider the average depreciation approach to be consistent with the NER.[45]

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37 Jemena, *Response to AER information request #017,* 5 August 2015, and Incenta, *Calculation of depreciation – review of the AER's approximate calculation: CitiPower, Powercor and Jemena Electricity Networks*, July 2015.

38 AER, *Issues paper, Victorian electricity distribution pricing review, 2016 to 2020*, June 2015.

39 In earlier decisions the AER termed this approach 'individual tracking'. Jemena and its consultant, Incenta, referred to it 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.

40 Incenta, *Calculation of depreciation – review of the AER's approximate calculation: CitiPower, Powercor and Jemena Electricity Networks*, July 2015, p. 11.

41 AER, *Preliminary decision, SA Power Networks determination 2015–16 to 2019–20, Attachment 5 – Regulatory depreciation*, April 2015, pp. 5-11 to 5-18; and AER, *Preliminary decision, Ergon Energy determination 2015–16 to 2019–20, Attachment 5 – Regulatory depreciation*, April 2015, pp. 5-11 to 5-20.

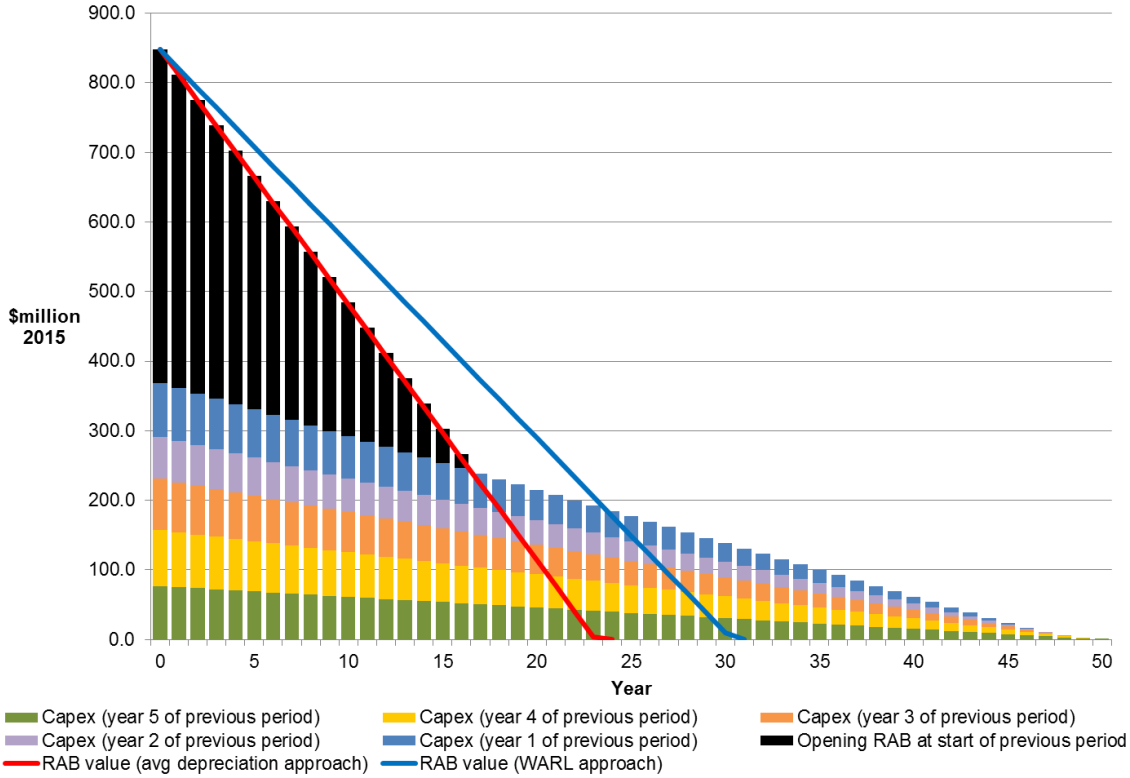
42 The numbers are based on Jemena's proposal before any adjustments were made.

43 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.

44 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.

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

Figure 5.1 Projection of the value of assets for 'Distribution system assets' asset class over time ($million, 2015)



Source: AER analysis.

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.[46] 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

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

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.

We considered whether to apply our preferred WARL or another depreciation approach given our rejection of the average depreciation approach. CitiPower, Powercor and Jemena jointly commissioned a consultant report from Incenta on this issue, noting that all three had proposed the average depreciation approach in their initial proposals. Incenta endorsed year-by-year tracking as its preferred approach. We have adopted the year-by-year tracking approach for CitiPower and Powercor, in accordance with their submissions. In contrast, when Jemena submitted the Incenta consultant report to us, it maintained its position that the average depreciation approach should apply.[47] Nonetheless, in adopting the year-by-year tracking approach, we have had regard to the preference for year-by-year tracking over WARL in the Incenta consultant report.

Overall, the outcome under year-by-year tracking means Jemena will receive roughly the same amount of depreciation as it proposed under the average depreciation approach for the 2016–20 regulatory control period (subject to revised capex forecasts). However, in future regulatory control periods (when existing legacy assets expire) it will face lower depreciation allowances, other things being equal. This prevents the shortening of the depreciation schedule that results under the average depreciation approach.

Although the report by Incenta proposed the 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:

- 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.

The year-by-year tracking approach is a more complex approach than WARL or the average depreciation approach. 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.[48] The data therefore expands over time and models such as the AER's PTRM and RFM may need to be expanded to

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47 Jemena, *Response to AER information request #017,* 5 August 2015.

48 For example, under the IT asset class, there would be asset sub-classes 2016 IT, 2017 IT, 2018 IT, etc.

accommodate the increasing number of asset sub-classes.[49] Alternatively, separate depreciation models can be developed and maintained. 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.[50]

Adopting the year-by-year tracking approach now does not deal with the legacy issue of previous remaining asset life determinations. The approved remaining lives for existing assets as at 1 January 2011 were calculated using an average depreciation approach. For the reasons discussed in this 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.[51] Therefore, the remaining asset lives for existing assets as at 1 January 2011 reflect those as approved at the last determination.[52] Our expectation is that once the year-by-year tracking approach is adopted, it will need to be maintained into the future to prevent any further issues associated with switching depreciation approaches.

Depreciating capital expenditures as disaggregated yearly categories is also likely to result in more variable depreciation profiles over time, because 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. 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.[53] 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.

Implementation

To implement the year-by-year tracking approach, we have developed a separate depreciation model for existing assets. This model is similar to those developed by

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

50 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.

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

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

53 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.

CitiPower and Powercor.[54] The depreciation allowance for existing assets is calculated in this separate model in 2015 dollar terms. We hardcoded the outputs from the separate depreciation model directly into the PTRM. This hardcoding overrides the depreciation calculations in the 'Assets' sheet of the PTRM that usually uses a single remaining asset life for each asset class. 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. It is unnecessary to insert remaining asset lives in the PTRM and we therefore have removed them.

As discussed in attachment 2, we have determined that forecast depreciation, rather than actual depreciation, will be used to roll forward the RAB over the 2016–20 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, 2016 IT) will have its value depreciated by more than the asset sub-class' forecast depreciation would have suggested had actual capex been known at the time.[55] 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.[56]

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, we consider these amounts should be returned to customers over the next regulatory control period.[57,58] This will be included in our

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54 CitiPower, Powercor and Jemena jointly commissioned an expert report on this issue, and this report addressed several implementation issues.

55 For example, expenditure on IT may have been forecast to be $120 in 2016. This would mean with an expected life of 6 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 (2020, after 4 years of depreciation) of $40 ($120 – 4x($120/6)). However, if actual expenditure on IT in 2016 was only $90, the sub-class would have a value of only $10 ($90 – 4x($120/6)) at the end of the regulatory control period if forecast depreciation is used to roll forward the value. If the expenditure on IT in 2016 was only $60, the sub-class value would be –$20 ($60 – 4x($120/6)) at the end of the regulatory control period.

56 In terms of the example above, where expenditure on IT in 2016 was only $90, the end of period value is $10 instead of $40. Over the 2021–25 regulatory control period this value would be depreciated at $5 per annum ($10/(6-4)). This asset sub-class over its 6 years of life will therefore be depreciated as follows: $20, $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 6 years, except for the case where a negative sub-class develops, as discussed below.

57 In terms of the example above, where expenditure on IT in 2016 was only $60, the asset is fully depreciated (over-depreciated) within 4 years, not 6 years. The depreciation profile for this asset sub-class would be as follows: $20, $20, $20, $20, –$20.

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

assessment of Jemena's proposed depreciation schedules at the next regulatory determination.