CitiPower and Powercor

Submission in response to the Issues Paper

Depreciation

13 July 2015

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Depreciation

1 Introduction

On 10 June 2015, the Australian Energy Regulator (**AER**) published an Issues Paper on the Victorian electricity distribution pricing review. In its issues paper, the AER invited comments on how the changing environment in which we operate may affect, amongst other areas, the calculation of depreciation.[1] An accurate calculation of depreciation is important to manage intergenerational equity issues, so that today's customers pay an appropriate proportion of the cost of an asset relative to tomorrow's customers.

The issues paper follows the AER's preliminary decision for SA Power Networks, which was published on the same date we lodged our regulatory proposals. In its preliminary determination for SA Power Networks, the AER rejected the method for calculating remaining lives proposed by SA Power Networks and replaced it with its own method.[2]

This submission in response to the AER's issues paper, therefore, also has regard to the AER's preliminary determination for SA Power Networks. Specifically, this submission sets out our preferred method for calculating regulatory depreciation—referred to as the 'baseline' method. We also outline the limitations with the AER's depreciation approach, including the mathematical error in its calculation of remaining lives. Our submission assumes that the use of straight-line depreciation is uncontentious.

This submission is supported by a report prepared by Incenta Economic Consulting (**Incenta**).

2 Estimating remaining lives under the AER's depreciation approach

The AER uses the post-tax revenue model (**PTRM**) to calculate allowed revenues for distributors. A component of this revenue is the depreciation of the regulatory asset base.

Under the AER's PTRM approach to calculating depreciation, assets are aggregated into a small number of asset classes. Within each of the asset classes, the relevant components include the following:

- the starting regulatory value for each class of assets, which is the aggregate of the written down value of all assets within each class at the start of the next regulatory period (i.e. the 2016–2020 regulatory control period);
- the remaining life of each of these asset classes at the commencement of the next regulatory control period (i.e. the 2016–2020 regulatory control period);
- the forecast capital expenditure for each asset class for each year over the next regulatory period (i.e. the 2016–2020 regulatory control period); and
- the standard life of each of these asset classes.

The contentious issue in the AER's preliminary decision for SA Power Networks is how to calculate the remaining life for each asset class at the commencement of the next regulatory control period.

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1 AER, *Issues Paper, Victorian electricity distribution pricing review, 2016 to 2020*, June 2015, p. 47.

2 AER, *Preliminary Decision, SA Power Networks determination 2015–16 to 2019–20, Attachment 5 – Regulatory depreciation*, April 2015.

2.1 Limitations of remaining life calculations

In its preliminary decision for SA Power Networks, the AER used a Weighted Average Remaining Life (**WARL**) method to calculate the remaining life for each asset class at the commencement of the next regulatory control period.[3] Our regulatory proposal used a 'direct' method for calculating the remaining lives.

Both the WARL method and the direct method attribute a single remaining life to a group of assets that are commissioned over many years (e.g. most distribution assets have a standard life of about 50 years). Using a single remaining life means the calculated depreciation will be an approximation. That is, combining old and new assets in the same class must, by definition, result in an average life that differs from the actual remaining lives of the individual assets that constitute the class. Therefore, irrespective of the averaging method used, information on the actual remaining lives of each of the individual assets is 'lost'.

The Incenta report demonstrates that the AER's WARL method and our direct method may result in a depreciation profile that departs from the true straight-line depreciation profile over time. This is consistent with the outcomes shown in figure 5.1 of the AER's preliminary decision for SA Power Networks.[4] For example:

- the AER's WARL method immediately overstates the accurate remaining life of an asset class for a significant period (i.e. defers depreciation). With no additional capital expenditure this bias eventually reduces and then reverses.
- the direct method accurately reflects the remaining life of an asset class for a period. With no additional capital expenditure the average method eventually understates the remaining life of an asset class (i.e. brings forward depreciation).

Given the above, we consider that if a straight-line depreciation profile is deemed appropriate in the long term then an alternative approach which does not rely on an aggregate remaining life—such as our baseline method—is more preferable for calculating depreciation. If it is deemed that a straight-line depreciation profile is appropriate in the medium term, and an accelerated depreciation profile is appropriate in the long term to reflect disruptive technologies, then the direct method would be more preferable. The AER noted in the rate of return attachment of its preliminary decision for SA Power Networks that accelerated depreciation may be appropriate as a means of responding to disruptive technologies in the Australian energy sector.[5]

2.2 The AER's WARL method is mathematically incorrect

Incenta's report also demonstrates that even if using remaining lives was preferable, the formula used by the AER to calculate remaining lives is mathematically incorrect. Further, correcting for the error in the AER's WARL method produces an outcome that replicates our direct method for estimating remaining lives. That is, the depreciation set out in our regulatory proposal reflects the 'correct' formula for calculating the remaining life for a group of assets as set out by Incenta.

The error in the AER's WARL method is essentially that it uses written down asset values as the weighting factor, whereas the correct method would be to use depreciation as the weighting factor. This is demonstrated by Incenta, and can also be shown using a simple example.

For example, consider a steady state electricity network with annual capital expenditure equal to $100 million, with an average economic life of 50 years. Assume depreciation is constant at $100 million per annum, and the depreciated asset value is constant at $2,550 million. It follows that the remaining life—equal to the depreciated

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[3] The AER has also accepted alternative depreciation methods in other previous decisions—most recently, for example, in its final decision for TransGrid. AER, *Final decision, TransGrid transmission determination 2015–16 to 2017–18*, July 2015.

[4] AER, *Preliminary Decision, SA Power Networks determination 2015–16 to 2019–20, Attachment 5 – Regulatory depreciation*, April 2015.

[5] AER, *Preliminary Decision, SA Power Networks determination 2015–16 to 2019–20, Attachment 3 – Rate of return*, April 2015, p. 3–76.

asset value divided by depreciation in a given year—is constant at 25.5 years. At any point in time the remaining life calculated using depreciation as the weighting factor will provide the correct remaining life of 25.5 years. In contrast, at any point in time the WARL method calculates a remaining life of 33.7 years.

The attached 'steady state' model provides the above calculations.

2.3 Our proposed direct method

The direct method set out in our regulatory proposal accurately reflects the remaining life of an asset class for a period of time. Further, as shown in the attached model, the depreciation calculated for the 2016–2020 regulatory control period using our direct method matches almost exactly that calculated for the same period using our baseline method.

The direct method, however, still calculates a single remaining life for a group of assets. In the long term, therefore, this approximation is likely to result in the depreciation profile departing from the true straight-line depreciation profile.

3 Alternative depreciation methods

As set out in the AER's preliminary decision for SA Power Networks, the most accurate way of calculating straight-line depreciation is to track every asset individually.[6] Incenta identify that the only practical implementation of this method would be for the AER to rely on the regulated businesses' own systems to keep track of depreciation on each individual asset. This method would be costly to administer as systems would need to be set up to conduct the calculations, and it is assumed that the AER would require the systems to be audited.

Incenta identified the next most accurate method of estimating depreciation would be to keep track of depreciation on each year's capital expenditure for each asset class. We refer to this approach as the baseline depreciation method. The baseline method is recommended by Incenta because of the following:

- it would leave the PTRM self-contained;
- it does not require any additional information to that already reported to the AER;
- it is straightforward to implement; and
- it does not lead to any relevant information being sacrificed.

In regard to the final point noted by Incenta, this removes the inter-generational issues acknowledged previously by the AER.[7] For example, longer remaining asset lives (as generated using the AER's WARL method) will mean that depreciation is deferred—tomorrow's customers, therefore, may pay more than today's customers.[8]

The baseline method is also used as the reference point by the AER to assess the alternative depreciation methods in its preliminary decision for SA Power Networks. Further benefits of the baseline method include the following:

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6 AER, *Preliminary Decision, SA Power Networks determination 2015–16 to 2019–20, Attachment 5 – Regulatory depreciation*, April 2015, p. 5–12.

7 A similar point was also made in Houston Kemp's report for SA Power Networks, that ensuring assets are depreciated in a manner that reflects their economic life safeguards against intergenerational equity issues. Houston Kemp Economists, *Analysis of different approaches to calculating remaining lives, Report for SA Power Networks*, June 2015.

8 AER, *Preliminary Decision, SA Power Networks determination 2015–16 to 2019–20, Attachment 5 – Regulatory depreciation*, April 2015, p. 5–13.

- the administrative burden the baseline method would impose is negligible—for example, as shown in the attached 'price trend' model, the baseline approach only results in one additional asset stream being added each year for each asset class, and the calculation is identical across each asset stream; and
- the baseline method would not result in volatile prices—for example, this is illustrated in the attached 'price trend' model, which calculates annual distribution revenue X-factors under a number of assumptions about future costs.

4 Conclusion

We conclude that the baseline depreciation approach is preferable to the other depreciation methods assessed, if the straight-line method of depreciation is deemed to be appropriate in the long term. Accordingly, attached is a 'baseline method' model for each of CitiPower and Powercor which calculates our forecast depreciation for the 2016–2020 regulatory control period, based on the baseline method, using inputs from our regulatory proposal.

The model also compares the resulting forecast depreciation with that in our regulatory proposals, and shows that they are almost exactly the same. It is notable in this context that the AER has previously accepted a depreciation method akin to our direct approach, notwithstanding its general concern with the approach.[9]

[9] See, for example: AER, *Draft decision, Jemena Gas Networks (NSW) Ltd Access arrangement 2015–20, Attachment 5*, November 2014, pp.15–18; and AER, *Draft decision, ActewAGL distribution determination 2015–16 to 2018–19, Attachment 5*, November 2014, pp. 11–13.