DRAFT DECISION
Evoenergy
Access Arrangement

2021 to 2026

Attachment 4
Regulatory depreciation

November 2020

AUSTRALIAN ENERGY REGULATOR

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Note

This attachment forms part of the AER's draft decision on the access arrangement that will apply to Evoenergy for the 2021–26 access arrangement period. It should be read with all other parts of the draft decision.

The draft decision includes the following documents:

Overview

Attachment 1 – Services covered by the access arrangement

Attachment 2 – Capital 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 carryover mechanism

Attachment 9 – Reference tariff setting

Attachment 10 – Reference tariff variation mechanism

Attachment 11 – Non-tariff components

Attachment 12 – Demand

Attachment 13 – Capital expenditure sharing scheme

Contents

4 Regulatory depreciation

Depreciation is the amount provided so capital investors recover their investment over the economic life of the asset (otherwise referred to as 'return of capital'). When determining the total revenue for Evoenergy, we include an amount for the depreciation of the projected capital base.[1] Under the building block framework, regulatory depreciation consists of the net total of the straight-line depreciation less the indexation of the capital base.

This attachment outlines our draft decision on Evoenergy's annual regulatory depreciation amount for the 2021–26 access arrangement period. Our consideration of specific matters that affect the estimate of regulatory depreciation is also outlined in this attachment:

- the standard asset lives for depreciating new assets associated with forecast capital expenditure (capex), including the proposed shortening of standard lives for pipeline assets[2]
- the remaining asset lives for depreciating existing assets in the opening capital base.[3]

4.1 Draft decision

We determine a regulatory depreciation amount of $44.4 million ($ nominal) for Evoenergy for the 2021–26 access arrangement period. This represents a $0.3 million (or 0.8 per cent) increase from Evoenergy's proposed regulatory depreciation amount of $44.0 million ($ nominal).[4] The key reason for the increase compared to Evoenergy's proposal is due to our lower expected inflation rate for the 2021–26 period.

The regulatory depreciation amount is the net total of the straight-line depreciation less the inflation indexation of the capital base. The straight-line depreciation is impacted by our decision on Evoenergy's opening capital base as at 1 July 2021 (Attachment 2), forecast capex (Attachment 5) and asset lives (section 4.4). Our draft decision straight-line depreciation for Evoenergy is $0.2 million lower than proposed. This is mainly due to our updates to the opening capital base.

The indexation on the capital base is impacted by our decision on Evoenergy's opening capital base (Attachment 2), forecast capex (Attachment 5) and the expected inflation rate (Attachment 3).[5] Our draft decision indexation on Evoenergy's projected

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1 NGR, r. 76(b).

2 The term 'standard asset life' may also be referred to as 'standard economic life', 'asset life', 'economic asset life' or 'economic life'.

3 The term 'remaining asset life' may also be referred to as 'remaining economic life' or 'remaining life'.

4 Evoenergy, *2021–26 Access Arrangement Proposal – Appendix - 4.2 PTRM – Public*, June 2020.

5 As discussed in Attachment 3, our draft decision estimate of expected inflation is 2.37 per cent per annum for the access arrangement period. We are currently undertaking a review into the treatment of inflation in our regulatory

capital base is $0.6 million lower than proposed. This is largely because of our lower expected inflation rate of 2.37 per cent per annum for the 2021–26 period compared to 2.40 per cent per annum as proposed by Evoenergy. The decrease in indexation has more than offset the decrease in straight-line depreciation (since indexation is deducted from the straight-line depreciation).

In coming to our decision on Evoenergy's straight-line depreciation:

- We accept Evoenergy's proposed straight-line method to calculate regulatory depreciation.
- We accept Evoenergy's proposed weighted average method to calculate the remaining asset lives as at 1 July 2021 for depreciating its existing assets. In accepting the weighted average method, we have updated the proposed remaining asset lives as at 1 July 2021 due to the input changes we made to Evoenergy's proposed roll forward model (RFM). These input changes are discussed in section 4.4.1.
- We partially accept Evoenergy's proposal to reduce its standard asset lives (accelerated depreciation) associated with new assets for its high-pressure (HP) mains, medium-pressure (MP) mains, and MP services (pipeline) asset classes. While we accept Evoenergy's proposed shorter standard asset lives for new pipeline assets in the ACT region, we do not consider the reduced standard lives should be applied to the NSW region. Therefore, we have created three new asset classes for pipeline assets located in the NSW region of Evoenergy's gas network and maintained the longer standard asset lives for these new asset classes. We accept Evoenergy's proposed standard asset lives for its other asset classes (section 4.4.2).

Table 4.1 sets out our draft decision on Evoenergy's regulatory depreciation amount over the 2021–26 period.

Table 4.1 AER's draft decision on Evoenergy's forecast depreciation for the 2021–26 access arrangement period ($ million, nominal)

	2021–22	2022–23	2023–24	2024–25	2025–26	Total
Straight-line depreciation	15.6	17.2	18.4	19.6	20.7	91.4
Less: indexation on opening capital base	9.1	9.3	9.5	9.6	9.6	47.0
Regulatory depreciation	**6.5**	**7.9**	**9.0**	**10.0**	**11.0**	**44.4**

Source: AER analysis.

framework, including the method likely to result in the best estimate of expected inflation. The final outcomes of this review are expected in December 2020. If we consider a different method for estimating expected inflation should be adopted, we intend to commence the consultation process under the NGR for amending the PTRM. We expect to apply amendments to the PTRM (if any) in our final decision in April 2021, unless a rule change proposal is required.

4.2 Evoenergy's proposal

Evoenergy proposed a total forecast regulatory depreciation amount of $44.0 million ($ nominal) for the 2021–26 period, as set out in Table 4.2.

Table 4.2 Evoenergy's proposed forecast depreciation for the 2021–26 access arrangement period ($ million, nominal)

	2021–22	2022–23	2023–24	2024–25	2025–26	Total
Straight-line depreciation	15.9	17.1	18.4	19.5	20.6	91.6
Less: indexation on opening capital base	9.2	9.4	9.6	9.7	9.7	47.6
Regulatory depreciation	**6.7**	**7.7**	**8.8**	**9.9**	**10.9**	**44.0**

Source: Evoenergy, *2021–26 Access Arrangement Proposal – Appendix - 4.2 PTRM – Public*, June 2020.

To calculate the depreciation amount, Evoenergy proposed to use:[6]

- the straight-line depreciation method employed in the AER's post-tax revenue model (PTRM)
- the closing capital base value at 30 June 2021 derived from the AER's RFM
- proposed forecast capex for the 2021–26 period
- an expected inflation rate of 2.40 per cent per annum for the 2021–26 period
- the weighted average approach to determine remaining asset lives at 1 July 2021 derived from the RFM to calculate the forecast depreciation of existing assets
- the asset classes and standard asset lives for depreciating new assets associated with forecast capex for the 2021–26 period, which are mostly unchanged from those approved in the 2016–21 access arrangement. However, Evoenergy proposed to reduce the current standard asset lives for its asset classes associated with its pipeline assets.[7] Table 4.3 sets out Evoenergy's proposed changes to the standard asset lives for the relevant asset classes. It shows that about 37.3 per cent of the total proposed forecast capex for the 2021–26 period is allocated to these asset classes.

The key reason submitted by Evoenergy for reducing its current approved standard asset lives for these asset classes is to address potential cost recovery uncertainties caused by the ACT Government's legislation for net zero greenhouse gas emissions by 2045. Evoenergy noted that in September 2019, the ACT Government published a

[6] Evoenergy, *2021–26 Access Arrangement Proposal – Appendix - 4.2 PTRM – Public*, June 2020; Evoenergy, *2021–26 Access Arrangement Proposal – Appendix - 4.1 RFM – Public*, June 2020.

[7] Evoenergy, *Attachment 4 – Capital base and depreciation, Access arrangement information, ACT and Queanbeyan-Palerang gas network 2021–26*, June 2020, p. 4-8.

climate change strategy requiring the phasing out of natural gas use in the ACT and its replacement by renewable electricity.[8]

Evoenergy stated that its proposal for accelerated depreciation of new, long-lived assets is an early, precautionary measure against rising bills as the result of declining gas consumer numbers. It submitted that accelerated depreciation will reduce the risk that, in the event of network closure, consumers who find it difficult or unfeasible to move away from gas will be left to pay an unfair share of costs.[9]

Table 4.3 Evoenergy's proposed reductions to standard asset lives for pipeline assets and forecast capex allocations (years)

Asset class	Current standard asset lives	Proposed standard asset lives	Percentage of total forecast capex allocated to asset class
HP mains	80	50	5.7%
MP mains	50	30	15.6%
MP services	50	30	16.0%

Source: Evoenergy, *Appendix - 4.2 PTRM – Public*, June 2020; AER analysis.

4.3 Assessment approach

In its 2021–26 access arrangement proposal, Evoenergy must provide a forecast depreciation schedule for the 2021–26 period. The depreciation schedule sets out the basis on which the pipeline assets constituting the capital base are to be depreciated for the purpose of determining a reference tariff.[10] It may consist of a number of separate schedules, each relating to a particular asset or class of asset.[11]

In making a decision on the proposed depreciation schedule, we assess the compliance of the proposed depreciation schedule with the depreciation criteria set out in the National Gas Rules (NGR). The depreciation criteria[12] state that the depreciation schedule should be designed:

- so that reference tariffs will vary, over time, in a way that promotes efficient growth in the market for reference services[13]

8 Evoenergy, *Overview – Access arrangement information, ACT and Queanbeyan-Palerang gas network 2021–26*, June 2020, p. 1.
9 Evoenergy, *Overview – Access arrangement information, ACT and Queanbeyan-Palerang gas network 2021–26*, June 2020, p. iv.
10 NGR, r. 88(1).
11 NGR, r. 88(2).
12 NGR, r. 89.
13 NGR, r. 89(1)(a).

- so that each asset or group of assets is depreciated over the economic life of that asset or group of assets[14]
- so as to allow, as far as reasonably practicable, for adjustment reflecting changes in the expected economic life of a particular asset, or a particular group of assets[15]
- so that (subject to the rules about capital redundancy), an asset is depreciated only once[16]
- so as to allow for the service provider's reasonable needs for cash flow to meet financing, non-capital and other costs.[17]

The depreciation criteria also provide that a substantial amount of depreciation may be deferred in circumstances where investment is made on the expectation of future demand growth.[18]

The NGR require that any forecast must be arrived at on a reasonable basis and must represent the best forecast or estimate possible in the circumstances.[19]

Our assessment takes into account the revenue and pricing principles (RPP) and seeks to promote the National Gas Objective (NGO).[20] The NGO is to promote efficient investment in, provision of and use of, natural gas services for the long term interests of consumers with respect to price, quality, safety, reliability and security of supply of natural gas.[21] We are required, when carrying out our functions, to make a decision that will contribute, or will be likely to contribute, to the achievement of the NGO.[22] In addition, when exercising our decision-making powers, we are required to take into account the RPP.[23] These include the principle that a service provider should be provided with effective incentives in order to promote efficient investment in, provision of and use of pipeline services, and the principle that we should have regard to the economic costs and risks of the potential for under- and over-investment in a pipeline and utilisation of a pipeline when making our decisions.[24]

In April 2020, we published our first version of the RFM and PTRM for gas network service providers under new provisions in the NGR.[25] Gas distribution businesses are required to use these models for the purposes of their access arrangement proposals. The PTRM sets out the method for calculating the forecast deprecation schedule. We have also published a separate depreciation module to the RFM that applies the

14 NGR, r. 89(1)(b).
15 NGR, r. 89(1)(c).
16 NGR, r. 89(1)(d).
17 NGR, r. 89(1)(e).
18 NGR, r. 89(2).
19 NGR, r. 74(2).
20 NGL, s 28; NGR r. 100(1).
21 NGL, s. 23.
22 NGL, s. 28(1).
23 NGL, s. 28(2).
24 NGL, s. 24.
25 NGR, rr. 75A–75B.

year-by-year tracking depreciation approach. This module is used for calculating the depreciation of existing assets, and the output from this module will feed into the PTRM.

The regulatory depreciation approach in the PTRM involves two components:

1. A straight-line depreciation component calculated by dividing the asset value by its standard asset life (for new assets) or remaining asset life (for existing assets). We consider that the straight-line method satisfies the NGR's depreciation criteria.[26] This is because the straight-line method smooths changes in the reference tariffs, promotes efficient growth of the market, allows assets to be depreciated only once and over its economic life, and allows for a service provider's reasonable needs for cash flow.
2. An offsetting adjustment for indexation of the value of assets in the capital base. This component is necessary to prevent double counting of inflation when a nominal rate of return is applied to the inflation indexed capital base. Therefore, we remove the revaluation (indexation) gain on the capital base from the depreciation building block when setting total revenue.

The regulatory depreciation amount is an output of our PTRM. We therefore assessed Evoenergy's proposed regulatory depreciation amount by analysing the proposed inputs to the PTRM for calculating that amount. Key inputs include the:

- opening capital base at 1 July 2021
- forecast net capex in the 2021–26 period[27]
- indexation adjustment—based on the forecast capital base and expected inflation rate for the 2021–26 period
- standard asset life for each asset class—used for calculating the depreciation of new assets associated with forecast net capex in the 2021–26 period
- remaining asset life for each asset class—used for calculating the depreciation of existing assets associated with the opening capital base as at 1 July 2021.

Our draft decision on Evoenergy's regulatory depreciation amount reflects our determinations on the opening capital base, expected inflation and forecast net capex (the first three inputs in the above list).[28] Our determinations on these components of Evoenergy's proposal are discussed in Attachments 2, 3 and 5, respectively. In this Attachment 4, we discuss our assessment on the proposed standard and remaining asset life for each asset class (the last two inputs in the above list).

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[26] NGR, r. 89.

[27] Capex enters the capital base, net of forecast disposals and capital contributions. It includes equity raising costs (where relevant) and the half-year WACC to account for the timing assumptions in the PTRM. Our draft decision on the capital base (Attachment 2) also reflects our updates to the WACC for the 2021–26 access arrangement period.

[28] Our final decision will update the opening capital base as at 1 July 2021 for revised estimates of actual capex and inflation.

In general, we consider that consistency in the standard asset life for each asset class across access arrangement periods will allow reference tariffs to vary over time in a manner which would promote efficient growth in the market for reference services. Our assessment on standard asset life of an asset class also takes into account the technical life (or the engineering designed life) of the assets associated with the asset class. The economic life need not match the technical life of the asset, but if an asset is technically available for use, then it usually is able to serve an economic purpose.[29] For the networks we regulate we observe that the economic and technical lives are closely related in practice because demand for the essential service is sustained over the long-term. We also benchmark Evoenergy's standard asset lives with those used by other gas service providers for similar asset classes. Evoenergy has proposed to reduce the standard asset lives for its long-lived pipeline asset classes. Section 4.4.2 discusses our assessment on the proposed shorter standard asset lives.

Our PTRM provides for two approaches for calculating the straight-line depreciation for the existing assets:

- The 'weighted average remaining lives' (WARL) approach: This approach calculates the remaining asset life for an asset class by weighting together its remaining asset life at the beginning of the access arrangement period with the new capex added to the asset class during that period. The residual asset values are used as weights to calculate the remaining asset life at the end of that period. The WARL for the asset classes are calculated in our RFM and are inputs to the PTRM. We consider this approach meets the depreciation criteria of the NGR.
- The 'year-by-year tracking' approach: Under this approach, the capex (in addition to grouping assets by type via asset classes) for each year of an access arrangement period is depreciated separately and tracked on a year-by-year basis over the assigned standard life for the asset class. In general, we consider that this approach would also meet the depreciation criteria of the NGR. Our depreciation tracking module conducts the detailed calculations required under this approach. The output of this module is then recorded in the PTRM.

Evoenergy's proposal has continued adopting the WARL approach to calculate its remaining asset lives at 1 July 2021. Our assessment on this aspect of Evoenergy's proposal is discussed in section 4.4.1.

4.3.1 Interrelationships

The regulatory depreciation amount is a building block component of the total revenue requirement.[30] Higher (or quicker) depreciation leads to higher revenues over the access arrangement period. It also causes the capital base to reduce more quickly

[29] That is, an asset at the end of its technical life has no economic worth. Similarly, an asset that is technically sound may have no economic worth if no one demands it at any price.

[30] The PTRM distinguishes between straight-line depreciation and regulatory depreciation, the difference being that regulatory depreciation is the straight-line depreciation minus the indexation amount on the projected capital base.

(excluding the impact of new capex being added to the capital base). This reduces the return on capital amount, although this impact is usually smaller than the increased depreciation amount in the short to medium term.[31]

Ultimately, however, a service provider can only recover the capex that it incurred on assets once.[32] The depreciation amount reflects how quickly the capital base is being recovered and is based on the remaining and/or standard asset lives used in the depreciation calculation. It also depends on the level of the opening capital base and the forecast capex. Any increase in these factors also increases the depreciation amount.

Our standard approach is to maintain the capital base in real terms, meaning the capital base is indexed for expected inflation. The return on capital building block has to be calculated using a nominal rate of return (WACC) applied to the opening capital base.[33] The total revenue requirement is calculated by adding up the return on capital, depreciation, operating expenditure (opex), tax and revenue adjustments building blocks.[34] Because inflation on the capital base is accounted for in both the return on capital (based on a nominal rate) and the depreciation calculations (based on an indexed capital base), 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 capital base from the calculation of total revenue. Our standard approach is to subtract the indexation of the opening capital base—the opening capital base multiplied by the expected inflation for the year—from the capital base depreciation. The net result of this calculation is referred to as regulatory depreciation (or return of capital).[35] 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 capital base, which is indexed for inflation annually. Figure 4.1 shows where the inflation components are included in the building block costs.

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

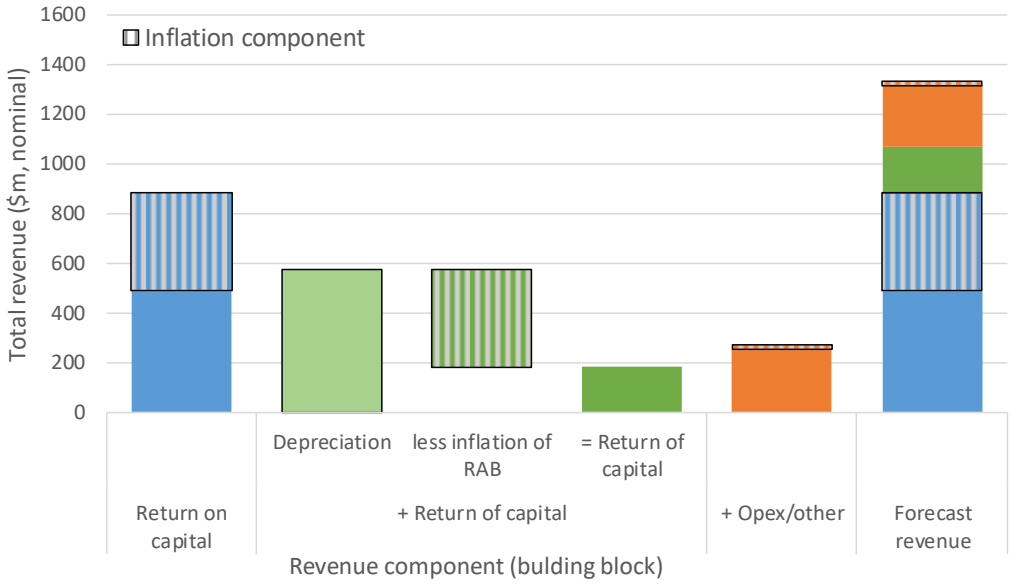
32 NGR, r. 89(1)(d).

33 NGR, cl. 87.

34 NGR, r. 76.

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

Figure 4.1 Inflation components in revenue building blocks – example



Source: AER analysis.

This approach produces the same total revenue requirement and capital base as if a real rate of return had been used in combination with an indexed capital base. Under an alternative approach where a nominal rate of return was used in combination with an un-indexed (historical cost) capital base, 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 (and therefore prices) would be higher early in the asset's life (as a result of more depreciation being returned to the service provider) and lower in the future—producing a steeper downward sloping profile of total revenue.[36] Under both approaches, the total revenues being recovered are in net present value (NPV) neutral terms—that is, returning the initial cost of the capital base.

Figure 4.2 shows the recovery of revenue under both approaches using a simplified example.[37] Indexation of the capital base and the offsetting adjustment made to depreciation results in smoother revenue recovery profile over the life of an asset than if the capital base was un-indexed. The indexation of the capital base also reduces price shocks when the asset is replaced at the end of its life.[38]

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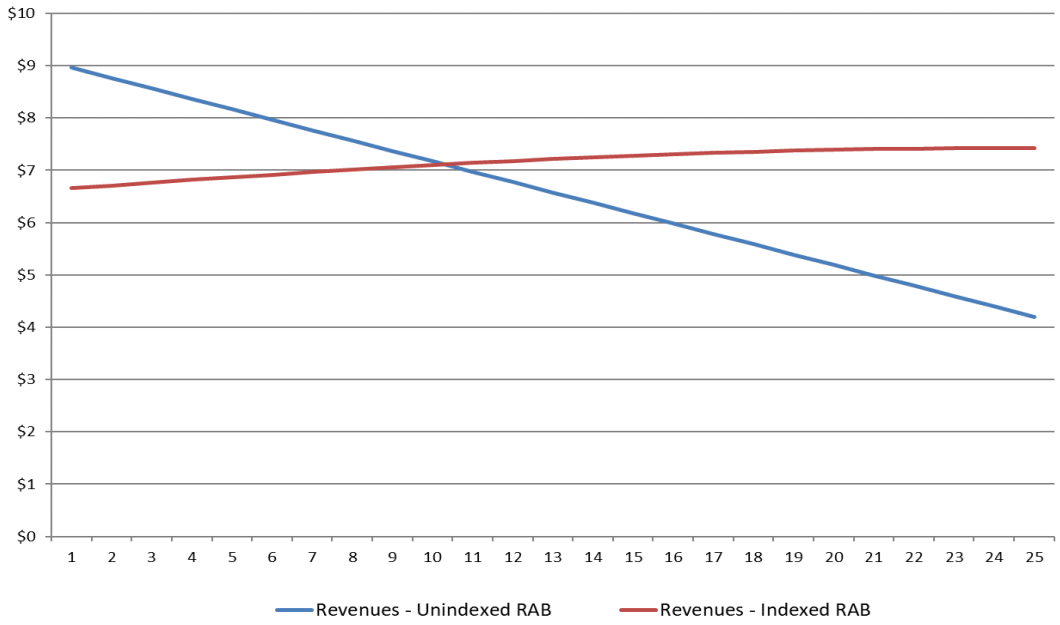
[36] A change of approach from an indexed capital base to an un-indexed capital base would result in an initial step change increase in revenues to preserve NPV neutrality.

[37] 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.

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

Figure 4.2 Revenue path example – indexed vs un-indexed capital base ($ nominal)



Source: AER analysis.

Figure 2.1 (in Attachment 2) shows the relative size of the inflation indexation and straight-line depreciation, and their impact on the capital base using Evoenergy's proposal. A 10 per cent increase in the straight-line depreciation causes revenues to increase by about 3.2 per cent.[39]

4.4 Reasons for draft decision

We accept Evoenergy's proposed straight-line depreciation method for calculating the regulatory depreciation amount as set out in the PTRM. However, we increased Evoenergy's proposed forecast regulatory depreciation amount by $0.3 million (or 0.8 per cent) to $44.4 million ($ nominal). This amendment reflects the lower expected inflation rate we applied in this draft decision compared to Evoenergy's proposal (Attachment 3), which is the key driver of the increase to the depreciation amount compared to the proposal.

We accept Evoenergy's proposed weighted average method to calculate the remaining asset lives as at 1 July 2021 for depreciating its existing assets, subject to modelling updates to the RFM.

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

We accept Evoenergy's proposed standard asset lives for the majority of its asset classes. However, we do not fully accept its proposed shorter standard asset lives for its pipeline assets (HP mains, MP mains and MP services).

Table 4.4 sets out our draft decision on the standard and remaining asset lives for Evoenergy over the 2021–26 period. We are satisfied that the asset lives:

- would result in the assets being depreciated over their economic lives[40]
- would lead to tariffs varying, over time, in a way that promotes efficient growth in the market for reference services.[41]

Table 4.4 AER's draft decision on Evoenergy's standard and remaining asset lives as at 1 July 2021 (years)

Asset class	Standard asset life	Remaining asset life
HP mains – ACT[a]	50.0	60.4
HP mains - NSW	80.0	n/a
HP services	50.0	34.4
MP mains – ACT[a]	30.0	23.9
MP mains – NSW	50.0	n/a
MP services – ACT[a]	30.0	36.0
MP services - NSW	50.0	n/a
TRS & DRS - valves & regulators	15.0	8.4
Contract meters	15.0	6.0
Tariff meters	15.0	10.7
Regulatory costs	5.0	1.0
IT system	5.0	1.0
Land and easement	n/a	n/a

Source: AER analysis.

(a) We have renamed these asset classes to reflect pipeline assets located in the ACT region of Evoenergy's gas network.

n/a: Not applicable. We have not assigned a standard or remaining asset life to the 'Land and easement' asset class because the assets are not subject to depreciation. We have not assigned a remaining life to the new 'HP mains – NSW', ' MP mains – NSW' and 'MP services – NSW' asset classes as they do not have an opening capital base value as at 1 July 2021.

40 NGR, r. 89(1)(c).

41 NGR, r. 89(1)(a).

Our assessment of Evoenergy's proposed remaining and standard asset lives are discussed in turn in the following sub-sections.

4.4.1 Remaining asset lives

We accept Evoenergy's proposed weighted average method to calculate the remaining asset lives as at 1 July 2021. The proposed method is a continuation of the approved approach used in the 2016–21 access arrangement and applies the approach as set out in our RFM. In accepting the weighted average method, we have updated Evoenergy's remaining asset lives to reflect our adjustments to the proposed RFM. As discussed in Attachment 2, we made minor updates to the 2014–15 actual inflation and 2014–15 actual capex inputs in Evoenergy's proposed RFM which accordingly updated the remaining asset lives as at 1 July 2021. This is because some of the inputs in the RFM affect the value of assets in the capital base and in turn, the calculation of the remaining asset lives as at 1 July 2021.

We note that we have updated the remaining asset lives as at 1 July 2021 for the 'Regulatory costs' and 'IT systems' asset classes as they have small negative residual values at the start of the 2021–26 period. We have assigned a remaining asset life of 1 year to these asset classes so that the negative amount is fully depreciated over the 2021–26 period.

For this draft decision, the remaining asset lives as at 1 July 2021 reflect estimated capex values for 2019–20 and 2020–21. As part of the final decision, we will update the 2019–20 estimated capex with actuals and the 2020–21 estimated capex may be revised based on more up to date information by Evoenergy in its revised proposal. Therefore, we will recalculate Evoenergy's remaining asset lives as at 1 July 2021 using the method approved in this draft decision to reflect the revised capex inputs for the final decision.

Table 4.4 above sets out our draft decision on the remaining asset lives as at 1 July 2021 for Evoenergy.

4.4.2 Standard asset lives

We accept the majority of the standard asset lives proposed by Evoenergy for the 2021–26 period as they are the same as those approved for the 2016–21 period. However, we do not fully accept Evoenergy's proposal to reduce its standard asset lives for its pipeline asset classes. Our draft decision is to:

- accept Evoenergy's proposed shorter standard asset lives for pipeline assets in the ACT region
- not accept Evoenergy's proposed shorter standard asset lives for pipeline assets in the NSW region. Accordingly, we have created three new asset classes for pipeline assets located in the NSW region of Evoenergy's gas network and maintained the longer standard asset lives for these new asset classes.

In assessing Evoenergy's proposal, we have considered the issues raised by Evoenergy which affect gas usage in its network. Given the ACT Government's climate

change policies towards future natural gas use in the ACT and Evoenergy's proposal to reduce network expansion in that region, we consider that shorter standard asset lives for the 2021–26 period could reduce potential asset stranding risk. However, we do not consider that reduced asset lives are warranted for capex associated with NSW expansion, given Evoenergy has a positive consumer growth outlook for this region and the ACT Government's climate change policy does not apply to this region. We have also considered consumers' views and stakeholders' submissions on Evoenergy's proposed shorter asset lives.

There are a variety of views from stakeholders, but a common concern is the potential implication for future prices for consumers. Therefore, there may be a case for some precautionary steps to be taken sooner rather than later.

We discuss the reasons for our decision below.

4.4.2.1 Gas pipelines in the ACT

Implications of ACT climate change policy on economic lives

The NGR state that the depreciation schedule should be designed so that 'each asset or group of assets is depreciated over the economic life of that asset or group of assets'.[42] Determining the economic life of an asset is a matter of judgment. Our standard approach considers that the estimated technical (engineering) life of an asset is the best estimate for the economic (useful) life of an asset. This is because, on average, assets for a monopoly network will remain useful until the end of their technical life; recognising that some may run beyond their technical life, and some may need to be replaced earlier. We have generally applied this approach in the past. However, we note that the depreciation criteria in the NGR allow us to consider other relevant factors which could have an impact on the future usefulness of an asset.

All State and Territory Governments in Australia have some sort of target (aspirational or legislated) to achieve net zero greenhouse gas emissions by or around 2050. We consider that unless there is an explicit government policy aimed at curbing carbon emissions from natural gas in a particular jurisdiction, it is unclear whether a greenhouse gas emissions target—in and of itself—would solely cause the future usage for the gas network to significantly decline in that jurisdiction.

In our 2020–25 final decision for Jemena Gas Networks (NSW) Ltd (JGN),[43] we rejected its proposal for shortening its standard lives for new expenditure on pipeline assets. JGN submitted that the NSW Government's 2050 carbon neutral target would result in a likely stranding of its assets. In JGN's final decision we noted that the NSW Government's plan provided for an economy-wide target for decarbonisation with no specific policies directed at curtailing gas consumption. We considered that the

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42 NGR, r. 89(1)(b).

43 AER, *JGN 2020–25 Access Arrangement – Final Decision – Attachment 4 – Regulatory Depreciation*, June 2020.

existence of a carbon emissions reduction target does not automatically equate to a phasing out of gas without clear policy direction from the Government.

We note that the ACT Government has a legislated target of net zero greenhouse gas emissions by 30 June 2045 under the *Climate Change and Greenhouse Gas Reduction Act 2010*. It also has a legislated target of a 100 per cent renewable electricity supply from 2020 – which was achieved, when allowing for carbon offsets, in October 2019.[44] This transition helped the ACT achieve its first interim target to reduce emissions by 40 per cent by 2020.

The ACT Government's *Climate Change Strategy 2019–2025* (*Strategy*) was published in September 2019. It sets a pathway to achieving its next interim target to reduce emissions by 50–60 per cent by 2025.[45] The *Strategy* places a strong focus on reducing emissions from transport and gas—the two largest sources of emissions from 2020, once emissions from electricity are reduced to zero. The *Strategy* also notes that the ACT Government wants to encourage a shift from gas to electricity by removing the mandated requirement for gas connection in new suburbs, supporting gas to electric appliance upgrades, and encouraging new builds to be all-electric.[46] We note that the ACT was the only jurisdiction with the mandate of reticulating gas to new suburbs – removal of this mandate brings it in line with the other States and Territories.

We also note that the ACT Government has shown a preference towards full electrification to achieve net zero emissions from gas use by 2045, through the action items for reducing emissions in its *Strategy*. This includes providing rebates to consumers to switch their old gas heaters to electric, incentives to have new builds be fully electric, commitment to transforming public housing, public hospital, schools and Government offices to all electric builds etc.[47]

A key action item for the ACT Government noted in the *Strategy* is to develop a plan by 2024 for achieving zero emissions from gas use by 2045, including setting timelines with appropriate transition periods for phasing out new and existing gas connections. Evoenergy has submitted that it envisages two broad scenarios which would allow the ACT to achieve zero emissions from gas:[48]

1. transition away from the gas network, with the region's energy needs being met by renewable electricity

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[44] Please note, the ACT generates about five per cent of the electricity used within the ACT. Therefore, this target is achieved through carbon offsets. That is, for every watt of non-renewable electricity consumed in the ACT, it pays one back through its renewable investments around the country. Source: https://www.abc.net.au/news/2019-10-01/act-is-100-per-cent-renewable-but-what-does-that-mean/11560356

[45] ACT Government, *Climate Change Strategy 2019–25*, September 2019, accessed at: https://www.environment.act.gov.au/cc/act-climate-change-strategy

[46] ACT Government, *Climate Change Strategy 2019–25*, September 2019, p. 36.

[47] ACT Government, *Climate Change Strategy 2019–25*, September 2019.

[48] Evoenergy, *Overview – Access arrangement information, ACT and Queanbeyan-Palerang gas network 2021–26*, June 2020, p. 9.

2. transition away from carbon-emitting natural gas to renewable gas options, including hydrogen and bio-methane.

In Appendix A to this attachment, we discuss that there are potential barriers and costs associated with moving towards full electrification. However, we consider a number of these barriers could be mitigated in the ACT.

On the other hand, we also acknowledge that there is a possibility that the ACT Government could choose to transition towards hydrogen or other renewable gases and reduce incentives for greater electrification by the time of the subsequent 2026–31 access arrangement proposal. We note the following considerations below:

- The ACT Government (along with other Australian States and Territories) endorsed the *National Hydrogen Strategy* in November 2019.[49]
- The ACT Government has noted that hydrogen development and its commercial viability would have to progress for it to consider this transition over full electrification. We consider that there has been further advancement in national policies towards the development of hydrogen over the past year as noted in Appendix A.
- Evoenergy's gas network is relatively new and largely compatible with hydrogen transportation. The ACT Government has indicated that by 2024, it would deliver a plan based on the most efficient (least costly) path for achieving zero emissions from gas use by 2045.

We consider that some gas networks, such as JGN in NSW, have time to transition towards hydrogen until its production becomes commercially viable and hydrogen appliances (cooktops, space heating, and water heating) are available for end-users. In the case of Evoenergy in the ACT, the ACT Government considers its 100 per cent renewable electricity supply to be a clear alternative to renewable gas. We consider that even if hydrogen for residential consumers becomes commercially viable in 10-15 years, the ACT Government's policies to get existing consumers to progressively switch over to electricity could lead to a decline in the future usage of Evoenergy's gas network.

Further, we note that Evoenergy has also submitted that the principal developer in the ACT, the Suburban Land Agency[50] (SLA) has expressed to Evoenergy that it will not be applying to connect gas in its new estates.[51] Evoenergy reflected this information in its proposal by forecasting zero connections in greenfield sites in the ACT (i.e. new land released by the SLA). Therefore, even with the uncertainty about the ACT

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[49] COAG Energy Council, *National Hydrogen Strategy - Ministers' Joint Statement*, November 2019.

[50] The Suburban Land Agency is a statutory authority established under the *City Renewal Authority and Suburban Land Agency Act 2017*. Suburban Land Agency is responsible for delivering the ACT Government's suburban development program, including urban renewal in established town centres and suburbs. Source: https://suburbanland.act.gov.au/en/what-we-do

[51] Evoenergy, *Overview – Access arrangement information, ACT and Queanbeyan-Palerang gas network 2021–26*, June 2020, p. 24.

Government's 2024 roadmap to zero emissions from gas use, these actions could result in a declining customer base in the ACT. This is because Evoenergy's consumer base is mostly made up of residential and small business consumers but no heavy industries.[52] We consider that if the SLA continues to maintain this policy:

- In the short- to medium-term, Evoenergy would still have growth opportunities in the ACT as 'brownfield' areas continue to connect and have vacant land blocks for new housing.
- In the longer-term, there could be a decline in Evoenergy's connections as it would have limited growth opportunities in the ACT outside of existing suburbs, given new suburbs in the ACT are being designed to be fully electric.

For this draft decision, we are required to determine the expected economic life (i.e. future usefulness) of the new assets being built by Evoenergy over the 2021–26 period. The ACT Government has made a clear policy directive to significantly reduce or eliminate natural gas consumption in the ACT by 2045, which goes beyond setting a net zero emissions target. Based on the current evidence available to us, we consider there is a likelihood of the usage of Evoenergy's gas network declining due to the ACT Government's policies directed at reducing gas consumption by consumers. Therefore, we consider Evoenergy faces a greater likelihood that its ACT pipelines would not reach the end of their technical lives due to the combination of the policies aimed at curtailing natural gas use in the ACT.

While we consider there is a possibility that the pipeline assets would not reach the end of their technical lives, there is currently not enough evidence to say that all assets would be stranded by 2045. This is because the ACT Government is still considering a transition towards renewable gas to achieve net zero emissions from gas use, which would allow Evoenergy to use its pipelines beyond 2045 to transport renewable gas. We consider the reasonable approach under the current climate change policies in the ACT is to assign asset lives which are longer than the 2045 target but shorter than the technical lives of the assets.

Therefore, we consider that Evoenergy's proposed shorter standard asset lives of 30 years for the MP mains and MP services (reduced from 50 years), and 50 years for HP mains (reduced from 80 years) are reasonable for the purposes of depreciating new pipeline assets over the 2021–26 period in the ACT region. We expect to have more policy clarity from the ACT Government at the next review to re-assess the asset lives for the 2026–31 period.

We consider our draft decision is a prudent, responsible and precautionary first step to protect the long term interests of Evoenergy's gas consumers from asset stranding risk. We will adapt our approach in future access arrangement reviews for the key considerations and changing circumstances that are relevant for each jurisdiction.

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[52] Evoenergy, *Overview – Access arrangement information, ACT and Queanbeyan-Palerang gas network 2021–26*, June 2020, p. 4.

Managing stranding risks through reducing capex

The capital base is an accumulation of the value of investments that a service provider has made in its network. This value is the amount customers 'owe' to the investors which is paid back over time through depreciation. Therefore, costs associated with network stranding affects both consumers and networks. In the instance of increased stranding risk, we need to consider how to safely transition the remaining customers off the gas network so that they do not have to risk paying significantly large amounts in the event of stranding. The equation below shows how the capital base is calculated at a particular point in time.

- Capital base$_{(t)}$ = Capital base$_{(t-1)}$ + Actual inflation + Actual capex – Straight-line depreciation

We note that Incenta, in its report commissioned by Evoenergy, has advocated for reducing the asset lives to remove the risk of stranding for investors,[53] but it did not consider the impact of potential stranding on consumers. While applying accelerated depreciation would help decrease the capital base faster, this would be offset by any new additions of capex to the capital base. As such, accelerated depreciation does not assist in reducing the capital base by itself and therefore does not fully address the stranding risk borne by consumers. It just shifts the profile of capital base recovery by increasing the costs to consumers in the short term due to higher depreciation costs over a shorter period and then reducing the costs to consumers in the longer term because the capital base has been recovered faster.

We consider an important aspect of reducing stranding risk on consumers is by reducing capex. If we apply accelerated depreciation to address asset stranding risk but do not put any constraints on capex, then while investors get certainty that they would get their money back in a shorter period of time, it does not prevent poor investment decisions being borne by consumers once the stranding risk is realised.

We dealt with this conflict in our 2020–25 final decision for JGN where it proposed to apply higher depreciation to address potential stranding risk but at the same time had a large capex program which caused it to increase its capital base by 3.2 per cent at the end of the period. We stated that JGN's capex proposal did not suggest it is preparing for a persistent and significant decline in demand, as over 50 per cent of JGN's proposed forecast capex of approximately $900 million related to new demand (connections and augmentation), leading to a growing capital base at the end of its 2020–25 period.[54]

In contrast, we note Evoenergy's proposed forecast capex for the 2021–26 period is 28 per cent lower compared to its approved forecast capex for the 2016–21 period as shown in Table 4.5. Further, Evoenergy's forecast capex for its pipeline asset classes

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[53] Evoenergy, *2021–26 Access Arrangement Proposal – Incenta – Appendix 4.3 Responding to stranded asset risk*, June 2020, p. 3.

[54] AER, *JGN 2020–25 Access Arrangement – Final Decision – Attachment 4 – Regulatory Depreciation*, June 2020, p. 25.

(HP mains, MP mains, MP services) has reduced by 53 per cent compared to the 2016–21 period to reflect lower connections and augmentation forecasts in response to the ACT Government's climate change policies.

Table 4.5 Evoenegy's forecast capex by asset class over the 2016–21 and 2021–26 periods

Asset class	2016–21 approved forecast capex	2021–26 proposed capex	Difference
HP mains	8.8	3.6	–5.2 (–59%)
HP services	0.9	1.6	+0.7 (+78%)
MP mains	20.7	9.9	–10.9 (–52%)
MP services	20.3	10.1	–10.2 (–50%)
TRS & DRS - valves & regulators	5.8	7.9	+2.1 (+36%)
Contract meters	1.0	0.4	–0.6 (–62%)
Tariff meters	29.3	29.8	+0.5 (+2%)
IT system	0.6	0	–0.6 (–100%)
Land and easement	0.4	0	–0.4 (–100%)
Total	**87.8**	**63.3**	**–24.5 (–28%)**

Source: AER analysis.

As a result of these actions, Evoenergy's capital base is expected to decline by 5.5 per cent by the end of the 2021–26 period in real terms. The majority of this decline is due to the lower capex. We note that even if accelerated depreciation was not applied, the capital base would still decline by 5.4 per cent. We consider a declining capital base profile is appropriate where we have reason to believe that future stranding is a significant risk.

We note Evoenergy's forecast market expansion capex is nearly half its actual expenditure in the current period, reflecting ACT Government policy.[55] However, growth is still expected to continue in the NSW segments of the network, where the outlook is positive, and in brownfields/existing ACT suburbs, where urban infill and medium to high density dwellings are likely to continue to connect to gas. Attachment 5 details our reasons for accepting Evoenergy's proposed brownfields connections capex in the ACT as placeholder amounts for the 2021–26 period. If in future access arrangement periods, Evoenergy envisages an even greater risk of stranding and therefore proposes further reductions to asset lives, we would also expect equivalent reductions to its capex. For instance, if it had proposed to depreciate all its assets in 25 years to align with the 2045 target, we consider it would also be prudent to limit the capex to maintaining the safety and reliability of the network (i.e. no market expansion and minimal metering or non-network capex).

[55] Evoenergy, *Attachment 3 Capital expenditure access arrangement information, ACT and Queanbeyan-Palerang gas network 2021–26*, June 2020, Table 3.4.

4.4.2.2 Gas pipelines in NSW

Aside from the ACT, Evoenergy's gas network also covers the Queanbeyan-Palerang area of NSW. Around 10 per cent (or 15,000) of Evoenergy's total connections are in NSW.[56] We note that approximately $3.5 million (or 14 per cent) of Evoenergy's forecast capex on pipeline asset classes for the 2021–26 period is related to market expansion in NSW, the majority of which relates to mains extension and services installation for new residential consumers in NSW.

Evoenergy has submitted the following regarding its market expansion in NSW:[57]

> "A significant part of the market expansion capex (15 per cent) relates to developments in NSW, where no direct government action is being taken to transition away from gas.
>
> In NSW over the past 5 years, we have seen strong demand for gas as shown in NSW Government data on households being built or undergoing major renovations continuing to choose gas. We have forecast to continue receiving connection requests for homes in NSW."

Evoenergy has submitted that it currently has a positive outlook for consumer growth in NSW—this is consistent with our findings in our JGN 2020–25 final decision. We note that builders in the NSW part of Evoenergy's network have an incentive to connect gas to new estates to receive the NSW Government's BASIX (building sustainability index) certificate.[58] Further, NSW consumers are not eligible to receive ACT Government rebates (offered to ACT consumers) to switch their gas appliances to electric appliances. Therefore, NSW consumers are unlikely to start disconnecting from the gas network, unless it becomes too costly for them to remain on Evoenergy's network. It is not clear at this point in time whether Evoenergy would cease connecting new consumers in NSW if the ACT Government decides to move to full electrification in the ACT.

We recognise the potential risk faced by Evoenergy's NSW consumers due to the ACT Government's policies. However, we consider that the appropriate measure is to not apply accelerated depreciation to the NSW capex for the 2021–26 period, given Evoenergy's capex proposal is 'business as usual' in regards to NSW. Further, in the scenario of a potential closure of the gas network in the ACT, it may be possible for Evoenergy to technically maintain the NSW side of the network, with a transmission pipeline passing through the ACT to connect NSW to the gas supply. Based on the current policy environment, Evoenergy has the incentive to grow its current 15,000 consumer connections in NSW over the next 25 years.

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[56] Evoenergy, *Overview – Access arrangement information, ACT and Queanbeyan-Palerang gas network 2021–26*, June 2020, p. 4.

[57] Evoenergy, *Attachment 3 Capital expenditure access arrangement information, ACT and Queanbeyan-Palerang gas network 2021–26*, June 2020, p. 3-9.

[58] Gas (mains or bottled) appliances score well in BASIX due to the low greenhouse gas intensity of gas compared to electricity. Source: https://basix.nsw.gov.au/iframe/energy-help/gas.html

While Evoenergy's proposal to reduce the current pipeline lives for NSW capex would have a negligible effect on consumer bills for the 2021–26 period, we consider it is appropriate to maintain applying the longer standard lives for pipeline assets being built in NSW as currently there is insufficient evidence to conclude that the economic lives of these assets would be shorter than their technical lives. We consider having separate pipeline asset lives for ACT and NSW allows us to deal with the different market growth incentives in these jurisdictions.

4.4.2.3 Consumer bill impacts and stakeholders' submissions on Evoenergy's proposal for accelerated depreciation

Evoenergy has proposed total forecast revenue of $314.9 million over the 2021–26 period. This is based on the shorter asset lives of 50 years for HP mains and 30 years for MP mains and MP services. This has the effect of increasing its regulatory depreciation amount by $0.7 million (or 1.7 per cent) over the 2021–26 period, all else being equal, compared to if we had maintained the current standard asset lives.

In terms of the impact on average retail gas bills, we estimate that Evoenergy's proposal for shorter standard asset lives results in a $1 increase to residential consumer bills and $8 increase to small business consumer bills over the 5 year period. As such, our acceptance of Evoenergy's proposed accelerated depreciation to its standard asset lives does not have a material impact to consumer bills over the 2021–26 period.

We received stakeholder submissions from the Consumer Challenge Panel (CCP24), Energy Consumers Australian (ECA), ACT Council of Social Service (ACTCOSS), the Conservation Council ACT Region, EnergyAustralia and Origin Energy regarding Evoenergy's proposal for applying shorter standard asset lives for its new expenditure on pipeline assets. There were a broad range of views expressed by stakeholders on this issue, so it is difficult to determine a 'majority' view from submissions on this issue. However, many stakeholder submissions noted Evoenergy's extensive stakeholder engagement to consider the future of its gas network based on information from a variety of viewpoints. For instance, its Citizens' Jury, call for submission on its draft plan, community roadshows, and deep dive sessions including an asset stranding workshop.

From a consumer perspective, we note that:

- the CCP24 supported Evoenergy's proposal for shorter asset lives and submitted that there could be a case for asset lives to be aligned with the 2045 net zero emissions date.[59]
- On the other hand, the ECA did not support Evoenergy's proposed shorter standard asset lives. It submitted that this may not be the right time to act to

[59] CCP24, *Advice to the Australian Energy Regulatory on Evoenergy gas network 21 plan for Evoenergy (ActewAGL) ACT, Queanbeyan and Palerang access arrangement July 2021–June 2026*, August 2020, p. 15.

address stranding risk as Evoenergy does not know the outcome or timeline of ACT Government's transition roadmap.[60]

- ACTCOSS was undecided on the issue of applying shorter asset lives. However, it supported Evoenergy's decision to cease network expansion in new developments in the ACT and stated that same decision could also apply to market expansion in the NSW component of Evoenergy's network, as well as expansion of the network in brownfield sites in existing suburbs.[61]

We consider our draft decision on Evoenergy's proposal for the 2021–26 period provides a balanced approach that addresses asset stranding risk due to the ACT Government's current climate change policies and legislation, and does not remove options to extend the life of the network through transition towards renewable gas transportation in the future.

Further, we note that a number of stakeholder submissions in response to Evoenergy's proposal for accelerated depreciation called for the AER to conduct a broader review of possible asset stranding risks in gas networks under the context of jurisdictional climate change policies.[62] To this end, and in recognition of the importance of the gas market and our role in determining network access arrangements, we have elevated consideration of future gas market issues in our strategic priorities list. We are currently considering how we could advance this discussion with consumers, industry, market bodies and government stakeholders.

If there is more certainty about the phasing out of gas at the next access arrangement review, we would reconsider whether current assessment tools remain appropriate for the purpose of determining expenditure forecasts, demand forecasts, pricing structures and incentive schemes. In particular, we would consider:

- Whether a more rigorous incremental revenue test for connections and augmentations would be more appropriate since the longevity of future benefits to consumers would be in doubt. Future consumers wanting to connect to the gas network may then have to pay a capital contribution to connect. This would mean the customers who want to connect to a possibly stranded network would bear some of the costs associated with it upfront.

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60 Energy Consumers Australia, *Evoenergy and Australian Gas Networks (SA) Gas access arrangement proposals 2021–26 submission*, August 2020, p. 11.

61 ACTCOSS, *Submission: Evoenergy's gas network 2021–26 access arrangement proposal to the Australian Energy Regulator*, August 2020, pp. 7, 14.

62 CCP24, *Advice to the Australian Energy Regulatory on Evoenergy gas network 21 plan for Evoenergy (ActewAGL) ACT, Queanbeyan and Palerang access arrangement July 2021–June 2026*, August 2020, p. 41; ACTCOSS, *Submission: Evoenergy's gas network 2021–26 access arrangement proposal to the Australian Energy Regulator*, August 2020, p. 8; Energy Consumers Australia, *Evoenergy and Australian Gas Networks (SA) Gas access arrangement proposals 2021–26 submission*, August 2020, p. 9; EnergyAustralia, *Evoenergy – Proposed Access arrangement 2021–26 – 1 July 2020,* August 2020, p. 4; Origin Energy, *Evoenergy access arrangement proposal,* August 2020, p. 4.

- If any ongoing marketing expenditure would be necessary for a network facing an increased risk of stranding.
- If the capital expenditure sharing scheme (CESS) should be applied in a declining demand or asset stranding scenario.
- If the introduction of exit fees or different pricing structures would become necessary.

4.5 Revisions

We require the following revisions to make the access arrangement proposal acceptable as set out in Table 4.6:

Table 4.6 Evoenergy's regulatory depreciation revisions

Revision 4.1:	Make all necessary amendments to reflect this draft decision on the regulatory depreciation amounts for the 2021–26 access arrangement period, as set out in Table 4.1.
Revision 4.2:	Make all necessary amendments to reflect this draft decision on the standard asset lives, as set out in Table 4.4.
Revision 4.3:	Make all necessary amendments to reflect this draft decision on the remaining asset lives, as set out in Table 4.4.

A Climate change policies and their impact on gas network usage

The future of natural gas is a live issue, particularly as renewable electricity becomes cheaper and is increasingly becoming the choice of consumers. Whilst ACT and NSW consumers are still demanding gas and Evoenergy continues to connect consumers and support its network operations, gas networks across Australia are facing an evolving landscape with growing support for reducing carbon emissions by moving away from natural gas use for homes and businesses. This is occurring at varying speeds in different regions, driven primarily by jurisdictional government policy.

We consider there are barriers preventing existing gas consumers from switching to electricity on their own initiative. Residential and small business gas users have low cross-price elasticities[63] even though electricity can be substituted for gas for most of its applications, such as cooking, space heating and water heating. Overall, gas is considered to be cheaper than electricity[64] and some consumers prefer using gas cooking. Some consumers also prefer to have an alternative fuel to electricity connecting to their dwelling in the instance of a blackout.[65] Switching to electricity would require consumers to buy new electric appliances to replace existing gas appliances. We note that Evoenergy has submitted that the ACT Government is providing rebates and discounts to eligible households to replace their gas appliances with electric appliances.[66] This could help mitigate the barriers for existing residential gas customers to switch to electricity. However, while we can extrapolate the impact of existing rebates using available data, it is difficult to reasonably judge the impact of future rebates on demand over the 2021–26 period. Our draft decision on Evoenergy's 2021–26 gas demand forecast is discussed in Attachment 12.

Further, some large industrial consumers currently would be unable to switch to electricity as certain industrial functions require high temperatures or high-pressure steam which can be produced rapidly and efficiently by natural gas.[67] This is a relevant consideration for industrial consumers connected to gas distribution networks in NSW, Victoria and South Australia. However, we note that this limitation may not apply to Evoenergy as it does not transport gas to any heavy industries. Evoenergy's customer

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63 For example, for the 2018 remittal calculations for JGN an own price elasticity of -0.3 (or -0.11 once the proportion of network charges in the total gas bill was accounted for) was accepted by the AER, which is relatively inelastic. See AER, *JGN Final decision Access arrangement 2015-20 - Remittal Actual volumes scenarios*, February 2019, Elasticity sheet.

64 Canstar Blue, *What's Cheaper: Electricity or Gas?*, June 2018, accessed at: https://www.canstarblue.com.au/electricity/whats-cheaper-electricity-or-gas/.

65 Evoenergy, *Overview – Access arrangement information, ACT and Queanbeyan-Palerang gas network 2021–26*, June 2020, p. 17.

66 Evoenergy, *Attachment 7 – Demand forecasts, Access arrangement information, ACT and Queanbeyan-PAlerang gas network 2021–26,* June 2020, pp. 7-6 to 7-7.

67 APGA, *Gas Facts and Figures*, accessed at: https://www.apga.org.au/gas-facts-and-figures.

base comprises 98 per cent residential customers and about 2 per cent commercial and industrial customers.[68]

If all existing gas consumers switch to full electrification for their homes or businesses, then the peak demand on the electricity network would likely increase substantially, potentially doubling. This would cause a considerable increase in augmentation costs for the electricity network. Consumers would not only have to pay for the stranding of the gas network, but also for increasing the capacity of the electricity network, which would likely cause a steep increase in electricity network costs. Therefore, we consider it is more likely that existing gas consumers would switch to electricity at modest rates initially. However, this switch could accelerate if governments intervene to subsidise some of these costs to consumers from switching from gas to electricity.

Historically, electricity produced from burning coal emitted higher amounts of greenhouse gases compared to burning natural gas. Therefore, natural gas was considered to be a comparatively 'cleaner' source of energy. However, electricity generated from renewables, such as wind and solar, is cleaner than natural gas, and the ACT jurisdiction has achieved a 100 per cent renewable electricity supply when allowing for carbon offsets. It is important to note that other States and Territories in Australia have not yet achieved a fully renewable electricity supply and electricity generated from fossil fuels continues to account for a significant proportion of total electricity generation.

We consider the development of renewable gases, such as hydrogen and bio-methane, may have the potential to provide gas network businesses the opportunity to transform their networks to become competitive with renewable electricity. The merits of hydrogen versus full electrification is not known at this point and depends on the production cost of hydrogen.

In the absence of explicit government policy directed towards eliminating the use of natural gas, we expect gas businesses to gradually transition their networks, in a cost effective manner (using existing pipeline infrastructure), to allow the transportation of renewable gas in the future. For example, the SA Government's submission on AGN(SA)'s 2021–26 access arrangement proposal has noted its support for AGN(SA)'s proposal to not apply accelerated depreciation given the potential for its gas network to use hydrogen.[69] This demonstrates that even if a jurisdiction has a net zero greenhouse gas emissions target,[70] it does not automatically mean that the gas network would become stranded unless the jurisdictional government is actively taking steps to encourage consumers to disconnect from gas. However, it does mean that the

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[68] Evoenergy, *Overview – Access arrangement information, ACT and Queanbeyan-Palerang gas network 2021–26*, June 2020, p. 4.

[69] SA Minister Energy & Mining, *Submission on AGN AA*, August 2020, p. 5.

[70] The SA Government is aiming to achieve net zero emissions by 2050. SA Department for Environment and Water, *South Australia's greenhouse gas emissions*, 2020, accessed at: https://www.environment.sa.gov.au/topics/climate-change/south-australias-greenhouse-gas-emissions.

nature of the gas network could be different in 20–30 years' time as it transitions to potentially transport renewable gases.

While there is still uncertainty about the commercial viability of renewable gas, we note that it is widely accepted that 10 per cent blends of hydrogen with natural gas are largely compatible with the existing gas networks without requiring any major modifications to current gas infrastructure or requiring end-users to replace their appliances. This view is supported by several gas networks in Australia.[71]

> "Blending of hydrogen with natural gas for supply via the gas distribution network is an efficient approach to decarbonisation being pursued in Australia and throughout the globe.
>
> We believe Australia's gas networks are hydrogen ready. Many have already or are in the process of replacing older mains with next generation polyethylene which is suitable for 100% hydrogen. A limiting technical factor for hydrogen blending is the end-use appliance. Appliance testing work being undertaken across the globe supports a 10% volume blend as suitable for current appliances.
>
> We consider a 10% hydrogen volume blend to our networks is achievable over the next decade, and potentially sooner."

We consider that this would allow reductions in emissions from natural gas use in the short- to medium-term while renewable gas technologies are developed further. While we acknowledge that there are still uncertainties about whether hydrogen would be available for residential use, there are several trials underway testing the production and use of hydrogen for subsequent application on a broader scale. We note the following developments over the past year which suggest a future for hydrogen in the energy mix:

- The National Hydrogen Strategy, which aims to establish Australia's hydrogen industry as a major global player by 2030 has been unanimously adopted by the Commonwealth, State, and Territory Governments in late 2019.[72]
- The Commonwealth Government released a technology roadmap in September 2020 which identifies the development of hydrogen over the next decade as a top priority.[73] This builds upon the advisory group it set up earlier in

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71 AGIG, JGN, AusNet Services and Evoenergy, *Expression of Interest – Achieving 10% Renewable Hydrogen in Australian Gas Networks*, March 2020, p. 5, accessed at: https://www.agig.com.au/media-release---greater-hydrogen-use.

72 COAG energy council, *22nd Energy Council Meeting Communique*, November 2019, accessed at http://www.coagenergycouncil.gov.au/publications/22nd-energy-council-meeting-communique.

73 Minister for Energy and Emissions Reduction, *Media Release: Technology-led plan to lower emissions, lower costs and support jobs*, 22 September 2020, accessed at: https://www.minister.industry.gov.au/ministers/taylor/media-releases/technology-led-plan-lower-emissions-lower-costs-and-support-jobs

the year, with the aim of determining how to produce hydrogen fuel for less than $2 per kilogram.[74]

- There are a number of trials approved in NSW, South Australia and Queensland which are aimed at injecting 5 to 10 per cent blends of hydrogen in the existing gas networks in these regions.[75]
- In the ACT, Evoenergy and the Canberra Institute of Technology (CIT) have built a hydrogen test facility at CIT's Fyshwick campus, which is testing how hydrogen interacts with Evoenergy's network materials, work practices and equipment. Through testing 100 per cent hydrogen in a replica gas network for almost two years, this study has verified that the underground 200 kPa plastic (polyethylene and nylon) network is compatible with 100 percent hydrogen.[76]

We note that MP pipelines which are made of high-density polyethylene (HDPE), especially in newer networks such as Evoenergy, are suitable for transporting hydrogen gas.[77] However, we recognise that pipeline assets which are made of metal are less compatible with hydrogen as they become brittle (over a long period of time) as hydrogen is transported through it.[78] This include HP pipelines which are made of steel. The current standard asset lives of HP pipelines is 80 years, however, if we transition towards hydrogen, then their remaining asset lives would likely reduce as they will either need to be replaced or at least coated with a material compatible with hydrogen (plastic) before the end of their technical lives.

MP pipelines for older gas networks were built using cast iron in the past which is incompatible with hydrogen but these pipelines are progressively being replaced with HDPE. If gas network businesses intend to use their existing gas pipelines to transport higher blends of hydrogen to its end-users, we would require them to identify those particular pipelines so that their technical lives could be re-assessed at that time.

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74 Minister for Energy and Emissions Reduction, *Keynote address at CEDA 'Future Direction in Energy Technologies' event, Sydney*, 28 February 2020, accessed at: https://www.minister.industry.gov.au/ministers/taylor/speeches/keynote-address-ceda-future-direction-energy-technologies-event-sydney.

75 Jemena, *NSW Government gives green light to Jemena's hydrogen project*, August 2020, accessed at: https://jemena.com.au/about/newsroom/article/nsw-government-gives-green-light-to-jemena%E2%80%99s-hydro; Government of South Australia, South Australia's Hydrogen Action Plan, September 2019, p.15, accessed at: http://www.renewablessa.sa.gov.au/content/uploads/2019/09/south-australias-hydrogen-action-plan-online.pdf; Queensland Government, Renewable hydrogen bonanza for Gladstone, February 2020, accessed at: https://statements.qld.gov.au/statements/89434.

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Shortened forms

Shortened form	Extended form
ACT	Australian Capital Territory
ACTCOSS	ACT Council of Social Service
AER	Australian Energy Regulator
AGN	Australian Gas Networks
Capex	Capital expenditure
CCP / CCP24	Consumer Challenge Panel, sub-panel 24
CESS	Capital expenditure sharing scheme
CIT	Canberra Institute of Technology
ECA	Energy Consumers Australia
ENA	Energy Networks Australia
HDPE	High-density polyethylene
HP	High pressure
Incenta	Incenta Economic Consulting
JGN	Jemena Gas Networks (NSW) Ltd
MP	Medium pressure
NGL	National Gas Law
NGO	National Gas Objective
NGR	National Gas Rules
NPV	Net present value
NSW	New South Wales
Opex	Operating expenditure
PTRM	Post-tax revenue model
RPP	Revenue and pricing principles
RFM	Roll forward model
SA	South Australia
SLA	Suburban Land Agency
WACC	Weighted average cost of capital
WARL	Weighted average remaining lives