

Draft Decision

Transgrid Transmission Determination 2023 to 2028

(1 July 2023 to 30 June 2028)

Attachment 4 Regulatory depreciation

September 2022

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Note

This attachment forms part of the AER’s draft decision on Transgrid’s 2023–28 transmission determination. It should be read with all other parts of the draft decision.

The draft decision includes the following documents:

Overview

Attachment 1 – Maximum allowed revenue

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

Attachment 8 – Efficiency benefit sharing scheme

Attachment 9 – Capital expenditure sharing scheme

Attachment 10 – Service target performance incentive scheme

Attachment 11 – Demand management innovation allowance mechanism

Attachment 12 – Pricing methodology

Attachment 13 – Pass through events

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4 Regulatory depreciation

Regulatory depreciation is the amount 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 Transgrid, we make determinations on the indexation of the regulatory asset base (RAB) and depreciation building blocks for Transgrid’s 2023–28 regulatory control period.¹ The regulatory depreciation amount is the net total of the straight-line depreciation less the indexation of the RAB.

This attachment sets out our draft decision on Transgrid’s regulatory depreciation amount. It also presents our draft decision on the proposed depreciation schedules, including an assessment of the proposed asset lives used for calculating the straight-line depreciation.

4.1 Draft decision

We determine a regulatory depreciation amount of \$579.1 million (\$ nominal) for Transgrid for the 2023–28 period. Transgrid proposed a regulatory depreciation amount of \$801.8 million.² Our draft decision represents a decrease of \$222.7 million (27.8%) on the proposed amount.

This reduction is primarily the result of our draft decision on the calculation of expected inflation (Attachment 3)³, which affects the projected RAB over the 2023–28 period. Indexation of the RAB is \$390.8 million higher than the proposal, largely due to applying a higher expected inflation rate of 3.0% per annum in this draft decision compared to Transgrid’s proposal of 2.35% per annum. However, straight-line depreciation is \$168.1 million (8.8%) higher than the proposal mainly due to a higher opening RAB as at 1 July 2023 (Attachment 2). The higher RAB indexation has more than offset the increase in straight-line depreciation (since indexation is deducted from straight-line depreciation).

For our draft decision on Transgrid’s regulatory depreciation:

- we accept Transgrid’s proposed straight-line depreciation method used to calculate the regulatory depreciation amount
- we accept Transgrid’s proposed application of the year-by-year tracking approach to implement straight-line depreciation of its existing assets, and its forecast capital expenditure (capex) (section 4.4.1)
- we accept Transgrid’s proposed asset classes and standard asset lives, with the exception of the proposed standard asset lives for the ‘Equity raising costs’ and the new ‘Leasehold land and property’ asset classes (section 4.4.2).

Table 4.1 sets out our draft decision on the annual regulatory depreciation amount for Transgrid’s 2023–28 period.

¹ NER, cl. 6A.5.4 and 6A.14.1.

² Transgrid, *2023–28 Revenue proposal, Post-tax revenue model*, January 2022.

³ Our draft decision on the RAB (Attachment 2) also reflects our updates to the WACC for the 2023–28 regulatory control period.

Table 4.1 AER’s draft decision on Transgrid’s regulatory depreciation for the 2023–28 regulatory control period (\$ million, nominal)

	2023–24	2024–25	2025–26	2026–27	2027–28	Total
Straight-line depreciation	350.0	390.2	434.1	443.1	460.8	2,078.3
Less: inflation indexation on opening RAB	276.8	296.7	305.0	308.8	312.0	1,499.2
Regulatory depreciation	73.2	93.5	129.2	134.4	148.8	579.1

Source: AER analysis.

4.2 Transgrid’s proposal

For the 2023–28 period, Transgrid proposed a total forecast regulatory depreciation amount of \$801.8 million (\$ nominal). To calculate the depreciation amount, Transgrid proposed to use:⁴

- the straight-line depreciation method employed in our post-tax revenue model (PTRM)
- the closing RAB value as at 30 June 2023 derived from our roll forward model (RFM)
- the proposed forecast capex for the 2023–28 period
- an expected inflation rate of 2.35% per annum for the 2023–28 period
- our year-by-year tracking module in the RFM for depreciation of existing assets for the 2023–28 period
- the same asset classes and standard asset lives for depreciating its forecast capex for the 2023–28 period, which are consistent with those approved in the 2018–23 transmission determination. Transgrid proposed a new asset class of ‘Leasehold land and property’ related to property leases over the 2023–28 period. Transgrid also proposed two new asset classes in the PTRM for ‘Buildings - capital works’ and ‘In-house software’ that were created for straight-line tax depreciation purposes arising from the AER’s 2018 tax review (Attachment 7).

Table 4.2 sets out Transgrid’s proposed depreciation amount for the 2023–28 period.

Table 4.2 Transgrid’s proposed regulatory depreciation for the 2023–28 regulatory control period (\$ million, nominal)

	2023–24	2024–25	2025–26	2026–27	2027–28	Total
Straight-line depreciation	316.1	354.5	397.0	412.5	430.0	1,910.2
Less: inflation indexation on opening RAB	204.8	219.4	225.5	228.4	230.4	1,108.4
Regulatory depreciation	111.3	135.1	171.6	184.2	199.6	801.8

Source: Transgrid, *2023–28 Revenue proposal, Post-tax revenue model*, January 2022.

⁴ Transgrid, *2023–28 Revenue proposal, Post-tax revenue model*, January 2022; Transgrid, *2023–28 Revenue proposal, Roll forward model*, January 2022.

4.3 Assessment approach

We determine the regulatory depreciation amount using the PTRM as a part of a transmission network service provider’s (TNSP) annual building block revenue requirement.⁵ 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.⁶

Our standard approach to calculating depreciation is to employ the straight-line method set out in the PTRM. 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.⁷ 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 or category of assets over the economic life of that asset or category of assets⁸ (apart from in certain specified circumstances)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 or category of assets was first included in the RAB for the relevant transmission system.¹⁰

To the extent that a TNSP’s revenue proposal does not comply with the above requirements, we must determine the depreciation schedules for calculating the depreciation for each regulatory year.¹¹

The regulatory depreciation amount is an output of the PTRM. We, therefore, assess Transgrid’s proposed regulatory depreciation amount by analysing the proposed inputs to the PTRM for calculating that amount. The key inputs include:

- the opening RAB as at 1 July 2023
- the forecast net capex in the 2023–28 period¹²
- 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

⁵ NER, cl. 6A.5.4(a)(3) and 6A.5.4(b)(3).

⁶ NER, cl. 6A.6.3(a).

⁷ This is the standard practice for the AER, as well as other jurisdictional regulators. See for example, IPART, *Cost building block model template, 20 June 2014*, Table 1; ERAWA, *Final Decision on Proposed Revisions to the Access Arrangement for the Western Power Network*, September 2012, Appendix 2: Target Revenue Calculation (Revenue Model).

⁸ NER, cl. 6A.6.3(b)(1).

⁹ NER, cl. 6A.6.3(b)(1) and 6A.6.3(c).

¹⁰ NER, cl. 6A.6.3(b)(2).

¹¹ NER, cl. 6A.6.3(a)(2)(ii).

¹² Capex enters the RAB net of forecast disposals. 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 2023–28 regulatory control period.

- the depreciation of existing assets in the opening RAB as at 1 July 2023—calculated in a separate year-by-year depreciation tracking module.

Our draft decision on Transgrid's regulatory depreciation amount reflects our determinations on the opening RAB as at 1 July 2023, expected inflation and forecast net capex (the first three building block components in the above list).¹³ Our determinations on these components of Transgrid's proposal are discussed in Attachments 2, 3 and 5, respectively.

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

- the approved standard asset lives in the transmission determination for the 2018–23 period
- the standard asset lives of comparable asset classes approved in our recent transmission determinations for other service providers
- the appropriate economic lives of the assets.

Our default approach for depreciating a service provider's existing assets in the PTRM uses a single remaining asset life for each asset class at the start of a regulatory control period as determined in the RFM. However, Transgrid has proposed to adopt an alternative approach where (in addition to grouping assets by type via asset classes) it tracks its asset classes' remaining asset lives for straight-line depreciation purposes on a year-by-year basis—known as the year-by-year tracking approach. This approach creates multiple remaining asset lives for each asset class depending on when the assets were acquired, rather than using a single weighted average remaining asset life. This approach was included in the latest version of the electricity transmission RFM in a separate depreciation tracking module. Transgrid used the RFM and the separate depreciation tracking module to calculate its straight-line depreciation forecast in developing its proposal.¹⁴

4.3.1 Interrelationships

The regulatory depreciation amount is a building block component of the annual building block 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 (excluding the impact of further capex). This reduces the return on capital amount, although this impact is usually smaller than the increased depreciation amount in the short to medium term.¹⁶

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

¹³ Our final decision will update the opening RAB as at 1 July 2023 for revised estimates of actual capex and inflation.

¹⁴ Version 4 of the electricity RFM was the latest published version at the time of Transgrid's proposal. An amended version 4.1 of the RFM was published in May 2022 and used for this draft decision. This version fixed default adjustments for capitalised provisions calculations in the 'Inputs working' sheet and minor formula errors in the 'TAB roll forward' and 'Remaining lives' sheets.

¹⁵ The PTRM distinguishes between straight-line depreciation and regulatory depreciation, with regulatory depreciation being straight-line depreciation minus the indexation adjustment.

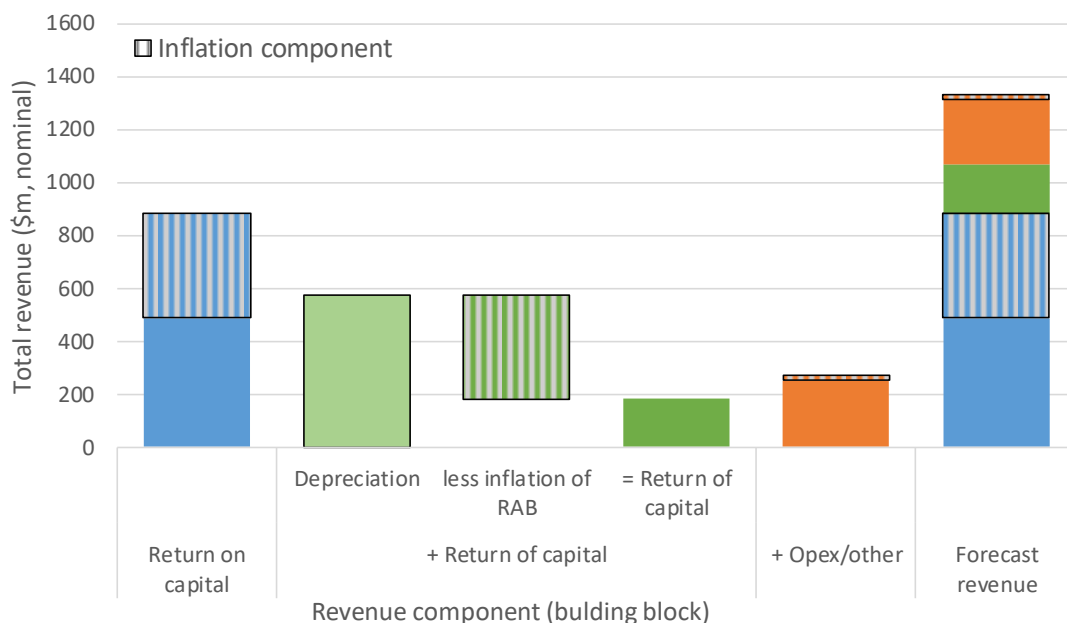
¹⁶ This is generally the case because the reduction in the RAB amount feeds into the higher depreciation building block, whereas the reduced return on capital building block is proportionate to the lower RAB multiplied by a nominal rate of return (WACC).

RAB and the forecast capex. Any increase in these factors also increases the depreciation amount.

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 building block revenue requirement is calculated by adding up the return on capital, depreciation, operating expenditure (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. Figure 4.1 shows where the inflation components are included in the building block costs.

Figure 4.1 Inflation components in revenue building blocks – example



Source: AER analysis.

¹⁷ NER, cl. 6A.5.4(b)(1) and 6A.6.1(e)(3).

¹⁸ AER, *Rate of return instrument*, cl. 1, 3(a) and 36(c), December 2018.

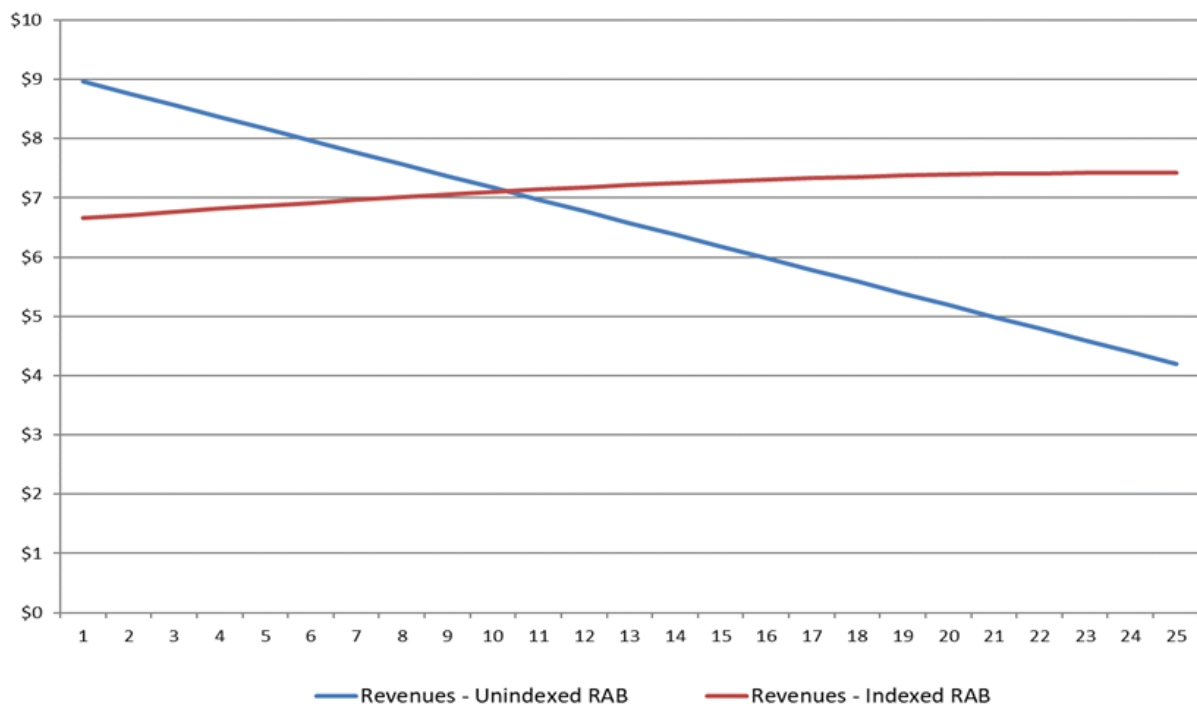
¹⁹ NER, cl. 6A.5.4(b)(1)(ii).

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 straight-line depreciation in such circumstances.

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 (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 TNSP) 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 4.2 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 a smoother revenue recovery profile over the life of an asset than if the RAB was un-indexed. The indexation of the RAB also reduces price shocks when the asset is replaced at the end of its life.²³

Figure 4.2 Revenue path example – indexed vs un-indexed RAB (\$ nominal)



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 net present value (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 2.5%, expected inflation of 2.4% and nominal WACC of 4.96%. Other building block components such as opex, tax and capex are ignored for simplicity as they would affect both approaches equally.

²³ In year 26, the revenues in the example for the un-indexed approach would jump from about \$4 to \$9, assuming the asset is replaced by an asset of roughly similar replacement cost as the initial asset. In contrast, in the same circumstances, the indexed approach would see revenues stay at roughly \$7.

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 Transgrid's proposal. A 10% increase in the straight-line depreciation causes unsmoothed revenues (\$ nominal) to increase by about 5.0%.²⁴

4.4 Reasons for draft decision

We accept Transgrid's proposed straight-line depreciation method for calculating the regulatory depreciation amount as set out in the PTRM. However, we decreased Transgrid's proposed forecast regulatory depreciation amount for the 2023–28 period by \$222.7 million (27.8%) to \$579.1 million (\$ nominal).

This decrease is primarily the result of our draft decision on the calculation of expected inflation (Attachment 3), which affects the projected RAB over the 2023–28 period. The magnitude of the reduction, however, is partially offset by our draft decision on the opening RAB as at 1 July 2023 (Attachment 2). Our assessment of Transgrid's proposed year-by-year tracking depreciation approach and standard asset lives are discussed in the following subsections.

4.4.1 Year-by-year tracking approach

Transgrid has proposed a change in approach to implementing the straight-line method for the calculation of its forecast regulatory depreciation amount. It proposed to change from the period-by-period approach²⁵ (approved for the 2018–23 regulatory control period) to the year-by-year tracking approach going forward. We accept Transgrid's proposed year-by-year tracking approach meets the requirements of the National Electricity Rules (NER). The current period-by-period tracking approach already includes some elements of tracking, and the impact of the change to year-by-year tracking is not material. We note that year-by-year tracking improves the matching of depreciation with the assets' underlying economic lives. Therefore, our draft decision is to accept this approach as we consider that it results in depreciation schedules that meet the requirements of the NER by:²⁶

- reflecting the nature of the assets and their economic life
- ensuring that total depreciation (in real terms) equals the initial value of the assets
- allowing the economic lives of existing assets to be consistent with those determined on a prospective basis in our 2018–2023 transmission determination.

Transgrid used our depreciation module in the RFM to implement year-by-year tracking. We have reviewed Transgrid's application of this module, and corrected some minor input errors

²⁴ We have analysed the sensitivity of straight-line depreciation relative to total revenue based on input data provided in Transgrid's proposal PTRM.

²⁵ The period-by-period tracking approach creates separate asset classes for each regulatory control period, with the weighted average approach used to determine the remaining lives for the existing assets at the start of the period. Compared to the weighted average remaining lives method, period-by-period tracking improves the matching of depreciation with the assets' underlying economic lives.

²⁶ NER, cl. 6A.6.3(b).

and made updates due to other aspects of our decision. In particular, we have made the following adjustments:

- updated the CPI for 2021–22 and WACC values for 2021–22 and 2022–23 as these have become available subsequent to Transgrid’s proposal. The CPI for 2022–23 has also been updated for the latest forecast CPI published in the Reserve Bank of Australia’s (RBA) August *Statement on Monetary Policy*
- corrected the equity raising costs capex in the module to reflect those made in the RFM, as discussed in Attachment 2
- amended the capex for the ‘Leasehold land and property’ and ‘Business IT’ asset classes to reflect our position on mid-period changes in capitalisation standards. Further, we have also included a final year asset adjustment to address the roll-in of capitalised leases (Attachments 2 and 8).²⁷

4.4.2 Standard asset lives

We accept Transgrid’s proposed standard asset lives, with the exception of the standard asset lives for the ‘Leasehold land and property’ and ‘Equity raising costs’ asset classes. We have calculated the standard asset life of equity raising costs by taking the weighted average of the standard asset lives of total forecast capex for each asset class over the 2023–28 period. We also accept the introduction of two new asset classes and associated standard asset lives arising from the 2018 tax review (Attachment 7).

Transgrid proposed the same standard asset lives for its existing asset classes in respect of the forecast capex to be incurred in the 2023–28 period except for the ‘Equity raising costs’ asset class. We accept the unchanged asset lives as they are consistent with those approved for the 2018–23 regulatory control period and are largely comparable with the standard asset lives approved in our recent determinations for other TNSPs.

The standard asset life for the ‘Equity raising costs’ asset class needs to be reviewed each regulatory control period. We consider the standard asset life for this asset class should reflect the lives of the mix of assets making up the approved forecast net capex, because the equity raising cost benchmark is associated with that forecast.²⁸ Transgrid’s standard life calculation for the ‘Equity raising costs’ asset class contained an error that did not correctly account for all forecast capex over the 2023–28 period, resulting in a proposed standard life of 15.9 years. For this draft decision, we have amended the calculation to reflect the weighted average of the standard asset lives of all depreciable asset classes over the 2023–28 period. As a result, we have determined a standard asset life of 37.3 years for the ‘Equity raising costs’ asset class.

Transgrid also proposed a new asset class of ‘Leasehold land and property’ for future property and land related lease expenditure. It proposed a standard asset life of 10 years for this asset class. However, Transgrid’s proposal PTRM did not forecast any such capex for

²⁷ AER, *Draft decision, Transgrid transmission determination 2023–28, Attachment 2 – Regulatory asset base*, September 2022, pp. 11–12; AER, *Draft decision, Transgrid transmission determination 2023–28, Attachment 8 – Efficiency benefit sharing scheme*, September 2022, pp. 6–7.

²⁸ For this reason, we used forecast net capex as the weights to establish the weighted average standard asset life for amortising equity raising costs.

the 2023–28 period. In its response to our information request, Transgrid submitted a revised PTRM which included forecast capex for this asset class and an amended standard life of 5 years.²⁹ We have assessed the revised PTRM and are satisfied the revised life of 5 years reflects the average lease terms of its forecast capex and therefore the expected economic lives of the leases. We have also determined a remaining asset life of 11.6 years for the roll-in of Transgrid's existing leases as an end of period adjustment (Attachment 2). We are satisfied that this life reflects the weighted average remaining asset life of Transgrid's existing leases as at 30 June 2023.

In order to implement the changes arising from the 2018 tax review, Transgrid allocated some of its forecast capex related to buildings and IT assets for the 2023–28 period into two new asset classes for 'Buildings - capital works' and 'In-house software'.

As discussed further in Attachment 7, the tax review acknowledged different methods of calculation of tax depreciation for different asset classes, which resulted in the addition of these asset classes to the PTRM and a reallocation of forecast capex to these asset classes. For each asset class a standard asset life has been proposed that is consistent with the asset class from which the forecast capex was reallocated. Therefore, for the 'Buildings - capital works' asset class we accept assigning a standard asset life of 40 years, while for the 'In-house software' asset class we accept assigning a standard asset life of 15 years. These standard asset lives are also consistent with the lives approved in the 2018–23 transmission determination for Transgrid's existing 'Substations' and 'Secondary systems' asset classes respectively.

Table 4.3 sets out our draft decision on Transgrid's standard asset lives for the 2023–28 period. We are satisfied that:³⁰

- the standard asset lives and depreciation approach more broadly 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 were first included in the RAB for Transgrid.

²⁹ Transgrid, *Email response to AER information request #007*, 20 May 2022.

³⁰ NER, cl. 6A.6.3(b)(1)–(2).

Table 4.3 AER’s draft decision on Transgrid’s standard asset lives at 1 July 2023 (years)

Asset class	Standard asset life
Transmission lines (2018 onwards)	50.0
Underground cables (2018 onwards)	45.0
Substations (2018 onwards)	40.0
Secondary systems (2018 onwards)	15.0
Communications (short life) (2018 onwards)	10.0
Business IT (2018 onwards)	4.0
Minor plant, motor vehicles & mobile plant (2018 onwards)	8.0
Transmission line life extension (2018–23) ^a	35.0
Land and easements	n/a
Synchronous condensers	40.0
Leasehold land and property	10.0
Buildings - capital works	40.0
In-house software	15.0
Equity raising costs	37.3

Source: AER analysis.

n/a not applicable. We have not assigned a standard asset life to the 'Land and easements' asset class because the assets allocated to it are not subject to depreciation.

(a) We have changed this asset class name back to 'Transmission line life extension (2018–23)' consistent with the approved PTRM with the 2018–23 determination.

Glossary

Term	Definition
AER	Australian Energy Regulator
Capex	Capital expenditure
NER	National Electricity Rules
NPV	Net present value
Opex	Operating expenditure
PTRM	Post-tax revenue model
RAB	Regulatory asset base
RBA	Reserve Bank of Australia
RFM	Roll forward model
TNSP	Transmission network service provider
WACC	Weighted average cost of capital
