ATTACHMENT 9.2

APPLICATION AND DEMONSTRATION OF COMPLIANCE WITH CONTROL MECHANISM FOR STANDARD AND ALTERNATIVE CONTROL SERVICES

Contents

1. Introduction

This attachment addresses the application of the control mechanisms determined by the AER and the formulae determined by the AER to give effect to those control mechanisms.

Clauses 6.12.1(11) and (12) of the National Electricity Rules (the rules) require the AER to make a decision on the form of control mechanism (including the X factor) for standard control services and for alternative control services (to be in accordance with the relevant framework and approach paper) and on the formulae that give effect to those mechanisms.

Clause 6.8.2(c)(3) of the rules requires Essential Energy's regulatory proposal to include, for services classified as alternative control services, a demonstration of the application of the control mechanism, as set out in the framework and approach paper, and the necessary supporting information.

Paragraph 3 of schedule 1 of the AER's RIN also requires Essential Energy to provide the following information:

> For the proposed forecast revenues that Essential Energy's estimates to recover from providing direct control services over the *forthcoming regulatory control period* provide:
>
> (a) formulaic expressions for the basis of control mechanisms for standard control services and for *alternative control services*; and
>
> (b) a detailed explanation and justification for each component that makes up the formulaic expression."
>
> Also demonstrate:
>
> (a) how Essential Energy considers the control mechanisms are compliant with the framework and approach paper; and
>
> (b) for standard control services, how Essential Energy considers the control mechanisms are also compliant with clause 6.2.6 and part C of Chapter 6 of the NER.

Essential Energy's regulatory proposal and attachments and supporting documents demonstrate how Essential Energy has applied the control mechanisms for standard control services and alternative control services. Particularly, chapter 8 and associated documents sets out how Essential Energy has derived the prices for alternative control services, as the AER has decided to apply caps on prices of alternative control services.

In the AER's Stage 1 Framework and Approach (F&A) paper, the AER set out the formulae to give effect to the control mechanisms for standard control services and alternative control services. In this attachment, Essential Energy sets out our considerations on the AER's formulae, on how we have applied these formulae in preparing the regulatory proposal and on how these formulae should apply for the 2015-19 regulatory period.

In the AER's F&A paper, the AER acknowledged that there remains uncertainty on the formulae to give effect to the control mechanism for alternative control services and such formulae will not be finalised until a basis of control for these services are finalised. Further there are limited details given in the F&A paper on the formulae for standard control services. Essential Energy's consideration of these formulae, as a consequence, is confined within the information available and would therefore be subject to further refinement during the consultation process between the AER and Essential Energy.

2. Application and demonstration of compliance with control mechanisms for standard control services

This section provides our proposed approach to the application of and demonstration of compliance with the control mechanism for distribution standard control services.

The AER's generic formulaic expression of the revenue cap for the standard control distribution services provided by Essential Energy in the next regulatory control period is shown below:

$$MAR_t = \sum_{i=1}^{n} \sum_{j=1}^{m} p_{ij}^{t} q_{ij}^{t*}$$

$$MAR_t = AR_t + I_t + T_t + B_t$$

$$AR_t = AR_{t-1}(1+CPI)(1-X_t)$$

Where:

MAR_t	is the maximum allowable revenue in year t.
P^{t}_{ij}	is the price of component i of tariff j in year t.
q^{t*}_{ij}	is the forecast quantity of component i of tariff j in year t.
AR_t	is the allowable revenue for year t.
I_t	is the sum of incentive scheme adjustments in year t[1].
T_t	is the sum of transitional adjustments in year t.
B_t	is the sum of annual adjustments in year t.
CPI_t	is the percentage increase in the consumer price index.
X_t	is the X-factor in year t.
AR_1	is the allowable revenue in the first year of the regulatory control period..[2]

For the purposes of satisfying our obligations under Clause 6.8.2 (C) (4) of the National Electricity Rules to include indicative prices for each year of the next regulatory control period in our regulatory proposal, Essential Energy has been required to make specific assumptions about the nature of the parameters in the above revenue cap formula.

These assumptions are briefly discussed below:

(i) CPI

Essential Energy has assumed that the AER will adopt the current approach to the calculation of actual CPI as expressed in the formula below:

$$\Delta CPI = \left[\frac{CPI_{Mar,t-2} + CPI_{June,t-2} + CPI_{Sept,t-1} + CPI_{Dec,t-1}}{CPI_{Mar,t-3} + CPI_{June,t-3} + CPI_{Sept,t-2} + CPI_{Dec,t-2}} - 1 \right]$$

Where:

[1] We propose the I factor to include the recovery of expenditure arising from the application of the current D-Factor scheme to account for the two year lag. That is, the D-Factor outcomes for 2012-13 and 2013-14 will be accounted for in 2014-15 and 2015-16 respectively.

[2] AER 2013, Formulae for control mechanisms – revised, Matters relevant to the framework and approach for NSW and ACT DNSPs 2014-19, February, p.7

CPI means the all groups index number for the weighted average of eight capital cities as published by the ABS, or if the ABS does not or ceases to publish the index, then CPI will mean an index which the AER considers is the best estimate of the index.

For the purpose of setting indicative prices for the next regulatory control period for inclusion in our regulatory proposal, Essential Energy has assumed that CPI is equal to 2.5% in each regulatory year.

(ii) Allowed Revenue (AR)

Essential Energy notes that at this stage the AER have provided limited detail on the specific calculation of the Allowed Revenue (AR) parameter in the generic revenue cap formula.

Essential Energy considers that the requirements of clause 6.4.3 of the National Electricity Rules are satisfied if the Allowed Revenue for the next regulatory control period is based on the following:

- The annual (smoothed) revenue requirement as per the post tax revenue model (PTRM):[3]
- Revenue adjustment to account for the annual update to the cost of debt.
- Revenue adjustment to account for emergency response works; that is, costs of repairing damages to Essential Energy's assets which were not recoverable from a liable party.
- Revenue adjustments to account for the difference in revenue requirement in 2014/15 under the Transitional decision and the final determination as required by clause 11.56.4(h)-(j). In the event that the AER considers the allowed revenue is not the most appropriate part of the control mechanism formula to make the adjustment required by the rules, Essential Energy considers that the adjustment would then need to be accounted for via the T factor.

For the purpose of setting indicative prices for inclusion in our regulatory proposal, Essential Energy has essentially used the proposed revenue for each year of the 2014-19 period as the main input as the other three components of the allowed revenue (AR) parameter (e.g. update to cost of debt, adjustment for emergency recoverable works and true-up for standard control services) are not known at this stage. Our discussion of these three factors is however set out below:

- ***Intra-period adjustment to WACC***

Essential Energy notes that the AER proposes to apply an intra-period adjustment to the WACC in the next regulatory control period to allow for an annual update to the cost of debt.[4] To assist the AER make a decision in relation to this aspect of the control mechanism formula, Essential Energy believes that it is necessary to add an additional parameter to the revenue cap formula to ensure that this adjustment is made in a transparent manner, as discussed below:

$$AR_t = AR_{t-1}(1+CPI)(1-X_t)+W$$

For the purpose only of setting indicative prices for the next regulatory control period for inclusion in our regulatory proposal, Essential Energy has assumed that there will be no annual adjustment to the cost of debt in the next regulatory control period.

To assist the AER make a decision in this area, Essential Energy has developed an approach to estimating the revenue adjustment for the annual update to the cost of debt by modifying the Post Tax Revenue Model (PTRM). Appendix A sets out further details of this adjustment and a simple spreadsheet (provided

3 Please note that annual update to WACC for the cost debt would also influence the calculation of WACC interest in relation to the overs and unders account for distribution standard control revenue, transmission use of system (TUOS) revenue and Climate Change Fund (CFF) revenue.
4 AER 2013, Better Regulation, Rate of Return Guideline, page 9, December.

as part of this attachment) gives an example of our proposed modeling approach to the WACC update in each regulatory year.

> ***Recovery of Emergency Recoverable Works Costs***

Essential Energy notes that the Allowed Revenue (AR) factor in the revenue cap formula may also need to include another parameter (E-factor) to allow Essential Energy to recover residual costs in relation to emergency recoverable works, as illustrated in the following formulaic expression:

$$E_t = C_{t-1} \times (1 + WACC_t)^t$$

Where

Et	Allowed Revenue Adjustment in relation to residual costs of providing emergency recoverable works services
Ct-1	Estimated residual costs of providing emergency recoverable works services in period t-1
WACC	Weighted Average Cost of Capital updated for cost of debt

> ***True-up of revenue for standard control services***

Essential Energy believes that the calculation of the allowed revenue (AR) parameter in the revenue cap formula also reflect the present value of the difference between the 2014/15 revenues determined under the AER's transitional decision and the decision for this substantive proposal, as required by Clause 11.56.4 of the rules.

In summary, Essential Energy considers that the allowed revenue (AR) parameter of the formulae is as follow:

$$AR_t = AR_{t-1}(1 + CPI)(1 - X_t) + W + E + True - up$$

(iii) Incentive Adjustment (I-Factor)

Essential Energy notes that the AER have at this stage provided limited detail on the specific calculation of the sum of the incentive scheme adjustment (I-factor) parameter in the generic revenue cap formula.

Essential Energy's interpretation of the I-factor is that it relates to the annual adjustments to the maximum allowed revenue during the course of the next regulatory control period that arise as a consequence of the operation of an incentive scheme. To illustrate consider the treatment of the Service Target Performance Incentive Scheme (STPIS) from the perspective of the revenue cap formula.

The STPIS is designed to ensure that the efforts of DNSPs to increase operating and capital efficiency do not come at the expense of service performance for customers. It achieves this outcome by linking the maximum allowed revenue in a regulatory year to the DNSPs actual service performance compared to pre-determined targets set by the AER. It is Essential Energy's position that the STPIS amount approved by the AER should be reflected in the revenue cap formula in the I-factor.

For the purpose of setting indicative prices for inclusion in our regulatory proposal, Essential Energy has not taken into account the forecast annual revenue increments or decrements arising from the operation of STPIS during the next regulatory control period.

(iv) Transitional Adjustment (T-factor)

Essential Energy believes that the T-factor may not be required in the revenue cap formula given that the revenue difference, relating to the 2014/15 year, between the AER's transitional decision and the AER's decision for this substantive proposal, has been accounted for in the allowed revenue (AR) parameter of the control formulae. Nevertheless, to the extent that the AER has identified any residual adjustments to revenue that need to be addressed through the T-factor in the revenue cap formula, Essential Energy proposes that these adjustments be made in the following manner, as expressed in formulaic terms below:

$$T_{t+1} = \left[AR(Final)_t - AR(Transitional)_t\right] \times (1 + WACC)^{0.5}$$

Where

AR(Transitional)$_t$	Placeholder DUOS Revenue for FY 2014/15
AR(Final)$_t$	Annual Smoothed DUOS Revenue Requirement for FY 2014/15, as set out in the AER Final Determination
WACC	Weighted Average Cost of Capital, updated for cost of debt (where applicable)

Also, if the AER decides that the allowed revenue (AR) parameter is not the appropriate parameter to account for the revenue true-up required under clause 11.56.4 of the rules, then the required adjustments would need to be reflected via the B-factor.

For the purpose of setting indicative prices for inclusion in our regulatory proposal, Essential Energy has assumed that the T-factor is zero.

(v) Annual Adjustment (B-factor)

Essential Energy notes that at this stage the AER have provided limited detail on the specific calculation of the Annual Adjustment parameter in the generic revenue cap formula. Essential Energy has assumed that the B-factor in the generic formula is intended by the AER to account for any differences that arise between the actual DUOS revenue recovered compared to the maximum allowed revenue for a particular regulatory year, as expressed in formulaic terms below:

$$B_t = B_{t-1} \times (1 + WACC_{t-1})^t + R_t \times (1 + WACC_t)^{0.5t}$$
$$B_{t-1} = B_{t-2} \times (1 + WACC_{t-2})^t + R_{t-1} \times (1 + WACC_{t-1})^{0.5t}$$

Where:

B_t	Forecast closing balance of the DUOS revenue overs and unders account in year t
B_{t-1}	Estimated closing balance of the DUOS revenue overs and unders account in year t-1
B_{t-2}	Audited closing balance of the DUOS revenue overs and unders account in year t-2
WACC	Weighted Average Cost of Capital, updated for cost of debt (where applicable)
R_t	Forecast over/under recovery of DUOS revenue in year t
R_{t-1}	Estimated over/under recovery of DUOS revenue in year t-1

For the purpose of setting indicative prices for inclusion in our regulatory proposal, Essential Energy has made the following assumptions in relation to the B-factor:

> The closing balance of the DUOS revenue overs and unders account in FY 2013/14 is zero i.e B-factor is zero in year t-1.

> The closing balance of the DUOS revenue overs and unders account is zero in each regulatory year (1,2,3,4,5). This outcome assumption reflects the following assumptions:

- The forecast volumes at the tariff component level are assumed to equal the actual volumes in each year of the regulatory control period.
- No account has been taken of the potential difference between the forecast revenue requirement in FY 2014/15 as set out in our regulatory proposal and the AER's decision on the placeholder transitional revenue amount.

Essential Energy also wishes to make the AER aware that Essential Energy will be unable to calculate an accurate actual closing balance of the DUOS revenue overs and unders account in FY 2014/15. This issue arises because the actual DUOS price in 2014-15 is a bundled price that recovers not only the revenue for standard control distribution services but also the additional revenue for some alternative control services including metering services and certain ancillary network services and unclassified services (i.e. emergency recoverable works).[5]

Essential Energy considers the most practical resolution to this issue is to deduct the additional revenue amount for certain ancillary network services and unclassified services used to calculate the bundled DUOS charges in the transitional year from the total actual revenue collected for the transitional year. To illustrate our proposed approach, please consider the following illustrative in the table below.

Table 1 – Illustrative example calculation of over/under recovery in the transitional year

2014-15	Revenue used for calculation bundled DUOS price	Actual revenue collected from charging bundled DUOS
Revenue approved by the AER as annual revenue requirement in the transitional determination	$200	$280
Additional revenues for certain alternative control services ACS and unclassified services	$50	
Total bundled revenue	$250	

In the simple example in the above table Essential Energy's approach results in a DUOS over recovery of $30 in 2014-15, which represents the difference between the AER approved DUOS revenue of $200 and the deemed actual DUOS revenue of $230 in FY 2014/15 i.e $280 - $50.

(vi) Tolerance Limits in the B-factor

Essential Energy notes that the AER believes that the risk of unstable prices arising under the revenue cap is best addressed through the implementation of tolerance limits in relation to the overs and unders account.[6] To assist the AER make a decision in relation to this aspect of the control mechanism, Essential Energy's position on the tolerance limits is summarised in the following table:

Table 2 – Essential Energy's Proposed Tolerance Limits and actions

Tolerance	DNSP Action Required
Less than +/- 2 per cent	If the audited over/under recovery of DUOS revenue in year t-2 is within +/- 2 per cent of the MAR for year t, the DNSP is required to set DUOS prices for year t to achieve a zero closing balance for the DUOS revenue overs and unders account in year t.
Between +/- 2 per cent and +/- 5 per cent	If the audited over/under recovery of DUOS revenue in year t-2 is greater than +/- 2 per cent of the MAR for year t, but less than +/- 5% of MAR for year t, the DNSP is allowed to set DUOS prices for year t to achieve a non-zero closing balance for the DUOS revenue overs and unders account in year t. The only requirement is that the DNSP sets DUOS prices in year t with the expectation of achieving a zero closing balance of the DUOS revenue overs and unders account in year t+1.
Greater than 10%	If the audited over/under recovery of DUOS revenue in year t-2 is greater than +/- 10% of the MAR for year t, the DNSP is required to submit to the AER as part of its annual pricing proposal a medium-term plan to address the DUOS revenue overs and unders account.

For the purpose of setting indicative prices for inclusion in our regulatory proposal, Essential Energy has not taken account of tolerance limits because the value of the B-factor is assumed to be zero in each year of the next regulatory control period.

(vii) Approved pass through amounts

[5] Please note that this issue will not arise in the remaining years of the regulatory control period because separate charges exist for standard control services and alternative control services.
[6] AER 2013, Formulae for control mechanisms – revised, Matters relevant to the framework and approach for NSW and ACT DNSPs 2014-19, February, p.57

Essential Energy notes that the generic formulaic expression of the revenue cap does not explicitly allow for the Maximum Allowed Revenue to be adjusted for approved pass through amounts (either positive or negative) in the next regulatory control period. Essential Energy recommends that the AER include a pass through (P-factor) parameter in the specific formulaic expression of the revenue cap control mechanism, as shown below:

$$MAR_t = AR_t + I_t + T_t + B_t \pm P_t$$

Where:

Pt The approved pass through amount with respect to regulatory year t, as determined by the AER.

3. Proposed control mechanism for alternative control services

Essential Energy notes that the AER has proposed to apply caps on the prices of individual services to services classified as alternative control. The AER's generic formulaic expression[7] of the price cap for alternative control service is set out below with a detailed explanation and justification for each component consistent , noting that the AER has indicated that key components of CPI, X Factor, Price Cap for the first year and the A adjustment factors are to be decided in the final decision.

> ***Services currently classified as alternative control services and remain classified as alternative control services.***

Essential Energy's services currently classified as alternative control services and which remain classified as alternative control services are public lighting services.

As explained below in *Services currently classified as standard control services which are re-classified as alternative control services,* Essential Energy considers that this formula could also apply to those Ancillary Network Services which were previously standard control services (known as miscellaneous and monopoly services subject to a price) and which are subject to a CPI escalation in the 2014-15 transitional regulatory control period.

At the time that the AER proposed these formulas it presumably anticipated that a new price would be set in the transitional regulatory control period for services being classified as alternative control services for the first time. However this did not occur and no new prices were set for alternative control services during the transitional regulatory control period. It would therefore be most consistent with the formulas proposed by the AER that those ancillary network services for which there was an existing price and were subject to a CPI escalation only during the transitional regulatory control period should therefore be subject to the formula below .

$$\bar{p}_i^t \geq p_i^t$$ i=1,n and t=1,2,3,4

$$\bar{p}_i^t = \bar{p}_i^{t-1}(1 + CPI_t)(1 - X_t) + A_i$$

Where:

$\bar{p}_i^t$ is the cap on the price of service i in year t.

p_i^t is the price of service i in year t.

CPI_t is the percentage increase in the consumer price index. To be decided in the final decision.

The basis of control proposed by Ausgrid provides for an annual CPI adjustment. For the purposes of the regulatory proposal a CPI of 2.5% has been adopted, but the actual CPI to be applied will be that determined by the AER in its final determination.

X_t is the X-factor for service in year t. To be decided in the final decision.

The basis of control proposed by Essential; Energy provides for annual adjustment for public lighting services mainly due to labour cost escalation and this adjustment will drive the "X" factor. It must be noted that under the basis of control proposed for public lighting services, the labour cost escalation affects mainly the public lighting maintenance costs whereas other cost components (e.g. pre and post 2009 charges) and hence prices thereof are driven by CPI only. Nevertheless, the X factor for public lighting will be determined by the AER as part of its final determination.

[7] Set out at pages 60 and 61 of the AER's Framework and Approach paper

The basis of control proposed by Essential Energy provides for an annual adjustment or escalator for ancillary network services also due primarily to the application of a labour escalator but for some services these may also be driven by changes to certain cost drivers that need to be reflected in the specific X factor for different services.

$\overline{p}_i^1$ is the cap on the price of service i in of the transitional regulatory control period. As specified in the transitional rules, $\overline{p}_i^0$ will be prices from the final year of the 2009-2014 regulatory control period escalated by CPI.

It appears there is a disconnect between the definition of the $\overline{p}_i^1$ component of the control formulae. The formulae refers to the $\overline{p}_i^1$ whereas the definition of this component refers to the $\overline{p}_i^0$ (P-Nought). We seek clarification from the AER.

A_i^1 is the adjustment factor. Likely to include, but not limited to adjustments for residual charges when customers choose to replace assets before the end of their economic life. To be decided in the final decision.

In relation to the A_i^1 adjustment factor the basis of control proposed by Essential Energy provides for an adjustment factor for residual charges when customers choose to replace assets before the end of their economic life. Further details of this adjustment are provided in Essential Energy's public lighting attachments and supporting documents.

In Attachment 8.11 we consider the true-up options for alternative control services. Essential Energy considers the A adjustment factor of the control formulae is the most appropriate parameter to effect this true-up.

> ***Services currently classified as standard control services which are re-classified as alternative control services***

Essential Energy's services which are currently standard control services and which have been reclassified as alternative control services are:

> Metering Services Types 5 and 6 (metering provision, maintenance, reading and data services)

> Ancillary Network Services.

Essential Energy notes that some Ancilliary Network Services have a price cap set for the 2009-14 Regulatory Control period and have been escalated by CPI for the transitional year. Whilst it will not affect the ultimate price calculation it might be more appropriate for the formula set out in (1) above for services which are continuing as alternative control services to also apply to these services

In relation to those services which were previously classified as standard control services and which are being reclassified as alternative control services, Essential Energy does not consider that it is possible to apply the formula set out in the AER's framework and approach paper. This is because the AER's formula relies upon a price for these services being set for the transitional year. At the time that the AER proposed these formulas it presumably anticipated that a new price would be set in the transitional regulatory control period for services being classified as alternative control services for the first time. For this reason Essential Energy proposes that the formula be amended so that instead of $\overline{p}_i^1$ referring to *the cap on the price of the service I in the transitional regulatory control period* it becomes *the cap on the price of the service I set in the AER's final determination*. This change has been marked up on the formula below together with a detailed explanation and justification for each component that makes up the formula. In addition it will need to be clear that the following formulae will not be applied until the second (2016-17) year of the regulatory control period as the

AER will determine the price for the first (2015-16) year of regulatory control period. Adjustments have been made to the year references in the price caps to reflect this.

$$\overline{p}_i^t \geq p_i^t$$

$$\overline{p}_i^t = \overline{p}_i^{t-1}(1 + CPI_t)(1 - X_t) + A_i$$

Where:

$\overline{p}_i^t$ is the cap on the price of service i in year t.

p_i^t is the price of service i in year t.

CPI_t is the percentage increase in the consumer price index. To be decided in the final decision.

The basis of control proposed by Essential Energy provides for an annual CPI adjustment. For the purposes of the regulatory proposal a CPI of 2.5% has been adopted, but the actual CPI to be applied will be that determined by the AER in its final determination.

X_t is the X-factor in year t. To be decided in the final decision.

The basis of control proposed by Essential Energy for Metering Services and Ancillary Network services provide for an annual adjustment or escalator. This escalator is driven primarily by the application of a labour escalator but for some services the escalator may also be driven by changes to certain cost drivers that need to be reflected in the specific X factor for different services. This will require the AER to determine different X factors depending on the service as anticipated by AER in its framework and approach paper[8]. For example, for a meter replacement service triggered by a meter failure or performance of a class of meters, the X factor will be driven by labour costs as well as logistical synergies that are dependant on the forecast volumes of meter replacements taking place during the relevant year.

$\overline{p}_i^1$ is the cap on the price of service i in the ~~transitional regulatory control period~~ first year of the 2015-2019 regulatory control period..

As explained above, given that no prices have been determined for either metering services or ancillary network services in the transitional regulatory control period, this reference will need to be amended so that it refers to the price determined by the AER for the first year of the 2015-2019 regulatory control period.

A_i^1 is the adjustment factor.

The basis of control proposed by Essential Energy for Metering Services and Ancillary Network services do not at this stage provide for any additional adjustment factor to that already provided for in the CPI and X factor approach. However Essential Energy agrees with the AER's statement in its framework and approach paper[9] that an adjustment factor may be required if the adjustments which Essential Energy anticipates will be reflected in the X factor are determined by the AER as more appropriate for a more generic adjustment factor.

In Attachment 8.11 we consider the true-up options for alternative control services. Essential Energy considers the A adjustment factor of the control formulae is the most appropriate parameter to effect this true-up.

[8] Op Cit at page 61
[9] Op Cit page 62.

Appendix A – Annual update to the allowed return on debt

Essential Energy proposes that the AER annually update the return on debt allowance throughout the 2014-19 regulatory period, consistent with the AER's final rate of return guidelines. In Appendix A and Appendix B to this attachment, we set out how we believe this annual update can be effected. We would welcome opportunities to work with the AER to finalise a method and approach for updating the cost of debt annually.

We propose that a revenue adjustment be applied to the smoothed revenue allowance for each year of the regulatory control period to reflect a revised return on debt. The AER's stage 1 framework and approach paper for the NSW DNSPs outlines the formula for control as follows:

$$\text{Maximum Allowed Revenue}_t = \text{Annual Smoothed Revenue}_t + I_t + T_t + B_t$$

The stage 1 framework and approach paper outlines that:

$$AR_t = AR_{t-1}(1+CPI)(1-X_t)$$

As set out above we propose that the allowable revenue (ARt) for each year also incorporate an adjustment for the annual update to the return on debt allowance. Therefore, we propose:

$$AR_t = AR_{t-1}(1+CPI)(1-X_t) + W_t$$

Where W_t is the annual adjustment to allowed revenues to cover any difference between the allowed return on debt set at the start of a determination (i.e. the 10 year trailing average return on debt at the start of a determination) and the updated 10 year trailing average return on debt each year.

However, the AER's standard PTRM only caters for one rate of return to apply over a full regulatory period. We have added functionality into the AER's standard PTRM to enter a separate rate of return for each year of the regulatory period. The separate annual WACC inputs are contained in the 'Inputs' sheet of the amended PTRM (Appendix B to this attachment – 'W factor PTRM').

The functionality added to the PTRM allows the AER to keep smoothed revenues constant in one year and then update the WACC in following years. The updated WACC is used to revise building block revenue allowances within the regulatory period, and to estimate the NPV of the revised cash flows. A "W factor" has been added to the X-factor sheet in Appendix B which resets smoothed revenue allowances for a particular year after a new return on debt parameters are entered into the Inputs page. The W factor operates to incorporate the updated return on debt and to ensure NPV neutrality between smoothed revenue allowances and revised building block revenue allowances.

To update the maximum allowed revenue in each year of the 2014-19 regulatory period for updated return on debt estimates, we propose that our W factor PTRM be used. The difference between the approved smoothed revenue allowances in the 2014-19 determination and the revised smoothed revenue from the W factor PTRM would be incorporated into each year's maximum allowed revenue through the "W" factor in the form of control. For example, to calculate the return on debt adjustment for 2015-16:

- In the W factor PTRM, both building block and smoothed revenue allowances for 2014-15 would remain fixed.
- A revised trailing average return on debt would be input to the amended PTRM for 2015-16 to 2018-19.
- The "W factors" in the amended PTRM would be used to calculate updated building block and smoothed revenues for 2015-16 to 2018-19 that maintain NPV neutrality between the new building block and smoothed revenues.
- The difference between the updated smoothed revenue for 2015-16 in the W factor PTRM and the smoothed revenue allowance for 2015-16 set and fixed in the AER's determination would form the return on debt adjustment to be applied through the "W" factor in our proposed formula for control.

Updating the AER's PTRM to enable updating certain WACC parameters annually

The PTRM is used to ultimately calculate the x-factors in the price or revenue control mechanism. It is proposed a new factor be inserted into the control mechanism to update the prices or revenues to reflect the updated WACC. This note focuses on the revenue cap form of control. A similar approach might be possible for a price cap, but the annual update would need to consider whether the PTRM applied the determination forecast volumes or an updated forecast.

To calculate the w-factor, a new goal seek would be required to set the NPV of the revenue requirement equal to the NPV of the smoothed revenue, in the updated PTRM.

This w-factor would be used in the annual pricing proposal to determine the revenue cap for the coming year.

What changes would the PTRM need?

The WACC inputs in the PTRM directly impact many calculations:

1. the half WACC applied to capex
2. the return on capital
3. the discounting of the revenue requirements and smooth revenue
4. debt and equity raising costs?

It also has indirect impacts such as:

1. the amount of taxable income changes therefore the benchmark return for tax changes
2. the RAB changes, therefore depreciation changes
3. the RAB changes therefore indexation of the RAB changes

All of these direct and indirect changes mean that we should not make an assumption that this process will be simple.

Proposed changes

Essential Energy's understanding of the AER's mechanism is to use a rolling return on debt, resulting in a different effective discount rate per annum. This means the model will need to recalculate the annual revenue requirement for each year using a different annual WACC.

> **Inputs page**

The first proposed change would be to add to the Inputs page to include annual WACC inputs for the regulatory control period. The following depicts the change to the PTRM, which allow the 5 year forecast in the PTRM plus the annual updates. In the original determination all WACC parameters would be set equal to the original forecast. This has the effect of not changing the calculations that would occur with a single WACC assumption.

Figure 1 WACC inputs after amendments

Cost of Capital	Forecast	2009-10	2010-11	2011-12	2012-13	2013-14
Nominal Risk Free Rate	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%
Inflation Rate	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Debt Risk Premium	1.10%	1.10%	1.10%	1.10%	1.10%	1.10%
Market Risk Premium	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%
Utilisation of Imputation (Franking) Credits	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%
Proportion of Debt Funding	60.00%	60.00%	60.00%	60.00%	60.00%	60.00%
Equity Beta	0.90	0.90	0.90	0.90	0.90	0.90
Debt Raising Cost Benchmark	0.08%	0.08%	0.08%	0.08%	0.08%	0.08%

> WACC page

These WACC inputs would need to be reflected in the respective years throughout the PTRM. The WACC sheet would also be amended to represent the forecast and the annual WACC parameters. Certain cells should be named to make the flow on amendments to other pages work consistently with the current PTRM formulae. The formula should be changed to represent the relevant year inputs.

Figure 2 Amended WACC page

Cost of Capital Parameters

		Input Data & Calculated Inputs	Basic Building Block Model	2009-10	2010-11	2011-12	2012-13	2013-14
Nominal Risk Free Rate	Rf	6.00%		6.00%	6.00%	6.00%	6.00%	6.00%
Real Risk Free Rate	Rrf	2.91%		2.91%	2.91%	2.91%	2.91%	2.91%
Inflation Rate	f	3.00%		3.00%	3.00%	3.00%	3.00%	3.00%
Cost of Debt Margin	DRP	1.10%		1.10%	1.10%	1.10%	1.10%	1.10%
Nominal Pre-tax Cost of Debt	Rd	7.10%		7.10%	7.10%	7.10%	7.10%	7.10%
Real Pre-tax Cost of Debt	Rrd	3.98%		3.98%	3.98%	3.98%	3.98%	3.98%
Market Risk Premium	MRP	6.00%		6.00%	6.00%	6.00%	6.00%	6.00%
Corporate Tax Rate	T	30.00%		30.00%	30.00%	30.00%	30.00%	30.00%
Effective Tax Rate for Equity (From Relevant Cash flows)	Te	19.31%	19.31%	19.31%	19.31%	19.31%	19.31%	19.31%
Effective Tax Rate for Debt (Effective Debt Shield)	Td	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%
Utilisation of Imputation (Franking) Credits	γ	50.00%		50.00%	50.00%	50.00%	50.00%	50.00%
Proportion of Equity Funding	E/V	40.00%		40.00%	40.00%	40.00%	40.00%	40.00%
Proportion of Debt Funding	D/V	60.00%		60.00%	60.00%	60.00%	60.00%	60.00%
Equity Beta	βe	0.90		0.90	0.90	0.90	0.90	0.90

WACC Analysis

	Formula Approximation		2009-10	2010-11	2011-12	2012-13	2013-14
Post-tax Nominal Return on Equity(pre-imp)	11.40%	11.40%	11.40%	11.40%	11.40%	11.40%	11.40%
Post-tax Real Return on Equity(pre-imp)	8.16%	8.16%	8.16%	8.16%	8.16%	8.16%	8.16%
Nominal Vanilla WACC	**8.82%**	**8.82%**	**8.82%**	**8.82%**	**8.82%**	**8.82%**	**8.82%**
Real Vanilla WACC	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%	5.65%
Post-tax Nominal WACC	7.05%	8.30%	7.05%	7.05%	7.05%	7.05%	7.05%
Post-tax Real WACC	3.94%	5.14%	3.94%	3.94%	3.94%	3.94%	3.94%
Pre-tax Nominal WACC	9.31%	9.33%	9.31%	9.31%	9.31%	9.31%	9.31%
Pre-tax Real WACC	6.12%	6.15%	6.12%	6.12%	6.12%	6.12%	6.12%
Nominal Tax Allowance	0.49%	0.51%	0.49%	0.49%	0.49%	0.49%	0.49%
Real Tax Allowance	0.47%	0.50%	0.47%	0.47%	0.47%	0.47%	0.47%

> Assets page

The calculation of capex to be added to the RAB includes the application of 6 months worth of real vanilla WACC. This impacts both the formula associated with the real capex and the depreciation of real capex, which both include 'rvanilla' in the formula (shown below).

Figure 3 - Amended real capex table

G11 =Input!G143*(1+rvanilla1)^0.5

Asset Roll Forward

Year		2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Inflation Assumption (CPI % increase)	3.00%		3.00%	3.00%	3.00%	3.00%	3.00%
Cumulative Inflation Index (CPI end period)		100%	103.0%	106.1%	109.3%	112.6%	115.9%
Opening Regulated Asset Base		2,300.0					
Real Capex			134.7	130.5	110.0	110.0	130.5
Sub-transmission lines			46.3	51.4	41.1	41.1	51.4
distribution lines			46.3	46.3	36.0	36.0	46.3
substations			10.3	10.3	10.3	10.3	10.3
distribution transformers			10.3	10.3	10.3	10.3	10.3
LVS and meters			8.2	8.2	8.2	8.2	8.2
communications			5.1	2.1	2.1	2.1	2.1

Figure 4 - Amended real depreciation calculations

J79 =IF(A1stdlife="n/a","n/a",IF(J$3>(A1stdlife+$E79),(Input!$H$143*(1+rvanilla2)^0.5)-

	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
73																
74																
75			135.00	139.47	117.98	104.42	107.52	111.04	110.21	110.01	109.07	108.57	88.07	87.78	87.48	87.4
76			23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.3
77	0															
78	1			0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.9
79	2				1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.0
80	3					0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.8
81	4						0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.8
82	5							1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.0
83	6								-	-	-	-	-	-	-	-
84	7									-	-	-	-	-	-	-
85	8										-	-	-	-	-	-
86	9											-	-	-	-	-
87	10												-	-	-	-
88			23.3	24.3	25.3	26.1	26.9	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.

The annual real vanilla WACC on the WACC page should be named ‘rvanilla1’ through to ‘rvanilla5’ then the relevant formula in the Assets page changed from ‘rvanilla’ to ‘rvanilla1….5’ for the relevant years. It is proposed the references in year 6 onwards should be to ‘rvanilla5’.

> Analysis page

The Analysis page calculates the revenue requirement building blocks and it also performs checks to ensure the building block revenue requirements achieve the required rate of return. This means there are several impacts that need to reflect the calculation of an annual discount rate, including:

1. the return on capital calculations
2. the present value calculations to perform the checks on the discount rate
3. item two needs to include the cumulative effect of the annual discount rate, so new calculations are added.

Note: The IRR check at the bottom of the page assumes the annual rate of return is the same rate so it is expressed as a single percentage. In the annual adjustment process the target WACC is going to be changed and therefore this check will fail. We are not sure whether another check can be put in place that will work.

Figure 5 - Amended return on capital calculations

H19 =ROE_2*H13

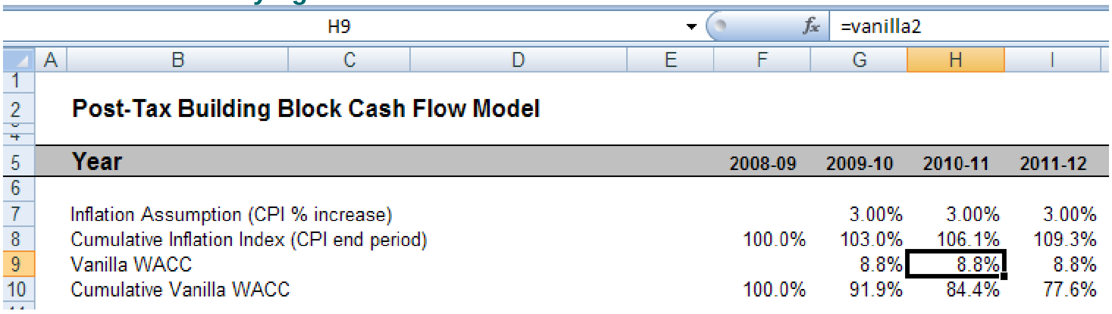
	A	B	C	D	E	F	G	H	I	J	K
1											
2		**Post-Tax Building Block Cash Flow Model**									
5		**Year**				2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
16		**Revenue Building Blocks**									
17		Nominal Vanilla WACC		8.82%			202.9	208.9	214.3	220.0	227.2
18		Return on Asset									
19		- Return on Equity		11.40%			104.9	108.0	110.8	113.7	117.4
20		- Return on Debt		7.10%			98.0	100.9	103.5	106.3	109.7

Figure 6 - Amended present value calculations

F52 =SUMPRODUCT(G52:BI52,$G$10:$BI$10)

	A	B	C	D	E	F	G	H	I	J
1										
2		**Post-Tax Building Block Cash Flow Model**								
5		**Year**				2008-09	2009-10	2010-11	2011-12	2012-13
48		**Cash Flow Analysis Below This Line**								
49										
50		**Net Present Values**								
51		RAB (start period)		**Project NPV Check**		**(0.0)**	2,300.0	2,368.6	2,430.2	2,494.4
52		PV for Returns on and of Asset Only				2,819.8	272.9	285.8	270.4	262.7
53		PV for Capex Only				525.1	138.7	138.5	120.2	123.8
54		PV for end of period assets				5.3	-	-	-	-

Figure 7 – New time varying discount rate added

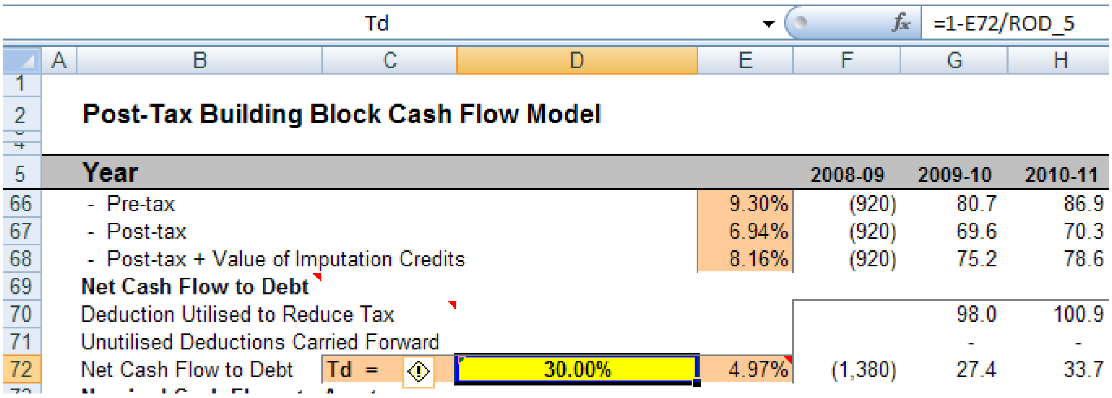


H9 | =vanilla2

Post-Tax Building Block Cash Flow Model

Year	2008-09	2009-10	2010-11	2011-12
Inflation Assumption (CPI % increase)		3.00%	3.00%	3.00%
Cumulative Inflation Index (CPI end period)	100.0%	103.0%	106.1%	109.3%
Vanilla WACC		8.8%	8.8%	8.8%
Cumulative Vanilla WACC	100.0%	91.9%	84.4%	77.6%

Figure 8 - Amended Td calculation



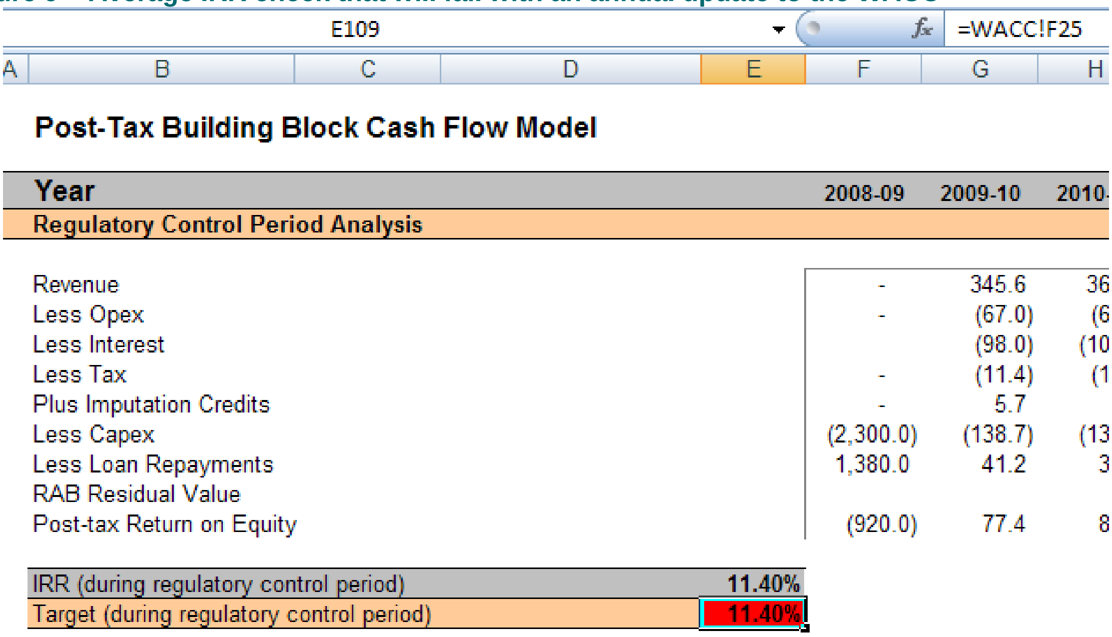
Td | =1-E72/ROD_5

Post-Tax Building Block Cash Flow Model

Year			2008-09	2009-10	2010-11
- Pre-tax		9.30%	(920)	80.7	86.9
- Post-tax		6.94%	(920)	69.6	70.3
- Post-tax + Value of Imputation Credits		8.16%	(920)	75.2	78.6
Net Cash Flow to Debt					
Deduction Utilised to Reduce Tax				98.0	100.9
Unutilised Deductions Carried Forward				-	-
Net Cash Flow to Debt Td =	30.00%	4.97%	(1,380)	27.4	33.7

The reason this calculation was calculated using the rate of return on debt in year 5 is because it will be equal the forecast rate in the determination PTRM and it will change each year until year 5. Any annual difference will be resolved in the revenue adjustment through the W-factor. It would be prefereable to have this calculated annually, but that complication may be undesirable.

Figure 9 – Average IRR check that will fail with an annual update to the WACC



E109 | =WACC!F25

Post-Tax Building Block Cash Flow Model

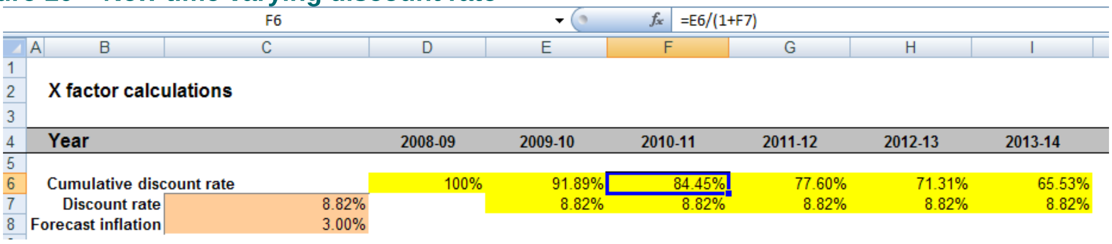
Year		2008-09	2009-10	2010-
Regulatory Control Period Analysis				
Revenue		-	345.6	36
Less Opex		-	(67.0)	(6
Less Interest			(98.0)	(10
Less Tax		-	(11.4)	(1
Plus Imputation Credits		-	5.7	
Less Capex		(2,300.0)	(138.7)	(13
Less Loan Repayments		1,380.0	41.2	3
RAB Residual Value				
Post-tax Return on Equity		(920.0)	77.4	8
IRR (during regulatory control period)	11.40%			
Target (during regulatory control period)	11.40%			

> X-factor page

The X-factor page would be used as per the normal determination. That is, when the AER is making its determination it would apply zero w-factor and solve only the x-factors. Then annually as the WACC parameters are update the revenue requirement will change accordingly. Therefore the smooth revenue cap will need to be amended. This would be done by way of a ‘w-factor’.

The w-factor should be solved on an annual basis so that the annual change in return on capital is reflected in the annual price paid by customers.

Figure 10 – New time varying discount rate

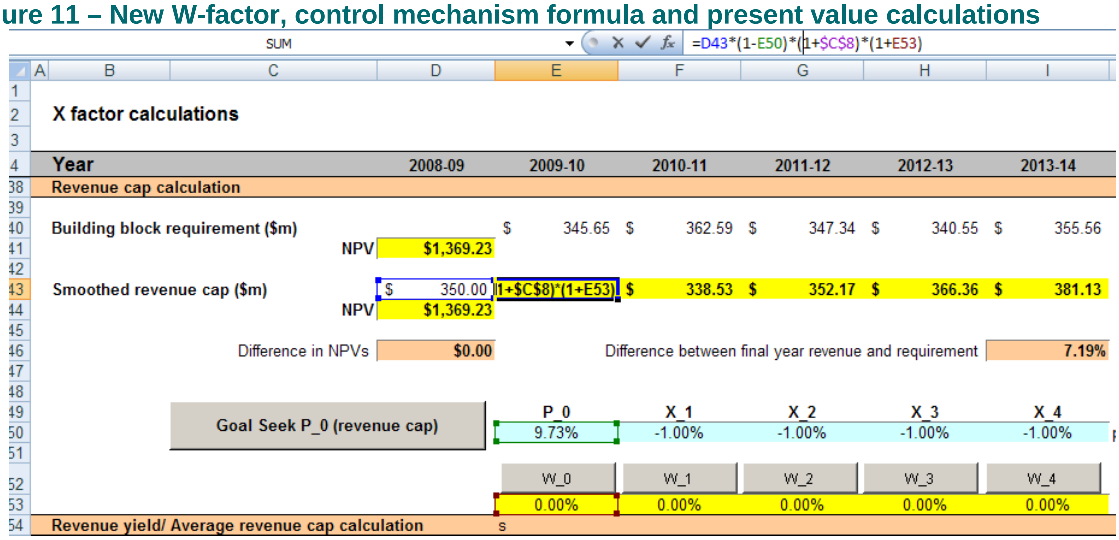


F6 =E6/(1+F7)

X factor calculations

Year		2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Cumulative discount rate		100%	91.89%	84.45%	77.60%	71.31%	65.53%
Discount rate	8.82%		8.82%	8.82%	8.82%	8.82%	8.82%
Forecast inflation	3.00%						

Figure 11 – New W-factor, control mechanism formula and present value calculations



SUM =D43*(1-E50)*(1+$C$8)*(1+E53)

X factor calculations

Year		2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Revenue cap calculation							
Building block requirement ($m)			$ 345.65	$ 362.59	$ 347.34	$ 340.55	$ 355.56
	NPV	$1,369.23					
Smoothed revenue cap ($m)		$ 350.00	1+$C$8)*(1+E53)	$ 338.53	$ 352.17	$ 366.36	$ 381.13
	NPV	$1,369.23					
	Difference in NPVs	$0.00	Difference between final year revenue and requirement				7.19%
Goal Seek P_0 (revenue cap)			P_0	X_1	X_2	X_3	X_4
			9.73%	-1.00%	-1.00%	-1.00%	-1.00%
			W_0	W_1	W_2	W_3	W_4
			0.00%	0.00%	0.00%	0.00%	0.00%
Revenue yield/ Average revenue cap calculation							

Appendix B – W-Factor PTRM

Refer to Attachment 9.2_Appendix B_W Factor PTRM.xlsm