DRAFT DECISION
TransGrid transmission determination
2018 to 2023

Attachment 5 – Regulatory depreciation

September 2017

AUSTRALIAN ENERGY REGULATOR

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Note

This attachment forms part of the AER's draft decision on TransGrid's transmission determination for 2018–23. 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 – 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

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Attachment 13 – Pass through events

Attachment 14 – Negotiated services

Contents

Shortened forms

Shortened form	Extended form
AARR	aggregate annual revenue requirement
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
ASRR	annual service revenue requirement
augex	augmentation expenditure
capex	capital expenditure
CCP	Consumer Challenge Panel
CESS	capital expenditure sharing scheme
CPI	consumer price index
DMIA	demand management innovation allowance
DRP	debt risk premium
EBSS	efficiency benefit sharing scheme
ERP	equity risk premium
MAR	maximum allowed revenue
MRP	market risk premium
NEL	national electricity law
NEM	national electricity market
NEO	national electricity objective
NER	national electricity rules
NSCAS	network support and control ancillary services
NSP	network service provider
NTSC	negotiated transmission service criteria
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

Shortened form	Extended form
RIN	regulatory information notice
RPP	revenue and pricing principles
SLCAPM	Sharpe-Lintner capital asset pricing model
STPIS	service target performance incentive scheme
TNSP	transmission network service provider
TUoS	transmission use of system
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 TransGrid, we make determinations on the indexation of the regulatory asset base (RAB) and depreciation building blocks for TransGrid's 2018–23 regulatory control period. 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 TransGrid's regulatory depreciation allowance. It also presents our draft decision on the proposed depreciation schedules, including an assessment of the proposed standard and remaining asset lives used for forecasting depreciation.

5.1 Draft decision

We do not accept TransGrid's proposed regulatory depreciation allowance of $678.1 million ($nominal) for the 2018–23 regulatory control period. Instead, we determine a regulatory depreciation allowance of $630.5 million ($nominal) for TransGrid. This represents a decrease of $47.6 million (or 7.0 per cent) on the proposed amount. In coming to this decision:

- We accept TransGrid's proposed straight-line method used to calculate the regulatory depreciation allowance.
- We largely accept TransGrid's proposed asset classes and standard asset lives, with the following exceptions:
    - We did not retain the standard asset life of 36 year associated with the proposed new asset class for 'NSCAS assets' in the PTRM. While we accept TransGrid's proposal to roll-in the assets relating to the provision of network support and control ancillary services (NSCAS) to the RAB, we do not accept the proposed roll-in amount of $25.7 million ($2017–18). We have instead determined a roll-in amount of zero (see attachment 6). Therefore, we are not required to make a decision on the proposed standard asset life for this asset class.
    - We do not accept the proposed standard asset life of 25 years for the 'Transmission line life extension (2018–23)' asset class. This is because we consider this standard asset life does not reflect the economic life of the assets in this asset class.[1] We determine a standard asset life of 35 years, which reflects the weighted average of the technical lives of the assets used for the forecast transmission line life extension works for the 2018–23 regulatory control period.

[1] NER, cl. 6A.6.3(b)(1).

We consider our decision on TransGrid's standard asset lives would lead to a depreciation schedule that reflects the nature of the assets over their economic lives (section 5.4.1).[2]

- We accept TransGrid's proposed weighted average method to calculate the remaining asset lives as at 1 July 2018. This because the proposed method applies the approach set out in the AER's roll forward model (RFM). In accepting the weighted average method, we have updated TransGrid's remaining asset lives as at 1 July 2018 to reflect our updates to the RAB roll forward inputs for the 2014–18 regulatory control period (attachment 2).
- We made determinations on other components of TransGrid's proposal that also affect the forecast regulatory depreciation allowance—the opening RAB as at 1 July 2018 (attachment 2), expected inflation rate (attachment 3) and forecast capital expenditure (attachment 6).

Table 5.1 sets out our draft decision on the annual regulatory depreciation allowance for TransGrid's 2018–23 regulatory control period.

Table 5.1 AER's draft decision on TransGrid's depreciation allowance for the 2018–23 regulatory control period ($million, nominal)

	2018–19	2019–20	2020–21	2021–22	2022–23	Total
Straight-line depreciation	260.3	278.2	293.3	301.3	316.0	1449.2
Less: inflation indexation on opening RAB	159.3	160.8	163.7	166.6	168.3	818.7
Regulatory depreciation	**101.0**	**117.4**	**129.6**	**134.7**	**147.8**	**630.5**

Source: AER analysis.

5.2 TransGrid's proposal

For the 2018–23 regulatory control period, TransGrid proposed a forecast regulatory depreciation allowance of $678.1 million ($nominal). To calculate the depreciation allowance, TransGrid proposed:[3]

- to use the straight-line depreciation method employed in the AER's post-tax revenue model (PTRM)
- the closing RAB value as at 30 June 2018 derived from our RFM
- the weighted average remaining asset lives of assets in existence as at 30 June 2018 derived from the RFM for calculating the depreciation of existing assets
- to use proposed forecast capex for the 2018–23 regulatory control period

[2] NER, cl. 6A.6.3(b)(1).

[3] TransGrid, *Revenue proposal*, January 2017, pp. 194–197.

- to create separate asset classes for the 2018–23 regulatory control period to ensure accurate treatment of depreciation associated with capex and asset disposals forecast for this period. The proposed asset classes and standard asset lives created for the 2018–23 regulatory control period are consistent with those approved in the 2014–18 transmission determination.
- a new asset class for 'NSCAS assets' with a standard asset life of 36 years.

Table 5.2 sets out TransGrid's proposed depreciation allowance for the 2018–23 regulatory control period.

Table 5.2 TransGrid's proposed depreciation allowance for the 2018–23 regulatory control period ($million, nominal)

	2018–19	2019–20	2020–21	2021–22	2022–23	Total
Straight-line depreciation	261.6	281.5	300.0	312.3	331.3	1486.7
Less: inflation indexation on opening RAB	153.2	156.0	160.8	166.2	172.4	808.6
Regulatory depreciation	**108.4**	**125.5**	**139.2**	**146.1**	**158.9**	**678.1**

Source: TransGrid, *Revenue proposal, Post Tax Revenue Model, January 2017.*

5.3 Assessment approach

We determine the regulatory depreciation allowance using the post-tax revenue model (PTRM) as a part of a TNSP's annual building block revenue requirement.[4] 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.[5]

Our standard approach to calculating depreciation is to employ the straight-line method as 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.[6] 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 assets.[7]

4 NER, cll. 6A.5.4(a)(3) and 6A.5.4(b)(3).

5 NER, cl. 6A.6.3(a).

6 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).

7 NER, cl. 6A.6.3(b)(1).

- The sum of the real value of the depreciation 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.[8]

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.[9]

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

- the opening RAB as at 1 July 2018
- the expected inflation rate for the 2018–23 regulatory control period
- the forecast net capex in 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 weighted average remaining asset lives for each asset class—used for calculating the depreciation of existing assets.

Our draft decision on TransGrid's regulatory depreciation allowance reflects our determinations on the opening RAB as at 1 July 2018, expected inflation and forecast capex (the first three building block components in the above list).[10] Our determinations on these components of TransGrid's proposal are discussed in attachments 2, 3 and 6 respectively.

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

- the approved standard asset lives in the transmission determination for TransGrid for the 2014–18 regulatory control period
- the standard asset lives of comparable asset classes approved in our recent transmission determinations for other TNSPs.

We use our standard approach for depreciating a TNSP's existing assets in the PTRM by using the remaining asset lives at the start of a regulatory control period as determined in the RFM. The proposed RFM uses our preferred weighted average method to establish a remaining asset life for each asset class. This method rolls forward the remaining asset life for an asset class from the beginning of the 2014–18 regulatory control period. We consider this method reflects the mix of assets within the 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 remaining values

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8 NER, cl. 6A.6.3(b)(2).

9 NER, cl. 6A.6.3(a)(2)(ii).

10 Our final decision will update the opening RAB as at 1 July 2018 for revised estimates of actual capex and inflation.

of all assets are used as weights at the end of the period. TransGrid creates separate asset classes for each regulatory control period for depreciating its capex.[11] This means that TransGrid's proposal adopts the weighted average method to calculate remaining asset lives as at 1 July 2018 for existing asset classes. A new set of asset classes is then applied for depreciating new capex over the 2018–23 regulatory control period. This approach is a continuation of that approved in TransGrid's previous determinations. We note this approach achieves a similar outcome as the 'year-by-year tracking' depreciation approach that we have approved in recent decisions for other network service providers.[12]

5.3.1 Interrelationships

The regulatory depreciation allowance is a building block component of the annual building block revenue requirement.[13] 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 allowance, although this impact is usually smaller than the increased depreciation allowance in the short to medium term.[14]

Ultimately, however, a TNSP can only recover the capex it has incurred on assets once. The depreciation allowance reflects how quickly the RAB is being recovered and 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.[15] The return on capital building block has to be calculated using a nominal rate of return (WACC) applied to the opening RAB.[16] As noted in attachment 1, the total annual building block 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.

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11 TransGrid, *Revenue proposal*, January 2017, p. 195.

12 AER, *Draft decision: TasNetworks distribution determination - Attachment 5 - Regulatory depreciation*, September 2015, p. 6; AER, *Final decision: SA Power Networks distribution determination - Attachment 5 - Regulatory depreciation*, October 2015, p. 7; AER, *Final decision: Ergon Energy distribution determination - Attachment 5 - Regulatory depreciation,* October 2015, p. 11; AER, *Preliminary decision: Jemena distribution determination - Attachment 5 - Regulatory depreciation,* October 2015, p. 6.

13 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.

14 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.

15 NER, cll.6A.5.4(b)(1) and 6A.6.1(e)(3).

16 NER, cll. 6A.6.2(a) and 6A.6.2(d)(2).

To avoid this double compensation, we make an adjustment by subtracting the annual indexation gain on the RAB from the calculation of total revenue.[17] 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.[18] 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 (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.[19] Under both approaches, the total revenues being recovered are in present value neutral terms—that is, returning the initial cost of the RAB.

Figure 5.1 shows the recovery of revenue under both approaches using a simplified example.[20] 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.

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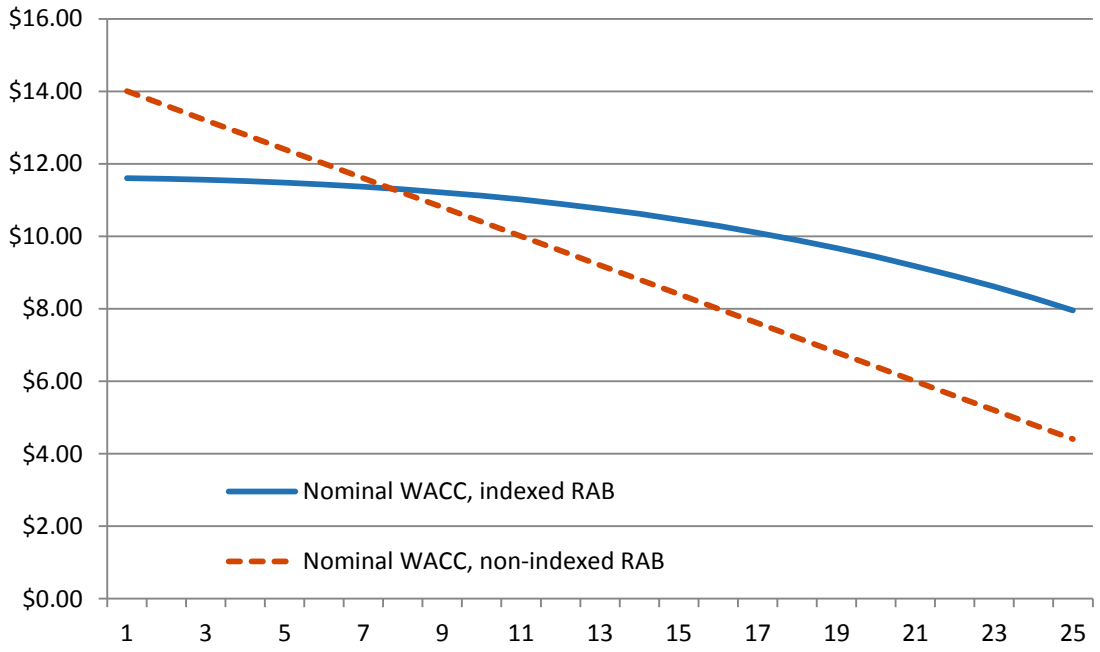
17 NER, cl. 6A.5.4(b)(1)(ii).

18 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.

19 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.

20 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.

Figure 5.1 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 TransGrid's proposal. A ten per cent increase in the straight-line depreciation causes revenues to increase by about 4.2 per cent.

5.4 Reasons for draft decision

We accept TransGrid's proposed straight-line depreciation method for calculating the regulatory depreciation allowance as set out in the PTRM. TransGrid creates separate asset classes for each regulatory control period to ensure accurate treatment of depreciation associated with capex and asset disposals forecast for that period.[21] This means that TransGrid's proposal adopts the weighted average method to calculate remaining asset lives as at 1 July 2018 for existing asset classes. A new set of asset classes is then applied for depreciating new capex over the 2018–23 regulatory control period. We consider this approach to be reasonable as it achieves a similar outcome as the 'year-by-year tracking' depreciation approach that we approved in recent decisions for other network service providers.[22] Further, we note that this approach is a

[21] TransGrid, *Revenue proposal*, January 2017, p. 195.

[22] AER, *Draft decision: TasNetworks distribution determination - Attachment 5 - Regulatory depreciation*, September 2015, p. 6; AER, *Final decision: SA Power Networks distribution determination - Attachment 5 - Regulatory depreciation*, October 2015, p. 7; AER, *Final decision: Ergon Energy distribution determination - Attachment 5 -*

continuation of that approved in TransGrid's previous determinations. We also accept the majority of TransGrid's proposed asset classes and standard asset lives, except for the 'NSCAS assets' and 'Transmission line life extension (2018–23)' asset classes.

Overall, we reduced TransGrid's proposed forecast regulatory depreciation allowance for the 2018–23 regulatory control period by $47.6 million (or 7.0 per cent) to $630.5 million. This reduction reflects our amendments to the above two standard asset lives. Our determinations regarding other components of TransGrid's revenue proposal also affect the forecast regulatory depreciation allowance—the opening RAB as at 1 July 2018 (attachment 2), expected inflation rate (attachment 3) and forecast capital expenditure (attachment 6).

5.4.1 Standard asset lives

We accept the majority of TransGrid's proposed standard asset lives for its asset classes in respect of forecast capex to be commissioned in the 2018–23 regulatory control period. We note that TransGrid's proposed standard asset lives are consistent with those approved in the 2014–18 determination and largely comparable with those used by other TNSPs for similar asset classes.[23] However, we did not retain the standard asset life of 36 years for the proposed new asset class for 'NSCAS assets' in the PTRM. We also do not accept TransGrid's proposed standard asset life of 25 years for the 'Transmission line life extension (2018–23)' asset class. We discuss our reasons on these decisions in detail below.

5.4.1.1 Standard asset life for the 'NSCAS assets' asset class

We did not retain TransGrid's proposed standard asset life of 36 years for the asset class for 'NSCAS assets' in the PTRM. These assets were originally procured by AEMO under a commercial arrangement with TransGrid to provide NSCAS from 4 February 2013 to 30 June 2019. TransGrid proposed to roll-in the depreciated value of these assets via a capex adjustment to its forecast RAB at the commencement of 2019–20. It has proposed a standard asset life of 36 years for depreciation purposes. We consider that TransGrid has more than fully recovered its initial investment under the agreement with AEMO. Therefore, we determine that the NSCAS assets be rolled into the RAB at a zero value. Since we have not approved TransGrid's proposed roll-in amount of the NSCAS assets to the RAB, we are not required to make a decision on the proposed standard asset life for NSCAS assets. The reasons for our decision on the proposed roll-in of the NSCAS assets are discussed in attachment 6.

Regulatory depreciation, October 2015, p. 11; AER, *Preliminary decision: Jemena distribution determination - Attachment 5 - Regulatory depreciation,* October 2015, p. 6.

[23] AER, *Final decision: Powerlink transmission determination 2017–22*, *Overview*, April 2017, p. 24*;* AER, *Final decision: AusNet Services transmission determination 2017–22, Attachment 5 – Regulatory depreciation*, April 2017, p. 14*;* , AER, *Final decision: ElectraNet transmission determination 2013–18*, April 2013, p. 149; AER, *Draft decision: TasNetworks transmission determination 2015–19*, *Attachment 5: Regulatory depreciation*, November 2014, p. 14.

5.4.1.2 Standard asset life for the 'Transmission line life extension (2018–23)' asset class

We do not accept TransGrid's proposed standard asset life of 25 years for the 'Transmission line life extension (2018–23)' asset class for depreciation purposes. This is because we consider this standard asset life does not reflect the economic life of the assets in this asset class for the 2018–23 regulatory control period.[24] Our general approach on depreciation is to align the economic life of the asset class with the technical life of the assets that make up the asset class. We have consistently applied this approach for similar asset classes in our recent decisions for TNSPs.[25]

For this draft decision, we determine a standard asset life of 35 years for the 'Transmission line life extension (2018–23)' asset class. This reflects the weighted average of the technical lives of the assets associated with the forecast transmission line life extension capex for the 2018–23 regulatory control period as shown in Table 5.3. We have calculated the weighted average by weighting together the technical lives of the component assets using the proportion of capex for each asset type as weights. We consider the amended standard asset life results in a depreciation profile that reflects the nature of the assets over the economic life of the assets within this asset class.[26] This change will slightly reduce TransGrid's forecast regulatory depreciation allowance by about $1.1 million (or 0.2 per cent) over the 2018–23 regulatory control period.

Table 5.3 Weighted average technical life of the component assets associated with the forecast transmission line life extension capex

Component assets	Technical life (years)	Proposed capex ($2017–18, million)	Weights (per cent)	Weighted average technical life (years)
Tower refurbishment[a]	25	139.8	55.1	14
Insulators	40	14.7	5.8	2
Fittings[b]	40	12.8	5.0	2
Earthwire/OPGW[c]	50	8.8	3.5	2
Earthing	40	1.3	0.5	0
Steel and concrete poles[d]	50	74.6	29.4	15
Landscaping and access	n/a	1.7	0.7	n/a
Total		**253.6**[e]	**100.0**	**35**

[24] NER, cl. 6A.6.3(b)(1).

[25] AER, *Final decision: Powerlink transmission determination 2012–17*, April 2012, pp. 203–205; AER, *Final decision: ElectraNet transmission determination 2013–18*, April 2013, pp. 146–147; AER, *Draft Decision: TransGrid transmission determination 2015–18 — Attachment 5 -Regulatory Depreciation,* November 2014, p. 11.

[26] NER, cl. 6A.6.3(b)(1).

Source: TransGrid, *Response to information request #015 — Depreciation of Transmission line life extension asset class*, May 2017; AER analysis.

(a) Includes zinc painting of towers, asbestos paint removal, remediation of fountains, replacement of nuts and bolts etc.

(b) Relates to both transmission line refurbishment and transmission line compliance.

(c) Optical ground wire (OPGW).

(d) For replacement for wood poles.

(e) TransGrid initially proposed $229 million ($2017–18) capex for the 'Transmission line life extension (2018-23)' asset class in its revenue proposal. However, following our information request, it later identified errors in its original submission and proposed a revised capex of $253.6 million ($2017–18) for this asset class; TransGrid, *Response to information request #015 — Depreciation of Transmission line life extension asset class,* May 2017.

In the 2014–18 determination for TransGrid, we approved a standard asset life of 25 years for the 'Transmission line life extension (2014–18)' asset class. This is because it reflected the weighted average of the technical lives of assets associated with the transmission line life extension capex for the 2014–18 regulatory control period. The type of life extension works approved for the 2014–18 period mainly involved zinc coating of tower structures, and replacement of corroded nuts, bolts and fittings with technical lives between 20 and 34 years.[27]

TransGrid proposed $253.6 million ($2017–18) transmission line life extension capex for the 2018–23 regulatory control period, which is an increase of about $226 million from the amount approved for the 2014–18 period.[28] A large proportion of this proposed capex involves installing new components of the transmission structures such as insulators, and steel and concrete poles, which have 40 or 50 years technical lives (see Table 5.3). Therefore, we consider that the current standard asset life of 25 years used for the 2014–18 period no longer reflects the mix of asset types and their technical lives associated with the forecast transmission line life extension capex for the 2018–23 regulatory control period.

TransGrid submitted that it did not consider the technical lives of the individual transmission line components in setting the standard asset life of the 'Transmission line life extension (2018–23)' asset class. TransGrid has viewed this from the perspective of the asset in its entirety, not the lives of the individual asset components. It has set the standard asset life to be consistent with the estimated extended life of the

[27] AER, *Draft Decision: TransGrid transmission determination 2015–18 — Attachment 5 Regulatory Depreciation,* November 2014, p. 11.

[28] TransGrid initially proposed $229 million ($2017–18) capex for the 'Transmission line life extension (2018–23)' asset class in its revenue proposal. However, following our information request, it later identified errors in its original submission and proposed a revised capex of $253.6 million ($2017–18) for this asset class; TransGrid, *Response to information request #015 — Depreciation of Transmission line life extension asset class,* 15 May 2017.

underlying transmission lines that are subject to refurbishment. It stated that its approach is consistent with Australian Accounting Standards.[29]

We do not agree with this submission. We are not aware of any accounting standard that requires a transmission line to be treated as a single asset. In any event, the regulatory approach required by the NER is not based on or constrained by accounting standards. While we endeavour to maintain consistency with accounting practices where possible, we make our decisions in accordance with the requirements of the NER and the NEL to achieve outcomes in the long term interests of consumers.[30] We consider that where an asset class is comprised of a number of different asset components, such as a transmission line, treating it as a single asset is generally not an essential element of a TNSP's efficient asset management practices.

We consider that it is reasonable to expect the newly installed transmission line components during the 2018–23 regulatory control period to be used until the end of their respective technical lives. The reasons for this view are:

- TransGrid is expected to refurbish or replace the remainder of the transmission line components as they reach the end of their lives, resulting in further extensions to the life of the underlying transmission lines. This approach extends line life beyond the life of any line components. TransGrid's current maintenance policies specify the undertaking of regular inspections on all assets down to the component level to assess their condition, which enables the strategic targeting and addressing of component issues accordingly.[31] This asset renewal approach suggests that components that comprise TransGrid's transmission lines will likely have a perpetual remaining life because the need for a transmission line does not have an end date unless TransGrid has a firm decommissioning plan in place. We note that TransGrid has not presented any decommissioning plans to support a remaining economic life shorter than the technical life. Therefore, we consider the economic life of the transmission line can be extended perpetually by replacing components that have reached end of life until a time when TransGrid decides the functions of the line is no longer required, and decommissioning of the line is economically justifiable.
- Some assets may be reusable in other areas of the network, even if a particular line is no longer used. If TransGrid is required to replace an entire transmission line at the end of its 25 year life extension period, it could still reuse the new transmission line components installed in the 2018–23 regulatory control period (such as poles and insulators) for other transmission lines. This is because these components are likely to still have many years of remaining useful life beyond 25 years. TransGrid

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29 TransGrid, *Response to information request #034 — Depreciation of Transmission line life extension asset class (further questions),* 18 May 2017, p. 1.

30 This view is also consistent with previous statements from the Australian Competition Tribunal. See Australian Competition Tribunal, *Application by Jemena Gas Networks (NSW) Ltd (No 3) [2011] ACompT 6*, paragraphs 31–32.

31 TransGrid, *Response to information request #034 — Depreciation of Transmission line life extension asset class (further questions)*, 18 May 2017, p. 5.

indicated that it would typically use existing asset components where possible for a new replacement or upgraded transmission line. Alternatively, it may reuse asset component as spares for ongoing maintenance activities.[32] We acknowledge that it may not always be possible to reuse each component for reasons such as safety, compatibility and cost effectiveness, in an event that the line is decommissioned. However, this is unknown at the current time. Therefore, we do not consider it reasonable to fully depreciate an asset component before it reaches the end of its technical life. We expect the key components of the lines should be generally used until the end of their technical life for a TNSP that has a sound asset management policy and strategy.

- There is no evidence that TransGrid, in the past, has systematically disposed major assets, such as insulators and poles, before they reach the end of their technical life. We agree with TransGrid's past practice in this respect and consider that it is not efficient or prudent to systematically dispose of an asset or components of an asset before they reach the end of the technical life.
- TransGrid's proposed approach may lead to inefficient investment and management of assets. TransGrid stated that 'in the event that the transmission line is retired or replaced, the value of any reusable components would be captured by customers through the lower capex or maintenance costs that would be incurred when it is used for future projects'. However, TransGrid is not obliged to reuse its assets in this way and we consider that, under TransGrid's proposed approach, there would be no incentive for TransGrid to continue using an asset once it has been fully depreciated before its technical life.
- TransGrid submitted it is unreasonable to expect that the components of the lines would be used until the end of their technical lives due to the uncertain nature of its future transmission line asset plans beyond the 2018–23 period.[33] While TransGrid may choose to take a range of options in its future transmission line asset plans such as refurbishment, replacement and decommissioning, the uncertainty around its future asset management plans should not be used as the basis for setting a shorter overall line life at the current time. We note that TransGrid currently does not have any firm decommissioning plan to support a shorter life of the existing lines. Therefore it is not reasonable to assume the lines that are being refurbished during the 2018–23 regulatory control period will not be operational after 25 years as suggested by TransGrid. However, if TransGrid could not further extend the lives of the underlying transmission lines through its asset management strategies, then it could propose to the AER to write off the residual value of the line assets based on its decommissioning plan.

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[32] TransGrid, *Response to information request #034 — Depreciation of Transmission line life extension asset class (further questions),* 18 May 2017, p. 6.

[33] TransGrid, *Response to information request #034 — Depreciation of Transmission line life extension asset class (further questions),* 18 May 2017, p. 6.

Therefore, for the reasons discussed above, we are not persuaded that the expected economic lives of these newly installed assets should significantly deviate from their technical lives. We consider the best approach is to use the weighted average of the technical lives of the assets for regulatory depreciation purposes. The resulting standard asset life of 35 years provides a depreciation profile that reflects the nature of the assets over the economic life of the assets within this asset class.[34]

Table 5.4 sets out our draft decision on TransGrid's standard asset lives for the 2018–23 regulatory control period. We consider 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. Further, the sum of the real value of the depreciation attributable to the assets would be equivalent to the value at which the assets was first included in the RAB for TransGrid.[35]

5.4.2 Remaining asset lives

We accept TransGrid's proposed weighted average method to calculate the remaining asset lives as at 1 July 2018 for its existing asset classes. The proposed method applies the approach as set out in our RFM. In accepting the weighted average method, we have updated TransGrid's remaining asset lives to reflect our adjustments to the proposed RFM. As discussed in attachment 2, we updated the CPI and WACC inputs in TransGrid's proposed RFM and accordingly updated the remaining asset lives as at 1 July 2018. This is because such inputs in the RFM affect the calculation of the remaining asset lives as at 1 July 2018.

Table 5.4 sets out our draft decision on the remaining asset lives as at 1 July 2018 for TransGrid.

Table 5.4 AER's draft decision on TransGrid's standard and remaining asset lives as at 1 July 2018 (years)

Asset class	Standard asset life	Remaining asset life as at 1 July 2018[a]
Transmission lines (pre 2004–05)	n/a	14.1
Underground cables (pre 2004–05)	n/a	26.3
Substations including buildings (pre 2004–05)	n/a	12.5
Transmission lines (2004–09)	n/a	40.1
Underground cables (2004–09)	n/a	32.4
Substations including buildings (2004–09)	n/a	29.8
SCADA and communications (2004–09)	n/a	4.8

[34] NER, cl. 6A.6.3(b)(1).

[35] NER, cll. 6A.6.3(b)(1)–(2).

Transmission lines & cables (2009–14)	n/a	44.6
Substations (2009–14)	n/a	34.2
Secondary systems (2009–14)	n/a	29.5
Communications (2009–14)	n/a	29.4
Minor plant, motor vehicles & mobile plant (2009–14)	n/a	2.2
Transmission lines (2014–18)	n/a	49.5
Underground cables (2014–18)	n/a	43.6
Substations (2014–18)	n/a	38.2
Secondary systems (2014–18)	n/a	13.6
Communications (short life) (2014–18)	n/a	9.0
Business IT (2014–18)	n/a	3.1
Minor plant, motor vehicles & mobile plant (2014–18)	n/a	6.8
Transmission line life extension (2014–18)	n/a	24.1
Residual - other	n/a	1.00
Transmission lines (2018–23)	50.0	n/a
Underground cables (2018–23)	45.0	n/a
Substations (2018–23)	40.0	n/a
Secondary systems (2018–23)	15.0	n/a
Communications (short life) (2018–23)	10.0	n/a
Business IT (2018–23)	4.0	n/a
Minor plant, motor vehicles & mobile plant (2018–23)	8.0	n/a
Transmission line life extension (2018–23)	35.0	n/a
Land and easements	n/a	n/a
NSCAS assets	n/a	n/a
Equity raising costs[b]	n/a	32.6

Source: AER analysis; TransGrid, *Roll Forward Model,* 31 January 2017; TransGrid, *Post Tax Revenue Model,* 31 January 2017.

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. The asset classes ending with '(pre 2004–05)'; '(2004–09)'; '(2009–14)'; and '(2014–18)' also do not have assigned standard asset lives because forecast capex is no longer allocated to them.

(a) The 2016–17 and 2017–18 capex values are used to calculate the weighted average remaining asset lives in the RFM. At the time of this draft decision, the capex values for 2016–17 and 2017–18 are based on estimates. For the final decision, we will update the 2016–17 estimated capex values with the actual values and may update the 2017–18 estimated capex with revised estimates. Therefore, for the final decision we will recalculate TransGrid's remaining asset lives as at 1 July 2018 using the method approved in this draft decision.

(b) For this draft decision, TransGrid does not satisfy the requirements to incur benchmark equity raising costs associated with its forecast capex for the 2018–23 regulatory control period. Therefore, a standard asset life for equity raising costs (2018–23) is not required.