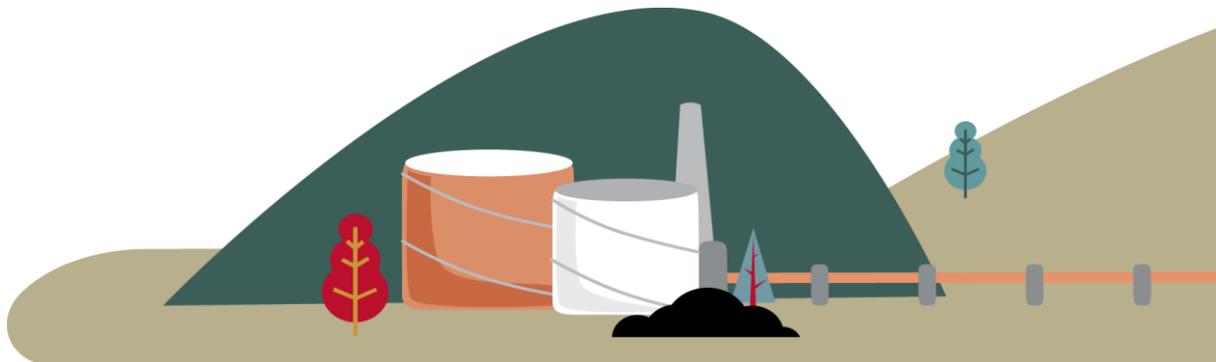# Default price-quality paths for gas pipeline services from 1 October 2017

High level specification for the 2017 GPB reset financial model
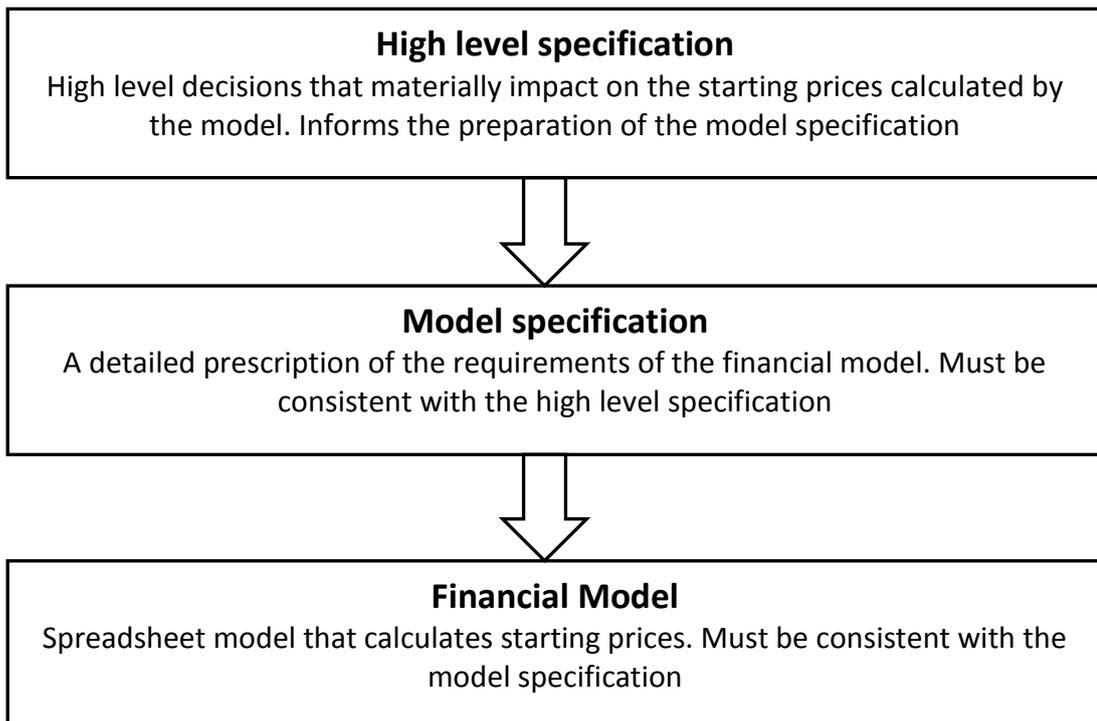
CONTENTS

Purpose

1.   The purpose of this draft high level specification is to set out the material decisions that will be used in developing the financial model (the model) for the 2017 gas pipeline default price-quality path (DPP) reset to help interested parties understand the underlying basis for the model.

Introduction

2.   This specification is being released along with the draft 2017 gas DPP reset financial model (early exposure draft model) and model specification.

Interrelationship between the financial model, high level specification and model specification

3.   This high level specification, the model specification and the financial model have each been released in the week ending 1 July 2016. Releasing model specifications is a new process for us, and we would appreciate stakeholders' views on these documents.

4.   The purpose of the financial model is to determine the starting prices in the 2017 gas DPP reset for the gas pipeline services that are regulated under Part 4 of the Commerce Act.

5.   The high level specification records the decisions that materially impact on the calculation of the starting prices in the model. This high level specification informs the preparation of the model specification. The model specification provides a more detailed prescription of the model requirements than does the high level specification.

High level specification

High level decisions that materially impact on the starting prices calculated by the model. Informs the preparation of the model specification

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Model specification

A detailed prescription of the requirements of the financial model. Must be consistent with the high level specification

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Financial Model

Spreadsheet model that calculates starting prices. Must be consistent with the model specification

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Exclusions

6.   The high level and model specifications exclude the following items:

    6.1   identifying and interpreting relevant input methodologies; and

    6.2   describing the actual data inputs to the financial model, including outputs from other models or supplier-specific data derived from information disclosures and responses to any s 53ZD notices.

Definitions

7.   The high level specification and the model specification use the following defined terms, which include some terms defined in the input methodologies. These defined terms are shown in bold font throughout this specification.

Pricing year[1]	A year ending 30 September within the **regulatory period**
BBAR	Building blocks allowable revenue before tax
BBAR year	An information disclosure year that begins or ends within a **regulatory period**
BBAR period	Either: • a **BBAR year** that has both its start date and end date within the **regulatory period**, or • a part year with the same start date as the **regulatory period** and having the same end date as the information disclosure year within which the **regulatory period** commences, or • a part year with the same end date as the **regulatory period** and having the same start date as the information disclosure year within which the **regulatory period** ends
Regulatory period[2]	The five year period commencing 1 October 2017 and ending 30 September 2022
WACC[2]	Vanilla weighted average cost of capital (**WACC**), 67th percentile, as will be published by the Commission for the 2017 GPB DPP Reset decision

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[1]   The term "Pricing Year" has been defined for the first time as part of the IM review, and can be found in sub-paragraph 1.1.4 of the draft GDB IM and sub-paragraph 1.1.4 of the draft GTB IM released as part of the IM review draft decision.

[2]   The terms "Regulatory period" and "WACC" are defined in sub-paragraph 1.1.4 of the draft GDB IM and the draft GDB IM released as part of the IM review draft decision.

Form of control

8. The form of control is specified in the input methodologies.[3] It is not specified in this specification.

MAR time series

9. The financial model will determine a price path in which the maximum allowable revenue (MAR) in the second year and each subsequent year t of the **regulatory period** (MAR_t) is a function of the previous year's MAR, the forecast change in consumer price index (CPI), the rate of change X, and where the form of control is a weighted average price cap, the forecast of constant price revenue growth.

10. Where the form of control is a weighted average price cap:

$$MAR_t = MAR_{t-1}*(1 + \Delta CPI_t)*(1-X)*(1+CPRG_{t-2})$$

Where-
MAR_t is the maximum allowable revenue in **pricing year** t
ΔCPI_t is the change in **forecast CPI** values, and is given by:

$$\Delta CPI_t = ((CPI_1 + CPI_2 + CPI_3 + CPI_4) \div (CPI_1^{-4} + CPI_2^{-4} + CPI_3^{-4} + CPI_4^{-4})) -1,$$

where-

CPI_n means **forecast CPI** for the nth quarter of the **pricing year** in question; and

CPI_n^{-4} means **forecast CPI** for the equivalent quarter in the preceding **pricing year**.

X is the rate of change for the **pricing year** t as determined by the Commission

$CPRG_{t-2}$ is constant price revenue growth to Year t-2

11. Where the form of control is a revenue cap:

$$MAR_t = MAR_{t-1}*(1 + \Delta CPI_t)*(1-X)$$

Where-
MAR_t is the maximum allowable revenue in **pricing year** t
ΔCPI_t is the change in **forecast CPI** values, and is given by:

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[3] See Commerce Commission "Input methodologies review draft decisions: Report on the IM review" (22 June 2016), IM decisions SP01 and SP02. The draft form of control for gas distribution suppliers for the 2017 gas DPP reset is proposed in IM decision SP01 on p73 of the Report as a weighted average price cap, using the 'pass-through balance' approach. The draft form of control for gas transmission suppliers for the 2017 gas DPP reset is proposed in IM decision SP02 on p74-75 of the Report as a 'pure' revenue cap with a revenue wash-up. The final decisions on the forms of control are planned in each case to be determined by the Commission in the IM Review in December 2016.

$$\Delta CPI_t = ((CPI_1 + CPI_2 + CPI_3 + CPI_4) \div (CPI_1^{-4} + CPI_2^{-4} + CPI_3^{-4} + CPI_4^{-4})) -1,$$

where-

CPI_n means **forecast CPI** for the nth quarter of the **pricing year** in question; and

CPI_n^{-4} means **forecast CPI** for the equivalent quarter in the preceding **pricing year**.

X is the rate of change for the **pricing year** as determined by the Commission

Present value equivalence

12.   The value of MAR for the first year of the **regulatory period** will be such that the sum of the present value of the five MAR values for the **regulatory period** is equal to the total present value of the **BBARs** for each **BBAR period** in the **regulatory period** plus a possible 'additional allowance' as provided in input data to the model.[4]

13.   All present values are determined using a discount rate of **WACC**.

Financial capital maintenance

14.   The financial model applies the financial capital maintenance principle. We apply the following equation (NPV=0 equation) for each **BBAR period**:

Opening RIV = present value of cash flows + present value of closing RIV, where:

14.1   RIV = regulatory investment value = regulatory asset base (RAB) + deferred tax balance;

14.2   present values and opening value are measured as at the start of the **regulatory period;**

14.3   **WACC** is used as the discount rate; and

14.4   the deferred tax balance is expressed as positive when the balance is an asset to the supplier.

15.   The cash flows include :

15.1   revenue, excluding revenue that is for the recovery of pass-though and recoverable costs, including other regulated income. The revenue in this context is the **BBAR**;

15.2   operating expenditure (opex) excluding pass-though and recoverable costs;

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[4]   Additional allowances were provided for three EDBs at the 2015 DPP reset, and are discussed at Paragraph 4.16 of the 2015 EDB DPP reset Main Policy Paper, 28 November 2014.

15.3   capital expenditure (capex);

15.4   tax cash flow, ie, tax payable.

Building blocks allowable revenue before tax

16.   A **BBAR** will be calculated for each **BBAR period**. This **BBAR** will be such that the NPV=0 equation is satisfied. The process for determining a **BBAR** value that satisfies the NPV=0 equation is discussed in the model specification.

17.   Tax allowances and asset valuations will be calculated according to the input methodologies.

18.   The model input data will be time series of annual cash flows for opex and capex.

BBAR periods that are part years

19.   There is a mismatch between the year-end dates for information disclosure for most of the gas pipeline businesses and the 30 September year-end dates of the five **pricing year**s that make up the **regulatory period**.[5]

20.   For example, the **BBAR period**s that will apply to a supplier that has a 30 June year-end for information disclosure will be:

20.1   a nine month **BBAR period** from 1 October 2017 (being the start of the **regulatory period**) to 30 June 2018 (being the end of the supplier's information disclosure year);

20.2   four **BBAR period**s, each of 12 months, and ending on 30 June of each of 2019, 2020, 2021 and 2022; and

20.3   a three month **BBAR period** from 1 July 2022 to 20 September 2022.

Pro rata reduction of full year amounts for part years

21.   Cash flows (such as opex) and other parameters (such as depreciation) that are available as a time series of annual amounts at information disclosure year-ends will be determined for each **BBAR period** by a pro rata reduction of the annual amount, by multiplying by the number of months in the **BBAR period** divided by 12.

Linear interpolation of balance amounts at the start and end of the regulatory period

22.   There are a number of balance amounts, such as the opening RAB value, for which data is available from information disclosure as at the end of disclosure years. In addition to this disclosed information, we require amounts as at the start and end of the **regulatory period**.

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[5] Information disclosure year end dates are: First Gas Distribution: 30 June; First Gas Transmission (MDL): 31 December; First Gas Transmission (Vector): 30 June; GasNet: 30 June; Powerco: 30 September; Vector Distribution: 30 June.

23. Where such information is not available, we consider that linear interpolation is appropriate. The opening and closing RAB balances and the opening and closing deferred tax balances are to be calculated by linear interpolation.

24. This approach is considered appropriate from consideration of the way in which the year-end data is rolled forward from one information disclosure year to the next. The changes in balance amounts in the roll-forward formulas each suggest that linear interpolation of the information at other dates will be appropriate. For example, RAB values are rolled forward with adjustments for the value of additional assets, depreciation and revaluation.

Intra-year cash flow timing

25. In the financial model for each DPP reset to date, we have modelled cash flows as occurring during each **BBAR period** rather than at year-end, and these 'intra-year timing' assumptions have been consistent from one reset to the next.

BBAR periods that are full 12 months

26. For each **BBAR period** that is a full 12 month year, the underlying assumptions have been:

    26.1 opex, capex and tax payable cash flows occur as 12 equal monthly cash flows in the middle of each month;

    26.2 revenue from prices cash flows occur as 12 equal monthly cash flows, each on the 20th day of the following month.

27. While these have been the underlying assumptions, in practice we model each type of cash flow as a single annual cash flow with an intra-year timing that results in that cash flow being a present value equivalent to the 12 monthly cash flows.

BBAR periods that are a part year

28. In the 2013 Gas DPP model, we made the same fundamental assumptions of mid-month cash flows for opex, capex and tax payable cash flows when dealing with **BBAR period**s of less than a year. We used the same 20th of following month assumption for revenues from prices.

Choice of intra-year timing

29. The same underlying timing assumptions as for the 2013 Gas DPP Model will be used for the 2017 GPB DPP reset.

30. For each **BBAR period** of less than 12 months, an equivalent single transaction timing is applied for that part-year period, using the same calculation methodology as used for 12 month periods.

Modelling of the First Gas transmission network as two separate networks

31. The First Gas gas transmission network will, for the purposes of the financial model, be modelled as two separate networks, being the former Maui Development Ltd (MDL) network and the former Vector transmission network.

32. The model will produce starting prices, ie, the maximum allowable revenue for the first year of the **regulatory period**, for each network, with the two values being added together to be the starting price for the gas transmission network as a whole.

33. This approach was adopted because of the different year-end dates for information disclosures for each of the former MDL and Vector networks.

34. Information disclosures should be able to provide much of the supplier-specific information for gas transmission, without requiring the supplier to specially prepare information in response to s 53ZD requests. This information will be available for the former MDL network on a 31 December year-end basis and for the former Vector gas transmission network on a 30 June year-end basis.

35. These different year-ends mean that data on a common year-end basis is not available in a way that would allow the simple addition of the various parameters that we require for data inputs to the financial model.

36. Our approach is therefore to model the transmission network as two separate networks.