Final decision

Amendment

Electricity transmission and distribution network service providers

Post-tax revenue models (version 3)

29 January 2015

AUSTRALIAN ENERGY REGULATOR

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Shortened forms

Shortened form	Extended form
ABBRR	annual building block revenue requirement
ARR	annual revenue requirement
AEMC	Australian Energy Market Commission
AER	Australian Energy Regulator
CESS	capital expenditure sharing scheme
CPI	consumer price index
DMS	data management system
DNSP	distribution network service provider
EBSS	efficiency benefit sharing scheme
ENA	Energy Networks Association
ERC	equity raising costs
MAR	maximum allowed revenue
NER	National Electricity Rules
NPV	net present value
NSP	network service provider (DNSP or TNSP)
PTRM	post-tax revenue model
RAB	regulatory asset base
TAB	tax asset base
TNSP	transmission network service provider
WACC	weighted average cost of capital

1 Introduction

The AER is responsible for the economic regulation of prescribed transmission and direct control distribution services provided by transmission and distribution network service providers (TNSPs and DNSPs) in the National Electricity Market, in accordance with the National Electricity Rules (NER).[1] The NER requires us to prepare and publish post-tax revenue models (PTRMs) for TNSPs and DNSPs.[2] TNSPs and DNSPs can be collectively referred to as network service providers (NSPs).

The NER allows us to amend or replace the PTRMs of the NSPs and sets out the requirements in doing so.[3] We released an *Explanatory statement* of proposed amendments to the PTRMs in October 2014. [4] Seven submissions were received on these proposed amendments.[5] This decision sets out the AER's final position on the amendments to the PTRMs and the reasons for the changes.

Table 1 shows the previous versions of the PTRMs for TNSPs and DNSPs, the key changes to these models and when they were made.

Table 1 Previous PTRM versions

Date	TNSP version	Key changes	DNSP version	Key changes
September 2007	1	–	n/a	n/a
June 2008	n/a	n/a	1	–
June 2009	n/a	n/a	2	Various non-consequential errors corrected.
December 2010	2	Input section modified to allow for the opening regulatory asset base (RAB) to be based on as-commissioned capital expenditure. Formulae to calculate depreciation adjusted for the RAB roll forward. Summary tables and equity raising costs calculation added.	n/a	n/a

These new versions of the PTRMs (which are labelled version 3 for both TNSPs and DNSPs) give effect to the AER's new *Rate of return guideline*.[6] The *Rate of return guideline* was developed and published in December 2013 following changes to the NER by the Australian Energy Market

1 Chapters 6A and 6 of the NER for TNSPs and DNSPs respectively.
2 NER, clauses 6A.5.2(a) and 6.4.1(a).
3 NER, clauses 6A.5.2(b) and 6.4.1(b), read with the applicable consultation procedures.
4 AER, *Explanatory Statement; Proposed amendment Electricity transmission and distribution network service providers Post-tax revenue models (version 3)*, 3 October 2014 (AER, *Explanatory statement, Proposed amended PTRMs*, October 2014.
5 These submissions are listed in a footnote to section 4.1.
6 AER, *Better regulation, Rate of return guideline*, December 2013.

Commission (AEMC) in November 2012.[7] The most significant change to the PTRMs is to allow for an annual update for the return on debt.

There are differences between the PTRMs used for TNSPs and DNSPs. However, the amendments discussed in this final decision affect both in largely the same way and are therefore discussed together. Matters that are TNSP or DNSP specific are identified as such.

7 AEMC, *Rule determination, National electricity amendment (Economic regulation of network service providers) rule 2012, National gas amendment (Price and revenue regulation of gas services) rule 2012*, 29 November 2012.

2 NER requirements

The NER allows the AER to amend or replace the PTRMs of the NSPs and sets out the consultation procedures the AER must comply with in doing so.[8] When amending the PTRM, the consultation procedures in the NER require us to:[9]

- publish the proposed amended model
- publish an explanatory statement setting out the provision of the NER under which the model is proposed to be prepared, made or developed or is required to be reviewed and the reasons for the proposed amended model
- invite written submissions on the proposed amended model.

Interested parties must be allowed no less than 30 business days to make submissions to the AER.[10] Within 80 business days of publishing the proposed amended model the AER must publish its final decision, which sets out the amended model, the provision of the NER under which the model is being amended and the reasons for the amendment.[11] This decision complies with these requirements.

The NER also sets out the required contents of the PTRM.[12] The required contents are largely similar for the TNSP and DNSPs, although expressions/terminologies differ between the relevant clauses. For example, the TNSP's PTRM refers to the annual building block revenue requirement (ABBRR) and maximum allowed revenue (MAR) for each year of the regulatory control period.[13] The DNSP's PTRM refers to the annual revenue requirement (ARR) and expected revenue for each year of the regulatory control period.[14] Key features of both PTRMs include:

- a methodology that seeks to produce the best estimates of expected inflation[15]
- the timing assumptions and associated discount rates that are to apply in relation to the calculation of the building blocks[16]
- the manner in which the estimated cost of corporate income tax is to be calculated[17]
- a net present value (NPV) calculation that sets the NPV of the total expected MAR/expected revenue (for each year of the regulatory control period) equal to the NPV of the total ABBRR/ARR (for each year)[18]
- the MAR/expected revenue for the NSP is updated annually using a CPI – X methodology[19]
- the X factors to apply in the regulatory control period.[20]

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8 NER, clauses 6A.5.2(b) and 6.4.1(b).
9 NER, clauses 6A.20(b) and 6.16(b).
10 NER, clauses 6A.20(c) and 6.16(c).
11 NER, clauses 6A.20(e) and 6.16(e).
12 NER, clauses 6A.5.3 and 6.4.2.
13 NER, clauses 6A.5.3 and 6A.6.8.
14 NER, clauses 6.4.2 and 6.5.9.
15 NER, clauses 6A.5.3(b)(1) and 6.4.2(b)(1)
16 NER, clauses 6A.5.3(b)(2) and 6.4.2(b)(2)
17 NER, clauses 6A.5.3(b)(4) and 6.4.2(b)(4)
18 NER, clauses 6A.5.3(c)(1) and 6.5.9(b)(3).
19 NER, clause 6A.5.3(b)(5) and 6.5.9.

3 Reasons for the PTRM

The ultimate purpose of the PTRM is to calculate the smoothed MAR /expected revenue for an NSP in each year of a regulatory control period and resulting X factors as part of a transmission/distribution determination. The X factors are then used in the annual updates to either revenues or prices (depending on the form of control) and annual price approval requirements (in the case of DNSPs).

Before smoothing revenues, the ABBRR/ARR calculated using the PTRM, must be determined using the building block approach set out in the NER.[21] The building blocks include:

- an indexation of the RAB[22]
- a return on capital[23]
- a return of capital (depreciation)[24]
- the estimated cost of corporate income tax[25]
- forecast operating expenditure (opex) [26]
- revenue increments or decrements arising from applicable efficiency incentive schemes[27]
- other adjustments such as those related to the application of a control mechanism used in the previous regulatory control period or those related to the use of shared assets or compensation for other risks.[28]

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20 NER, clauses 6A.6.8 and 6.5.9.

21 NER, clauses 6A.5.4 and 6.4.3.

22 NER, clauses 6A.5.4(a)(1) and 6.4.3(a)(1).

23 NER, clauses 6A.5.4(a)(2) and 6.4.3(a)(2).

24 The net total of the indexation of the RAB and depreciation building blocks is referred to as 'regulatory depreciation'.

25 NER, clauses 6A.5.4(a)(4) and 6.4.3(a)(4).

26 NER, clauses 6A.5.4(a)(6) and 6.4.3(a)(7).

27 NER, clauses 6A.5.4(a)(5) and 6.4.3(a)(5). Being any efficiency benefit sharing schemes (EBSS), capital expenditure sharing schemes (CESS), service target performance incentive schemes, or small scale incentive schemes applied to the NSP (and, in the case of DNSPs, any applicable demand management and embedded generation schemes).

28 NER, clauses 6A.5.4(a)(5A), (7) and 6.4.3(a)(6), (6A).

4 Amendments

This section sets out the amendments to the PTRMs for the NSPs and the relevant handbooks. Tables 2 and 3 show which worksheets have been amended, added or removed from the distribution and transmission PTRMs.[29] The changes bring the structure of the two PTRMs into closer alignment compared to versions 2.[30]

Table 2 Changes to the distribution PTRM worksheets

Old PTRM worksheets	Status	New PTRM worksheets
Intro	Minor changes only	Intro
	Added	DMS input
Input	Amended	PTRM input
WACC	Amended	WACC
Assets	Amended	Assets
Analysis	Amended	Analysis
Forecast revenues	Amended	Forecast revenues
X factor	Amended and renamed	X factors
	Added	Revenue summary
	Added	Equity raising costs
Chart 1-Revenues	Minor changes only	Chart 1-Revenues
Chart 2-Price path	Minor changes only	Chart 2-Price path
Chart 3-Building blocks	Minor changes only	Chart 3-Building blocks

Table 3 Changes to the transmission PTRM worksheets

Old PTRM worksheets	Status	New PTRM worksheets
Intro	Minor changes only	Intro
	Added	DMS Input
Input	Amended	PTRM Input
WACC	Amended	WACC
Assets	Amended	Assets
Analysis	Amended	Analysis
Smoothing	Amended and renamed	X factors

[29] Minor changes are changes to formatting or labelling which, while noted for completeness, are not consequential to the operation of the PTRM.

[30] For further detail see AER, *Explanatory Statement; Proposed amended PTRMs,* October 2014.

Revenue summary	Amended	Revenue summary
Equity raising cost-capex	Amended and renamed	Equity raising costs
Price path (nominal)	Removed	Moved to Revenue summary
Price path (real)	Removed	Moved to Revenue summary
Chart 1-Revenues	Minor changes only	Chart 1-Revenues
Chart 2-Price path	Minor changes only	Chart 2-Price path
Chart 3-Building blocks	Minor changes only	Chart 3-Building blocks

4.1 Changes to the PTRM

In November 2012, the AEMC amended the rules that determine how the AER sets the revenues for regulated electricity and gas networks.[31] In particular, the new rules change the way we establish the rate of return on capital, a key determinant of regulated revenues. These rules also introduced the prospect of revenue adjustments (decrement) for shared assets. In December 2013, we published our *Rate of return* and *Shared asset* guidelines, which set out how we intend to implement the new rules in relation to these matters.

In May 2014, we undertook preliminary consultation with various NSPs and industry bodies on the key changes to the PTRM. The feedback received to this consultation was discussed in our *Explanatory statement,* released in October 2014. Revised handbooks and proposed PTRMs were also released at that time.

Seven submissions were received in response to the *Explanatory statement* and revised handbooks and PTRMs.[32] Overall, these submissions were supportive of the key amendments proposed by the AER with only a few specific matters raised. Responses to these particular matters are noted below and discussed in more detail in section 5 (particularly where the AER has not accepted a submission's proposal).

The final amended PTRMs are at appendices A and B for TNSPs and DNSPs respectively. The final amended handbooks are at appendices C and D for TNSPs and DNSPs respectively.

The changes to the PTRMs are now discussed in further detail. A detailed list of changes is contained in appendix E.

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31 AEMC, *Rule determination, National electricity amendment (Economic regulation of network service providers) rule 2012, National gas amendment (Price and revenue regulation of gas services) rule 2012*, 29 November 2012.

32 Ausnet Services, *Submission re: Post-tax revenue models (transmission and distribution)*, 17 November 2014 (Ausnet, *Submission on PTRMs*, November 2014);
Energy Networks Association, *Submission re: AER proposed amendments to post-tax revenue models – electricity transmission and distribution*, 17 November 2014, (ENA, *Submission on PTRMs*, November 2014);
Energex, *Submission re: Proposed amendments to the post-tax revenue models (version 3)*, 10 November 2014, (Energex, *Submission on PTRMs*, November 2014);
Jemena Electricity Networks (Vic) Ltd, *Jemena submission – AER proposed amendments to post-tax revenue models – Electricity transmission and distribution*, 17 November 2014 (Jemena, *Submission on PTRMs*, November 2014);
Networks NSW, *Networks NSW submission on changes to the Distribution Post-Tax Revenue Model,* 17 November 2014, (Networks NSW, *Submission on distribution PTRM*, November 2014);
SA Power Networks, *Submission re: AER proposed amendments to post-tax revenue models, Electricity transmission and distribution*, 13 November 2014 (SAPN, *Submission on PTRMs*, November 2014); and
United Energy and Multinet Gas, *Letter re: Submission to the AER's consultation on the post-tax revenue model*, 17 November 2014, pp. 1–4 (United Energy, *Submission on PTRMs*, November 2014).

4.1.1 Return on equity changes

The changes specifically related to the return on equity are relatively minor. The return on equity is no longer calculated solely from the capital asset pricing model (CAPM) components (risk free rate, market risk premium and equity beta), and these component inputs have been removed in the final amended PTRMs.

Instead, the user directly enters the overall return on equity input. For simplicity, we have only included the 'final' return on equity as input to the PTRM. This value then feeds into the calculation of the overall return on capital and discount rates.[33]

No issues were raised by submissions regarding the general approach to this matter.[34] However, Networks NSW submitted we should not apply the round function to the return on equity automatically within the PTRM but rather make such rounding explicit in our decisions.[35] We have accepted this submission and will round the return on equity input outside the final amended PTRMs.[36]

4.1.2 Return on debt changes

The changes related to the return on debt are more substantial. The user no longer enters the debt risk premium input (which was then presumed constant across the regulatory control period) and the risk free rate input.

Instead, the key input is the estimate of the trailing average portfolio return on debt for each year of the regulatory control period.[37] The different annual values for the return on debt will then flow through to all linked building block revenue components.

The user is also required to enter the update year when updating the annual return on debt within the regulatory control period. This does not change the underlying calculation of smoothed or unsmoothed revenues, but it does change the presentation of context-sensitive labels and comments that should guide the user.

No issues were raised by submissions regarding this change, and Networks NSW explicitly endorsed the AER approach.[38]

4.1.3 Future years' return on debt

The return on debt when updated for a particular year will also apply for all remaining years of the regulatory control period. This was a significant issue raised in the initial consultation and was a question put to stakeholders in the *Explanatory statement* of the proposed amendments to the PTRMs. The *Explanatory statement* also included examples to investigate the impact of the proposed approach.

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[33] The determination of the overall return on equity will necessarily involve separate modelling outside of the PTRM.

[34] The ENA submission explicitly endorsed the separation of WACC modelling from the PTRM. ENA, *Submission on PTRMs*, November 2014, p. 1.

[35] Networks NSW, *Submission on distribution PTRM*, November 2014, Attachment 1, p. 2.

[36] This is consistent with our overall approach of separating WACC modelling from PTRM modelling, That is, all calculations required to determine the WACC are undertaken separately to the PTRM, and only the final output from the WACC modelling is entered into the PTRM.

[37] As with the return on equity, there will be separate modelling to derive the trailing average portfolio return on debt input.

[38] Networks NSW, *Submission on distribution PTRM*, November 2014, p. 1.

No submissions raised issue with the AER's proposed approach. Energex specifically endorsed the AER's approach to updating the return on debt for all remaining years of the regulatory control period.[39]

4.1.4 Rate of return on capital changes

Given the return on debt changes, the rate of return on capital can now vary from year to year during the regulatory control period. This gives rise to further consequential changes to the PTRM. There are two ways in which the rate of return on capital affects the outputs of the PTRM:

1. The rate of return is an input into several of the revenue building blocks.
2. The rate of return is the discount rate used in the NPV calculation to equalise smoothed and unsmoothed revenue profiles.

The major changes to the building block revenue calculations are as follows:

- New variables are defined to allow the PTRM to include different real vanilla weighted average cost of capital (WACC) values for each year of the regulatory control period, which previously only required one real vanilla WACC value to be defined. New defined variables ‘rvanilla01’, ‘rvanilla02’ to ‘rvanilla10’ replace the previously single defined ‘rvanilla’ variable used for the half WACC adjustment.[40]
- The allowed rate of return on debt component of the rate of return calculation for each year now refers to the prevailing trailing average portfolio return on debt for that year. The trailing average return on debt calculated at the most recent annual update is assumed to apply for the remainder of the regulatory control period.
- The PTRM calculates straight-line depreciation using the initial value of capital expenditure added to the RAB. This includes half a year of the WACC, in line with the PTRM’s timing assumption. These calculations now refer to the newly defined ‘rvanillaXX’ variable for the prevailing WACC in the year in which the capital expenditure is added to the RAB. Previously, all calculations referred to a single, constant real vanilla WACC value as determined in our final decision.

The major change to the NPV calculations is that the discount rate applied to each year when calculating the NPV is the cumulative discount rate for all relevant years, even when the individual year has a different return on capital. Hence, the *X factors* worksheet for revenue smoothing purposes accommodates the use of different rates of return on capital for each year.

Submissions were supportive of the changes made regarding these matters.[41] However, two submissions suggested the use of a pre-tax WACC, rather than the (partially post-tax) vanilla WACC as the discount rate for revenue smoothing. We do not agree with these submissions for the reasons discussed in section 5.

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[39] Energex, *Submission on PTRMs*, November 2014, p. 1.

[40] Similarly, the nominal vanilla WACC for each year is defined using the variables ‘vanilla01, vanilla02,.. , vanilla10’. This replaces the previous single ‘vanilla’ variable which was presumed constant across the entire regulatory control period.

[41] ENA, *Submission on PTRMs*, November 2014, p. 1; Energex, *Submission on PTRMs*, November 2014, p. 1; and Networks NSW, *Submission on distribution PTRM*, November 2014, Attachment 1, p. 2.

4.1.5 Equity raising costs changes

Another consequential change due to the return on debt updates is that the benchmark equity raising costs (ERC) will also need to be updated annually. The *Equity raising cost–capex* worksheet has been amended (and renamed) to allow the ERC to be updated annually for TNSPs. In addition, an *Equity raising costs* worksheet has been added to the DNSP PTRM, standardising our approach across the two models. There were a number of submissions relating to the ERC calculation in the proposed PTRM, and we have made some changes in response.

Networks NSW noted that the PTRM removes the 'half WACC' adjustment to capex for the purpose of estimating the funding requirements. However, it submitted that as the ERC is calculated as year-end amounts the 'half WACC' adjustment should not be removed.[42] We have not accepted this submission. This adjustment provides a return on capex during the year it is incurred, and reflects the difference between the assumed timing of capex (i.e. incurred evenly throughout the year) and the year-end cash flows in the PTRM. However, for financing purposes, it is only the net capex value (without the half-WACC adjustment) that is of relevance.[43] This reflects the correct basis for calculating the funds required from internal sources (retained cash flows) and external sources (dividend reinvestment plans or seasoned equity offerings). After ERC are calculated, the PTRM already applies the half WACC adjustment when the ERC are added to the RAB for amortisation purposes.[44] Hence, including the half WACC adjustment in the ERC calculation itself as submitted by Networks NSW would result in double compensation for this component.

The United Energy/Multinet Gas submission also made a number of comments on the ERC calculation:[45]

- The impact of revenue adjustments efficiency benefit sharing scheme (EBSS), capital expenditure sharing scheme (CESS), or other schemes) on the ERC calculation should be 'consistent with the treatment of carry-overs under the EBSS', which is that the revenue adjustments do not bolster or diminish the estimate of retained cash flows.
- The input variables for the ERC calculation should be subject to review.
- The gross capital expenditure, rather than net capital expenditure (after the deduction of capital contributions) is the relevant cash flow for the ERC calculations. As a result, the framework needed to change to reflect the additional dividend distributions arising from customer contributions, both in terms of ensuring that shareholders can realise the benefits from gamma and in the need for additional complimentary capital expenditure.

In response to the first point, the final amended PTRM now more transparently presents the effect of revenue adjustments on the ERC calculation. The submission appears to have concluded from a note in the proposed amended PTRM that the AER currently excludes EBSS revenues from the ERC calculation. That is not the case. The EBSS revenues were included with the opex building block in the previous PTRM (version 2), both as a contribution to total revenue and as a cash flow deduction. As such, they did not need to be added separately to revenues in the ERC calculation. The note in the proposed amended PTRM was to make clear we were not double counting these revenues. The new layout in the final amended PTRM makes clear that all categories of revenue adjustments will be treated consistent with the treatment of EBSS in the prior version.

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[42] Networks NSW, *Submission on Distribution PTRM,* November 2014, Attachment 1, p. 3.

[43] See AER, *Final decision, New South Wales distribution determination, 2009–10 to 2013–14*, 28 April 2009, p. 587.

[44] See the *Assets* worksheet, row 40 of the final amended DNSP PTRM and row 60 of the final amended TNSP PTRM.

[45] United Energy, *Submission on PTRMs*, November 2014, pp. 5–6.

We agree that the ERC input variables should be updated from time to time, and the current PTRM maintains these as inputs to the model (rather than hard coding values, which would make updating more difficult). We have not attempted to revise the values for these inputs as part of the PTRM update process.[46]

We consider that the ERC calculation is correct to consider net capex (after deducting capital contributions) as the relevant cash flow. It is not the gross capex that the service provider needs to raise funds for, but rather the net capex, with customers contributing the difference. Further, the PTRM correctly models tax implications arising from these capital contributions. The calculation of retained earnings on the *Equity Raising Costs* worksheet explicitly models the dividends to be distributed such that shareholders are certain to realise the value of imputation credits consistent with the value of gamma used as an input to the model.

Finally, Networks NSW submitted that the ERC use the nominal closing RAB from the prior year to estimate the capital raising costs, when the nominal (inflated) opening RAB value should be used to ensure proper application of inflation.[47] We have implemented this suggestion, noting that the change has no effect on the ERC calculation itself.[48]

4.1.6 Debt raising costs calculation

Networks NSW submitted that (as with equity raising costs) the debt raising costs calculation should use the nominal (inflated) opening RAB value, rather than nominal closing RAB from the prior year as in version 2 of the TNSP PTRM.[49] We have implemented this suggestion, noting that the change will result in a slight increase in the calculated costs of raising debt (reflecting one year's inflation).

4.1.7 X factor recalculation

With the annual return on debt update in the PTRM, the X factor will also need to be updated annually.[50] The building block revenues will be updated and the revenues resmoothed to determine revised X factors from year 2 onwards of a regulatory control period. The *X factors* worksheet in the PTRMs include revised X factor calculation buttons with built in macros.

The updated X factors are determined such that the entire impact of the annual return on debt update is realised in the year to which the change relates. The approach for updating the X factors is discussed in further detail in the PTRM handbooks.

No issues were raised by submissions regarding this change.

4.1.8 Revenue adjustments

There can be other revenue adjustments besides the standard building block components on occasion. To pick up these potential revenues adjustments as provided for in the NER, extra input sections have been added to the final amended PTRMs. The treatment of revenue adjustments in the

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[46] The ENA submission also noted that the ERC methodology had not been reviewed as part of the overall Better Regulation program. ENA, *Submission on PTRMs*, November 2014.

[47] Networks NSW, *Submission on Distribution PTRM,* November 2014, Attachment 1, p. 2.

[48] The opening RAB is presented in the *Equity raising costs* worksheet only to provide context for the capex program; it plays no direct role in the calculation of the ERC.

[49] Networks NSW, *Submission on Distribution PTRM,* November 2014, Attachment 1, p. 2.

[50] The NSW DNSPs suggested in initial consultation that the X factors from the final decision could be left unchanged and instead new yearly factors, labelled W factors, would be changed in response to the annual return on debt update. We explained our reasoning against this suggestion in the *Explanatory statement*, with no further submissions received on the matter.

final amended PTRMs differs from that in the proposed amended PTRMs (October 2014), reflecting our response to the submissions received on these issues.

Networks NSW submitted that the proposed amended PTRMs did not include all the different types of revenue adjustments (incentive revenue, control mechanism carryovers, and shared asset revenue) in the annual revenue requirement.[51] We understand this as a presentation issue which arose because the proposed amended PTRMs reported only some adjustments and categories on the *Analysis* worksheet, even though all were included in the annual revenue requirement used on the *X factors* worksheet. The final amended PTRMs now consistently report all such adjustments across all worksheets, including the use of the category 'Revenue adjustments' when presenting the building block derivation of the annual revenue requirement.

Several submissions raised concerns with the revenue adjustment related to shared assets applied in the proposed amended PTRMs.[52] These submissions noted that removing these revenues from the unsmoothed revenue requirements would reduce the service provider's tax allowance. They submitted this effectively increased the sharing percentage beyond the 10 per cent set out in the *Shared assets* guideline. We agree that such an outcome would have arisen under the approach in the proposed amended PTRMs. In response, we have changed the final amended PTRMs such that shared asset revenue adjustment will have no impact on the calculation of the tax allowance and so the 10 per cent target will be met.[53]

More generally, the ability to include many different revenue adjustments in the PTRMs means that it is not possible to hard code in the model the taxation implications of each adjustment.[54] Submissions were received from several parties on the particular tax treatment that should apply to certain types of adjustments.[55] The final PTRMs have been designed with switches that allow each revenue adjustment to be either included or excluded from the tax calculation. This will allow the AER to confirm its position of these tax matters during the reset process.[56]

4.1.9 Minor presentational and operational changes

Minor presentational and operational changes were flagged in the *Explanatory statement*.[57] No submissions raised concerns with these changes, although some further minor issues were raised. We have accepted a number of these suggestions. In particular;

- SumProduct was commissioned by United Energy/Multinet Gas to do a review of the proposed PTRMs.[58] We reviewed each of its suggestions and adopted many of them. These suggestions covered such issues as: incorrect cell references, incorrect labelling, redundant cells impacting file size and stability, and streamlining formulae.

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[51] Networks NSW, *Submission on Distribution PTRM,* November 2014, Attachment 1, p. 2

[52] A detailed treatment is included in United Energy, *Submission on the PTRM*, 17 November 2014 pp. 1–4 and the attached consultant report NERA Economic Consulting, *Memo re: Shared Assets and the PTRM*, 13 November 2014. See also Ausnet *Submission on PTRMs*, November 2014, p. 1; ENA, *Submission on PTRMs*, November 2014, pp. 1–2; Jemena, *Submissions on PTRM*s, November 2014, Appendix 1, pp. 2–3; and SAPN, *Submission on PTRMs*, November 2014, pp. 1–2.

[53] This is one of the two approaches suggested by NERA as part of the submission by United Energy/Multinet Gas.

[54] That is, whether the revenue adjustment should be treated as taxable income and (separately) if it should be treated as a tax expense.

[55] For example, see Networks NSW, *Submission on Distribution PTRM,* November 2014, Attachment 1, pp. 1–2; United Energy, *Submission on PTRMs*, November 2014, p. 4.

[56] The PTRM templates include sample revenue adjustments line items, which should be treated as basic examples of the type of revenue adjustments (and tax treatments) that might be included. The examples should not be read as indicating the AER's position on the tax implications of these particular revenue adjustments.

[57] AER, *Explanatory Statement, Proposed amended PTRMs*, October 2014, p. 15.

[58] United Energy, *Submission on PTRMs*, 17 November 2014, attachment.

- The Energy Networks Association (ENA) raised some issues with the regulatory control period variable, noting a summation of values not responding to the length of regulatory control period chosen and an incorrect cell reference.[59]
- Networks NSW provided sample code to simplify several macros and made several other recommendations concerning spreadsheet presentation and layout.[60]

4.1.10 Input worksheet for AER data management system

The AER has developed a data management system (DMS) to collect data from regulatory information notices and from the various regulatory models. We have added a new *DMS input* worksheet to help our system ingest the relevant data from the PTRMs. This worksheet has no impact on the operation of the PTRM. The worksheet previously labelled *Input* has been renamed *PTRM input* to distinguish the two input worksheets. Service providers will need to complete both input worksheets when submitting their proposed PTRMs. The additional information required is minimal (contact details and a few cells identifying the context for the PTRM submission).

4.1.11 Handbook clarifications

Although no issues were identified in the operation of depreciation in the PTRM, which had not changed, some submissions questioned the wording of the handbook in relation to alternative depreciation profiles to that used in the PTRM.[61] Service providers noted the value in discussing any alternative depreciation profiles to that used in the PTRM with the AER before lodging their regulatory proposals. However, they submitted the language used in the handbook suggested this was a requirement. We agree that this is not a requirement of the NER and have amended the handbook accordingly.

The submission from United Energy/Multinet Gas noted the handbook does not mention CESS, and that the NER references for the other revenue adjustments had not been broadened to reflect the new clauses.[62] We have included in the handbook additional NER references to allow users a better understanding of the legal basis for the adjustments.

[59] ENA, *Submission on PTRMs*, November 2014, p. 3.
[60] Networks NSW, *Submission on Distribution PTRM,* November 2014, Attachment 1, p. 3–4.
[61] Ausnet, *Submission on PTRMs*, November 2014, p. 1; ENA, *Submission on PTRMs*, November 2014, pp. 2–3; and Jemena, *Submission on PTRMs*, November 2014, Appendix 1, pp. 4–5.
[62] United Energy, *Submission on PTRMs*, November 2014, p. 4.

5 Consultation

This section highlights the consultation that has been undertaken with stakeholders and our response to issues raised in submissions which we have not accepted.

5.1 Initial consultation

In May 2014 we undertook initial consultations with 19 service providers and industry bodies, sending them example TNSP/DNSP PTRMs with some initial changes, particularly in accommodating the changes to the return on equity and return on debt. The ENA provided a response, with six NSPs also responding with comments. Two NSPs responded by noting the ENA's comments.

The issues raised in these consultations were discussed in the *Explanatory statement*, along with further issues raised by the AER. For the most part, our proposed responses to these issues have either been supported by (or have not drawn further comment from) stakeholders. However, a few issues were raised again in formal submissions.

5.2 Submissions on proposed amendments

We received seven submissions on the proposed amendments to the PTRMs.[63] A number of suggestions made in submissions have been adopted (in whole or in part) in the final amendments to the PTRMs and handbooks as discussed in section 4. However, there were also suggestions that we have not accepted. These issues are discussed below.

5.2.1 Discount rate used for smoothing revenues

In our *Explanatory statement*, we asked for comments on the form of the discount rate used when deriving smoothed revenue across the regulatory control period.[64] After considering the limited number of responses on this issue, we have decided to retain the use of the vanilla WACC when smoothing, consistent with our previous approach.[65] The AER considers that the opportunity cost to use for smoothing is preferably a post-tax rate.[66] The service provider cannot retain the tax on the returns earned (or foregone) on the incremental revenues invested in alternative investments.[67] To deduct/add pre-tax returns earned in one year from future years is double taxing, or over compensating on tax, depending on whether the incremental revenues are positive or negative.[68]

Energex and Jemena submitted that instead of a vanilla WACC, a pre-tax WACC should be used when calculating the NPV of total revenue over the regulatory control period.[69] We note that this

[63] These submissions are listed in a footnote in section 4.1.

[64] AER, *Explanatory statement, Proposed amended PTRMs,* October 2014, pp. 17, 19.

[65] The legislative requirement is that the net present value of the smoothed and unsmoothed total revenue streams are equal, as set out in NER, clauses 6.5.9(3), 6A.5.3(c) and 6A.6.8(c). There is an equivalent provision in rule 92(2) of the NGR.

[66] The vanilla WACC is considered a reasonable proxy for the opportunity cost of funds despite it not being purely post-tax.

[67] By incremental revenues, we mean the difference between the smoothed and unsmoothed revenues for a particular year. It is assumed the costs are paid consistent with the timing of the unsmoothed revenues. Therefore if smoothed revenues are received that are greater than the unsmoothed revenues, the incremental revenues can be invested in alternative investments in the meantime.

[68] For example, if the service provider received $100 in incremental revenues in year 1. In year 2, the service provider would only have to return the $100 plus the post-tax returns earned on this investment. To deduct from year 2 revenues also the tax on that alternative investment would be double taxing. That is, the government collects the tax on the returns earned on the $100 investment in year 1 and then the regulator takes it again if the pre-tax returns are deducted from revenues in year 2.

[69] The Energex and Jemena submissions appear to directly equate total revenue with operating income (earnings before interest and tax). Jemena's submission correctly noted that under the Officer (1994) framework used by the AER, either operating income (not total revenue) is discounted using a pre-tax WACC, or after-tax income is discounted using a post-

would require converting the post-tax return on equity (a direct input to the model) into a pre-tax return on equity, but this is problematic.[70] The financial literature (including that referenced by Jemena in its submission) makes clear that the pre-tax WACC calculated in this way will not be accurate where there are differences in the timing of cash flows and their taxation implications.[71] This is the case when we compare the smoothed and unsmoothed total revenue, and the concern is exacerbated by the use of a time varying WACC.[72]

In practice, the form of WACC used when discounting smoothed and unsmoothed revenue does not have a material impact on revenue outcomes.[73] Even in extreme circumstances, using a pre-tax WACC instead of the vanilla WACC changes total smoothed revenue across the regulatory control period by no more than 0.1 per cent.[74] Further, although the pre-tax WACC will always be a higher discount rate than the equivalent vanilla WACC, the effect on total smoothed revenue will not be a systematic increase. Rather, total smoothed revenue can either increase or decrease depending on the relative profiles of unsmoothed and smoothed revenue.[75]

5.2.2 Use of alternative units of measure

The ENA submitted that it would be useful for a service provider to have flexibility to nominate different unit prices and quantities than shown in the PTRM.[76] While the PTRM is set up with particular default units, there are notes in the PTRM that the service provider can change the pricing structure as required for the price cap function in the DNSP PTRM to operate correctly. The PTRM cannot be set up to cater for all pricing possibilities in advance, so we recognise that adjustments may have to be made to the units of measure at times by the services providers. We therefore do not propose any further refinements in this regard.

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tax WACC. See Jemena, *Submission on PTRMs,* November 2014, Appendix 1, p. 6; Energex*, Submission on PTRMs*, November 2014, pp. 1–2; and R. Officer, 'The cost of capital of a company under an imputation tax system', *Accounting and Finance*, 1994, vol. 34(1), pp. 1–17.

70 The proposed PTRM undertakes this conversion (for display purposes only) using the relevant Officer formula. While this is the best available approach, it is only an approximation. Under the Officer (1994) framework this conversion is accurate (not an approximation) because the framework assumes the use of perpetuities and that the effective tax rate is known.

71 W. Lonergan, 'Pre and post tax discount rates and cash flows – A technical note'*, The Journal of Applied Research in Accounting and Finance*, 2009, vol. 4(1), pp. 41–45. See also two response articles including K. Davis, 'Why pre tax discount rates should be avoided', *The Journal of Applied Research in Accounting and Finance*, 2010, vol. 5(2), pp. 2–5; and M. Dempsey, M. McKenzie and G. Partington, 'The problem of pre-tax valuations: A note', *The Journal of Applied Research in Accounting and Finance*, 2010, vol. 5(2), pp. 10–13.

72 The financial theory cited above all assumes the post-tax WACC is constant.

73 This immateriality was noted in Energex, *Submission on PTRMs*, November 2014, p. 2.

74 The 'extreme circumstances' considered here are the latest round of draft decisions for NSW and ACT electricity networks, where as a result of the 2014–15 transitional decision there was substantial over-recovery at the start of the regulatory control period (and therefore substantial under-recovery at the end of the period).

75 If smoothed revenue is more 'front-ended' than unsmoothed revenue (that is, over-recovers in early years of the regulatory control period and under-recovers in later years), then increasing the discount rate (moving from vanilla to pre-tax) decreases the smoothed revenue requirement overall. Conversely, if smoothed revenue is 'back-ended' relative to unsmoothed revenue (that is, under-recovers in early years and then over-recovers in later years), then increasing the discount rate increases the smoothed revenue requirement overall.

76 ENA, *Submission on PTRMs*, November 2014, p. 3.

Appendices

The appendices include the final amended models and handbooks. There is a high level summary of changes for version 3 in the *Intro* worksheets of the PTRMs and a detailed list of changes in appendix E.

Appendix A: Post-tax revenue model (transmission)

Appendix B: Post-tax revenue model (distribution)

Appendix C: Post-tax revenue model handbook (transmission)

Appendix D: Post-tax revenue model handbook (distribution)

Appendix E: Detailed list of changes from previous versions of the models