

28 September 2010

Mr Warwick Anderson
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Australian Energy Regulator
GPO Box 3131
Canberra ACT 2601

Via email: aerinquiry@aer.gov.au

Dear Warwick,

Proposed Amendments to RFM and PTRM

Grid Australia makes this submission in response to the Australian Energy Regulator (AER)'s proposed amendments to the Roll Forward Model (RFM) and Post Tax Revenue Model (PTRM), which were released for consultation on 17 August 2010. The proposed models are intended to apply to future electricity transmission determinations.

Grid Australia engaged NERA to review the AER's proposed amendments and to recommend any changes to the AER's proposed version 2 of the RFM and PTRM. In light of NERA's review and recommendations, Grid Australia proposes a number of amendments to the two models, which are summarised as follows:

RFMv2

- Changes to the method of calculating tax depreciation;
- Removal of the asset lives roll forward tab to maintain the current arrangements that allow a TNSP to adopt any methodology for calculating the remaining asset lives subject to its compliance with clause 6A.6.3 of the NER;
- Removal of the "as incurred" RAB; and
- The correction of a number of modelling errors within the RFMv2 itself.

In relation to the calculation of average remaining asset lives, Grid Australia notes that the AER proposes to have a standard method built into the RFMv2 as a default option only. Grid Australia understands that, consistent with the Rules (clause 6A.6.3(b)), this does not limit a TNSPs flexibility to propose alternative options as part of a Revenue Proposal. However, for the avoidance of doubt this requirement of the Rules ought to be expressly acknowledged in the guideline.

PTRMv2

- The inclusion of equity raising costs; and
- Removal of the “as incurred’ RAB and the addition of a WIP asset class to the “as commissioned’ RAB.

In addition to these changes which specifically relate to the AER’s proposed amendments and construction of the existing models, Grid Australia recommends that the AER adopt a number of additional enhancements to the models, which would improve the usability and integrity of the RFM and PTRM. For example, provision for contingent projects to be separately input into the PTRM.

To accommodate the particular circumstances and arrangements established in current TNSP revenue decisions, Grid Australia also considers that it would be appropriate for the guideline to enable TNSPs to propose relatively minor amendments to their individual models as part of a revenue determination process. The guideline would permit these proposals to be implemented provided the amendments were not substantive and where the AER agreed to the proposed amendments.

This submission includes the NERA Report as an attachment and is also accompanied by amended model spreadsheets that incorporate the recommended changes to the models.

Should you require any further clarification or elaboration on any of the matters raised in this submission, please do not hesitate to contact me on (08) 8404-7983 or via email at korte.rainer@electranet.com.au.

Yours sincerely,



Rainer Korte
Chairman
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28 September 2010

**Review of the Proposed
Version 2 of the RFM and
PTRM**
Grid Australia



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1. Introduction

In August 2010 the Australian Energy Regulator (AER) released its proposed version 2 of the roll forward model (RFM) and post tax revenue model (PTRM) to apply to future electricity transmission network determinations. The proposed amendments update the first version (version 1) of the RFM and PTRM that were published by the AER in September 2007.

These models are used to determine the revenue requirement of a transmission network service provider (TNSP), with the:

- § RFM used to roll forward the regulatory asset base (RAB) of a TNSP from the start of one regulatory period to the next; and
- § PTRM deriving the revenue requirement of a TNSP using the opening RAB calculated in the RFM, together with assumptions of the cost of capital and future capital and operating expenditure.

NERA has been engaged by Grid Australia¹ to review and if necessary recommend changes to the AER's proposed version 2 of the RFM and PTRM.

The structure of this report is as follows:

- § Section 2 – sets out our assessment review of the RFMv2;
- § Section 3 – outlines our examination of the PTRMv2; and
- § Section 4 – presents a number of suggested enhancements to improve the usability and integrity of the RFMv2 and PTRMv2.

¹ Grid Australia represents the owners of Australia's electricity transmission networks and includes:

- § ElectraNet Pty Ltd (South Australia);
- § Powerlink Queensland (Queensland);
- § SP AusNet (Victoria);
- § Transend (Tasmania); and
- § TransGrid (New South Wales).

2. Assessment of the Roll Forward Model

As part of its consultation process for the proposed amendments to the roll forward model (RFMv2) the AER has released the following two documents and accompanying Excel model:

- § AER, *Proposed amended electricity transmission network service provider roll forward model – explanatory statement*, August 2010;
- § AER, *Proposed amended electricity transmission network service provider roll forward model – handbook*, August 2010; and
- § AER, *Proposed_amended_transmission_roll_forward_model.xls*, August 2010 (RFMv2).

The AER states that the amendments to the RFM seek to:

- § include additional functionality for a RAB so that it recognises capital expenditure (capex) on an as-commissioned basis; and
- § insert a standard approach for rolling forward the average remaining asset lives by asset class, to determine the average remaining asset lives at the end of the regulatory control period.

In light of our review, the following amendments to the proposed RFMv2 are suggested:

- § changes to the method of calculating tax depreciation to:
 - reduce the administrative costs of calculating tax depreciation;
 - remove the inconsistency with the PTRM; and
 - make the RFM compatible with the NER;
- § the removal of the Asset lives roll forward tab from the RFM to maintain the current arrangements that allow a TNSP to adopt any methodology for calculating the remaining asset lives subject to its compliance with clause 6A.6.3 of the NER;
- § the removal of the “as incurred” RAB; and
- § the correction of a number of modelling errors within the RFMv2.

In addition, section 4.1 sets out a number of suggested enhancements to RFMv2 that NERA considers would improve the usability and integrity of the RFM.

The NER requires that a TNSP’s revenue application must be consistent with the RFM as set out in the AER’s published guidelines. However, it is foreseeable that the individual circumstances of a TNSP will require that minor adjustments be made to this model. Consequently, we propose that:

- § a TNSP be allowed as part of its revenue reset to propose minor amendments to the RFM to meet the specific circumstances of the TNSP; and

- § the AER may accept these proposed minor amendments, where they are consistent with the objectives of the NER.

The remainder of this section addresses each of the above amendments.

2.1. Calculation of tax depreciation on the opening tax base

Proposed Amendment to the RFM - 1

- § the **Opening Tax Value** (t_0) of each asset class entered in the Input tab should represent their expected values at the start of the regulatory control period – *Input!S7:S26*;
- § the **Average Tax Remaining Life (Year)** (t_0) should reflect the previous PTRM values and so reflect the values at start of the current regulatory control period - *Input!T7:T26*;
- § a single tax depreciation allowance for all expected assets in existence at the start of the regulatory period (ie, the removal of t-1 capex tax depreciation from the *Tax value roll forward!51:331*); and
- § set the **Opening Tax Asset Values** (*Tax value roll forward!G8:G27*) equal to the expected **Opening Tax Value** (*Input!S7:S26*) plus the difference between actual and expected capital expenditure in year $t-1$.

There is an inconsistency in tax depreciation methodology used in the PTRM and the RFM. The inconsistency arises when the RFM uses the t_{-1} starting point for tax depreciation on opening balances. While the PTRM uses t_0 as the starting point. Both models rely on the concept of average remaining tax lives. A one year difference in the starting point will produce a different average life and a different depreciation value. This inconsistency does not exist in the roll forward of the RAB.

2.1.1. Calculation of annual tax depreciation on the opening tax base in the RFM and PTRM

Tax depreciation is calculated in the Tax value roll forward tab of the RFM (*Tax value roll forward!51:331*). The RFM calculates the annual tax depreciation on assets that existed at the start of the regulatory period by:

- § dividing the **Opening Tax Value** (t_{-1}) at the start of the final year of the previous control period by the **Average Tax Remaining Life (Year)** (t_{-1}) at the start of the final year of the previous control period; and
- § dividing the **Actual “as commissioned” Net Capital Expenditure** (t_{-1}) in the final year of the previous control period by the Tax Standard Life (Years).

Table 2.1, sets out how the RFMv2 calculates the annual real depreciation of those assets in existence at the start of the current regulatory period.

Table 2.1
Annual Tax Depreciation
RFMv2

OTAB _{t-1}	\$1,000
Capex _{t-1}	\$50
Average tax remaining lives (t-1)	15 years
Tax standard life	45 years
Annual Tax Depreciation (OTAB _{t-1})	\$66.67
Annual Tax Depreciation (Capex _{t-1})	\$1.11
Annual Tax Depreciation (RFM)	\$67.78

On the other hand, the PTRM calculates the annual tax depreciation on assets that existed at the start of the regulatory period by dividing the **Opening Tax Value** (t_0) by the **Average Tax Remaining Life (Year)** (t_0) at the start of the control period. Table 2.2 uses the same assumptions as those used in the RFM model and calculates annual tax depreciation in the PTRM as:

Table 2.2
Annual Tax Depreciation
PTRM

OTAB _{t-1}	\$1,000
Capex _{t-1}	\$50
Average tax remaining lives (t-1)	15 years
Tax standard life	45 years
OTAB _{t+0}	\$983.33 ²
Average tax remaining lives (t+0)	15.58 years ³
Annual Tax Depreciation (PTRM)	\$63.13

² The OTAB_{t+0} (\$983.33) is the equal to the OTAB_{t-1} (\$1000) – Tax Dep_{t-1} (\$66.67 = \$1000/15) + Capex_{t-1} (\$50).

³ Weighted average of existing $t-0$ assets is 15.58 years (ie, opening $t-1$ tax assets would have a value of \$933.33 and remaining life of 14 years at the start of year $t+0$ and assets commissioned in year $t-1$ would have a value of \$50 and remaining life of 45 year $t+0$).

2.1.2. NERA Concerns

NERA has the following three concerns with the RFM's calculation of tax depreciation on assets in existence at the start of the previous regulatory period:

- § the **Opening Tax Value** (t_{-1}) and **Average Tax Remaining Life (Year)** (t_{-1}) at the start of the final year of the previous control period are not generally known by the TNSP and are administratively costly to retrospectively calculate;
- § RFM calculates different annual tax depreciation to the PTRM, even when there is no forecasting errors in the level of capex in year $t-1$; and
- § RFM calculation is compatible with S6A.2.1(f)(3) of the NER that requires that the benefit or penalty associated with any difference between the estimated and actual capex in year $t-1$ must be removed.

Each of these points is further explained below.

Determining tax asset values and average tax lives in year $t-1$ is generally not a straight forward process and can become administratively costly to undertake. This is because the information required by the RFM is unnecessary for the calculation of revenues in the previous period (ie, the PTRM requires tax asset values and average tax lives in year $t+0$). With effort this information could potentially be derived from the Tax Asset Base roll forward model used to determine the Opening Tax Value in the previous RFM. However, this information may not be available to those businesses that applied the PTRM for the first time in the last regulatory control period (and therefore did not use the RFM).⁴

A more important point is that tax depreciation is not consistently calculated in the RFM and the PTRM. This is demonstrated above in Table 2.1 and Table 2.2, which use the same assumptions but result in different levels of real annual tax depreciation. To ensure consistency over multiple regulatory periods it is necessary for the tax asset base to be rolled forward in the RFM in a manner consistent with the PTRM.

The final point is that schedule S6A.2.1(f)(3) of the NER requires that the benefit or penalty associated with any difference between the estimated and actual capex in year $t-1$ must be removed. Depreciating the tax asset base on the basis of actual (rather than forecast) $t-1$ capex is clearly inconsistent with this principle, since the amount removed from the RFM is different from the amount that was used to calculate revenues, without any subsequent true-up.

To correct for these identified issues the following components of the RFMv2 should be amended:

- § the **Opening Tax Value** (t_0) of each asset class included in the Input tab should be in their expected value at the start of the regulatory control period – *Input!S7:S26*;

⁴ We note that this may be more of an issue for electricity distribution businesses that are in the process of transitioning to a post tax regulatory environment.

- § the **Average Tax Remaining Life (Year)** (t_0) should be set to the same value as that used in the PTRM that determined revenues in the current period - *Input!T7:T26*;
- § using these values the RFM will calculate the same level of tax depreciation for assets expected to be in existence at the start of the regulatory period;
- § it follows that the opening tax asset base would be depreciated by the same amount in both the RFM and the PTRM;
- § this recommendation would also have the following implications to the RFMv2:
 - tax depreciation on t-1 capex (*Tax value roll forward!51:331*) would no longer need to be calculated; and
 - all other components of the tax asset base roll forward would remain unchanged including; an adjustment for the difference between actual and forecast capex in the final year of the previous regulatory period; and the addition and tax depreciation of actual capital expenditure during the regulatory period.

Note that this suggestion has been included in a modified RFMv2 attached to this report.

2.2. Roll forward of tax and regulatory average lives

Proposed Amendment to the RFM - 2

- § the removal of the *Asset lives roll forward* tab from the RFM, so as to continue providing TNSPs with the flexibility to determine the average remaining life subject to the requirement that the resulting depreciation is consistent with the requirements of clause 6A.6.3 of the NER.

There is no “correct” method for determining the average lives of groups of assets with different remaining lives. The AER is proposing to use the following calculation to determine the remaining lives of each asset category:

$$ARL^i = \frac{\sum RL_t^i \times AV_t^i}{\sum AV_t^i}$$

Where

ARL^i is the average remaining life of asset group i , at the end of the regulatory period;

RL_t^i is the remaining life at the end of the regulatory period of assets in group i , included in the RAB in year t ; and

AV_t^i is the value of assets at the end of the regulatory period of assets in group i , included in the RAB in year t .

In our opinion, this is a reasonable method for determining the average remaining life of an asset group. However, it is not the only reasonable method for determining a depreciation profile that would be consistent with clause 6A.6.3 of the NER.

The NER allows TNSPs to have the flexibility to choose other calculations to determine the average remaining life of an asset group, subject to the restrictions that it must comply with the requirements of clause 6A.6.3 of the NER. An alternative approach that, in our opinion, would also comply with the requirements of 6A.6.3 would be to determine an asset life that is sufficient to maintain real depreciation of the asset group, ie:

$$ARL^i = \frac{\sum RAV_t^i}{Dep_t^i}$$

Where

ARL^i is the average remaining life of asset group i , at the end of the regulatory period;

RAV_t^i is the real value of assets at the end of the regulatory period of assets in group i , included in the RAB in year t ; and

Dep_t^i is the real value of depreciation in first year of the following regulatory period, for all assets in existence at the end of the current regulatory period.

This approach ensures that a decision to group assets together at the end of the regulatory period does not change the level of depreciation on these assets.

Another approach would be to calculate the average remaining physical life of the asset group. Note that neither of the above reflect the underlying physical life of the asset group because they are both calculated by reference to net capex (ie, gross capex *less* disposals) and so do not make any allowance for:

- § the gross value of new assets that have entered the RAB in any given year; and
- § the value and age of existing assets that have been removed from the RAB (ie, disposed assets) in a given year.

This third approach cannot be calculated in the RFM and would need to be based on information contained in the asset registers of each TNSP.

The RFMv2 by proscribing a single approach removes the flexibility allowed by the current version of the RFM and the NER. The current version allows a TNSP to select any approach to determining the average remaining life subject to the requirement that the resulting depreciation is consistent with the requirements of clause 6A.6.3. Maintaining a degree of

flexibility in determining the depreciation profile was explicitly envisaged by the Australian Energy Market Commission as it stated that:⁵

... the Commission would expect TNSPs to demonstrate to the AER's satisfaction that **their depreciation profiles** are consistent with the above conditions. [**Emphasis added**]

Note that this suggestion has been included in a modified RFMv2 attached to this report.

2.3. Removal of unnecessary information

Proposed Amendment to the RFM - 3

- § the removal of the “*as incurred*” RAB and capex from both the RFM and the PTRM;
- § the TNSPs only being required to provide information on the “*as commissioned*” assets values and capex;
- § the addition of a compulsory asset category named **Work in Progress (WIP)**,⁶ where capex is the difference between total “*as incurred*” capex and total “*as commissioned*” capex in a given year, where:
 - Closing $WIP_t = \text{Opening } WIP_t \times (1 + \text{CPI}) - \text{“as commissioned” } WIP_t + \text{“as incurred” } WIP_t$;
 - Capex $WIP_t = \text{“as incurred” } WIP_t - \text{“as commissioned” } WIP_t$
- § the adjustment for difference in actual and forecast capex in the final year of the previous regulatory control period to be depreciated over the following regulatory period;
- § a result of these changes is that a number of inputs and calculations in the RFM would become redundant, including:
 - forecast and actual assets under construction in the year *t-1* (*Input!Q7:R26*);⁷ and
 - the adjustment for difference in forecast and actual assets under construction (*Adjustment for previous period!I20:J30*);
- § in the PTRM the requirement to enter an Opening Asset Value (Partially as Incurred) would be redundant (*Input!J7:J26*).

⁵ AEMC, 2006, *Draft National Electricity Amendment (Economic Regulation of Transmission Services) Rule 2006*, Rule Determination, 16 November 2006, Sydney, page 80.

⁶ Note that the term Work in Progress would be interchangeable with the term Assets Under Construction.

⁷ Forecast WIP would be entered in the forecast capex column (*Input!M7:M26*) while actual WIP would be calculated entered in the actual “as commissioned” column (*Input!G103:G122*).

Note that the use of the term regulatory asset base (RAB) is used interchangeably in the RFM (and the PTRM) to refer to either the “as incurred” RAB or the “as commissioned” RAB.⁸ This is confusing.

Before outlining our proposed simplification I first set out our understanding of how the RFM and the PTRM use the “as commissioned” and “as incurred” RAB values in each of the models.

In the RFM:

- § “as incurred” capex is added to each asset category and is used to calculate the value of each asset class at the end of the regulatory control period;
- § the difference between total forecast and total actual “as incurred” capex in year $t-1$ is used to determine the adjustment for the previous period;
- § the “as commissioned” opening asset value in year $t-1$ plus forecast “as commissioned” capex in year $t-1$ is used to calculate depreciation on the Opening asset base;⁹ and
- § the actual “as commissioned” capex over the regulatory period is used to calculate depreciation.

In the PTRM:

- § the total opening “as incurred” RAB plus total “as incurred” capex is used to calculate the return on capital building block; and
- § the opening “as commissioned” RAB of each asset class plus “as commissioned” capex by asset class is used to calculate the return of capital building block.

It is apparent that in both models, the recognition of different asset categories is only required at the point that the asset begins to be depreciated.

The current approach to specifying both an “as incurred” and “as commissioned” RAB is confusing and should be simplified. This simplification can be achieved by the removal of the “as incurred” RAB from the RFM and the PTRM and to define the RAB as:

- § the sum of “as commissioned” values for each component asset group, such as: transmission lines; substations; and easements, *plus*
- § a new asset group called **Work In Progress** (WIP) that represents the difference between current “as incurred” and “as commissioned” RABs.

⁸ For example, *Input!J6:J26* asks for the opening asset value to be added without specifying whether it is the “as commissioned” or the “as incurred” RAB values. Our analysis suggests that version 2 of the RFM requires that the “as commissioned” RAB values be entered, which is different from version 1 of the RFM where “as incurred” RAB values were required. We note that the RFM handbook (pages 3-4) does not provide sufficient guidance as to which RAB values should be included in the model.

⁹ We note that the version 2 of the RFM incorrectly calculates the depreciation of the opening RAB, this error is outlined in section 2.4.1 of this report.

In the input section, the WIP capex will be entered as the difference between total "as incurred" capex and total "as commissioned" capex for the year. It is worth noting that in some years this value could be negative. Furthermore, since the TNSP will earn a real return on the WIP it is appropriate that the WIP be indexed for changes in CPI. Consequently, the WIP asset group should have the following features:

- § no depreciation is applied to the WIP (as is currently the case);
- § in the RFM the WIP is indexed for actual inflation;
- § in the PTRM the WIP is indexed by expected inflation;
- § WIP capital expenditure in a given year is calculated as the difference between total "as incurred" capex and total "as commissioned" capex; and
- § $\text{Closing WIP} = \text{Opening WIP} \times (1 + \text{CPI}) - \text{"as commissioned" WIP} + \text{"as incurred" WIP}$

The inclusion of a WIP means that the value of regulatory assets for which the TNSP earns a return on is the opening "as commissioned" RAB (which includes the opening WIP). Nominal depreciation would remain unchanged and continue to only depreciate commissioned assets.

This proposed simplification is not intended to change the AER's hybrid regulatory approach. However, the simplification requires a minor adjustment to the RFM's treatment of the return on differences between actual and forecast capex in the final year of the previous regulatory control period. In version 2 of the RFM a required adjustment is calculated for each asset category. Under the proposed simplification this information on individual asset categories would not be available. Consequently, we suggest that any required adjustment be depreciated over the next regulatory period.

Note that this adjustment changes the period under which the return on the differences is depreciated. In the proposed RFMv2, the return on the difference in each asset class is depreciated over the remaining life of each asset class. Under our proposed adjustment the total return on differences is depreciated evenly over the following control period. However, this amendment does not change the present value of the adjustment and so continues to meet the requirements of schedule S6A.2.1(f)(3) of the NER, ie the benefit or penalty associated with any difference between the estimated and actual capex in the year preceding the current regulatory period is removed.

The removal of the "as commissioned" RAB has a number of advantages, including:

- § the lessening of any potential confusion from the models referring to one of two possible RAB values, ie, either the "as commissioned" or the "as incurred" RAB;

- § lowering the administrative costs of a TNSP which is currently only required to estimate “as incurred” capex by asset categories for its regulatory accounts and is not a requirement of their regulatory financial accounts;¹⁰
- § does not affect the depreciation incentive mechanism since the benefit or penalty associated with any forecasting error in the final year of the previous year is removed; and
- § simplifying both the RFM and PTRM.

Note that this suggestion has been included in a modified RFMv2 attached to this report.

2.4. Modelling errors

Proposed Amendment to the RFM - 4

- § to ensure that the opening RAB is depreciated correctly the RFMv2 must remove assets under construction from the opening RAB value used to calculate depreciation (*Actual RAB roll forward!H56:L315*);
- § the RFMv2 contains an unnecessary adjustment for differences between $t-2$ and $t-1$ CPI from the calculation of the nominal difference between actual and forecast net capex in year $t-1$ (*Adjustment for previous period!G56:G75*); and
- § the RFMv2 fails to make any adjustment for the impact that errors in forecasting $t-1$ CPI has on the opening RAB and should include a similar adjusted as that for differences in actual and forecast capital expenditure in year $t-1$.

Our review of the RFM has identified the following three modelling errors:

- § depreciation of the RAB in the Actual RAB roll forward tab is incorrectly calculated – Version 2 RFM depreciates forecast assets under construction in the year preceding the current regulatory period;
- § the calculation of the difference between actual and forecast net capex (*Adjustment for previous period!G56:G75*) improperly adjusts for the difference between inflation (CPI) in year $t-2$ and $t-1$; and
- § the RFM does not undertake an adjustment for differences between forecast and actual CPI in year $t-1$.

Details of each of these errors and the required corrections are set out below. Note each of these errors has been corrected in the modified RFMv2 attached to this report.

¹⁰ Our understanding from Grid Australia members is that the allocation of “as incurred” capex to asset categories only an estimate and the allocation of expenditure to assets groups is normally undertaken at the time that the asset is commissioned.

2.4.1. Depreciation of the opening RAB

Schedule S6A.2.1(f)(3) of the NER, requires that any benefit or penalty associated with differences between the estimated and actual capex in the year immediately preceding the current regulatory period must be removed. The RFM contains a modelling error that means that this requirement is not accomplished.

RFMv2 calculates the forecast nominal opening RAB at the start of the current regulatory period (*Adjustment for previous period!H233:H253*). The RFM then depreciates this forecast opening RAB over the regulatory period using the **Average remaining life**¹¹ - ie, *Actual RAB roll forward!H56:L315*. The modelling error in the RFMv2 is that the Opening RAB (*Adjustment for previous period!H233:H253*) which is divided by the average remaining life, includes forecast assets under construction in year $t-1$. In other words, the RFM appears to depreciate the “as incurred” RAB rather than the “as commissioned” RAB. Assets under construction should not be depreciated under the AER's hybrid approach. Note that this calculation would be consistent for a TNSP that is transitioning to the AER's hybrid approach from a pure “as incurred” regulatory approach.¹²

This error would be automatically corrected if our recommendation outlined in section 2.3 is adopted by the AER. In this scenario, Assets under construction would be replaced by the WIP which is an asset category that is not depreciated. If the recommendation is not accepted then the RFM must be adjusted so that the opening RAB (used to determine depreciation) does not include assets under construction in year $t-1$.

2.4.2. Inflation adjustment for year $t-2$

The RFM calculates the nominal difference between actual and forecast net capex as:¹³

$$Diff^i = Capex_a^i \times \frac{1 + CPI_{t-2}}{1 + CPI_{t-1}} - Capex_f^i$$

where

$Diff^i$ the nominal difference between actual and forecast capex in asset group i in the final year of the previous regulatory period;

$Capex_a^i$ is actual capex in asset group i in the final year of the previous regulatory period;

CPI is actual inflation in final two years of the previous regulatory period; and

¹¹ At *Input!K7:K26* of the RFM the TNSP enters the average remaining lives used in the previous PTRM.

¹² Where a TNSP is transitioning to the hybrid approach from a pure “as commissioned” approach, assets under construction in the previous regulatory period (ie, year $t-1$) would be depreciated. However, if the TNSP is already operating in the previous regulatory period under either a pure “as commissioned” or hybrid approach then assets under construction in year $t-1$ are not depreciated during the current regulatory period.

¹³ See *Adjustment for previous period!G56:G75*.

$Capex_f^i$ is forecast capex in asset group i in the final year of the previous regulatory period.

The RFM includes the following comment explaining this adjustment:

Adjustment for lagged CPI is required to ensure that actual net capex is consistent in nominal terms with the forecast net capex rolled into the RAB as allowed in the previous RFM.

This statement is incorrect. Actual capex in the final year of the previous regulatory period would have been grossed up for the assumption that it occurred mid-way through the regulatory year (ie, increased by a half year inflation adjusted nominal WACC). At no point would this capex be indexed for actual inflation in $t-2$. This point can be checked by reference to the indexation of the RAB in the final year in Version 2 of the RFM.¹⁴

The consequences of this adjustment is that if outturn capex in year $t-1$ is as forecast and actual CPI in final year was known at the time of the decision, then the RFM would still calculate a difference solely because actual inflation was different in years $t-2$ and $t-1$.

This error can be corrected if the nominal difference between actual and forecast capex is calculated by the following formula:

$$Diff^i = Capex_a^i - Capex_f^i$$

Note that this is the formula used to calculate the nominal difference between actual and forecast assets under construction.

2.4.3. Adjustments for differences in actual and forecast CPI in year t-1

The AER will generally know the actual inflation for the final year of the previous regulatory period at the time it makes its final decision and so the actual and forecast CPI will be the same for year $t-1$. Furthermore, this would not be an issue where the final decision requires that TNSP's first year revenues be calculated by way of CPI-X formula.¹⁵

However, where actual CPI in year $t-1$ has not been incorporated in the decision and revenues are specified in nominal terms, then differences between forecast and actual CPI can result in a windfall gain or loss for the TNSP. For example, if forecast CPI in year $t-1$ was 3 per cent and actual CPI was just 2 per cent, then the opening RAB would be overstated by 1 per cent. As a result, the return on and of capital during the regulatory period would also be overstated by 1 per cent.

It follows that the RFM should include a similar adjustment for differences in forecast and actual CPI in year $t-1$ as it already includes for differences in capex. The features of this adjustment would be as follows:

¹⁴ See *Actual RAB roll forward!L633:L653*, that indexes the opening RAB in the final year of the regulatory period for actual inflation in that year.

¹⁵ In other words, $t+1$ revenues are specified as $t-1$ revenues multiplied by CPI-X, in which case actual CPI in year $t-1$ has been included in regulatory revenues and no adjustment would be required.

- § the CPI difference would equal the opening RAB based on actual CPI less the opening RAB based on forecast CPI, ie:

$$Diff^{CPI} = ORAB^a - ORAB^f$$

where

$Diff^{CPI}$ the nominal difference between the Opening RAB based on actual and forecast CPI in the final year of the previous regulatory period;

$ORAB^a$ is the nominal Opening RAB which as calculated using actual CPI in the final year of the previous regulatory period;

$ORAB^f$ is the nominal Opening RAB which as calculated using forecast CPI in the final year of the previous regulatory period; and

- § a compounded return on the nominal difference in the Opening RAB due to CPI forecasting errors would be calculated over the regulatory period, escalated using the inflation adjusted nominal WACC.

3. Assessment of the Post Tax Revenue Model

As part of its consultation process for the proposed amendments to the post tax revenue model (PTRM) the AER has released the following two documents and accompanying Excel model:

- § AER, *Proposed amended electricity transmission network service provider Post-tax revenue model– explanatory statement*, August 2010;
- § AER, *Proposed amended electricity transmission network service provider Post-tax revenue model – handbook*, August 2010; and
- § AER, *Proposed_amended_transmission_post-tax_revenue_model.xls*, August 2010 (PTRMv2).

The AER states that the amendments to the PTRM seek to:

- § modify the input section for the opening RAB (based on as-commissioned capex) and makes adjustments to formulae used to calculate depreciation by referencing to this RAB; and
- § inserting summary tables to enhance presentation.

In light of our review it is proposed that the PTRMv2 be amended so that:

- § equity raising costs are included in the PTRMv2; and
- § the “as incurred” RAB is removed and a WIP asset class is added to the “as commissioned” RAB.

In addition, chapter 4.2 sets out a number of suggested changes to the proposed PTRMv2 that Grid Australia members have indicated would improve the usability and integrity of the model.

The NER requires that a TNSP’s revenue application must be consistent with the PTRM as set out in the AER’s published guidelines. However, it is foreseeable that the individual circumstances of a TNSP will require that minor adjustments be made to this model. Consequently, we propose that:

- § a TNSP be allowed as part of its revenue reset application to propose minor amendments to the PTRM to meet the specific circumstances of the TNSP; and
- § the AER may accept these proposed minor amendments, where they are consistent with the objectives of the NER.

§

The remainder of this section addresses each of the above amendments.

3.1. The inclusion of equity raising costs

Proposed Amendment to the PTRM - 2

§ the inclusion into the PTRM of the AER approach to calculating the equity raising calculations.

An entity incurs equity raising costs when it is required to raise equity capital. These costs may include legal and brokerage fees, and marketing costs. The AER current approach to determining whether or not new equity must be raised by a TNSP is to calculate the difference between:

- § the equity portion of forecast capex; and
- § the amount of retained earnings derived from the PTRM cash flows.

If the difference is positive then the TNSP is expected to raise new equity over the regulatory period. This requirement for new equity capital is then multiplied by the cost of raising a dollar of new equity (determined by expert opinion) to establish the cost of new equity over the regulatory period. Finally, the cost of raising new equity is added to the capital base of the TNSP and depreciated over the weighted average life of all regulated assets.

The proposed PTRMv2 does not include a calculation of equity raising costs. Instead equity raising costs are calculated in a separate model and are an input into the PTRMv2. This equity raising cost model is not subject to any form of consultation with stakeholders.

Since equity raising costs are both a function of the cash flows and an input into the PTRM, it is appropriate that these calculations are included in the PTRMv2. Attaching the equity raising cost model to the PTRM would require:

- § the addition of a Equity raising cost tab in the PTRMv2; and
- § the inclusion within the Input tab of the equity raising cost inputs, such as the cost per dollar of new equity and the dividend payout rate..

The advantages of incorporating the equity raising calculation into the PTRM are:

- § the increased transparency of including the calculation of equity raising calculation in the PTRM guideline process as it allows for these calculations to be reviewed by all interested stakeholders; and
- § as the TNSPs are required to follow the PTRM guidelines it ensures that a consistent approach to equity costs is adopted across the NEM.

3.1.1. The removal of “as incurred” RAB

Proposed Amendment to the PTRM - 3

§ the removal of the “as incurred” RAB from the PTRM.

Section 2.3 of this report outlined the advantages of simplifying both the RFM and PTRM by the removal of the “as incurred” RAB. To remove the “as incurred” RAB from the PTRM it would require the following amendments to the PTRMv2:

- § the deletion of Opening Asset Value (Partially As Incurred) (*Input!J7:J27*);
- § the deletion of the “as incurred”:
 - forecast capital expenditure (*Input!30:52*);
 - forecast disposals (*Input!53:76*); and
 - forecast net capital expenditure (*Input!77:100*);
- § the addition of a WIP asset class into the “as commissioned” RAB;
- § linking cell (*Assets!F9*) to the total “as commissioned” RAB; and
- § calculating **Real Net Capital Expenditure (capex)** (*Assets!G11:P30*) by reference to “as commissioned capex.

These proposed changes have been included in a modified PTRMv2 attached to this report. Note that these changes do not affect the revenues calculated by the PTRM.

4. Suggested Enhancements

In addition to the technical issues raised there are a number of additional enhancements that would improve the usability and integrity of both the RFM and the PTRM.

4.1. Suggested enhancements to the RFM

4.1.1. Inclusion of an output tab

The RFMv2 provides a number of inputs into the PTRM including:

- § the “as commissioned” and “as incurred” opening values of each asset category;
- § the opening tax asset life of each asset category; and
- § if they remain in the RFM (notwithstanding our second recommendation) the remaining regulatory and tax asset lives.

These PTRM inputs are found in a variety of locations within the RFMv2. A suggested improvement to the proposed RFMv2 would be to include an output tab that was in the same format as the PTRMv2 input tab. This would minimise the risk of transposition errors.

Note that this suggestion has been included in the modified RFMv2 attached to this report.

4.1.2. Ability to automatically add asset classes

The RFMv2 allows up to 20 asset classes to be included in the RFM. However, some TNSPs are likely to require more than 20 asset classes and are therefore required to amend their RFM to add the additional asset classes. In doing so it raises the risk of introducing formula errors. The ability to include additional asset classes automatically (by way of a macro similar to the one that adds new operating expenditure categories in the PTRMv2) would be a significant enhancement.

Note that this functionality has **not** been included in the modified RFMv2 attached to this report.

4.1.3. Inclusion of the version name in the title of each worksheet of the RFM

When preparing a regulatory proposal it is common for several versions of both the RFM and the PTRM to be developed by the TNSP. To assist in the management of this process it would be useful for the version name to be included in the title of each worksheet.

Note that this suggestion has been included in the modified RFMv2 attached to this report.

4.1.4. Independent audit of the RFM formulas

It would also be prudent for the AER to seek to have the final RFMv2 checked for computational errors before a final decision is published. I note that RFMv2 continues to contain formulae errors that have been previously highlighted to the AER. For example:

- § the calculation of the compound return on the difference in assets under construction incorrectly references the wrong asset values (Adjustment for previous period!H225:L228); and
- § the calculation of Asset 1:Year 2 tax depreciation fails to correctly copy the formula across ('Tax value roll forward!'O55:P55).

4.1.5. Compatibility with different versions of Excel

It would also be useful if the AER publishes the RFMv2 PTRMv2 in all versions of Excel currently supported by Microsoft. This would eliminate the requirement for some TNSPs to update their information technology infrastructure to access the regulatory models.

4.2. Suggested enhancements to the PTRM

4.2.1. Addition of a contingent projects input sheet

It is foreseeable that a TNSP's revenue determination may need to be adjusted during the regulatory period to include the costs of contingent projects. Further, when contingent projects are triggered the additional costs of these projects must be added in a manner that is consistent with the existing revenue decision.

To facilitate the inclusion of contingent projects into the PTRM, version 2 of the model should include a separate input cost tab for contingent projects. The contingent projects input tab would be linked to the input tab of the PTRM so that the contingent project costs can be transparently added to the existing revenue decision.¹⁶

The advantages of having a separate contingent project input tab within the PTRM are that:

- § the original inputs into the PTRM remain unchanged;
- § the cost of any contingent projects are identified by the year in which the project is triggered; and
- § it ensures that the full costs of contingent projects (including any debt and equity raising costs) are included in the new calculation of the annual revenue requirement.

4.2.2. Capability to vary company income tax rates

The Henry tax review¹⁷ has recommended that the Australian company income tax rate be lowered over time. In light of this recommendation it would seem prudent for the PTRM to contain the capability to allow company tax rates to vary over the regulatory period.

The ability to vary company tax rates over the regulatory period could be achieved by:

¹⁶ Attached to this report is a modified PTRMv2 that includes a contingent projects cost input tab.

¹⁷ Australia's future tax system: Report to the Treasurer – Part one, December 2009 P

- § the inclusions in the Inputs tab of expected company tax rates in each year of the regulatory period; and
- § the inclusion of these expected company income tax rates in the company tax calculation in the Analysis tab.

Note that this suggestion has been included in a modified PTRMv2 attached to this report.

4.2.3. Ability to automatically add asset classes

The PTRMv2 allows up to 20 asset classes to be included in the PTRM. However, some TNSPs have more than 20 asset classes and must amend their RFM and PTRM to add the required additional asset classes. The ability to include additional asset classes automatically (by way of a macro similar to the one that adds new operating expenditure categories) would be a significant enhancement.

4.2.4. Default smoothed MAR

The Smoothing tab contains two **Maximum Allowed Revenue – Smoothed**. However, the Revenue summary (and the subsequent charts) only reference the first of these calculations (*Smoothed!F9:K9*). The PTRMv2 should include the functionality to allow a TNSP to select either calculation (*Smoothed!F9:K9* or *Smoothed!F13:K13*).

This functionality could be incorporated into the PTRMv2 through a variety of methods. For example, the PTRMv2 could contain a check box that allows the TNSP to select its preferred smoothed revenue approach, which would then be reflected in the Revenue summary tab and in all the subsequent charts.

Note that this suggestion has been included in a modified PTRMv2 attached to this report.

4.2.5. Inclusion of the version name in the title of each worksheet of the PTRM

When preparing a regulatory proposal it is common for several versions of both the RFM and the PTRM to be developed by the TNSP. To assist in the management of this process, it would be useful for the version name to be included in the title of each worksheet.

Note that this suggestion has been included in a modified PTRMv2 attached to this report.

4.2.6. Independent audit of the PTRM formulas

It would be prudent for the AER to also have the final PTRMv2 checked for computational errors before a final decision is published. For example, the NPV check (*Analysis!F46*) in the Analysis tab contains an error. It appears that cell *Analysis!BI47* should be:

$$=SUM(BI17:BI18,BI20)+Assets!BI324$$

Note that this error has been corrected in a modified PTRMv2 attached to this report.

4.2.7. Compatibility with different versions of Excel

It would also be useful if the AER publishes the PTRMv2 in all versions of Excel currently supported by Microsoft. This would eliminate the requirement for some TNSPs to update their information technology infrastructure to access the regulatory models.