DRAFT DECISION

TasNetworks Distribution Determination 2019 to 2024

Attachment 4 Regulatory depreciation

September 2018

AUSTRALIAN ENERGY REGULATOR

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Note

This attachment forms part of the AER's draft decision on TasNetworks' 2019–24 distribution determination. It should be read with all other parts of the draft decision.

The draft decision includes the following attachments:

Overview

Attachment 1 – Annual revenue requirement

Attachment 2 – Regulatory asset base

Attachment 3 – Rate of return

Attachment 4 – Regulatory depreciation

Attachment 5 – Capital expenditure

Attachment 6 – Operating expenditure

Attachment 7 – Corporate income tax

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Shortened forms

Shortened form	Extended form
ACS	alternative control services
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
augex	augmentation expenditure
capex	capital expenditure
CCP	Consumer Challenge Panel
CCP 13	Consumer Challenge Panel, sub-panel 13
CESS	capital expenditure sharing scheme
CPI	consumer price index
DRP	debt risk premium
DMIAM	demand management innovation allowance (mechanism)
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

Shortened form	Extended form
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
SCS	standard control services
SLCAPM	Sharpe-Lintner capital asset pricing model
STPIS	service target performance incentive scheme
WACC	weighted average cost of capital

4 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 TasNetworks, we make determinations on the indexation of the regulatory asset base (RAB) and depreciation building blocks for TasNetworks' 2019–24 regulatory control period.[1] The regulatory depreciation allowance is the net total of the straight-line depreciation less the indexation of the RAB.

This attachment sets out our draft decision on TasNetworks' regulatory depreciation allowance. It also presents our draft decision on the proposed depreciation schedules, including an assessment of the proposed asset lives used for forecasting depreciation.

4.1 Draft decision

We determine a regulatory depreciation allowance of $341.8 million ($nominal) for TasNetworks for the 2019–24 regulatory control period. TasNetworks proposed a regulatory depreciation allowance of $345.4 million ($nominal).[2] Our decision represents a reduction of $3.5 million or 1.0 per cent on the proposed amount. This reduction occurs mainly as a consequence of our determinations on other components of TasNetworks' proposal that affect the forecast regulatory depreciation allowance. Specifically, they relate to:

- the opening RAB at 1 July 2019 (attachment 2)
- forecast capital expenditure (attachment 5) including its effect on the projected RAB over the 2019–24 regulatory control period.[3]

For our draft decision on TasNetworks' regulatory depreciation:

- we accept TasNetworks' proposed asset classes, its straight-line depreciation method, and the standard asset lives used to calculate the regulatory depreciation allowance. We consider TasNetworks' proposed standard asset lives for its existing asset classes are consistent with those approved for the 2017–19 distribution determination and largely comparable to the standard asset lives used for other distributors.
- we accept the continuation of TasNetworks' year-by-year tracking approach to calculate the straight-line depreciation of existing assets. We have made some changes in the proposed depreciation model to ensure that any small residual asset values as at 1 July 2019 calculated in the RFM are fully depreciated in the

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1 NER, cll. 6.12.1, 6.4.3.

2 TasNetworks, *Transmission and Distribution Regulatory Proposal 2019–24*, January 2018, p. 165.

3 Capex enters the RAB net of forecast disposals and capital contributions. It includes equity raising costs (where relevant) and the half-year WACC to account for the timing assumptions in the PTRM. Our draft decision on the RAB (attachment 2) also reflects our updates to the WACC for the 2019–24 regulatory control period.

depreciation model. We have also updated the latest CPI and WACC values in the depreciation model which were not available at the time of the initial proposal.

Table 4.1 sets out our draft decision on the annual regulatory depreciation allowance for TasNetworks' 2019–24 regulatory control period.

Table 4.1 AER's draft decision on TasNetworks' depreciation allowance for the 2019–24 regulatory control period ($million, nominal)

	2019–20	2020–21	2021–22	2022–23	2023–24	Total
Straight-line depreciation	100.2	107.3	115.1	120.8	126.3	569.8
Less: inflation indexation on opening RAB	42.8	44.4	45.8	46.8	48.0	227.9
Regulatory depreciation	**57.4**	**62.9**	**69.3**	**73.9**	**78.3**	**341.8**

Source: AER analysis.

4.2 TasNetworks' proposal

For the 2019–24 regulatory control period, TasNetworks proposed a total forecast regulatory depreciation allowance of $345.4 million ($nominal). To calculate the depreciation allowance, TasNetworks proposed to use:[4]

- the straight-line depreciation method employed in the AER's PTRM
- the closing RAB value at 30 June 2019 derived from the AER's roll forward model (RFM)
- proposed forecast capex for the 2019–24 regulatory control period[5]
- an expected inflation rate of 2.45 per cent for the 2019–24 regulatory control period
- the year-by-year tracking depreciation model, which implements the straight-line method to calculate the forecast depreciation for the 2019–24 regulatory control period
- standard asset lives for depreciating new assets associated with forecast capex for the 2019–24 regulatory control period consistent with those approved in the 2017–19 distribution determination

Table 4.2 sets out TasNetworks' proposed depreciation allowance for the 2019–24 regulatory control period.

[4] TasNetworks, *Transmission and Distribution Regulatory Proposal 2019–24*, January 2018, pp. 162–165.

[5] TasNetworks, *Distribution regulated asset base and tax depreciation model,* January 2018.

Table 4.2 TasNetworks' proposed depreciation allowance for the 2019–24 regulatory control period ($million, nominal)

	2019–20	2020–21	2021–22	2022–23	2023–24	Total
Straight-line depreciation	100.7	108.9	117.7	124.4	132.0	583.7
Less: inflation indexation on opening RAB	43.0	45.6	47.9	49.8	52.1	238.4
Regulatory depreciation	**57.7**	**63.3**	**69.8**	**74.6**	**80.0**	**345.4**

Source: TasNetworks, *Post Tax Revenue Model (PTRM) Distribution*, January 2018.

4.3 AER's assessment approach

We determine the regulatory depreciation allowance using the PTRM as a part of a service provider's annual revenue requirement.[6] 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.[7]

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.[8] 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[9]
- 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.[10]

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.[11]

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:

6 NER, cll. 6.4.3(a)(3) and (b)(3).
7 NER, cl. 6.5.5(a).
8 NER, cl. 6.5.5(b)(1).
9 NER, cl. 6.5.5(b)(1).
10 NER, cl. 6.5.5(b)(2).
11 NER, cl. 6.5.5(a)(ii).

- the opening RAB at 1 July 2019
- the forecast net capex in the 2019–24 regulatory control period[12]
- the expected inflation rate for the above period
- the standard asset life for each asset class—used for calculating the depreciation of new assets associated with forecast net capex in the above period
- the depreciation associated with the opening RAB as at 1 July 2019—calculated in a separate year-by-year tracking depreciation model (depreciation model).

Our draft decision on TasNetworks' regulatory depreciation allowance reflects our determinations on the opening RAB at 1 July 2019, expected inflation and forecast capex (the first three building block components in the above list).[13] Our determinations on these components of the service provider's proposal are discussed in attachments 2, 3 and 5 respectively.

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

- the approved standard asset lives in the distribution determination for the 2017–19 regulatory control period
- the standard asset lives of comparable asset classes approved in our recent distribution determinations for other service providers.

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.[14] The weighted average method rolls forward the remaining asset life for an asset class from the beginning of the previous regulatory control period. This method reflects the mix of assets within that asset class. It also reflects when the assets were acquired over that period and the remaining asset lives of existing assets at the end of that period. The residual asset values of all assets are used as weights to calculate the remaining asset lives at the end of the period. TasNetworks has adopted an alternative approach—year-by-year tracking—to implement straight-line depreciation. We have therefore assessed whether this approach would meet the depreciation provisions of the NER, as discussed in section 4.4.1.

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[12] Capex enters the RAB net of forecast disposals and capital contributions. It includes equity raising costs (where relevant) and the half-year WACC to account for the timing assumptions in the PTRM. Our draft decision on the RAB (attachment 2) also reflects our updates to the WACC for the 2019–24 regulatory control period.

[13] Our final decision will update the opening RAB as at 1 July 2019 for revised estimates of actual capex and inflation.

[14] We consider this depreciation method to be a generally superior approach. The reasons are outlined in our decision on the roll forward model for electricity transmission network service providers. See AER, *Explanatory statement, Proposed amendment, Electricity transmission network service providers, Roll forward model*, August 2010, pp. 5–6.

4.3.1 Interrelationships

The regulatory depreciation allowance is a building block component of the annual revenue requirement.[15] 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 smaller than the increased depreciation allowance in the short to medium term.[16]

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

The RAB has to be maintained in real terms, meaning the RAB must be indexed for expected inflation.[17] The return on capital building block has to be calculated using a nominal rate of return (WACC) applied to the opening RAB.[18] As noted in attachment 1, the total annual revenue requirement is calculated by adding up the return on capital, depreciation, opex, tax and revenue adjustments building blocks. Because inflation on the RAB is accounted for in both the return on capital—based on a nominal rate—and the depreciation calculations—based on an indexed RAB—an adjustment must be made to the revenue requirement to prevent compensating twice for inflation.

To avoid this double compensation, we make an adjustment by subtracting the annual indexation gain on the RAB from the calculation of total revenue.[19] Our standard approach is to subtract the indexation of the opening RAB—the opening RAB multiplied by the expected inflation for the year—from the RAB depreciation. The net result of this calculation is referred to as regulatory depreciation.[20] Regulatory depreciation is the amount used in the building block calculation of total revenue to ensure that the revenue equation is consistent with the use of a RAB, which is indexed for inflation annually.

This approach produces the same total revenue requirement and RAB as if a real rate of return had been used in combination with an indexed RAB. Under an alternative approach where a nominal rate of return was used in combination with an un-indexed

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15 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.

16 This is generally the case because the reduction in the RAB amount feeds into the higher depreciation building block, whereas the reduced return on capital building block is proportionate to the lower RAB multiplied by the WACC.

17 NER, cl. 6.5.1(e)(3).

18 NER, cl. 6.5.2(d)(2).

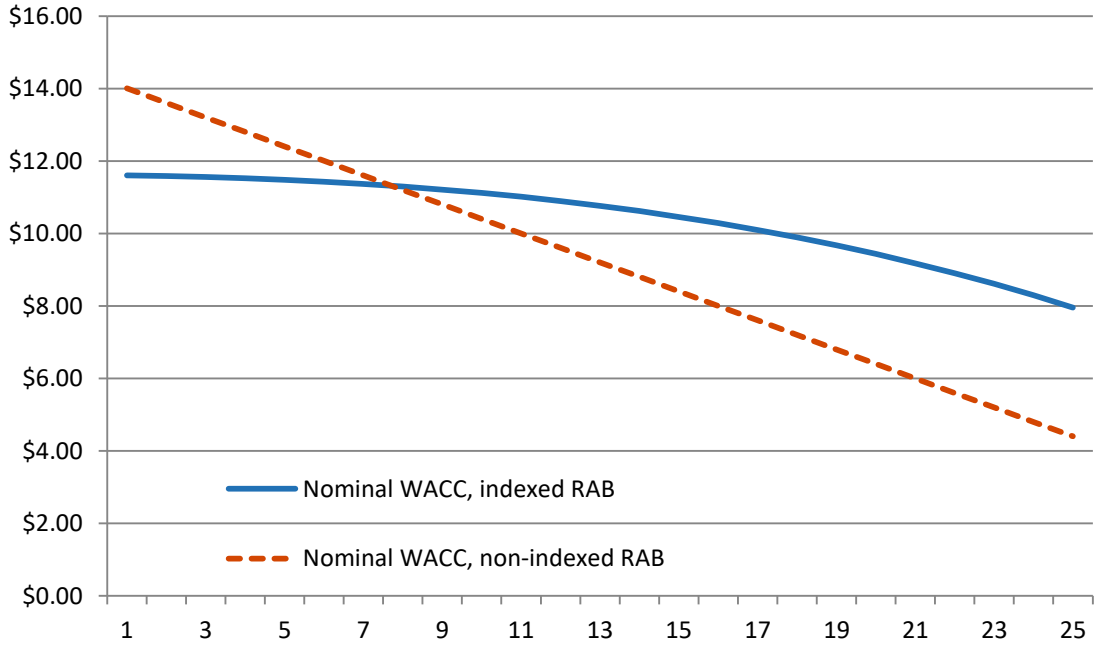
19 NER, cl. 6.4.3(b)(1)(ii).

20 If the asset lives are extremely long, such that the RAB depreciation rate is lower than the inflation rate, then negative regulatory depreciation can emerge. The indexation adjustment is greater than the RAB depreciation in such circumstances.

(historical cost) RAB, no adjustment to the depreciation calculation of total revenue would be required. This alternative approach produces a different time path of total revenue compared to our standard approach. In particular, overall revenues would be higher early in the asset's life (as a result of more depreciation being returned to the service provider) and lower in the future—producing a steeper downward sloping profile of total revenue.[21] Under both approaches, the total revenues being recovered are in present value neutral terms—that is, returning the initial cost of the RAB.

Figure 4.1 shows the recovery of revenue under both approaches using a simplified example.[22] Indexation of the RAB and the offsetting adjustment made to depreciation results in smoother revenue recovery profile over the life of an asset than if the RAB was un-indexed.

Figure 4.1 Revenue path example – indexed vs un-indexed RAB ($nominal)



Source: AER analysis.

Figure 2.1 (in attachment 2) shows the relative size of the inflation and straight-line depreciation and their impact on the RAB based on TasNetworks' proposal. A 10 per cent increase in the straight-line depreciation causes revenues to increase by about 4.8 per cent.

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21 A change of approach from an indexed RAB to an un-indexed RAB would result in an initial step change increase in revenues to preserve NPV neutrality.

22 The example is based on the initial cost of an asset of $100, a standard economic life of 25 years, a real WACC of 7.32%, expected inflation of 2.5% and nominal WACC of 10%. Other building block components such as opex, tax and capex are ignored for simplicity as they would affect both approaches equally.

4.4 Reasons for draft decision

We accept TasNetworks' proposed straight-line depreciation method for calculating the regulatory depreciation allowance as set out in the PTRM and its depreciation model. We also accept the proposed asset classes and proposed standard asset lives.

However, we reduced TasNetworks' proposed forecast regulatory depreciation allowance by $3.5 million (or 1.0 per cent) to $341.8 million ($nominal). This amendment reflects our determinations regarding other components of TasNetworks' regulatory proposal—the opening RAB as at 1 July 2019 (attachment 2) and forecast capital expenditure (attachment 5) including its effect on the projected RAB[23] over the 2019–24 regulatory control period—which affect the forecast regulatory depreciation allowance. Our assessment of TasNetworks' proposed year-by-year tracking depreciation approach, and its proposed standard asset lives, are discussed in turn in the following subsections.

4.4.1 Year-by-year tracking approach

TasNetworks proposed to continue using the year-by-year tracking approach for calculating depreciation of its existing assets, consistent with that approved for its previous determination.[24] We accept TasNetworks' proposed year-by-year tracking approach meets the requirements of the NER in that it will result in depreciation schedules that:

- reflect the nature of the assets and their economic life[25]
- ensure that total depreciation (in real terms) equals the initial value of the assets[26]
- allows the economic lives of existing assets to be consistent with those determined on a prospective basis in our 2017–19 distribution determination[27]

We have reviewed TasNetworks' year-by-year tracking depreciation model and updated the latest CPI and WACC values in the depreciation model which were not available at the time of the initial proposal. We have also made some changes in the depreciation model to ensure that any small residual asset values as at 1 July 2019, as calculated in the RFM, are fully depreciated in the depreciation model.

In particular, we note that there are minor divergences in the asset values calculated between the depreciation model and the RFM due to different timing lag assumptions on inflation between the two models. As a consequence of this divergence, while some

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[23] Capex enters the RAB net of forecast disposals and capital contributions. It includes equity raising costs (where relevant) and the half-year WACC to account for the timing assumptions in the PTRM. Our draft decision on the RAB (attachment 2) also reflects our updates to the WACC for the 2019–24 regulatory control period.

[24] Under the year-by-year tracking approach, capex within each asset class is disaggregated by year of expenditure and separately depreciated.

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

[26] NER, cl. 6.5.5(b)(2).

[27] NER, cl. 6.5.5(b)(3).

asset classes may have shown as fully depreciated in the depreciation model, the RFM may still calculate a small residual value for these asset classes. To correct this inconsistency, we have assigned a remaining life of 1 year in the depreciation model to ensure that any small residual values are fully depreciated in the first year of the 2019–24 regulatory control period.

4.4.2 Standard asset lives

We accept TasNetworks' proposed standard asset lives for its existing asset classes in respect of the forecast capex to be incurred in the 2019–24 regulatory control period. These asset lives are consistent with the approved standard asset lives for the 2017–19 regulatory control period and comparable with the standard asset lives approved in our recent determinations for other distributors.[28]

Table 4.3 sets out our draft decision on TasNetworks' standard asset lives for the 2019–24 regulatory control period. We are satisfied that:[29]

- the standard asset lives would lead to a depreciation schedule that reflects the nature of the assets over the economic lives of the asset classes, and
- the sum of the real value of the depreciation attributable to the assets is equivalent to the value at which the assets was first included in the RAB for TasNetworks.

Table 4.3 AER's draft decision on TasNetworks' standard asset lives at 1 July 2019 (years)

Asset class	Standard asset life
Overhead subtransmission lines (urban)	50.0
Underground subtransmission lines (urban)	60.0
Urban zone substations	40.0
Rural zone substations	40.0

[28] AER, *Final decision: Jemena distribution determination 2016–20 – attachment 5*, May 2016, p. 10; AER, *Final decision: Powercor distribution determination 2016–20 – attachment 5*, May 2016, p. 12; AER, *Final decision: United Energy distribution determination 2016–20 – attachment 5*, May 2016, p. 10; AER, *Final decision: CitiPower distribution determination 2016–20 – attachment 5*, May 2016, p. 12; AER, *Final decision: AusNet Services distribution determination 2016–20 – attachment 5*, May 2016, p. 10; AER, *Final decision: Ausgrid distribution determination 2014–19 – attachment 5,* April 2015, p. 10; AER, *Final decision: Endeavour distribution determination 2014–19 – attachment 5,* April 2015, p. 9; AER, *Final decision: Essential Energy distribution determination 2014–19 – attachment 5,* April 2015, p. 9; AER, *Final decision: ActewAGL distribution determination 2014–19 – attachment 5,* April 2015, p. 10; AER, *Final decision: Energex distribution determination 2015–20 – attachment 5*, October 2015, p, 10; AER, *Final decision: Ergon Energy distribution determination 2015–20 – attachment 5*, October 2015, p. 10; AER, *Final decision: SA Power Networks distribution determination 2015–20 – attachment 5*, October 2015, p. 9; and AER, *Draft decision: TasNetworks distribution determination 2017–19 – attachment 5*, September 2016, pp. 16–17.

[29] NER, cll. 6.5.5(b)(1)–(2).

SCADA	10.0
Distribution switching stations (ground)	40.0
Overhead high voltage lines urban	35.0
Overhead high voltage lines rural	35.0
Voltage regulators on distribution feeders	40.0
Underground high voltage lines	60.0
Underground high voltage lines SWER	60.0
Distribution substations HV (pole)	40.0
Distribution substations HV (ground)	40.0
Distribution substations LV (pole)	40.0
Distribution substations LV (ground)	40.0
Overhead low voltage lines underbuilt urban	35.0
Overhead low voltage lines underbuilt rural	35.0
Overhead low voltage lines urban	35.0
Overhead low voltage lines rural	35.0
Underground low voltage lines	60.0
Underground low voltage common trench	60.0
HVST service connections	40.0
HV service connections	40.0
HV metering CA service connections	40.0
HV/LV service connections	40.0
Business LV service connections	35.0
Business LV metering CA service connections	25.0
Domestic LV service connections	35.0
Domestic LV metering CA service connections	20.0
Emergency network spares	n/a
Motor vehicles	6.0
Minor assets	5.0
Non-system property	40.0
Spare parts	n/a
NEM assets	5.0
Business management systems	10.0

Land	n/a
Easements	n/a
Equity raising costs	40.6

Source: AER analysis.

n/a: not applicable. We have not assigned a standard asset life to some asset classes because the assets allocated to those asset classes are not subject to depreciation.