Attachment 10.31

Response to Draft Decision:
Updated Estimate of the Required Return on Equity

A report by Frontier Economics

2016/17 to 2020/21 Access Arrangement Information Response to Draft Decision

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An updated estimate of the required return on equity

REPORT PREPARED FOR AUSTRALIAN GAS NETWORKS

January 2016

An updated estimate of the required return on equity

Final Contents

1 An estimate of the required return on equity for Australian Gas Networks

1.1 Overview

1 This report should be read in conjunction with our companion report, Frontier Economics (2015 ROE). In that companion report, we examine two approaches for estimating the required return on equity for the benchmark efficient entity:

a. A multi-model approach, whereby we estimate each of four relevant financial models and distil a final estimate by applying weight to each according to the relative strengths and weaknesses of each model; and

b. The AER's "foundation model" approach, whereby the SharpeLintner Capital Asset Pricing Model (SL-CAPM) is the only model to be estimated, but the estimation of the parameters of that model are informed by the evidence from the other relevant financial models.

2 We note that, our estimates of the required return on equity are sensitive to the estimate of the risk-free rate. Specifically, in the prevailing market conditions, our estimates of the required return on equity tend to rise and fall with changes in the risk-free rate, but not in lock-step. For example, a 1% decline in the riskfree rate will result in a smaller decline in our estimate of the required return on equity.

3 Our companion report adopts a risk-free rate of 2.75% for the 30-day period ending on 30 September 2015. In this report, we adopt a risk-free rate of 2.68% for the 20-day period ending on 31 October 2015. This 7 basis point difference in the risk-free rate has a very minor effect on the estimates of various models and parameters, as set out below.

1.2 Multi-model approach

4 We implement the multi-model approach in exactly the same way as set out in Frontier Economics (2015 ROE), except that we use a risk-free rate of 2.68%. This produces a final estimate of the required return on equity for the benchmark efficient entity of **9.76%,** as set out in Table 1 below.

Table 1: Multi-model estimate of the required return on equity

Model	Weight	Required return

SL-CAPM	12.5%	9.14%
Black CAPM	25.0%	9.75%
Fama-French	37.5%	9.76%
DGM	25.0%	10.10%
Return on equity	**100%**	**9.76%**

Source: Frontier calculations.

1.3 Foundation model approach

5 The AER's foundation model approach involves inserting estimates of three parameters into the SL-CAPM formula. We adopt the following parameter estimates:

a. A risk-free rate of 2.68%, as set out above;

b. An equity beta of 0.91, for the reasons set out in Frontier Economics (2015 ROE). We note that our estimate of the equity beta is independent of the risk-free rate to be used in the SL-CAPM formula; and

c. A market risk premium (MRP) of 7.89%, estimated using the procedure set out in Frontier Economics (2015 ROE), and summarised in Table 2 below.

Table 2: Market risk premium estimates

Estimation approach	Estimate	Weight
AER estimate from mean historical excess returns	6.50%	20%
AER estimate from the historical real returns approach	8.67%	20%
AER estimate from the DGM approach	8.20%	50%
HoustonKemp (2016) estimate from independent expert valuation reports	7.59%	10%
Weighted average	**7.89%**	**100%**

6 When inserted into the SL-CAPM formula, these parameters produce an estimate of the required return on equity of **9.84%**.[1]

[1] 2.68% + 0.91 × 7.89%.

2 References

Frontier Economics, 2016, *The required return on equity under a foundation model approach*, January.

HoustonKemp, 2016, *The cost of equity: response to the AER's draft decisions for the Victorian electricity distributors*, January.

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