Attachment 10.8

Transmission price path

Access Arrangement Information

2 October 2017

Access Arrangement Information (AAI) for the period
1 July 2017 to 30 June 2022

westernpower

Transmission price path

Access arrangement information

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1.1 Overview

1. This report provides an overview of the transmission network price path issue, together with the options considered by Western Power and the resulting proposed transmission price path for the AA4 period.

2. In summary, transmission network prices at the end of the AA3 period were substantially lower than transmission target revenue. Western Power's transmission target revenue for the AA4 period is forecast to be similar to the AA3 period[1], however, because transmission prices are currently so much lower than target revenue, they will need to increase sharply during the AA4 period in order to recover Western Power's revenue requirement. Transmission network tariff increases could be as high as 18 per cent per year if no measures are taken to address this issue.

3. This issue is a construct of the regulatory framework and the practice of applying a smooth price path to recover revenue during an access arrangement period. It is not due to any material increase in Western Power's costs.

4. We have considered several options to mitigate the price impact on transmission customers, and have developed a solution that would limit transmission network increases to **10 per cent per year**.

5. These options, the preferred solution, and further detail of the issue is provided in the following sections.

1.2 Explanation of the issue

6. Transmission revenue over the AA3 period was materially lower (on a per annum basis) than during the AA2 period. This was largely the result of a significant reduction in the Weighted Average Cost of Capital (**WACC**) between periods. The WACC in the AA2 period was 7.98 per cent real pre-tax, falling to 4.38 per cent real pre-tax for the AA3 period.[2]

7. Transmission target revenue is set using the revenue building blocks. These building blocks comprise the revenue Western Power requires to recover costs such as:

    - the cost of operating and maintaining the transmission network
    - the financing costs of investing in the transmission network
    - depreciation of transmission assets
    - tax
    - other costs such as subsidies, deferred revenue and incentive payments.[3]

8. The building blocks are added together to calculate the overall transmission target revenue. Transmission network prices are then set to recover the transmission target revenue amount.

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1 Forecast transmission target revenue for the entire AA4 period is around $176 million, or 9.7 percent higher than the AA3 transmission target revenue.

2 Because the size of the transmission regulated asset base is large (as it contains many high value assets), a change in WACC can have a large impact on transmission return on investment revenue.

3 The full list of revenue building blocks is described in Chapter 10 of the AAI.

9. The timing of investment in the transmission network is typically 'lumpy'. If a major transmission project is undertaken in one year, the required transmission building block revenue in that year will be high. If there are fewer projects in the next year, transmission building block revenue would be lower.

10. This means that if transmission network prices are set to recover the building block revenue in each year, prices could go up or down considerably depending on how much investment was being made. Such price volatility can cause issues for customers.

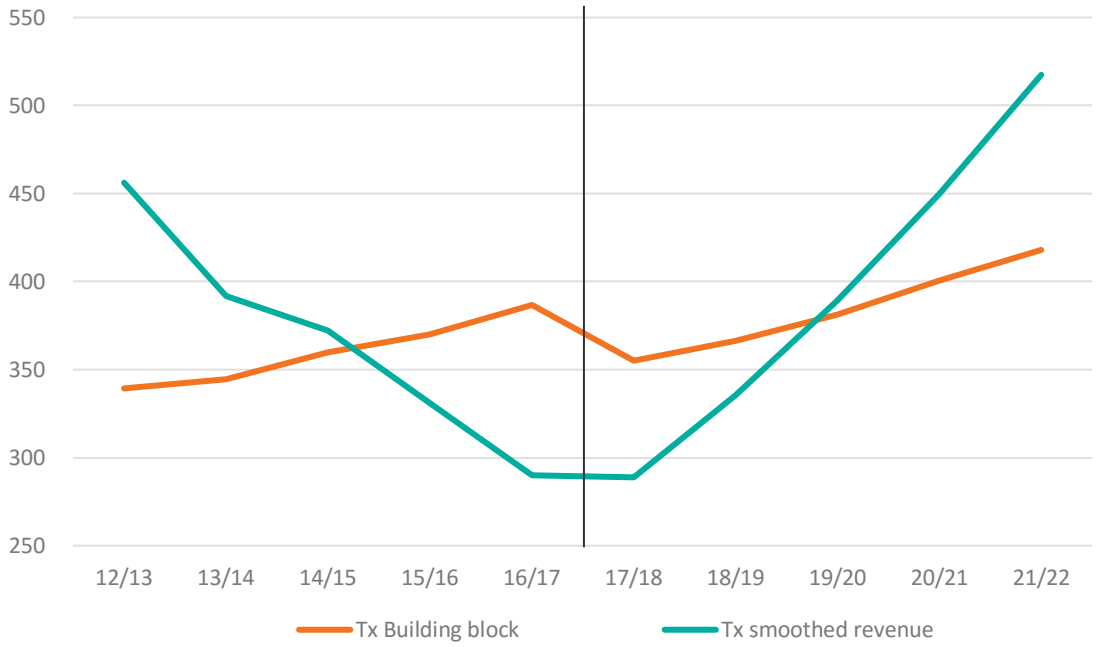
11. To protect customers from sharp price increases or decreases between years, it is a standard regulatory practice to apply a smooth revenue recovery path across an access arrangement period. This means that rather than adjusting the prices to recover the exact building bloc revenue amounts forecast for each year, prices are set so there is an equal price change between years, while still recovering the total revenue amount. A smooth revenue path allows Western Power to recover an average amount of target revenue each year instead of the actual amount specified by the building blocks.

12. This smoothing approach means that revenue recovery in any one year may be higher or lower than the revenue specified in the revenue building blocks. This is where the AA4 transmission price path issue emerges.

13. The ERA applied a smooth price path to AA3 transmission revenue. Because AA3 transmission revenue requirement was so much lower than AA2 transmission revenue, the smoothed transmission price path has declined over the AA3 period.

14. At the beginning of the AA3 period, the smoothed price path started with prices higher than building block revenue. Over the course of the AA3 period, prices have declined, falling below building block revenue by the end of the period (see Figure 1.1).

Figure 1.1: Transmission revenue path over the AA2, AA3 and AA4 periods



15. The result of this smoothing effect is that the smoothed transmission revenue path (the orange line in Figure 1.1) is substantially lower than the building block revenue (the blue line) at the end of the AA3

period. This also means transmission prices are significantly lower at the end of the AA3 period. This causes the potential for price shock in the AA4 period.

16. Transmission prices for the AA4 period will be set to recover AA4 transmission target revenue. AA4 transmission target revenue is only 6.8 per cent higher over the entire AA4 period than it was over the AA3 period. However, because prices are currently so far below building block revenue, there would need to be a sharp price increase (even with a smooth price path) over the AA4 period in order to recover the transmission target revenue. This is exacerbated by the fact that the AA4 network tariffs are unlikely to come into effect until 1 July 2018, one year into the AA4 period[4], which means the AA4 transmission target revenue will be recovered over four years rather than five.

17. If Western Power recovers forecast transmission target revenue over the AA4 period, and no measures are taken to mitigate price impact, transmission network prices would increase by as much **as 18 per cent** per year.

Table 1.1: AA4 forecast price paths, smooth price path, and no price impact mitigation

	2017/18[5]	2018/19	2019/20	2020/21	2021/22
Distribution tariffs	0.0%	2.1%	2.1%	2.1%	2.1%
Transmission tariffs	0.0%	18.2%	18.2%	18.2%	18.2%
Bundled tariffs	0.0%	4.6%	5.0%	5.3%	5.7%

18. We recognise that price increase of this magnitude would result in price shock for transmission customers. Therefore, we have considered a range of solutions to reduce the size of the transmission tariff increases. The options considered are discussed in the following sections.

1.3 Options considered

19. Western Power considered several courses of action relating to transmission tariffs for the AA4 period. In summary, the options we have assessed are:

    1. **Applying smoothed full price increases** – this option involves applying no price impact mitigation measures and simply recovering the full amount of AA4 transmission target revenue during the AA4 period. It is tantamount to a 'do nothing' option. This option results in large (18 per cent) annual price increases for transmission customers, however, it does ensure prices reflect the actual cost of providing transmission network services.
    2. **Apply a one-off large increase, then flat prices** – this option involves increasing transmission prices by 52 per cent in the first year (2018/19), then maintaining flat prices over the remainder of the AA4 period. This option ensures prices are cost reflective, however, a very large price shock to customers would occur in year one. An advantage of this approach is that it would reduce the

[4] The AA4 period was supposed to commence on 1 July 2017, however, a series of Government-led energy market reforms (and their subsequent suspension) meant the lodgement date for Western Power's AA4 proposal was moved to 2 October 2017. The revised access arrangement will not be in place until the ERA makes its AA4 Further Final Decision, expected June 2018.

[5] We have not forecast a price increase in 2017/18 as the AA4 process had not commenced at the time that Western Power had to submit its 2017/18 Price List and Price List Information in April 2017.

likelihood that this transmission price path issue will occur again during the transition from AA4 to the AA5 period.

3. **Applying a substantial increase in year one, then smaller increases in following years –** this option involves increasing transmission prices by 40 per cent in the first year (2018/19), followed by five per cent annual price increases in the next three years. This option has the same advantages of option 2, but with a slightly smaller price increase in the first year. However, a 40 per cent increase remains a substantial price shock.
4. **Substituting transmission revenue with distribution deferred revenue** – this option involves deferring the recovery of $234 million of AA4 transmission target revenue to future access arrangement periods, and bringing forward the recovery of $234 million distribution revenue that was deferred from the AA2 period. Deferring $234 million of transmission revenue has the effect of limiting the transmission price increase to 10 per cent per year. This option reduces the price shock for transmission customers, while ensuring Western Power remains revenue neutral, and goes some way to ensuring a similar issue does not occur in the AA5 period. There would also be a minor impact on distribution customers, as bundled tariffs would be 0.02 per cent higher.

20. These options are discussed in more detail below.

1.3.1 Key considerations and assumptions

21. We are conscious of the impact that network tariff increases have on customers. Therefore, when considering options we have looked at ways to manage transmission network tariff increases in a way that does not have longer term consequences for Western Power and customers. When assessing the potential solutions, we considered the following factors:

- the solution must reduce price shock for transmission customers
- the solution must provide sufficient revenue to cover the cost of providing network services during the AA4 period
- the solution should help prevent a similar situation in the next access arrangement period.[6]

22. The following assumptions apply to all options:

- the tariff increase in 2017/18 is 0 per cent as the 2016/17 Price List remains in place, therefore the additional revenue required is being recovered over four years
- new tariffs commence on 1 July 2018. Should the ERA not make its further final decision in time to implement new tariffs on 1 July 2018, Western Power may need to increase tariffs further to recover the AA4 revenue over less than four years. This would increase the magnitude of the necessary price increases, all other things being equal.

1.3.2 Option 1 – smoothed full price increases

23. This option applies the default smoothing approach in the revenue model, recovering the full amount of AA4 transmission target revenue during the AA4 period.

24. Our modelling shows that this option would result in average transmission network tariff increases of 18 per cent per year over four years as shown in Table 1.1 above.

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6 That is, prices at the end of the AA4 period should be consistent with building block revenue and not result in a significant price change at the beginning of the AA5 period.

25. An 18 per cent per annum tariff increase would see the average transmission customer's annual electricity bill rise from $1.3 million in 2016/17 to $2.5 million in 2021/22.

26. This option would:

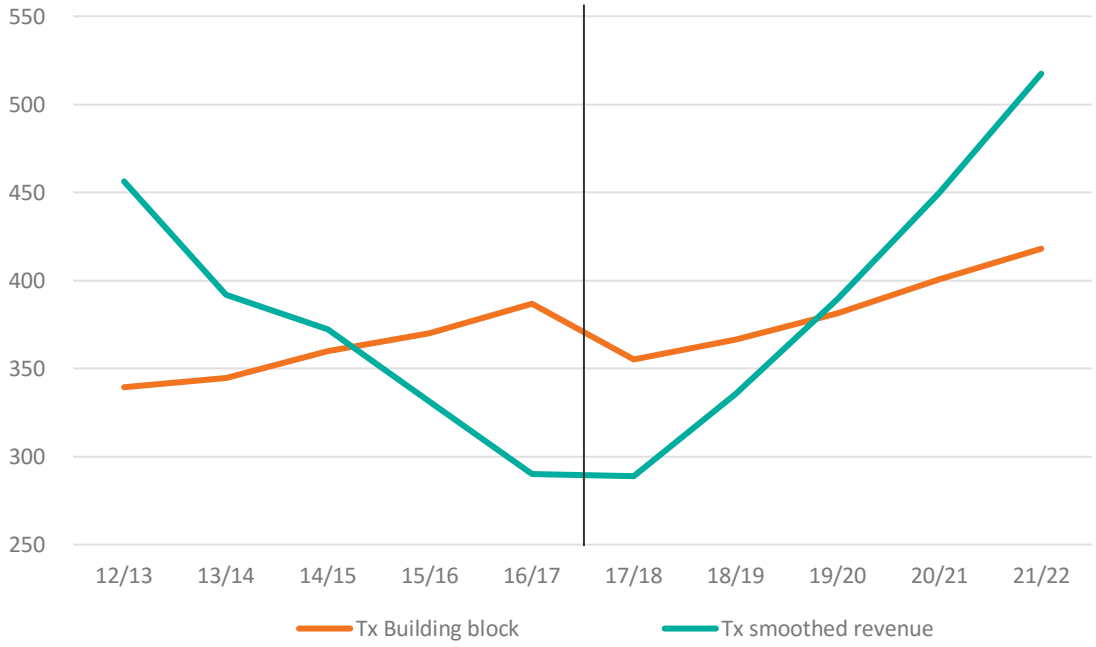
- provide sufficient revenue to cover the cost of providing network services during the access arrangement period.

27. However, this option would not :

- reduce price shock for transmission customers
- help prevent a similar situation in the next access arrangement period.

28. The fundamental issue with this option is that it does not mitigate the impact of the large price increases for transmission customers. In addition, applying a smooth price path may result in a similar issue at the end of the AA4 period, as transmission prices would be substantially higher than the building block revenue. This would likely result in a declining price path for the AA5 period, which simply perpetuates the transmission revenue issue.

Figure 1.2: Option 1 forecast transmission price path



1.3.3 Option 2 – one-off large increase, then flat prices

29. This option applies a one-off step change in 2018/19 followed by flat prices for the remaining three years of the AA4 period.

30. Our modelling shows that this option would result in average transmission network tariff increases of 52 per cent in 2018/19, followed by no increases or decreases for the next three years (see Table 1.2)

Table 1.2: AA4 forecast price path, Option 2

	2017/18	2018/19	2019/20	2020/21	2021/22
Distribution tariffs	0.0%	2.1%	2.1%	2.1%	2.1%
Transmission tariffs	0.0%	52.7%	0.0%	0.0%	0.0%
Bundled tariffs	0.0%	10.0%	1.6%	1.6%	1.6%

31. This price path would see the average transmission customer's annual electricity bill rise from $1.3 million in 2016/17 to $2.0 million in 2018/19, then remaining flat until 2021/22.

32. This option would:

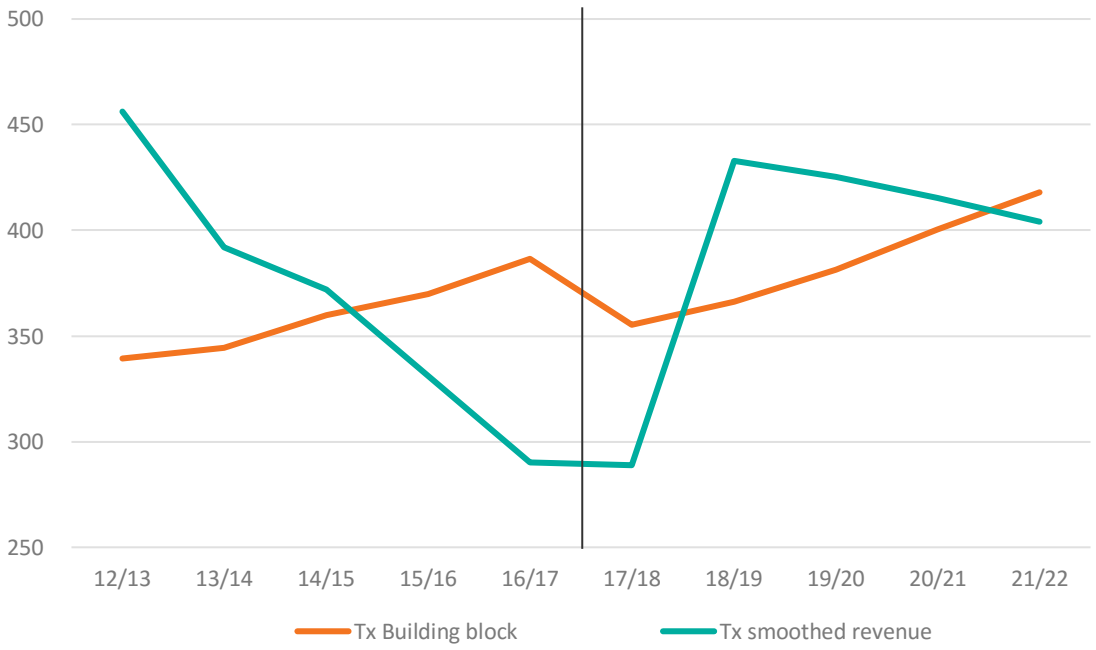
- provide sufficient revenue to cover the cost of providing network services during the access arrangement period
- prevent a similar situation occurring in the next access arrangement period.

33. However, this option would not :

- reduce price shock for transmission customers.

34. This option would help prevent this issue occurring in the transition to the AA5 period, as transmission tariffs would be in line with building block revenue at the end of the period. However, a 52 per cent price increase in one year would represent a significant price shock to transmission customers in 2018/19.

Figure 1.3: Option 2 forecast transmission price path



1.3.4 Option 3 – substantial increase in year one, then smaller annual increase

35. This option applies a large increase in 2018/19 followed by five per cent annual increases for the remaining three years of the AA4 period.

36. Our modelling shows that this option would result in average transmission network tariff increases of 42 per cent per cent in 2018/19, followed by small increases for the next three years (see Table 1.2)

Table 1.3: AA4 forecast price path, Option 3

	2017/18	2018/19	2019/20	2020/21	2021/22
Distribution tariffs	0.0%	2.1%	2.1%	2.1%	2.1%
Transmission tariffs	0.0%	42.1%	5.0%	5.0%	5.0%
Bundled tariffs	0.0%	8.4%	2.7%	2.7%	2.7%

37. This price path would see the average transmission customer's annual electricity bill rise from $1.3 million in 2016/17 to $1.9 million in 2018/19, then increase to $2.1 million by 2021/22.

38. This option would:

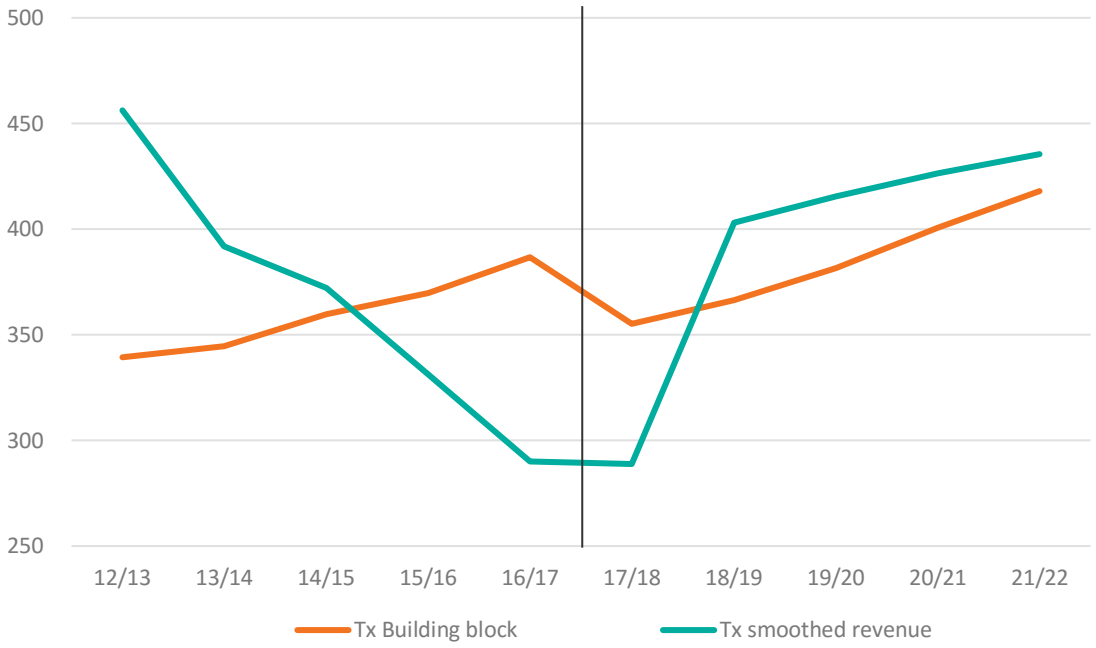
- provide sufficient revenue to cover the cost of providing network services during the access arrangement period
- prevent a similar situation occurring in the next access arrangement period.

39. However, this option would not :

- reduce price shock for transmission customers.

40. This option has similar benefits to Option 2, as it would help prevent this issue occurring in the transition to the AA5 period. However, a 42 per cent price increase remains a significant price shock to transmission customers in 2018/19.

Figure 1.4: Option 3 forecast transmission price path



1.3.5 Option 4 – substitute transmission revenue for distribution deferred revenue

41. This option involves substituting $234 million of AA4 transmission target revenue for $234 million of distribution revenue that has previously been deferred from the AA2 period.

42. In the AA2 period, $823 million of distribution revenue was deferred for recovery in future access arrangement periods. This was done to mitigate price shock at the time. Having this deferred revenue available provides an opportunity to:

- push back recovery of a portion of the AA4 transmission revenue in order to bring transmission prices down
- bring forward recovery of the same amount of the AA2 deferred distribution revenue to ensure Western Power has sufficient revenue to provide network services during the AA4 period.

43. By deferring $234 million of transmission revenue for collection in the future, the average transmission tariff increases would be 10 per cent per year, significantly reducing the price shock for transmission customers (compared to the 18 per cent increase that would apply under Option1).

44. Bringing $234 million of distribution revenue forward for collection has a relatively small impact on distribution customers, as bundled tariffs would only increase by 0.02 per year (see Table 1.4).

Table 1.4: AA4 forecast tariff path, Option 4

	2017/18	2018/19	2019/20	2020/21	2021/22
Distribution tariffs	0%	4.2%	4.2%	4.2%	4.2%
Transmission tariffs	0.0%	10.00%	10.00%	10.00%	10.00%
Bundled tariffs	0%	5.1%	5.2%	5.2%	5.2%

45. This price path would see the average transmission customer's annual electricity bill rise from $1.3 million in 2016/17 to $1.9 million by 2021/22.

46. This option would:

- reduce price shock for transmission customers
- provide sufficient revenue to cover the cost of providing network services during the access arrangement period

47. However, this option may not fully prevent a similar situation occurring in the next access arrangement period.

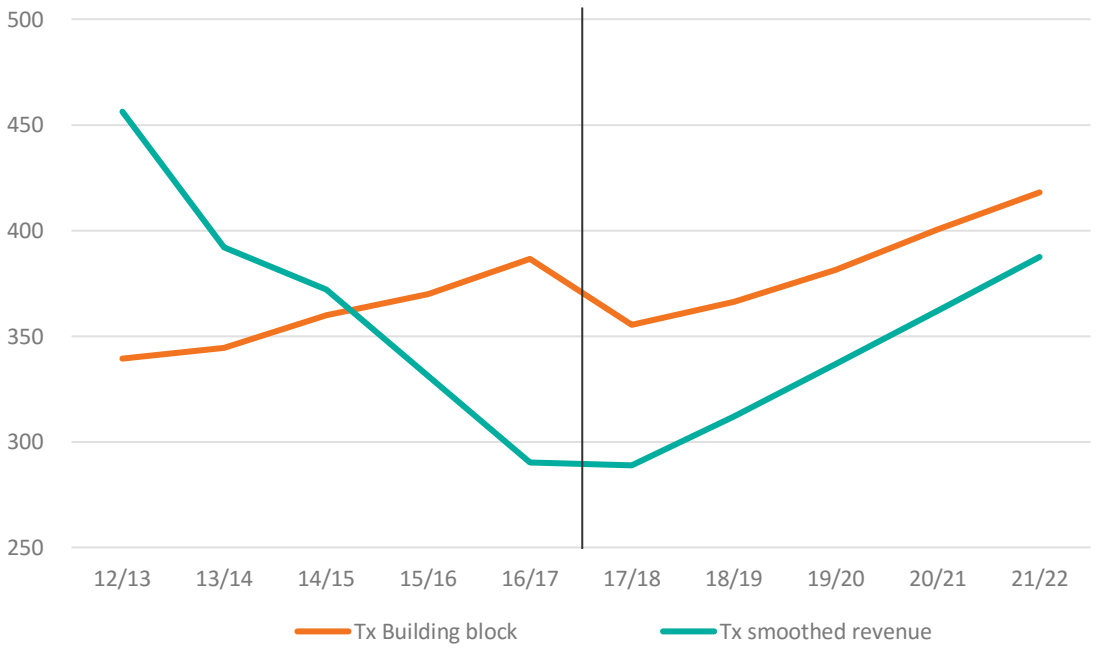
48. The main benefit of this option is that it reduces price shock for transmission customers. While a 10 per cent increase per year is still a sizeable increase, it is significantly lower than the alternative options.

49. The increase in distribution revenue does not materially impact network tariffs for distribution customers. This is because the distribution customer base (more than one million customers) is significantly larger than the transmission customer base, therefore the costs are spread over a much larger number of connection points.

50. Western Power remains revenue neutral as a result of this switch between distribution and transmission revenue. It is also worth noting that, as a result of this treatment of deferred revenue, distribution customers are not paying any more or transmission customers paying any less over the longer term. In effect, all that is changing is the timing of when customers will be required to pay for transmission and distribution covered services.

51. A potential downside of this option is that it does not fully resolve the same situation occurring in the future. Option 4 applies a smooth price path. This means that transmission tariffs will be lower than building block revenue at the end of the AA4 period, albeit a much smaller amount than under Option 1.

Figure 1.5: Option 4 forecast transmission price path



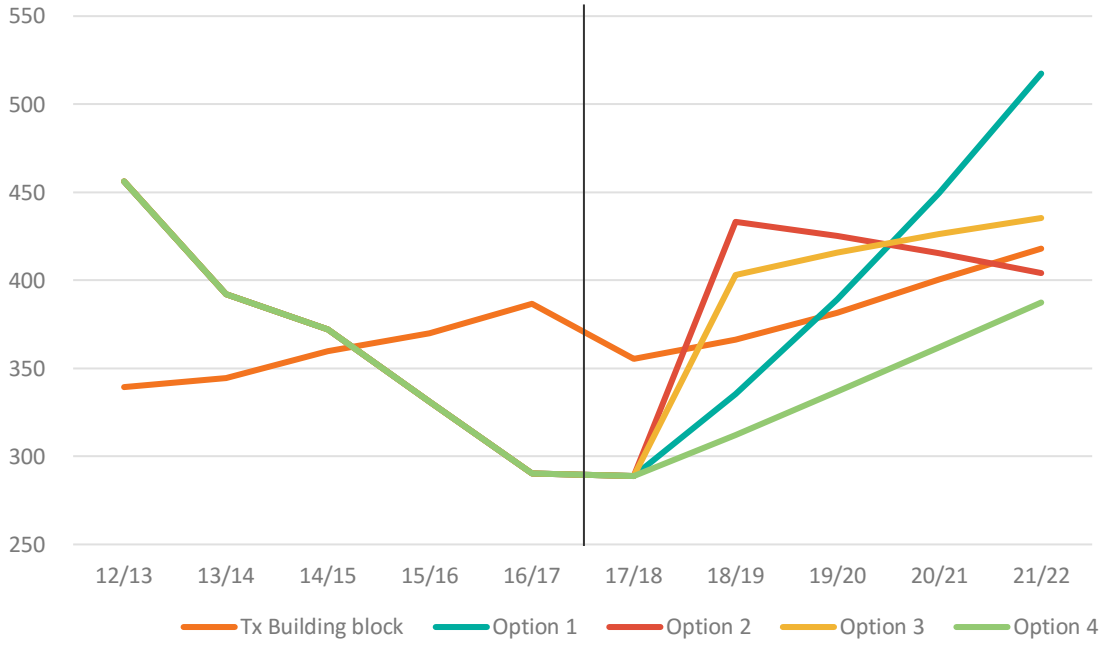
1.4 Recommended option

52. Western Power submits Option 4 is the most suitable solution for the transmission price path issue. We consider that, of the options presented, it best manages the network price impact on customers while ensuring sufficient revenue is being recovered to enable Western Power to deliver the network services described in the AA4 proposal.

53. We recognise that Option 4 results in a form of cross-subsidy between distribution and transmission customers, and it perpetuates the inter-generational cross subsidies that result from deferring revenue generally. However, we consider it represents a practical solution to ensure transmission network tariffs remain affordable.

54. Figure 1.6 shows the relative price paths of Options 1 to 4.

Figure 1.6: Comparison of transmission price paths for Options 1 to 4



1.4.1.1 How the 10 per cent price cap was calculated

55. The following steps were undertaken to calculate the 10 per cent price cap on transmission tariffs:

1. The required transmission cost of service/revenue are calculated
2. The price cap is applied to the average transmission tariff and a re-smoothed cost of service is calculated
3. An annual comparison of the original cost of service and the re-smoothed cost of service is performed
4. The annual differences between the cost of services are added to the distribution gross cost of service calculation (as additional distribution deferred revenue recovery) to be captured as part of the distribution tariff smoothing
5. The transmission deferred revenue account is adjusted for the additional revenue being deferred as part of the transmission price cap from AA5

6. The distribution deferred revenue account is adjusted for the additional revenue recovery, which reduces the account balance at a faster rate