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Supplement to the consultation on Electricity and Gas Input Methodologies: Cash flow timing for customised price-quality paths

Supplementary information on proposed changes to the input methodologies for CPPs for EDBs, GDBs and GTBs

Date: 31 August 2012

Draft input methodologies for CPP cash flow timing

Purpose

1. This paper contains the draft changes to the input methodologies (IMs) required to incorporate cash flow timing assumptions into customised price-quality paths (CPPs) for electricity distribution businesses (EDBs) and gas pipeline businesses (GDBs and GTBs).

Intra year cash flow timing assumptions for CPPs

2. On 10 August 2012, we issued a consultation paper proposing to change the CPP IMs for EDBs, GDBs and GTBs. The draft changes to the applicable provisions of the IMs contained in this paper are published for the purposes of informing our on-going consultation with interested parties pursuant to s 52X of the Commerce Act 1986.

3. The draft methodologies relate to the IMs for CPPs contained in the following determinations:

   - Decision 710, *Commerce Act (Electricity Distribution Services Input Methodologies) Determination 2010*, 22 December 2010 (as amended);

   - Decision 711, *Commerce Act (Gas Distribution Services Input Methodologies) Determination 2010*, 22 December 2010 (as amended);

   - Decision 712, *Commerce Act (Gas Transmission Services Input Methodologies) Determination 2010*, 22 December 2010 (as amended).

4. No changes are proposed as part of this consultation for IMs that relate to information disclosure regulation, or to default price-quality path regulation.

5. **Attachment A** to this paper contains the relevant draft input methodologies.

6. **Attachment B** to this paper contains additional explanatory material consisting of an algebraic derivation which demonstrates how cash flow timing assumptions can be incorporated into the CPP 'building blocks allowable revenue before tax' formula.

Next steps

7. You are invited to provide your views on the attached draft methodologies — submissions are due Friday **14 September 2012**.

8. Details of how interested parties can make submissions are contained in the paper titled 'Consultation on Electricity and Gas Input Methodologies: Cash flow timing for customised price-quality paths', 10 August 2012, located at:

   http://www.comcom.govt.nz/assets/Pan-Industry/Clarifications-and-amendments/Consultation-on-amendments-to-input-methodologies-CPP-cash-flow-timing-10-August-2012.PDF

Attachment A: Draft input methodologies

This attachment sets out the draft methodologies shown as changes to existing IMs for EDBs. Insertions are double-underlined and deletions are shown in strike-through text.

The same amendments proposed for EDBs below are also proposed in all material respects, and with all necessary modifications, for IMs for GDBs.

The proposed amendments for GTBs are shown separately below due to differences in the CPP building blocks formula reflecting the GTB regulatory tax allowance specification.

Proposed methodologies for EDBs (and equivalent methodologies for GDBs)

5.3.2 Building blocks allowable revenue before tax

(1) Building blocks allowable revenue before tax for each **disclosure year** of the **next period** is determined in accordance with the formula-

(**regulatory investment value** × *cost of capital* + **total value of commissioned assets** × (**TF**$_{VCA}$ - 1) + **term credit spread differential allowance** × **TF** - **total revaluation**) ÷ (~~1~~**TF**$_{rev}$ - **corporate tax rate** × **TF**)

+ (**total depreciation** × **(1 – corporate tax rate** × **TF)**

+ **total value of disposed assets**

+ **forecast operating expenditure** × **TF** × (**1 – corporate tax rate**)

- **other regulated income** × **TF** × **(1 – corporate tax rate)**

+ (**closing deferred tax** – **opening deferred tax**) × **(TF – 1)**

+ (**permanent differences** + **regulatory tax adjustments** - **utilised tax losses**) × ~~(~~**corporate tax rate** × **TF)** ÷ (~~1~~**TF**$_{rev}$ - **corporate tax rate** × **TF**)).

(2) Regulatory investment value means the amount obtained in accordance with the formula-

total opening RAB value + **opening deferred tax** ~~*+ RAB proportionate investment*~~.

(3) For the purpose of subclause (1~~2~~)~~, 'RAB proportionate investment' means the sum of proportionate value of each asset forecast to be **commissioned** less the sum of proportionate value of each **disposed asset**.~~

(a) 'total value of commissioned assets' means, in relation to a **disclosure year**, the sum of **closing RAB values** for all assets calculated in accordance with clause 5.3.6(3)(b); and

(b) 'total value of disposed assets' means, in relation to a **disclosure year**, the sum of **opening RAB values** for all **disposed assets**.

(4) For the purpose of subclause (1~~3~~)~~'proportionate value' means for~~

~~(a) an asset forecast to be **commissioned**, its **forecast value of commissioned asset** multiplied by the proportion of that **disclosure**~~

~~**year** in question from the forecast **commissioning date** to the end of that **disclosure year** out of the whole **disclosure year**; and~~

~~(b) a **disposed asset**, its **opening RAB value** multiplied by the proportion of the **disclosure year** in question from the start of that **disclosure year** to the date of sale or transfer out of the whole **disclosure year**.~~

(a) $\mathbf{PV_{VCA}}$ means the sum of the present value of **closing RAB values** for assets calculated in accordance with clause 5.3.6(3)(b), where each present value is determined by discounting each **closing RAB value** by the **cost of capital** from the relevant **commissioning date** to the commencement of the relevant **disclosure year**;

(b) **TF** is determined in accordance with the formula-

$$(1 + \textbf{cost of capital})^{182/365};$$

(c) $\mathbf{TF_{rev}}$ is determined in accordance with the formula-

$$(1 + \textbf{cost of capital})^{148/365}; \text{ and}$$

(d) $\mathbf{TF_{VCA}}$ is determined in accordance with the formula-

$$\mathbf{PV_{VCA}} \times (1 + \textbf{cost of capital}) \div \textbf{total value of commissioned assets}.$$

(5) For the purpose of ~~sub~~this clause ~~(1)~~, 'cost of capital' means the **75th percentile estimate of WACC** published most recently prior to submission of the **CPP proposal**, in respect of the term that the **Commission** has determined is the appropriate duration of the **CPP**.

(6) Forecast operating expenditure means, in relation to a **CPP proposal** -

(a) that has not been assessed by the **Commission**, the amount of **operating expenditure** for the relevant **disclosure year** included by the **CPP applicant** in its **opex forecast**; or

(b) undergoing assessment by the **Commission**, the amount of **operating expenditure** determined for the relevant **disclosure year** by the **Commission** after assessment of the amount in paragraph (a) against the **expenditure objective**.

(7) Other regulated income means income associated with the **supply** of **electricity distribution services** other than-

(a) through **prices**;

(b) investment-related income;

(c) **capital contributions**; or

(d) **vested assets**.

(8) For the purpose of this clause, all values and amounts are expressed in nominal terms unless otherwise specified.

5.4.7 Proposed building blocks allowable revenue [note: cl. 5.5.5 for GDBs]

(1) A **CPP proposal** must contain amounts for-

(a) **building blocks allowable revenue before tax** for each **disclosure year** of the **next period**; and

(b) **building blocks allowable revenue after tax** for each **disclosure year** of the **next period**.

(2) A **CPP proposal** must contain all data, information, calculations and assumptions used to determine the amounts required by subclause (1), including but not limited to-

(a) amounts or forecasts of-

(i) **regulatory investment value**;

(ii) **total value of commissioned assets** determined in accordance with clause 5.3.2(3)(a);

(iii) **total value of disposed assets** determined in accordance with clause 5.3.2(3)(b);

(~~ii~~iv) **total depreciation**;

(~~iii~~v) **total revaluation**; and

(~~iv~~vi) **other regulated income**;

(b) all data, information, calculations and assumptions used to derive amounts or forecasts of $\mathbf{TF}_{VCA,}$ $\mathbf{PV}_{VCA,}$ **TF**, and $\mathbf{TF}_{rev}$ determined in accordance with clause 5.3.2(4);

(~~b~~c) all data, information, calculations and assumptions used to derive the forecasts of **other regulated income** provided pursuant to paragraph (a);

(~~c~~d) **forecast operating expenditure**; and

(~~d~~e) any proposed **term credit spread differential allowance**.

(3) A **CPP proposal** must contain the following information:

(a) actual **other regulated income** for each **disclosure year** of the **current period**; and

(b) data, calculations and assumptions demonstrating how the forecast of **other regulated income** provided pursuant to subclause (2)(a)(iv) is consistent with information provided in accordance with paragraph (a).

(4) All calculations, values and amounts required by this clause must be presented in a spreadsheet format which -

(a) clearly demonstrates how **building blocks allowable revenue before tax** and **building blocks allowable revenue after tax** for each **disclosure year** of the **next period** have been derived using the formulae specified in clauses 5.3.2 and 5.3.3; and

(b) where data has been computed or derived from other values on the spreadsheet through the use of formulae, makes the underlying formulae accessible.

Proposed methodologies for GTBs

5.3.2 Building blocks allowable revenue before tax

(1) Building blocks allowable revenue before tax for each **disclosure year** of the **next period**, is, subject to subclause (2), determined in accordance with the formula-

(**regulatory investment value** × *cost of capital* + **total value of commissioned assets** × (**TF**$_{VCA}$ - 1) + **term credit spread differential allowance** × **TF** - **total revaluation**) ÷ (1~~-~~**TF**$_{rev}$ - **corporate tax rate** × **TF**)

+ (**total depreciation** × **(1 – corporate tax rate** × **TF)**

+ **total value of disposed assets**

+ **forecast operating expenditure** × **TF** × (**1 – corporate tax rate**)

- **other regulated income** × **TF** × **(1 – corporate tax rate)**

+ (**permanent differences** + **positive temporary differences** - **negative temporary differences** - **tax depreciation** - **notional deductible interest** - **utilised tax losses**) × ~~(~~**corporate tax rate** × **TF)** ÷ (1~~-~~**TF**$_{rev}$ - **corporate tax rate** × **TF**)).

(2) For the purpose of subclause (1), where regulatory net taxable income determined in accordance with clause 5.3.13(2), is negative using, for the purpose of clause 5.3.13(4), the amount of building blocks allowable revenue before tax determined in accordance with subclause (1), building blocks allowable revenue before tax is determined in accordance with the formula-

(**regulatory investment value** × *cost of capital* + **total value of commissioned assets** × (**TF**$_{VCA}$ - 1) + **term credit spread differential allowance** × **TF** - **total revaluation** + **total depreciation** + **total value of disposed assets**) ÷ **TF**$_{rev}$

+ **forecast operating expenditure** × **TF** ÷ **TF**$_{rev}$

- **other regulated income** × **TF** ÷ **TF**$_{rev}$.

(3) Regulatory investment value means ~~the amount obtained in accordance with the formula~~ **total opening RAB value** ~~+ *RAB proportionate investment*~~.

(4) For the purpose of subclauses (1~~3~~) and (2), ~~'RAB proportionate investment' means the sum of proportionate value of each asset forecast to be~~ **commissioned** ~~less the sum of proportionate value of each~~ **disposed asset**~~-~~

(a) 'total value of commissioned assets' means, in relation to a **disclosure year**, the sum of **closing RAB values** for all assets calculated in accordance with clause 5.3.6(3)(b); and

(b) 'total value of disposed assets' means, in relation to a **disclosure year**, the sum of **opening RAB values** for all **disposed assets**..

(5) For the purpose of subclauses (1~~4~~) and (2), ~~'proportionate value' means for-~~

~~(a) an asset forecast to be~~ **commissioned,** ~~its~~ **forecast value of commissioned asset** ~~multiplied by the proportion of that~~ **disclosure year** ~~in question from the forecast~~ **commissioning date** ~~to the end of that~~ **disclosure year** ~~out of the whole~~ **disclosure year**~~; and~~

~~(b) a **disposed asset**, its **opening RAB value** multiplied by the proportion of the **disclosure year** in question from the start of that **disclosure year** to the date of sale or transfer out of the whole **disclosure year**.~~

(a) **PV_{VCA}** means the sum of the present value of **closing RAB values** for assets calculated in accordance with clause 5.3.6(3)(b), where each present value is determined by discounting each **closing RAB value** by the **cost of capital** from the relevant **commissioning date** to the commencement of the relevant **disclosure year**;

(b) **TF** is determined in accordance with the formula-

$$(1 + \textbf{cost of capital})^{182/365};$$

(c) **TF_{rev}** is determined in accordance with the formula-

$$(1 + \textbf{cost of capital})^{148/365}; \text{ and}$$

(d) **TF_{VCA}** is determined in accordance with the formula-

$$PV_{VCA} \times (1 + \textbf{cost of capital}) \div \textbf{total value of commissioned assets}.$$

(6) For the purpose of ~~sub~~this clause ~~(1)~~, 'cost of capital' means the **75th percentile estimate of WACC** published most recently prior to submission of the **CPP proposal**, in respect of the term that the **Commission** has determined is the appropriate duration of the **CPP**.

(7) Forecast operating expenditure means, in relation to a **CPP proposal**-

(a) that has not been assessed by the **Commission**, the amount of **operating expenditure** for the relevant **disclosure year** included by the **CPP applicant** in its **opex forecast**; or

(b) undergoing assessment by the **Commission,** the amount of **operating expenditure** determined for the relevant **disclosure year** by the **Commission** after assessment of the amount in paragraph (a) against the **expenditure objective**.

(8) Other regulated income means income associated with the **supply** of **gas transmission services** other than-

(a) through **prices**;

(b) investment-related income;

(c) **capital contributions**; or

(d) **vested assets**.

(9) For the purpose of this clause, all values and amounts are expressed in nominal terms unless otherwise specified.

5.5.5 Proposed building blocks allowable revenue

(1) A **CPP proposal** must contain amounts for-

(a) **building blocks allowable revenue before tax** for each **disclosure year** of the **next period**; and

(b) **building blocks allowable revenue after tax** for each **disclosure year** of the **next period**.

(2) A **CPP proposal** must contain all data, information, calculations and assumptions used to determine the amounts required by subclause (1), including but not limited to-

(a) amounts or forecasts of-

(i) **regulatory investment value**;

(ii) **total value of commissioned assets** determined in accordance with clause 5.3.2(4)(a);

(iii) **total value of disposed assets** determined in accordance with clause 5.3.2(4)(b);

(iv) **total depreciation**;

(~~iii~~v) **total revaluation**;

(~~iv~~vi) **regulatory tax allowance**; and

(~~v~~vii) **other regulated income**;

(b) all data, information, calculations and assumptions used to derive amounts or forecasts of $\mathbf{TF}_{VCA,}$ $\mathbf{PV}_{VCA,}$ **TF**, and $\mathbf{TF}_{rev}$ determined in accordance with clause 5.3.2(5);

(~~b~~c) all data, information, calculations and assumptions used to derive the forecasts of **other regulated income** provided pursuant to paragraph (a);

(~~c~~d) **forecast operating expenditure**; and

(~~d~~e) any proposed **term credit spread differential allowance**.

(3) A **CPP proposal** must contain the following information:

(a) actual **other regulated income** for each **disclosure year** of the **current period**; and

(b) data, calculations and assumptions demonstrating how the forecast of **other regulated income** provided pursuant to subclause (2)(a)(v) is consistent with information provided in accordance with paragraph (a).

(4) All calculations, values and amounts required by this clause must be presented in a spreadsheet format which-

(a) clearly demonstrates how **building blocks allowable revenue before tax** and **building blocks allowable revenue after tax** for each **disclosure year** of the **next period** have been derived using the formulae specified in clauses 5.3.2 and 5.3.3; and

(b) where data has been computed or derived from other values on the spreadsheet through the use of formulae, makes the underlying formulae accessible.

Attachment B: Derivation of CPP building blocks revenue formula

Derivation for deferred tax approach (EDBs and GDBs)

We derive in this part of the attachment a formula for the Annual Revenue Requirement of a regulated business subject to a customised price path where a deferred tax approach is used for the determination of the tax allowance. The formula accommodates given cash flow timing assumptions, the opening RAB at the start of the year, the operating expenditure, change in the deferred tax balance in the year and a number of other variables.

This derivation focuses on just one year in a regulatory period, not on a multi-year regulatory period as a whole. It is intended that the formulas derived would be applied to determine the building blocks revenue for each year, which would then need to be "smoothed" to form a CPI minus X price path.

This note first covers preliminary matters before setting out the derivation proper. The preliminary matters are defining variables, discussion of timing factors (used with respect to intra-year cash flow timing) and setting out the set of fundamental equations on which the derivation is based.

Variable definitions

Input variables[1]

RAB_0	RAB at start of the year
DT_0	Deferred tax asset value at the start of the year
WACC	Weighted Average Cost of Capital (used as the discount rate)
O	Operating Expenditure, net of pass through costs and recoverable costs
D	Regulatory Depreciation
D_{tax}	Tax Depreciation
TCSD	Term Credit Spread Differential Allowance
NDI	Notional Deductible Interest (which includes TCSD)
PD	Permanent Differences
Reval	Revaluation
VCA	Value of Commissioned Assets
t	Company tax rate
RTA	Regulatory Tax Adjustments
ΔDT	Increase in deferred tax asset value during the year
Dispos	Sum of the opening RAB value of assets disposed of during the year
ORI	Other Regulated Income

[1] These "Input Variables" are inputs to this derivation, not necessarily inputs to a spreadsheet model. For example, they include regulatory depreciation which is treated as a given input in this derivation, but it will be calculated from other parameters in any spreadsheet model.

Derived values (i.e. formulas are provided in this derivation)

RAB_1	RAB at end of the year
DT_1	Deferred tax asset value at the end of the year
TP	Tax Payable
TA	Tax Allowance
Rev	Revenue requirement from prices for the year,ie, building blocks revenue before tax[2]
RIV	Regulatory Investment Value

Present value functions

$PV_{start}()$	Present value as at the start of the year
$PV_{end}()$	Present value as at the end of the year
PVVCA	Present value, as at the start of the year, of the value of commissioned assets, the timing of the associated nominal cash flows being the commissioning dates

Timing Factors (Other than the timing factor for asset commissioning and disposed assets)

A Timing Factor (TF) reflects the year-end value of a cash flow that occurs part-way through the year. For example, operating expenditure, tax payments and interest payments are assumed to occur at mid year, so half a year of discounting at WACC is required to determine the equivalent value at year-end. Thus:

$$TF_{opex} = (1 + WACC)^{182/365}$$

$$TF_{tax} = (1 + WACC)^{182/365}$$

$$TF_{ORI} = (1 + WACC)^{182/365}$$

$$TF_{TCSD} = (1 + WACC)^{182/365}$$

These can be redefined as a single TF factor – 'TF' – reflecting a mid year cash flow timing assumption, and this is in fact done as part of the implementation of the CPP building blocks formula section of this attachment (see below).

Revenue has been assumed to occur with timing equivalent to being received on 3 November each year for suppliers with a 31 March regulatory balance date[3]. There are 148 days between 3 November and the end of the financial year on the following 31 March, which means that the timing factor for revenue is given by:

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[2] This is the revenue amount, excluding other regulatory income, received on the revenue date during the year, not an amount expressed in year-end terms.

[3] The 3 November date is proposed as it is equivalent (in time value of money terms) to revenues being received in 12 equal monthly instalments on the 20th of the month following the provision of the service.

$$TF_{rev} = (1 + WACC)^{148/365}$$

This timing factor is also appropriate for regulated suppliers with regulatory balance date other than 31 March (such as gas suppliers with a 30 June or 31 December balance date).

These TF values are applied when calculating the PVend() of a cash flow. For example:

$$PV_{end}(Rev) = Rev * TF_{rev}$$

The $PV_{end}()$ function can be applied in a similar fashion for each of the other cash flows.

Timing Factor for asset commissioning

The Commission's consultation document proposes that the intra-year timing of asset commissioning to reflect application-specific assumptions, rather than having an industry-wide timing assumption determined by the Commission.

To accommodate this flexibility, each applicant must calculate the present value of its proposed value of commissioned assets for each year of the regulatory period using the WACC as the discount rate.

If the total value of assets commissioned in a year is denoted as "VCA", and the present value of the series of individual amounts in a year is denoted by "PVVCA", then the timing factor for the commissioned assets shall be calculated according to the formula for TF_{VCA} derived below. The present value for each year would be as at the first day of that year.

As PVVCA is the value of the commissioned assets discounted to the start of the year, the following quantity will be the value of the commissioned assets discounted to the end of the year:

$$PVVCA * (1 + WACC)$$

The timing factor TF_{VCA} is the factor that relates the sum of the individual values of commissioned assets to the value discount to the end of the year, such that:

$$\text{Value of commissioned assets discounted to year-end} = TF_{VCA} * VCA$$

Equating these two methods of expressing the year-end values gives:

$$PVVCA * (1 + WACC) = TF_{VCA} * VCA$$

Therefore: $TF_{VCA} = PVVCA * (1 + WACC) / VCA$

Proceeds of sale of disposed assets and costs of disposal

It would be possible to model the cash flows associated with the proceeds of sale of disposed assets and the costs of disposal. However for the purpose of this derivation, no

such amounts have been modelled, which is consistent with the approach used in the 2010 input methodologies for customised price paths.

Equations on which this derivation is based

The equations which form the basis of this derivation are as follows:

Financial Capital Maintenance equation

The following equation expresses the financial capital maintenance approach of having the opening total value[4] of the assets equal to the sum of

- the present value of cash flows over a year plus
- the discounted total asset value at the end of that year.

$$RAB_0 + DT_0 = PV_{start}(\text{Cash flows}) + (RAB_1 + DT_1)/(1 + WACC) \quad 1$$

When applying this equation, the commissioning of an asset or the disposal of an asset is treated as if it generates a cash flow on the basis that at the time of asset commissioning, the supplier is treated as having to have paid the "value of commissioned asset", which includes an allowance for finance during construction.

RAB roll-forward equation

The roll-forward of the RAB from one year to the next[5] is given by:

$$RAB_1 = RAB_0 + VCA - D + Reval - Dispos \quad 2$$

Tax Allowance

The tax allowance, in the absence of tax losses, is given by: [6]

$$TA = (Rev + ORI - O - D + PD + RTA) * t \quad 3$$

Deferred tax balance roll-forward

The roll-forward of the deferred tax balance from one year to the next is given by:

$$DT_1 = DT_0 + \Delta DT \quad 4$$

Tax payable

The formula for tax payable is as follows:

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4 This total opening value includes the value of the deferred tax asset

5 This RAB roll-forward equation is consistent with the RAB roll-forward approach in the EDB IM of December 2010, Clauses and 2.2.4 and 5.3.6, (and equivalent clauses in the GDB IMs).

6 This tax allowance equation is consistent with the tax allowance approach in clause 5.3.13 of the 2010 Input Methodologies Determinations for EDBs (and equivalent clauses in the GDB IMs).

$$TP = TA + \Delta DT \qquad 5$$

Year-end present values, relative to year-start

The present value of a set of cash flows as at the end of the year is (1 + WACC) multiplied by the present value at the start of the year:

$$PV_{end}(\text{Cash flows}) = PV_{start}(\text{Cash flows}) * (1+ WACC) \qquad 6$$

Derivation

The derivation of a non-circular formula for the annual revenue requirement is set out below, based on the 6 equations above (Equations 1 to 6).

Equation 1 multiplied by (1 + WACC) becomes, after applying Equation 6:
$(RAB_0 + DT_0) * (1 + WACC) = PV_{end}(\text{Cash flows}) + RAB_1 + DT_1$

Subtracting $(RAB_0 + DT_0)$ from each side of this equation gives:
$(RAB_0 + DT_0) * WACC = PV_{end}(\text{Cash flows}) + RAB_1 - RAB_0 + DT_1 - DT_0$

Recognising that the cash flows comprise Rev, O, VCA, TCSD, TP and ORI, and applying Equation 4 gives:
$(RAB_0 + DT_0) * WACC = PV_{end}(\text{Rev, O, VCA, TCSD, TP and ORI}) + RAB_1 - RAB_0 + \Delta DT$

Equation 2 indicates that $RAB_1 - RAB_0 = VCA - D + Reval - Dispos$, and applying this to the equation above gives:
$(RAB_0 + DT_0) * WACC = PV_{end}(\text{Rev, O, VCA, TCSD, TP and ORI}) +$
$VCA - D + Reval - Dispos + \Delta DT$

Expanding the $PV_{end}()$ function above using the timing factors gives:
$(RAB_0 + DT_0) * WACC = Rev*TF_{rev} - O*TF_{opex} - VCA*TF_{VCA} - TCSD * TF_{TCSD} - TP*TF_{tax} +$
$ORI*TF_{ORI} + VCA - D + Reval - Dispos + \Delta DT \qquad 7$

We define the variable, Regulatory Investment Value (RIV) as follows:
$RIV = RAB_0 + DT_0$

Substituting , in Equation 7, the variable RIV for $RAB_0 + DT_0$ and substituting the right-hand-side of Equation 5 for TP gives:

$RIV * WACC = Rev*TF_{rev} - O*TF_{opex} - VCA*TF_{VCA} - TCSD * TF_{TCSD} -$
$(TA + \Delta DT) *TF_{tax} +$
$ORI*TF_{ORI} + VCA - D + Reval - Dispos + \Delta DT \qquad 8$

The expression for TA in Equation 3 is:

$$TA = (Rev + ORI - O - D + PD + RTA) * t$$

Substituting the right-hand-side of this expression for TA in Equation 8 gives:

$$\begin{aligned} RIV * WACC = {} & Rev*TF_{rev} - O*TF_{opex} - VCA*TF_{VCA} - TCSD * TF_{TCSD} - \\ & ((Rev + ORI - O - D + PD + RTA) * t + \Delta DT) *TF_{tax} + \\ & ORI*TF_{ORI} + VCA - D + Reval - Dispos + \Delta DT \end{aligned} \quad 9$$

Collecting terms in Rev to the left-hand-side gives:

$$\begin{aligned} Rev*(TF_{rev} - t * TF_{tax}) = {} & RIV * WACC + O*TF_{opex} + VCA*TF_{VCA} + TCSD * TF_{TCSD} \\ & +((ORI - O - D + PD + RTA) * t + \Delta DT) *TF_{tax} \\ & -ORI*TF_{ORI} - VCA + D - Reval + Dispos - \Delta DT \end{aligned}$$

Dividing both sides of this equation by $TF_{rev} - t * TF_{tax}$ gives:

$$\begin{aligned} Rev = {} & \big(RIV * WACC + O*TF_{opex} + VCA*TF_{VCA} + TCSD * TF_{TCSD} - Reval\big)/(TF_{rev} - t * TF_{tax}) \\ & +\big(((ORI - O - D + PD + RTA) * t + \Delta DT) *TF_{tax} \\ & -ORI*TF_{ORI} - VCA + D + Dispos - \Delta DT\big)/(TF_{rev} - t * TF_{tax}) \end{aligned}$$

Collecting terms in O together, and collecting terms in D together gives:

$$\begin{aligned} Rev = {} & \big(RIV * WACC + VCA*TF_{VCA} + TCSD * TF_{TCSD}\big)/(TF_{rev} - t * TF_{tax}) \\ & + \big(O*TF_{opex} - O * t * TF_{tax} \\ & + D - D * t * TF_{tax} \\ & + ((ORI + PD + RTA) * t + \Delta DT) *TF_{tax} \\ & - ORI*TF_{ORI} - VCA - Reval + Dispos - \Delta DT\big)/(TF_{rev} - t * TF_{tax}) \end{aligned}$$

Similarly collecting terms in VCA, ORI and ΔDT together gives:

$$\begin{aligned} Rev = {} & \big(RIV * WACC + VCA*TF_{VCA} - VCA + TCSD * TF_{TCSD}\big)/(TF_{rev} - t * TF_{tax}) \\ & + \big(O*TF_{opex} - O * t * TF_{tax} \\ & + D - D * t * TF_{tax} \\ & - ORI*TF_{ORI} + ORI * t * TF_{tax} \\ & + \Delta DT * TF_{tax} - \Delta DT \\ & + (PD + RTA) * t * TF_{tax} \\ & - Reval + Dispos\big)/(TF_{rev} - t * TF_{tax}) \end{aligned}$$

Taking out the common factors VCA, O, D and ΔDT gives, after some re-ordering:

$$\begin{aligned} Rev = {} & \big(RIV * WACC + VCA*(TF_{VCA} - 1) + TCSD * TF_{TCSD} - Reval\big)/(TF_{rev} - t * TF_{tax}) \\ & + \big(O*(TF_{opex} - t * TF_{tax})\end{aligned}$$

$$
\begin{aligned}
&+ D * (1 - t * TF_{tax}) \\
&- ORI*(TF_{ORI} - t * TF_{tax}) \\
&+ \Delta DT*(TF_{tax} - 1) \\
&+ (PD + RTA) * t *TF_{tax} - \\
&+ Dispos\big)/(TF_{rev} - t * TF_{tax}) \qquad 10
\end{aligned}
$$

In implementing Equation 10, we take the value of TF_{TCSD}, TF_{opex}, TF_{tax} and TF_{ORI} to be equal to each other as the timing to which each of these factors relates is mid year timing, or TF_{mid}.

Making these changes in Equation 10 gives:

$$
\begin{aligned}
Rev = \big(&RIV * WACC + VCA*(TF_{VCA} - 1) + TCSD * TF_{mid} - Reval\big)/(TF_{rev} - t * TF_{mid}) \\
&+ \big(D * (1 - t * TF_{mid}) + Dispos \\
&+ O* TF_{mid} * (1 - t) \\
&- ORI* TF_{mid} * (1 - t) \\
&+ \Delta DT*(TF_{mid} - 1) \\
&+ (PD + RTA) * t *TF_{mid}\big)/(TF_{rev} - t * TF_{mid}) \qquad 11
\end{aligned}
$$

Implementation of formula in existing CPP IM

Substituting the terms in equation 11 above with the equivalent defined terms for building blocks allowable revenue before tax[7] in the existing IM determination gives the following corresponding expressions (existing defined terms in the IMs are **bolded**):

(**regulatory investment value** × **cost of capital** + total value of commissioned assets × (TF_{VCA} - 1) + **term credit spread differential allowance** × TF - **total revaluation**) ÷ (TF_{rev} - **corporate tax rate** × TF)

+ (**total depreciation ×** (1 – **corporate tax rate** × TF)

+ total value of disposed assets

+ **forecast operating expenditure** × TF × (1 – **corporate tax rate**)

- **other regulated income** × TF × (1 – **corporate tax rate**)

[7] **Building blocks allowable revenue before tax =** (**regulatory investment value** × *cost of capital* + **term credit spread differential allowance** - **total revaluation***)* ÷ (1- **corporate tax rate**)
+ **total depreciation**
+ **forecast operating expenditure**
- **other regulated income**
+ (**permanent differences** + **regulatory tax adjustments** - **utilised tax losses**) ×
(**corporate tax rate** ÷ (1- **corporate tax rate**)).

+ (**closing deferred tax – opening deferred tax**) × (TF – 1)

+ (**permanent differences** + **regulatory tax adjustments** - **utilised tax losses**) × **corporate tax rate** × TF) ÷ (TF_{rev} - **corporate tax rate** × TF)).

Additional required definitions

1. **TF** = $(1 + WACC)^{182/365}$

2. $\mathbf{TF_{rev}} = (1 + WACC)^{148/365}$

3. $\mathbf{TF_{VCA}} = \mathbf{PV_{VCA}}$ x (1 + **WACC**) / **VCA**

4. $\mathbf{PV_{VCA}}$ is the sum **value of commissioned asset** discounted to the start of the year using **WACC** as the discount rate

5. **Total value of commissioned assets** is the sum value of assets commissioned in the year (ie, the closing RAB values which are the value of commissioned assets).

6. **Total value of disposed assets** is the sum value of assets disposed in the year (ie, the opening RAB values).

Derivation for tax payable approach (GTBs)

We derive in this part of the attachment a formula for the Annual Revenue Requirement of a regulated business subject to a customised price path where a tax payable approach is used for the determination of the tax allowance. The formula accommodates given cash flow timing assumptions, the opening RAB at the start of the year, the operating expenditure, tax permanent and temporary differences and a number of other variables.

This derivation focuses on just one year in a regulatory period, not on a multi-year regulatory period as a whole. It is intended that the formulas derived would be applied to determine the building blocks revenue for each year, which would then need to be "smoothed" to form a CPI minus X price path.

This note first covers preliminary matters before setting out the derivation proper. The preliminary matters are defining variables, discussion of timing factors (used with respect to intra-year cash flow timing) and setting out the set of fundamental equations on which the derivation is based.

Variable definitions

Input variables[8]

RAB_0	RAB at start of the year
WACC	Weighted Average Cost of Capital (used as the discount rate)
O	Operating Expenditure, net of pass through costs and recoverable costs
D	Regulatory Depreciation
TCSD	Term Credit Spread Differential Allowance
NDI	Notional Deductible Interest (which includes TCSD)
PD	Permanent Differences
TD	Temporary Differences
Reval	Revaluation
VCA	Value of Commissioned Assets
t	Company tax rate
Dispos	Sum of the opening RAB value of assets disposed of during the year
ORI	Other Regulated Income

Derived values (i.e. formulas are provided in this derivation)

RAB_1	RAB at end of the year
DT_1	Deferred tax asset value at the end of the year
TP	Tax Payable
TA	Tax Allowance
Rev	Revenue requirement from prices for the year, ie, building blocks revenue

[8] These "Input Variables" are inputs to this derivation, not necessarily inputs to a spreadsheet model. For example, they include regulatory depreciation which is treated as a given input in this derivation, but it will be calculated from other parameters in any spreadsheet model.

	before tax[9]
RIV	Regulatory Investment Value

Present value functions

$PV_{start}()$	Present value as at the start of the year
$PV_{end}()$	Present value as at the end of the year
PVVCA	Present value, as at the start of the year, of the value of commissioned assets, the timing of the associated nominal cash flows being the commissioning dates

Timing Factors (Other than the timing factor for asset commissioning and disposed assets)

A Timing Factor (TF) reflects the year-end value of a cash flow that occurs part-way through the year. For example, operating expenditure, tax payments and interest payments are assumed to occur at mid year, so half a year of discounting at WACC is required to determine the equivalent value at year-end. Thus:

$$TF_{opex} = (1 + WACC)^{182/365}$$

$$TF_{tax} = (1 + WACC)^{182/365}$$

$$TF_{ORI} = (1 + WACC)^{182/365}$$

$$TF_{TCSD} = (1 + WACC)^{182/365}$$

These can be redefined as a single TF factor – 'TF' – reflecting a mid year cash flow timing assumption, and this is in fact done as part of the implementation of the CPP building blocks formula section of this attachment (see below).

Assuming a timing of revenue consistent with the derivation for deferred tax approach (see above) the timing factor for revenue is given by:

$$TF_{rev} = (1 + WACC)^{148/365}$$

These TF values are applied when calculating the $PV_{end}()$ of a cash flow. For example:

$$PV_{end}(Rev) = Rev * TF_{rev}$$

The $PV_{end}()$ function can be applied in a similar fashion for each of the other cash flows.

[9] This is the revenue amount, excluding other regulatory income, received on the revenue date during the year, not an amount expressed in year-end terms.

Timing Factor for asset commissioning

The Commission's consultation document proposes that the intra-year timing of asset commissioning to reflect application-specific assumptions, rather than having an industry-wide timing assumption determined by the Commission.

To accommodate this flexibility, each applicant must calculate the present value of its proposed value of commissioned assets for each year of the regulatory period using the WACC as the discount rate.

If the total value of assets commissioned in a year is denoted as "VCA", and the present value of the series of individual amounts in a year is denoted by "PVVCA", then the timing factor for the commissioned assets shall be calculated according to the formula for TF_{VCA} derived below. The present value for each year would be as at the first day of that year.

As PVVCA is the value of the commissioned assets discounted to the start of the year, the following quantity will be the value of the commissioned assets discounted to the end of the year:

$$PVVCA * (1 + WACC)$$

The timing factor TF_{VCA} is the factor that relates the sum of the individual values of commissioned assets to the value discount to the end of the year, such that:

$$\text{Value of commissioned assets discounted to year-end} = TF_{VCA} * VCA$$

Equating these two methods of expressing the year-end values gives:

$$PVVCA * (1 + WACC) = TF_{VCA} * VCA$$

Therefore: $TF_{VCA} = PVVCA * (1 + WACC) / VCA$

Proceeds of sale of disposed assets and costs of disposal

It would be possible to model the cash flows associated with the proceeds of sale of disposed assets and the costs of disposal. However for the purpose of this derivation, no such amounts have been modelled, which is consistent with the approach used in the 2010 input methodologies for customised price paths.

Equations on which this derivation is based

The equations which form the basis of this derivation are as follows:

Financial Capital Maintenance equation

The following equation expresses the financial capital maintenance approach of having the opening total value[10] of the assets equal to the sum of

- the present value of cash flows over a year plus
- the discounted total asset value at the end of that year.

$$RAB_0 + DT_0 = PV_{start}(\text{Cash flows}) + (RAB_1 + DT_1)/(1 + WACC)$$

where DT_0 and DT_1 refer to the deferred tax balance at the start and the end of the year respectively.

When applying this equation, the commissioning of an asset or the disposal of an asset is treated as if it generates a cash flow on the basis that at the time of asset commissioning, the supplier is treated as having to have paid the "value of commissioned asset", which includes an allowance for finance during construction.

In the context of a tax payable approach, the tax allowance is set equal to tax payable, which means that no amount of deferred tax arises, i.e. $DT_0 = DT_1 = 0$. Thus the equation above becomes:

$$RAB_0 = PV_{start}(\text{Cash flows}) + RAB_1/(1 + WACC) \quad (1)$$

RAB roll-forward equation

The roll-forward of the RAB from one year to the next is given by:

$$RAB_1 = RAB_0 + VCA - D + Reval - Dispos \quad (2)$$

Tax Allowance

The tax allowance, in the absence of tax losses, is given by: [11]

$$TA = (Rev + ORI - O - D + PD + TD - NDI) * t \quad (3)$$

Tax payable

For the tax payable approach, the tax payable amount is equal to the tax allowance:

$$TP = TA \quad (4)$$

[10] This total opening value includes the value of the deferred tax asset.

[11] This tax allowance equation is consistent with the tax allowance approach in Clause 5.3.13 of the 2010 Input Methodologies Determinations for GTBs.

Year-end present values, relative to year-start

The present value of a set of cash flows as at the end of the year is (1 + WACC) multiplied by the present value at the start of the year:

$$PV_{end}(\text{Cash flows}) = PV_{start}(\text{Cash flows}) * (1+ \text{WACC}) \quad 5$$

Derivation

The derivation of a non-circular formula for the annual revenue requirement is set out below, based on the 5 equations above (Equations 1 to 5).

Equation 1 multiplied by (1 + WACC) becomes, after applying Equation 6:
$RAB_0 * (1 + \text{WACC}) = PV_{end}(\text{Cash flows}) + RAB_1$

Subtracting RAB_0 from each side of this equation gives:
$RAB_0 * \text{WACC} = PV_{end}(\text{Cash flows}) + RAB_1 - RAB_0$

Recognising that the cash flows comprise Rev, O, VCA, TCSD, TP and ORI, and applying Equation 4 gives:
$RAB_0 * \text{WACC} = PV_{end}(\text{Rev, O, VCA, TCSD, TP and ORI}) + RAB_1 - RAB_0$

Equation 2 indicates that $RAB_1 - RAB_0 = \text{VCA} - \text{D} + \text{Reval} - \text{Dispos}$, and applying this to the equation above gives:

$$RAB_0 * \text{WACC} = PV_{end}(\text{Rev, O, VCA, TCSD, TP and ORI}) + \text{VCA} - \text{D} + \text{Reval} - \text{Dispos} \quad 6$$

Expanding the $PV_{end}()$ function above using the timing factors gives:

$$RAB_0 * \text{WACC} = \text{Rev}*TF_{rev} - \text{O}*TF_{opex} - \text{VCA}*TF_{VCA} - \text{TCSD} * TF_{TCSD} - \text{TP}*TF_{tax} + \text{ORI}*TF_{ORI} + \text{VCA} - \text{D} + \text{Reval} - \text{Dispos} \quad 7$$

Rearranging this equation 7 and substituting the expression for TA from Equation 4 into this equation gives:

$$\text{Rev}*TF_{rev} = RAB_0 * \text{WACC} + \text{VCA}*(TF_{VCA} - 1) + \text{TCSD} * TF_{TCSD} - \text{Reval} + \text{D} + \text{Dispos} + \text{O}*TF_{opex} + \text{TA}*TF_{tax} - \text{ORI}*TF_{ORI} \quad 8$$

The expression for TA in Equation 3 is:

$$\text{TA} = (\text{Rev} + \text{ORI} - \text{O} - \text{D} + \text{PD} + \text{TD} - \text{NDI}) * t$$

Substituting the right-hand-side of this expression for TA in Equation 8 gives:

$$\text{Rev}*TF_{rev} = RAB_0 * \text{WACC} + \text{VCA}*(TF_{VCA} - 1) + \text{TCSD} * TF_{TCSD} - \text{Reval} + \text{D} + \text{Dispos} + \text{O}*TF_{opex} + (\text{Rev} + \text{ORI} - \text{O} - \text{D} + \text{PD} + \text{TD} - \text{NDI}) * t * TF_{tax} - \text{ORI}*TF_{ORI} \quad 9$$

Collecting terms in Rev to the left-hand-side gives:

$$Rev*(TF_{rev} - t * TF_{tax}) = RAB_0 * WACC + VCA*(TF_{VCA} - 1) + TCSD * TF_{TCSD} - Reval + D + Dispos + O*TF_{opex} + (ORI - O - D + PD + TD - NDI) * t * TF_{tax} - ORI*TF_{ORI}$$

Dividing both sides of this equation by $TF_{rev} - t * TF$ gives:

$$Rev = \left(RAB_0 * WACC + VCA*(TF_{VCA} - 1) + TCSD * TF_{TCSD} - Reval\right) / (TF_{rev} - t * TF_{tax}) + \left(D + Dispos + O*TF_{opex} + (ORI - O - D + PD + TD - NDI) * t * TFtax - ORI*TFORI\right) / (TFrev - t * TFtax)$$

Collecting terms in O together, collecting terms in D together and collecting terms in ORI together gives:

$$Rev = \left(RAB_0 * WACC + VCA*(TF_{VCA} - 1) + TCSD * TF_{TCSD} - Reval\right) / (TF_{rev} - t * TF_{tax}) + \left(O*TF_{opex} - O * t * TF_{tax} + D - D * t * TF_{tax} + Dispos - ORI*TF_{ORI} + ORI * t * TF_{tax} + (PD + TD - NDI) * t * TF_{tax}\right) / (TF_{rev} - t * TF_{tax})$$

Taking out the common factors O, D and ORI gives, after some re-ordering:

$$Rev = \left(RAB_0 * WACC + VCA*(TF_{VCA} - 1) + TCSD * TF_{mid} - Reval\right) / (TF_{rev} - t * TF_{tax}) + \left(O*(TF_{opex} - t * TF_{tax}) + D*(1 - t * TF_{tax}) + Dispos - ORI*(TF_{ORI} - t * TF_{tax}) + (PD + TD - NDI) * t * TF_{tax}\right) / (TF_{rev} - t * TF_{tax}) \quad 10$$

In implementing Equation 10, we take the value of TF_{TCSD}, TF_{opex}, TF_{tax} and TF_{ORI} to be equal to each other as the timing to which each of these factors relates is mid year timing, or TF_{mid}.

Making these changes in Equation 10 gives:

$$Rev = \left(RAB_0 * WACC + VCA*(TF_{VCA} - 1) + TCSD * TF_{mid} - Reval\right) / (TF_{rev} - t * TF_{mid}) + \left(D*(1 - t * TF_{mid}) + Dispos + O*TF_{mid} * (1 - t) - ORI* TF_{mid} * (1 - t) + (PD + TD - NDI) * t * TF_{mid}\right) / (TF_{rev} - t * TF_{mid}) \quad 11$$

Implementation of formula in existing CPP IM

Substituting the terms in equation 11 above with the equivalent defined terms for **building blocks allowable revenue before tax**[12] in the existing IM determination gives the following corresponding expression (existing defined terms in the IMs are **bolded**):

(**regulatory investment value** × **cost of capital** + total value of commissioned assets × (TF_{VCA} - 1) + **term credit spread differential allowance** × TF - **total revaluation**) ÷ (TF_{rev} - **corporate tax rate** × TF)

+ (**total depreciation** × (1 – **corporate tax rate** × TF)

+ total value of disposed assets

+ **forecast operating expenditure** × TF × (1 – **corporate tax rate**)

- **other regulated income** × TF × (1 – **corporate tax rate**)

+ (**permanent differences** + **positive temporary differences** - **negative temporary differences** - **tax depreciation** - **notional deductible interest** - **utilised tax losses**) × (**corporate tax rate** × TF) ÷ (TF_{rev} - **corporate tax rate** × TF)).

Additional required definitions

1. **TF** = $(1 + WACC)^{182/365}$
2. $\mathbf{TF_{rev}} = (1 + WACC)^{148/365}$
3. $\mathbf{TF_{VCA}} = \mathbf{PV_{VCA}}$ x (1 + **WACC**) / **VCA**
4. $\mathbf{PV_{VCA}}$ is the sum **value of commissioned asset** discounted to the start of the year using **WACC** as the discount rate
5. **Total value of commissioned assets** is the sum value of assets commissioned in the year (ie the closing RAB values which are the value of commissioned assets)
6. **Total value of disposed assets** is the sum value of assets disposed in the year (ie the opening RAB values).

[12] **Building blocks allowable revenue before tax =** (**regulatory investment value** × *cost of capital* + **term credit spread differential allowance** - **total revaluation** + **total depreciation***)* ÷ (1- **corporate tax rate**)
+ **forecast operating expenditure**
- **other regulated income**
+ (**permanent differences** + **positive temporary differences** - **negative temporary differences** - **tax depreciation** - **notional deductible interest** - **utilised tax losses**) × (**corporate tax rate** ÷ (1- **corporate tax rate**)).

Derivation where regulatory net taxable income is negative

Where the application of the formulas above for revenue results in the regulatory net taxable income, an alternative derivation applies, as follows (Equation numbers refer to those above for the tax payable case):

Where net taxable income is negative, TA = TP = 0

Terms in TP in the PV of cash flows have therefore not been included.

Equation 1 multiplied by (1 + WACC) becomes, after applying Equation 6:
$RAB_0 * (1 + WACC) = PV_{end}(\text{Cash flows}) + RAB_1$

Subtracting RAB_0 from each side of this equation gives:
$RAB_0 * WACC = PV_{end}(\text{Cash flows}) + RAB_1 - RAB_0$

Recognising that the cash flows comprise Rev, O, VCA, TCSD, and ORI, and applying Equation 4 gives:
$RAB_0 * WACC = PV_{end}(\text{Rev, O, VCA, TCSD and ORI}) + RAB_1 - RAB_0$

Equation 2 indicates that $RAB_1 - RAB_0 = VCA - D + Reval - Dispos$, and applying this to the equation above gives:

$$RAB_0 * WACC = PV_{end}(\text{Rev, O, VCA, TCSD, TP and ORI}) + VCA - D + Reval - Dispos \quad 6$$

Expanding the $PV_{end}()$ function above using the timing factors gives:

$$RAB_0 * WACC = Rev*TF_{rev} - O*TF_{opex} - VCA*TF_{VCA} - TCSD * TF_{TCSD} + ORI*TF_{ORI} + VCA - D + Reval - Dispos \quad 7$$

Rearranging this equation 7 and substituting the expression for TA from Equation 4 into this equation gives:

$$Rev*TF_{rev} = RAB_0 * WACC + VCA*(TF_{VCA} - 1) + TCSD * TF_{TCSD} - Reval + D + Dispos + O*TF_{opex} - ORI*TF_{ORI} \quad 8$$

Dividing both sides of this equation by TF_{rev} gives:

$$Rev = \left(RAB_0 * WACC + VCA*(TF_{VCA} - 1) + TCSD * TF_{TCSD} - Reval\right) / TF_{rev} + \left(D + Dispos + O*TF_{opex} + - ORI*TF_{ORI}\right) / (TF_{rev}) \quad 9$$

After some rearranging:

$$\text{Rev} = \left(RAB_0 * WACC + VCA*(TF_{VCA} - 1) + TCSD * TF_{TCSD} - Reval + D + Dispos\right) / TF_{rev} + O*TF_{opex} / TF_{rev} - ORI*TF_{ORI} / TF_{rev} \quad 10$$

In implementing Equation 10, we take the value of TF_{TCSD}, TFopex and TF_{ORI} to be equal to each other as the timing to which each of these factors relates is mid year timing, or TF_{mid}.

Making these changes in Equation 10 gives:

$$\text{Rev} = \left(RAB_0 * WACC + VCA*(TF_{VCA} - 1) + TCSD * TF_{mid} - Reval + D + Dispos\right) / TF_{rev} + O*TF_{mid} / TF_{rev} - ORI*TF_{mid} / TF_{rev} \quad 11$$

Implementation of formula in existing CPP IM

Substituting the terms in equation 11 above with the equivalent defined terms for building blocks allowable revenue before tax[13] in the existing IM determination gives the following corresponding expression (existing defined terms in the IMs and those additional definitions referred to above are **bolded**):

(**regulatory investment value** × **cost of capital** + **total value of commissioned assets** × (**TF_{VCA}** - 1) + **term credit spread differential allowance** × **TF** - **total revaluation** + **total depreciation** + **total value of disposed assets**) ÷ **TF_{rev}**

+ **forecast operating expenditure** × **TF** ÷ **TF_{rev}**

- **other regulated income** × **TF** ÷ **TF_{rev}**

[13] **Building blocks allowable revenue before tax =** (**regulatory investment value** × *cost of capital* + **term credit spread differential allowance** - **total revaluation** + **total depreciation**)
+ **forecast operating expenditure**
- **other regulated income**