# DRAFT DECISION

## AusNet Services Transmission Determination 2022 to 2027

## Attachment 4 Regulatory depreciation

June 2021

AUSTRALIAN ENERGY REGULATOR

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# Note

This attachment forms part of the AER's draft decision on AusNet Services' 2022–27 transmission determination. It should be read with all other parts of the draft decision.

The draft decision includes the following attachments:

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

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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 AusNet Services, we make determinations on the indexation of the regulatory asset base (RAB) and depreciation building blocks for AusNet Services' 2022–27 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 AusNet Services' 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 $560.2 million ($nominal) for AusNet Services for the 2022–27 regulatory control period. AusNet Services proposed a regulatory depreciation amount of $545.1 million ($nominal).[2] Our draft decision represents an increase of $15.1 million (or 2.8 per cent) on the proposed amount.

This increase is a result of our calculation of expected inflation (attachment 3) and its impact on the indexation of the RAB. Indexation of the RAB is $53.5 million lower than the proposal. This is largely due to applying a lower expected inflation rate of 2.00 per cent per annum in this draft decision resulting from our recent inflation review position, compared to AusNet Services' proposal of 2.25 per cent per annum.

The indexation adjustment more than offsets our proposed reductions to accelerated depreciation and other components of AusNet Services' proposal that affect the forecast regulatory depreciation amount. Specifically, it offsets our proposed reductions to the opening RAB as at 1 April 2022 (attachment 2) and forecast capital expenditure (attachment 5) including its effect on the projected RAB over the 2022–27 regulatory control period.[3]

For our draft decision on AusNet Services' regulatory depreciation:

- we accept AusNet Services' proposed straight-line depreciation method used to calculate the regulatory depreciation amount
- we accept AusNet Services' proposed continuation of tracking its capital expenditure (capex) on a year-by-year basis

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1 NER, cll. 6A.5.4 and 6A.14.1.

2 AusNet Services, *ANT - TRR 2023-27 Model Post Tax Revenue Model*, 29 October 2020. The proposed regulatory depreciation amount was unaffected by a later update to the PTRM.

3 Capex enters the RAB net of forecast disposals. It includes equity raising costs (where relevant) and the half-year weighted average cost of capital (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 2022–27 regulatory control period.

- we accept AusNet Services' proposed asset classes and standard asset lives, with the exception of the proposed asset lives for new asset classes for existing and future insulators and instrument transformers (section 4.4.2). These exceptions have reduced the amount of accelerated depreciation compared to that sought by AusNet Services by about $9 million for the 2022–27 regulatory control period.

Table 4.1 sets out our draft decision on the annual regulatory depreciation amount for AusNet Services' 2022–27 regulatory control period.

### Table 4.1 AER's draft decision on AusNet Services' regulatory depreciation for the 2022–27 regulatory control period ($million, nominal)

| | 2022-23 | 2023-24 | 2024-25 | 2025-26 | 2026-27 | Total |
|---|---|---|---|---|---|---|
| Straight-line depreciation | 185.2 | 169.8 | 180.8 | 192.0 | 199.9 | 927.6 |
| *Less:* inflation indexation on opening RAB | 70.9 | 71.9 | 73.6 | 75.1 | 75.8 | 367.3 |
| **Regulatory depreciation** | **114.3** | **97.9** | **107.2** | **116.9** | **124.0** | **560.2** |

Source: AER analysis.

## 4.2 AusNet Services' proposal

For the 2022–27 regulatory control period, AusNet Services proposed a total forecast regulatory depreciation amount of $545.1 million ($nominal). To calculate the depreciation amount, AusNet Services proposed to use:

- the straight-line depreciation method employed in the AER's post-tax revenue model (PTRM)
- the closing RAB value at 31 March 2022 derived from the AER's roll forward model (RFM)
- the proposed forecast capex for the 2022–27 regulatory control period
- an expected inflation rate of 2.25 per cent per annum for the 2022–27 regulatory control period
- the asset classes and standard asset lives for depreciating its forecast capex for the 2022–27 regulatory control period which are consistent with those approved in the 2017–22 transmission determination. In addition, AusNet Services proposed six new asset classes and associated asset lives related to the accelerated depreciation of insulators and instrument transformers. It also proposed new asset classes related to property leases for four of the regulatory years in the 2022–27 regulatory control period
- the AER's year-by-year tracking module in the RFM for depreciation of existing assets for the 2022–27 regulatory control period.

Table 4.2 sets out AusNet Services' proposed depreciation amount for the 2022–27 regulatory control period.

**Table 4.2 AusNet Services' proposed regulatory depreciation for the 2022–27 regulatory control period ($million, nominal)**

| | 2022-23 | 2023-24 | 2024-25 | 2025-26 | 2026-27 | Total |
|---|---|---|---|---|---|---|
| Straight-line depreciation | 190.2 | 176.4 | 188.6 | 201.0 | 209.8 | 966.0 |
| *Less:* inflation indexation on opening RAB | 80.5 | 82.2 | 84.4 | 86.4 | 87.4 | 420.9 |
| **Regulatory depreciation** | **109.6** | **94.2** | **104.3** | **114.6** | **122.4** | **545.1** |

Source: AusNet Services, *Post Tax Revenue Model*, 29 October 2020.

## 4.3 Assessment approach

We determine the regulatory depreciation amount using the PTRM as a part of a transmission network service provider's (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 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]
- 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.[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 amount is an output of the PTRM. We therefore assess AusNet Services' proposed regulatory depreciation amount by analysing the proposed inputs to the PTRM for calculating that amount. The key inputs include:

- the opening RAB at 1 April 2022

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, Independent Pricing and Regulatory Tribunal, *Cost building block model template, 20 June 2014*, Table 1; Economic Regulation Authority Western Australia, *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).

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

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

- the forecast net capex in the 2022–27 regulatory control period[10]
- 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 of existing assets in the opening RAB as at 1 April 2022 — calculated in a separate year-by-year depreciation tracking module.

Our draft decision on AusNet Services' regulatory depreciation amount reflects our determinations on the opening RAB as at 1 April 2022, expected inflation, and forecast capex (the first three building block components in the above list).[11] Our determinations on these components of AusNet Services' proposal are discussed in attachments 2, 3 and 5 respectively.

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

- the approved standard asset lives in the transmission determination for the 2017–22 regulatory control 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, AusNet Services has previously adopted an approach where 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—in a separate depreciation tracking model. 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. Having previously approved the year-by-year tracking approach and determined that it met the depreciation provisions of the NER, we reaffirm this decision for the 2022–27 regulatory control period.

AusNet Services' proposal also included accelerated depreciation of certain assets. One key consideration is whether the accelerated depreciation produces depreciation schedules that reflect the economic life of the affected assets, as set out in clause 6A.6.3(b)(1) of the NER.

### 4.3.1 Interrelationships

The regulatory depreciation amount is a building block component of the annual building block revenue requirement.[12] Higher (or quicker) depreciation leads to higher revenues

[10] 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 2022–27 regulatory control period.

[11] Our final decision will update the opening RAB as at 1 April 2022 for revised estimates of actual capex and inflation.

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.[13]

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 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 amount.

The RAB has to be maintained in real terms, meaning the RAB must be indexed for expected inflation.[14] The return on capital building block has to be calculated using a nominal rate of return (WACC) applied to the opening RAB.[15] 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.[16] 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.[17] 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

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

13 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.

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

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

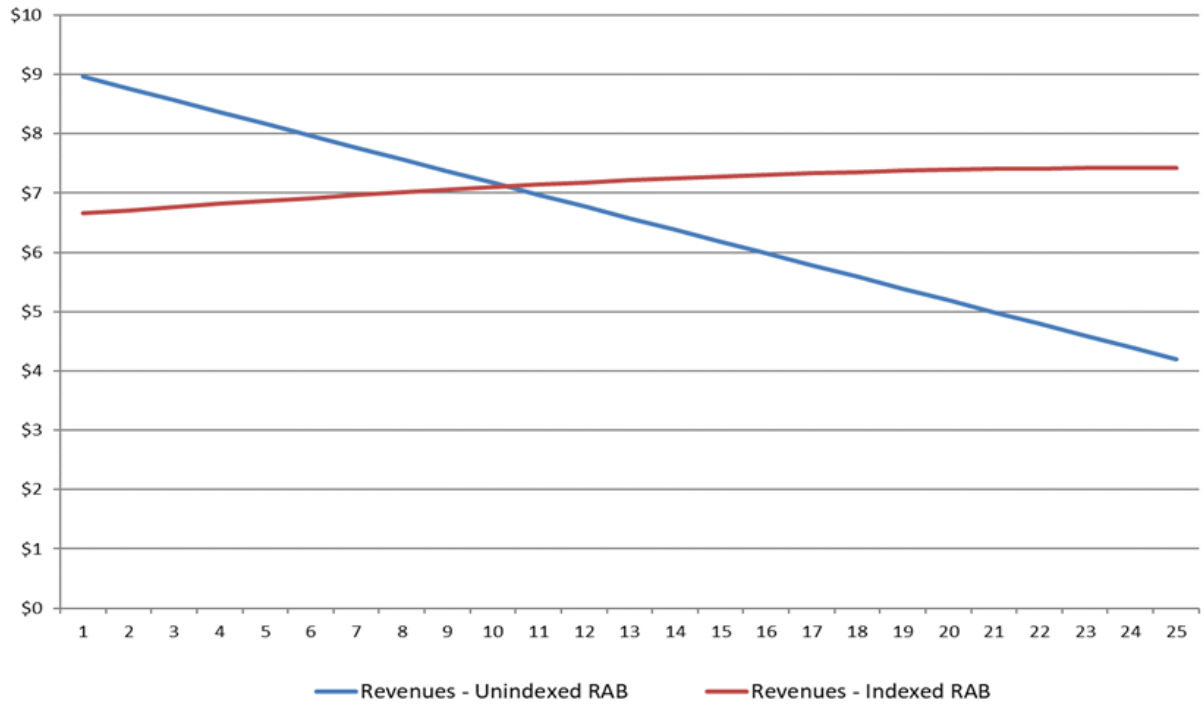
16 NER, cl. 6A.5.4(b)(1)(ii).

17 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.

revenue.[18] 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.[19] 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 AusNet Services' proposal. A 10 per cent increase in the straight-line depreciation causes revenues to increase by about 3.7 per cent.[20]

[18] 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.

[19] 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.

[20] We have analysed the sensitivity of straight-line depreciation relative to total revenue based on input data provided in AusNet Services' proposal PTRM.

## 4.4 Reasons for draft decision

We accept AusNet Services' proposed straight-line depreciation method for calculating the regulatory depreciation amount as set out in the PTRM. However, we increased AusNet Services' proposed forecast regulatory depreciation amount for the 2022–27 regulatory control period by $15.1 million (or 2.8 per cent) to $560.2 million ($nominal).

This increase is a result of our calculation of expected inflation (attachment 3) and its impact on the indexation of the RAB. This impact more than offsets our proposed reductions to accelerated depreciation and other components of AusNet Services' proposal such as the opening RAB as at 1 April 2022 (attachment 2) and forecast capital expenditure (attachment 5) including its effect on the projected RAB over the 2022–27 regulatory control period.[21]

Our assessment of AusNet Services' proposed accelerated depreciation and standard asset lives are discussed in the following subsections.

### 4.4.1 Year by year tracking approach

AusNet Services has implemented the straight-line method for the calculation of its forecast regulatory depreciation using the year-by-year tracking approach. We accepted this approach in our previous determinations. AusNet Services' proposal is to continue using the year-by-year tracking approach for calculating depreciation of its existing assets.

We accept that AusNet Services' 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
- ensure that total depreciation (in real terms) equals the initial value of the assets
- allow the economic lives of existing assets to be consistent with those determined on a prospective basis in our 2017–2022 distribution determination.

AusNet Services used the AER's depreciation module in the RFM to implement year-by-year tracking. We have reviewed AusNet Services' application of this module and corrected some minor errors and made adjustments due to other aspects of our decision. In particular, we have made the following adjustments:

- we corrected some inputs in the module to reflect those in the RFM
- we corrected a couple of historical Consumer Price Index and WACC figures that related to a 3 month period, rather than an annual period associated with a previous regulatory control period
- we changed other inputs in the depreciation module to reflect our positions on capitalised leases (attachment 2) and accelerated depreciation (section 4.4.2 below).

[21] 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 2022–27 regulatory control period.

### 4.4.2 Accelerated depreciation

AusNet Services proposed accelerated depreciation of its insulators and instrument transformers. We propose to accept parts of this proposal related to decommissioned assets; reject the future treatment of instrument transformers; and require modifications to the future treatment of insulators.[22]

To give effect to its proposal, AusNet Services established six new asset classes. Four new asset classes were related to $29 million of insulators and instrument transformers that AusNet Services stated had been decommissioned, or will be decommissioned by the end of the 2022–27 regulatory control period. Having confirmed the need for this decommissioning/replacement and discussed in attachment 5, we propose to accept this aspect of the proposal. We also accept the remaining asset lives of 1 year and 5 years for accelerated depreciation purposes, as they reflect the expected economic life of the assets allocated to the four asset classes. This approach is consistent with our treatment of removed assets in the other regulatory determinations, including the recent resets for the Victorian distributors. The approach satisfies the NER requirements, in particular the requirement for the depreciation schedules to reflect an asset's economic life.

The other two new asset classes were created for $442 million of existing insulators and instrument transformers that would provide services beyond the 2022–27 regulatory control period, and for new assets of these type acquired during the 2022–27 regulatory control period and beyond. We do not propose accepting these aspects of the proposal, which would have added about $37 million ($2021–22) in regulatory depreciation over the 2022–27 regulatory control period.[23] Instead, we only accept accelerated depreciation of $103 million of polymeric insulators. Our changes will reduce the proposed accelerated depreciation over the 2022–27 regulatory control period to about $28 million ($2021–22).[24]

Table 4.3 sets out our draft decision on the revised asset lives for the six new classes proposed by AusNet Services for accelerated depreciation.

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22 All the depreciation schedules we approve must be NPV neutral, regardless of whether they are subject to accelerated depreciation or not. NPV neutrality is a necessary, but not sufficient, requirement for a depreciation schedule to be approved.

23 The changed remaining life for existing insulators and transformers explains the majority of this impact. The shorter standard asset life for these assets to be used going forward adds about $1 million to revenues over the 2022–27 regulatory control period, given the forecast capex is relatively small for these two assets over that period.

24 The relatively small change in additional revenues compared to the change in the value of assets covered by accelerated depreciation reflects our decision that the new asset class only includes polymeric insulators that have a relatively shorter life than the glass and porcelain insulators that were proposed to also be included in the new asset class. For the purposes of the accelerated depreciation of existing polymeric insulators, we also accepted AusNet Services' proposed standard asset life of 25 years, although we have not accepted this standard asset life for new assets, as discussed below.

## Table 4.3 AER's draft decision on AusNet Services' asset lives at 1 April 2022 for insulators and instrument transformers (years)

| Asset class | Proposed asset life | AER asset life |
|---|---|---|
| Insulators - Already decommissioned | 1.0 | 1.0 |
| Insulators - Decommission 2022-2027 | 5.0 | 5.0 |
| Instrument transformers - Already decommissioned | 1.0 | 1.0 |
| Instrument transformers - Decommission 2022-2027 | 1.0 | 5.0 |
| Insulators/Polymeric insulators[a] | 40.0 | 35.0 |
| Instrument transformers[b] | 38.0 | 45.0 |

Source: AER analysis.

(a) As discussed below, we have narrowed the proposed new asset class from all insulators (including long lived glass and porcelain insulators) to those made of polymeric material. AusNet Services proposed that polymeric insulators have an asset life of 25 years.

(b) AusNet Services initially proposed 38 years for these assets. In response to our questions it revised the asset life to 40 years. We have not approved the proposed reduction to the standard asset life for this asset class and consider the assets should remain being depreciated over 45 years. We have therefore transferred the value of the assets back to the existing broader asset class of 'Switchgear', which has a 45 year standard asset life.

### *The proposal*

The insulators are currently included in the broader 'Towers and conductors' asset class with a standard asset life of 60 years, while instrument transformers are in the broader 'Switchgear' asset class with a standard asset life of 45 years. AusNet Services proposed two new asset classes for separating insulators and instrument transformers from the broader asset classes, with standard asset lives of 40 and 38 years respectively.[25] It proposed that the remaining asset lives of these assets be adjusted to reflect the shorter standard asset lives. Other things being equal, this would mean the remaining asset lives of insulators and instrument transformers would be reduced by 20 years and 7 years respectively. AusNet Services stated that its proposed asset lives are consistent with the expected economic lives of the assets in question.

If accepted, the revision to the remaining lives for these assets will add about $35.6 million ($2021–22) to the depreciation amount in each of the next three regulatory control periods (beginning with the 2022–27 regulatory control period), until some assets start to become fully depreciated in 18 years and then require replacement. As a consequence, the RAB will reduce faster until the replacement occurs.

### *Our position*

We consider the new asset class for insulators should be limited to those of polymeric material. AusNet Services stated such insulators make up 28 per cent of the number, but 62 per cent of the remaining value, of existing insulators. We consider the glass and

[25] AusNet Services subsequently amended its proposed standard asset life for instrument transformers to 40 years in response to AER inquiries.

porcelain insulators should remaining in the broader 'Towers and conductors' asset class as their assets lives are largely consistent with that of the broader asset class based on the advice of our technical expert.

We do not accept that the standard asset life for instrument transformers is expected to differ significantly from the 45 years used for the broader 'Switchgear' asset class. Accordingly, we reject the creation of a separate asset class for instrument transformers and the accelerated depreciation associated with this aspect of the proposal.

Our reasons for these positions follow. They have been informed by responses to two information requests to AusNet Services on this matter and a meeting with AusNet Services, where the engineering advisers of both parties had an opportunity to exchange their opinions.[26]

### Insulators

We do not agree that glass and porcelain insulators should have a standard asset life of less than the current 60 years, but accept that there is sufficient evidence to suggest polymeric insulators do have a shorter life. We have therefore required the new asset class for insulators be limited to 'Polymeric insulators'. AusNet Services estimated the value of these assets based on current unit rates, the volume of these asset types on its network, and how old they were (so that past depreciation could be determined).

For existing polymeric insulators we have accepted that a standard asset life of 25 years is reasonable to use to determine the remaining asset lives of these assets. However, there are many factors that could explain the failure rates that have been observed in these units. Some failures may reflect broader replacement decisions too. In the two decades since the first polymeric insulator units were installed, we consider that improvements in polymeric materials have occurred. We therefore consider 35 years should be used for newly installed polymeric insulators.

We shared these views with AusNet Services. In its response, AusNet Services characterised our draft position as representing a step change in technology and noted that its manufacturer did not know of any improvement in the last two years to significantly impact the expected standard asset life. We disagree with our position being seen as a step change. The acceptance of the 25 years of existing assets and the use of the 35 years going forward recognises that technology has improved over a couple of decades. Manufacturers are acutely aware that their product durability is a competitive edge and make ongoing effort to improve it. AusNet Services has not presented any evidence to the contrary. AusNet Services' actual replacement age is not necessarily an indicator of a new insulator's standard asset life because the severe operating conditions that some of those replaced insulators were subject to is not representative across AusNet Services' network, and in this case we consider there is good reason to expect significant positive performance from future units.

There are limited amounts of published research work to ascertain the life of new polymeric insulators. However, available data points to longer life of the new products

[26] Meeting was on 22 January 2021.

driven by advancement in material technologies. Due to the long term need of electricity services, electricity assets commonly have expected life of 50 years or longer, particularly when they are not retired due to technology obsoleteness. Should the new insulators have a life of only 25 years, then AusNet Services' economic justification of making expenditure on this type of insulator could be questioned.

We provided reported results from lab tests to AusNet Services that indicated polymeric insulators could have a standard asset life of 36 years to 43 years.[27] The 35 years we propose to use in this draft decision is marginally below the lower end of that range. The lab tests were calibrated for Northern Indian conditions. AusNet Services submitted that these tests are not comparable stating that the Indian insulator samples were subjected to less electrical and mechanical stress, and that the Victorian operating condition is more severe than Northern India with larger variation of temperature and more dust.

We consider the dominating factor of insulator life is UV induced degradation. Electrical and mechanical stresses are less relevant. Northern India's average UV index is 7, compared to 6 in Victoria, and Northern India's average daily bright sunshine is over 8 hours, compared to 6-7 hours in Victoria. In combination, Northern India receives 33 per cent more UV radiation than Victoria. The test environment also simulated Northern India conditions with an annual average temperature over 22 degrees, compared to 15 degrees in Victoria.[28] While heavy dust may cause surface tracking on insulators, dust is not a major factor affecting insulator age.

In its response to the AER, AusNet Services noted its low replacement age of 11 years in corrosive environments, and that this supports a 25 year standard asset life. However, AusNet Services has not demonstrated the merit for it to continue the use of polymeric insulators in the corrosive environment. Given this experience, we expect that AusNet Services would avoid deployment of polymeric insulators in the corrosive environment in the future.

AusNet Services also submitted that other Australian TNSPs' experiences show shorter life in coastal, sub-tropical or high pollution areas. We note that AusNet Services' network sit outside the sub-tropical region. The majority of its network is over 50km, from coastal line and the salt content in air is substantially less than coastal areas. AusNet Services has not presented reasons for continuing to deploy polymeric insulators in high pollution areas.

Given the above considerations, we consider that a 35 year standard asset life is reasonable for AusNet Services' future deployment of polymeric insulators based on available research work.

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[27] Rahmat Ullah, Muhammad Akbar Life Senior Member, *Lifetime Estimation based on Surface Degradation and Characterization of HTV Silicone-Rubber based Composites for HVAC and HVDC Transmission*, IEEE, p. 7.

[28] The UV measures, hours of sunshine, and temperature data have been gathered from various weather data sites (including the Australian Bureau of Meteorology) and analysed by the AER. Our analysis found that the overseas tests and analysis were carried out under operating environment that is materially more severe than that in the Victoria, as measured by average UV radiation, temperature and sunshine hours.

### Instrument transformers

Based on the information provided by AusNet Services and our own assessment, we are not satisfied that a separate new asset class for 'Instrument transformers' should be created. This means there would be no accelerated depreciation adopted for existing instrument transformers or a shorter standard asset life for new instrument transformers.

We do not agree the data provided suggests a significant divergence from the current standard asset life of 45 years from the broader asset class of 'Switchgear' is appropriate. We have concerns with using a simple mean of this data. AusNet Services' proposal determined this mean as 38 years in its initial proposal. It subsequently revised this calculation to 40 years to reflect concerns we raised that some 'failures' would be part of broader repair/protection considerations. Despite this adjustment, it remains relevant that the circumstances in which each of these assets failed cannot be assessed. AusNet Services stated that its current transformer (CT)[29] life follows multimodal distribution as a result of condition and risk based replacement, and the underlying reason may be differences in technologies, materials and manufacturing processes etc. However, AusNet Services did not provide any evidence to support this claim.

The data provided shows the mean is significantly lower than the median life and the most frequent age of replacement. In general, condition based asset replacement age follows unimodal distribution. We found that after removing the CT population replaced under the first hump, i.e. those less than 32 years, the median replacement age of the remaining assets is 44 years.

We note that AusNet Services' voltage transformer (VT) life data shows a normal unimodal distribution. Most of the replacement occurred between the age of 43 years and 53 years. This aligns with a 45 year standard life.

AusNet Services stated the asset management criteria that it uses to replace instrument transformers have not changed, except to reflect the long-term, continuous improvements it has made to its asset management systems and data. If continuous improvements have been made we find it difficult to accept that no changes have been made in the management of assets to maximise their expected life.

We also expect that AusNet Services would give asset life adequate weight in its plant procurement decisions. AusNet Services stated it would not be economical to pay a premium for a potential design over and above standard designs to achieve a nominal minimum life. We consider that asset durability is a key consideration in equipment procurement. Typically, businesses would avoid products that have shorter life due to deficient technologies, materials or manufacturing processes. We disagree that to procure longer life assets necessitates significantly higher cost, particularly given the relatively small difference of 5 years in question. Looking forward, we consider that a 45 year standard asset life for these assets should be reflective of the technical lifespan in the long run.

[29] Current transformers, along with voltage transformers, are instrument transformers.

### *CCP23 submission*

The Consumer Challenge Panel, sub-panel 23 (CCP23) noted the lack of consumer involvement in AusNet Services' preparation of its accelerated depreciation proposal and therefore did not endorse this aspect of AusNet Services' proposal. It recommended that the AER closely investigate the proposal. It noted concerns with how the assets were valued and the standard asset lives proposed for the assets.[30] We have investigated asset lives as part of our assessment above.

Regarding the value of the remaining insulators calculated by AusNet Services, we accept the estimate as reasonable. It adopted an approach similar to that used and approved for its Victorian distribution network recently. Similarly to that proposal, we investigated the key components of the calculation (such as the unit costs) and found them reasonable.

The CCP23 also raised two matters of principle for the AER to consider related to reclassification of assets and accelerated depreciation of decommissioned assets. On reclassification, the CCP23 noted that removing shorter lived asset from an asset class should be matched by a lengthening of the life of the assets that remain in the broader asset class. We agree with this principle and note that this does indeed occur in our modelling. A year-by-year tracking depreciation model will typically reflect a reallocation of such assets for accelerated depreciation as:

- a positive depreciation adjustment for the target asset class into which the faster-depreciating assets are transferring
- a negative depreciation adjustment for the broader asset class from which the faster-depreciating assets are being removed. This negative depreciation adjustment therefore reduces the total rate of depreciation for the broader asset class.

However, even with the reduced rate of depreciation of the broader asset class, this may not significantly offset the accelerated depreciation of the assets. This is because the assets are now depreciated separately[31] and may also have a shorter asset life proposed than that used in determining the average life of the broader asset class previously.

In terms of decommissioned assets, the CCP23 is concerned that assets were funded by consumers on the basis of their expected average asset life at the time the original capital expenditure was approved. However, these assets are now being replaced in many instances for reasons other than their serviceability. While we can appreciate the CCP23's concern in this regard, we note that the NER is founded on the principle of the

[30] CCP23, *Advice to the AER on AusNet Services Transmission regulatory proposal*, 12 February 2021, pp. 33–35.

[31] Just separating out assets from an asset class with an average life (with otherwise no change in the underlying standard asset lives) will accelerate depreciation in the short to medium term. Take an example of 2 assets of equal $50 value but with lives of 1 and 100 years respectively. As a broad asset class, it would have a weighted average life of 50.5 years, which implies depreciation of about $2 per annum ((2×$50)/50.5). However, if depreciated separately, depreciation would rise significantly in the first year to $50.5 (($50/1) + ($50/100)) before reducing to $0.5 per annum subsequently. In the short run there has been a significant impact from depreciating the assets separately in this case.

asset life reflecting its economic life, which can change over the years.[32] Using the economic life of the asset ensures a realignment of costs that reflect the usefulness of the asset and are therefore efficient for today's environment.[33] We investigate closely the circumstances where assets are identified for early replacement and such replacements have to be fully justified.

### 4.4.3 Standard asset lives

We accept AusNet Services' proposed standard asset lives, with the exception of two of the proposed new asset classes related to insulators and instrument transformers discussed above. We also accept the introduction of two new asset classes arising from the 2018 tax review (attachment 7).

AusNet Services proposed the same standard asset lives for its existing asset classes in respect of the forecast capex to be incurred in the 2022–27 regulatory control period. We accept the unchanged asset lives as they are consistent with those approved for the 2017–22 regulatory control period and are largely comparable with the standard asset lives approved in our recent determinations for other TNSPs.[34]

In order to implement the changes arising from the 2018 tax review, AusNet Services reallocated a proportion of its forecast capex related to buildings and IT assets for the 2022–27 regulatory control period into two new asset classes for 'Buildings - capital works' and 'In-house software'.

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 standard asset lives determined for these asset classes in recent AER decisions. Therefore, for the 'Buildings - capital works' asset class we accept assigning a standard asset life of 40 years, while for 'In-house software' we accept assigning a standard asset life of 5 years. AusNet Services also has an existing asset class related to premises. In its response to our information request, AusNet Services noted that there has been some reallocation of assets between this existing asset class and the new buildings asset class. However, this has an insignificant impact on regulatory depreciation.

AusNet Services also proposed four new asset classes for future property related lease expenditures.[35] We accept these new asset classes: 'Lease L&B 2022-23', 'Lease L&B

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[32] In previous decisions we have discussed more broadly the principles underlying depreciation in our regulatory context. See for example appendix A of: https://www.aer.gov.au/system/files/AER%20-%20JGN%202020-25%20-%20Draft%20decision%20-%20Attachment%204%20-%20Regulatory%20depreciation%20-%20November%202019.pdf

[33] In certain circumstances customers may be able to negotiate long term contracts with a supplier. However, given the extremely long asset lives and difficulties of customer negotiation in the sectors we regulate, such long term binding decisions could lead to inefficient and unintended outcomes as circumstances change. We therefore consider the principle of the depreciation schedule reflecting the asset's economic life as appropriate in our regulatory context.

[34] No benchmark equity raising costs were forecast. Accordingly no standard asset life has been determined.

[35] AusNet Services' proposed PTRM included two asset classes labelled 'Lease L&B 2021-22' and 'Lease L&B 2024-25'. However, it did not allocate any forecast values nor assign asset lives to these asset classes. For this draft decision, we have removed these asset classes from the PTRM.

2023-24', 'Lease L&B 2025-26' and 'Lease L&B 2026-27', and their proposed standard asset lives, for the years forecast capex is expected to occur. We are satisfied the proposed standard asset lives reflect the lease terms and therefore the expected economic lives of the leases.[36]

Table 4.4 sets out our draft decision on AusNet Services' standard asset lives for the 2022–27 regulatory control period. We are satisfied that:[37]

- 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 AusNet Services.

[36] We also accept the proposed remaining asset lives for existing capitalised leases in the new asset classes of 'Lease L&B 2019-20 < 20 years rem life', 'Lease L&B 2019-20 > 20 years rem life' and 'Lease L&B 2020-21'. These remaining asset lives were calculated based on the expected remaining lease terms and therefore reflect the economic lives of the capitalised leases.

[37] NER, cll. 6A.6.3(b)(1)–(2).

## Table 4.4 AER's draft decision on AusNet Services' standard asset lives at 1 April 2022 (years)

| Asset class | Standard asset life |
|---|---|
| Secondary | 15.0 |
| Switchgear | 45.0 |
| Transformers | 45.0 |
| Reactive | 40.0 |
| Towers and conductor | 60.0 |
| Establishment | 45.0 |
| Communications | 15.0 |
| Inventory | n/a |
| IT | 5.0 |
| Vehicles | 7.0 |
| Other (non-network) | 10.0 |
| Premises | 10.0 |
| Land | n/a |
| Easements | n/a |
| Polymeric insulators | 35.0 |
| Lease L&B 2022-23 | 25.0 |
| Lease L&B 2023-24 | 19.0 |
| Lease L&B 2025-26 | 31.8 |
| Lease L&B 2026-27 | 15.4 |
| Buildings | 40.0 |
| In-house software | 5.0 |

Source: AER analysis.

n/a: Not applicable. We have not assigned a standard life to the 'Land' and 'Easement' asset classes because those assets are not subject to depreciation.

Note: A small negative balance in an asset class labelled 'Inventory adjustment (Other non-network)' will be returned to customers in the first year of the 2022–27 regulatory control period.

# Shortened forms

| Shortened form | Extended form |
|---|---|
| AER | Australian Energy Regulator |
| capex | capital expenditure |
| CCP23 | Consumer Challenge Panel, sub-panel 23 |
| CT | current transformers |
| NER | national electricity rules |
| NPV | net present value |
| opex | operating expenditure |
| PTRM | post-tax revenue model |
| RAB | regulatory asset base |
| RFM | roll forward model |
| TNSP | transmission network service provider |
| VT | voltage transformers |
| WACC | weighted average cost of capital |