



Economic Regulation Authority

Draft decision on proposed revisions to the access arrangement for the Western Power Network 2022/23 – 2026/27

Attachment 4: Depreciation

9 September 2022

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Note

This attachment forms part of the ERA's draft decision on proposed revisions to the access arrangement for the Western Power Network for the fifth access arrangement period (AA5). It should be read with all other parts of the draft decision.

The draft decision comprises all of the following attachments:

Draft decision on proposed revisions to the access arrangement for the Western Power network 2022/23 – 2026/27 – Decision Overview

Attachment 1 – Price control and target revenue

Attachment 2 – Regulated asset base

Attachment 3A – AA4 capital expenditure

Attachment 3B – AA5 capital expenditure

Attachment 4 – Depreciation (this document)

Attachment 5 – Return on regulated asset base

Attachment 6 – Operating expenditure

Attachment 7 – Other components of target revenue

Attachment 8 – Services

Attachment 9 – Service standard benchmarks and adjustment mechanism

Attachment 10 – Expenditure incentives and other adjustment mechanisms

Attachment 11 – Network tariffs

Attachment 12 – Policies and contracts

1. Summary

This attachment deals with depreciation.

Summary of draft decision on depreciation

- The ERA has approved the continued use of straight-line depreciation.
- The ERA has amended some asset lives proposed by Western Power.
- Western Power must amend the percentage allocations to asset class for AA4 to reflect actual expenditure by asset class.
- Western Power must amend some minor errors in the depreciation calculation to be consistent with ERA's target revenue model.

The table below sets out the asset lives the ERA has amended.

Table 1: Draft decision economic asset life for depreciation purposes

| Asset group | Draft decision | Western Power proposal |
|---------------------------------|----------------|------------------------|
| Distribution underground cables | 60 | 50 |
| Distribution switchgear | 35 | 30 |
| Stand-alone power systems | 20 | 15 |
| Storage | 20 | 10 |

Source: ERA and Western Power target revenue models.

The reasons for the ERA's draft decision in respect of the matters relevant to depreciation and details of required amendments are set out in this attachment.

2. Regulatory requirements

The access arrangement must provide for the depreciation of the network assets comprising the capital base, including the economic lives of each network asset or group of network assets, the depreciation method to be applied to each network asset or group of network assets and the circumstances in which the depreciation of a network asset may be accelerated.¹

Clause 5.35 of the current access arrangement specifies the depreciation of the opening capital base for AA5 is the forecast depreciation included in the AA4 target revenue.

Clause 5.3.2 of the current access arrangement sets out the depreciation method and asset lives that applied for AA4:

- 5.3.2 The depreciation provision contained in the target revenue for each year of this access arrangement period is calculated using:
- a) the straight line depreciation method;
 - b) the existing weighted average lives for each of the transmission system and distribution system that comprise the capital base value as at 30 June 2017; and
 - c) for new facilities investment forecast for this access arrangement period the weighted average lives for each of the transmission system and distribution system based on the asset lives for each group of network assets as set out in [Tables 28 and 29 of the access arrangement].

¹ Section 6.70 of the Access Code

3. Western Power's proposal

Western Power proposes to retain the current access arrangement provisions for depreciation except for some asset lives. A comparison of the proposed new lives with current lives is shown in Table 2.

Table 2: Western Power proposed economic asset life (years) for depreciation purposes

| Asset group | AA5 proposed economic life (years) for depreciation purposes | AA4 approved economic life (years) for depreciation purposes |
|--|--|--|
| Transmission transformers | 50 years | 50 years |
| Transmission reactors | 40 years | 50 years |
| Transmission capacitors | 40 years | 40 years |
| Transmission circuit breakers | 40 years | 50 years |
| Transmission lines – steel towers | 60 years | 60 years |
| Transmission lines – wood poles | 45 years | 45 years |
| Transmission cables | 55 years | 55 years |
| Transmission metering | 40 years | 40 years |
| Transmission SCADA and communications | 11 years | 11 years |
| Transmission IT | 6 years | 6 years |
| Transmission other, non-network assets | 27 years | 27 years |
| Transmission secondary systems | 30 years | N/A |
| Distribution lines – wood poles | 41 years | 41 years |
| Distribution underground cables | 50 years | 60 years |
| Distribution transformers | 35 years | 35 years |
| Distribution switchgear | 30 years | 35 years |
| Street lighting | 20 years | 20 years |
| Distribution meters and services | 15 years | 15 years |
| Distribution IT | 6 years | 6 years |
| Distribution SCADA & communications | 10.16 years | 10.16 years |
| Distribution other, non-network assets | 27 years | 27 years |
| Stand-alone power systems (SPS) | 15 years | N/A |
| Storage | 10 years | N/A |

| Asset group | AA5 proposed economic life (years) for depreciation purposes | AA4 approved economic life (years) for depreciation purposes |
|----------------------|--|--|
| Equity raising costs | 49 years | 46 years |

Source: ERA target revenue model

Western Power states:

- For the new asset classes, the proposed asset life is based on Western Power's assessment of the mean replacement life for these assets.
- The changes in economic life for the existing asset classes reflect the most recent tax ruling (TR 2021/3) on the effective life of depreciating assets.

Western Power proposes that these changes will affect only the calculation of new facilities investment undertaken during the AA5 period and future capex. New facilities investment undertaken in previous access arrangements will continue to be depreciated based on the economic lives that applied at the time the depreciation forecast was developed for the investment.

Western Power has calculated depreciation on the opening regulated capital base as set out in Table 3 below.

Table 3: Western Power proposed depreciation for opening capital base

| | 2017/18 | 2018/19 | 2019/20 | 2020/21 | 2021/22 | Total |
|--------------|---------|---------|---------|---------|---------|---------|
| Transmission | 120.2 | 126.6 | 133.5 | 141.9 | 145.0 | 667.2 |
| Distribution | 281.6 | 301.4 | 305.7 | 294.5 | 286.3 | 1,469.5 |
| Total | 401.8 | 428.0 | 439.2 | 436.4 | 431.3 | 2,136.7 |

Source: Western Power regulated revenue model

Western Power has calculated forecast depreciation for AA5 as set out in Table 4 below.

Table 4: Western Power proposed depreciation for forecast capital base

| | 2022/23 | 2023/24 | 2024/25 | 2025/26 | 2026/27 | Total |
|--------------|---------|---------|---------|---------|---------|---------|
| Transmission | 146.7 | 165.2 | 175.5 | 184.7 | 192.9 | 865.0 |
| Distribution | 288.2 | 290.6 | 324.9 | 347.9 | 379.7 | 1,631.3 |
| Total | 434.9 | 455.8 | 500.4 | 532.6 | 572.6 | 2,496.3 |

Source: Western Power regulated revenue model

4. Submissions

Submissions on depreciation were received from the Australian Energy Council and Synergy.

The Australian Energy Council was concerned about the increase in depreciation due to a large proportion of the proposed AA5 capital expenditure relating to assets with relatively short lives. It was also concerned about the proposed reduction in some asset lives:

The AEC notes that the forecast depreciation in 2026/27 of \$633.1 million is 47 per cent higher than the forecast depreciation in 2022/23 of \$443.8 million. The main explanation for this increase in depreciation is that much of the capex during AA5 is on assets with relatively short economic lives. For example, Western Power is proposing an economic life of 15 years for standalone power systems (capex budget of \$330 million) and an economic life of 10.2 years for SCADA and communications (capex budget of \$483 million). The straight-line depreciation method used by Western Power accelerates the depreciation of these assets. Western Power notes in its AA5 submission that the proposed reductions in the economic life for the existing asset classes is based on a recent tax ruling (TR 2021/3) but for new asset classes the proposed economic life is based on Western Power's assessment of these assets. Western Power is incentivised to reduce the life of its assets to bring forward the revenue it can earn. This is not in the long-term interests of network users and their end use customers. The ERA should satisfy itself that the proposed asset lives are realistic and consistent with asset lives used in other jurisdictions.

The Australian Energy Council suggested that the annuity method of depreciation should be considered instead of the straight-line depreciation method:

The improvement would be due to the flat overall capital cost recovery profile that the real annuity method affords and the fact that network users face a higher weighted average cost of capital than Western Power. A move to the real annuity method of depreciation would thus improve the net present value of network user's cash flows without impacting the net present value of Western Power's cashflows, which would place downward pressure on network prices and ultimately retail prices. Moreover, the move would provide some benefit for the network by preserving the network's capital base for longer, resulting in a stronger balance sheet over the life of the assets.

Synergy expressed similar views to the Australian Energy Council:

Synergy agrees with the AEC that the annuity method of depreciation should also be applied to all asset categories and vintages, as this ensures the resultant target revenue satisfies the Code objective and the specific criteria in ENAC section 6.4(c), unlike the straight-line method of depreciation that has been used in the past.

Moving from a straight-line to an annuity method of depreciation for all asset categories and vintages would be NPV neutral for WP – i.e., an annuity approach would provide WP with the same NPV in revenue over the life of the assets as the straight-line depreciation approach - but would be NPV positive for network users and for customers because those users and customers face a higher cost of capital relative to WP's cost of capital and network cost recovery using the straight-line method of depreciation approach is front-end-loaded when compared to the annuity method of depreciation approach, which has a flat cost recovery profile.

Synergy does not support reductions in the economic lives of WP assets merely due to a change in a taxation ruling that generalises the effective life of assets for taxation purposes. For the purposes of the ENAC, Synergy's view is that economic life calculations should account for the specific circumstances of WP's asset use. Synergy considers for the proposed access arrangement and associated information to comply with ENAC sections 6.4(a)(i) and 4.2, WP should explain what business practices or procurement decisions may have effected a material decrease in the economic lives of some asset categories since AA4.

Synergy also expressed concerns about the calculation of depreciation:

In Synergy's view, WP's method of allocating capex and contributions from regulatory category to asset class lacks transparency, resulting in potentially inappropriate accelerated depreciation. It appears the percentage values in WP's AA5 regulated revenue model's allocation matrices are identical to those forecast at the beginning of the AA4 period and used in WP's AA4 regulated revenue model, i.e., before the capex was actually spent. In other words, the actual allocation percentages observed during the AA4 period do not appear to have been applied in WP's AA5 regulatory model.

...

Allowing WP to retain the capex allocation forecast made at the beginning of an access arrangement period for the allocation of actual capex and contributions from regulatory category to asset class may confer an incentive upon WP to favour its forecast allocation to asset classes with relatively short economic lives. If the actual capex incurred during the access arrangement period is spent on assets with relatively long economic lives compared to the forecast made at the beginning of the access arrangement period, the assumed allocation factors will result in an artificially accelerated rate of depreciation.

5. Considerations of the ERA

The current access arrangement specifies the depreciation of the opening capital base for AA5 is the forecast depreciation included in the AA4 target revenue.

The ERA is satisfied that the depreciation values used in Western Power's calculation of the opening capital base for AA5 are consistent with the depreciation values included in the AA4 target revenue.

For AA5, Western Power proposes to retain the methods set out in the current access arrangement which specify depreciation is calculated using:

- The straight-line depreciation method.
- The existing weighted average lives for assets that are included in the capital base at the beginning of the access arrangement period (i.e. beginning of AA5).
- Asset lives specified in the access arrangement for capital expenditure during the access arrangement period (i.e. AA5).
- The depreciation of the opening capital base for AA5 will be the forecast depreciation included in the AA5 target revenue.

The ERA is satisfied that this approach is consistent with applying the roll-forward calculation of the regulated capital base in a manner consistent with the Access Code objective. The ERA has identified some minor errors in Western Power's calculation of depreciation that need to be corrected.

Required Amendment 1

Amend errors in the calculation of depreciation to be consistent with ERA's target revenue model.

Synergy and the Australian Energy Council suggested that the annuity method of depreciation should be considered instead of the straight-line depreciation method.

Regulatory frameworks such as the Access Code provide for a return on efficient capital investments in assets that are required to provide regulated services as well as the return of the assets over their economic lives. Depreciation is an input into the calculation of regulated charges.

The current straight line depreciation method ensures Western Power's target revenue only includes a regulatory depreciation allowance equal to (in real terms) the value of its initial capital investment and that assets are fully depreciated by the end of their economic lives.

For AA5 capital expenditure, Western Power has proposed changes to some of the economic lives that were applied in AA4 and created some new asset classes. Western Power states the revised asset lives were based on most recent tax ruling (TR 2021/3) on the effective life of depreciating assets. The ERA agrees with Synergy's view that economic lives should not be amended merely due to a change in a taxation ruling.

The ERA's consultant Engevity provided advice to assist the ERA in its assessment of asset lives. Engevity based its advice on:

- Western Power's historical lives

- comparisons to the lives applied to the NEM businesses
- experience with modern network and SPS equipment.

Engevity found that the distribution asset lives proposed by Western Power typically fall at the shorter end of industry expectations, whilst transmission asset lives are generally aligned or longer than the lives used by the NEM transmission networks.

Engevity recommended:

- Accepting the proposed reduction in transmission reactors and circuit breakers asset lives from 50 years to 40 years. It considered the reduction in lives for these assets is consistent with the general trend by transmission equipment manufacturers to move away from rebuildable/serviceable equipment to minimise maintenance requirements and reliability impacts. This means that Western Power's revised asset lives simply reflect that modern equipment is not expected to remain in service as long as older technologies because contemporary manufacturers have struck a different balance between maintenance costs, reliability impacts, refurbishment options and capital cost when compared to older manufacturers.
- Accepting the proposed life for new asset class transmission secondary systems.
- Not accepting the proposed reduction for distribution underground cables. Reducing the asset life by ten years would place the life for the asset class below the NEM average and at the lower end of the range (excluding United Energy at 35.6 years across most distribution network asset classes). Engevity recommends that the asset life assumption for underground cables is retained at 60 years.
- Not accepting the proposed reduction for distribution switchgear. Western Power's existing assumptions are already at the lower limit of industry expectations. Engevity recommends that the existing asset life assumption for switchgear is retained at 35 years.
- Not accepting the proposed (15-year) life for new asset class standalone power systems. It considers the proposed life appears to be too heavily weighted towards the shorter life inverter assets. Typical lives noted by Western Power in their Network Management Plan are 10 years for an inverter, 20 years for a solar array/battery and 30 years for a generator/relocatable structure. Engevity considers these assumptions are well aligned with typical manufacturer expectations. Engevity considers that an asset life of 20 years is appropriate for the SPS asset class as this reflects the expected life of the solar array and battery components that form the majority of the SPS asset costs. Engevity recommended that the weighting is revisited at the next access arrangement to ensure it is still appropriate.
- Not accepting the proposed (10-year) life for new asset class storage. Engevity recommends using a 20 year life which aligns with a BESS operation that cycles less than one full cycle per day as well as Western Power's Network Management Plan assumptions for battery storage.
- Engevity recommended increasing the asset life for distribution meters and services to reflect the longer life of service connections and legacy meters compared with advanced meters. However, the ERA has subsequently established that Western Power has historically only allocated metering costs to this category and the legacy electro mechanical meters are now fully written down.
- Accepting all other proposed lives.

Table 5: Engevity recommended asset lives

| Asset group | Western Power proposed life | AA4 approved life | NEM average (range) | Engevity recommended life |
|--|-----------------------------|-------------------|---------------------------|-----------------------------------|
| Transmission transformers | 50 years | 50 years | 44 (40-50) | 50 |
| Transmission reactors | 40 years | 50 years | 42 (40-45) | 40 |
| Transmission capacitors | 40 | 40 | 42 (40-45) | 40 |
| Transmission circuit breakers | 40 | 50 | 44 (40-45) | 40 |
| Transmission lines – steel towers | 60 | 60 | 56(50-60) | 60 |
| Transmission lines – wood poles | 45 | 45 | 49 (45-55) | 45 |
| Transmission cables | 55 | 55 | 47 (40-60) | 55 |
| Transmission metering | 40 | 40 | - | 40 |
| Transmission SCADA and communications | 11 | 11 | 17 (10-37) | 11 |
| Transmission IT | 6 | 6 | 5 (4-7) | 6 |
| Transmission other, non-network assets | 27 | 27 | 15 (7-40) | 27 |
| Transmission secondary systems | 30 | N/A | 19 (15-37) | 30 |
| Distribution lines – wood poles | 41 | 41 | 48.6 (35-58) | 41 |
| Distribution underground cables | 50 | 60 | 53.3 (35.6-60) | 60 |
| Distribution transformers | 35 | 35 | 47.4 (35.6-58) | 35 |
| Distribution switchgear | 30 | 35 | 43.5 (35-51) | 35 |
| Street lighting | 20 | 20 | 20 | 20 |
| Distribution meters and services | 15 | 15 | 15 25 46.05 (35-55) | 15-AMI 7-legacy 35-services |
| Distribution IT | 6 | 6 | 5.5 (5-10) | 6 |
| Distribution SCADA & communications | 10.16 | 10.16 | 10.2 (7-15) | 10.16 |
| Distribution other, non-network assets | 27 | 27 | 9.9 (5-17.4) | 27 |
| Stand-alone power systems | 15 | N/A | | 20 ² |

| Asset group | Western Power proposed life | AA4 approved life | NEM average (range) | Engevity recommended life |
|-------------|-----------------------------|-------------------|---------------------|---------------------------|
| Storage | 10 | N/A | | 20 |

Source: Engevity, Western Power AA5 Expenditure Proposal Review, Attachment 6

Based on the advice provided by Engevity, and the Access Code requirements in relation to depreciation, the ERA considers the following asset lives should be used.

Table 6: Draft decision economic asset life for depreciation purposes

| Asset group | Draft decision | Western Power proposal |
|--|----------------|------------------------|
| Transmission transformers | 50 | 50 |
| Transmission reactors | 40 | 40 |
| Transmission capacitors | 40 | 40 |
| Transmission circuit breakers | 40 | 40 |
| Transmission lines – steel towers | 60 | 60 |
| Transmission lines – wood poles | 45 | 45 |
| Transmission cables | 55 | 55 |
| Transmission metering | 40 | 40 |
| Transmission SCADA and communications | 11 | 11 |
| Transmission IT | 6 | 6 |
| Transmission other, non-network assets | 27 | 27 |
| Transmission secondary systems | 30 | 30 |
| Distribution lines – wood poles | 41 | 41 |
| Distribution underground cables | 60 | 50 |
| Distribution transformers | 35 | 35 |
| Distribution switchgear | 35 | 30 |
| Street lighting | 20 | 20 |
| Distribution meters | 15 | 15 |
| Distribution IT | 6 | 6 |
| Distribution SCADA & communications | 10.16 | 10.16 |

² Comprising: solar PV cells -20 years; inverter – 10 years; relocatable structures – 30 years, generator – 30 years; storage – 20 years.

| Asset group | Draft decision | Western Power proposal |
|--|----------------|------------------------|
| Distribution other, non-network assets | 27 | 27 |
| Stand-alone power systems | 20 | 15 |
| Storage | 20 | 10 |

Source: ERA and Western Power target revenue model

Required Amendment 2

Amend the proposed depreciation lives for AA5 capital expenditure for distribution underground cables, distribution switchgear, stand-alone power systems and storage to 60, 35, 20 and 20 years respectively.

Synergy raised concerns that Western Power had proposed using the forecast percentage allocations to asset class from AA4 to apply to actual capital expenditure during AA4. The ERA agrees updating the model to use actual expenditure by asset class for AA4 would provide a more accurate calculation of depreciation.

Required Amendment 3

Update the revenue model depreciation calculation to use actual expenditure by asset class for AA4.