

# **Weighted average cost of capital**

Incorporating a return on capital in the 2013  
electricity determination

**Electricity — Draft Methodology Paper**  
November 2012





Independent Pricing and Regulatory Tribunal

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## Invitation for submissions

IPART invites written comment on this document and encourages all interested parties to provide submissions addressing the matters discussed.

**Submissions are due by 20 December 2012.**

We would prefer to receive them electronically via our online submission form <[www.ipart.nsw.gov.au/Home/Consumer\\_Information/Lodge\\_a\\_submission](http://www.ipart.nsw.gov.au/Home/Consumer_Information/Lodge_a_submission)>

You can also send comments by fax to (02) 9290 2061, or by mail to:

WACC in the 2013 electricity determination  
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Our normal practice is to make submissions publicly available on our website <[www.ipart.nsw.gov.au](http://www.ipart.nsw.gov.au)>. If you wish to view copies of submissions but do not have access to the website, you can make alternative arrangements by telephoning one of the staff members listed on the previous page.

We may choose not to publish a submission—for example, if it contains confidential or commercially sensitive information. If your submission contains information that you do not wish to be publicly disclosed, please indicate this clearly at the time of making the submission. IPART will then make every effort to protect that information, but it could be disclosed under the *Government Information (Public Access) Act 2009* (NSW) or the *Independent Pricing and Regulatory Tribunal Act 1992* (NSW), or where otherwise required by law.

If you would like further information on making a submission, IPART's submission policy is available on our website.



# Contents

<b>Invitation for submissions</b>	<b>iii</b>
<b>1 Introduction</b>	<b>1</b>
1.1 How does this paper fit in our broader electricity review?	2
1.2 Proposed approach for determining WACC estimates	2
1.3 Overview of issues on which we seek comment	3
1.4 What does the rest of this paper cover?	4
<b>2 The post-tax WACC framework</b>	<b>4</b>
<b>3 Determining a feasible WACC range</b>	<b>6</b>
3.1 Nominal risk free rate and inflation	6
3.2 Cost of equity	8
3.3 Cost of debt	10
3.4 Gearing	12
<b>4 Choosing a point estimate within a range</b>	<b>13</b>
4.1 Choosing a point estimate for the WACC	13
4.2 Choosing a point estimate for the parameters	14
<b>5 Updating the WACC during the 2013 determination</b>	<b>15</b>



# 1 Introduction

The Minister for Resources and Energy has asked the Independent Pricing and Regulatory Tribunal (IPART) to continue regulating retail electricity prices in NSW. Our new determination will apply from 1 July 2013 to 30 June 2016 (2013 determination).

In developing our approach to this review, one of the issues we will need to consider is an appropriate rate of return or return on capital for a number of energy-related businesses. IPART's preferred approach for determining a rate of return is to use a weighted average cost of capital (WACC). The WACC for a business is the expected cost of its various classes of capital (debt and equity), weighted to take into account the relative share of debt and equity in the total capital structure.

We require WACC estimates for various energy-related businesses as follows:

- ▼ A WACC for **electricity generation** is used for modelling the long run marginal cost (LRMC) of electricity generation.<sup>1</sup>
- ▼ A WACC for **electricity retailing** is used in the analysis for estimating the retail margin.<sup>2</sup> A WACC for electricity retailing is also used for calculating the volatility premium associated with market-based energy purchase costs.
- ▼ A WACC for various **gas businesses** (including a separate WACC for gas production/processing, transmission and liquid natural gas facilities) is used as an input for forecasting gas input costs.<sup>3</sup>
- ▼ A WACC for **coal mining** is used as an input for forecasting coal input costs.<sup>4</sup>

We seek stakeholder views on our approach to the WACC for the 2013 determination. In providing comments, stakeholders should have regard to our forthcoming discussion paper (to be released in December 2012) on aspects of our approach to the WACC that are currently under review.

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<sup>1</sup> For more information on LRMC modelling see Frontier Economics, *Methodology Report – input assumptions and modelling – A draft report for IPART*, November 2012, Chapter 3.

<sup>2</sup> For more information see Strategic Finance Group, *Methodology for estimating retail electricity margins*, October 2012.

<sup>3</sup> For more information on gas market forecasts see Frontier Economics, *Methodology Report – input assumptions and modelling – A draft report for IPART*, November 2012, Chapter 10 and Appendix D.

<sup>4</sup> For more information on coal forecasts see Frontier Economics, *Methodology Report – input assumptions and modelling – A draft report for IPART*, November 2012, Chapter 10.

## 1.1 How does this paper fit in our broader electricity review?

Our proposed approach to the 2013 determination generally is set out in our issues paper. It outlines the factors we need to consider in undertaking the review, how we will decide on the most appropriate way to regulate prices and how we will estimate the various costs involved in supplying electricity.

This paper is one of 3 draft methodology papers which accompany our issues paper. The other methodology papers relate to estimating energy costs, forecasting load profiles and developing input assumptions for modelling energy costs, and estimating a retail margin for retail electricity businesses.

All these papers are available on IPART's website.

As mentioned above, we will also be undertaking a separate review on aspects of our WACC methodology (WACC methodology review). This review will have a particular focus on averaging periods, maturity profiles and approaches for estimating the market risk premium. Our discussion paper is expected to be released in December 2012.

Our WACC methodology review will have regard to the Australian Energy Market Commission's (AEMC) recommended rule changes for the economic regulation of network service providers (final determination due for release in November 2012) and the discussion of WACC issues during the consideration of rule changes.<sup>5</sup>

We encourage interested stakeholders to consider our forthcoming discussion paper in making submissions to this review. Where possible, submissions to, and outcomes from our WACC methodology review will be incorporated into our 2013 determination. Details on how to make a submission to our electricity review can be found in our issues paper and our WACC methodology review when it is released in December.

## 1.2 Proposed approach for determining WACC estimates

For each of the WACC estimates required for the 2013 electricity determination we will need to:

1. Determine a feasible WACC range by considering the underlying parameters of the WACC.
2. Choose underlying parameters and a WACC from within the feasible range having regard to parameter uncertainties but also the results of other models of the WACC and other market information.

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<sup>5</sup> For more information see <http://www.aemc.gov.au/electricity/rule-changes/open/economic-regulation-of-network-service-providers-.html>

3. Consider how to update the WACC estimate as part of any annual review of the energy cost allowance.

While we have not made any firm decisions on the methodologies that we will use, our preliminary view is that where appropriate we should build on the methodologies we have used in making our previous determinations.

### 1.3 Overview of issues on which we seek comment

Throughout this paper, we have identified the issues on which we particularly seek stakeholder comment. Stakeholders may address all or some of these issues, and are also free to raise and discuss any other issues that they feel are relevant. In considering our proposed approach to the WACC in the 2013 determination, stakeholder submissions should have regard to:

- ▼ the current approach used in our 2010 electricity determination, and the subsequent modifications to our approach applied in other industries
- ▼ our discussion paper on the WACC methodology review to be released in December 2012
- ▼ other relevant market information and regulatory precedents.

For convenience, a full list of the issues we seek comment on is provided below:

- 1 Are there significantly greater difficulties in moving to a post-tax WACC in the 2013 electricity determination than in our determinations in other industries? 6
- 2 What is the appropriate benchmark for estimating the risk free rate for electricity generation, electricity retail, gas production, gas transmission, LNG facilities and coal mining businesses? 7
- 3 What is the appropriate approach to determining the market risk premium for the 2013 determination? 8
- 4 What is the equity beta and associated gearing for electricity generation, electricity retail, gas production, gas transmission, LNG facilities and coal mining businesses, and what is the supporting quantitative evidence? 9
- 5 Are there any issues with IPART using a gamma assumption of 0.25 for the 2013 determination? 10
- 6 How should the debt margin be estimated for the 2013 determination? Is our current approach of using BBB/BBB+ credit rating assumption appropriate for our benchmark businesses? 11
- 7 Is the inclusion of a 20 basis point allowance for debt raising costs (based on a 5-year maturity period) appropriate for the 2013 determination? 11

8	What are the appropriate gearing ratios for electricity generation, electricity retail, gas production, gas transmission, LNG facilities and coal mining businesses? How should our gearing ratios relate to the benchmark credit rating assumption?	13
9	What information should IPART consider in choosing an appropriate point within the WACC range?	14
10	How should internally consistent individual WACC parameters be determined?	15
11	Which parameters of the WACC should be updated as part of any annual review?	16

#### 1.4 What does the rest of this paper cover?

The rest of this paper discusses each step in our proposed approach for determining WACC estimates, and outlines our preliminary thinking on some of the issues we will consider. It is structured as follows:

- ▼ Section 2 sets out the framework for a post-tax WACC
- ▼ Section 3 discusses how we propose to determine a feasible range for the WACC estimates, including consideration of the underlying WACC parameters
- ▼ Section 4 outlines how we will select an appropriate WACC within the feasible range
- ▼ Section 5 discusses how the WACC estimates could be updated over the 2013 determination.

## 2 The post-tax WACC framework

For the 2010 electricity determination, we used a real pre-tax WACC. This approach allowed for tax directly in the WACC.

After undertaking consultation, IPART decided in December 2011 to change our approach from a real pre-tax WACC model to a real post-tax WACC model for those businesses we regulate under a building block approach. Under a post-tax WACC model, tax liability is estimated separately from the WACC, based on revenue and expenses of regulated business activities. We found that a post-tax model provides a better estimate of the tax liability for regulated businesses.<sup>6</sup>

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<sup>6</sup> IPART, *The incorporation of company tax in pricing determinations – Final Decision*, December 2011, p 1.

For industries where we don't use a building block approach, such as electricity, we acknowledged that the application of a post-tax WACC may be more difficult and undertook to consider its application on a case-by-case basis.<sup>7</sup> Hence, we have to consider whether it is more difficult to apply a post-tax WACC in this determination than a determination using a standard building block model.

We seek comment from stakeholders on whether there are any significantly greater difficulties that would prevent us from moving to a post-tax WACC in this determination. Our preliminary view is this is not the case, and that we should move to a real post-tax WACC in our 2013 determination, consistent with our approach in other industries.

To separately account for the tax liability in a post-tax WACC framework we will need to form a view on the underlying WACC parameters including the cost of debt.

A real post-tax WACC can be estimated using the following formulas:

$$WACC^{post-tax} = \frac{\left(1 + \left\{R_e \cdot \left(\frac{E}{D+E}\right) + R_d \cdot \left(\frac{D}{D+E}\right)\right\}\right)}{(1+\Pi)} - 1$$

$$R_e = Rf + \beta_e \times MRP$$

$$R_d = Rf + DM$$

Where:

- ▼ Real post-tax WACC ( $WACC^{post-tax}$ )
- ▼ Nominal cost of equity ( $R_e$ )
- ▼ Nominal cost of debt ( $R_d$ )
- ▼ Adjustment for expected inflation ( $\Pi$ )
- ▼ Proportion of equity ( $\frac{E}{D+E}$ )
- ▼ Proportion of debt ( $\frac{D}{D+E}$ )
- ▼ Nominal risk free rate (Rf)
- ▼ Equity beta ( $\beta_e$ )
- ▼ Market risk premium (MRP)
- ▼ Debt margin (DM)
- ▼ Statutory tax rate (t)

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<sup>7</sup> Ibid, p 3.

IPART seeks comment on the following

- 1 Are there significantly greater difficulties in moving to a post-tax WACC in the 2013 electricity determination than in our determinations in other industries?

### 3 Determining a feasible WACC range

Our 2010 determination set out the approach used for estimating the WACC for electricity businesses. From time-to-time we review aspects of our approach on the WACC in the light of new information and precedents. These reviews, and subsequent determinations, are documented on our website.<sup>8</sup>

In estimating the WACC we have used the capital asset pricing model (CAPM) with our standard approach to determine the underlying parameters of the WACC. We have used a range for parameters we consider are particularly uncertain. This generates a feasible range for the WACC.

In its recent draft rule change, the AEMC recognised the difficulty and uncertainty in determining the WACC. It proposes that regulators have regard to models other than CAPM, and within these models, alternative approaches to determine the parameter values.<sup>9</sup>

We consider that the AEMC's proposed approach is broadly consistent with our current approach. Furthermore, we will shortly issue a discussion paper that discusses our approach to several of the parameters. This discussion paper will draw upon the submissions to and proposals of the AEMC.

The discussion below describes our current approach for estimating the underlying WACC parameters in the 2010 determination, and where relevant our approach in other industries. We also outline where our approach is currently being reviewed. We invite comments on how we should approach the underlying WACC parameters in the 2013 determination.

#### 3.1 Nominal risk free rate and inflation

To determine the cost of equity and debt within the WACC we use an estimate of the risk free rate. In both the return on equity and the cost of debt calculations, the risk free rate is the base to which a premium or margin is added to reflect the riskiness of the specific business.

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<sup>8</sup> <http://www.ipart.nsw.gov.au/Home/Industries/Research>

<sup>9</sup> AEMC 2012, *Economic Regulation of Network Service Providers, and Price and Revenue Regulation of Gas Services, Draft Rule Determinations*, 23 August 2012, p 47-48.

In our 2010 determination we used a 10-year term-to-maturity to determine the risk free rate.<sup>10</sup> However, our current approach in other industries has changed from a 10-year to a 5-year term-to-maturity, which approximates the regulatory period. Matching the regulatory period and the term to maturity assumption is consistent with the NPV-neutrality of our decisions.<sup>11</sup> However, the reasons for changing our approach to a 5-year term-to-maturity may not be relevant to many of the businesses for which we need estimates of the WACC (such as unregulated electricity generation and retail businesses and gas supply businesses).

The risk free rate is estimated using an average of yields on Commonwealth bonds of the relevant maturity over the last 20 trading days prior to the decision on the WACC. That is, it is a short-term average of current rates. We use a similar short-term average for debt margins. But, like other regulators in Australia, we use a long-term market risk premium. As discussed below, we have been concerned about the impact of the current market conditions on our estimated WACC. To date we have addressed this by selecting a WACC at the top-end of the range (see section 4.1 for discussion on choosing a point estimate of the WACC), however our forthcoming discussion paper on WACC will review our approach to estimating the risk free rate, debt margins and the market risk premium.

We will need to consider averaging periods and maturity periods for each of the businesses for which we need estimates of the WACC (see section 1). We will also consider how to address any relationship between movements in the risk free rate and market risk premium.

IPART seeks comment on the following

- 2 What is the appropriate benchmark for estimating the risk free rate for electricity generation, electricity retail, gas production, gas transmission, LNG facilities and coal mining businesses?

### **3.1.1 Inflation adjustment**

The inflation adjustment is used to convert nominal parameters into real parameters.

Currently we estimate forward inflation using data from the zero-coupon inflation-linked swap market. We consider that relying on swap market data has several advantages over other approaches. Our primary reason for using swap market data is that it is based on market observations and is therefore objective, repeatable and transparent.

Our preliminary view is that we continue to use swap market data to derive the inflation adjustment.

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<sup>10</sup> IPART, *Changes in regulated electricity retail prices from 1 July 2011 – Final Report*, June 2011, p 127.

<sup>11</sup> IPART, *Developing the approach to estimating the debt margin – Final Decision*, April 2011, p 19.

## 3.2 Cost of equity

Currently we estimate the cost of equity based on the CAPM. This model determines the cost of equity by adding the product of the equity beta and the market risk premium to the risk free rate.

### 3.2.1 Market risk premium

The market risk premium (MRP) is the expected return over the risk free rate that investors would require for investing in a well-diversified portfolio of risky assets. The MRP is an expected return and is not directly observable. It therefore needs to be estimated through proxies.

Like other regulators in Australia and many practitioners, our current approach uses a long-term view of the MRP. The 2010 determination used a MRP in the range of 5.5% to 6.5% and this remains the range we use in other determinations.<sup>12</sup>

In the current market circumstances, there is some evidence to support the view that expectations for the MRP have risen as bond yields have fallen. To date, we have not used current estimates due to concerns about the robustness and stability of these measures.

As part of our consultation on the 2012 annual review of the energy cost allowance, a number of stakeholders submitted that our estimated cost of equity was less than the cost of equity faced by market participants given that:

- ▼ we use a mixture of short-term and long-term averages for market parameters
- ▼ there is a negative relationship between the risk free rate and the MRP<sup>13</sup>

We will be examining alternative approaches for estimating the MRP in our WACC methodology review. These approaches may include survey, historical and implied MRP approaches.

IPART seeks comment on the following

- 3 What is the appropriate approach to determining the market risk premium for the 2013 determination?

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<sup>12</sup> IPART, *Review of regulated retail tariffs and charges for electricity 2010-2013 – Final Report*, March 2010, p 241.

<sup>13</sup> For example, see AGL's submission, May 2012, p 7 and Origin Energy's submission, May 2012, pp 7-8, available at [http://www.ipart.nsw.gov.au/Home/Industries/Electricity/Reviews/Retail\\_Pricing/Changes\\_in\\_regulated\\_electricity\\_retail\\_prices\\_from\\_1\\_July\\_2012/12\\_Apr\\_2012\\_-\\_Draft\\_Report/Draft\\_Report\\_-\\_Changes\\_in\\_regulated\\_electricity\\_retail\\_prices\\_from\\_1\\_July\\_2012\\_-\\_April\\_2012](http://www.ipart.nsw.gov.au/Home/Industries/Electricity/Reviews/Retail_Pricing/Changes_in_regulated_electricity_retail_prices_from_1_July_2012/12_Apr_2012_-_Draft_Report/Draft_Report_-_Changes_in_regulated_electricity_retail_prices_from_1_July_2012_-_April_2012)

### 3.2.2 Equity beta

The equity beta measures the riskiness of the business relative to the overall market. It can be estimated from observing how the return of traded securities varies with the overall return of the market. It represents the systematic or market wide risk of an asset that cannot be avoided by holding it as part of a diversified portfolio. The equity beta does not take into account business specific or non-systematic risks.

In our 2010 determination, we undertook an analysis of equity betas for proxy companies, professional valuations and other regulatory decisions on equity betas for electricity businesses. We determined an equity beta in the range of 0.9 to 1.1 (with a midpoint of 1) for both electricity generation and retail businesses for gearing ratios of 50% and 30% respectively.<sup>14</sup> While the equity betas were the same, the lower gearing for retail meant that the underlying asset beta (a measure of systematic risk unaffected by gearing) was assumed to be lower for retail.

As part of our consultation on the 2012 annual review of the energy cost allowance, AGL submitted that our equity beta value does not acknowledge the risks faced by a stand-alone generator, and as such the assumed equity beta for generation was understated.<sup>15</sup>

For our 2013 determination, we will need to estimate an equity beta for a range of businesses, some of which may have different characteristics.

Consistent with our approach in the 2010 determination, we propose to undertake analysis of market evidence to determine equity betas for these businesses. As part of this analysis we will need to consider the appropriate characteristics of the proxy businesses for which benchmark data is available. In particular, we are interested in understanding the systematic risks faced by these businesses relative to other businesses for which we have to determine a WACC.

IPART seeks comment on the following

- 4 What is the equity beta and associated gearing for electricity generation, electricity retail, gas production, gas transmission, LNG facilities and coal mining businesses, and what is the supporting quantitative evidence?

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<sup>14</sup> IPART, *Review of regulated retail tariffs and charges for electricity 2010-2013 – Final Report*, March 2010, pp 237 & 242.

<sup>15</sup> AGL submission, May 2012, p 9, available at: [http://www.ipart.nsw.gov.au/Home/Industries/Electricity/Reviews/Retail\\_Pricing/Changes\\_in\\_regulated\\_electricity\\_retail\\_prices\\_from\\_1\\_July\\_2012/12\\_Apr\\_2012\\_-\\_Draft\\_Report/Draft\\_Report\\_-\\_Changes\\_in\\_regulated\\_electricity\\_retail\\_prices\\_from\\_1\\_July\\_2012\\_-\\_April\\_2012](http://www.ipart.nsw.gov.au/Home/Industries/Electricity/Reviews/Retail_Pricing/Changes_in_regulated_electricity_retail_prices_from_1_July_2012/12_Apr_2012_-_Draft_Report/Draft_Report_-_Changes_in_regulated_electricity_retail_prices_from_1_July_2012_-_April_2012)

### 3.2.3 Tax rate and imputation tax credits (Gamma)

Under the Australian dividend imputation system, investors receive a tax credit (franking credit) for the company tax they have paid. This ensures that the investor is not taxed twice on their investment returns (ie, once at the company level and once on the personal tax level).

The value of the imputation tax credits is represented in the 'gamma'. The rationale for including a value for gamma is that domestic investors would accept an investment with a lower rate of return if there were imputation tax credits, since imputation tax credits provide value by offsetting personal income tax liabilities.<sup>16</sup> International investors cannot utilise imputation credits.

In our 2010 determination, we used a parameter range for gamma of 0.5 to 0.3, with a midpoint of 0.4. However, we now use a gamma of 0.25 in other industries we regulate. This followed a review of the gamma in 2012 that took into account more recent studies, regulatory precedents, and information on market practice.<sup>17</sup>

IPART seeks comment on the following

- 5 Are there any issues with IPART using a gamma assumption of 0.25 for the 2013 determination?

## 3.3 Cost of debt

### 3.3.1 Debt margin

The debt margin represents the cost of debt a business pays above the nominal risk free rate. The debt margin is related to current market interest rates on corporate bonds, the maturity of debt, the assumed capital structure and the credit rating.

The 2010 determination estimated the debt margin using a 20-day average of the 7-year Bloomberg fair value curve and a portfolio of BBB+ and BBB rated Australian corporate bonds with a 10-year maturity. We determined a range for the debt margin using the highest and lowest yields.<sup>18</sup>

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<sup>16</sup> Under a pre-tax WACC framework, gamma is a WACC parameter. Under a post-tax WACC framework, gamma is not a WACC parameter, but an input into the calculation of tax liabilities.

<sup>17</sup> IPART, *Review of imputation credits (gamma) – Final Report*, March 2012.

<sup>18</sup> IPART, *Review of regulated retail tariffs and charges for electricity 2010-2013 – Final Report*, March 2010, pp 236-237.

Following a review of our approach to estimation of debt margins in 2011 we now use the median and interquartile range of the 20-day averages of:

- ▼ yields on BBB+ to BBB rated Australian corporate bonds with a maturity of 5 years
- ▼ yields on BBB+ to BBB rated Australian corporate bonds with a maturity of 5 years issued in the US market
- ▼ the 5-year Bloomberg Fair value curve.<sup>19</sup>

As part of our consultation on the 2012 annual review of the energy cost allowance, a number of stakeholders submitted that there is a need to reconsider the credit rating assumptions and the interdependency between the debt margin and the gearing ratio.<sup>20</sup>

Our WACC methodology review will examine different options for averaging periods and maturity profiles to determine the debt margin and the interdependency between the target credit rating and the gearing ratio.

IPART seeks comment on the following

- 6 How should the debt margin be estimated for the 2013 determination? Is our current approach of using BBB/BBB+ credit rating assumption appropriate for our benchmark businesses?

### 3.3.2 Debt raising costs

For the 2010 electricity determination we included an allowance of 12.5 basis points per annum on the debt margin for debt raising costs.<sup>21</sup> When we changed our approach to a 5-year maturity period for other industries (see section 3.1), we increased this allowance to 20 basis points. Our preliminary view is that we should adopt 20 basis points (based on a 5-year maturity period) in the 2013 determination.

IPART seeks comment on the following

- 7 Is the inclusion of a 20 basis point allowance for debt raising costs (based on a 5-year maturity period) appropriate for the 2013 determination?

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<sup>19</sup> IPART, *Developing the approach to estimating the debt margin - Final Decision*, April 2011.

<sup>20</sup> For example, see AGL's submission, May 2012, p 8, available at: [http://www.ipart.nsw.gov.au/Home/Industries/Electricity/Reviews/Retail\\_Pricing/Changes\\_in\\_regulated\\_electricity\\_retail\\_prices\\_from\\_1\\_July\\_2012/12\\_Apr\\_2012\\_-\\_Draft\\_Report/Draft\\_Report\\_-\\_Changes\\_in\\_regulated\\_electricity\\_retail\\_prices\\_from\\_1\\_July\\_2012\\_-\\_April\\_2012](http://www.ipart.nsw.gov.au/Home/Industries/Electricity/Reviews/Retail_Pricing/Changes_in_regulated_electricity_retail_prices_from_1_July_2012/12_Apr_2012_-_Draft_Report/Draft_Report_-_Changes_in_regulated_electricity_retail_prices_from_1_July_2012_-_April_2012)

<sup>21</sup> IPART, *Review of regulated retail tariffs and charges for electricity 2010-2013 - Final Report*, March 2010, p 237.

### 3.4 Gearing

Gearing is a measure of financial leverage and is defined as the ratio of the value of debt to total capital (ie, debt and equity). Gearing is used to weigh the costs of debt and equity when formulating the WACC.

When determining the level of gearing used to calculate the WACC, we adopt a benchmark capital structure, rather than the actual financial structure, to ensure that customers will not bear the cost associated with an inefficient financing structure.

In our 2010 determination we undertook a benchmark analysis of gearing levels in proxy electricity generation and electricity retail companies. We decided to use a gearing ratio of 50% for electricity generation and 30% for electricity retailing.<sup>22</sup>

As part of our consultation on the 2012 annual review of the energy cost allowance, a number of stakeholders submitted that there is a need to consider the interdependency between the debt margin and the gearing ratio. AGL and Origin submitted that the current approach is inconsistent with the metrics required by rating agencies to obtain a credit rating of BBB/BBB+.<sup>23</sup>

For our 2013 determination we will need to assume a gearing level for a range of businesses.

We propose to undertake a similar analysis to that conducted for our 2010 determination to determine gearing levels for these businesses. In particular, we are interested in understanding the relative risks of these businesses and the extent to which the assumed gearing level could sustain an investment grade credit rating. In this regard, we note that the Australian Energy Regulator has recently used a gearing level of 60% for gas transmission businesses.<sup>24</sup> Given the differing characteristics of these businesses and the relative risks involved in coal mining, gas production and LNG facilities, the gearing level for these businesses may lie between the level for a gas transmission business and an electricity retail business.

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<sup>22</sup> IPART, *Review of regulated retail tariffs and charges for electricity 2010-2013 – Final Report*, March 2010, p 242.

<sup>23</sup> AGL submission, May 2012, p 7 and Origin Energy submission, May 2012, pp 7-8, available at [http://www.ipart.nsw.gov.au/Home/Industries/Electricity/Reviews/Retail\\_Pricing/Changes\\_in\\_regulated\\_electricity\\_retail\\_prices\\_from\\_1\\_July\\_2012/12\\_Apr\\_2012\\_-\\_Draft\\_Report/Draft\\_Report\\_-\\_Changes\\_in\\_regulated\\_electricity\\_retail\\_prices\\_from\\_1\\_July\\_2012\\_-\\_April\\_2012](http://www.ipart.nsw.gov.au/Home/Industries/Electricity/Reviews/Retail_Pricing/Changes_in_regulated_electricity_retail_prices_from_1_July_2012/12_Apr_2012_-_Draft_Report/Draft_Report_-_Changes_in_regulated_electricity_retail_prices_from_1_July_2012_-_April_2012)

<sup>24</sup> For example see AER, *APT Petroleum Pipeline Pty Ltd Access arrangement - Roma to Brisbane Pipeline 2012-13 to 2016-17 – Final decision*, August 2012, p 20.

IPART seeks comment on the following

- 8 What are the appropriate gearing ratios for electricity generation, electricity retail, gas production, gas transmission, LNG facilities and coal mining businesses? How should our gearing ratios relate to the benchmark credit rating assumption?

## 4 Choosing a point estimate within a range

### 4.1 Choosing a point estimate for the WACC

As discussed above, we use a range for some of our WACC input parameters reflecting the uncertainty involved in their estimation. This means there is also a range for the WACC.

We will need to choose an appropriate point within the WACC range. We often choose the mid-point from the range for our price determinations as this generally represents our best estimate for that parameter. This promotes regulatory certainty. However, we are not bound to choose the mid-point for all our pricing reviews. In previous decisions, we have also used values above or below the mid-point.

Recent examples of using a WACC estimate other than the mid-point are found in our decisions in water<sup>25</sup> and electricity<sup>26</sup>. In these decisions we observed that in recent years the risk free rate had been affected by market volatility and prolonged weak market conditions. We recognised that a disparity between current market rates and long-term averages had emerged. The change in these factors potentially created a disparity between the risk free rate (for which we use short-term average data) and the market risk premium (for which we use long-term average data). However, it is difficult to measure these short-term variations in expectations for the market risk premium. Rather than adjusting the risk free rate or revaluing the market risk premium, we selected a WACC point estimate from within the range having regard to long-term averages and other relevant information. These issues will be considered in the discussion paper on WACC to be released in December 2012.

In choosing a point estimate from within a range we will consider other relevant information that may not be captured within our methodologies for determining the cost of debt and equity. We will also be guided by our broader objectives of facilitating competition and promoting efficiency in the electricity industry for the long-term interests of customers.

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<sup>25</sup> IPART, *Review of water prices for Sydney Desalination Plant Pty Limited – Final Report*, December 2011, pp 80, 85 & 91.

<sup>26</sup> IPART, *Changes in regulated electricity retail prices from 1 July 2012 – Final Report*, June 2012, p 104.

IPART seeks comment on the following

- 9 What information should IPART consider in choosing an appropriate point within the WACC range?

## 4.2 Choosing a point estimate for the parameters

For this determination we also need to choose a point estimate for WACC parameters because these are specifically required for our modelling, for example:

- ▼ in the analysis for the retail margin, we make assumptions about how volatile the market return is (which must be consistent with the market risk premium) and about how much systematic risk the equity holders are exposed to
- ▼ amortising capital costs for modelling the LRMC of generation requires a point estimate of the cost of debt to calculate the interest expense during construction
- ▼ estimating the tax expense requires a point estimate for the cost of debt.

This distinguishes this determination from our other determinations. In those determinations the Tribunal's approach has been to identify a possible range for the WACC using our standard methodology based on a range for certain parameters that are considered more uncertain. As noted above the Tribunal then comes to a view on the appropriate WACC having regard to those uncertainties but also the results of other models of the WACC and other market information. It has not specifically set out a set of parameter values underpinning the particular WACC chosen.<sup>27</sup>

In choosing a point estimate for underlying parameter values we will take into consideration similar factors as for determining a point estimate of the WACC. These include information that may not be captured within our methodologies and the broader objectives of facilitating competition and promoting efficiency in the electricity industry for the long-term interests of customers.

An issue this raises in determining values for individual parameters is whether we should use:

- ▼ the mid-point of the range for each parameter, or
- ▼ a parameter value that is internally consistent with the WACC, noting that there are a range of possible values.

The mid-point of the range of each parameter could be our best estimate of that parameter, given the approach used to its estimation. However, it may not be internally consistent with the point estimate of the WACC.

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<sup>27</sup> Indeed except where the extreme ends of the range are chosen there can be numerous combinations of parameter values consistent with the point estimate of the WACC chosen.

IPART seeks comment on the following

10 How should internally consistent individual WACC parameters be determined?

## 5 Updating the WACC during the 2013 determination

Our terms of reference for the 2013 determination require us to conduct a periodic review of the energy cost allowance. Consistent with our 2010 determination and the terms of reference, we propose to conduct this review annually.

In our 2010 determination we updated the WACC during our annual review. However, we undertook to update the market parameters of the WACC only, including the risk free rate and debt margin.<sup>28</sup> Other parameters, such as gamma and the MRP were not updated. This approach was designed to capture those parameters that are considered volatile and at the same time promote regulatory certainty and limit administrative costs by 'locking in' those parameters that were likely to be less volatile over the determination period.

In our 2012 annual review some stakeholders questioned whether it was appropriate to review only the market parameters of the WACC.<sup>29</sup>

Updating more of the parameters as part of the annual review for the 2013 determination would allow us to capture additional information that was not available at the time of the original decision. For example, we may have more updated information on equity betas and market risk premiums. Updating this analysis as part of the annual review may result in a WACC that better reflects the cost of capital for the various benchmark energy related businesses. This is likely to promote efficiency.

However, there also costs and risks involved. This approach would reduce regulatory certainty to stakeholders and may lead to more volatile outcomes, and would increase the time and costs involved in undertaking annual reviews of the energy cost allowance as a result of the need to consult on these parameters as part of the annual review.

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<sup>28</sup> IPART, *Review of regulated retail tariffs and charges for electricity 2010-2013 – Final Report*, March 2010, p 146.

<sup>29</sup> For example, see AGL's submission May 2012, pp 6-7, available at: [http://www.ipart.nsw.gov.au/Home/Industries/Electricity/Reviews/Retail\\_Pricing/Changes\\_in\\_regulated\\_electricity\\_retail\\_prices\\_from\\_1\\_July\\_2012/12\\_Apr\\_2012\\_-\\_Draft\\_Report/Draft\\_Report\\_-\\_Changes\\_in\\_regulated\\_electricity\\_retail\\_prices\\_from\\_1\\_July\\_2012\\_-\\_April\\_2012](http://www.ipart.nsw.gov.au/Home/Industries/Electricity/Reviews/Retail_Pricing/Changes_in_regulated_electricity_retail_prices_from_1_July_2012/12_Apr_2012_-_Draft_Report/Draft_Report_-_Changes_in_regulated_electricity_retail_prices_from_1_July_2012_-_April_2012)

The appropriate scope of the annual review therefore involves considering the trade-off between regulatory certainty and the increased costs, extended time required and uncertainty associated with a wider scope. We seek stakeholder comment as to the appropriate balance between these objectives and the extent to which they promote the long-term interests of customers.

IPART seeks comment on the following

- 11 Which parameters of the WACC should be updated as part of any annual review?