# FINAL DECISION
# United Energy distribution determination
# 2016 to 2020

# Attachment 5 – Regulatory depreciation

May 2016

AUSTRALIAN ENERGY REGULATOR

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# Note

This attachment forms part of the AER's final decision on United Energy's distribution determination for 2016–20. 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

Attachment 7 – Operating expenditure

Attachment 8 – Corporate income tax

Attachment 9 – Efficiency benefit sharing scheme

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# 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 United Energy, we make determinations on the indexation of the regulatory asset base (RAB) and depreciation building blocks for United Energy'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 final decision on United Energy's regulatory depreciation allowance. It also presents our final decision on the revised proposed depreciation schedules, including an assessment of 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 United Energy's revised proposed regulatory depreciation allowance of $463.3 million ($ nominal) for the 2016–20 regulatory control period.[2] Instead, we determine a regulatory depreciation allowance of $421.9 million ($ nominal). This amount represents a decrease of $41.4 million (or 8.9 per cent) on United Energy's revised proposed amount. In coming to this decision:

- We accept United Energy's 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 United Energy's revised proposal approach to depreciation associated with existing assets compared to its initial proposal. However, we have made some changes to the implementation of the approach to correct some modelling errors and improve clarity in the depreciation calculations (section 5.4.2).
- We made determinations on other components of United Energy's revised proposal which affect the forecast regulatory depreciation allowance—for example, the opening RAB at 1 January 2016 (attachment 2), expected inflation (attachment 3), and forecast capex (attachment 6).[3]

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

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1 NER, cll. 6.12.1, 6.4.3.

2 United Energy, *Revised regulatory proposal*, January 2016, p. 70.

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

**Table 5.1 AER's final decision on United Energy's depreciation allowance for the 2016–20 regulatory control period ($ million, nominal)**

| | 2016 | 2017 | 2018 | 2019 | 2020 | Total |
|---|---|---|---|---|---|---|
| Straight-line depreciation | 138.2 | 123.5 | 136.3 | 145.1 | 151.1 | 694.0 |
| *Less:* inflation indexation on opening RAB | 48.4 | 51.5 | 54.9 | 57.5 | 59.8 | 272.2 |
| **Regulatory depreciation** | **89.8** | **72.0** | **81.4** | **87.5** | **91.2** | **421.9** |

Source: AER analysis.

## 5.2 United Energy's revised proposal

United Energy's revised proposal for the 2016–20 regulatory control period forecasts a total regulatory depreciation allowance of $463.3 million ($ nominal).[4] United Energy amended its methodology for determining the remaining asset lives of its existing assets as part of calculating the regulatory depreciation allowance in response to the preliminary decision. To calculate the depreciation allowance, United Energy's revised proposal used:

- the straight-line depreciation method, consistent with that employed in our post-tax revenue model (PTRM)
- a revised closing RAB value at 31 December 2015 derived from the revised proposal roll forward model (RFM)
- a revised approach to calculate depreciation on the opening RAB based on the year-by-year tracking approach. Under this approach:
    - assets in existence at 1 January 2011 are depreciated by asset class using straight-line depreciation with the remaining lives determined in the 2010 final decision; and
    - capex in each year of the 2011 to 2015 period is grouped by asset class and separately depreciated over their standard lives as approved in the 2010 final decision.
- standard asset lives approved in the preliminary decision for depreciating new assets associated with forecast capex for the 2016–20 regulatory control period
- a revised expected inflation rate
- the revised proposed forecast capex for the 2016–20 regulatory control period.

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

[4] United Energy, *Revised regulatory proposal*, January 2016, p. 70.

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

| | 2016 | 2017 | 2018 | 2019 | 2020 | Total |
|---|---|---|---|---|---|---|
| Straight-line depreciation | 121.3 | 126.1 | 141.6 | 153.1 | 160.2 | 702.3 |
| *Less:* inflation indexation on opening RAB | 41.5 | 44.9 | 48.3 | 51.0 | 53.3 | 239.0 |
| **Regulatory depreciation** | **79.8** | **81.2** | **93.3** | **102.1** | **106.9** | **463.3** |

Source: United Energy, *Revised regulatory proposal*, January 2016, p. 70 and Post-tax revenue model.

## 5.3 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.[5] However, we have accepted a change to the approach for the depreciation of existing assets for United Energy. Section 5.4.2 discusses this change as it affects the remaining asset lives for United Energy.

## 5.4 Reasons for final decision

We determine a regulatory depreciation allowance of $421.9 million ($ nominal) for United Energy over the 2016–20 regulatory control period. In determining this allowance, we accept United Energy's revised proposed standard asset lives and its use of the year-by-year tracking approach to determine its straight-line depreciation of assets.

However, we reduced United Energy's revised proposed regulatory depreciation allowance by $41.4 million (or 8.9 per cent). This amendment reflects our:

- changes to United Energy's implementation of the year-by-year tracking approach to correct some modelling errors (section 5.4.2),
- determinations regarding other components of United Energy's revised proposal—for example, the opening RAB at 1 January 2016 (attachment 2), expected inflation (attachment 3),[6] and forecast capex (attachment 6)[7]—affecting the forecast regulatory depreciation allowance.

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5 AER, *Preliminary decision – United Energy determination 2016 to 2020, Attachment 5 – Regulatory depreciation*, October 2015, pp. 8–10.

6 Our final decision approves a higher expected inflation rate compared to United Energy's revised proposal. This results in a larger inflation on opening RAB component being removed from straight-line depreciation, and therefore lower regulatory depreciation over the 2016–20 regulatory control period, all things being equal.

7 Our final decision approves a lower forecast capex allowance compared to United Energy's revised proposal. This means lower regulatory depreciation for the assets forecast to be added to the RAB over the 2016–20 regulatory control period, all things being equal.

### 5.4.1 Standard asset lives

We accept United Energy's revised proposed standard asset lives. United Energy's revised proposal adopted our preliminary decision on the standard asset lives.

In the preliminary decision, we accepted most of United Energy's proposed standard asset lives for its existing asset classes, and the introduction of two new asset classes—'SCADA (10-year assets)' and a non-depreciating 'Land' asset class. Our only amendment in the preliminary decision was to the standard asset life applied to the 'Equity raising costs' asset class.

We received one submission from the CCP on the preliminary decision raising concerns about the variation in standard asset lives applied to similar asset classes across the Victorian service providers. The CCP submitted the variation is greater than that needed to reflect the specific nature of each network.[8] It also noted that there are elements of the assets that are not impacted by any different environments—such as office costs, IT, SCADA and vehicles—and therefore are not exposed to different standard asset lives.

We agree that the same asset types should have the same standard asset life applied barring any environmental factors that may impact on the useful life of the asset. However, each asset class used in the PTRM is not for a single asset type, but covers a group of assets. For example, the 'Distribution system assets' asset class may include assets such as concrete, wooden, and steel poles, surge diverters and zone substation batteries. Likewise, the 'Non-network general – IT' asset class may encompass short lived standard IT assets (e.g. office computers and general word processing software), as well as more specialised IT assets (e.g. data servers and storage systems). We consider it is reasonable that these assets may have different useful lives. The standard asset life of each asset class should represent the average standard asset life of the capex allocated to that asset class. As the overall make-up of assets entering a certain asset class may differ by business, we consider it reasonable for there to be variation in the average standard asset life applied across businesses. For this reason, we note that this is particularly the case for broader asset classes such as 'Non-network – other' which the CCP submitted has significant variation in standard asset life across Victorian service providers.[9]

We also note that United Energy's proposed standard asset lives for its existing asset classes have not changed from those determined in previous regulatory control periods. We are satisfied that the standard asset lives reflect the nature of the assets over the economic lives of the asset classes.[10]

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8 CCP3, *Response to AER Preliminary Decisions made by the AER in response to proposals from Victorian electricity distribution network service providers for a revenue reset for the 2016–2020 regulatory period*, 25 February 2016, pp. 68–70.

9 The 'Non-network – other' asset class may include any non-network assets that do not fit in the IT category. This may include vehicles (heavy or light), furniture, general office equipment, as well as property assets.

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

Table 5.3 sets out our final decision on United Energy's standard asset lives for the 2016–20 regulatory control period.

### Table 5.3 AER's final decision on United Energy's standard asset lives at 1 January 2016 (years)

| Asset class | Standard asset life |
|---|---|
| Subtransmission | 60.0 |
| Distribution system assets | 35.6 |
| Metering | n/a[a] |
| Public lighting | n/a[a] |
| SCADA (5-year asset) | 5.0 |
| Non network - IT | 5.0 |
| Non network - other | 7.5 |
| Neutral screen services | n/a[a] |
| Distribution transformers upgrades | n/a[a] |
| SCADA (10-year asset) | 10.0 |
| Land | n/a |
| Equity raising costs | 40.4 |

Source: AER analysis.
n/a: not applicable.
(a) This asset class is no longer used as no further capex in this category is being added over the 2016–20 regulatory control period.

## 5.4.2 Remaining asset lives

We accept United Energy's revised proposal to use the year-by-year tracking approach to determine depreciation on the opening RAB as at 1 January 2016. We consider that this approach meets the requirements of the NER in that it produces depreciation schedules that align with the economic life of the assets.[11]

Our preliminary decision used the weighted average remaining life (WARL) approach for determining remaining asset lives instead of the average depreciation approach initially proposed by United Energy. We considered that United Energy's average depreciation approach consistently underestimates the remaining asset lives.[12]

[11] NER, cl. 6.5.5(b)(1).
[12] AER, *Preliminary decision, United Energy determination 2016 to 2020: Attachment 5 − Regulatory depreciation,* October 2015, pp. 12–16.

United Energy's revised proposal used the year-by-year tracking approach to determining remaining asset lives and depreciation associated with existing assets. The year-by-year tracking approach is different to average depreciation (used in its initial proposal) and the WARL approach.[13] Under the year-by-year tracking approach:

- assets in existence at 1 January 2011 are depreciated by asset class using straight-line depreciation with the remaining lives determined in the 2010 final decision; and
- capex in each year of the 2011 to 2015 period is grouped by asset classes and separately depreciated over their standard lives as approved in the 2010 final decision.

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, lives and associated depreciation. The year-by-year tracking approach is more disaggregated, compared with the other approaches, and involves multiple depreciation calculations within each asset class, separately tracking capex by the regulatory year it was incurred. For this reason, it does not combine capex incurred during 2011 to 2015 with existing assets in 2011, and so does not require average remaining asset lives to be estimated at 1 January 2016.

The year-by-year tracking approach was proposed by some service providers as part of recent reset processes before the AER. We considered this approach in detail in our 2015 SAPN and Ergon Energy final decisions, and preliminary decisions for CitiPower, Powercor and Jemena.[15] In summary, and consistent with our previous assessment, we consider that the year-by-year tracking approach:

- produces depreciation schedules that reflect the nature of the assets and their economic life[16]
- ensures that total depreciation (in real terms) equals the initial value of the assets.[17]

Our acceptance of the year-by-year tracking approach in this final decision is a departure from our preliminary decision. We consider the use of WARL also meets the requirements of the NER and avoids the additional complexity inherent in year-by-year

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13 United Energy, *Revised regulatory proposal*, January 2016, p. 70.

14 United Energy prepared a model (RRP 7-1 United Energy - Sunk Depreciation - RRP.xlsx) where the separate calculations of depreciation occur. The output from this model is used as an input to the PTRM depreciation calculations.

15 AER, *Final decision SA Power Networks distribution determination - Attachment 5 - Regulatory depreciation*, October 2015, pp. 10–17; AER, *Final decision Ergon Energy distribution determination - Attachment 5 - Regulatory depreciation*, October 2015, pp. 10–17; AER, *Preliminary decision CitiPower distribution determination - Attachment 5 - Regulatory depreciation*, October 2015, pp. 14–22; AER, *Preliminary decision Powercor distribution determination - Attachment 5 - Regulatory depreciation*, October 2015, pp. 15–22; AER, *Preliminary decision Jemena distribution determination - Attachment 5 - Regulatory depreciation*, October 2015, pp. 12–19.

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

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

tracking, which brings with it additional administration costs and increased risk of error.[18] We maintain our preference for the WARL approach to determining remaining asset lives. However, under the NER, we must use the depreciation schedules proposed by United Energy to the extent they satisfy the requirements of the NER.[19]

We have made some changes to United Energy's implementation of the year-by-year tracking approach to correct some modelling errors and improve clarity in the depreciation calculations as discussed below.

## Implementation of year-by-year tracking approach

United Energy prepared a separate depreciation model to implement year-by-year tracking.[20] In our review of this model we identified a number of issues with the assumptions and calculations relied on in the model that required correction. Rather than amend United Energy's proposed model to address the errors identified, we used a different model—consistent with the model used for Jemena, CitiPower and Powercor for their preliminary decisions—to calculate United Energy's year-by-year tracking depreciation.[21] United Energy was provided this model for comment, and agreed with our identified corrections and suggested use of the different model.[22]

The most significant difference in the final decision model is in the approach to the depreciation of end-of-period RAB adjustments. In United Energy's revised proposal all final year adjustments were combined with 2015 capex for depreciation purposes. These RAB adjustments relate to either the difference between actual and forecast 2010 capex, or the six-month indexation adjustment to the RAB. The final decision depreciation model calculates the depreciation of these adjustments separately ensuring that the depreciation more closely reflects the life of the assets it relates. We consider this more appropriate than allocating all adjustments to 2015 capex. We have also adjusted the depreciation model for any changes made to the RAB roll forward (discussed in attachment 2) that are applicable.

In its submission to the preliminary decision, the CCP raised concerns about the increased depreciation resulting from the move to a year-by-year tracking approach. The CCP submitted that this is due to the year-by-year tracking approach being 'backdated' to 2011 and reflects the under-recovery of depreciation over the 2011–15 regulatory control period where depreciation was based on a different approach. It

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18 AER, *Preliminary decision, United Energy determination 2016 to 2020: Attachment 5 − Regulatory depreciation,* October 2015, pp. 14–15.

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

20 United Energy, *Revised regulatory proposal, RRP 7-1 United Energy - Sunk Depreciation - RRP.xlsx*, January 2016.

21 United Energy's revised proposal adopted our change to the 'Equity raising costs' standard asset life (40.4 years) in the RFM. However, this change was not reflected correctly in United Energy's revised proposal depreciation model (40.0 years was applied). Our final decision depreciation mode also corrects this inconsistency.

22 United Energy, *RE: AER information request – UED - #041 – year-by-year depreciation tracking* [email to AER], 9 February 2016.

recommended that the change to year-by-year tracking should only be implemented for future capex.

We are satisfied that beginning the year-by-year tracking of depreciation from 2011 is a continuation of the approach applied in the PTRM to forecast depreciation at the 2010 determination. Therefore, we do not consider it results in an under-recovery in depreciation over that period which will be recovered from future customers. At the 2010 determination the depreciation allowance was calculated using remaining asset lives at 1 January 2011 to depreciate the opening RAB, and standard asset lives to depreciate forecast capex over the 2011–15 regulatory control period. This is the standard approach to calculating depreciation. The year-by-year tracking approach uses the remaining and standard asset lives determined at the 2010 determination to calculate depreciation over the 2011–15 regulatory control period, but updates for actual capex—as is done in the RFM—and continues the tracking into the 2016–20 regulatory control period.[23]

The advantage of the year-by-year tracking approach is that it preserves the annual capex information over multiple regulatory control periods rather than combining it together with existing assets at each reset for depreciation purposes. This means that estimating the average remaining life of the combined assets is not required at each reset. This is because the asset lives determined in previous decisions are maintained and applied to the relevant year of capex. The only determination is on the standard asset lives to apply to forecast capex for subsequent regulatory control periods.

In the preliminary decision for United Energy we rejected its proposal to use the average depreciation approach to determine remaining asset lives. In the short run, year-by-year tracking will lead to a depreciation allowance that is roughly comparable in aggregate to that initially proposed by United Energy. In the long run, however, the depreciation allowance will be lower under the year-by-year tracking approach. The average depreciation approach would have locked in relatively lower remaining asset lives for all existing (pre 2011) and new assets (capex 2011–15).[24] The year-by-year tracking approach will result in new assets (capex from 2011 onwards) being depreciated over their standard asset lives without adjustment. The assets in existence in 2011 will be depreciated by the remaining asset life approved in the last determination. Each year the accuracy of the remaining asset lives in total will improve under year-by-year tracking as the assets acquired prior to 2011 make up a smaller proportion of the RAB. Delaying the start of year-by-year tracking delays the benefits of such an approach being realised and does not reduce the amount of depreciation recovered in the short run if the depreciation is still calculated using the average depreciation approach as United Energy initially proposed.

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[23] 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.

[24] There is also a ratcheting effect at each reset where the opening RAB and capex are combined and depreciated using a single remaining life at each reset.

We estimate that applying the year-by-year tracking approach to United Energy results in total revenue about 3 per cent higher than if remaining asset lives under the WARL approach were used for the final decision.[25] However, in future regulatory control periods (when existing legacy assets at 1 January 2011 expire) United Energy will face lower depreciation, other things being equal.

In the preliminary decision, we determined (and confirmed in this final decision) that forecast depreciation, rather than actual depreciation, will be used to roll forward the RAB over the 2016–20 regulatory control period.[26] 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.[27] 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.[28]

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.[29,30] This will be included in our

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25 This increase is mainly caused by an increase to straight-line depreciation on the opening RAB of about 10.5 per cent. However there are also impacts to the inflation on opening RAB, as well as the return on capital and tax building blocks.

26 See attachment 2 for details of our final decision on the use of forecast depreciation in the 2016–20 roll forward.

27 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.

28 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.

29 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.

30 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 United Energy's proposed depreciation schedules at the next regulatory determination.